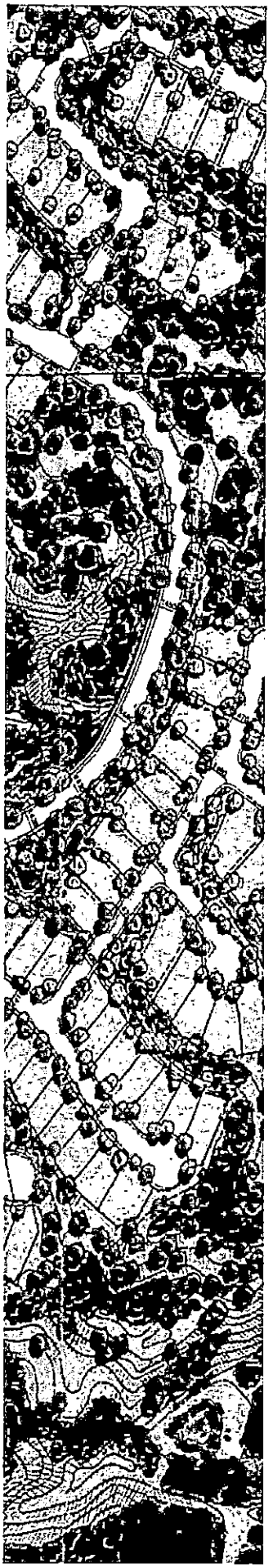

Addendum No. 2

FINAL SUBSEQUENT
ENVIRONMENTAL IMPACT REPORT
EIR 566
State Clearinghouse No. 96121072

Volume 1

Saddleback Meadows

Planning Application 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

County of Orange
Planning and Development Services Department

HDR
March 2001

Addendum No. 2

Volume 1

Final Subsequent Environmental Impact Report 566

State Clearinghouse No. 96121072

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Planning Application (PA) 980103
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March 2001

TABLE OF CONTENTS

VOLUME 1

Section			Page
1	**INTRODUCTION**		1-1
	1.1	Legal History	1-1
	1.2	Board of Supervisors Actions	1-1
	1.3	Addendum No. 2 Organization	1-2
	1.4	CEQA Statutory Requirements	1-2
	1.5	Addendum No.2 Findings	1-4
2	**PROJECT DESCRIPTION**		2-1
	2.1	Location	2-1
	2.2	Background	2-1
	2.3	Project Description	2-2
	2.4	Related Projects	2-6
3	**ENVIRONMENTAL SETTING**		3-1
4	**ANALYSIS OF IMPACTS AND MITIGATION**		4-1
	4.1	Land Use	4-1
	4.2	Soils and Geology	4-2
	4.3	Water and Hydrology	4-2
	4.4	Transportation and Circulation	4-3
	4.5	Air Quality	4-4
	4.6	Noise	4-4
	4.7	Biological Resources	4-5
	4.8	Aesthetics	4-6
	4.9	Cultural and Scientific Resources	4-7
	4.10	Recreation	4-7
	4.11	Hazards	4-8
	4.12	Public Services	4-8
	4.13	Utilities and Service Systems	4-9
5	**FINDINGS AND DETERMINATION**		5-1
6	**REFERENCES**		6-1
EXHIBITS			7-1
1	Regional Location Map		
2	Vicinity Map		
3	Illustrative Site Plan		
4	Related Projects		

TABLES

2-1	Land Use Summary	2-3
2-2	Related Projects	2-6
4-1	Land Use and Planning Impacts	4-1
4-2	Soils and Geology Impacts	4-2
4-3	Water and Hydrology Impacts	4-2
4-4	Transportation and Circulation Impacts	4-3
4-5	Air Quality impacts	4-4
4-6	Noise Impacts	4-4
4-7a	Biological Resource Impacts	4-5
4-7b	Biological Mitigation Plan Summary	4-6
4-8	Aesthetic Impacts	4-6
4-9	Cultural and Scientific Resource Impacts	4-7
4-10	Recreation Impacts	4-7
4-11	Hazards Impacts	4-8
4-12	Public Service (Education) Impacts	4-9
4-13	Utility and Service System Impacts	4-9

ADDENDUM NO. 2 APPENDICES

A Project Chronology
B Updated Traffic Analysis
C Updated Biological Mitigation Plan

VOLUME 2

D. Saddleback Meadows Processing Documents - Administrative Record in Support of Petitioner's Motion for Summary Adjudication – October 1997 to December 8, 1998

VOLUME 3 (Bound as Individual Documents)

E. Draft Environmental Impact Report 561 (Volumes 1 – 3) - February, 1996
F. Response to Comments – Draft EIR 561 - July, 1996
G. Draft Subsequent Environmental Impact Report 566 (Volumes 1 – 3) – June, 1997
H. Response to Comments – Draft EIR 566 - October 1997

1.0 INTRODUCTION

Addendum No. 2 to certified subsequent Environmental Impact Report (SEIR) 566 has been prepared to evaluate and document any potential changes in the environmental effects or baseline environmental conditions associated with the Saddleback Meadows project (PA 980103) since the preparation of SEIR Addendum No.1 in July 1998. The project evaluated by Addendum No. 2 is identical to the project evaluated in SEIR Addendum No. 1, consisting of 299 single family dwelling units on the 222.2 acre project site. California Environmental Quality Act (CEQA) documentation prepared for the project to date is summarized as follows:

EIR 561. Environmental Impact Report 561 was prepared in February 1996 for a 318 detached single family dwelling units on a 222.2 acre site.

SEIR 566. Subsequent Environmental Impact Report (SEIR) 566 for the Saddleback Meadows project was certified by the Orange County (County) Planning Commission on December 3, 1997, and affirmed by the County Board of Supervisors (Board) on January 27, 1998. The approved project was 705 manufactured homes.

Addendum 1. The First Addendum (Addendum No.1) to the certified SEIR (PA980103) was prepared in July 1998. The project evaluated by Addendum 1 was 299 detached single family dwelling units on 222.2 acres.

Addendum 2. This Second Addendum (Addendum No. 2) to SEIR 566 evaluates changes in the environmental conditions and potential effects associated with the currently proposed Saddleback Meadows project, which is 299 units The proposed project described in this Addendum 2 is the identical project (299 detached single-family dwelling units on a 222.2-acre site) as was described in Addendum 1. The Board must recertify SEIR 566 prior to adopting Addendum 2.

1.1 Legal History

In March 1998, after certification of SEIR 566 (including Addendum 1), a lawsuit (791309) was filed by the Vendanta Society of Southern California et al. in Orange County Superior Court. In January 1999, two additional lawsuits (804137 and 804139) were filed, and consolidated into one summary adjudication motion, which was granted by the trial court in April 1999. The judgement declared that the EIR had never been validly certified and directed the County of Orange (County) to set aside all approvals with regards to the 299-unit project. The County (applicant) appealed this judgement to the California Court of Appeal, Fourth Appellate District (G026580). On October 30, 2000, the Court of Appeal affirmed the trial court's judgement and confirmed the order to set aside certification of EIR 566, as well as all related County approvals, and directed the County to reconsider certification of EIR 566.

1.2 Board of Supervisors Actions

Based upon the October 30, 2000 court order, the Board met in closed session pursuant to Government Code Section 54956.9(A) and directed that all project approvals associated with the Board's prior actions of February 24, 1998, and December 8, 1998, be rescinded and vacated, as follows:

- Final Tentative Tract Map report regarding Tentative Tract Map 15784 and the CEQA documentation relating thereto, as adopted by the Subdivision Committee on October 21, 1998
- Ordinance 9817, enacting Zone Change ZC 98-3, adopted by the Board on December 8, 1998
- Resolution 98-466, approving the Addendum and Final SEIR (FSEIR) 566 to serve as the CEQA documentation for the 299-unit project, as adopted by the Board on December 8, 1998

- Resolution 98-467, denying the appeal and upholding the Planning Commission's approval of AP 98-2, as adopted by the Board on December 8, 1998
- Resolution 98-468, denying the appeal and upholding the Subdivision Committee's approval of Tentative Tract Map 15784, as adopted by the Board on December 8, 1998

1.3 Addendum No. 2 Organization

Addendum 2 is based on certified SEIR EIR 566, which was originally prepared to evaluate 705 manufactured homes (referred herein as the "approved project"), and re-evaluates the currently proposed 299-unit project that was evaluated in Addendum 1.

The 299-unit project was originally evaluated in Addendum No.1 and included strategically designed lotting, landform grading and landscaping to screen and filter the view of the proposed development area from surrounding land as compared to both the 318 unit proposal evaluated by EIR 561 and the 705 unit manufactured home project evaluated by SEIR 566. . Additional 299 unit project features included accomplished by shortening cul-de-sac street lengths and eliminating residential lots to allow space for landform berming and contour grading, designed to substantially reduce views of the development area from both Saint Michael's Abbey and the Ramakrishna Monastery. In comparison to the 705-unit previously approved project evaluated in certified SEIR 566, the currently proposed project has substantially reduced density and associated environmental effects.

Volume 1 of Addendum No.2 contains the environmental impact assessment evaluation of the proposed project, a comprehensive project chronology and updated technical studies for traffic and biological resources. Volume 2 contains the administrative record in support of the petitioner's motion for summary adjudication. Volume 3 includes the prior CEQA documents prepared for the project including EIR 561(including response to Comments, SEIR 566 (including response to comments) and SEIR 566 Addendum No.1.

1.4 CEQA Statutory Requirements

The California Environmental Quality Act (CEQA) Guidelines (CEQA Guidelines §15164.) authorize the use of an addendum for the purpose of determining whether a previously prepared EIR can be used for a project (CEQA Guidelines §15063(c)(7)). Section 15164(a) states:

> *The lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or addition are necessary, but none of the conditions described in Section 15162 calling for the preparation of a subsequent EIR have occurred.*

Section 21166 of the California Environmental Quality Act (CEQA, Pub. Res. Code §21000, et seq. and CEQA Guidelines §15162 set the standard to determine whether a new EIR should be prepared when a previous EIR has been prepared. Section 21166 states:

> *When an environmental impact report has been prepared for a project pursuant to this division, no subsequent or supplemental environmental impact report shall be required by the lead agency or by any responsible agency, unless one or more of the following events occurs:*
>
> *(a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report.*
>
> *(b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report.*

(c) New information, which was not know and could not have been known at the time the environmental impact report was certified as complete, becomes available.

Section 21166 is further explained in the CEQA Guidelines (§15162), in the following language:

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken, which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(C) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

(b) If changes to a project or its circumstances occur or new information becomes available after adoption of a negative declaration, the lead agency shall prepare a subsequent EIR if required under subsection (a). Otherwise, the lead agency shall determine whether to prepare a subsequent negative declaration, an addendum, or no further documentation.

(c) Once a project has been approved, the lead agency's role in project approval is completed, unless further discretionary approval on that project is required. Information appearing after an approval does not require reopening of the approval. If after the project is approved, any of the conditions described in the subsection (a) occurs, a subsequent EIR or negative declaration shall only be prepared by the public agency which grants the next discretionary approval for the project, if any. In this situation no other responsible agency shall grant an approval for the project until the subsequent EIR has been certified or subsequent negative declaration adopted.

(d) A subsequent EIR or negative declaration shall be given the same notice and public review as required under Section 15087 or Section 15072. A subsequent EIR or negative declaration shall state where the previous document is available and can be reviewed.

The key to Sections 21166 and 15162 is to determine whether any circumstances have changed dramatically enough to justify repeating a substantial portion of the environmental documentation process. If conditions do not justify a new or supplemental EIR, but minor additional or technical changes (such as traffic updates) are appropriate to keep the document current and useful, an agency may prepare an addendum (CEQA Guidelines §15164).

1.5 Addendum No. 2 Findings

Based upon the foregoing information, preparation of a second addendum is the appropriate CEQA document to provide project-specific analysis and to provide clarification and minor changes to Final SEIR 566. This document is prepared under the authority of Section 15164 of the CEQA Guidelines for the following reasons:

- Only minor technical changes or additions are necessary to make the previously certified Final SEIR 566 adequate under CEQA.
- This Addendum No. 2 does not raise important new issues about the significant effects on the environment. There is no substantial evidence that the project, as mitigated by the measures required within the Final SEIR 566, would have a significant adverse effect on the environment (§15070).
- Final SEIR 566 was certified for the development of the previously proposed project in connection with earlier approvals. The certification of an EIR is recognition of the continuing utility of the document for subsequent development approval within the scope of the original approval. The Section 21166 test provides evidence under state law on the question of whether a new environmental document is necessary. This test is a tangible one, and does not challenge the age of a document, but only provides the criteria to test its continuing accuracy and utility.

2.0 PROJECT DESCRIPTION

The project description is the same as proposed and evaluated in Addendum 1 to SEIR 566. Project description details are hereby incorporated by reference (CEQA Guidelines Section 15150) from Addendum 1 and summarized in this section.

2.1. Location

The project site is situated on vacant land located on the eastern side of El Toro Road, approximately ½ mile south of the intersection of Santiago Canyon Road (El Toro Road) and Live Oak Canyon Road, in east-central unincorporated Orange County. Regional and vicinity maps are shown in Exhibits 1 and 2, respectively. The incorporated cities of Mission Viejo and Lake Forest lie approximately three miles to the south and southwest, and the Cleveland National Forest boundary is approximately ½ mile north of the project site. Aliso Creek is adjacent to the northwestern portion of the project site. In addition, a small strip of County-owned land is located between the project site and El Toro Road. See Exhibit 1 (Regional Location Map) and Exhibit 2 (Vicinity Map).

2.2. Background

A comprehensive chronology of the Saddleback Meadows project is included in its entirety in Appendix A of this document. The chronology details the CEQA and entitlement history of the project, beginning in 1978. The following cases are associated with the proposed project and will be considered by the Orange County Planning Commission and Board of Supervisors:

- Planning Application (PA) 980103
- Zone Change (ZC) 98-3
- Area Plan (AP) 98-2
- Tentative Tract Map 15784
- Vesting Tentative Tract Map 15230

In addition to these County of Orange Planning and Development Services cases, several regulatory permits are currently in process with state and federal resource agencies, Including:

- Army Corps of Engineers Section 404 Nationwide 26 Permit
- California Regional Water Quality Control Board Section 401 Certification
- California Department of Fish and Game 1603 Streambed Alteration Agreement

2.3. Project Description

The following project design features have been incorporated into the 299 detached single family unit project description, which is identical to the project description evaluated in SEIR 566 Addendum No. 1.

2.3.1 Project Design Features

Acreage, Lots, and Dwelling Units. The project proposes the construction of 299 single-family detached dwelling units (the proposed project) on 222.2 acres, as shown in Exhibit 3 (Illustrative Site Plan). This land plan is identical to the project discussed in the first Addendum (PA980103) (July 1998). The average lot size for this project is approximately 6,672 square feet (sf), with a minimum lot size of 5,000 sf. Total open space is approximately 71 percent (158.6 acres), which is approximately 30.47 acres more than the approved project.

Access and Fire Protection. Access to the project would be provided via a gate-guarded private street off El Toro Road, immediately south of the existing structure crossing under the Aliso Creek and Trail. An emergency-only access connects with Valley Vista Way. All habitable structures are proposed to be protected by automatic fire sprinkler systems.

Off-Site Water Tank. The project acreage does not include an adjacent off-site site for a water tank with a maximum capacity of 1.4 million gallons. The tank and an associated access road are proposed adjacent to the northeastern corner of the project site to provide water service to the proposed project. The site was previously dedicated to the Trabuco Canyon Water District when the existing Final Tract Map was recorded (Tract No. 10692). The water tank will be approximately 30-feet tall and 100 to 110 feet in diameter. It will be bermed, landscaped, and painted a color that compliments the surrounding setting.

Off-Site Acreage. A total of approximately 8 acres of off-site area would be affected as a result of project implementation to accommodate slope area, access roads, related remedial grading, the water tank, and County of Orange fuel modification requirements.

Traffic Circulation. On-site circulation is proposed with a system of private streets consisting of a primary spine street (56-foot right-of-way) and a series of cul-de-sacs (41-, 45-, and 52-foot rights-of-way). An encroachment easement is required from the County to accommodate the project access road where it traverses County-owned property along the western-most boundary of the site.

Rural Viewscape. The project has been designed to minimize impact on the existing landform. The homes have been located on the relatively level area in a broad crescent shape that flows along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off the eastern and northern major ridgelines bordering the property. A primary design consideration in establishing the rural character of Saddleback Meadows is presenting a landscape-enveloped community, when viewed both from the surrounding areas and from within the development. In response to this design intent and the interests of St. Michael's Abbey, the Ramakrishna Monastery, and the neighboring Hidden Ridge community, specific grading techniques, site planning, and landscape elements will be incorporated within the project. The intent of these features will be to enhance the view of Saddleback Meadows from the surrounding areas.

Design Features. Design features such as landform grading, resource enhancement, and recreation and open space components are summarized as follows:

- Landform grading along the northern side of the primary spine road, and the majority of the southern development edge, designed to screen off-site views of the development area

- A wildlife movement corridor system designed to accommodate primary wildlife movement through a 400-foot-wide east-west corridor (not counting 50-foot-wide buffer zones on either side of the corridor)
- Preservation of the southern ephemeral pond
- A ±90-acre extension of O'Neill Regional Park that may include a trailhead pocket park and ridgetop lookout park
- A hiking trail connecting the Aliso Creek Riding/Hiking Trail and the Live Oak Hiking Trail to the trail staging area and O'Neill Regional Park
- Relocation of residential lots so none is adjacent to the wildlife corridor or St. Michael's Abbey
- Preservation of the oak woodland associated with the east-west wildlife movement corridor
- Revegetation of the wildlife movement corridors with native plant materials
- Elimination of side yard slope retaining walls
- Elimination of a commercial use
- Approximately 68.6 acres of Restricted Scenic Preservation Easement (open space)

Grading. Implementation of the proposed project would require grading totaling approximately 8.6 million cubic yards.

Site Plan. The proposed project site plan is shown in Exhibit 3 (Illustrative Site Plan) and the proposed project land uses are summarized in Table 2-1 (Land Use Summary).

Table 2-1
LAND USE SUMMARY

On-Site	*Acres*	*Portion of Site*
Residential Lots	45.8	21%
Streets (private)	17.8	8%
Regional Park	90.0	41%
Restricted Scenic Preservation Easement	68.6	30%
Total	222.2	100%

2.3.2 General Plan and Zoning

Orange County General Plan

The project site is subject to policies contained in the following elements of the Orange County General Plan: Land Use, Circulation, Housing, Public Services and Facilities, Noise, and Recreation and Safety.

Land Use Element. The Land Use Element (adopted June 1982), designates the Saddleback Meadows project site as 1B (Suburban Residential, 0.5 to 18 dwelling units per acre [du/ac). The Community Profile, which is not a part of the General Plan, designates the site as 1.2 low-density residential (0.5 to 2.0 du/ac).

Housing Element. The Housing Element (adopted September 13, 1993) is a comprehensive statement of broad and specific policies to facilitate development of housing in the County. The project site is located in Regional Statistical Area (RSA) 43-C, for which the 1995 population was 190,700, the 2000 population

(projected in 1995) was 212,700 (2.3 percent growth), and the 1995 jobs-to-housing ratio was 3.80 (the highest in the County).

Affordable Housing. In 1979, the County adopted the Inclusionary Housing Program (IHP), which requires 25 percent of all new dwellings to be affordable category (i.e., cost 120 percent or less of the median annual income). In 1983, the IHP was replaced by the Housing Opportunities Program (HOP), which phased out mandatory requirements over a three-year period in favor of voluntary compliance with affordable housing objectives encouraged by County incentives and market forces. However, prior approvals of IHP-mandated affordable housing requirements were not rescinded and are still in effect.

A total of 26,907 mandatory affordable units have been required to date as part of General Plan amendments or zone changes. The vast majority of these (24,268) are found within planned communities, with the remainder scattered in conventionally zoned parcels.

The previously approved and recorded Final Tract Map 10692 was required in the IHP/HOP to provide 66 2/3 percent of total construction as affordable housing (mobile homes). Because this requirement was an original Condition of Approval, it still applies to the project.

Foothill-Trabuco Specific Plan

In December 1991, the County Board of Supervisors converted the then policy-level Foothill-Trabuco Feature Plan into the regulatory-zoning level Foothill-Trabuco Specific Plan. The Specific Plan sets forth goals, policies, land use district regulation, development guidelines, and implementation programs designed to preserve the area's rural character and to guide future development in Foothill-Trabuco area. To facilitate planning, three individual planning areas were created within the overall Specific Plan Area: the Upper Aliso Planning Area, the Trabuco Canyon Planning Area, and the Plano Trabuco Planning Area. The project site is located within the Upper Aliso Planning Area and is designated the "Bridlewood Residential District."

Exemption from Specific Plan. While the Foothill-Trabuco Specific Plan was adopted with the intent of guiding future land use within the Specific Plan area, its approval postdated that of tract Map 10692 by some 12 years. Accordingly, the current project, originally approved in 1979, is effectively exempt from the provisions of the Foothill-Trabuco Specific Plan.

The following passages are excerpted from the Land Use Regulations section of the Specific Plan:

> *As long as the site is developed in accordance with the existing Saddleback Meadows Planned Community zoning (Zone Change 84-3P) and Recorded Tract 10692, the project site shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.*
>
> *The Bridlewood Residential District is established to recognize the existing zoning and tract map approvals for the Bridlewood (Saddleback Meadows) property which permit the development of 705 manufactured homes on the site. While the board of Supervisors does not believe that these approvals are consistent with the Goals and Objectives of the Specific Plan, the property owner has recently declared bankruptcy. A legal stay precludes the board of Supervisors from taking any action related to the property that would affect its value. However, the provisions of this District require that the Specific Plan be amended to determine an appropriate density cap and District Regulations for the property in the event that it cannot be developed in a manner which is consistent with the approved zoning and tract map. (Foothill-Trabuco Specific Plan, p.III-20).*

Aliso Creek Corridor Specific Plan

The Aliso Creek Corridor Specific Plan (concept) (adopted in July 1978) outlines open space and recreational policies and programs for Aliso Creek and proximal surrounding area, from its headwaters in the Cleveland

National Forest to its outlet into the Pacific Ocean at Laguna Beach. The goals of the Aliso creek Corridor Specific Plan area as follows:

- The preservation of the natural character of the Aliso Creek Corridor from the forest to the sea, including the creek course and banks, irreplaceable resources and environmental features
- The utilization of the Aliso Creek Corridor as an organizer for various systems including, but not limited to, recreation, circulation, public service and development
- The provision of opportunities to provide for alternative means of transportation and recreation within the Aliso Creek Corridor utilizing bicycle, pedestrian, and equestrian trails, while minimizing conflicts with vehicular traffic along and across the corridor
- The utilization of the Aliso Creek Corridor as a regional recreation and open space amenity providing a variety of recreation opportunities
- Provision of a well-organized program designed to implement the Aliso Creek Corridor Specific Plan

Open Space/Recreation Requirement. The project site is partially located within the Aliso Creek Corridor Specific Plan, with the Specific Plan's boundary formed by the Aliso Creek watershed limits. The site is located within Subarea 33 of Planning Unit 5, and so is designated for open space and recreation land uses. In addition, the Concept Specific Plan shows a regional bike trail on-site.

Zoning

The entire project site is currently zoned "S"-Foothill-Trabuco Specific Plan with an "SR"-Sign Restriction overlay district. The Bridlewood/Saddleback Meadows Residential District was established within the Foothill-Trabuco Specific Plan, adopted December 1991, to recognize the existing zoning and tract map approvals for the Bridlewood/Saddleback Meadows property.

Required Zone Change. A zone change (ZC98-3) will be required to amend the Foothill-Trabuco Specific Plan ("Bridlewood Residential District") (Specific Plan Amendment), Page III-20 (Sections III.D.3.0 through 3.4). Although not a project-specific requirement, the County would be required to implement a General Plan Amendment to modify project-related affordable housing requirements no longer in effect. Once Zone Change 98-3 is adopted, the proposed project would be in substantial compliance with the Foothill-Trabuco Specific Plan.

2.4 Related Projects

Related projects are shown in Exhibit 4 (Related Projects) and listed in Table 2-2 (Related Projects). The additional related projects proposed within the County and surrounding jurisdictions since distribution of SEIR 566 and the Addendum 1 are asterisked on Table 2-2, and the cumulative impact analysis has been updated to reflect these related projects.

Table 2-2
RELATED PROJECTS

Project [b]	*Type of Development*	*Size*	*Status*
Saddle Creek/Saddle Crest*	Single-family residential	299 du	Pending
Live Oak Plaza	Commercial center	51,900 sf	Approved
Los Angeles Athletic Club*	Self-storage facility	77,095 sf	Approved
Mammoth Equities Office*	Office	49,000 sf	Approved
Painted Trails Residential	Single-family residential, private parks	578 du	Approved
Country Suites Hotel*	Hotel	118 rooms	Approved
Shea Properties*	Multifamily residential; apartments	230 apartments	Approved

Source: Development Resource Consultants, Draft Environmental Impact Report, County of Orange, No. 578, Saddle Creek & Saddle Crest Projects, December 2000.

** Not included in SEIR 566 or Addendum 1 (PA980103)*

du = dwelling units; sf = square feet

3.0 ENVIRONMENTAL SETTING

The natural environmental setting on the project site and in the surrounding vicinity of the project site has not substantially changed since Addendum 1 was prepared in 1998. All environmental setting descriptions in SEIR 566 and Addendum No. 1 remain valid. The environmental setting information contained in SEIR 566 and Addendum No. 1 is hereby incorporated by reference.

Additional Information. This Addendum No.2 contains additional updated information on traffic volumes and roadway improvements in the vicinity of the proposed project and additional information relative to the biological mitigation plan as a result of furthering discussions with the California Department of Fish and Game, the U.S Fish and Wildlife Service, and the U.S. Army Corps of Engineers.

4.0 ANALYSIS OF IMPACTS AND MITIGATION

The impact analysis in this Addendum No.2 discusses changes in impacts, as compared to the level of impact documented in Addendum No. 1. This section does not contain the full body of text from SEIR 566 or Addendum No. 1; however, those sections which are not duplicated herein are incorporated by reference. If no changes have occurred since Addendum 1, no further analysis is included herein or warranted.

Each of the following environmental factors has been re-evaluated to determine whether any additional project impacts or mitigation measures are required as a result of the implementation of the proposed project or changes in environmental conditions. A tabular summary is included for each environmental factor to document any change that may have occurred since Addendum 1 with respect to regional conditions, County conditions, impact thresholds, mitigation required, insignificant/significant impacts, and cumulative impacts. All mitigation measures contained in SEIR 566 and Addendum No.2 are hereby incorporated by reference.

4.1 Land Use and Planning

No Changes. As shown in Table 2-3 (Land Use and Planning), no changes in adverse project impacts on land use and/or planning have occurred since the completion of Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-1
LAND USE AND PLANNING IMPACTS

Parameter	*Yes/No?*	*Status and Comments*
Changes in regional conditions?	Yes	Buildout of existing projects in the vicinity of Saddleback Meadows has continued to occur since completion of Addendum 1 to SEIR 566.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	Yes	Additional related projects have been identified that could contribute to cumulative impacts, but no additional adverse impacts are anticipated.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.2 Soils and Geology

No Changes. As shown in Table 2-4 (Soils and Geology), no changes with regard to project impacts on soils and geology have occurred since the completion of Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-2
SOILS AND GEOLOGY IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.3 Water and Hydrology

No Changes. As shown in Table 2-5 (Water and Hydrology), no changes with regard to project impacts on water and hydrology have occurred since the completion of Addendum 1. As indicated in Table 2-5 (Water and Hydrology), additional urban stormwater runoff requirements of the California Regional Water Quality Control Board (RWQCB) have been implemented and will be complied with as part of the RWQCB Section 401 certification requirements. No further impact analysis or additional mitigation measures are required.

Table 4-3
WATER AND HYDROLOGY IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No Yes	Additional urban stormwater runoff regulations have been adopted by the RWQCB, Los Angeles Region, which require on-site filtering on stormwater. The proposed project will comply with these state requirements.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	All mitigation requirements will be designed into on-site open space areas.

4.4 Transportation and Circulation

A previous traffic study prepared by RKJK & Associates, Inc. on May 19, 1997 (based upon 1995 traffic counts) analyzed the impacts associated with the recorded tract map that included 705 manufactured housing units and 20,000 square feet of commercial retail use. According to the study, the recorded tract map (TR10692) would generate approximately 8,340 trip-ends per day.

The currently proposed project would include 299 single-family detached dwelling units and generate 3,588 trip-ends per day. This represents a decrease of 4,752 trip-ends per day over the previously recorded tract map (10692). A review of recent 24-hour traffic counts in the study area (including Santiago Canyon Road and El Toro Road) shows that actual volumes are generally less than those projected in the original traffic study for this time period. The reduction in traffic is likely due to the attraction of the Foothill Transportation Corridor (SR-241) which was not yet completed when the original traffic counts were taken in June of 1995.

For future Year 2020 traffic conditions, the forecast traffic volumes identified in the May 19, 1997 traffic study are consistent with two recently approved projects. These projects include Saddle Creek / Saddle Crest and Live Oak Plaza. The future Year 2020 traffic forecasts for both of these studies included the Saddleback Meadows project in their traffic analysis. In reviewing the mitigation measures proposed in these studies it can be concluded that the impacts of the currently proposed project (299 units) should be no greater than those for the initially proposed project (705 units). Therefore, no additional mitigation beyond those identified in the May 19, 1997 traffic study should be needed. It should be noted however, that any modification to the current mitigation will require a new traffic study.

Table 4-4
TRANSPORTATION AND CIRCULATION IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	Yes	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	Yes	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	Yes	Additional related projects have been identified that may generate additional incremental cumulative traffic.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Traffic/circulation-related mitigation proposed in SEIR Addendum No.1 separately addresses cumulative traffic generation and mitigation.

4.5 Air Quality

No Changes. As shown in Table 2-7 (Air Quality), no changes with regard to project-related impacts on air quality have occurred since the completion of SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-5
AIR QUALITY IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.6 Noise Analysis

No Changes. As shown in Table 2-8 (Noise), no changes with regard to project-related impacts on noise have occurred since the completion of SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-6
NOISE IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.7 Biological Resources Analysis

No Changes. As shown in Table 2-9a (Biological Resources), no changes with regard to project-related impacts on biological resources have occurred since the completion of SEIR 566 Addendum 1. The biological resources mitigation program has been further refined since Addendum 1 has been prepared. The summary in Table 2-9b (Biological Mitigation Plan Summary) documents the current structure of the biological resources mitigation program. As outlined in Addendum No. 1 and SEIR 566, the biological mitigation plan will be implemented both on the project site and at offsite locations. The applicant is currently in the process of finalizing regulatory permits from the California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), and the Army Corps of Engineers (COE). No further impact analysis or additional mitigation measures are required.

Detailed biological mitigation plan features are described in detail in Appendix C, which includes the following documents:

- *Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas*
- *Saddleback Meadows coastal California Gnatcatcher Surveys*
- *Viejo Conservation Bank Vernal Pool restoration/Creation Plan Outline*
- *Saddleback Meadows Riverside F airy Shrimp Mitigation Plan and Sampling Results*
- *U.S Army Corps of Engineers Wetland Mitigation Plan*

Table 4-7a
BIOLOGICAL RESOURCE IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Mitigation measures have been further refined as a result of additional meetings and negotiations with CDFG, COE, and USFWS. See above discussion.

Table 4-7b
BIOLOGICAL MITIGATION PLAN SUMMARY

Habitat	Acreage Existing	Acreage Impacted	Acreage Mitigation	Mitigation Location and Comments
Venturan-Diegan Coastal Sage Scrub:				
Undisturbed	67.1	36.0	54.0	45.2 acres on-site
Disturbed	0	8.5	8.5	17.3 acres off-site (Edison property or Hidden Ranch Mitigation Bank)
Coast Live Oak Woodland	14.5	6.2 (181 trees)	18.6 (543 trees)	7.4 acres (200 trees) on-site; 11.2 acres (343 trees) off-site (Edison property or Hidden Ranch Mitigation Bank)
Ephemeral Ponds	0.48 (Ponds A, B,D,E,G)	0.40 (Ponds A, B,D,E,G)	1.28	1.20 acres excluding on-site preservation; 0.05 acres, Viejo Mitigation Bank
Mulefat Scrub	1.07	0.86 (includes 595 lf of drainages)	2.79	0.9 creation; 0.82 enhancement, Hidden Ranch
Vegetated Intermittent Non-Wetland Waters of the U.S.	3.16	0.17	2.31	O.17 excluding on-site preservation
Unvegetated Ephemeral Non-Wetland Waters of the U.S.	Included in 3.16	1.32	1.49	0.44 acres onsite; 1.05 acres off-site

4.8 Aesthetics

No Changes. As shown in Table 2-10 (Aesthetics), no changes with regard to project impacts on aesthetic resources have occurred since the completion of SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-8
AESTHETIC IMPACTS

	Yes/No	Status/Comment
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.9 Cultural and Scientific Resources

No Changes. As shown in Table 2-11 (Cultural and Scientific Resources), no changes with regard to project impacts on cultural and scientific resources have occurred since the completion of SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-9
CULTURAL AND SCIENTIFIC RESOURCE IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.10 Recreation

No Changes. As shown in Table 2-12 (Recreation), no changes with regard to project impacts on recreation have occurred since the completion of the SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-10
RECREATION IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.11 Hazards

No Changes. As shown on Table 2-13 (Hazards), no changes with regard to project impacts on hazards have occurred since the completion of SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required.

Table 4-11
HAZARDS IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.12 Public Services

No Changes (Noneducation). No changes with regard to project impacts on sheriff, fire, library, or solid waste services have occurred since the completion of SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required for these services?.

No Changes (Education). As stated in Addendum 1, implementation of the proposed project would add 169 students to an already overcrowded Saddleback Valley Unified School District. Since completion of Addendum 1, additional projects have been proposed that may, with inclusion of the proposed Saddleback Meadows project, result in additional?? impacts on educational resources. Table 2-14 (Public Services [Education]) presents impacts with regard to only educational services.

Table 4-12
PUBLIC SERVICE (EDUCATION) IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

4.13 Utilities and Service Systems

No Changes. As shown in Table 2-15 (Utilities and Service Systems), no changes with regard to project impacts on utilities and service systems have occurred since the completion of SEIR 566 Addendum 1. No further impact analysis or additional mitigation measures are required.

Water Supply. In addition, regarding water supply, the Saddleback property has been included as part of the Trabuco Canyon Water District's planning and facility development for many years. Further, as the Final Map that currently applies to the property reflects 705 units for the project site, this planning has exceeded the potential water use that would occur with implementation of the proposed project (299 units). No further analysis or additional mitigation is required.

Table 4-13
UTILITY AND SERVICE SYSTEM IMPACTS

	Yes/No	*Status/Comment*
Changes in regional conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in County conditions?	No	Addendum 1 to SEIR 566 remains valid.
Changes in impact threshold?	No	Addendum 1 to SEIR 566 remains valid.
Changes in mitigation required?	No	Addendum 1 to SEIR 566 remains valid.
Changes in insignificant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in significant impacts?	No	Addendum 1 to SEIR 566 remains valid.
Changes in cumulative impacts?	No	Addendum 1 to SEIR 566 remains valid.
New significant adverse impacts?	No	Addendum 1 to SEIR 566 remains valid.
Additional mitigation required?	No	Addendum 1 to SEIR 566 remains valid.

5.0 FINDINGS AND DETERMINATION

Less Impact. The impacts associated with implementation of the proposed project would be substantially less than those associated with the previously approved 705 unit manufactured home project evaluated in SEIR 566 and similar to those evaluated in Addendum 1 to SEIR 566 (299 detached single family units. Impacts on all environmental factors identified in Addendum 1 would be substantially similar to those evaluated in Addendum 2 to SEIR 566.

No Greater Significant Adverse Effect. No significant adverse effects would occur as a result of implementation of the proposed project beyond those identified in Addendum 1 to SEIR 566.

Transportation, Circulation, and Biological Resources. Updated information provided in this Addendum 2 on transportation and circulation and biological resources further expands upon data and mitigation programs contained in Addendum 1 to SEIR 566. Regional improvements (SR 241 – Foothill Transportation Corridor) to the circulation system in the vicinity of the proposed project would have substantially reduced traffic congestion at key intersections and substantially reduced the proposed projects level of impact to the regional circulation system.

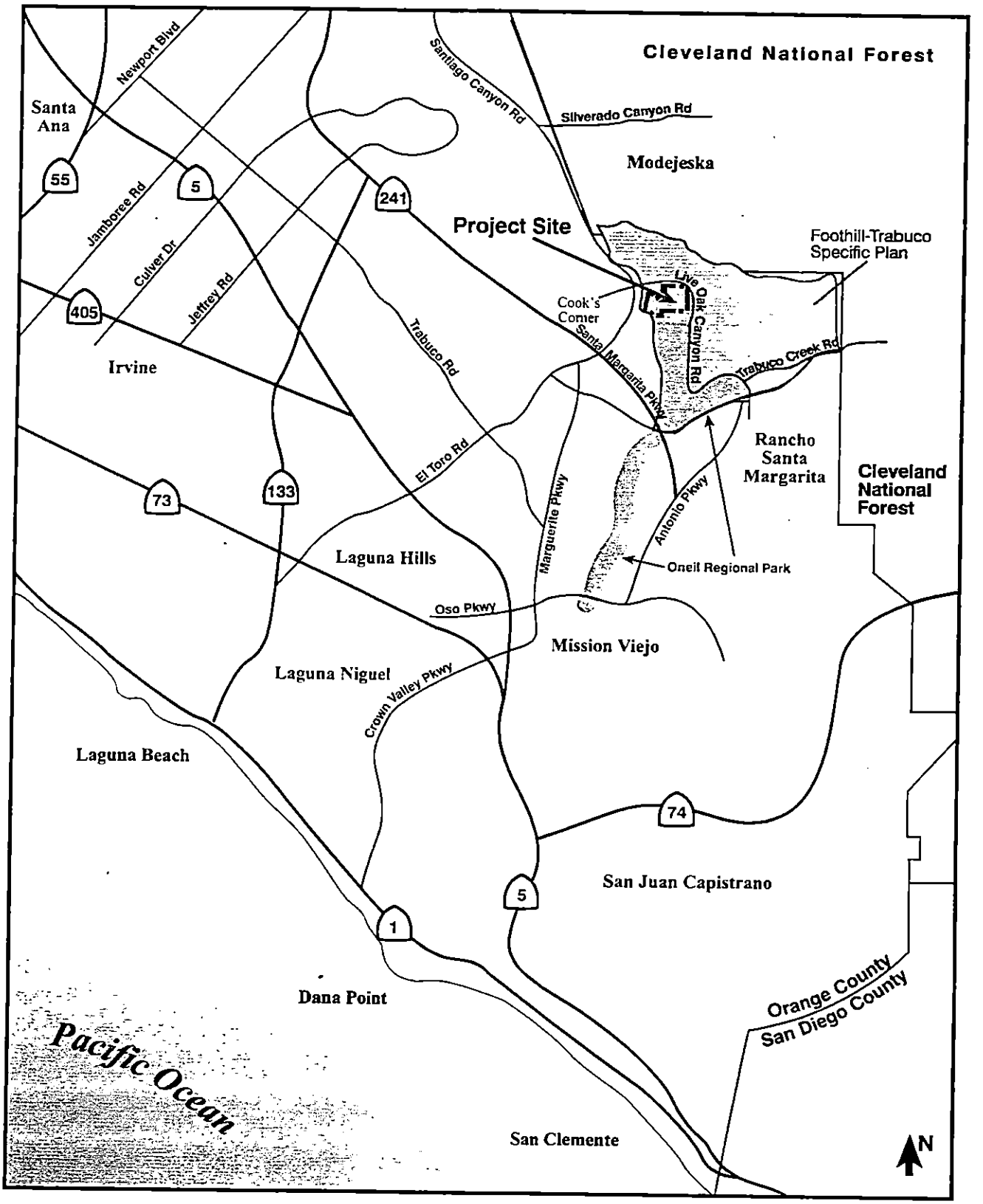
6.0 REFERENCES

The following references were used in compiling this Addendum 2. All other references are incorporated by reference from Addendum 1 and SEIR 566.

- County of Orange, Planning and Development Services/DRC, *Draft Environmental Impact Report, Saddle Creek and Saddle Crest Projects*, December, 2000
- Helix Environmental Planning, Inc., *Saddleback Meadows Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas*, August, 2000
- Helix Environmental Planning, Inc., *2000 Annual Report*, U.S. Fish and Wildlife Service Dry Stream Survey for San Diego and Riverside Fairy Shrimp, Saddleback Meadows Project, December 18, 2000
- Helix Environmental Planning, Inc., *Saddleback Meadows Conceptual Mitigation and Monitoring Plan*
- Helix Environmental Planning, Inc., *California Gnatcatcher Surveys*, October 6, 2000

7.0 EXHIBITS

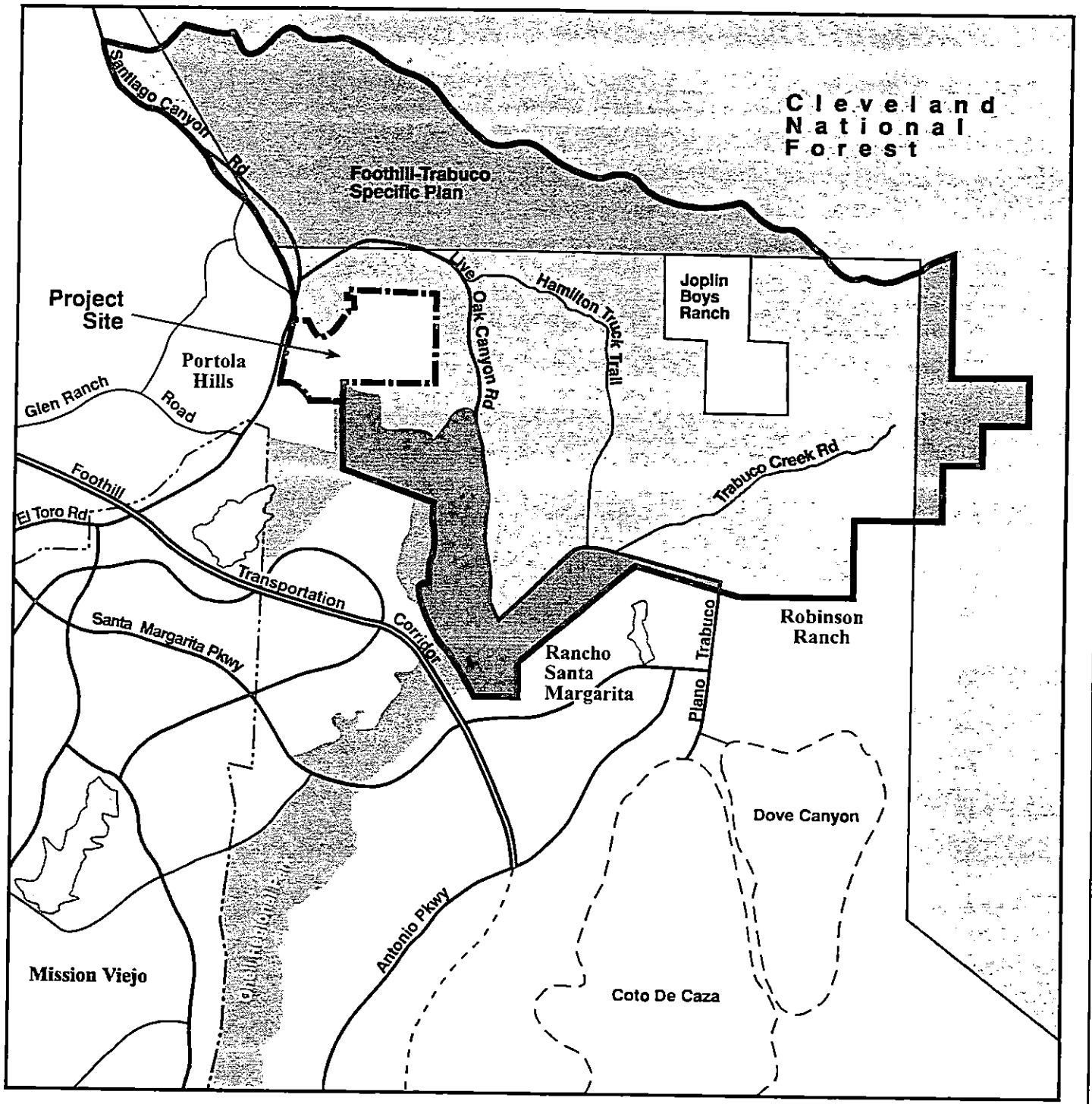
- 1—Regional Location Map
- 2—Vicinity Map
- 3—Illustrative Site Plan
- 4—Related Projects



Map Not to Scale
Source : DRC, 1998

HDR

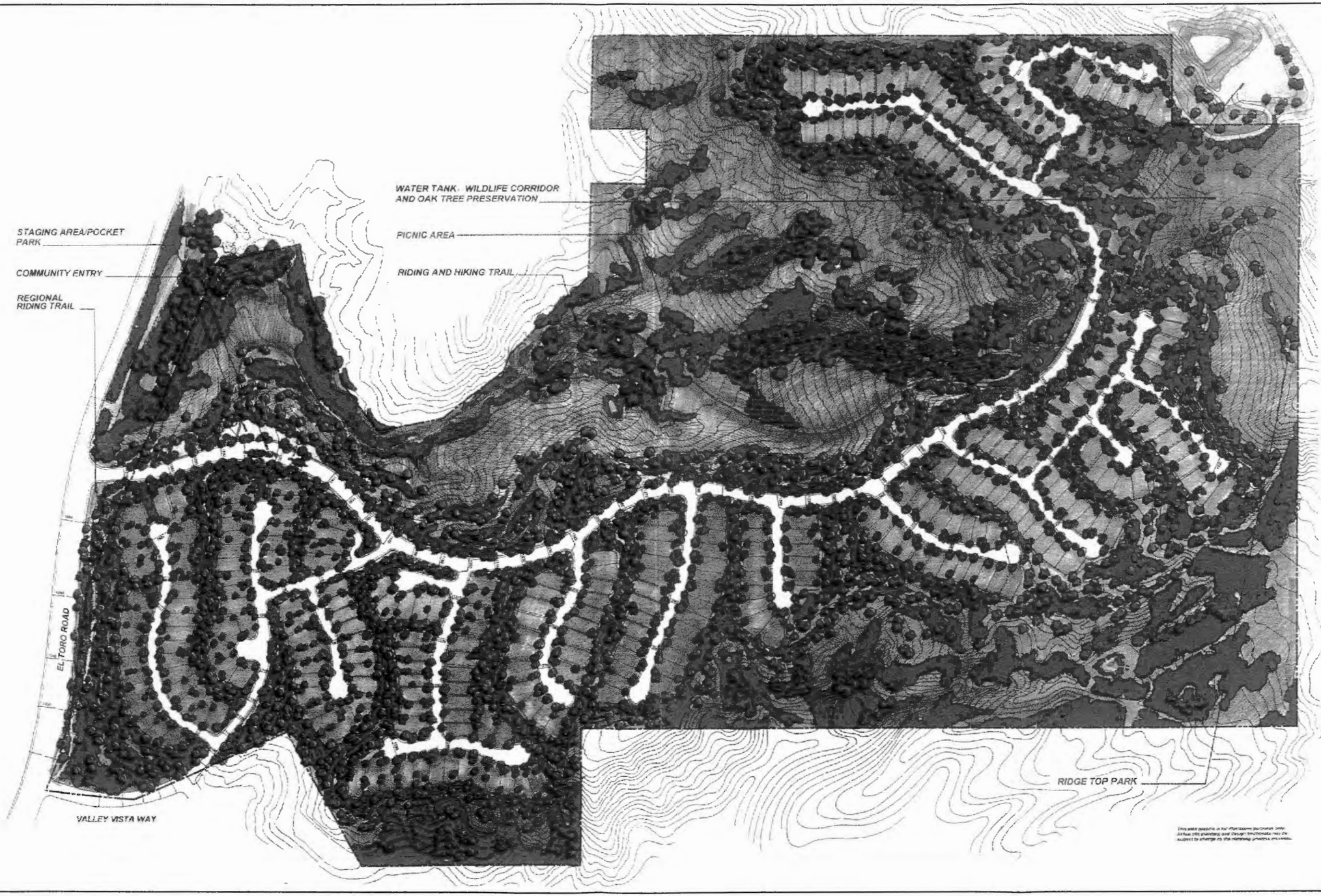
Exhibit 1
Regional Location Map
Saddleback Meadows



Map Not to Scale

HDR

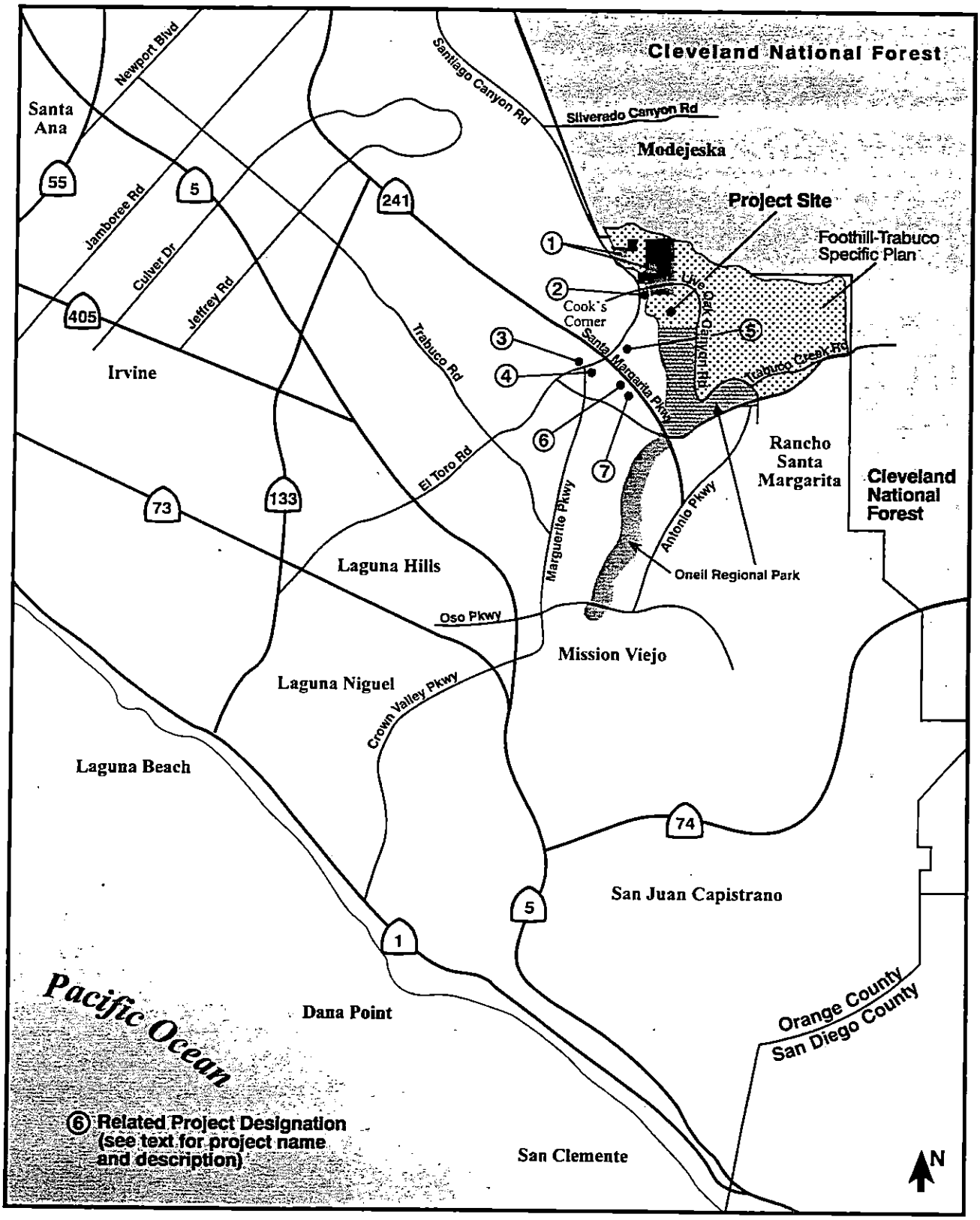
Exhibit 2
Project Vicinity Map
Saddleback Meadows



Source : California Quartet, 1998

HDR

Exhibit 3
Illustrative Site Plan
Saddleback Meadows



Map Not to Scale
Source : DRC, 1998

HDR

Exhibit 4
Related Projects
Saddleback Meadows

Appendix A

PROJECT CHRONOLOGY

Appendix A

PROJECT CHRONOLOGY

Appendix A
SUMMARY LAND USE ENTITLEMENT PROCESSING CHRONOLOGY (1978 – 2001)

SADDLEBACK MEADOWS SEIR ADDENDUM 2

[Append A Master Summary Chronology (MB)]

August 1978

- ✓ The Board of Supervisors of Orange County (Board) approved General Plan Amendment 78-1. Final Environmental Impact Report (FEIR) #59 was prepared and certified in conjunction with plan amendment

March 1979

- ✓ The property owner submitted a Zone Change Application, Tentative Tract Map, and Initial Study requests for mobile home subdivision to Orange County.

December 1980

- ✓ The Board approved Tentative Tract Map 10692, calling for development of a 714-lot single-family mobile home/manufactured housing subdivision and a small commercial site.

June 1984

- ✓ The Board approved the Development Plan (2nd revised) for Saddleback Meadows. This plan called for the 705-lot mobile home/manufactured housing subdivision and 1.7 acres of neighborhood commercial use.

October 1984 through July 1986

- ✓ The Orange County Subdivision Committee approved a 589-day tolling of the deadline to record the Final Map for Tentative Tract 10692 in October 1984. This action extended the expiration date for recording the Final Map for Saddleback Meadows to July 1986.

July 1986 through November 1998

- ✓ Sewer Moratorium. The Final Map did not record on in July 1986 because on July 16, 1986, the Santa Ana Mountains County Water District imposed a sewer moratorium. This moratorium tolled the expiration deadline for the tentative map until the moratorium was lifted in November 1988.

December 1988

- ✓ Final Map No. 10692 was recorded, and associated improvement bonds and fees (in excess of $2,000,000) were paid.

1990 through 1993

- ✓ During this period the Saddleback Meadows property was involved in various thrift regulation, bankruptcy, and foreclosing proceedings.

December 1991

- ✓ The Board approved the Foothill/Trabuco Specific Plan, which incorporated for the Saddleback Meadows property the site plan and development standards of Final Map (10692)

April 1994

- ✓ California Quartet filed with Orange County (the County) a Grading Application GA940031 for a portion, approximately 98 acres, of the site.

August 1994

- ✓ The environmental Initial Study was completed for the Grading Application and County staff decided that an environmental impact report (EIR) was necessary.
- ✓ California Quartet filed a Letter of Appeal with the County, contesting the requirement for an EIR for the Grading Application.

January 1995

- ✓ After several postponements, two hearings were held before the Planning Commission regarding the appeal of the EIR requirement (on January 17, & 31, 1995).
- ✓ On January 31, California Quartet. Ltd. withdrew the appeal of the County's determination to require the preparation of an EIR and clarified its intent to pursue a project that is more environmentally sensitive than the approved (705-lot) Final Map. The Planning Commission directed the applicant to develop a more compatible project in response to public testimony, staff concerns, and the Planning Commissions' direction (a process that was to take approximately 120 days).

February-June 1995

- ✓ California Quartet initiated contacts with community residents and neighboring property owners and undertook an intensive data gathering and design process.
- ✓ On June 9, a meeting with staff of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) was held at USFWS offices at Carlsbad to discuss environmental permitting.
- ✓ The initial design process continued from February through late June 1995. On June 30, California Quartet submitted a 318-lot proposal for informal review by County staff. The submittal was called a "Revised Site Development Plan for Saddleback Meadows."

July 1995

- ✓ California Quartet submitted a formal Planning Application to the County based on a revised project proposal for 318 lots. The Planning Application consisted of a zone change, Area Plan, and EIR 561.
- ✓ A Site Development Permit for geotechnical testing on the property was processed to permit continuation of geotechnical testing on the site after the County issued a stop-work notice1.

August -- December 1995

- ✓ County staff completed the Initial Study on August 11, and issued and a Notice of Preparation (NOP) of an EIR for the revised project.
- ✓ California Quartet conducted an additional work session with community residents on August 14, 1995.
- ✓ The County staff convened on August 24, 1995, a public meeting on the revised project in the form of a Public Scoping meeting in conjunction with the preparation of the Draft EIR.

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[1] This exploratory work was performed to provide geological data for use in conjunction with the revised site development plan. The County determined that since this was a new application, the Saddleback Meadows project would have to abide by the geo-technical investigation requirements of the Foothill Trabuco Specific Plan. The Specific Plan requires a site development permit to allow geo-technical testing on any property contained within the boundaries of the Specific Plan area, although Final Map 10692 is exempt from the requirements of the Specific Plan.

- ✓ California Quartet arranged for and participated in meetings with representatives of the neighboring St. Michael's Abbey and other nearby property owners contacted all the neighboring homeowner's associations to arrange for meetings to review their potential concerns.
- ✓ In October 1995, California Quartet sent an informational mailer with detachable questionnaire to over 2,000 households in the area.
- ✓ California Quartet also contacted members of the Foothill/Trabuco Specific Plan Review Board.
- ✓ On October 15, California Quartet submitted the Application for Vesting Tentative Tract Map 15230 that was based on the revised site plan.
- ✓ On November 9, a work session was held at the Saddleback Meadows property. Attendees included representatives of the U.S. Army Corps of (ACOE), the CDFG, the County (Harbors Beaches and Parks), California Quartet, and environmental consultants. The purpose of the session was to familiarize environmental permit agency staff with the site and to identify issues and concerns to be addressed in processing permits with ACOE, USFWS, and CDFG.
- ✓ County's planning staff met with staff from USFWS and CDFG on December 15, 1995, to discuss the proposed Saddleback Meadows project

February 1996

- ✓ County environmental review staff filed a Notice of Completion of the Draft Environmental Impact Report (DEIR) and begins the public circulation and comment period on February 5, 1996.
- ✓ The County's Director of Planning discussed DEIR 561 at the Foothill/Trabuco Review Board meeting of February 16, 1996.
- ✓ The DEIR was delivered to the ACOE, CDFG, and USFWS on February 13, 1996. On February 26, 1996 a meeting was held to present the Saddleback Meadows DEIR (#561) to representatives of the environmental permitting agencies. This session was held at the Carlsbad offices of the USFWS and attended by representatives of the USFWS, CDFG, and ACOE.

March 1996

- ✓ California Quartet discussed the discussed proposed project at Foothill/Trabuco Review Board meeting on March 8, 1996.
- ✓ On March 19, the first Planning Commission hearing on the revised project proposal was held. The purpose of this first hearing was to afford the public an opportunity to comment on the Draft EIR document prior to the close of the 45-day public comment period (March 25, 1996).
- ✓ A second Planning Commission public hearing was held on April 2, 1996, at which California Quartet provided a detailed briefing on the proposal for a revised project.
- ✓ Letters commenting on the DEIR were received from the CDFG and USFWS on March 25, 1996.

May 1996

- ✓ On May 5, the third Planning Commission hearing was postponed due to County staff concerns about the Resource Agencies (USFWS and CDFG) sudden and unexpected reversal of their position on the location and design of the wildlife corridor.
- ✓ On May 8, a work session was convened with County Environmental Management Agency (EMA) staff regarding alternative wildlife corridor alignments. General and specific discussion regarding suggestions for design modifications with the applicant explaining the economic and financial ramifications of the suggestions and how they would render the project infeasible from an economic and development objective standpoint. EIR Alternative 7 was reviewed with particular focus on the

size and width concerns of the wildlife corridor, which had appeared to be the primary source of the EMA's concerns regarding the proposed project.

- ✓ On May 17, a work session was convened. Representatives of the ACOE, CDFG, USFWS and County staff discussed wildlife corridor design issues and Alternative 7. The resource agencies, primarily the CDFG, asked for significant changes in the wildlife corridor location/alignment and its design. These comments conflicted with earlier comments from the agency.
- ✓ On May 20, the same environmental agency representatives who attended the May 17, 1996, work session participated in a tour of the Saddleback Meadows property. The purpose of this tour was to visualize in the field what was discussed at the May 17 session.
- ✓ On May 23, the first meeting was held with new counsel representing St. Michael's Abbey. This meeting served to re-establish dialogue with applicant. The Abbey had suddenly, and without explanation, terminated discussion in November of 1995.
- ✓ Based on comments from May 17 and May 20 sessions with representatives of environmental agencies, several additional alternative development plans were prepared and presented to County planning staff on May 24, 1996.
- ✓ A meeting with County staff was held on May 28 to discuss further refinements of the alternative development plans.

June 1996

- ✓ Prior to the June 5, 1996, Planning Commission public hearing (this was to be the third hearing), EMA staff recommended that the Planning Commission approve a project with a reduced lot yield of 299 lots (to become known as Alternative 8.)
- ✓ On June 5, the third Planning Commission public hearing was held. EMA staff recommend Alternative 8 with 299 Lots, California Quartet, Ltd. countered with a version of Alternative 8 with 318 lots fitting within the same development footprint as the 299-lot project. The Planning Commission continued the hearing to July 10, 1996.

July 1996

- ✓ In early July the County Tax Assessor's Office approved a payment plan for resolving the former owner's property tax delinquencies that dated back to 1991.
- ✓ On July 10, the fourth Planning Commission public hearing was held. After the staff recommended approval of a 299-lot project, the matter was continued to July 30, 1996.
- ✓ On July 30, the fifth Planning Commission public hearing was held and the Planning Commission was unable to reach agreement on the lot yield. The Commissioners voted four times on varying lot yields ranging from 318 lots to 260 lots. However, a majority of the commissioners were in agreement on the proposed development footprint as depicted by Staff-recommended-Alternative 8. The Commission voted to recommend that the Board certify the EIR for the project.

August through September 1996

- ✓ On August 2, California Quartet, Ltd., appealed the Planning Commission action of July 30 because the Commission's failure to reach agreement on the lot yield represented a *de facto* project denial.
- ✓ On September 10, California Quartet submitted a revised site plan (Alternative 9) that had a lot yield of 318 lots to County staff and requested that this alternative be considered by the Board as a plan that better addressed the concerns and issues raised by the public and the Planning Commissioners at the previous hearing.

October 1996

- ✓ The Saddleback Valley Unified School District Board approved a school facilities mitigation agreement for Saddleback Meadows (October 2, 1996).
- ✓ The Board held on October 22 a public hearing on the appeal of Planning Commission decision of July 30, 1996. Supervisor Silva recused himself from voting on the project and the Board denied the Appeal. The Supervisors then considered a motion to approve a project with a density cap of 100 lots (EIR Alternative 4). The motion did not carry and, at the request of Supervisor Stanton, the Board directed staff to report back to the Board on the process to initiate a reversion to acreage on the Saddleback Meadows property, (i.e., remove the existing Recorded Final Tract Map).

November 1996

- ✓ On November 5, the Board heard a County staff report concerning the reversion to acreage procedure. The motion to initiate the reversion to acreage did not carry. Supervisor Saltarelli requested staff to inquire about the potential acquisition of the Saddleback Meadows property for public purposes. The Board did not certify the EIR.
- ✓ On November 7 and 8, California Quartet attempted to resubmit the Grading Application based on Final Tract map. The County staff refused to accept any applications for submittal of anything relating to Saddleback Meadows. The County had determined that the previous Grading Application filed in April 1994 had expired in 1995; therefore, a new application would be necessary to continue processing the Grading Application.
- ✓ On November 8, California Quartet received a letter from Thomas Mathews, the County Planning Director, concerning Supervisor Saltarelli's desire to explore possible full or partial acquisition of the Saddleback Meadows property. In response, California Quartet's counsel transmitted to County Counsel a draft of a proposed Tolling Agreement to extend the deadline for filing a legal challenge to the Board decision of October 5, 1996.
- ✓ On November 15, California Quartet's counsel submitted to the County a Demand Letter concerning the processing of a Rough Grading Plan Application which the project civil engineer had attempted to submit on November 8 and 9, 1996, and also submitted a letter regarding Settlement Discussions concerning the sale of Saddleback Meadows property for public purposes laying out the ground rules for such negotiations.
- ✓ On November 18, 1996 California Quartet provided County staff with several sketch studies, which presented reduced development areas and lot yields as requested by County staff.
- ✓ On November 26, 1996 the Tolling Agreement was executed between California Quartet, Ltd. and the County. The Tolling agreement was effective on November 21, 1996 and was to expire 180 days from the effective date (May 20, 1997).
- ✓ On November 27, California Quartet received a letter from County staff regarding California Quartet's attempt to file a Grading Application for Tract 10692. The letter stated that the application was not accepted by the County was because of a misunderstanding by staff and invited California Quartet to resubmit the application.

December 1996

- ✓ On December 3, the County staff accepted the Grading Application for Tract 10692 (705 lots), which was assigned Grading Application Number GA960048.

- ✓ On December 24, 1996 the County staff circulated a NOP for a Draft Subsequent Environmental Impact Report related to Grading Application GA960048, Tract Map 10692. This started a 30-day comment period.

February 1997

- ✓ Because of concerns related to processing technicalities, the County staff recirculated the NOP.
- ✓ On February 7, a meeting requested by County staff was held to discuss potential full/partial acquisition possibilities with applicant and representatives from the community and neighbors. Attendees from the community included two members, representatives from the Foothill/Trabuco Review Board; St. Michaels Abbey; the Vedanta Society/Ramakrishna Monastery, and the Hidden Ridge community
- ✓ On February 21, California Quartet made an informational presentation before the Foothill/Trabuco Review Board.
- ✓ On February 28, the County held a followup session to the February 7 session with the same group of representatives from the community to receive their feedback from the previous meeting.

April 1997

- ✓ On April 7, the County's Director of Planning & Development Services sent a letter to the Board summarizing the alternatives proposed by the landowner but not acted on by the Board in October and the results of several meetings that had been held to explore acquisition of all or a portion of the property.[2]

May – September 1997

- ✓ The EIR for the Grading Application for the 705-lot project was prepared and circulated for public and governmental agency review and comment

October 1997

- ✓ On October 22, the first Planning Commission public hearing was held to review certification of Subsequent EIR 566 to allow the grading and development to implement the recorded (705-lot) Final Map. The hearing was continued to December 3, 1998.

November 1997

- ✓ The Board discussed amending the standard appeal procedures for SEIR 566 that would allow the SEIR to be directly to the Board following certification by the Planning Commission (November 25, 1997). No decision was reached and the hearing was continued to December 9, 1997.

December 1997

- ✓ On December 3, 1997, the Planning Commission voted to certify FSEIR 561. On December 9, the Board held a first reading of "An Ordinance of the County of Orange providing for appeal of certain Grading Permits". The item was continued to December 16, at which time the Board failed to approved the ordinance change.

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[2] Community representatives maintained that a 100-unit project clustered adjacent to El Toro Road was the maximum development acceptable. However, California Quartet indicated that the 100-unit alternative was not economically feasible. In this letter, the Planning Director reported that his understanding was that the landowner would entertain any offer to purchase (for preservation of open space) all or a portion of the property, even though the property was not being marketed. The Planning Director indicated that County staff was unaware of any viable sources of funds, private or public, for this purpose and expressed the opinion that further exploration of public acquisition was not warranted.

- ✓ On December 17, 1997, the Chair of the Planning Commission sent a letter to members of the Board regarding the Commissions recent certification of SEIR 566 on Saddleback Meadows and recommending that the Board revisit an alternative zoning designation for Saddleback Meadows, suggesting Alternative 4 in SEIR 566 (299 lots).
- ✓ On December 18, 1997, the Vedanta Society of Southern California filed a notice of appeal regarding the Planning Commission's certification of FSEIR 566.

January 1998

- ✓ On January 27, the Board held a hearing to consider the appeal of the Planning Commission's certification of SEIR 566, as filed by the Vedanta Society of Southern California. The hearing was continued for a month

February 1998

- ✓ Dialogue between California Quartet and St. Michael's Abbey was re-established on February 9, when counsel representing the "Saddleback Land Conservancy" transmitted to California Quartet an offer to purchase a portion of Saddleback Meadows for approximately $5.2 million. This offer was made prior to the February 24 hearing by the Board of an appeal of the Planning Commission approval of the EIR for the Grading Application for Recorded Tract Map 10692 (for 705 lots for mobile home or manufactured housing.).
- ✓ California Quartet transmitted a response to the Conservancy offer to the Deputy County Counsel's office, stating why the partial acquisition offer was rejected.
- ✓ The offer for partial acquisition of Saddleback Meadows became a point of discussion at the February 24, 1998, hearing before the Board on the EIR appeal. The Board deadlocked 2-2 on the appeal question, thereby failing to reverse the Planning Commission certification of the EIR.
- ✓ At the conclusion of the February 24, 1998, SEIR appeal hearing; Supervisor Spitzer expressed his desire to bring about a settlement between parties in connection with the Abbey's offer to purchase a portion of the property in return for a significantly reduced development project. It was agreed among the Supervisors that Supervisor Spitzer would provide the Board with an update report within 45 days (by April 14, 1998).

March 1998

- ✓ The first settlement/negotiation meeting with all the parties, including the Vedanta Society and County staff, was held on March 6, 1998.
- ✓ Following the meeting of March 6, California Quartet analyzed the feasibility of various reduced density/development envelope concepts. St. Michael's Abbey reviewed these alternatives during the course of those negotiations in conjunction with a potential partial purchase of the remainder property.[3]
- ✓ On March 6, 1998, the Vedanta Society filed a lawsuit challenging the validity of the EIR for the Grading Application, arguing that a majority vote of the Board was required to reject the appeal of the December 3, 1997, certification of the EIR for the Grading Application.

[3] The analyses of each of these concepts included performing conceptual site planning design, development cost studies, view and premium analysis, and finally running preliminary financial proformas for each of these scenarios. During the course of these negotiations, California Quartet determined that a reduced development alternative in conjunction with a partial purchase of the remaining open space areas by the Abbey could be made financially feasible under certain circumstances. Major deal points were the maximum development density, the purchase price of the open space, defining the development area, use of the open space for environmental mitigation needs of the project, restrictions on the purchased land for open space uses only, indemnification and release of liability relating to the purchased open space, and a guarantee of support for the project by the opposing parties.

- ✓ At a second settlement meeting (on March 23) California Quartet discussed reduced alternatives that had been analyzed since the last meeting while County staff unveils the "Mathews Plan" prepared by County staff.

April 1998

- ✓ A third settlement meeting was held at which California Quartet presented a modified version of the staff alternative (a.k.a. the "Modified Mathews Plan," 130-150 units).
- ✓ On April 14, Supervisor Spitzer provided Board members with a status update on the Saddleback Meadows negotiations.
- ✓ A working session with County staff was held at the County offices on April 20, to review geotechnical questions and concerns related to Staff alternative and the modified staff ("Mathews Plan"). Representatives of St. Michael's Abbey, including geologists, participated in this discussion.
- ✓ A fourth settlement session was held (on April 23, 1998) at which representatives of St. Michael's Abbey and the Ramakrishna Monastery discussed their concerns with geotechnical stability issues.
- ✓ California Quartet arranged an additional work session involving the geotechnical consultants to discuss and address the concerns raised in this meeting. Counsel to the Abbey conveyed the Abbey's latest offer in tabular form, offering different amounts for various scenarios, and requested California Quartet to return with a counteroffer at the next settlement meeting.

May 1998

- ✓ On May 4, California Quartet convened a working session involving the respective geotechnical consultants to discuss and review concerns raised by representatives of the Abbey and the Monastery. Unfortunately, no consensus was reached.
- ✓ At a fifth settlement meeting, California Quartet presented a response to the partial acquisition offer in tabular form. At this session, representatives of the Abbey and Supervisor Spitzer appeared to agree to a partial acquisition in the amount of $5.2 million in conjunction with a development program to be defined that would be larger than the County staff's proposal for a reduced development alternative and the California Quartet's proposed modification to the staff proposal. The Abbey was to provide $4.2 million, and $1.0 million was to come from the County[4].
- ✓ On May 26, California Quartet representatives attended a meeting at which the counsel for St Michael's proposed acquisition of the entire property for $12.2 million, with $10.2 million to come from the Abbey and $2.0 million from the County.

June 1998

- ✓ Supervisor Spitzer presented status report on Saddleback Meadows settlement negotiations at the Board meeting of June 2. The Board directed County Counsel and staff to prepare for consideration by the Board a settlement agreement containing the following "conceptual" terms:

  1) $1.5 million in appropriated County funds (referred to as the "Strawberry Field Funds") to acquire an interest in the property with the understanding that these funds were to be used only in conjunction with $10.5 million from St. Michael's Abbey to purchase the entire property. Escrow was to close on or before October 29, 1998, with the understanding that, if the "Strawberry Field funds" turned out not to be available, the development option would not be

[4] However, counsel representing the Ramakrishna Monastery rejected the idea of a modification to the staff-proposed development program. After a caucus among Supervisor Spitzer and representatives of the Abbey and the Monastery, the meeting concluded with Verlyn Jensen and Supervisor Spitzer making a combined cash offer of $8.0 million ($7.0 million from the Abbey and $1.0 million from the County) for the entire property.

triggered until the Board had had an opportunity to explore alternative funding. The County's contribution of $1.5 million was to be reimbursed if the property was used for a purpose that derives financial benefit;

2) Tolling of all litigation by St. Michael's Abbey and/or California Quartet;;

3) Immediate beginning by County staff of processing an amendment to the General Plan, amendment to the Specific Plan, Zone Change, Area Plan, and Tentative Tract Map applications and any other required plan/application for the 299-lot development plan to be considered for approval if the acquisition was not completed by October 29, 1998, and;

4) Cessation by California Quartet of processing any permits related to the 705-unit manufactured home subdivision (Final Map 10692) until October 30, 1998.

✓ On June 12, California Quartet received from St. Michael's Abbey a letter of intent regarding purchase and sale of the Saddleback Meadows property.

✓ On June 15, California Quartet formally requested that the County cease processing the grading plan check application based on Recorded Tract Map 10692 (705 units), in accordance with the conceptual terms of the settlement agreement referenced in the Board motion of June 2, 1998.

✓ On June 22, California Quartet submitted to the County applications for the Area Plan and Zone Change for the 299-lot "Contingency Plan" that would be adopted if St. Michael's Abbey failed to perform on acquiring the property.

✓ At the Board meeting held on June 23, Supervisor Spitzer provided Board Members with a Saddleback Meadows Settlement negotiations update and reported that St. Michael's Abbey apparently had decided not to follow through on its offer to work with the County to acquire the Saddleback Meadows property.

July 1998

✓ On July 3, the Saddleback Meadows Land Conservancy, Norbertine Fathers (St. Michael's Abbey) and the Vedanta Society of Southern California (Ramakrishna Monastery) transmitted to California Quartet a "Summary of Settlement Terms" and a "Supplemental Term Sheet" proposing partial purchase of the property for $5.2 million.

✓ On July 17, California Quartet provided a detailed response to the partial acquisition offer of July 3, 1998.

✓ On July 27, California Quartet provided a detailed analysis of the impact of "ridgeline protection" criteria proposed by the Vedanta Society. California Quartet surveyed and staked the edge of the "Vedanta Ridgeline" with 10'-tall white polyvinyl chloride (PVC) poles so that its view of the ridgeline could be seen and studied relative to the viewpoint of the Ramakrishna Monastery.

August 1998

✓ A site tour was held on August 10, to allow representatives of the Vedanta Society (Ramakrishna Monastery) to view the ridgeline on the Saddleback Meadows property. The purpose of the site visit and meeting was to discuss the issue of the "Vedanta Ridgeline Protection" proposal that, when physically interpreted, severely impacted the development envelope for the partial development alternative's so as to make the project financially infeasible.

✓ On August 11, Supervisor Spitzer provided other Board members with a status report on the Saddleback Meadows settlement negotiations and invited Supervisor Wilson to participate in the negotiations with him. Supervisor Wilson accepted and the next status report was set for October 6,

1998. This was the same date that the Board members designated as the deadline for reaching a mutually satisfactory agreement on the matter.

- ✓ On August 11, the USFWS and CDFG wrote an unusual joint letter to the Board commenting on the 299-lot Contingency Plan and also indicating they (the two agencies) had been informed by interested parties that a new clustered development alternative proposal, along with the purchase of significant open space on the site, had been offered to the property owner.
- ✓ On August 25, the Planning Commission heard the Area Plan and Zone Change application along with the Addendum to SEIR 566. The Commission voted to continue the item to October 7, the day after the deadline for the settlement negotiations and the next Board status report on Saddleback Meadows.
- ✓ On August 27, the sixth settlement negotiation session was conducted with both Supervisors Spitzer and Wilson involved. The main issue of discussion was protection of the ridgeline. This issue was not resolved during this session. The next negotiation session was scheduled for September 15, 1998.
- ✓ On August 28, counsel to the Vedanta Society sent to California Quartet copies of the Vedanta Alternate Study, consisting of a site plan prepared by its consultant engineer and site planner. The study showed a plan for 120 lots.

September 1998

- ✓ A meeting was held at the offices of the counsel to the Vedanta Society on September 10, at which representatives of California Quartet offered an analysis of Vedanta Alternative Plan as received by California Quartet on September 1, 1998.
- ✓ California Quartet provided a cost and revenues comparison impact analysis of the Vedanta Alternative Plan (120-lots) as compared to the Modified Staff Alternative (127-lots) on September 14, 1998.
- ✓ The seventh Settlement Negotiation Meeting was held at the County Hall of Administration on September 22, with Supervisors Wilson and Spitzer in attendance. Discussion focused on California Quartet's analysis of the Vedanta Alternative Plan and the Vedanta ridgeline protection issue. California Quartet explained how the Vedanta ridgeline protection proposal rendered the reduced development alternative financially unfeasible, unless the purchase price was increased to offset the additional costs and lost revenues that would result from an alternative that honored the ridgeline provision. Attorney Ed Connor informed the participants in this session that his clients would accept the Modified Staff Alternative (127-lots) without the ridgeline provision along with a total purchase price of $5.2 million (which would include $1 million from the County) so long as the area outside the 44-acre development bubble was not disturbed in any way (including fuel modification), despite the fact that "environmental mitigation" would be necessary outside the 44-acre development to accommodate fuel modification, geotechnical mitigation, and natural resource management.
- ✓ Ed Connor, counsel to Vedanta Society, submitted a letter to the County's Planning Director on September 23, 1998. The letter objected to the County's continued processing of the Contingency 299-lot Plan and alleged the County's failure to comply with the procedural requirements of the Foothill/Trabuco Specific Plan by failing to forward California Quartet's Area Plan and Zone Change Application to the Foothill Trabuco Specific Plan Review Board for its review and recommendations prior to the Planning Commission's consideration of the application.

October 1998

- ✓ On October 4, California Quartet delivered to Supervisor Spitzer's office an executed copy of a revised Memorandum of Understanding (MOU) between California Quartet and the Saddleback Meadows Land Conservancy.
- ✓ On October 5, 1998, counsel for St. Michael's Abbey transmitted another version of the MOU reflecting the "deal" reached at the September 22, 1998, meeting held at the County offices.
- ✓ On October 5, Supervisor Spitzer sent a memorandum to the other Board members providing an update on the Saddleback Meadows settlement negotiations.
- ✓ Deputy County Counsel Ben de Mayo sent on October 6, 1998, a memorandum to Members of the Planning Commission concluding that the Commission could take action on the Saddleback Meadows Zone Change and Area Plan prior to the Foothill Trabuco Specific Plan Review Board completing a further review of the project.
- ✓ William D. Ross, counsel for California Quartet, wrote on October 6, 1998, to Mr. Connor and Mr. Winton responding to Mr. Winton's offer letter dated October 5, 1998.
- ✓ On October 7, the Planning Commission heard the Area Plan and Zone Change application along with the Addendum to EIR 566. The Commission voted to recommend that the Board certify EIR 566 and approve the Area Plan and Zone Change.
- ✓ A Saddleback Meadows negotiation meeting called by Supervisor Spitzer's office was convened on October 30, 1998. Supervisor Spitzer pressed Katherine Swiss on the question of whether there was a commitment to acquire a portion of the Saddleback Meadows property. There was a mutual agreement that California Quartet would prepare a Conceptual Remedial Grading Plan based on the 127-lot reduced alternative and present it to the group prior to the November 24 Board of Supervisor's hearing on Saddleback Meadows.
- ✓ Attorney Winton distributed on October 31, 1998, his Draft of the MOU document, reflecting extensive changes compared to document signed by Pike Oliver on October 5, 1998.

November 1998

- ✓ At the Board hearing of November 3, Katherine Swiss (representing the Saddleback Land Conservancy) and Pike Oliver (representing California Quartet) executed an MOU for partial acquisition and development of the Saddleback Meadows property. The County did not or could not sign the MOU because County Counsel advised the Board not to do so until the proposed action was properly noticed. The Board continued the hearing to November 24, at which time the appeals for both the Tentative Tract maps and the Area Plan would be heard in conjunction with consideration of the acquisition agreement (i.e., Purchase and Sales Agreement).
- ✓ Attorney Connor filed on November 5, 1998, an appeal of the County Subdivision Committee's approval of the Contingency 299-lot Tentative Tract Maps on behalf of the Vedanta Society and the Saddleback Meadows Land Conservancy.
- ✓ Attorney Ross distributed the proposed Purchase and Sale Agreement for the partial acquisition and development alternative to the involved parties on November 17, 1998. This version incorporated revisions to the draft provided by Attorney Winton on October 31, 1998. California Quartet delivered copies of the Conceptual Remedial Grading Plan to Attorney Connor, Supervisor Spitzer, and County Planning Director Tom Mathews.

- ✓ A negotiation session was held at Supervisor Spitzer's office on November 18, 1998, to review and discuss the Conceptual Remedial Grading Plan and Winton/Connor's comments regarding the draft Purchase and Sales Agreement sent by Mr. Ross on November 17, 1998.
- ✓ The Board held a public hearing on November 24, 1998. The hearing dealt with the status of negotiations and appeal of the 299-lot Contingency Plan and related entitlement documents. Testimony was received and the public hearing closed, with final action continued to December 8, 1998.
- ✓ Attorney Ross sent a letter on November 25, 1998, on behalf of California Quartet to Attorney Winton responding to Mr. Winton's document entitled "Purchase Agreement for Real Property and Escrow Instructions for the Purchase of Saddleback Meadows (Spitzer-Wilson 44-acre Compromise)," dated November 23, consisting of 29 pages delivered November 24, 1998, by the Office of Supervisor Spitzer at approximately 5:30 p.m. in the hearing room of the Board prior to the hearing for the Contingency Plan for 299 units on the Saddleback Meadows property.

December 1998

- ✓ Attorney Ross sent a letter on December 1, 1998, on behalf of California Quartet to Attorney Winton regarding the preparation of the proposed Conservation Easement. Mr. Ross also explained to Mr. Winton that California Quartet had circulated a proposed Land Purchase Agreement reflecting the business terms set forth in an MOU dated November 3, 1998, between the Saddleback Meadows Land Conservancy, the County, and California Quartet. Instead of receiving Mr. Winton's responsive comments or a redlined version of the document with proposed changes, Mr. Ross's office received on November 24 a partial copy of a completely new draft agreement. Further, Mr. Ross pointed out how this agreement imposed an unrealistic and unattainable deadline.
- ✓ Attorney Ross sent a December 7, 199,8 letter to the Board responding to Attorney Connor's arguments supporting their appeals of the Planning Commission's action on the Area Plan and the Subdivision Committee's action approving the tentative tract maps.
- ✓ The Board considered the matter of Saddleback Meadows on December 8, 1998, and denied the Vedanta Society's appeals (on a 2-2 vote) upholding the Planning Commission and Subdivision Committee's approvals of the Area Plan and Tract Maps, respectively. The Board certified SEIR #566 and approved the appropriate Findings and Statement of Overriding Conditions. The Board also adopted the resolutions and ordinances approving the Zone Change for the 299-lot Contingency plan.
- ✓ The County Department of Planning and Development Services filed a Notice of Determination on the FSEIR, starting the 30-day statute of limitations for filing a legal challenge under the California Environmental Quality Act (CEQA) (December 9, 1998).
- ✓ California Quartet became aware of an e-mail message that was addressed to all Board Members of the Sea and Sage Chapter of the Audubon Society, inviting them to join in a lawsuit soon to be filed by St. Michael's Abbey, the Endangered Habitats League, and the Rural Canyons Conservation Fund (December 31, 1998).

January 1999

- ✓ A Petition for Writ of Mandate and Complaint for Declaratory Relief Verification was filed with the Orange County Superior Court (Superior Court) by the Endangered Habitats League on January 8, 1999.
- ✓ A Petition for Writ of Mandate and Complaint for Declaratory Relief was filed by the Norbertine Fathers on January 8, 1999.

- ✓ A site visit with representatives of the ACOE and a project biologist was held on January 13, 1999.
- ✓ Attorney Connor filed a Notice of Related Cases in Vedanta, Norbertine and Endangered Habitats Actions on January 21, 1999.
- ✓ Joint Status Conference Statement of all parties was filed with the Superior Court on January 22, 1999.

February 1999

- ✓ The Answer of Real Party-in-Interest was filed with the Superior Court by California Quartet in the Norbertine Action on February 16, 1999. Also, a Summons on Cross Complaint; Verified Cross-Complaint of Real Parties-In-Interest for Breach of Contract, Unfair Business Practices, Intentional Interference with Economic Relationship and Declaratory Relief was filed in the Norbertine Action.

March 1999

- ✓ A Stipulation and Order addressing the briefing schedule and the hearing date for the Motion for Summary Adjudication was executed by the parties to litigation and filed with the Superior Court on March 3.
- ✓ An amended Petition and Complaint was filed in Superior Court by counsel for the Endangered Habitats League on March 9.
- ✓ The Norbertines substituted counsel (replacing Ed Connor with Mary Hudson) on March 18.

April 1999

- ✓ The Superior Court consolidated the Vedanta, Norbertine and Endangered Habitat lawsuits by Minute Order on April 8, 1999. Also, the County agreed to provide the Petitioners with notice prior to the issuance of grading permits for the Saddleback Meadows property.
- ✓ Vedanta filed on April 23 a motion to dismiss all cross-claims by Real Parties in connection with the Norbertine action.

May 1999

- ✓ A Memorandum of Points and Authorities was filed by counsel for the Norbertines in support of their motion to dismiss the Cross Compliant filed by Real Parties on May 6, 1999, and Real Parties (California Quartet) filed an opposition to this motion on May 7, 1999.
- ✓ Vedanta filed their reply in support of their motion to strike California Quartet's cross complaint on May 12.
- ✓ California Quartet filed its opposition to Vedanta's motion to strike the cross complaint on May 27.

June 1999

- ✓ The Norbertines and Saddleback Meadows Land Conservancy filed their reply to the California Quartet cross complaint on June 2.
- ✓ California Quartet filed applications with the ACOE (Nationwide 404 Permit), State Water Quality Control Board (401 Permit), and CDFG (1603 Permit) on June 14.
- ✓ Judge Thomas of the Superior Court entered his judgement denying the California Quartet cross complaint.

July 1999

- ✓ The parties failed to reach agreement on a briefing schedule and the scope of the administrative record.

- ✓ A site visit with the ACOE and biologists employed by California Quartet was conducted on July 8.
- ✓ California Quartet waived the 30-day clock at request of the CDFG on July 15.
- ✓ The Regional Water Quality Control Board e-mailed a request for additional information on July 27.

August 1999

- ✓ The ACOE issued a request for additional information on August 3.
- ✓ Vedanta filed an amended complaint and request for declaratory relief with the Superior Court on August 9, and moved for summary judgment on the 2-2-vote issue on August 10.

September 1999

- ✓ California Quartet provided additional information to the ACOE on September 3.
- ✓ California Quartet filed its opposition to the Vedanta motion on the 2-2-vote issue on September 10.
- ✓ California Quartet provided a response to a request for information from the Regional Water Quality Control Board on September 29.
- ✓ Vedanta filed its reply to California Quartet's opposition to the motion on the 2-2-vote issue on September 27, 1999.

October 1999

- ✓ Vedanta filed a statement with the Superior Court concerning its motion for a summary adjudication of the 2-2-vote issue on October 15.
- ✓ The ACOE issued a verbal request for additional information on October 15.
- ✓ California Quartet provided additional information to the ACOE on October 22.
- ✓ A settlement agreement and release of all claims on the cross complaint was executed on October 15.

December 1999

- ✓ Superior Court Judge Thomas ruled that the 2-2 vote (on February 24, 1998) by the Board on the Vedanta appeal (of the December 7, 1997, Planning Commission certification of the Supplemental **(Subsequent??)** EIR for the Grading Application for the 705-lot project) had the effect of granting the Vedanta appeal.
- ✓ Vedanta filed a proposed order granting its motion for summary adjudication on the 2-2-vote issue.
- ✓ A meeting was held between the ACOE and consultant team and a site visit with the ACOE and project biologists was held on December 15.
- ✓ California Quartet filed on December 17 a draft Biological Assessment at the request of the ACOE as a prelude to the Section 7 consultation process.
- ✓ The County and California Quartet filed on December 29 their objection to the Vedanta draft of the court order.
- ✓ The Superior Court entered on December 30 its order on the 2-2-vote issue.

January 2000

- ✓ California Quartet filed a writ petition with the Fourth District Court of Appeal on the 2-2-vote issue on January 3.

- ✓ Vedanta filed on January 5 a motion to remove its remaining claims based on the rationale that the Superior Court ruling on the 2-2 vote issue has made them moot. On January 13, 2000, a site visit was conducted with the ACOE and the ACOE requested additional information
- ✓ Vedanta and the other colitigants filed an opposition to the California Quartet writ petition to the Fourth District Court of Appeal on January 18.
- ✓ California Quartet provided additional information to the ACOE on January 21.
- ✓ California Quartet filed opposition to the Vedanta motion for summary adjudication on January 25.
- ✓ The ACOE indicated on January 31 that it intended to deem the California Quartet application incomplete and require that a new application be filed.

February 2000

- ✓ On February 10, The CDFG informed California Quartet that the Section 1603 Streambed Alteration Permit application had been reassigned to new staff person, and that no review has been conducted since the application was filed.
- ✓ A meeting was held on February 15 between representatives of California Quartet and staff at the Los Angeles District Office of the ACOE at which the ACOE agreed to continue to process the Section 404 application if requested information could be submitted timely.
- ✓ The Regional Water Quality Control Board informed California Quartet on February 22 that the file has been reassigned to new staff person and that California Quartet's previous response could not be located.
- ✓ Judge Thomas of the Superior Court granted on February 23 the Vedanta motion for summary adjudication and dismissal of the remaining causes of action in the consolidated cases (Vedanta, Norbertine, Audubon, and Endangered Habitats.)[5]
- ✓ On February 29, California Quartet submitted to the ACOE an updated jurisdictional delineation report.

May 2000

- ✓ On May 10, consultants for California Quartet led a site visit of Saddleback Meadows and a potential off-site mitigation opportunity (Southern California Edison's Viejo property) that was attended by representatives of the ACOE, USFWS, CDFG, and State Regional Water Quality Control Board.

June 2000

- ✓ In June, California Quartet submitted to the ACOE and CDFG conceptual plans for biological mitigation at two off-site locations, Hidden Ranch and Southern California Edison's Viejo property.

September 2000

- ✓ On September 5, the ACOE submitted a request for a formal Section 7 consultation to the USFWS.

October 2000

- ✓ On October 10, consultants of California Quartet led a meeting attended by representatives from the ACOE, USFWS, CDFG, and State Regional Water Quality Control Board.
- ✓ On October 18, California Quartet's biologist gave a tour of the Saddleback Meadows property to the USFWS.

[5] The County and California Quartet (as Real Party In-Interest) had filed in January 2000 an appeal with the Fourth District Court of Appeal, thereby automatically staying implementation of Judge Thomas' order until the appellate court disposes of the appeal.

- ✓ On October 24, the USFWS acknowledged the ACOE's request and expected to provide a biological opinion by no later than January 22, 2000. The ACOE suggests that it is ready to issue a Nationwide Permit pending receipt of the USFWS's biological opinion.
- ✓ On October 30, the Fourth District Court of Appeal issued a 19-page decision upholding the Superior Court decision on the 2-2 vote issue, concluding that a majority vote of the Board is required to reject the appeal of the certification of the EIR for the Grading Application for the Final Map for Saddleback Meadows (the 705-lot project.)

November 2000

- ✓ On November 17, consultants of California Quartet met with the USFWS. The meeting was also attended by representatives of the ACOE and the CDFG. The CDFG announced that its project manager would soon be leaving. The USFWS requested that dry sampling for Riverside fairy shrimp cysts be conducted at the two breached ponds.

December 2000

- ✓ On December 7, California Quartet's biologists gave the CDFG a tour of the site with a focus on wildlife corridors.
- ✓ On December 20, additional biological information was submitted to the USFWS. Included are results of dry sampling, which found some cysts, but at very low density.

January 2001

- ✓ On January 3, 2001, the Fourth District Court of Appeal issued a remittatur, formally returning *Vedanta Society v. County of Orange* to the Superior Court.
- ✓ In December, the ACOE announced that its project manager responsible for the 404 Permit Application for the Saddleback Meadows project would be leaving. On January 10, 2000, a transition meeting was held between California Quartet's consultants and the ACOE staff.

Appendix B

UPDATED TRAFFIC REPORT

Appendix C

UPDATED BIOLOGICAL MITIGATION PLAN

[redacted]

Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas

Prepared by:

Saddleback Meadows

CONCEPTUAL MITIGATION AND MONITORING PLAN FOR CDFG JURISDICTIONAL AREAS

Prepared for:

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Saddleback Meadows
Conceptual Mitigation and Monitoring Plan
for CDFG Jurisdictional Areas

TABLE OF CONTENTS

Section	Title	Page
ES	EXECUTIVE SUMMARY	ES
I.	INTRODUCTION	1
II.	PROJECT DESCRIPTION	1
	A. Project Location	1
	B. Project Summary	2
	C. Existing Jurisdictional Areas	2
	D. Jurisdictional Areas to be Filled	3
III.	GOALS OF MITIGATION	3
	A. Type(s) of Habitat to be Preserved, Enhanced or Created	4
	1. On-site Wetland Preservation	4
	2. On-site Pond Creation	4
	3. On-site Wetland Creation	6
	4. On-site Streambed Creation	6
	5. Off-site Vernal Pool Enhancement, Creation and Preservation	6
	6. Off-site Wetland Enhancement, Creation, and Preservation	6
	7. Off-site Streambed Preservation	7
	B. Time Frame	7
IV.	FINAL SUCCESS CRITERIA	7
V.	PROPOSED MITIGATION SITE	8
	A. Location and Size of Mitigation Area	8
	1. On-site Habitat Creation	8
	2. Off-site Wetland and Ephemeral Pond Creation, Enhancement, and Preservation; and Streambed Preservation	8
	B. Ownership Status	8
	C. Existing Habitat Values of Mitigation Area	8
	D. Present and Proposed Uses of Mitigation Area	8
	E. Present and Proposed Uses of All Adjacent Areas	8
VI.	IMPLEMENTATION PLAN	9
	A. Rationale for Expecting Implementation Success	9
	B. Responsible Parties	10
	1. Project Proponent	10
	2. Landscape Architect	10
	3. Restoration Specialist	10
	4. Landscape Contractor	10
	C. Schedule	11

TABLE OF CONTENTS (cont.)

Section	Title	Page
VI.	IMPLEMENTATION PLAN (cont.)	
	D. Site Preparation	12
	1. Wetlands and Open Space Remaining On Site	12
	2. Pond Creation Areas	12
	3. Wetland Enhancement Area	13
	E. Planting Plan Materials and Methods	13
	F. Irrigation Plan	16
	G. As-Built Conditions	16
VII.	MAINTENANCE DURING MONITORING PERIOD	16
	A. Maintenance Activities	16
	1. General Maintenance	16
	2. Fencing	17
	3. Weed Control	17
	4. Disease and Pests	17
	5. Pruning	17
	6. Trash Removal	18
	B. Responsible Parties	18
	C. Schedule	18
VIII.	Monitoring Plan	19
	A. Performance Criteria	19
	B. Monitoring Methods	20
	1. Species Diversity	20
	2. Cover by Weeds	20
	3. Cover by Native Species	20
	C. Annual Reports	20
	D. Schedule	21
IX.	COMPLETION OF MITIGATION	21
X.	REFERENCES	22

LIST OF FIGURES

Number	Title	Follows Page
1	Regional Location Map	1
2	Project Vicinity Map	1
3	CDFG Jurisdictional Areas	2
4	CDFG Mitigation Areas	4
5	Viejo Mitigation Location Map	6
6	Viejo Conservation Bank Vernal Pool Mitigation Area	6
7	Hidden Ranch Restoration Location	6
8	Hidden Ranch Mitigation Bank Restoration Areas	6

TABLE OF CONTENTS (cont.)

LIST OF TABLES

Number	Title	On Page
1	Impacts to CDFG Jurisdictional Areas	2
2	Impacts and Mitigation for CDFG Jurisdictional Areas	5
3	California Department of Fish and Game Restoration Areas	7
4	Preliminary Schedule Guidelines for Mitigation Activities	11
5a	Mule Fat Scrub Plant Species Palette	13
5b	Oak Woodland Plant Species Palette	14
5c	Sycamore Woodland Plant Species Palette	14
6	Weed Species List	18
7	Maintenance Schedule	19
8	Maintenance Monitoring Schedule for the Restoration Specialist	19
9	Annual Success Criteria Milestones	20

EXECUTIVE SUMMARY

This Conceptual Mitigation and Monitoring Plan (Plan) provides project information, a conceptual mitigation plan, and a monitoring program for mitigation of impacted California Department of Fish and Game (CDFG) jurisdictional areas on the Saddleback Meadows property, located northeast of the City of Mission Viejo in Orange County. The impacts mitigated in this plan are based on delineations conducted in 1998 and 1999 by Chambers Group, Inc. and in 1995 by Sweetwater Environmental Biologists, Inc.

The 222-acre Saddleback Meadows project site contains approximately 8.24 acres, including 0.34 acre of ephemeral ponds, 4.32 acres of wetland vegetation and 3.58 acres of streambeds, subject to CDFG jurisdiction under Section 1600 et seq. of the California State Code. The proposed project would impact approximately 4.09 acres of CDFG jurisdictional areas, including 0.28 acre of ephemeral ponds, 2.37 acres of wetland vegetation, and 1.44 acres of streambeds. This plan has been developed with five specific objectives:

1) **On-site Wetland Preservation** - Within open space on site, maximize the protection, to the extent practicable, of existing jurisdictional areas (i.e., ephemeral ponds and drainages, along with surrounding wetland vegetation);

2) **On-site Wetland Creation** - Maximize on-site creation of ephemeral ponds and wetlands;

3) **On-site Streambed Creation** - Stream courses will be reconstructed in their original location as part of the remedial grading (this will occur within areas of remedial grading that are outside of the conventional grading limits);

4) **Off-site Wetland Creation, Enhancement, and Preservation** – Preserve, create, and enhance as much wetland vegetation in suitable off-site areas as is hydrologically feasible; and

5) **Off-site Streambed Preservation** – Mitigate remaining impacts to streambeds through acquisition of streambeds at an off-site location.

On site, mitigation for the loss of 0.28 acre of ephemeral ponds will be mitigated at a 3:1 ratio, or a total of 0.84 acre. A total of 1.01 acres of ephemeral ponds will be created. An additional 0.18 acre of vernal pools will be preserved, created, and/or enhanced on the Viejo Mitigation Bank site. The excess ephemeral pond mitigation totaling 0.35 acre (0.17 acre ephemeral pond and 0.18 acre of vernal pool) would be used to mitigate impacts to wetland vegetation. Impacts to 2.37 acres of wetland vegetation (1.54 acres of mule fat scrub, 0.73 acre of oak woodland, and 0.10 acre of sycamore woodland) will be mitigated at a 3:1 ratio with the on-site creation of an additional 2.78 acres of wetlands, the off-site creation of 2.25 acres of riparian habitat, the off-site preservation and enhancement of 1.73 acres of riparian habitat, and the aforementioned credit from the creation, preservation, and enhancement of vernal pools.

Creation of ponds and streambeds and the surrounding wetland vegetation on site requires the excavation, grading, and contouring in disturbed upland areas or areas disturbed by remedial grading to form basins or streambeds, and revegetating the margin of these areas with riparian cuttings, plantings and seeds of native understory species. The depth and shape of the constructed basins will be based on the contours of the existing ponds. In addition, soils from the bottom of the existing ponds will be collected prior to impacts and the collected soils will be used to innoculate the created ponds. Additional mitigation measures include the installation of fencing to deter vandalism and other disturbance of the mitigation site. Creation and enhancement of riparian and oak woodland habitat off site is proposed on the Hidden Ranch property and will focus on areas previously disturbed by years of cattle grazing.

Impacts to 1.44 acres of CDFG-jurisdictional streambeds will be mitigated for on site by the creation of streambeds within areas proposed for remedial grading previously supporting streambeds (0.44 acre), and off site by purchase of 1.0 acre of existing streambeds at either the Viejo or Hidden Ranch Mitigation Banks. Impacts will be mitigated at a 1:1 ratio for a total of 1.44 acres.

The Plan provides information on the construction, maintenance, and monitoring of the on-site mitigation area as well as a description of the project goals and final success criteria. The on- and off-site mitigation areas will be monitored for five years or until project specific success criteria outlined in this Plan are achieved.

I. INTRODUCTION

This Conceptual Mitigation and Monitoring Plan (Plan) provides project information, a conceptual mitigation plan, and a monitoring program for impacted California Department of Fish and Game (CDFG) jurisdictional areas on the Saddleback Meadows property, located northeast of the City of Mission Viejo in Orange County. Mitigation for these impacts is required under section 1600 et seq. of the California State Code. Impacts were determined based on site delineations conducted in 1998 and 1999 by Chambers Group, Inc. and in 1995 by Sweetwater Environmental Biologists, Inc. (SEB). Mitigation for impacts occurring to other sensitive habitats, plants, and wildlife present on the Saddleback Meadows property will be covered in separate documents.

The development of this Plan included the evaluation of several on-site alternatives, including:

1) Using flatter portions of the property with good hydrology for on-site drainage mitigation.

   This proposed alternative gives higher priority to using the flat portions of the site for the creation of ephemeral ponds.

2) Using uplands adjacent to existing drainages for on-site drainage mitigation.

   These uplands are occupied by southern sycamore woodland and coastal live oak woodland habitat. This proposed alternative gives higher priority to preserving these existing vegetation communities.

3) Reworking existing drainages in order to create new, larger drainages.

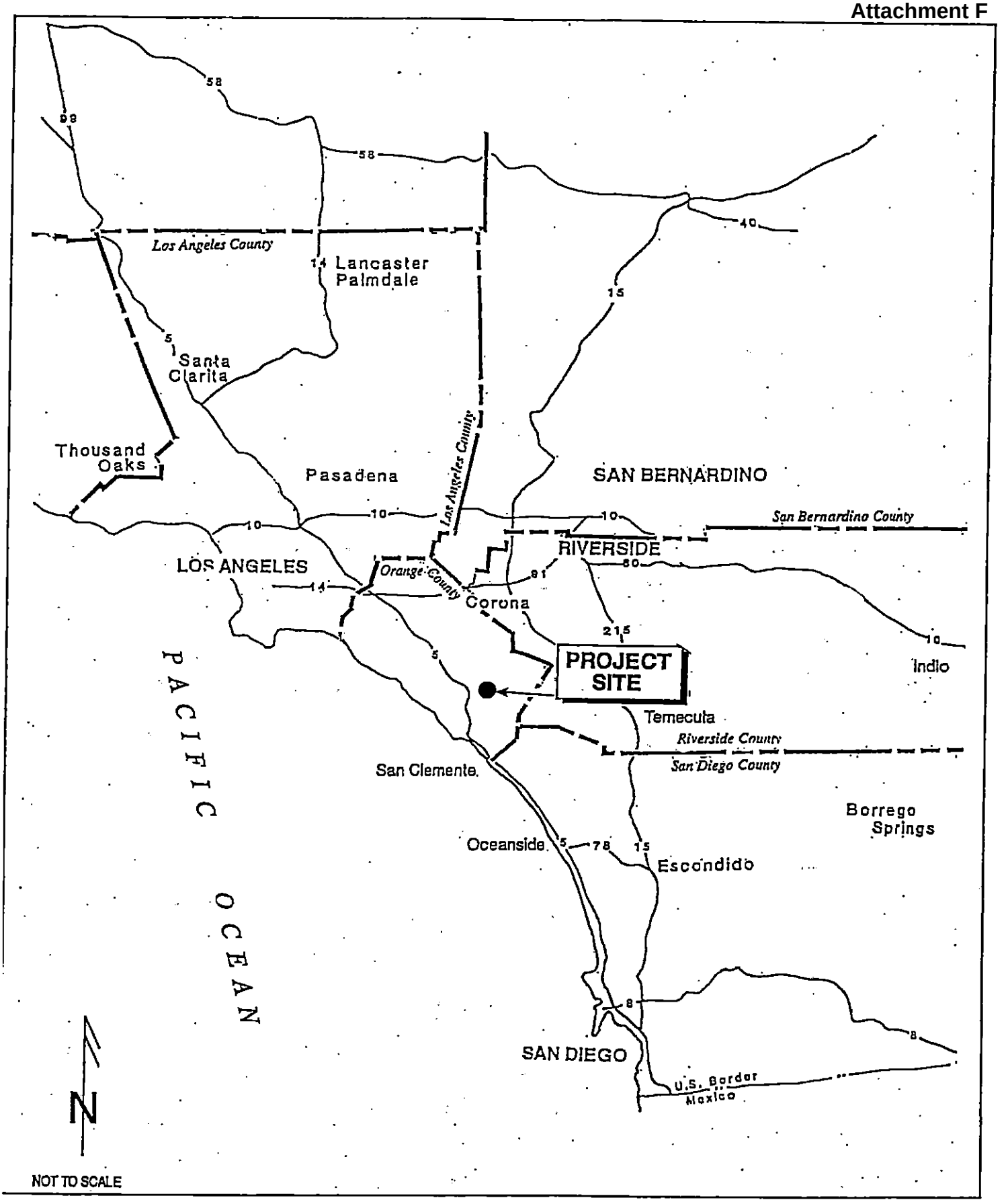
   The drainages not impacted by the project footprint are of the "higher quality" on-site drainages. In addition, due to the steep terrain, the opportunity to achieve a "net gain" would be minimal. This alternative would not provide measurable benefits for the level of disturbance it would require.

II. PROJECT DESCRIPTION

A. PROJECT LOCATION

Saddleback Meadows is a 222-acre site located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains (Figure 1). The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area (Figure 2). The site is located on the U.S. Geological Survey Santiago Peak and El Toro 7.5 minute quadrangles.

An active creek (Aliso Creek) runs north and south along the western boundary of the site. Residential communities are located to the south and west, pasture land is located to the east, and Saint Michael's Abbey is located to the north. The property is actively used for horse and cattle grazing. The intensive grazing combined with the presence of highly erodable soils on site has, over the years, resulted in extensive habitat degradation in both upland and wetland habitats. Significant erosion has also occurred within the drainages on the site. The project site is mostly undeveloped except for a small corral in the central portion of the western half of the site, remnants of houses, and a few unmaintained roads.

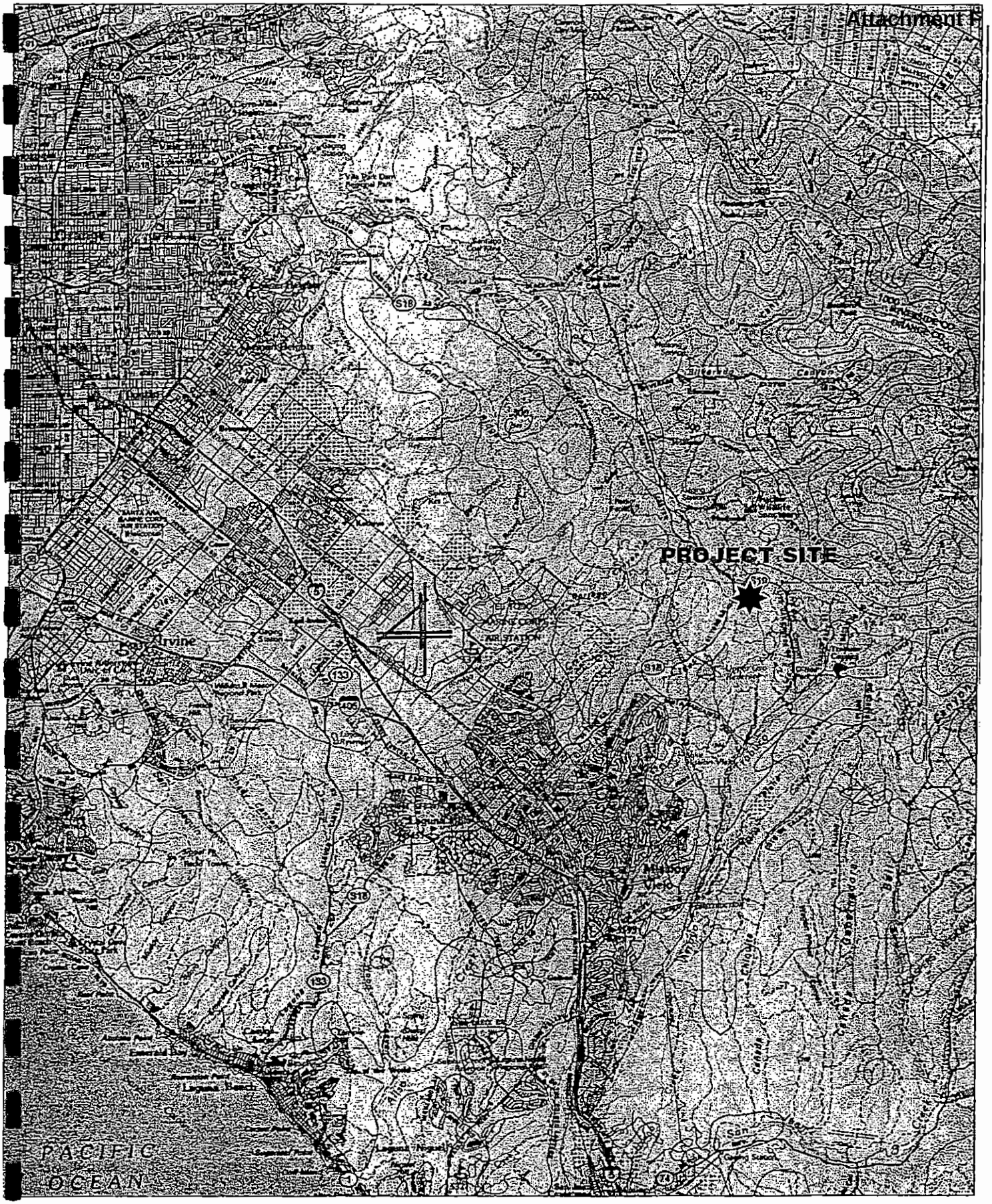


Regional Location Map

SADDLEBACK MEADOWS

Figure 1

HELIX


PROJECT SITE
PACIFIC
OCEAN
Irvine
Laguna Beach
Mission Viejo
San
Santa Ana
Anaheim
Orange
Tustin
Lake Forest
Aliso
Laguna Niguel
Trabuco
Rancho
Foothill
Cleveland
Bell
Caspers
Chiquita
Arroyo
Gobernador
Silverado
Modjeska
Santiago
Peters
Limestone
Irvine Lake
Santiago Peak
Modjeska Peak
Santiago Oaks
Irvine Regional Park
Laguna Beach
Aliso Beach
Doheny
Dana Point
Capistrano Beach
Crystal Cove
Newport Beach
Corona del Mar
Balboa
Huntington Beach
Fountain Valley
Costa Mesa
Newport Bay
Upper Newport Bay
Irvine Coast
Laguna Coast
Wilderness
Regional Park
Marine Corps
Air Station
Tustin
Santa Ana
Air Station
Municipal
Airport
Orange County
Airport
Laguna Niguel
Regional Park
Aliso and Wood
Canyons
Regional Park
Crystal Cove
State Park
Upper Newport Bay
Ecological Reserve
Irvine Coast
Wilderness
Laguna Coast
Wilderness
Irvine Regional
Park
Modjeska
Grade
Santiago
Oaks
Regional
Park
Peters
Canyon
Regional
Park
Limestone
Canyon
Regional
Park
Irvine
Lake
Santiago
Peak
Modjeska
Peak
Trabuco
Canyon
Rancho
Santa Ana
Botanic
Garden
Claremont
Colleges
Foothill
Ranch
Lake
Forest
Mission
Viejo
Aliso
Viejo
Laguna
Niguel
Laguna
Beach
Dana
Point
San
Clemente
Capistrano
Beach
Corona
del Mar
Newport
Beach
Balboa
Peninsula
Point
Huntington
Beach
Fountain
Valley
Costa
Mesa
Tustin
Irvine
Orange
Anaheim
Santa Ana
Foothill
Transportation
Corridor
Eastern
Transportation
Corridor
Riverside
Freeway
Santa Ana
Freeway
Newport
Freeway
Corona
Expressway
Laguna
Canyon
Road
Pacific
Coast
Highway
Ortega
Highway
Antonio
Parkway
Jeffrey
Road
Culver
Drive
Sand
Canyon
Avenue
Alton
Parkway
Bake
Parkway
Lake
Forest
Drive
Rancho
Parkway
Portola
Parkway
Santiago
Canyon
Road
Modjeska
Canyon
Road
Silverado
Canyon
Road
Irvine
Boulevard
Trabuco
Road
Jamboree
Road
Newport
Coast
Drive
Pacific
Coast
Highway
Harbor
Boulevard
Fairview
Road
Bristol
Street
Main
Street
Tustin
Ranch
Road
Red
Hill
Avenue
Newport
Boulevard
Fairview
Avenue
Harbor
Boulevard
Brookhurst
Street
Euclid
Street
Beach
Boulevard
Magnolia
Street

B. PROJECT SUMMARY

The proposed project entails the development of 299 single-family residential lots, roads, and recreational trails on approximately 63 acres of the property. An additional 102 acres will be impacted by remedial grading. The development is concentrated in the north and south sections of the property, avoiding a steep ravine and its associated oak woodlands near the center of the property. The remedial grading areas will be recontoured to preconstruction elevations, revegetated and preserved as open space. A total of approximately 159 of the property's 222 acres will be dedicated in permanent open space, including 90 acres dedicated to the County of Orange as an extension of O'Neill Regional Park. Manufactured slopes extending outside of the fuel modification zones will be revegetated with native vegetation and dedicated as open space. The current project configuration has been designed to avoid as much of the wetlands on site as possible, and to provide for an east-west wildlife corridor through the property to off-site open space areas located to the east and west. This east-west corridor is a critical component of the County's Natural Community Conservation Program (NCCP).

C. EXISTING JURISDICTIONAL AREAS

Several delineations have been conducted of the Saddleback Meadows property to identify areas subject to CDFG jurisdiction (Figure 3). SEB biologists conducted a jurisdictional delineation of the site in August 1995, and Chambers Group biologists delineated the project site in April and May 1998, and March, August, and October 1999. The delineations covered riparian plant communities and ponds within the project boundaries. In addition, all drainages on the site were inspected for evidence of periodic surface flows. Additional information on the site delineations is available in the Jurisdictional Delineation of the Saddleback Meadows Property in Orange County (Chambers Group 2000).

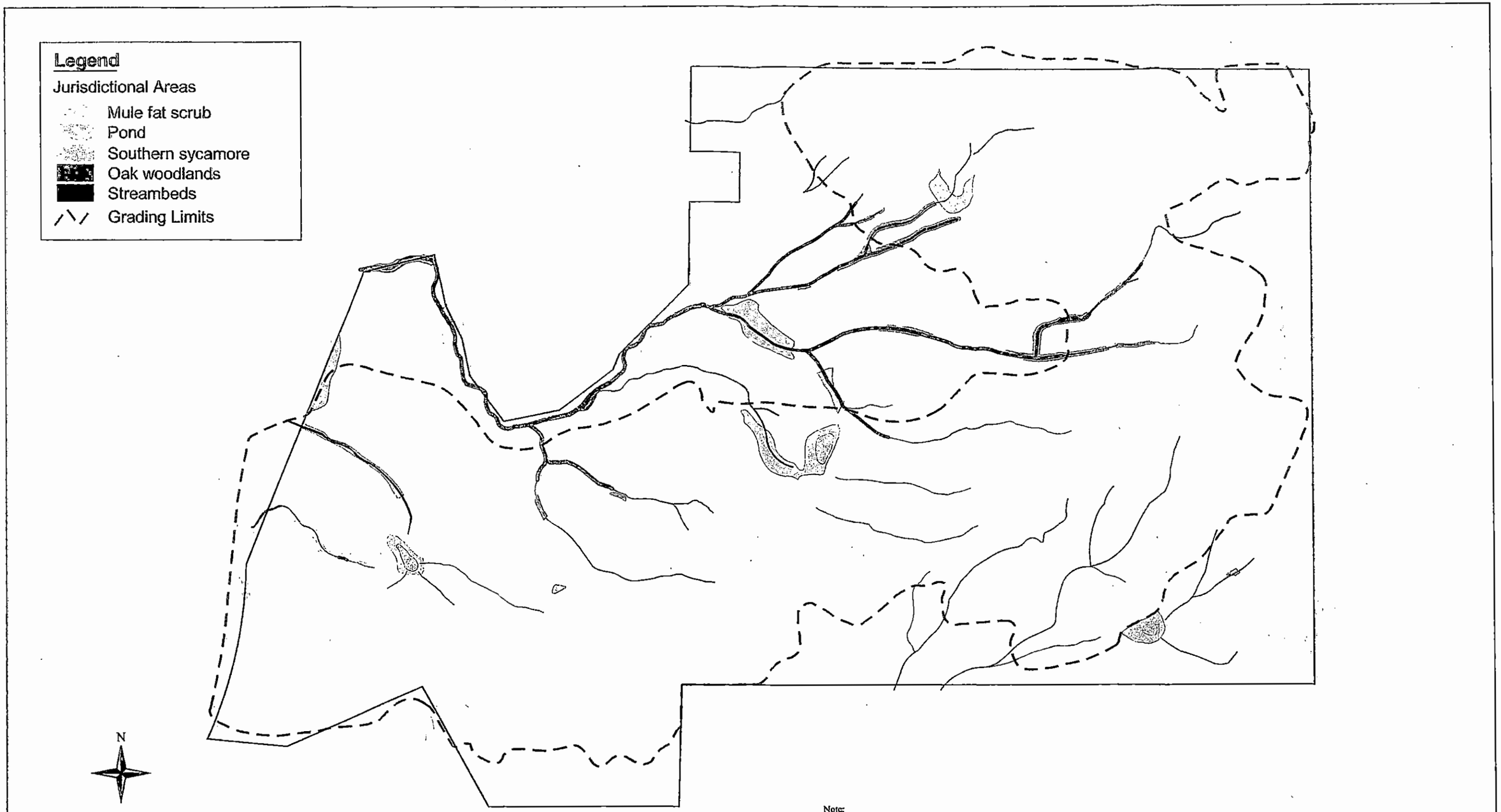
CDFG Jurisdictional Areas

A total of 8.24 acres on the site was determined to fall under CDFG jurisdiction (Figure 3; Table 1). CDFG jurisdiction is comprised of seven ephemeral ponds ringed by mule fat scrub, and patches of oak woodland, sycamore woodland, and mule fat scrub.

Table 1
IMPACTS TO CDFG JURISDICTIONAL AREAS

HABITAT	EXISTING (acres)	IMPACTS (acres)		
		Project Footprint	On-Site Mitigation Area	TOTAL
Ephemeral Ponds	0.34	0.28	–	0.28
Mule Fat Scrub	2.76	1.54	–	1.54
Oak Woodland	1.25	0.73	–	0.73
Sycamore Woodland	0.31	0.10	–	0.10
Streambed	3.58	1.34	0.10	1.44
TOTAL	8.24	3.99	0.10	4.09

Ephemeral Ponds – The site contains a total of nine stock ponds, two of which have breached and no longer retain water. The ponds are not natural, but rather man-made stock ponds created for cattle and other farming and ranching activities that have been present at the site for years. Four of the ponds, which are impoundments in otherwise natural drainages, are considered CDFG jurisdictional. The ponds



Source: Chambers Group Inc. February, 2000

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 8/24/00

CDFG Jurisdictional Areas

SADDLEBACK MEADOWS

Figure 3

are heavily degraded by cattle. For purposes of this analysis, it was assumed that the pond surface area extended to the maximum pond size based on the upper elevational limit of the dam that creates the pond. The ponds themselves are devoid of vegetation. Approximately 0.34 acre of ephemeral pond (calculated based on the sizes of the ponded basins) occurs on site.

Mule Fat Scrub - The mule fat scrub communities on site are, for the most part, associated with the ephemeral ponds and are essentially riparian "islands" within the surrounding upland communities. Mule fat (*Baccharis salicifolia*), in conjunction with arroyo willow (*Salix lasiolepis*) and red willow (*Salix laevigata*), also occurs along drainages on the site. Approximately 1.46 acres of mule fat scrub occurs along the edges of the ephemeral ponds; approximately 1.3 acres of mule fat scrub occur along two of the on-site drainages.

Oak Woodland– Approximately 1.25 acres of oak woodland, in association with mule fat, which extend beyond the banks of the drainage in the center of the property are considered CDFG jurisdictional.

Sycamore Woodland – Approximately 0.31 acres of CDFG-jurisdictional sycamore woodland occurs on the upper bench of Aliso Creek on site.

Streambeds – Approximately 3.58 acres of CDFG jurisdictional streambeds, which do not contain jurisdictional vegetation, occur on site.

D. JURISDICTIONAL AREAS TO BE IMPACTED

Implementation of the proposed project will impact a total of 4.09 acres of CDFG jurisdictional areas, including 0.28 acre of ephemeral ponds, 1.54 acres of mule fat scrub, 0.73 acre of oak woodland, 0.10 acre of sycamore woodland, and 1.44 acres of streambed (Table 1).

III. GOALS OF MITIGATION

The development of this Plan involved an iterative process that first focused on on-site preservation. Remaining on-site impact mitigation then focused on use of the flatter portions of the open space for creation of ephemeral ponds, with the surrounding area used for wetland creation. Other areas of on-site open space were also assessed for their potential for use as additional mitigation areas, including existing drainages. Widening existing drainages on site would result in greater impacts to wetland and upland habitats and were, therefore, not selected.

Remaining mitigation requirements are being met off site at two locations: the Viejo Mitigation Bank and the Hidden Ranch Mitigation Bank. The focus of mitigation on the Viejo site was the preservation, enhancement and creation of vernal pools, and the potential preservation of streambed and mule fat scrub. Mitigation on Hidden Ranch includes preservation, enhancement and creation of mule fat scrub, southern willow scrub, and sycamore/oak woodland. On site, two distinct areas were identified for mitigation: the area within the existing ranch compound that has been the most heavily disturbed and an area along the creek immediately upstream of the ranch compound that has been disturbed by long-term cattle grazing.

The Mitigation Plan has been developed with five specific objectives:

1) **On-site Wetland Preservation** – Within open space on site, maximize the protection, to the extent practicable, of existing ephemeral ponds and drainages, along with surrounding wetland vegetation;

2) **On-site Wetland Creation** - Maximize on-site creation of ephemeral ponds and wetlands;

3) **On-site Streambed Creation** - Stream courses will be reconstructed in their original location as part of the remedial grading (This will occur within areas of remedial grading that are outside of the conventional grading limits);

4) **Off-site Wetland Creation, Enhancement, and Preservation** – Preserve, create, and enhance as much wetland vegetation along the fringe of existing ephemeral basins and drainages as is hydrologically feasible; and

5) **Off-site Streambed Preservation** – Mitigate remaining impacts to streambeds through acquisition of streambeds at an off-site location.

The intent of this wetland mitigation is to create and enhance riparian, ephemeral pond, and vernal pool habitats on and off site to ensure no net loss of habitat values. The Plan also provides criteria and recommendations for the protection, enhancement, maintenance, and management of the natural resources located within the mitigation areas.

A. TYPE(S) OF HABITAT TO BE PRESERVED, ENHANCED, OR CREATED

Both on-site and off-site habitat preservation, enhancement, and creation are proposed and are outlined below. Table 2 summarizes the acreage totals for the mitigation program.

1. On-site Preservation

On site, approximately 159 acres of habitat located outside of the fuel modification zone will be preserved as open space, including 90 acres dedicated to the County as an extension of O'Neill Regional Park. This open space will include the preservation of 4.25 acres of the site's 8.24 acres of CDFG jurisdictional areas, and is comprised of 0.06 acre of ephemeral pond, 1.95 acres of wetland habitats, and 2.24 acres of streambeds. Several measures will be taken to minimize impacts related to construction and protect the biological values of this open space. Impacts to remaining open space will be minimized through project scheduling and construction monitoring and the (pre-construction) installation of high visibility orange fencing and silt fencing at the construction limits (where applicable). A delayed start date for the construction will allow for the salvage/collection of native materials such as mule fat cuttings from the development site. Mitigation will be initiated prior to project construction to minimize the temporal loss of wetland habitat functions and values.

The preserved areas will be protected in perpetuity as part of the dedicated open space for the project. These areas will be permanently fenced along the development edge to preserve their functions and values. Signs will be posted labeling the areas as sensitive habitat. These measures are intended to decrease potential impacts from humans and domestic animals. Any future measures required to protect the functions and values of the two remaining ponds will be undertaken as part of the regular open space maintenance.

2. On-site Pond Creation

Mitigation for the loss of ephemeral ponds will include the creation of approximately 1.01 acre of ephemeral ponds on site, a greater than 3:1 mitigation ratio. The on-site mitigation will occur in areas currently containing disturbed upland habitat, including annual grassland, and in a small area of non-jurisdictional mule fat scrub.[1] Mitigation in excess of a 3:1 ratio will be used towards the mitigation requirement for mule fat scrub (Figure 4).

[1] Mule fat scrub will be impacted by the expansion of one pond.

Table 2
IMPACTS AND MITIGATION FOR CDFG JURISDICTIONAL AREAS

HABITAT	IMPACTS (acres)	MITIGATION (acres)[1]										
		Ratio	Requirement	On Site		Viejo Mitigation Bank			Hidden Ranch			Total
				E	C	P	E	C	P	E	C	
Ephemeral Ponds	0.28	3:1	0.84	--	1.01	0.02[2]	0.04[2]	0.12[2]	--	--	--	1.19[3]
Mule Fat Scrub	1.54[4]	3:1	4.62	--	0.78	--	--	--	--	1.73[5]	1.24	3.75
Oak Woodland	0.73	3:1	2.19	--	1.70	--	--	--	--	--	1.01	2.71[6]
Sycamore Woodland	0.10	3:1	0.30	--	0.30	--	--	--	--	--	--	0.30
Streambed	1.44	1:1	1.44	--	0.44	1.00[7]	--	--	0.00[7]	--	--	1.44
TOTAL	**4.09**		**9.39**	--	**4.23**	**1.02[7]**	**0.04**	**0.12**	**0.00[7]**	**1.73**	**2.25**	**9.39**

1 P = habitat preservation, E = habitat enhancement, C = habitat creation.
2 Mitigation acreages are preliminary estimates.
3 Excess of 0.84 acre used to mitigate mule fat scrub.
4 Impacts occur to approximately 1.16 acre of mule fat scrub around the ephemeral ponds and 0.38 acre along two drainages.
5 Mitigation includes both preservation and enhancement.
6 Excess of 2.19 acres used to mitigate mule fat scrub.
7 Mitigation for 1.0 acre of streambed will occur through preservation of waters/wetlands on the Viejo and/or Hidden Ranch sites.

3. On-site Habitat Creation

Mitigation for the loss of jurisdictional habitats on the site will consist of 2.78 acres of habitat creation. Specifically, habitat creation on site would include 0.78 acre of mule fat scrub, 1.70 acres of oak woodland and 0.30 acre of sycamore woodland. This on-site mitigation will occur in areas currently containing disturbed upland habitat, including annual grassland and non-jurisdictional mule fat scrub.

4. On-site Streambed Creation

Mitigation for loss of CDFG-jurisdictional streambeds will be mitigated on site within areas of remedial grading that are outside of the conventional grading limits. In these areas, stream courses will be reconstructed in their original location as part of the remedial grading. This will result in approximately 0.44 acre of streambed mitigation.

5. Off-site Vernal Pool Enhancement, Creation, and Preservation

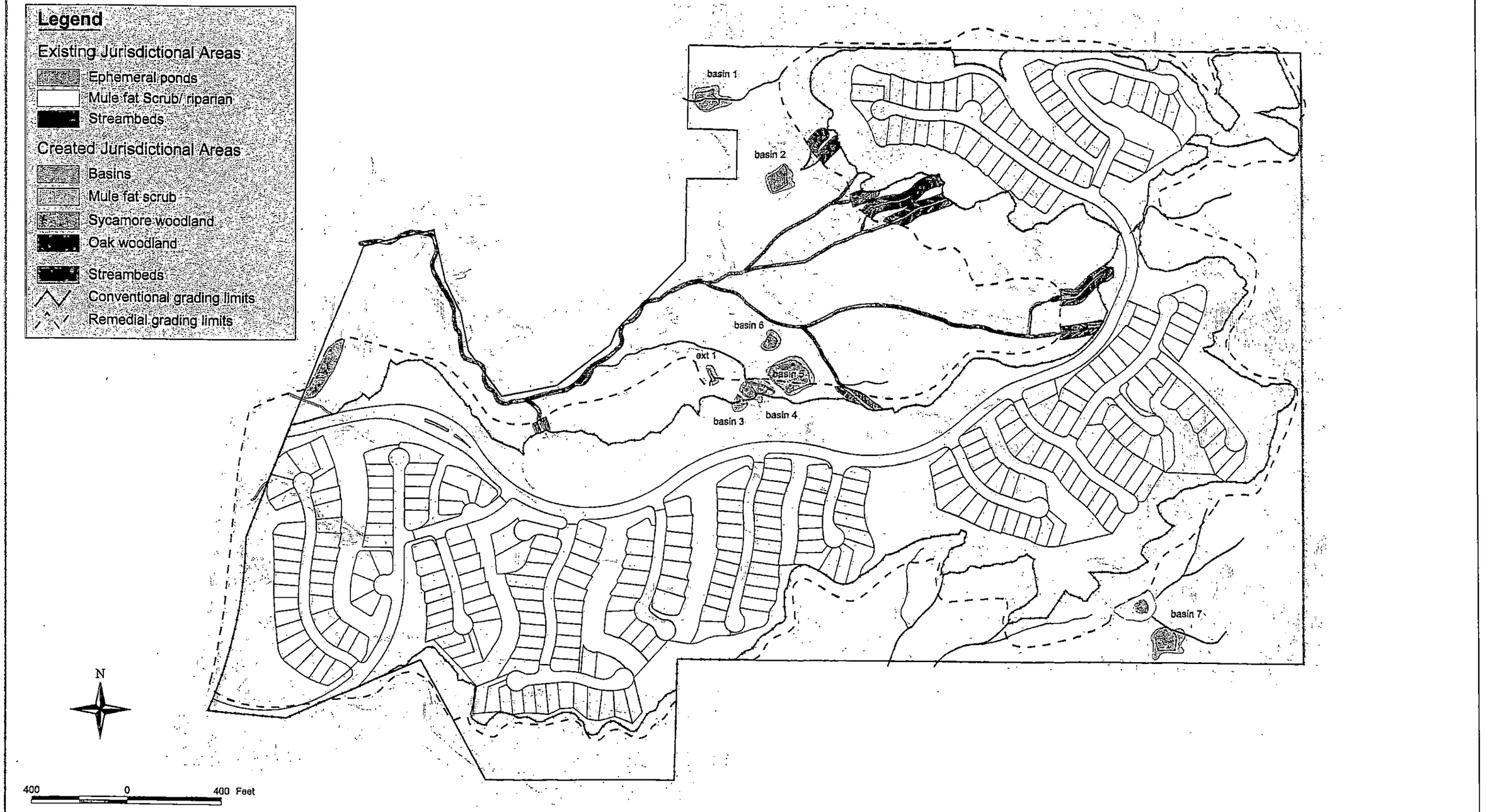
Preservation (0.02 acre), enhancement (0.04 acre), and creation (0.12 acre) of vernal pools (Table 2) is proposed off site within the Viejo Mitigation Bank (Figures 5 and 6). The focus of this portion of the mitigation will be to provide long-term preservation of existing vernal pools and their watersheds on the Viejo site, as well as provide for enhancement and expansion of some of the existing pools, and the creation of new pools where appropriate. At least one of the pools supports the federally listed as endangered Riverside fairy shrimp (*Streptocephalus woottoni*). Some of the created pools may be created deep enough to support this species. A final determination shall be made through the federal Section 7 Consultation process with the U.S. Fish and Wildlife Service (USFWS).

6. Off-site Wetland Enhancement, Creation, and Preservation

Additional mitigation requirements for impacts to wetlands will be met by the off-site creation of 1.24 acres of mule fat scrub, 1.01 acres of oak woodland, and the off-site preservation and enhancement of 1.73 acres of degraded mule fat scrub/riparian habitat within the Hidden Ranch Mitigation Bank (Figure 7). The remaining mitigation requirements for wetland impacts will be met through mitigation of ephemeral ponds in excess of a 3:1 ratio by the creation, enhancement, and preservation of vernal pools in the Viejo Mitigation Bank.

In the main drainage channel, the existing creek crossing will be expanded with additional pipes to allow a wider area of inundation upstream and downstream (Figure 8). Areas of the creek downstream of the existing crossing (Area 1) will be widened to the same grade as the existing channel. These areas will be considered U.S. Army Corps of Engineers (ACOE)/CDFG creation areas. The existing creek channel both downstream and upstream of the crossing (Area 2) will be enhanced and graded to within one foot of the existing creek channel to the east for use as a CDFG creation area. Another area (Area 3) will be graded down and restored along the smaller drainage to the east of the primary drainage. The area upstream of the crossing (Area 4) will be graded down to provide for ACOE and CDFG creation. Additional areas to the north of the compound (Area 5 and to the east), where the existing channel is of better quality but the channel has been degraded by cattle grazing, will also be used for ACOE and CDFG creation.

The existing channels will be enhanced by weeding and planting of mule fat and a limited number of willows. The areas in the ranch compound will need to be planted at similar densities to areas proposed for creation given the highly disturbed nature of the channel. CDFG creation areas will be planted based on Table 3 below. Temporary irrigation will be used for all but the existing stream channel areas.



Source: Chambers Group Inc. February, 2000

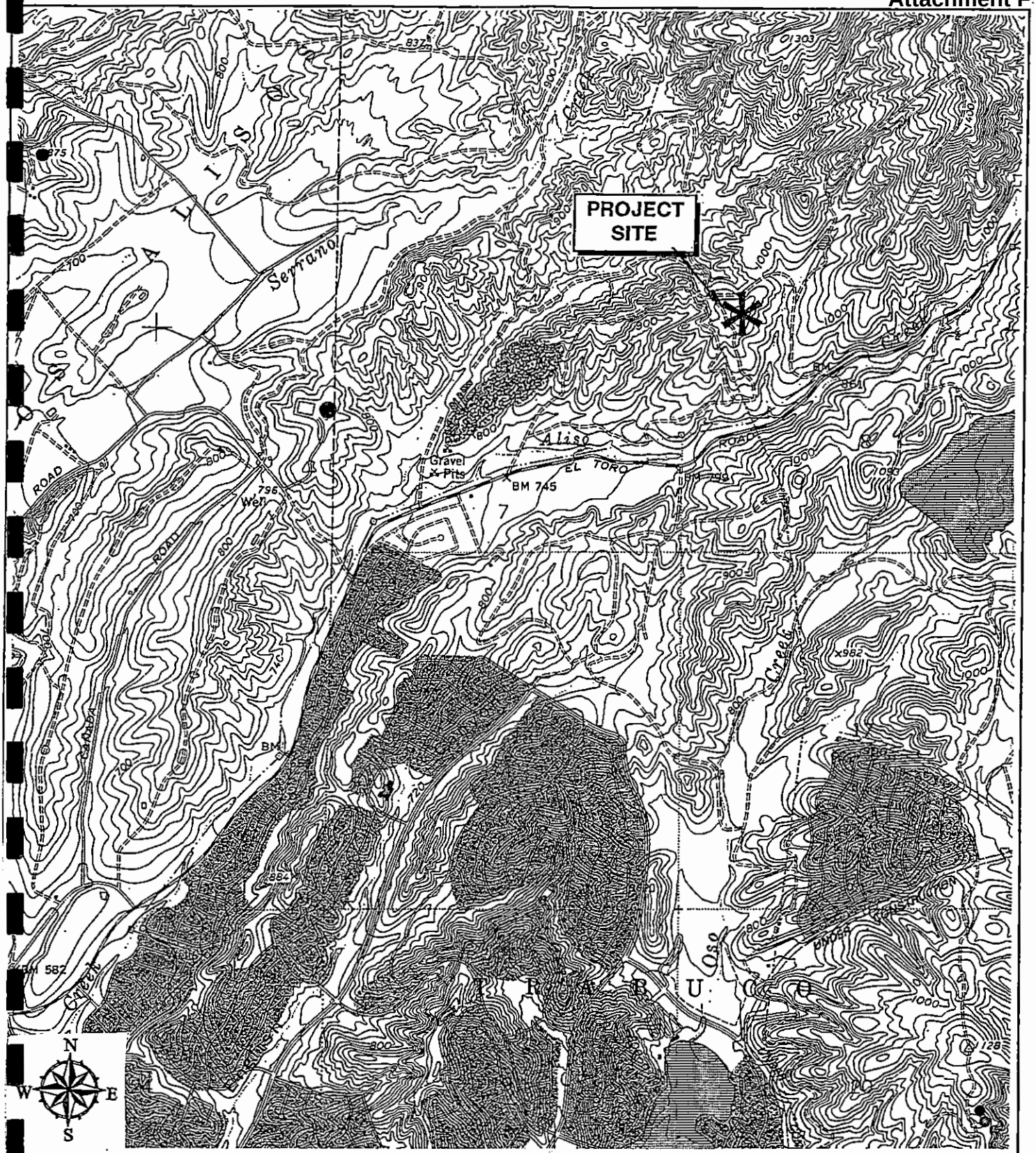
Job No: CQL-02 Date: 8/24/00

CDFG Jurisdictional Mitigation Areas

SADDLEBACK MEADOWS

Figure 4

HELIX



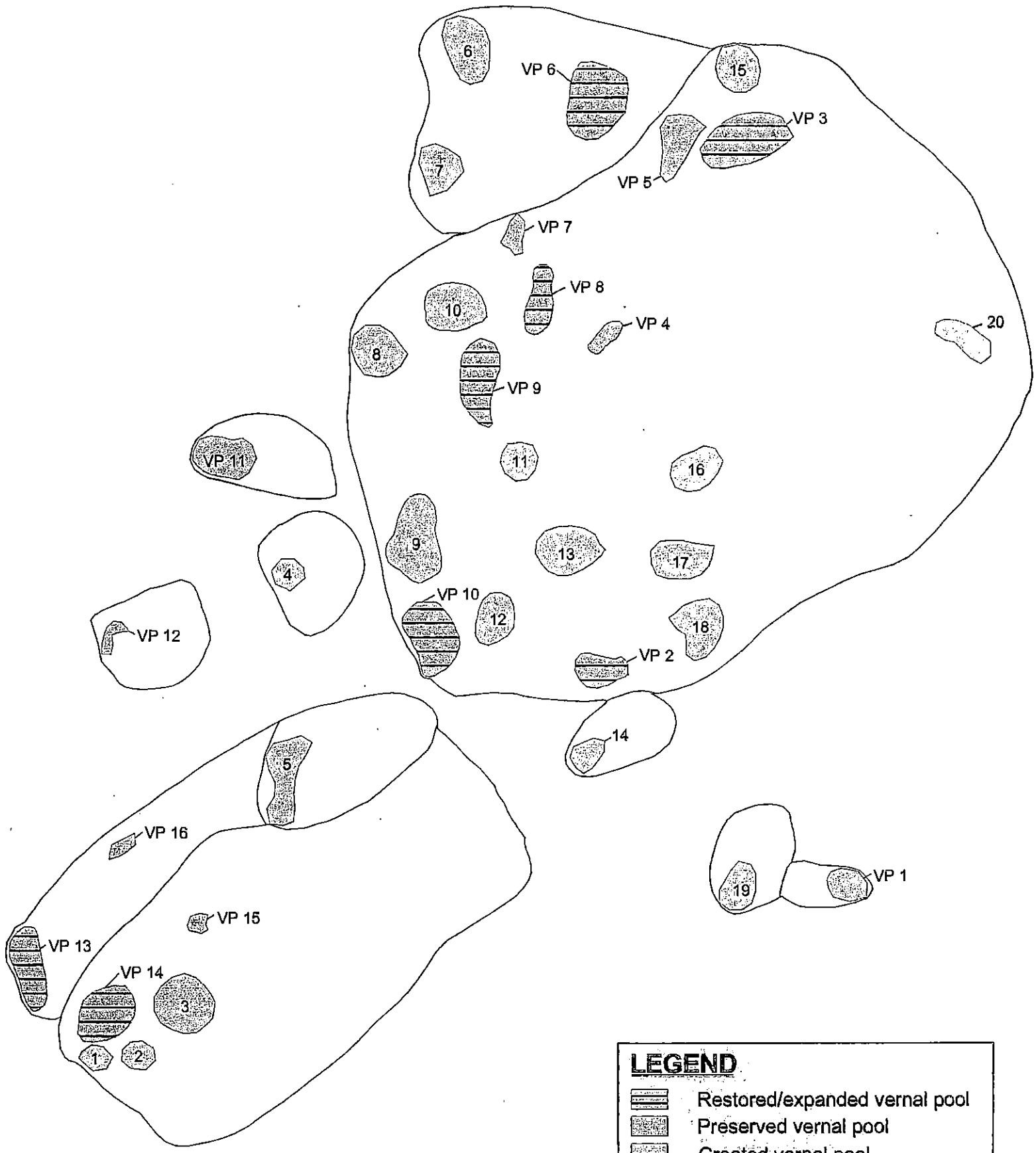
Scale: 1" = 2000'
Source: USGS 7.5 min Quadrangle, El Toro

Viejo Mitigation Location Map

SADDLEBACK MEADOWS

Figure 5

HELIX



Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

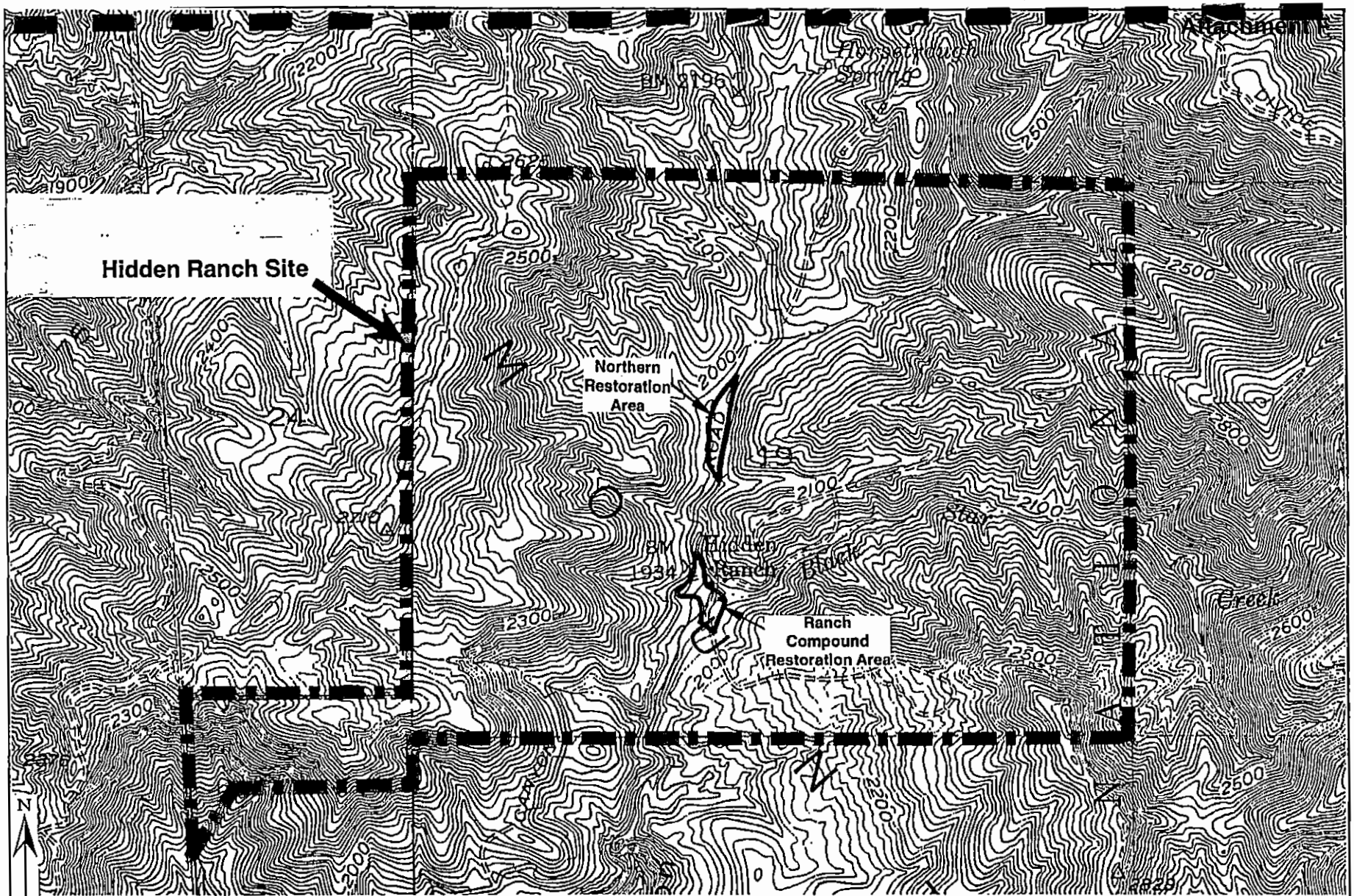
Job No: CQL-02 Date: 8/24/00

Viejo Conservation Bank Vernal Pool Mitigation Area

SADDLEBACK MEADOWS

HELIX

Figure 6

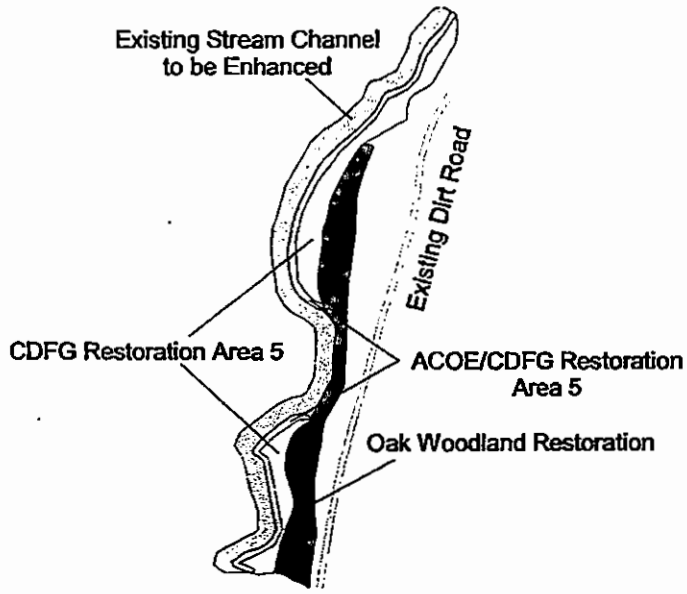


Hidden Ranch Restoration Locations

SADDLEBACK MEADOWS

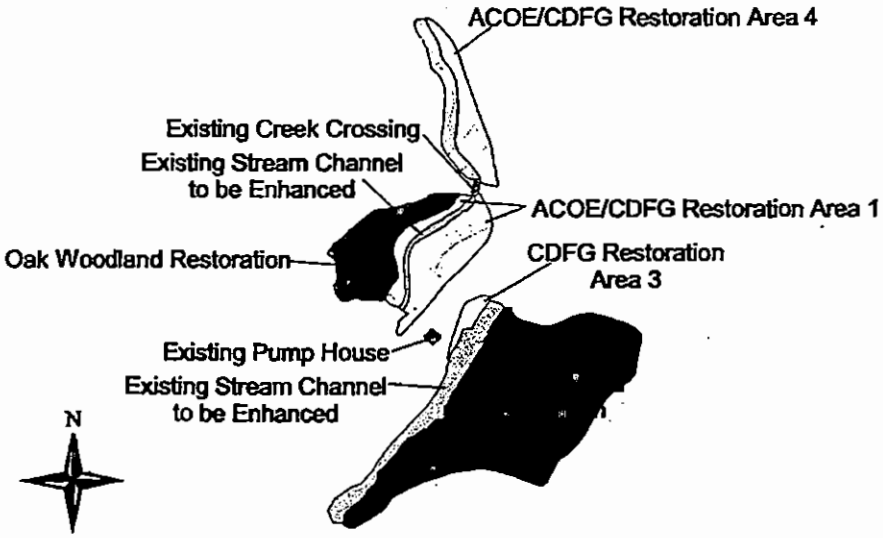
Figure 7

HELIX



Habitat Restoration

Type	Area	Acres
acoe/cdfg_res	3775.5700	0.09
acoe/cdfg_res1	12189.2000	0.28
acoe/cdfg_res4	7749.6500	0.18
acoe/cdfg_res5	8663.8500	0.20
cdfg_res3	1900.9200	0.04
cdfg_res5	19505.0700	0.45
creek crossing	168.0000	0.00
exist stream cha	47556.1200	1.09
oakwood_res	103240.0900	2.37



300 0 300 Feet

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 8/24/00

Hidden Ranch Mitigation Bank Restoration Areas

SADDLEBACK MEADOWS

HELIX

Figure 8

Table 3 CALIFORNIA DEPARTMENT OF FISH AND GAME RESTORATION AREAS	
SPECIES	PLANTS PER ACRE
Mule fat (*Baccharis salicifolia*)	200
Mexican elderberry (*Sambucus mexicana*)	20
Western sycamore (*Platanus racemosa*)	40
Coast live oak (*Quercus agrifolia*)	20
California rose (*Rosa californica*)	50

It is anticipated that this restoration effort will be successful because the areas proposed for creation/enhancement occur within or adjacent to the existing channel, and the width of the proposed creation/enhancement areas is no wider than the existing vegetation within the channel upstream or downstream where cattle grazing has been eliminated.

7. Off-site Streambed Preservation

Remaining mitigation requirements for streambeds (1.00 acre) will be provided through acquisition of 1.00 acre of streambeds at either the Viejo or Hidden Ranch Mitigation Bank.

A summary of existing conditions, impacts, and mitigation for CDFG jurisdictional areas is provided in Table 3.

B. TIME FRAME

The wetland monitoring program for Saddleback Meadows will take place over a five-year period, after installation of the creation areas is complete. The success criteria described below for this project must be met by the end of this period (Section IV of this document).

IV. FINAL SUCCESS CRITERIA

This section provides standards to determine the successful completion of the habitat creation outlined above. Attainment of these standards indicates that the mitigation area is progressing toward the target functions and values specified for this Plan. The methods to be used to measure these success criteria are described is section VIII A of this document. If at any time functions in these areas do not appear to be meeting the performance standards set forth in this Plan, California Quartet will be responsible for taking timely remedial actions (as determined by the restoration specialists) to ensure compliance with the performance standards.

TARGET JURISDICTIONAL ACREAGE TO BE CREATED/ENHANCED

Implementation of this Plan will result in the creation of 1.01 acres of ephemeral ponds, 2.78 acres of wetland habitats and 0.44 acre of streambed on the project site. A total of 0.18 acre of ephemeral ponds will be preserved, created, and enhanced off-site. Additionally, 2.25 acres of wetland habitat will be created off-site, and 1.73 acres of existing off-site riparian habitat will be preserved and enhanced to improve its wetland function and value. Also, 1.00 acre of off-site streambed will be acquired.

V. PROPOSED MITIGATION SITE

A. LOCATION AND SIZE OF MITIGATION AREA

1. On-site Habitat Creation

The wetland creation area will be located on site in areas that are deemed suitable based on soils (i.e., soil texture, and structure), topography, location within the same watershed, and potential for wildlife use. Suitable on-site creation areas are limited; therefore, the creation of the ephemeral ponds is planned for these areas. Streambeds will be recreated within remedial grading areas previously supporting these channels.

Figure 4 shows the locations of the ponds, wetlands, and streambeds proposed to be created. The ponds will be modeled after those currently existing on the project site. The impoundment will be situated to collect surface flows from the surrounding native habitat to ensure that a self-sustaining, ephemeral pond is created. The sites selected for the proposed ponds are located within the same watershed as the present impoundments and in the open space preserve areas of the project.

2. Off-site Wetland and Ephemeral Pond Creation, Enhancement, and Preservation; and Streambed Preservation

Off-site creation, enhancement, and preservation areas will be located in the Viejo and Hidden Ranch Mitigation Banks within the County of Orange. The final location of wetland enhancement and preservation areas will be determined in consultation with the County of Orange and the CDFG.

B. OWNERSHIP STATUS

The project applicant California Quartet owns the proposed on-site mitigation area. Off-site mitigation areas are owned by Southern California Edison.

C. EXISTING HABITAT VALUES OF MITIGATION AREA

The pond and wetland mitigation areas currently do not have wetland habitat values. They consist primarily of disturbed upland habitats that have been degraded by many years of grazing. The streambed habitat values vary for the streambeds being impacted and restored within the remedial grading areas. A majority of these areas are unvegetated streambeds that have been degraded by the ongoing cattle grazing; a limited area supports vegetated streambeds.

D. PRESENT AND PROPOSED USES OF MITIGATION AREA

Currently, the on-site mitigation areas are undeveloped. All of the on-site mitigation areas are proposed for open space preservation.

E. PRESENT AND PROPOSED USES OF ALL ADJACENT AREAS

On site, areas immediately adjacent to the created wetlands will be preserved as open space, wherever possible. The remainder of the site will be developed into a residential complex.

VI. IMPLEMENTATION PLAN

A. RATIONALE FOR EXPECTING IMPLEMENTATION SUCCESS

Ephemeral ponds have been successfully restored or created at various locations in California. A recent review of vernal pool rehabilitation and creation projects in San Diego County determined that most of the pools created adjacent to existing habitat successfully sustained populations of *Pogogyne abramsii*, an obligate vernal pool plant, over a period of 5 to 10 years (Black and Zedler 1998). A review of the Del Sol Reserve vernal pool project in Santa Barbara County also demonstrated that pools created and restored in 1986 are self-sustaining and support native vernal pool plant species (Ferren et al. 1998). Surveys conducted in 1996 found that the density and composition of macroinvertebrate populations, including several species of fairy shrimp, in vernal pools constructed in Folsom, California in 1994 were similar to that of adjacent reference pools (Rogers 1998). Generally, created pools inoculated with propagules taken from adjacent or nearby vernal pool complexes were more successful in sustaining populations of vernal pool species. The ponds on the project site will be designed using the methods of past successful projects as guidelines.

Measures outlined in guidelines described by the USFWS (De Weese 1998) will be incorporated into the construction, maintenance, and monitoring of the created ponds to ensure their successful creation. These measures include:

- The mitigation site will be located in an area that currently supports ephemeral ponds and has appropriate soil types (same series). An adequate buffer (>100') will be created between the pond habitat and the preserve boundary.
- Excavation of side slopes and pond bottoms will mimic that of the existing ponds to duplicate hydrologic depth, surface area, and inundation periods.
- Two existing on-site ponds will be preserved and managed for use as reference ponds.
- Hydrology staff gauges will be installed within the constructed and preserved ponds to facilitate monitoring of inundation periods. The hydrology will be monitored weekly during the wet season.
- Riverside fairy shrimp and other invertebrate populations will be monitored in the created and reference ponds once a month while the ponds hold water.
- Water quality, including temperature, turbidity, and conductivity, will be monitored in the created and reference ponds.
- Regular maintenance inspections will be performed to monitor for uncontrolled human disturbance, trash, and unexpected conditions (erosion, water run-off pollution, etc.).

Overall, success of the Plan is expected based on the following rationale:

- Plant material (seeds, container plants and cuttings) to be used for the revegetation effort will be derived from on-site material, which is anticipated to be adapted to the site conditions. Cuttings collected from the development site will also preserve the genetic integrity of the willow, mule fat, oak and sycamore populations.
- The mitigation site is located within a system that supports coastal sage scrub, coast live oak woodlands, and riparian habitat. The existence of these habitats provides support for the conclusion that the wetlands can be sustained.

- Exotic species to be removed within the site will reduce competition with existing native species and plantings associated with the revegetation project and enhance the site's ecological value.
- Removal of cattle is also expected to reduce the level of disturbance to the site.
- The revegetation site will be planted with cuttings and container plants at a relatively high density and seeded with a native herbaceous seed mix, which would impede the recolonization of invasive non-native plant species.

B. RESPONSIBLE PARTIES

1. Project Proponent

California Quartet
c/o TPG Management
ATTN: Pike Oliver
777 Campus Commons Road, Suite 200
Sacramento, California 95825

The project proponent and owner will be responsible for financing pre-grading plan hydrological testing, installation, maintenance, and monitoring of the habitat creation. In order to ensure the success of mitigation, the project proponent will enter into a five-year, secured agreement with the CDFG to cover the projected cost to install, monitor, and report on the mitigation. This agreement should be in the form of a 120 percent bond. The bond should be structured so that portions of the bond may be released as interim milestones are met (subject to negotiation between the proponent and the CDFG).

2. Landscape Architect

A licensed landscape architect will be selected for this project. The landscape architect shall prepare the construction drawings to accompany this Plan. The construction drawings shall be reviewed and approved by the restoration specialist.

3. Restoration Specialist

Monitoring of mitigation site preparation and installation, as well as maintenance/technical monitoring after site installation shall be the responsibility of a biologist, landscape architect, horticulturist, or other person knowledgeable in native habitat restoration. After each visit, the restoration specialist shall provide the project proponent and installation/maintenance contractor with a written checklist of maintenance items in need of attention, if any. All requests for work that are in addition to a contractor's scope of work shall first be approved by the project proponent. The restoration specialist shall educate the installation and maintenance contractors with regard to mitigation goals and requirements and will be responsible for tracking and preparing all required reports for submittal to the CDFG.

4. Landscape Contractor

The landscape contractor must be educated as to the installation and maintenance of native plants. This contractor shall be responsible for completion of grading, pre-planting weed control, irrigation system installation, planting, seeding, and final as-built plans.

Once the restoration specialist has verified the completion of the previous list of items, a 120-day installation maintenance period will begin. The landscape contractor shall be required to maintain the entire mitigation area at least once a month during this period. The landscape contractor shall meet the

restoration specialist at the site, when requested, and shall perform all maintenance items in need of attention in a timely manner. Maintenance tasks include, but are not limited to, dead plant replacement, reseeding, irrigation system repair, and weed control. At the end of the installation maintenance period, the restoration specialist will certify completion of the installation contract, provided all installation and maintenance tasks have been completed. The project proponent may change contractors at its discretion.

After the installation contract is certified as complete, site maintenance will be conducted by the landscape contractor for the five-year monitoring period. The contractor is responsible for actual implementation of this Plan's specifications and shall maintain the entire mitigation area according to a specified schedule. Maintenance tasks include, but are not limited to, dead plant replacement, reseeding, irrigation system repair, and weed control. The landscape contractor shall meet the restoration specialist at the site, when requested, and shall perform all maintenance items in need of attention in a timely manner. The project proponent may change contractors at its discretion. The landscape contractor will coordinate closely with the restoration specialist to ensure that the specifications of the mitigation plan are properly implemented.

C. SCHEDULE

Grading is to be completed no later than December 31, 2000. Planting and then seeding shall occur between November 15 and February 15 to take advantage of winter rains. Since irrigation will be provided for the container stock, planting (but not seeding) could occur into spring, but extreme care would need to be taken not to trample the previously spread seed mix.

If for any reason the plant materials (seeds and container plants) are undeliverable or rejected by the restoration specialist, planting will be completed as soon as desirable materials are available and the planting season is appropriate. The preliminary schedule guidelines for mitigation activities are outlined in Table 4.

Table 4
PRELIMINARY SCHEDULE GUIDELINES FOR MITIGATION ACTIVITIES

Mitigation Site Contracts Schedule
• Contract with Restoration Specialist
• Contract for plant materials
• Contract with earthmovers, schedule pond grading
• Restoration specialist and construction contractors attend pre-construction meeting(s)
• Contract with landscape contractor
• Contract with landscape architect (if Restoration Specialist determines irrigation a necessity)
Mitigation Site Preparation (September through November)
• Surveyor identifies restoration areas (verified by Restoration Specialist)
• Grade grasslands and create pond/wetland contours (Restoration Specialist present during grading activities)
• Pretreat site for weeds, if necessary
• Remove non-organic debris and vegetation material under guidance of Restoration Specialist
• Transfer inoculum from impact area ponds to replacement ponds
Planting (November through February)
• Schedule plant materials delivery date and planting crew
• Verify planting scheme for landscape contractor
• Collect/salvage suitable plant material from development site
• Cuttings and container plants installed

Table 4 (cont.)
Planting (November through February) (cont.)
• Seed application
• Coordinate replacement plantings
• Install replacement plantings (monitored by Restoration Specialist)
• Install plant fencing (if herbivory is a problem)
Maintenance and Monitoring
• See guidelines outlined in Sections VII and VIII of this report
Documentation
• Revegetation specialist submits annual reports to the CDFG by January 1 each year following implementation

D. SITE PREPARATION

1. Wetlands and Open Space Remaining On Site

Recommendations are presented to protect biological and aesthetic values of the natural habitats within the project site that are not directly affected by the proposed project. Impacts will be minimized through project scheduling and construction monitoring. A delayed start date for the construction will allow for the salvage/collection of native materials from the development site such as mule fat cuttings. Ponds to be retained in open space will be protected from construction disturbance through construction fencing and silt fencing or other erosion protection devices around the construction limits to prevent the flow of sediment into the ponds. Mitigation will be started before project construction to minimize the temporal loss of wetland habitat function. Specific measures to protect sensitive resources are discussed below.

2. Pond Creation Areas

Fencing – Orange plastic snow fencing (or other similar device) will be used to define limits of grading. Where possible, fencing will be located no closer than 15 feet from the dripline of all trees identified for protection.

Grading – A grading plan will be developed for the new ponds based on their position in the watershed, and the contours of the existing ponds. The new ponds will mimic as closely as possible the depths and areas of the existing ponds. A study of the hydrogeomorphology and dynamics of the existing ponds is currently in process. The yearlong study will provide the detailed information needed to create the exact specifications for the proposed ponds. Variables included in the study are topography and bank contours of the existing ponds, periods of inundation over time, watershed, and water quality analyses. Soils at the proposed sites will also be tested for permeability characteristics. Rough grading contours will be deep enough to allow for the application of a surface soil layer removed from the existing ponds.

Erosion Control – Only non-vegetative erosion control measures may be used in areas with native vegetation. Such erosion control measures may include sandbags, soil binders, waterbars, trenches, or dissipators. These measures preclude the introduction of non-native weedy species into the seed bank of areas with native vegetation. Drainage and sedimentation control devices will be routinely cleaned, maintained, and repaired prior to and during the rainy season. All repairs to these systems will be immediately executed to minimize erosion problems.

Debris – Garbage and debris will be removed from all areas of the mitigation site. Dead or downed wood will not be removed except as required for safety reasons, flood control or fuel modification because they provide important microhabitats for small vertebrates and invertebrates.

Transplanting Inoculum– After finish grading of the relocation ponds, the upper 24 inches of soils from existing ponds will be collected and spread over the bottom of the relocation ponds in two layers. The top layer shall be 1" deeper than the cracks in the soil and the second layer will be the remaining depth to 24". It is essential that the top soil layer salvaged is placed on the surface of the created basins. Initial grading of the mitigation site must include over excavation to allow for placement of the salvaged soil. Relocation ponds must also support a sufficient prey base population. If ponds do not support sufficient algal populations they will be inoculated with resources from the original ponds.

Vegetation Replacement – If any vegetation is removed, it will be replaced through seeding, container plantings, or both.

3. Wetland Enhancement Area

Regular weeding of the preserved habitat at Hidden Ranch shall be conducted according to the Post Installation Schedule presented in Table 7.

E. PLANTING PLAN MATERIALS AND METHODS

The planting palette for mule fat scrub (Table 5a), oak woodland (Table 5b), and sycamore woodland (Table 5c) shall be based on the species composition of corresponding extant habitat. Plants selected for the wetland areas are based mainly on those species currently found around the perimeter of the existing ponds and streambeds. The pond basins are not currently vegetated; therefore, no vegetation will be placed in the basins of the created ponds.

Table 5a
MULE FAT SCRUB PLANT SPECIES PALETTE

COMMON NAME	SCIENTIFIC NAME	PLANTING OR APPLICATION RATE/ACRE	GROUPING SIZE
Upper Canopy-Lower Benches[1]			
Black willow	*Salix goodingii*	30	2-3
Lower Canopy[1]			
Mexican elderberry	*Sambucus mexicana*	40	2-4
Mule fat	*Baccharis salicifolia*	250	15-25
Shrub and Herbaceous Layer (Seed Mix)[2]			
Mugwort	*Artemisia douglasiana*	5 lbs	–
Meadow barley	*Hordeum brachyantherum*	12 lbs	–
Western ragweed	*Ambrosia psilostachya*	6 lbs	–
Beardless wild rye	*Elymus triticoides*	8 lbs	–
Spikerush	*Eleocharis macrostachya*	1 lb	–
Toad rush	*Juncus bufonius*	1 lb	–

[1]1 gallon container stock
[2]Pounds of pure live seed per acre

Table 5b OAK WOODLAND PLANT SPECIES PALETTE			
COMMON NAME	SCIENTIFIC NAME	PLANTING OR APPLICATION RATE/ACRE	GROUPING SIZE
Woodland Canopy[1]			
Coast live oak	*Quercus agrifolia*	75	5-8
Shrub Understory[2]			
Toyon	*Heteromeles arbutifolia*	30	2-3
Laurel sumac	*Malosma laurnia*	30	2-3
California coffeeberry	*Rhamnus californica*	30	2-3
Fuchsia-flowered currant	*Ribes speciosum*	30	2-3
Herbaceous and Shrub Understory (Seed Mix)[3]			
California sagebrush	*Artemisia californica*	0.5-1.0	--
California brome	*Bromus carinatus*	2.0-4.0	--
California buckwheat	*Eriogonum fasciculatum*	3.0-4.0	--
Golden yarrow	*Eriophyllum confertiflorum*	1.0-3.0	--
California everlasting	*Gnaphalium californicum*	0.5-1.0	--
California golden bush	*Isocoma menziesii*	1.0-2.0	--
Goldfields	*Lasthenia chrysostoma*	1.5-2.0	--
Deerweed	*Lotus scoparius*	4.0-6.0	--
Succulent lupine	*Lupinus succulentus*	3.0-4.0	--
Purple needlegrass	*Nassella pulchra*	4.0-5.0	--
Blue-eyed grass	*Sisyrinchium bellum*	3.0-4.0	--

[1] 5 gallon container stock
[2] 1gallon container stock
[3] Pounds of pure live seed per acre

Table 5c SYCAMORE WOODLAND PLANT SPECIES PALETTE			
COMMON NAME	SCIENTIFIC NAME	PLANTING OR APPLICATION RATE/ACRE	GROUPING SIZE
Woodland Canopy			
Western sycamore	*Platanus racemosa*	125[1]	3-7
Black willow	*Salix goodingii*	140[2]	8-15
Shrub/Tree Understory[2]			
Arroyo willow	*Salix lasiolepis*	140	8-15
Mule fat	*Baccharis salicifolia*	250	15-25
Shrub and Herbaceous Understory (Seed Mix)[3]			
Mugwort	*Artemisia douglasiana*	5 lbs/acre	--
Yerba mansa	*Anemopsis californica*	12 lbs/acre	--
Western ragweed	*Ambrosia psilostachya*	6 lbs/acre	--
Nettle	*Urtica holosericea*	8 lbs/acre	--

[1] 5 gallon container stock
[2] 1 gallon container stock
[3] Pounds of pure live seed per acre

To ensure preservation of regional genotypes, cuttings will be collected from mule fat and willows in the existing ponds and drainages for the development of container stock. Optimally, vegetation will be collected during the fall months, when the weather is cooler and the vegetation is generally in a dormant or slow growth phase. After collection of seed and plant materials, planting will begin during the fall to take advantage of the rainy season.

Container stock will be as 1-gallon plants at elevations of approximately 4 to 12 feet above groundwater, and in natural groupings. In addition, the restoration specialist shall approve the final layout of all plant materials in the field prior to planting to ensure their correct ecological positioning (e.g., plants are not installed in rows).

All container stock shall be planted in a hole at least twice the diameter of the container and twice the depth. Backfill shall not be amended. The top of the root ball shall be set one inch above finish grade. A mulched zone shall then be established around each container plant, extending for at least 18 inches from the base of the plant. The mulch shall be two to four inches thick and must not come in contact with the collar of the plant. No fertilizers shall be applied.

Seeding will be done by hand, hydroseeding, or imprinting depending on the size of the area, slope, and surface topography. Mychorrizal inoculum will be applied with the seed mix.

Contract Growing and Plant Material Sources - Arrangements shall be made as soon as possible in advance of the expected planting date, either by the project proponent or the landscape contractor, to acquire container plant materials and seed required for habitat creation. An additional 10 percent of the total number of container plants and seed mix shall be procured in case replanting or reseeding is necessary. A copy of the plant material contract shall be submitted to the restoration specialist as verification of acquisition. Contract growing and seed collection shall be conducted by an experienced native plant nursery or seed company such as, but not limited to, Tree of Life Nursery, San Juan Capistrano, California; Mockingbird Nursery, Riverside, California; and/or S&S Seeds, Carpinteria, California.

It is preferred that the source of all plant material used at the site be from the drainages on site or as close to the site as possible. If necessary, the restoration specialist shall help the grower locate acceptable local sources for plant materials.

Substitutions - No species shall be substituted without approval from the restoration specialist. If the project proponent or installation contractor is unable to obtain the proper species (and sizes) specified by the time of planting, commencement of the 120-day installation maintenance period shall be delayed until all plants specified are in the ground. Substitution of plant material at the time of planting depends solely upon the discretion of the restoration specialist in consultation with the landscape architect. Any substitutions that are approved shall be documented by the installation contractor in the final set of as-built plans.

Plant Material Inspection - All plant materials shall be inspected by the restoration specialist and approved as healthy, disease free, and of proper size prior to planting. Overgrown, root-bound container stock will be rejected.

Container Plant Guarantees - All plants determined to be dead or terminally diseased shall be replaced by the installation contractor as soon as possible but no more than 90 days after installation. Plant replacement by the landscape contractor shall be completed as soon as possible but no more than 90 days following written direction by the restoration specialist. Unless substitutions are approved by the restoration specialist, the replacement plants shall be of the same species and at least the same size as

originally planted. All replacement plants shall be inspected by the restoration specialist and approved as healthy, disease free, and of proper size prior to planting.

Seed Guarantees - The installation contractor shall guarantee a 50 percent germination coverage rate for all seeded areas (based on visual assessment by the restoration specialist) at the end of the 120-day installation maintenance period. If there are particular bare areas, reseeding shall take place in those areas at the direction of the restoration specialist. The restoration specialist shall determine the timing and method for reseeding.

F. IRRIGATION PLAN

An irrigation system will be installed where necessary. The mule fat scrub will receive water from seasonal precipitation and should not need one. The oak and sycamore woodlands will require irrigation for plant establishment. Supplemental hand watering shall be applied if necessary to prevent the mortality of seedlings. Care will be taken to avoid water entering into the pond basins to avoid triggering of fairy shrimp hatching at an inappropriate time of year. Supplemental irrigation is only expected to be used for the first three years, or less, of the five-year monitoring period. During the final two years, the restoration specialist shall determine whether or not irrigation is necessary.

G. AS-BUILT CONDITIONS

At the end of the installation phase of the project, the installation contractor shall prepare as-built plans of the mitigation area. The as-built plans will document the conditions of the site as they exist at the completion of the installation. These plans will include an as-built topographic map and show areas of grading, planting, and seeding. The restoration specialist will review these plans for conformance with this Plan's technical design criteria, CDFG permit conditions, and project objectives. Any differences found between the original design and the as-built conditions will be fully assessed and documented by the restoration specialist through field maps, photographs, and descriptive text. It is expected that modifications of the original plan will have occurred due to post-mapping changes in project design as well as unforeseen changes resulting from site conditions. Any changes in the plan shall be justified to and accepted in writing by the restoration specialist and the California Quartet before the as-built conditions are approved.

A report of the "As-Built Conditions" shall be submitted by the restoration specialist to the CDFG within six weeks of completion of site preparation and planting. If grading, planting and erosion control measures are not completed within six weeks of each other, separate reports for each activity will be submitted.

VII. MAINTENANCE DURING MONITORING PERIOD

A. MAINTENANCE ACTIVITIES

1. General Maintenance

All contractors shall be informed of the specific mitigation goals and maintenance requirements of this project. Maintenance efforts will focus on ensuring that the created ponds retain water consistent with the conditions of the existing ponds.

Only construction equipment necessary to accomplish the mitigation installation shall be allowed on the mitigation site, and each piece of construction equipment shall be removed from the site as soon as its task is complete. No vehicular fluids shall be added or changed on site. Once plant installation and

seeding has begun, no vehicles shall be allowed on the mitigation site. Workers' personal vehicles shall be parked outside the mitigation area. The mitigation site shall be kept free of garbage.

No power tools shall be operated on the mitigation site from March 15 through July 15. Only activities that can be performed with non-power tools shall be allowed during this period. This time period coincides with the breeding season of many sensitive riparian bird species.

Damage to plants on the mitigation site as a result of unusual weather or vandalism shall be repaired as directed by the restoration specialist. Such repairs shall be paid for by the project proponent. Any damage caused by a contractor's inadequate maintenance, as determined by the restoration specialist, shall be repaired by the contractor at its expense.

2. Fencing

California Quartet will be responsible for the maintenance of the perimeter fence. Additional, protective measures such as tree tubes and placement of cages or screens around individual plants will be used in areas subject to trampling, herbivory, or other threats as determined by the restoration specialist. All protective devices shall be maintained through completion of the monitoring period or until removal is authorized by the restoration specialist.

3. Weed Control

Weed control shall be conducted monthly by the installation contractor and per the schedule outlined in this document for the maintenance contractor, or as necessary, to minimize competition that could prevent the establishment and growth of native species. Weeds shall be removed for a minimum of 4 years or until plantings are well established to prevent detrimental competition of invasive species with the mitigation plantings for water, nutrients, light, and space. Maintenance personnel shall be trained to distinguish weed species from desirable native vegetation. All weeds shall be removed mechanically. No herbicides shall be applied in the wetlands adjacent to the ponds.

A mulched area 18 inches from the base of each container plant shall be maintained to minimize competition from weeds, except within basins. This mulch will be maintained during the establishment period (120 days following certification of the installation contract), or until plants reach 2 to 3 feet in height. Table 6 lists examples of weeds that need to be controlled at the mitigation site.

4. Disease and Pests

Damage-causing insects, high levels of herbivory, and diseases shall be monitored by the installation and maintenance contractors during their maintenance periods. Generally speaking, a high threshold of tolerance will be permitted before chemical/lethal control measures are considered. All specific recommendations will only be made by a licensed pest control adviser as required by law. All applicable federal and state laws and regulations will be closely followed. The CDFG and restoration specialist will be consulted on any pest control matters.

5. Pruning

No pruning shall be done unless directed by the restoration specialist.

Table 6 WEED SPECIES LIST*	
SCIENTIFIC NAME	COMMON NAME
Arundo donax	giant reed
Brassica nigra	black mustard
Carpobrotus edulis	hottentot fig
Cortaderia selloana	pampas grass
Cynara cardunculus	artichoke thistle
Cynodon dactylon	Bermuda grass
Eucalyptus spp.	eucalyptus species
Foeniculum vulgare	sweet fennel
Myoporum laetum	myoporum
Rincinus communis	castor bean
Schinus terebenthifolius	Brazilian pepper tree
Silybum marianum	milk thistle
Tamarix spp.	tamarisk species
Washingtonia robusta	Mexican fan palm
Xanthium strumarium	cocklebur

*This species lists some common wetland weed species. Other weed species may occur at this mitigation site.

6. Trash Removal

Following rain events, trash and debris may enter the creek from storm drains. Trash shall be removed during regular maintenance events by the installation and maintenance contractors during their respective maintenance periods.

B. RESPONSIBLE PARTIES

The project proponent (California Quartet) will be responsible for financing the maintenance program. The landscape contractor will conduct maintenance efforts and will submit regular maintenance reports to the project proponent.

The project proponent may choose to legally transfer the property in fee title (subject to agency approval) to a public or private entity specializing in long-term management of open space. If such a transfer occurs, this entity would become the responsible party for implementing the maintenance program.

C. SCHEDULE

During the 120-day installation maintenance period, the installation contractor shall be required to maintain the entire mitigation area at least twice a month. Once the 120-day installation maintenance period is over, the area will be maintained by the maintenance contractor according to the schedule in Table 7. Specific items evaluated during maintenance events will include the presence of weeds, trash, vandalism, irrigation function and scheduling, and plant material condition.

Table 7 MAINTENANCE SCHEDULE	
PHASE	**SCHEDULE**
120-day Installation Maintenance Period	Bi-weekly
Post-Installation Maintenance Period	
February-May	Bi-weekly
June-January	Monthly

The restoration specialist shall begin monitoring during the grading/site preparation and installation phases and shall then continue monitoring through the post-installation phase according to the schedule outlined in Table 8. The restoration specialist shall file a written monitoring report with the project proponent and landscape contractor after completing each inspection. Each of these reports shall identify maintenance concerns including, but not limited to, plant mortality, vandalism, and weed-related issues, and shall provide recommendations to the maintenance contractor regarding any changes to the maintenance program. These monitoring reports will be included as part of the annual report to the CDFG.

Table 8 MAINTENANCE MONITORING SCHEDULE FOR THE RESTORATION SPECIALIST	
PHASE	**SCHEDULE OF INSPECTIONS**
Grading/Site Preparation	2 times per week
Installation	Daily
Post Installation	
Year 1	Monthly
Year 2	February, March, April, May, June, September, December
Years 3-5 (or until performance standards have been met)	Quarterly

VIII. MONITORING PLAN

A. PERFORMANCE CRITERIA

Performance criteria are specific standards by which to evaluate the progress and success of the mitigation during the five-year monitoring period. The standards are based on a reference site. Three categories of interim success criteria shall be analyzed: species diversity, cover by weeds, and cover by native species. The annual milestones for these parameters are presented in Table 9.

Table 9 ANNUAL SUCCESS CRITERIA MILESTONES[1]					
CRITERIA	YEAR				
	1	2	3	4	5
Species Diversity	40	50	60	70	80
Cover by Weeds[2]	140	130	120	110	100
Cover by Native Species[2]	60	70	80	90	100

[1]Values are percentages as compared with the reference site.
[2]Percent total cover.

B. MONITORING METHODS

Annual monitoring will be performed by the restoration specialist or by a qualified biologist with appropriate experience in site monitoring and transect measurements. This monitoring will include qualitative observations of overall plant survival, vigor, and recruitment, the status of irrigation, trash, and weeds, and the presence of wildlife species. In addition, monitoring will include quantitative measurements of native and non-native plant growth. Using the same techniques, a designated reference site will also be sampled so that comparisons can be made between the functions and values of the mitigation site and previously existing habitat. The reference site shall be located on site.

Vegetation monitoring will be conducted for the restored habitats created along riparian corridors and the margins of the created ponds. Observations of plant health and vigor will be made and compared to observations of plant health and vigor of the preserved habitats. All species that occur within the habitat, along with percent cover of native shrubs and annuals and non-native species, shall be noted separately for each area. In addition to the observations and measurements described above, several permanent stations for photo-documentation shall be established in each habitat type and annual photographs taken.

1. Species Diversity

Species diversity usually increases with recruitment of new native species from the surrounding native habitats. The effect of recruitment on diversity should allow the mitigation to approach the level of species diversity at the reference site. After five years, the mitigation site should reach 80 percent of the species diversity of the reference site.

2. Cover by Weeds

Many weeds have become naturalized, and therefore, the weed cover should reflect (or be less than) what is present at the reference site. Although weeds are expected, they should not be allowed to get out of control on site. Weeds should be controlled during site maintenance.

3. Cover by Native Species

Cover by native vegetation should increase over time and ultimately approach that of the reference site. With sufficient site maintenance, proper irrigation, and natural rainfall, native vegetation cover should approach 100 percent of the reference site in five years.

C. ANNUAL REPORTS

Annual reports on the status of the project mitigation shall include an assessment of the site's status relative to yearly target criteria as well as overall site progress toward final success criteria. These reports will also include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- a copy of the CDFG permit and any attachments including Special Conditions and subsequent Letters of Modification;
- an analysis of all qualitative and quantitative monitoring data;
- copies of all monitoring photographs; and
- maps identifying monitoring areas, transects, planting zones, and so forth as appropriate.

Remedial recommendations, if necessary, shall be made in the annual reports as well as a summary of whether or not the mitigation is meeting the success criteria for the appropriate year.

D. SCHEDULE

Monitoring and performance criteria will be tied to implementation. The first annual monitoring event will occur in June after the first full growing season. Annual technical monitoring reports shall be submitted to the CDFG by the end of August of each year to ensure that there is adequate time remaining in the dry season to implement any necessary contingency measures.

IX. COMPLETION OF MITIGATION

The project proponent shall notify the CDFG upon completion of the mitigation effort through the submittal of the final annual technical monitoring report. The final report shall include a jurisdictional delineation of the mitigation areas. This delineation must show that the goals of the mitigation (as described in section III of this document) have been met.

Performance standards may be waived by the CDFG in any area if monitoring indicates that good growth and functional habitats are otherwise achieved. If performance standards cannot be met because of adverse soil or other unmanageable site conditions, an alternative or auxiliary mitigation plan may be submitted to the CDFG for approval.

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2000 Annual Report
U.S. Fish and Wildlife Service Protocol Level
Dry Season Survey for
San Diego and Riverside fairy shrimp
(*Branchinecta sandiegonensis* and *Streptocephalus woottoni*)

Prepared for:
California Quartet
Saddleback Meadows Project

Prepared by:

HELIX Environmental Planning, Inc.
8100 La Mesa Blvd., Suite 150
La Mesa, California 91941-6476
(Endangered/Threatened Species Permit: PRT-778195)

December 19, 2000

California Quartet

Saddleback Meadows Project

2000 Dry Season Fairy Shrimp Sampling Results

INTRODUCTION

This report presents the findings of dry season fairy shrimp sampling conducted in two locations on the Saddleback Meadows site. Saddleback Meadows is a 222-acre site located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains (Figure 1). The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area (Figure 2). The site is located on the U.S. Geological Survey Santiago Peak and El Toro 7.5 minute quadrangles.

An active creek (Aliso Creek) runs north and south along the western boundary of the site. Residential communities are located to the south and west, pasture land is located to the east, and Saint Michael's Abbey is located to the north of the project site. The property is actively used for horse and cattle grazing. The intensive grazing combined with the presence of highly erodable soils on site has, over the years, resulted in extensive habitat degradation in both upland and wetland habitats. Significant erosion has also occurred within the drainages on site. The project site is mostly undeveloped except for a small corral in the central portion of the western half of the site, remnants of houses, and a few unmaintained roads.

At the request of the U.S. Fish and Wildlife Service (USFWS), dry sampling for fairy shrimp was conducted in two breached stock ponds (C and F). The site contains a total of nine stock ponds, two of which have breached and no longer retain water. The ponds are not natural, but rather man-made impoundments created for cattle and other farming and ranching activities that have been present at the site for years. While it is clear that the breached ponds no longer serve as fairy shrimp habitat, it is possible that they once supported fairy shrimp, and their cysts may be present in the remaining soils.

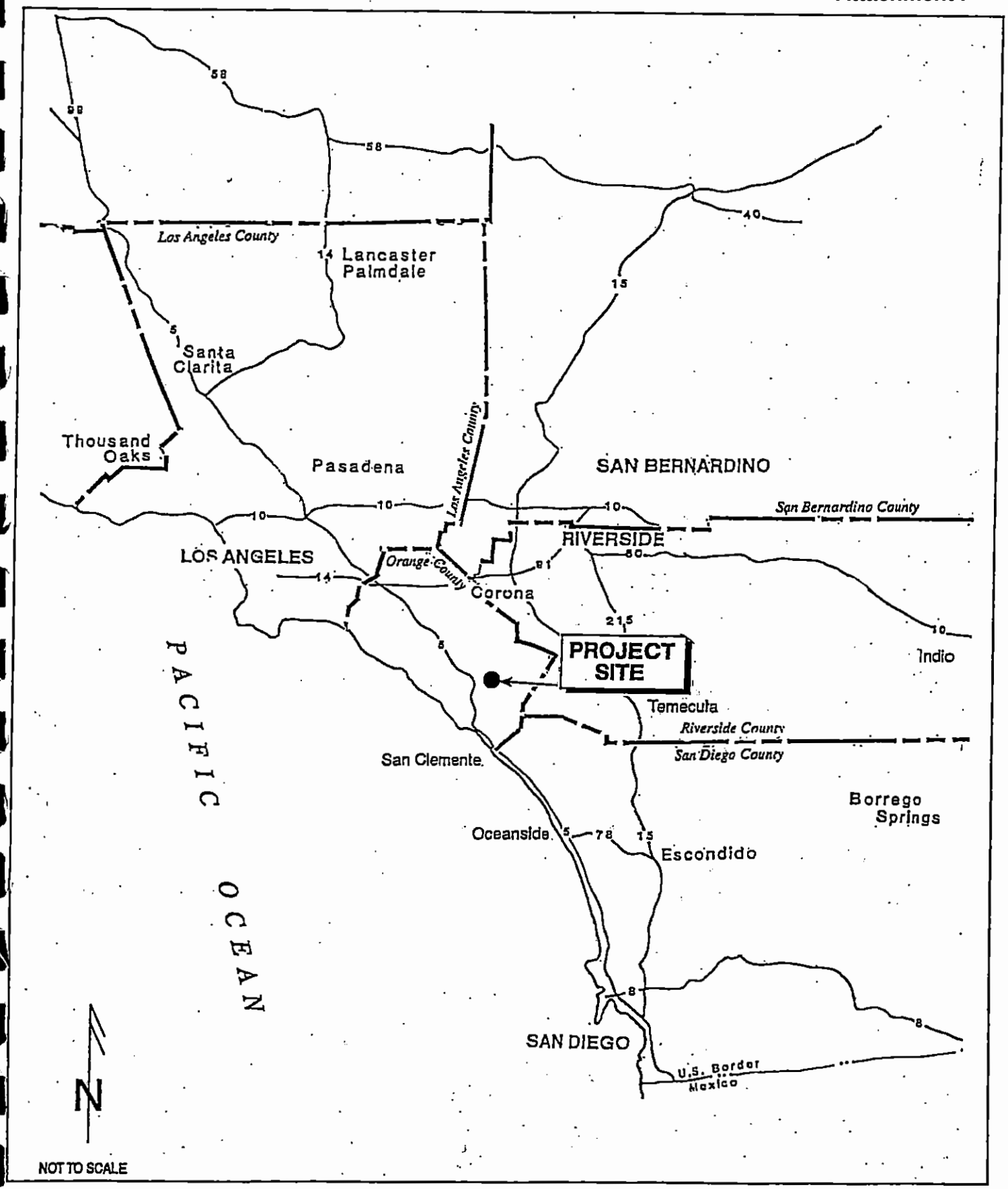
The San Diego fairy shrimp (*Branchinecta sandiegonensis*) is listed as a federally endangered species by the USFWS. It is found only in San Diego County. This species occurs in vernal pools and other ephemeral pools often located in patches of grassland and agriculture interspersed in Diegan coastal sage scrub and chaparral.

The Riverside fairy shrimp (*Streptocephalus woottoni*) is listed as a federally endangered species by the USFWS. Its range includes Riverside, Orange, and San Diego counties; and northern Baja California, Mexico. This species occurs in vernal pools and other ephemeral pools.

METHODS

The purpose of the survey was to determine the presence/absence of the federally listed San Diego fairy shrimp and Riverside fairy shrimp within breached ponds C and F (Figure 3). Soil collection was conducted on December 1, 2000 by HELIX biologist Greg Mason (Permit #778195) with permission from the USFWS (attached). Following the soil collection, the samples were brought to Dr. Charles Black (Permit #835549-1) for analysis. Greg Mason assisted Dr. Black in the soil analysis.

During soil collection, approximate depth, area and habitat condition were noted and recorded on USFWS Vernal Pool Data Sheets. The data sheets, in addition to a USFWS California Native Species Field Survey Form, are included with this document. Per the USFWS protocol, 10 soil samples were collected from each of the breached ponds. Each sample had a volume of approximately 100 ml for a total sample volume of approximately 1 L per breached pond. Locations of each sample location are shown on the USFWS data forms (attached).



Regional Location Map

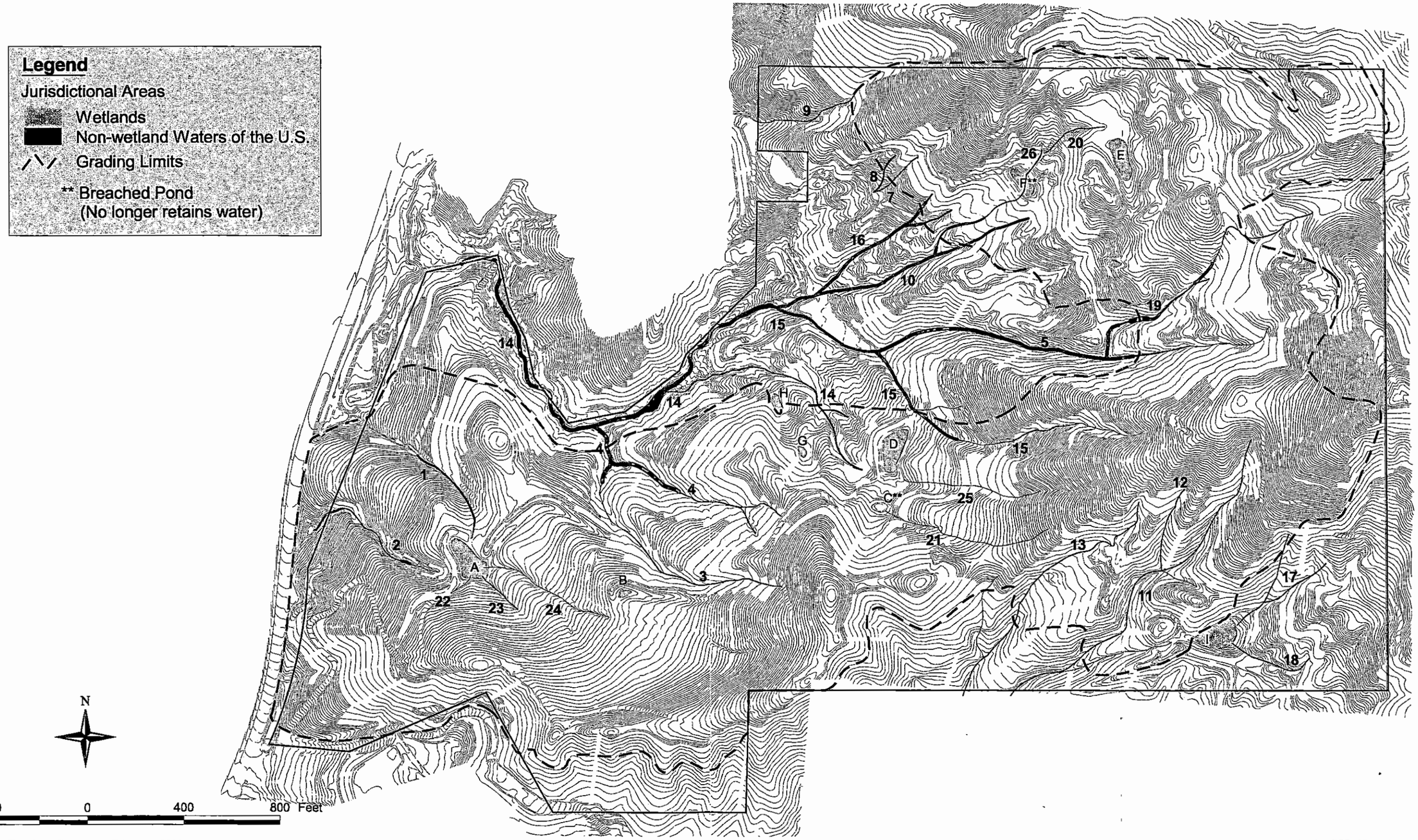
SADDLEBACK MEADOWS

Figure 1

HELIX

Project Vicinity Map
SADDLEBACK MEADOWS
Figure 2

HELIX



Source: Chambers Group Inc. February, 2000

Job No: CQL-02 Date: 12/19/00

ACOE Jurisdictional Areas

SADDLEBACK MEADOWS

Figure 3

The soil samples were prepared for examination in the laboratory by dissolving the soil in water and sequentially sieving the resulting solution through 500-, 300- and 150-µm pore size screens. The size of the screens ensured that fairy shrimp cysts would be separated from the soil and retained. The portion of each sample retained in the screens was dispersed in a brine solution to separate the organic material from the inorganic. The organic fraction was then examined under a microscope and fairy shrimp cysts were identified to genus.

RESULTS

Soil samples from basins C and F on site included fairy shrimp cysts of the genus *Streptocephalus*. A total of 1 cyst was found in breached pond C and 4 cysts in F. The *Streptocephalus* cysts identified are considered to be Riverside fairy shrimp because this species occurs in other basins on site and is also the only *Streptocephalus* species known to occur within the project vicinity.

Appendix A

SITE PHOTOS

Photo 1. View north across breached pond C*

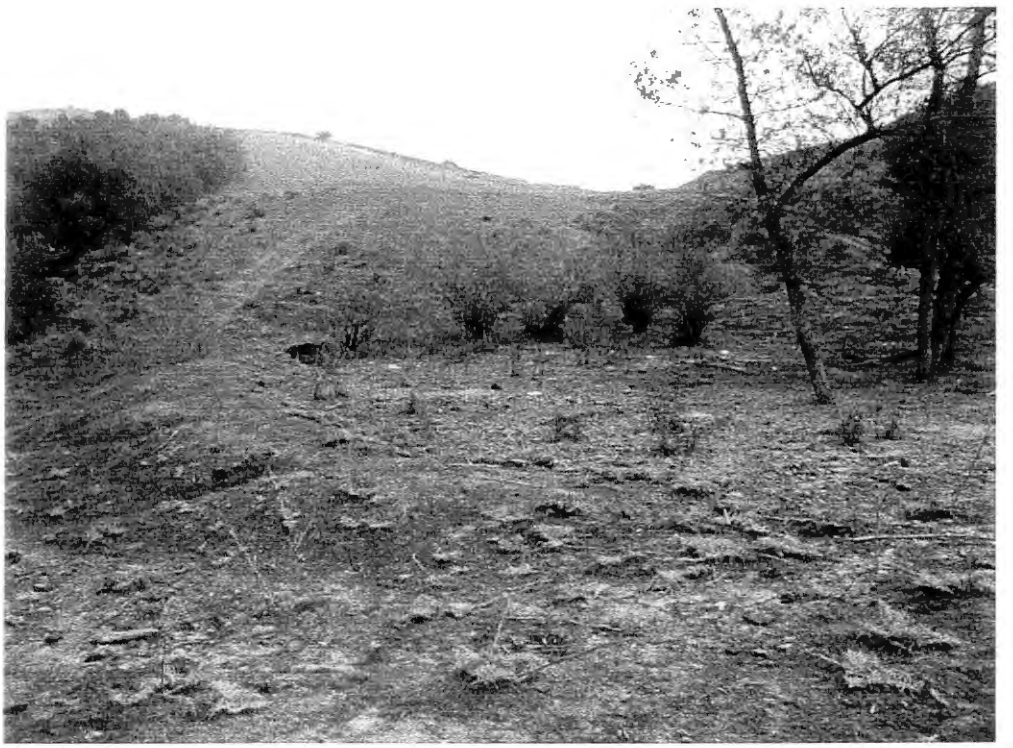


Photo 2. View south across breached pond C*

* Saddleback Meadows, Orange County, CA, lat. 33°41' long, 117°43'
Taken by G.M., 12/1/00. Cysts of genus *Streptocephalus* found.

Photo 3. View from below basin C showing berm and breach.*

Photo 4. Close-up view of breach in berm of pond C.*

* Saddleback Meadows, Orange County, CA, lat. 33°41' long, 117°43'
Taken by G.M., 12/1/00. Cysts of genus *Streptocephalus* found.

Photo 5. View southeast across breached pond F.*

Photo 6. View northwest across breached pond F.*

* Saddleback Meadows, Orange County, CA, lat. 33°41' long, 117°43'
Taken by G.M., 12/1/00. Cysts of genus *Streptocephalus* found.

Photo 7. View across berm at pond F.

Photo 8. Close-up view of breach in berm of pond F.*

* Saddleback Meadows, Orange County, CA, lat. 33°41' long, 117°43'
Taken by G.M., 12/1/00. Cysts of genus *Streptocephalus* found.

Appendix B

USFWS DRY SAMPLING DATA SHEETS

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ____ no __X__ yes

Required color slides and/or photographs for the project site are included: ____ no __X__ yes

Date: 12/1/00 Time: 1300 County: Orange Quad: Santiago Peak

Collector(s): Greg Mason (soil collection) Chuck Black (analysis) Permit #: 778195 - Greg Mason 835549 - Chuck Black

Site/Project Name: Saddleback Meadows Pool #: C

Township: 6S Range: 7W Section: 4 33°41' lat. 117°43' long.

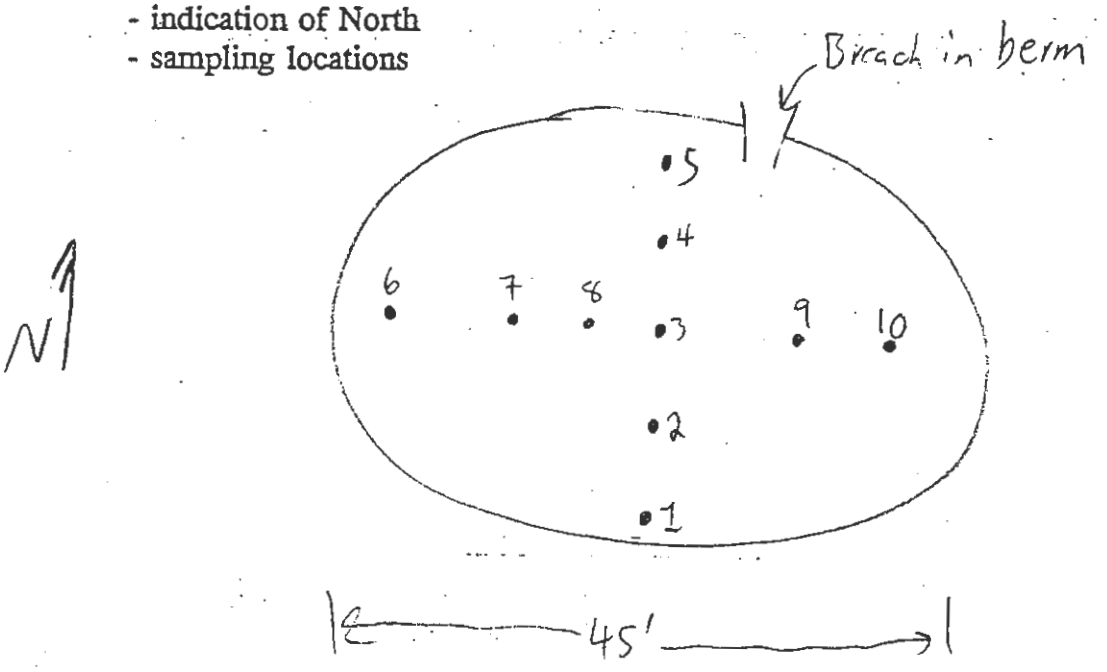
Habitat Condition: (circle where appropriate)

- undisturbed (disturbed:) tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) (horses) sheep other____
  light moderate (heavy)
- land use of habitat: Breached stock pond, no longer holds water

Pool Bottom Surface: (circle where appropriate)
hardpan (claypan) cobbly/rocky lava flow other____

Pool Depth: 0 cm (estimated maximum) Surface Area: 162 m² (estimated maximum)
No longer holds water

Sketch of pool and transects showing:
- scale
- indication of North
- sampling locations



U.S Fish and Wildlife Service Vernal Pool Data Sheet
Dry Season Survey
Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml)	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml)
1	100	—	—	—
2	100	—	—	—
3	100	—	—	—
4	100	—	—	—
5	100	—	—	—
6	100	—	—	—
7	100	—	—	—
8	100	—	—	—
9	100	—	—	—
10	100	Streptocephalus	1	1

Voucher Specimens
Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Dry Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: _____ no __X__ yes

Required color slides and/or photographs for the project site are included: _____ no __X__ yes

Date: 12 / 1 / 00 Time: 1300 County: Orange Quad: Santiago Peak

Collector(s): Greg Masan (soil collection) Chuck Black (analysis) Permit #: 778195 - Greg Masan 835491 - Chuck Black

Site/Project Name: Saddleback Meadows Pool #: F

Township: 6S Range: 7W Section: 4 33°41' lat. 117°43' long.

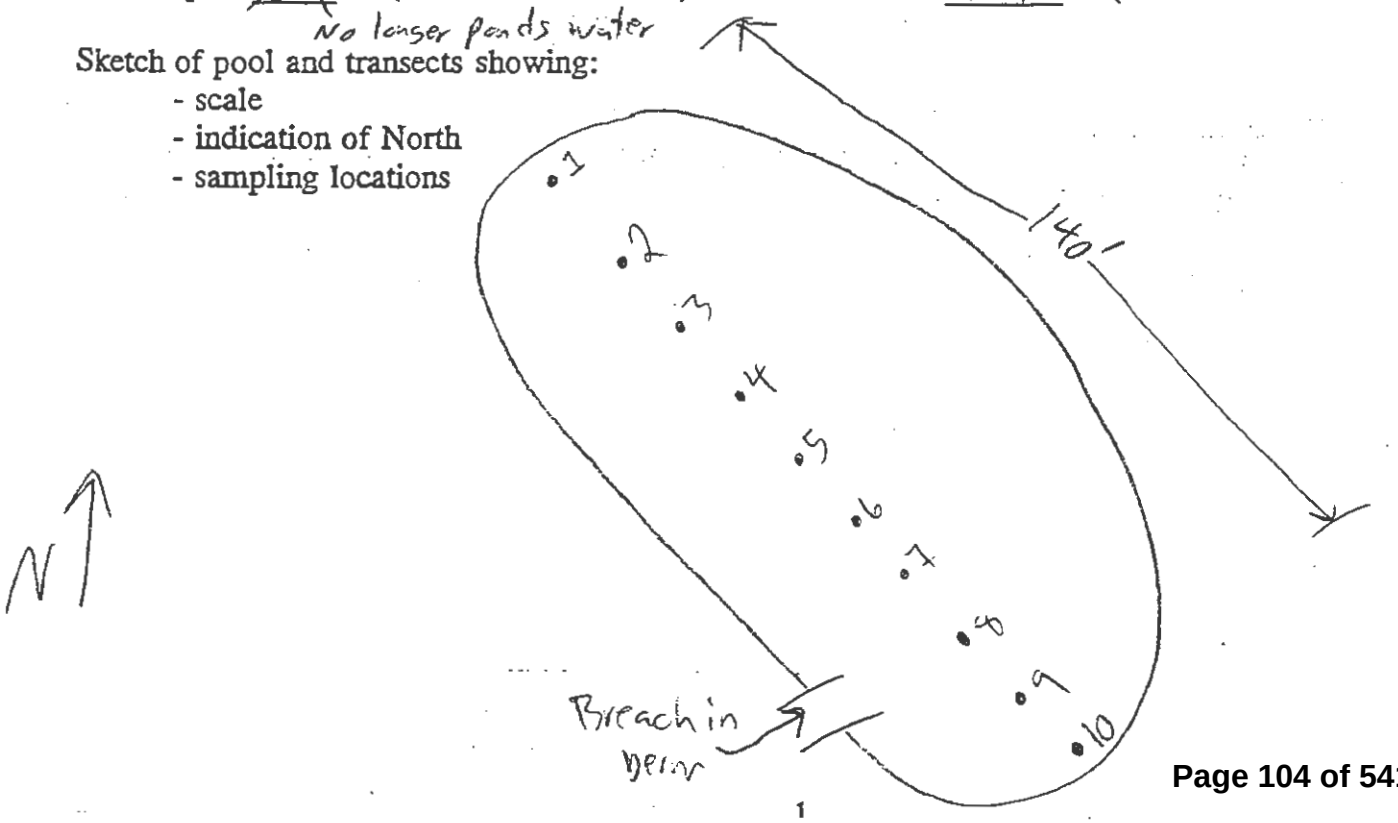
Habitat Condition: (circle where appropriate)

- undisturbed (disturbed:) tire tracks garbage discing/plowing
- ungrazed (grazed:) (cattle) (horses) sheep other_____ light moderate (heavy)
- land use of habitat: Breached stock pond, no longer holds water

Pool Bottom Surface: (circle where appropriate)
hardpan (claypan) cobbly/rocky lava flow other_____

Pool Depth: 0 cm (estimated maximum) Surface Area: 931 m² (estimated maximum)
No longer ponds water

Sketch of pool and transects showing:
- scale
- indication of North
- sampling locations



U.S Fish and Wildlife Service Vernal Pool Data Sheet
Dry Season Survey
Soil Analysis

Note: Please fill out the required information completely for each site visit.

Sample ID	Sample Volume(ml)	Genus (/species)	# Cysts (or None)	Cyst Density (#/100ml)
1	100	—	—	—
2	100	—	—	—
3	100	—	—	—
4	100	—	—	—
5	100	—	—	—
6	100	—	—	—
7	100	—	—	—
8	100	—	—	—
9	100	Streptocephalus	4	4
10	100	—	—	—

Voucher Specimens
Cysts shall be stored dry and shall be preserved according to the standards of the institution in which they will be accessioned.

Genus (/species)	# Cysts	Catalog/Accession #	Pool #

Appendix C

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

California Native Species Field Survey Form

Mail to:
Natural Diversity Data Base
California Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, California 95814

For office use only
Source Code _____ Quad Code _____
Elm Code _____ Occ # _____
Copy to _____ Map Index # _____

Date of field work 12 - 1 - 00 (mo day year)

Scientific Name: Streptocephalus woottoni
Common Name: Riverside Fairy Shrimp

Species Found? ☒ yes ☐ no _____ If not, why?
Total # Individuals 5 cysts Subsequent visit? ☐ yes ☒ no
Is this an existing NDDB occurrence? _____ ☐ no ☒ unk. Yes, Occ. #
Collection? If yes: _____ number _____ Museum/Herbarium

Reporter: Greg Mason
Address: HELIX Environmental Planning, Inc
8100 La Mesa Blvd., #150, La Mesa, CA 91941
Phone: (619) 462-1515

Plant Information
Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information
Age Structure: 5 Cysts _____ # adults # juveniles # unknown
☐ nesting ☐ breeding ☐ foraging ☐ wintering ☐ roosting ☐ burrow site ☒ other

Location (Please also attach or draw map on back.) Breached stock ponds. Held water in past, no longer suitable fairy shrimp habitat. Survey conducted to find shrimp cysts in soil.
County: Orange Landowner/Mgr: Quartet LLC
Quad Name: Santiago Peak Elevation: _____ UTM: Lat 33°41' Long 117°43'
T 6S R 7W ¼ of ¼ Sec 4 T _____ R _____ ¼ of ¼ Sec _____

Habitat Description (Plant communities, dominants, associates, substrate/soils, aspects/slope)
Breached stock ponds on Saddleback Meadows project site in Orange County, CA.

Other rare spp.? _____

Site Information Overall site quality: ☐ Excellent ☐ Good ☐ Fair ☒ Poor
Current/surrounding land use: Grazing (cows/horses)
Visible disturbances, possible threats: Ponds already breached, no longer suitable habitat.
Comments:

Determination: (Check one or more, fill in the blanks)
☐ Keyed in a site reference: _____
☐ Compared with specimen housed at: _____
☐ Compared with photo/drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: (Check one or more) Slide Print
Plant/animal ☐ ☐
Habitat ☐ ☒
Diagnostic Feature ☐ ☐
May we obtain duplicates at our expense? ☒ Yes ☐ No

Appendix D

USFWS PERMISSION TO SAMPLE

From: Christine_Moen@r1.fws.gov
To: "Greg Mason" GregM@helixepi.com
Date: 11/30/00 10:35AM
Subject: Re: Dry Sampling

Hi Greg,

I've discussed this case with Dave Zoutendyk, Doug Krofta, and Linda Belluomini. Our recommendation is to authorize you to go ahead and conduct the soil sampling, and give the samples to someone authorized to do the analysis (Richard Hill, Charles Black, etc.). This is an unusual case, and that's why we're deviating from the standard of not authorizing soil samples at this time. It's our understanding (per your previous information) that the ponds that are to be sampled are old impoundments that no longer pond. The potential "take" of individuals in this case is offset by the need to know if any cysts are present. Because of the current situation at the impoundments, even if cysts are present, the conditions don't exist that would allow them to complete their life cycle (no water ponding).

Please contact me if you have any other questions,

Christine

****
* Christine Moen
* U.S. Fish and Wildlife Service
* 2730 Loker Ave.
* Carlsbad, California 92008
* phone: (760) 431-9440
****

Saddleback Meadows

Conceptual Mitigation and Monitoring Plan

Prepared by:

Saddleback Meadows

CONCEPTUAL MITIGATION AND MONITORING PLAN

March 3, 2000
Revised April 13, 2000

Prepared for:

CALIFORNIA QUARTET
777 Campus Commons Road, Suite 200
Sacramento, California 95825

Prepared by:

HELIX ENVIRONMENTAL PLANNING, INC.
8100 La Mesa Boulevard, Suite 150
La Mesa, California 91941-6476

Saddleback Meadows
Conceptual Mitigation and Monitoring Plan

TABLE OF CONTENTS

Section	Title	Page
	EXECUTIVE SUMMARY	1
I.	INTRODUCTION	3
II.	PROJECT DESCRIPTION	3
	A. Project Location	3
	B. Project Summary	4
	C. Responsible Party	4
	D. Existing Jurisdictional Areas and Riverside Fairy Shrimp Habitat	4
	E. Jurisdictional Areas to be Filled	6
	F. Function and Value of Jurisdictional Areas to be Impacted	6
III.	GOALS OF MITIGATION	7
	A. Type(s) of Habitat to be Preserved, Enhanced, or Created	7
	B. Functions and Values of Habitat to be Created/Enhanced	8
	C. Time Frame	9
	D. Estimated Costs	9
IV.	FINAL SUCCESS CRITERIA	9
	A. Target Functions and Values	9
	B. Target Hydrological Regime	10
	C. Target Jurisdictional Acreage to be Created/Enhanced	10
V.	PROPOSED MITIGATION SITE	10
	A. Location and Size of Mitigation Area	10
	B. Ownership Status	11
	C. Existing Functions and Values of Mitigation Area	11
	D. Present and Proposed Uses of Mitigation Area	11
	E. Jurisdictional Delineation	11
	F. Present and Proposed Uses of All Adjacent Areas	11
	G. Zoning	11
VI.	IMPLEMENTATION PLAN	11
	A. Rationale for Expecting Implementation Success	11
	B. Responsible Parties	13
	1. Project Proponent	13
	2. Landscape Architect	13
	3. Restoration Specialist	13
	4. Landscape Contractor	13

TABLE OF CONTENTS (cont.)

VI. IMPLEMENTATION PLAN (cont.)
C. Schedule....14
D. Site Preparation....15
E. Planting Plan....16
F. Irrigation Plan....18
G. As-Built Conditions....18

VII. MAINTENANCE DURING MONITORING PERIOD....19
A. Maintenance Activities....19
1. General Maintenance....19
2. Fencing....19
3. Weed Control....19
4. Disease and Other Pests....20
5. Pruning....20
6. Trash Removal....20
B. Responsible Parties....20
C. Schedule....21

VIII. MONITORING PLAN....22
A. Performance Criteria....22
B. Monitoring Methods....22
C. Annual Reports....23
D. Schedule....23

IX. COMPLETION OF MITIGATION....23
A. Notification of Completion....23
B. Agency Confirmation....24

X. CONTINGENCY MEASURES....24
A. Initiating Procedures....24
B. Alternative Locations for Contingency Mitigation....24
C. Funding Mechanism....24
D. Responsible Parties....24

XI. REFERENCES CITED....25

LIST OF FIGURES

No.	Title	Follows Page
1	Regional Location Map	3
2	Project Vicinity Map	3
3	ACOE Jurisdictional Areas	4
4	ACOE Jurisdictional Mitigation Areas	7

LIST OF TABLES

No.	Title	On or Follows Page
1	Impacts to ACOE Jurisdictional Areas on Saddleback Meadows	5
2	Saddleback Meadows Impacts and Mitigation for ACOE Jurisdictional Areas	8
3	Preliminary Schedule Guidelines for Mitigation Activities	14
4	Wetland Plant Species Palette	16
5	Weed Species List for Saddleback Meadows	20
6	Maintenance Schedule	21
7	Maintenance Monitoring Schedule for the Restoration Specialist	21
8	Annual Success Criteria Milestones for Saddleback Meadows	22

EXECUTIVE SUMMARY

This Conceptual Mitigation and Monitoring Plan provides project information, a conceptual mitigation plan, and a monitoring program for mitigation of impacted jurisdictional areas on the Saddleback Meadows property, located northeast of the City of Mission Viejo in Orange County. This Plan is based on site delineations conducted in 1998 and 1999 by Chambers Group, Inc. (Chambers Group) and 1995 by Sweetwater Environmental Biologists, Inc. (SEB). The form and content of this report is based on the U.S. Army Corps of Engineers (ACOE) Habitat Mitigation and Monitoring Proposal Guidelines (1993).

The 222-acre Saddleback Meadows project site contains approximately 1.66 acres of wetland communities and 3.63 acres of non-wetland Waters of the U.S. subject to ACOE jurisdiction under Section 404 of the federal Clean Water Act. One species listed as endangered by the U.S. Fish and Wildlife Service (USFWS), the Riverside fairy shrimp (*Streptocephalus woottoni*), has also been documented in the ephemeral ponds present on the site.

The proposed project would impact 1.26 acres of ACOE jurisdictional wetlands (0.40 acre of ephemeral ponds and 0.86 acre of mule fat scrub) and 1.49 acres of Waters of the U.S./streambed (drainages). In addition, the proposed project will also result in impacts to approximately 0.40 acre of federally endangered Riverside fairy shrimp habitat within the ephemeral pond basins.

The Mitigation Plan has been developed with five specific objectives:

1) **On-site Wetland Preservation** - Maximize the protection, to the extent practicable, of existing ephemeral ponds, their watersheds, and surrounding wetland vegetation within open space habitat on site;

2) **On-site Wetland Creation** - Maximize on-site creation of ephemeral ponds capable of supporting the Riverside fairy shrimp;

3) **On-site Non-wetland Waters of the U.S. Creation** - Stream courses will be reconstructed in their original location as part of the remedial grading. This will occur within areas of remedial grading that are outside of the conventional grading limits;

4) **Off-site Wetland Enhancement** - Create as much wetland vegetation along the fringe of these ephemeral basins as is hydrologically feasible. Any remaining mitigation requirements will be met through an off-site giant reed removal program.

5) **Off-site Non-wetland Waters of the U.S. Preservation** – Mitigate remaining impacts to non-wetland waters of the U.S. through acquisition of waters of the U.S. at an off-site location.

On site, mitigation for the loss of 0.4 acre of wetlands (ephemeral ponds) containing Riverside fairy shrimp will be mitigated at a 2.53:1 ratio to create a total of 1.01 acres. Impacts to 0.86 acre of remaining wetland habitat (mule fat scrub) will be mitigated at a 3:1 ratio with the creation of 0.78 acre of wetlands as mule fat scrub around the perimeter of the created ponds and the enhancement of 1.80 acres of riparian habitat. Enhancement will include purchasing credits in an Orange County sponsored program or other mitigation site acceptable to the Corps dedicated to the eradication of invasive non-indigenous species, mainly giant reed (*Arundo donax*) along an existing riparian corridor. Creation of ponds and the surrounding wetland vegetation requires the excavation, grading and contouring in disturbed upland areas or areas disturbed by remedial grading to form basins, and revegetating the margin of these areas with riparian cuttings, plantings and seeds of native understory species. The depth and shape of the constructed basins will be based on the contours of the existing ponds. In addition, soils from the bottom of the existing ponds will be collected prior to impacts and the collected soils, which include Riverside

fairy shrimp cysts, will be used to inoculate the created ponds. Additional mitigation measures include the installation of fencing to deter vandalism and other disturbance of the restoration site.

Impacts to 1.49 acres of Waters of the U.S. will be mitigated for on site by the creation of Waters of the U.S. within areas proposed for remedial grading previously supporting Waters of the U.S. (0.44 acre), and by off site by purchase of 1.05 acre of existing Waters of the U.S. Impacts will be mitigated at a 1:1 ratio for a total of 1.49 acres of mitigation.

This mitigation and monitoring plan provides information on the construction, maintenance, and monitoring of the on-site mitigation area as well as a description of the project goals and final success criteria. The on-site mitigation area will be monitored for five years, or until project specific success criteria outlined in this plan are achieved. Off-site mitigation credits purchased from Orange County will be implemented and monitored by the County of Orange. Alternatively, off-site restoration at an alternative mitigation site would be monitored for five years.

I. INTRODUCTION

This Conceptual Mitigation and Monitoring Plan provides project information, a conceptual mitigation plan, and a monitoring program for impacted ACOE jurisdictional areas and Riverside fairy shrimp habitat on the Saddleback Meadows property, located northeast of the City of Mission Viejo in Orange County. Mitigation for these impacts is required under the federal Clean Water Act and the federal Endangered Species Act. Impacts were determined based on site delineations conducted in 1998 and 1999 by Chambers Group, Inc. (Chambers Group) and 1995 by Sweetwater Environmental Biologists, Inc. (SEB). The form and content of this report is based on the U.S. Army Corps of Engineers' (ACOE) Habitat Mitigation and Monitoring Proposal Guidelines (1993). Mitigation for impacts occurring to California Department of Fish and Game jurisdictional areas, and other sensitive habitats, plants, and wildlife present on the Saddleback Meadows property will be covered in separate documents.

The development of this mitigation plan included the evaluation of several alternatives, including:

1) Using flatter portions of the property with good hydrology for on-site drainage mitigation.

   The proposed alternative gives higher priority to using the flat portions of the site for the creation of ephemeral ponds (Riverside fairy shrimp habitat).

2) Using uplands adjacent to existing drainages for on-site drainage mitigation.

   These uplands are occupied by southern sycamore woodland and coastal live oak woodland habitat. The proposed alternative gives higher priority to preserving these existing vegetation communities.

3) Reworking existing drainages in order to create new larger drainages.

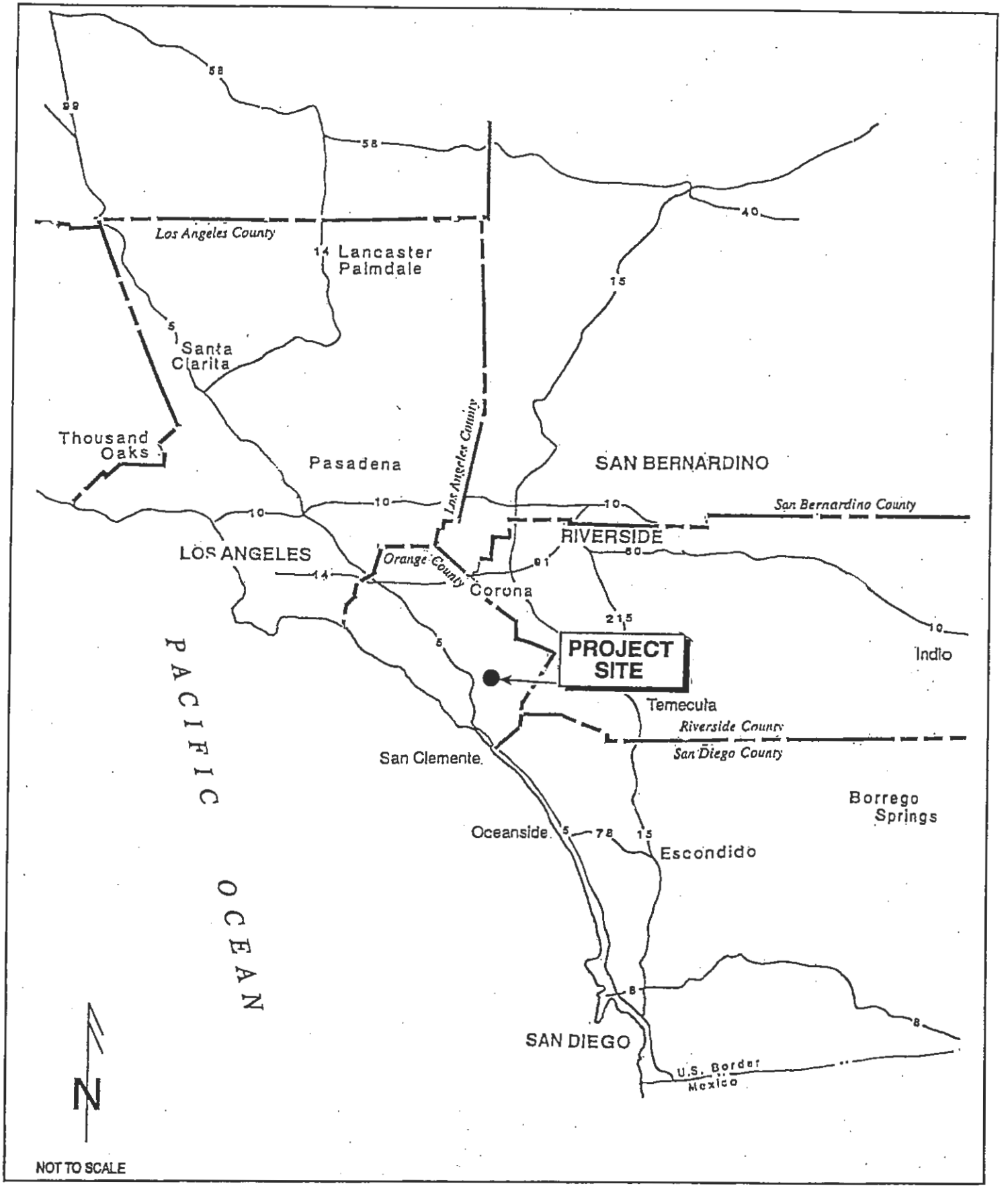
   The drainages not impacted by the project footprint are the higher quality of the on-site drainages. In addition, due to the steep terrain, the opportunity to achieve a "net gain" would be minimal. The proposed alternative does not rework existing drainages as this action would not provide measurable benefits for the level of disturbance it would require.

II. PROJECT DESCRIPTION

A. PROJECT LOCATION

Saddleback Meadows is a 222-acre site located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains (Figure 1). The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area (Figure 2). The site is located on the U.S. Geological Survey Santiago Peak and El Toro 7.5 minute quadrangles.

An active creek (Aliso Creek) runs north and south along the western boundary of the site. Residential communities are located to the south and west, pasture land is located to the east, and Saint Michael's Abbey is located to the north of the project site. The property is actively used for horse and cattle grazing. The intensive grazing combined with the presence of highly erodable soils on site has, over the years, resulted in extensive habitat degradation in both upland and wetland habitats. Significant erosion has also occurred within the drainages on site. The project site is mostly undeveloped except for a small corral in the central portion of the western half of the site, remnants of houses, and a few unmaintained roads.

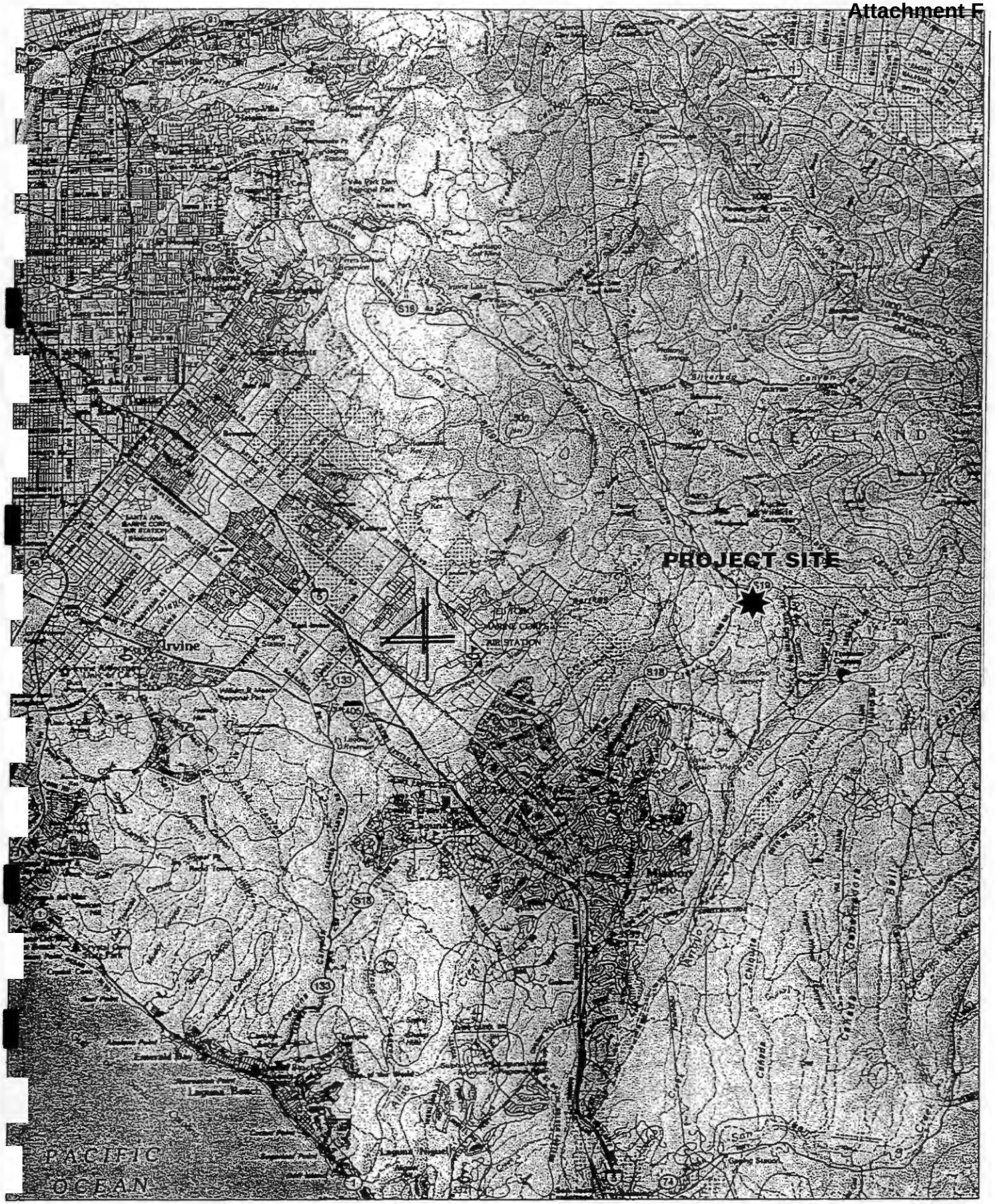


Regional Location Map

SADDLEBACK MEADOWS

Figure 1

HELIX



Project Vicinity Map

SADDLEBACK MEADOWS

Figure 2

HELIX

B. PROJECT SUMMARY

The proposed project entails the development of 299 single family residential lots, roads, and recreational trails on approximately 165 acres of the property. The development is concentrated in the north and south sections of the property, avoiding a steep ravine and associated oak woodlands near the center of the property. Approximately 159 of the properties 222 acres will be dedicated in permanent open space, including 90 acres dedicated to the County as an extension of O'Neill Regional Park. Manufactured slopes extending outside of the fuel modification zones will be revegetated with native vegetation. The current project configuration has been designed to avoid as much of the wetlands on site as possible, and to provide for an east-west wildlife corridor through the property to off-site open space areas located to the east and west. This east-west corridor is a critical component of the County of Orange's NCCP program.

C. RESPONSIBLE PARTY

California Quartet
c/o TPG Management
ATTN: Pike Oliver
777 Campus Commons Road, Suite 200
Sacramento, CA 95825

D. EXISTING JURISDICTIONAL AREAS AND RIVERSIDE FAIRY SHRIMP HABITAT

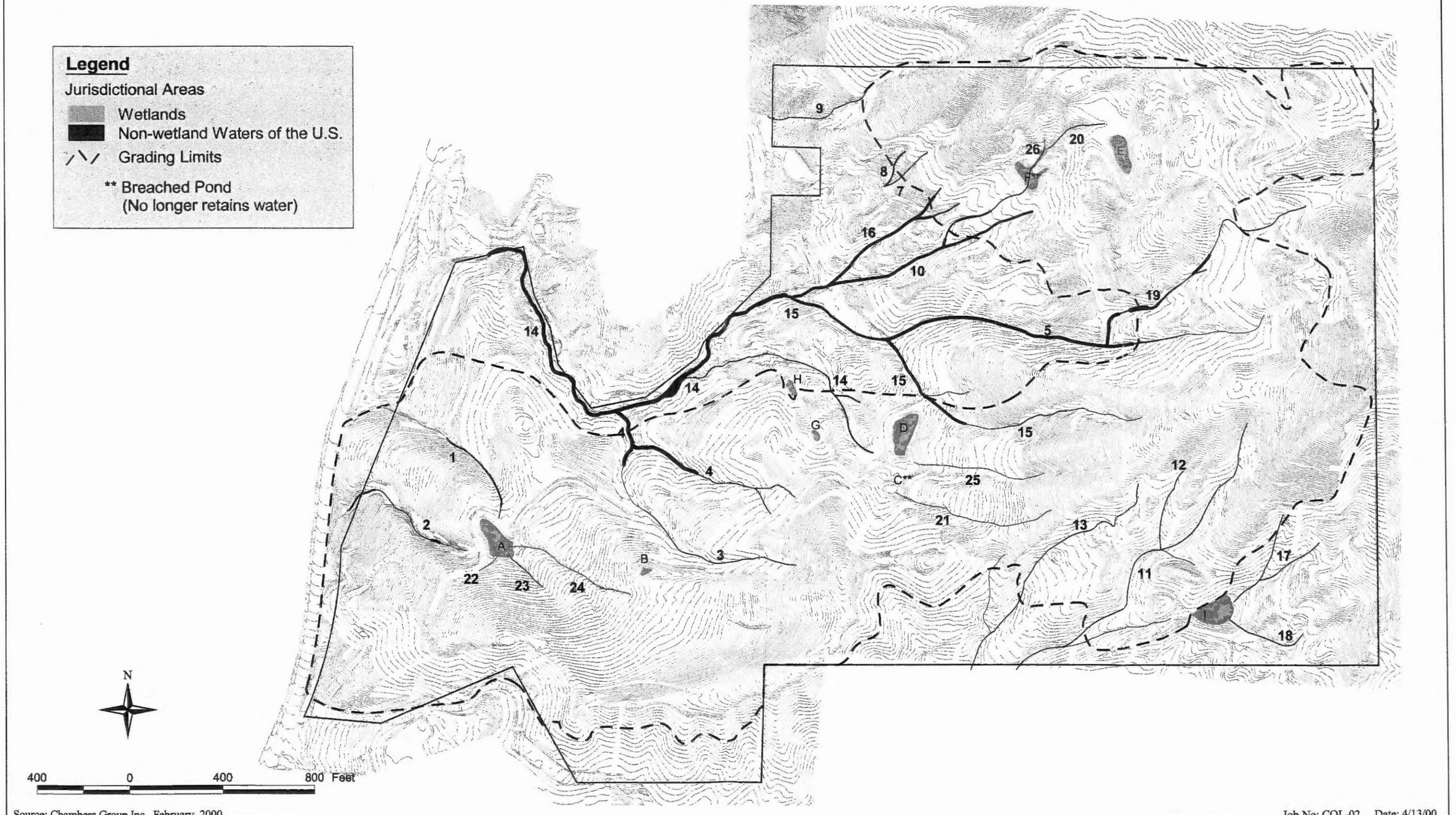
Several delineations have been conducted of the Saddleback Meadows property to identify areas subject to ACOE jurisdiction. SEB biologists conducted a jurisdictional delineation of the site in August 1995, and Chambers Group biologists delineated the project site on April 24 and May 21, 1998, and March 5, 12, and 18, August 5, and October 19, 1999. The delineations covered riparian plant communities and ponds within the project boundaries. In addition, all ephemeral ponds and drainages on the site were inspected for the presence of wetlands and ordinary high water marks. Additional information on the site delineations is available in the Jurisdictional Delineation of the Saddleback Meadows Property in Orange County (Chambers Group 2000).

The ACOE delineation was reviewed and refined with Vicki White of the ACOE during four field visits (January 13, July 8, December 15, 1999 and January 13, 2000). Mark Durham of the ACOE also participated in the December 15, 1999 field visit.

ACOE Jurisdictional Areas

A total of 5.29 acres on the site were determined to fall under ACOE jurisdiction, including 1.66 acres that meet the ACOE criteria for wetlands and 3.63 acres of Waters of the U.S. (Table 1; Figure 3). Wetlands on site are comprised of seven ephemeral ponds ringed by mule fat scrub, and additional patches of mule fat scrub occurring along drainages on site. Waters of the U.S. occur within several ephemeral and two intermittent drainages.

Ephemeral Ponds – The site contains a total of nine stock ponds, two of which have breached and no longer retain water. All but one of the ephemeral ponds present on Saddleback Meadows are not natural ponds, but rather man-made stock ponds created for cattle and other farming and ranching activities that have been present at the site for years. One basin, Pond E, may be a natural pond. The ponds are heavily degraded by cattle. For purposes of this analysis, it was assumed that the pond surface area extended to the maximum pond size based on the upper elevational limit of the dam used to create the pond. The ponds themselves are devoid of vegetation. The depth of these artificial ponds has created habitat suitable for Riverside fairy shrimp, which were found in six of the remaining ponds and on the site in 1994



Source: Chambers Group Inc. February, 2000

Job No: CQL-02 Date: 4/13/00

ACOE Jurisdictional Areas

SADDLEBACK MEADOWS

HELIX

Figure 1

(Simovich 1994), and are presumed to exist in the seventh. Approximately 0.48 acre of ephemeral pond habitat (calculated based on the sizes of the ponded basins) occurs on site.

Table 1
IMPACTS TO ACOE JURISDICTIONAL AREAS ON SADDLEBACK MEADOWS

HABITAT	EXISTING (acres)	IMPACTS (acres)		
		Project Footprint	On-Site Mitigation Area	TOTAL
ACOE Wetlands				
Ephemeral Ponds (with Riverside fairy shrimp)	0.48	0.40	-	0.40
Mule Fat Scrub	1.18	0.86	-	0.86
SUBTOTAL:	**1.66**	**1.26**	**-**	**1.26**
ACOE Waters of the U.S.				
Drainages	3.63	1.39	0.10	1.49
TOTAL:	**5.29**	**2.65**	**0.10**	**2.75**

Mule Fat Scrub - The wetland mule fat scrub communities on the project site are, for the most part, associated with the ephemeral ponds and are essentially riparian "islands" within the surrounding upland communities. Some additional mule fat scrub occurs along a few of the drainages. In both areas this plant community primarily supports mule fat (*Baccharis salicifolia*). A total of 1.18 acres of mule fat scrub habitat occurs on site, including 1.07 acres around the ephemeral ponds and 0.11 acre along drainages on site. Additional non-jurisdictional mule fat scrub habitat occurs in upland portions of the site.

Drainages – There are two types of drainages on site: approximately 19,750 linear feet of ephemeral drainages, which only contain water during and immediately after rain events, and approximately 3,314 linear feet of intermittent drainages, which contain water well beyond rain events and contain substantial riparian vegetation. A total of approximately 3.63 acres of drainages occur on site.

Riverside Fairy Shrimp

The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni)* occurs within the ephemeral ponds at the Saddleback Meadows site. The Riverside fairy shrimp is currently known only from five vernal pools in western Riverside County in the vicinity of Temecula and Rancho California (Eng et al. 1990); two locations in Orange County; 20 to 30 pools on Otay Mesa and at least one pool on Miramar in San Diego County; and one pool at an undisclosed location in northern Baja California, Mexico. In addition to vernal pools, Riverside fairy shrimp have been observed to occur in other habitats that provide adequate water depth for at least several weeks during the winter rainy season. These habitats include depressions created by tanks, basins created for collecting runoff from kelp drying operations, abandoned borrow pits, and other man-made depressions.

Fairy shrimp are ecologically dependent on seasonal water fluctuation and are typically found in ephemeral or vernal pools. The Riverside fairy shrimp is considered a warm water species; it hatches when water temperatures reach 15 to 17 degrees Celsius (Clyde Eriksen 1993 in MEC Analytical Systems, Inc. 1993). This warm water temperature dependency is the main factor in the temporal limitation of the species.

Larvae appear when water temperature ranges from 10 to 20 degrees Celsius (Hathaway et al. 1992), usually in late February or early March (Eng et al. 1990; Eriksen 1993 in MEC Analytical Systems, Inc. 1993). Riverside fairy shrimp require 28 days or more to reach maturity (Hathaway et al. 1992); therefore, this species usually occupies ponds that retain water later in the year. Adults live among loose, emergent vegetation (Eng et al. 1990) where they swim upside down to feed.

Studies on the life histories of other species of fairy shrimp provide the only information on the early development of these species.. Females lay up to 200 eggs which settle into the mud at the bottom of the ponds (Brown and Carpelan 1971). The eggs do not rest on the surface of the mud but settle into the top five to 10 millimeters of mud (when dry). The eggs remain viable for several years until the proper conditions for hatching are present.

Anthropogenic activities (urban and agricultural development, flood control, and off-highway vehicle use) that reduce the acreage of vernal pool complexes or alter the runoff patterns of the watersheds that feed pools have dramatically reduced population levels of all fairy shrimp species in southern California. The origin of the shrimp in the ephemeral ponds on site is unknown at this time but may be from relict populations, introductions from web-footed avian species, or transferred by cattle carrying mud bearing Riverside fairy shrimp eggs.

E. JURISDICTIONAL AREAS TO BE FILLED

Implementation of the proposed project will impact a total of 1.26 acres of jurisdictional wetlands, including 6 of the 8 ephemeral ponds and associated mule fat scrub, and additional mule fat scrub along drainages, and 1.39 acres of Waters of the U.S. within ephemeral and intermittent drainages on the site (Table 1).

F. FUNCTION AND VALUE OF JURISDICTIONAL AREAS TO BE IMPACTED

All but one of the ephemeral ponds present on Saddleback Meadows are man-made stock ponds created for cattle and other farming and ranching activities that have been present at the site for many years. All of the ponds have been heavily degraded by cattle and hold water at a depth and for a duration that prohibits the establishment of vegetation. On site, the ephemeral ponds serve as habitat for two sensitive species, the federally endangered Riverside fairy shrimp and the western spadefoot toad, a federal and state special concern species, respectively. In addition to these two species, the ponds serve to provide water to a variety of wildlife during the winter rainy season, when they fill with water; however, because of their small size and lack of vegetation, they are not likely to provide other habitat functions for wildlife. When the ponds are dry they contribute acreage to upland open space that may be used by many wildlife species in passing.

Wetland habitat, such as the mule fat scrub at the perimeter of the ephemeral ponds and a few drainages on site, is naturally limited and remaining acreage provides important island habitats for migrant birds and other wildlife species. Other important functions of wetland habitat include flood conveyance; flood storage; control of water quality and erosion; providing surface water and insects for fish, amphibians, and birds; spawning grounds for aquatic fauna; habitat for rare and endangered species; and corridors for wildlife movement.

Impacts to wetlands and Waters of the U.S. are regulated by the ACOE under Section 404 of the Clean Water Act.

III. GOALS OF MITIGATION

The development of the mitigation plan involved an iterative process that first focussed on on-site preservation. Remaining impact mitigation then focused on use of the flatter portions of the open space for creation of ephemeral ponds, with the surrounding area used for wetland creation. Other areas of on site open space were also assessed for their potential for use as additional mitigation areas including existing drainages. Widening existing drainages on site would result in greater impacts to wetland and upland habitats and were therefor not selected.

The Mitigation Plan has been developed with five specific objectives:

1. **On-site Wetland Preservation** - Maximize the protection, to the extent practicable, of existing ephemeral ponds, their watersheds, and surrounding wetland vegetation within open space habitat on site;

2. **On-site Wetland Creation** - Maximize on-site creation of ephemeral ponds capable of supporting the Riverside fairy shrimp;

3. **On-site Non-wetland Waters of the U.S. Creation** - Stream courses will be reconstructed in their original location as part of the remedial grading. This will occur within areas of remedial grading that are outside of the conventional grading limits;

4. **Off-site Wetland Enhancement** - Create as much wetland vegetation along the fringe of these ephemeral basins as is hydrologically feasible. Any remaining mitigation requirements will be met through an off-site giant reed removal program.

5. **Off-site Non-wetland Waters of the U.S. Preservation** – Mitigate remaining impacts to non-wetland waters of the U.S. through acquisition of waters of the U.S. at an off-site location.

The intent of this wetland mitigation is to create and enhance riparian habitats on site to ensure no net loss of habitat values. The plan also provides criteria and recommendations for the protection, enhancement, maintenance, and management of the natural resources located within the mitigation areas. Given the disturbed nature of the basins being impacted, the plan provides the potential for a net increase their value over the long-term.

A. TYPE(S) OF HABITAT TO BE PRESERVED, ENHANCED, OR CREATED

On-site Wetland Preservation

On site, approximately 159 acres of habitat located outside of the fuel modification zone will be preserved as open space, including 90 acres dedicated to the County as an extension of O'Neill Regional Park. This open space will include the preservation of 0.38 acre of ACOE jurisdictional wetlands (occurring as ephemeral ponds and mule fat scrub), and 2.14 acres of Waters of the U.S. (occurring as drainages). Several measures will be taken to minimize impacts related to construction and protect the biological values of this open space. Impacts to remaining open space will be minimized through project scheduling and construction monitoring and the installation (pre-construction) of high visibility orange fencing and silt fencing at the construction limits (where applicable). A delayed start date for the construction will allow for the salvage/collection of native materials such as mule fat cuttings and soils containing Riverside fairy shrimp cysts from the development site. Mitigation will be initiated prior to project construction to minimize the temporal loss of wetland habitat functions and values.

The project has been designed to preserve wetland habitat consisting of two ephemeral ponds totaling 0.08 acre, and an additional 0.30 acre of mule fat scrub around the perimeter of the ponds. Both ponds

will be protected in perpetuity as part of the dedicated open space for the project. Riverside fairy shrimp have been previously observed in both ponds and the ponds are expected to continue to serve as habitat for this species. Additional measures will be taken to protect the function of these ponds as Riverside fairy shrimp habitat. To this end, the ponds and their associated watershed, or at least a five-foot buffer zone (whichever is greater), will be permanently fenced along the development edge to preserve their functions and values. Watersheds of these pools will be enhanced by native upland habitat restoration. Signs will be posted labeling the areas as sensitive habitat. These measures are intended to decrease potential impacts from humans and domestic animals. In the past, two ephemeral ponds on the project site have been destroyed by erosion that has breached the man-made dams built to create them. Any future measures required to protect the functions and values of the two remaining ponds will be undertaken as part of the regular open space maintenance.

On-site Wetland Creation

Mitigation for the loss of ephemeral ponds and associated mule fat scrub habitat, will include the creation of new ephemeral ponds and together with some associated mule fat scrub habitat (Figure 4). On site, space available for pond creation is limited by the topography of the preserved land since the open space consists mainly of steep canyons. Given the topographical and hydrological constraints for creating self-sustaining ephemeral ponds, this mitigation plan provides for the creation of approximately 1.01 acre of ephemeral ponds and 0.78 acres of associated mule fat scrub habitat on site. This results in a 2.53:1 mitigation ratio for the ponds. The on-site mitigation will occur in areas currently containing disturbed upland habitat, including annual grassland, and a small patch of non-jurisdictional mule fat scrub.

On-site Non-wetland Waters of the U.S. Creation

Mitigation for loss of non-wetland waters of the U.S. will be mitigated on site within areas of remedial grading that are outside of the conventional grading limits. In these areas, stream courses will be reconstructed in their original location as part of the remedial grading. This will result in approximately 0.44 acre of non-vegetated Waters of the U.S. within constructed drainages.

Off-site Wetland Enhancement

The remaining mitigation requirements for impacts to wetlands (1.80 acres of mitigation) will be mitigated for off site by enhancing 1.80 acres of existing riparian habitat. Mitigation credits for this will be purchased from the County of Orange to contribute to their riparian corridor enhancement program. Alternatively, mitigation will occur at a site acceptable to the ACOE. The program includes the removal of giant reed (*Arundo donax*) and other invasive non-natives from existing native riparian habitat. If conducted along Aliso Creek, the enhancement will benefit the on site portion of the creek by removing non-native species upstream of the project site.

Off-site Non-wetland Waters of the U.S. Preservation

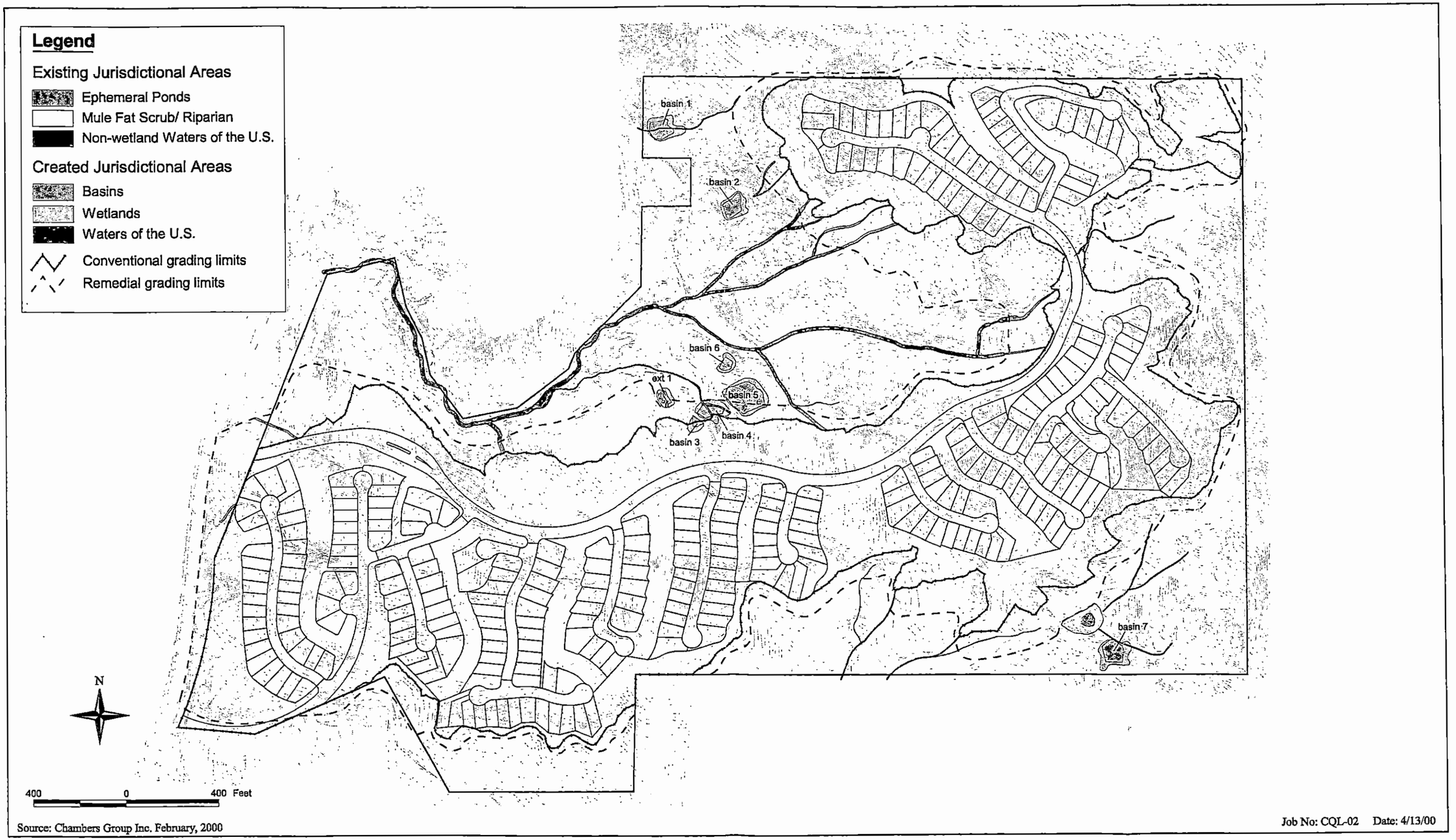
Remaining mitigation requirements for Waters of the U.S. (1.05 acre) will be provided through acquisition of 1.05 acre of Waters of the U.S. (including unvegetated Waters, vegetated Waters, or wetlands) at the Edison Viejo preserve or other site acceptable to the ACOE.

A summary of existing conditions, impacts, and mitigation for ACOE areas is summarized in Table 2.

B. FUNCTIONS AND VALUES OF HABITAT TO BE CREATED/ENHANCED

On-site Wetland Creation

The Mitigation and Monitoring Plan is designed to present a program that will enable the project site to sustain native vegetation and provide suitable habitat for the Riverside fairy shrimp. Once revegetation is



Source: Chambers Group Inc. February, 2000

Job No: CQL-02 Date: 4/13/00

ACOE Jurisdictional Mitigation Areas

SADDLEBACK MEADOWS

HELIX

Table 2
SADDLEBACK MEADOWS IMPACTS AND MITIGATION
FOR ACOE JURISDICTIONAL AREAS

HABITAT	EXISTING (acres)	IMPACTS (acres)			MITIGATION (acres)			
		Project Footprint	Mitigation Area	TOTAL	Ratio	Habitat Creation	Habitat Enhancement	TOTAL
Wetlands								
Ephemeral Ponds (with Riverside fairy shrimp)	0.48	0.40	-	0.40	2.53:1	1.01	-	1.01
Mule Fat Scrub	1.18[1]	0.86[2]	-	0.86	3:1	0.78	1.80	2.58
SUBTOTAL:	**1.66**	**1.26**	**-**	**1.26**		**1.79**	**1.80**	**3.59**
Waters of the U.S.								
Drainages	3.63	1.39	0.10	1.49	1:1	0.44	1.05[3]	1.49
TOTAL:	**5.29**	**2.65**	**0.10**	**2.75**		**0.44**	**3.47**	**5.27**

1 Approximately 1.07 acres of mule fat scrub surround the ephemeral ponds and 0.11 acre is located along drainages on site.
2 Impacts will occur to approximately 0.77 acre of mule fat scrub around the ephemeral ponds and 0.09 acre along two drainages.
3 Acquisition of existing Waters of the U.S.

implemented and becomes established, it will provide a site that will minimize erosion, be resistant to invasion by non-native plant species, and increase biotic interactions between micro- and macroorganisms, thus creating a nutrient system in which organic matter and nitrogen are cycled in a self-sustaining system.

On-site Waters of the U.S. Creation

Constructing Waters of the U.S. in areas proposed for remedial grading will restore and potentially enhance the function and value of these drainages. Removal of the cattle, grading the channels to a design to minimize erosion, and revegetating the channel and adjacent uplands with native species will enhance the functions and values.

Off-site Wetland Enhancement

The off-site mitigation area already serves many of the functions and values of wetland systems. The removal of invasive non-native species will allow native species cover to increase, thereby improving the quality of the habitat for native wildlife. In addition, the removal of giant reed will decrease chances of fire and flood within the riparian habitat, thereby decreasing chances for disturbances that could favor the re-establishment of non-native species.

C. TIME FRAME

The wetland mitigation and monitoring program for Saddleback Meadows will take place over a five-year period, after installation of the creation areas is complete. The success criteria described below for this project must be met by the end of this period (Section IV of this document).

D. ESTIMATED COSTS

The cost of the mitigation described in this document is expected to be approximately $150,000. This amount includes site preparation, installation, maintenance, and monitoring (including maintenance monitoring reports and annual technical reports) for the five-year period.

IV. FINAL SUCCESS CRITERIA

The following sections provide standards to determine the successful completion of the habitat creation outlined above. Attainment of these standards indicates that the mitigation area is progressing toward the target functions and values specified for this plan. The methods to be used to measure these success criteria are described is section VIII A of this document. If at any time functions in these areas do not appear to be meeting the performance standards set forth in the mitigation plan, California Quartet will be responsible for taking timely remedial actions (as determined by the Restoration specialists) to ensure compliance with the performance standards.

A. TARGET FUNCTIONS AND VALUES

The goal of the wetland creation is to progress toward the performance standards detailed below, including the ability of the project site to sustain native wetland vegetation, provide suitable habitat for the Riverside fairy shrimp, and provide habitat for other riparian habitat-dependent wildlife species.

Performance Standards for Created Wetlands

The performance standards for the created ephemeral ponds are based on their value to Riverside fairy shrimp. The creation of a hydrological regime that allows a self-sustaining population of Riverside fairy shrimp to exist will be the benchmark for determining the success of the created ponds.

Riparian habitat performance standards for created areas are based on the progress of these wetland areas toward targets developed from plant and animal species diversity and percent cover of vegetation wetland areas remaining on site. The goal of the mitigation plan is to establish habitat that will be used by resident riparian habitat species as well as by migratory birds. Observations of wildlife and plant species within the mitigation area and an on-site reference area shall be recorded during site visits.

Performance Standards for On-site Waters of the U.S. Creation

Creation of the drainages within the previous locations for these drainages will be the goal. No performance standards are proposed other than the constructed channels will provide a minimum of 0.44 acre of channel area; however, repairs during the five-year monitoring period may be required for these structures to maintain their function and minimize erosion.

Performance Standards for Off-site Wetland Enhancement

Payment of a fee to enhance 1.80 acres of riparian habitat will fulfill any obligation by the applicant, therefore, performance standards are not applicable to this area. If the County of Orange sites are not an option, success criteria would be developed in consultation with the ACOE.

B. TARGET HYDROLOGICAL REGIME

The ephemeral ponds require seasonal ponding of water to support Riverside fairy shrimp. A study of the hydrogeomorphology and dynamics of the existing ponds is currently in process. The yearlong study will provide the detailed information needed to create the exact specifications for the proposed ponds, including the target hydrological regime. Variables included in the study are topography and bank contours of the existing ponds, period(s) of inundation, watershed size , and water quality analyses. Soils at the proposed sites will also be tested for permeability characteristics.

C. TARGET JURISDICTIONAL ACREAGE TO BE CREATED / ENHANCED

Implementation of this mitigation plan will result in the creation of 1.01 acres of wetlands as ephemeral ponds ringed by 0.78 acres of jurisdictional wetlands as mule fat scrub on site. The 1.01 acres of ephemeral ponds will also serve as Riverside fairy shrimp habitat. Approximately 0.44 acre of Waters of the U.S. would be created on-site. In addition, 1.80 acres of existing off-site riparian habitat along Aliso Creek that has been degraded by giant reed will be enhanced to improve its wetland function and value.

V. PROPOSED MITIGATION SITE

A. LOCATION AND SIZE OF MITIGATION AREA

On-site Wetland Creation

The wetland creation area will be located on site in areas that are deemed suitable based on soils (i.e., soil texture and structure), topography, location within the same watershed, and potential for wildlife use. Suitable on site creation areas are limited, therefore, the most critical restoration, the creation of the

ephemeral ponds, is planned for these areas. Waters of the U.S. will be recreated within remedial grading areas previously supporting these channels.

Figure 4 shows the locations of the proposed ponds and associated riparian habitat, as well as the created Waters of the U.S. These ponds will be modeled after those currently existing on the Saddleback Meadows site. The impoundment will be situated to collect surface flows from the surrounding native habitat to ensure that a self-sustaining, ephemeral pond is created. The sites selected for the proposed ponds are located within the same watershed of the present impoundments, and in the open space preserve areas of the project.

Off-site Wetland Enhancement

The wetland enhancement area is located within Orange County. County owned riparian areas potentially available for enhancement include a portion of Aliso Creek located upstream of the project site, and portions of the Santa Ana River. The final location of wetland enhancement will be determined in consultation with the County of Orange and the ACOE.

B. OWNERSHIP STATUS

The project applicant California Quartet, owns the proposed mitigation area. The County of Orange owns the riparian enhancement area.

C. EXISTING FUNCTIONS AND VALUES OF MITIGATION AREA

The pond mitigation areas currently do not have wetland functions and values. They consist primarily as disturbed upland habitats that have been degraded by many years of grazing. The Waters of the U.S. functions and values vary for the Waters of the U.S. being impacted and restored within the remedial grading areas. A majority of these areas are unvegetated Waters of the U.S. that have been degraded by the ongoing cattle grazing. A limited area supports vegetated Waters of the U.S.

D. PRESENT AND PROPOSED USES OF MITIGATION AREA

Currently, the on-site mitigation areas are undeveloped. All of the on-site mitigation areas are proposed for open space preservation.

E. JURISDICTIONAL DELINEATION

The on site mitigation area was delineated in conjunction with the delineation for the project site. The areas currently proposed for mitigation are not ACOE jurisdictional areas; however, due to hydrological requirements for wetland creation, at least some of the created basins and mule fat scrub are for areas located adjacent to existing non-wetland Waters of the U.S.

F. PRESENT AND PROPOSED USES OF ALL ADJACENT AREAS

On site, areas immediately adjacent to the created wetlands will be preserved as open space, wherever possible. The remainder of the site will be developed into a residential complex.

G. ZONING

There is no plan to change the zoning of the mitigation area.

VI. IMPLEMENTATION PLAN

A. RATIONALE FOR EXPECTING IMPLEMENTATION SUCCESS

On-site Wetland Creation

Ephemeral ponds have been successfully restored or created at various locations in California. A recent review of vernal pool rehabilitation and creation projects in San Diego County determined that most of the pools created adjacent to existing habitat successfully sustained populations of *Pogogyne abramsii*, a vernal pool plant specialist, over a period of 5 to 10 years (Black and Zedler 1998). A review of the Del Sol Reserve vernal pool project in Santa Barbara County also demonstrated that pools created and restored in 1986, are self-sustaining and support native vernal pool plant species (Ferren et al. 1998). Surveys conducted in 1996 found that the density and composition of macroinvertebrate populations, including several species of fairy shrimp, in vernal pools constructed in Folsom, California in 1994 were similar to that of adjacent reference pools (Rogers 1998).

Riverside fairy shrimp also occur in a single vernal pool on the nearby Edison property. The contours of the Edison property pool had, in the past, been disturbed with heavy equipment that increased the depth of the pool (K. Gould, pers. com.). It is not known if the pool supported fairy shrimp prior to the disturbance.

Populations of other species of fairy shrimp have been successfully relocated to man-made ephemeral pools using inoculum taken from existing pools (T. Bomcamp, pers. com.), and it has been done successfully by the authors of this report. Thus, it is reasonable to expect that ponds created in similar topography and soils on the Saddleback Meadows site will successfully support this species. Generally, created pools inoculated with propagules taken from adjacent or nearby vernal pool complexes were more successful in sustaining populations of vernal pool species. The ponds at Saddleback Meadows will be designed using the methods of past successful projects as guidelines.

Measures outlined in guidelines described by the U.S. Fish and Wildlife Service (De Weese 1998) will be incorporated into the construction, maintenance, and monitoring of the created ponds to ensure their successful creation. These measures include:

- The mitigation site will be located in an area that currently supports ephemeral ponds and has appropriate soil types (same series). An adequate buffer (> 100') will be created between the pond habitat and the preserve boundary.
- Excavation of side slopes and pond bottoms will mimic that of the existing ponds to duplicate hydrologic depth, surface area, and inundation periods.
- Two existing on site ponds will be preserved and managed to maintain the populations of Riverside fairy shrimp and for use as reference ponds.
- Hydrology staff gauges will be installed within the constructed and preserved ponds to facilitate monitoring of inundation periods. The hydrology will be monitored weekly during the wet season.
- Riverside fairy shrimp and other invertebrate populations will be monitored in the created and reference ponds once a month while the ponds hold water.
- Water quality, including temperature, turbidity, and conductivity, will be monitored in the created and reference ponds.

- Regular maintenance inspections will be performed to monitor for uncontrolled human disturbance, trash, and unexpected conditions (erosion, water run-off pollution, etc.).

Overall, success of the mitigation implementation plan is expected based on the following rationale:

- Plant material (seeds, container plants and cuttings) to be used for the revegetation effort will be derived from on site material, which is anticipated to be adapted to the site conditions. Cuttings collected from the development site will also preserve the genetic integrity of the willow and mule fat populations.

- Populations of fairy shrimp have been successfully relocated to man-made ephemeral ponds using inoculum (soils) taken from existing ponds.

- The mitigation site is located within a system that supports coastal sage scrub, coast live oak woodlands, and riparian habitat. The existence of these habitats provide support for the conclusion that the wetlands can be sustained.

- Exotic species to be removed within the site will reduce competition with existing native species and plantings associated with the revegetation project and enhance the site's ecological value.

- Removal of cattle is also expected to reduce the level of disturbance to the site.

- The revegetation site will be planted with cuttings and container plants at a relatively high density and seeded with a native herbaceous seed mix which would impede the recolonization of invasive non-native plant species.

B. RESPONSIBLE PARTIES

1. Project Proponent

California Quartet
c/o TPG Management
ATTN: Pike Oliver
777 Campus Commons Road, Suite 200
Sacramento, CA 95825

The project proponent and owner will be responsible for financing pre-grading plan hydrological testing, installation, maintenance, and monitoring of the habitat creation. In order to ensure the success of mitigation, the project proponent will enter into a five-year, secured agreement with the ACOE to cover the projected cost to install, monitor, and report on the mitigation. This agreement should be in the form of a 120 percent bond. The bond should be structured so that portions of the bond may be released as interim milestones are met (subject to negotiation between the proponent and the ACOE).

2. Landscape Architect

An ACOE approved landscape architect will be selected for this project. The licensed landscape architect shall prepare the construction drawings to accompany this mitigation plan. The construction drawings shall be reviewed and approved by the restoration specialist.

3. Restoration Specialist

Monitoring of mitigation site preparation and installation, as well as maintenance/technical monitoring after site installation shall be the responsibility of a biologist, landscape architect, horticulturist, or other

person knowledgeable in native habitat creation/restoration. After each visit, the restoration specialist shall provide the project proponent and installation/maintenance contractor with a written checklist of maintenance items in need of attention, if any. All requests for work that are in addition to a contractor's scope of work, shall first be approved by the project proponent. The restoration specialist shall educate the installation and maintenance contractors with regard to mitigation goals and requirements and will be responsible for tracking and preparing all required reports for submittal to the respective agencies

4. Landscape Contractor

The landscape contractor must be educated as to the installation and maintenance of native plants. This contractor shall be responsible for completion of grading, pre-planting weed control, irrigation system installation, planting, seeding, and final as-built plans.

Once the restoration specialist has verified the completion of the previous list of items, a 120-day installation maintenance period will begin. The landscape contractor shall be required to maintain the entire mitigation area at least once a month during this period. The landscape contractor shall meet the restoration specialist at the site, when requested, and shall perform all maintenance items in need of attention in a timely manner. Maintenance tasks include, but are not limited to, dead plant replacement, reseeding, irrigation system repair, and weed control. At the end of the installation maintenance period, the restoration specialist will certify completion of the installation contract, provided all installation and maintenance tasks have been completed. The project proponent may change contractors at its discretion.

After the installation contract is certified as complete, site maintenance will be conducted by the landscape contractor for the five-year monitoring period. The contractor is responsible for actual implementation of the mitigation plan specifications and shall maintain the entire mitigation area according to a specified schedule. Maintenance tasks include, but are not limited to, dead plant replacement, reseeding, irrigation system repair, and weed control. The landscape contractor shall meet the restoration specialist at the site, when requested, and shall perform all maintenance items in need of attention in a timely manner. The project proponent may change contractors at its discretion. The landscape contractor will coordinate closely with the restoration specialist to ensure that the specifications of the mitigation plan are properly implemented.

C. SCHEDULE

Execution of the mitigation plan, including the relocation of Riverside fairy shrimp and implementation of the revegetation project, is to be completed no later than December 31, 2000. Vegetation may be installed between October 1 and March 31 to take advantage of the winter rainy season. Any schedule modifications will be granted upon approval in writing by the ACOE.

If for any reason the plant materials (seeds and container plants) are undeliverable or rejected by the restoration specialist, planting will be completed as soon as desirable materials are available and the planting season is appropriate. The preliminary schedule guidelines for mitigation activities is outlined in Table 3.

Planting and then seeding shall occur between November 15 and March 15 to take advantage of winter rains. Since irrigation will be provided for the container stock, planting (but not seeding) could occur into spring, but extreme care would need to be taken not to trample the previously spread seed mix.

Table 3 PRELIMINARY SCHEDULE GUIDELINES FOR MITIGATION ACTIVITIES
Mitigation Site Contracts Schedule
• Contract with Restoration Specialist
• Contract for plant materials
• Contract with earthmovers, schedule pond grading
• Restoration specialist and construction contractors attend pre-construction meeting(s)
• Contract with landscape contractor
• Contract with landscape architect (if Restoration Specialist determines irrigation a necessity)
Mitigation Site Preparation (September through November)
• Surveyor identifies restoration areas (verified by Restoration Specialist)
• Grade grasslands and create pond/wetland contours (Restoration Specialist present during grading activities)
• Pretreat site for weeds, if necessary
• Remove non-organic debris and vegetation material under guidance of Restoration Specialist
• Transfer inoculum from impact area ponds to replacement ponds
Planting (November through March)
• Schedule plant materials delivery date and planting crew
• Verify planting scheme for landscape contractor
• Collect/salvage suitable plant material from development site
• Cuttings and container plants installed
• Seed application
• Coordinate replacement plantings
• Install replacement plantings (monitored by Restoration Specialist)
• Install plant fencing (if herbivory is a problem)
Maintenance and Monitoring
• See guidelines outlined in Sections VII and VIII of this report
Documentation
• Revegetation specialist submits annual reports to the ACOE by January 1 each year following implementation

D. SITE PREPARATION

Wetlands and Open Space Remaining On Site

Recommendations are presented to protect biological and aesthetic values of the natural habitats within the project site that are not directly affected by the proposed project. Impacts will be minimized through project scheduling and construction monitoring. A delayed start date for the construction will allow for the salvage/collection of native materials from the development site such as mule fat cuttings and Riverside fairy shrimp. Mitigation will be started before project construction to minimize the temporal loss of wetlands habitat function. Specific measures to protect sensitive resources are discussed below.

Measures to protect Riverside fairy shrimp in ponds outside of the project footprint include:

- Construction fencing; and
- Silt fencing or other erosion protection devices around the construction limits to prevent the flow of sediment into the ponds.

Wetland Creation Area

Fencing – Orange plastic snow fencing (or other similar device) will be used to define limits of grading. Where possible, fencing will be located no closer than 15 feet from the dripline of all trees identified for protection.

Grading – A grading plan will be developed for the new ponds based on their position in the watershed, and the contours of the existing ponds. The new ponds will mimic as closely as possible the depths and areas of the existing ponds. A study of the hydrogeomorphology and dynamics of the existing ponds is currently in process. The yearlong study will provide the detailed information needed to create the exact specifications for the proposed ponds. Variables included in the study are topography and bank contours of the existing ponds, periods of inundation over time, watershed, and water quality analyses. Soils at the proposed sites will also be tested for permeability characteristics. Rough grading contours will be deep enough to allow for the application of a surface soil layer removed from the existing ponds.

Erosion Control – Only non-vegetative erosion control measures may be used in areas with native vegetation. Such erosion control measures may include sandbags, soil binders, waterbars, trenches, or dissipators. These measures preclude the introduction of non-native weedy species into the seed bank of areas with native vegetation. Drainage and sedimentation control devices will be routinely cleaned, maintained, and repaired prior to and during the rainy season. All repairs to these systems will be immediately executed to minimize erosion problems.

Debris – Garbage and debris will be removed from all areas of the mitigation site. Dead or downed wood will not be removed except as required for safety reasons, flood control or fuel modification because they provide important microhabitats for small vertebrates and invertebrates.

Transplanting Inoculum and Food Resources – After finish grading of the relocation ponds, the upper 24 inches of soils from existing ponds will be collected and spread over the bottom of the relocation ponds in two layers. The top layer shall be 1" deeper than the cracks in the soil and the second layer will be the remaining depth to 24". It is essential that the top soil layer salvaged is placed on the surface of the created basins. Initial grading of the mitigation site must include over excavation to allow for placement of the salvaged soil. Relocation ponds must also support a sufficient prey base population. If ponds do not support a sufficient algae population, they will be inoculated with resources from the original ponds.

Mitigation for the fairy shrimp consists of translocating the species to the newly created ponds. Soil that is salvaged from the existing stock ponds will be placed in the bottoms of the new ponds to translocate Riverside fairy shrimp eggs. Loose, emergent vegetation will be planted within the ponds for adult fairy shrimp to live among, although they currently exist without it.

Riverside fairy shrimp eggs should be salvaged by removing at least the top 10 millimeters of dry mud which should then be stored in a cool, dry place until the mitigation ponds are constructed. If the existing ponds are not entirely dry, then mud should be taken from the ring of dry mud surrounding the remaining water. The dry mud should be placed at the bottom of the newly created ponds, and it should not be inverted, mixed, or broken up.

Vegetation Replacement – If any vegetation is removed, it will be replaced through seeding, container plantings, or both.

Wetland Enhancement Area

Appropriate areas of habitat containing giant reed will be identified.

E. PLANTING PLAN

Planting Materials and Methods

The plants selected for the wetland areas are based mainly on those species currently found around the perimeter of the existing ponds. The pond basins are not currently vegetated, therefore, no vegetation will be placed into the basins of the created ponds. The wetland plant species palette is presented in Table 4.

Table 4
WETLAND PLANT SPECIES PALETTE

Common Name	Scientific Name	Occurrence	Minimum Density/ Acre	Distribution
Upper Canopy-Lower Benches				
Black willow	*Salix goodingii*	Subdominant	30	Scattered
Lower Canopy				
Mexican elderberry	*Sambucus mexicana*	Dominant	40	Scattered
Mule fat	*Baccharis salicifolia*	Dominant	250	Groups: 5-20
Herbaceous Layer (Seed Mix)				
Mugwort	*Artemisia douglasiana*	Dominant	5 lbs/acre	---
Meadow barley	*Hordeum brachyantherum*	Dominant	12 lbs/acre	---
Western ragweed	*Ambrosia psilostachya*	Subdominant	6 lbs/acre	---
Beardless wild rye	*Elymus triticoides*	Subdominant	8 lbs/acre	---
Spikerush	*Eleocharis macrostachya*	Subdominant	1 lb/acre	---
Toad rush	*Juncus bufonius*	Subdominant	1 lb/acre	---

To ensure successful recreation of the current conditions, cuttings will be collected from the existing ponds for utilization at the new sites. Optimally, vegetation will be collected during the cooler fall months; the weather is cooler and the vegetation is generally in a dormant or very slow growing phase. After collection of seed and plant materials, planting will begin during the fall to take advantage of the rainy season.

Species comprising the shrub understory and willow trees, will be installed as rooted cuttings, liners, and 1-gallon plants at elevations of approximately 4 to 12 feet above groundwater. The mule fat scrub area will provide cover and forage habitat in areas receiving surface flows. Rooted cuttings of mule fat and willows will be planted in natural groupings. An herbaceous understory of mugwort, meadow barley, western ragweed, and beardless wild rye will be hand seeded on the upper perimeter of the impoundment to control erosion and to provide cover and habitat for ground foraging animals.

All container stock shall be planted in a hole at least twice the diameter of the container and twice the depth. Backfill shall not be amended. The top of the root ball shall be set one inch above finish grade. A mulched zone shall then be established around each container plant, extending for at least 18 inches from the base of the plant. The mulch shall be two to four inches thick and must not come in contact with the collar of the plant.

No fertilizers shall be applied because of the presence of Riverside fairy shrimp in the ponds

Contract Growing and Plant Material Sources - Arrangements shall be made as soon as possible in advance of the expected planting date, either by the project proponent or the installation contractor, to acquire container plant materials and seed required for habitat creation. An additional 10 percent of the total number of container plants shall be grown to replace those that die. An additional 10 percent of the seed mix shall be procured in case reseeding is necessary. A copy of the plant material contract shall be submitted to the restoration specialist as verification of acquisition. Contract growing and seed collection shall be conducted by an experienced native plant nursery or seed company such as, but not limited to, Tree of Life Nursery, San Juan Capistrano, California; Mockingbird Nursery, Riverside, California; and/or S&S Seeds, Carpinteria, California.

It is preferred that the source of all plant material used at the site be from the drainage on site or as close to the site as possible. If necessary, the restoration specialist shall help the grower locate acceptable local sources for plant materials.

Substitutions - No species shall be substituted without approval from the restoration specialist. If the project proponent or installation contractor is unable to obtain the proper species (and sizes) specified by the time of planting, commencement of the 120-day installation maintenance period shall be delayed until all plants specified are in the ground. Substitution of plant material at the time of planting depends solely upon the discretion of the restoration specialist in consultation with the landscape architect. Any substitutions that are approved shall be documented by the installation contractor in the final set of as-built plans.

Plant Material Inspection - All plant materials shall be inspected by the restoration specialist and approved as healthy, disease free, and of proper size prior to planting. Overgrown, root-bound container stock will be rejected. In addition, the restoration specialist shall approve the final layout of all plant materials in the field prior to planting to ensure their correct ecological positioning (e.g., plants are not installed in rows).

Container Plant Guarantees - All plants determined to be dead or terminally diseased shall be replaced by the installation contractor as soon as possible but no more than 90 days after installation. Plant replacement by the maintenance contractor shall be completed as soon as possible but no more than 90 days following written direction by the restoration specialist. Unless substitutions are approved by the restoration specialist, the replacement plants shall be of the same species and at least the same size as originally planted. All replacement plants shall be inspected by the restoration specialist and approved as healthy, disease free, and of proper size prior to planting.

Seed Guarantees - The installation contractor shall guarantee a 50 percent germination coverage rate for all seeded areas (based on visual assessment by the restoration specialist) at the end of the 120-day installation maintenance period. If there are particular bare areas, reseeding shall take place in those areas at the direction of the restoration specialist. The restoration specialist shall determine the timing and method for reseeding.

F. IRRIGATION PLAN

No irrigation system will be installed as the wetland areas around the ephemeral ponds will receive water from seasonal precipitation. Supplemental hand watering shall be applied if necessary to prevent the mortality of seedlings. Care will be taken to avoid water entering into the pond basin to avoid triggering of fairy shrimp hatching at an inappropriate time of year. Supplemental irrigation is only expected to be used for the first three years, or less, of the five-year monitoring period. During the final two years, the restoration specialist shall determine whether or not irrigation is necessary.

G. AS-BUILT CONDITIONS

At the end of the installation phase of the project the installation contractor shall prepare as-built plans of the mitigation area. The as-built plans will document the conditions of the site as they exist at the completion of the installation. These plans will include an as-built topographic map and show areas of grading, planting, and seeding. The restoration specialist will review these plans for conformance with the mitigation plan's technical design criteria, ACOE permit conditions, and project objectives. Any differences found between the original design and the as-built conditions will be fully assessed and documented by the restoration specialist through field maps, photographs, and descriptive text. It is expected that modifications of the original plan will have occurred due to post-mapping changes in project design as well as unforeseen changes resulting from site conditions. Any changes in the plan shall be justified to and accepted in writing by the restoration specialist and the California Quartet before the as-built conditions are approved.

A report of the "As-Built Conditions" shall be submitted by the restoration specialist to the ACOE within 6 weeks of completion of site preparation and planting. If grading, planting and erosion control measures are not completed within six weeks of each other, separate reports for each activity will be submitted.

VII. MAINTENANCE DURING MONITORING PERIOD

A. MAINTENANCE ACTIVITIES

1. General Maintenance

All contractors shall be informed of the specific mitigation goals and maintenance requirements of this project. Maintenance efforts will focus on ensuring that the relocation ponds retain water consistent with the conditions of the existing ponds.

Only construction equipment necessary to accomplish the mitigation installation shall be allowed on the mitigation site, and each piece of construction equipment shall be removed from the site as soon as its task is complete. No vehicular fluids shall be added or changed on site. Once plant installation and seeding has begun, no vehicles shall be allowed on the mitigation site. Workers' personal vehicles shall be parked outside the mitigation area. The mitigation site shall be kept free of human garbage.

No power tools shall be operated on the mitigation site from March 15 through July 15. Only activities that can be performed with non-power tools shall be allowed during this period. This time period coincides with the breeding season of many sensitive riparian bird species.

Damage to plants on the mitigation site as a result of unusual weather or vandalism shall be repaired as directed by the restoration specialist. Such repairs shall be paid for by the project proponent. Any damage caused by a contractor's inadequate maintenance, as determined by the restoration specialist, shall be repaired by the contractor at its expense.

2. Fencing

California Quartet will be responsible for the maintenance of the perimeter fence. Additional, protective measures such as tree tubes and placement of cages or screens around individual plants will be used in areas subject to trampling, herbivory, or other threats as determined by the restoration specialist. All protective devices shall be maintained through completion of the monitoring period or until removal is authorized by the restoration specialist.

3. Weed Control

Weed control shall be conducted monthly by the installation contractor and per the schedule outlined in this document for the maintenance contractor, or as necessary, to minimize competition that could prevent the establishment and growth of native species. Weeds shall be removed for a minimum of 4 years or until plantings are well established to prevent detrimental competition of invasive species with the mitigation plantings for water, nutrients, light, and space. Maintenance personnel shall be trained to distinguish weed species from desirable native vegetation. All weeds shall be removed mechanically. No herbicides shall be applied in the wetlands adjacent to the ponds due to the presence of Riverside fairy shrimp.

A mulched area 18 inches from the base of each container plant shall be maintained to minimize competition from weeds, except within basins. This mulch will be maintained during the establishment period (120 days following certification of the installation contract), or until plants reach 2 to 3 feet in height. Table 5 lists examples of weeds that need to be controlled at the mitigation site.

Table 5
WEED SPECIES LIST FOR SADDLEBACK MEADOWS*

Scientific Name	Common Name
Arundo donax	giant reed
Brassica nigra	black mustard
Carpobrotus edulis	hottentot fig
Cortaderia selloana	pampas grass
Cynara cardunculus	artichoke thistle
Cynodon dactylon	Bermuda grass
Eucalyptus spp.	eucalyptus species
Foeniculum vulgare	sweet fennel
Myoporum laetum	myoporum
Rincinus communis	castor bean
Schinus terebenthifolius	Brazilian pepper tree
Silybum marianum	milk thistle
Tamarix spp.	tamarisk species
Washingtonia robusta	Mexican fan palm
Xanthium strumarium	cocklebur

* This species lists some common wetland weed species. Other weed species may occur at this mitigation site.

4. Disease and Other Pests

Damage causing insects, high levels of herbivory, and diseases shall be monitored by the installation and maintenance contractors during their maintenance periods. Generally speaking, a high threshold of tolerance will be permitted before chemical/lethal control measures are considered. All specific recommendations will only be made by a licensed pest control adviser as required by law. All applicable federal and state laws and regulations will be closely followed. The ACOE and restoration specialist will be consulted on any pest control matters.

5. Pruning

No pruning shall be done unless directed by the restoration specialist.

6. Trash Removal

Following rain events, trash and debris may enter the creek from storm drains. Trash shall be removed during regular maintenance events by the installation and maintenance contractors during their respective maintenance periods.

B. RESPONSIBLE PARTIES

The project proponent (California Quartet) will be responsible for financing the maintenance program. The landscape contractor will oversee maintenance efforts and will submit regular maintenance reports to the project proponent.

The project proponent may choose to legally transfer the property in fee title (subject to agency approval) to a public or private entity specializing in long-term management of open space. If such a transfer occurs, this entity would become the responsible party for implementing the maintenance program.

C. SCHEDULE

During the 120-day installation maintenance period, the installation contractor shall be required to maintain the entire mitigation area at least twice a month. Once the 120-day installation maintenance period is over, the area will be maintained by the maintenance contractor according to the schedule in Table 6. Specific items evaluated during maintenance events will include the presence of weeds, trash, vandalism, irrigation function and scheduling, and plant material condition.

Table 6
MAINTENANCE SCHEDULE

Phase	Schedule
120-day Installation Maintenance Period	Bi-weekly
Post Installation Maintenance Period	
February-May	Bi-weekly
June-January	Monthly

The restoration specialist shall begin monitoring during the grading/site preparation and installation phases and shall then continue monitoring through the post-installation phase according to the schedule outlined in Table 7. The restoration specialist shall file a written monitoring report with the project proponent and landscape contractor after completing each inspection. Each of these reports shall identify maintenance concerns including, but not limited to, plant mortality, vandalism, and weed-related issues, and shall provide recommendations to the maintenance contractor regarding any changes to the maintenance program. These monitoring reports will be included as part of the annual report to the ACOE.

Table 7 MAINTENANCE MONITORING SCHEDULE FOR THE RESTORATION SPECIALIST	
Phase	**Schedule of Inspections**
Grading/Site Preparation	2 times per week
Installation	Daily
Post Installation	
Year 1	Monthly
Year 2	
March-June	Monthly
July-February	Quarterly
Years 3-5 (or until performance	Quarterly
standards have been met)	

VIII. MONITORING PLAN

A. PERFORMANCE CRITERIA

Performance criteria are specific standards by which to evaluate the progress and success of the mitigation during the five year monitoring period. The standards are based on a reference site. Three categories of interim success criteria shall be analyzed: species diversity, cover by weeds, and cover by native species. The annual milestones for these parameters are presented in Table 8.

Table 8 ANNUAL SUCCESS CRITERIA MILESTONES FOR SADDLEBACK MEADOWS[1]					
	Year				
Criteria	**1**	**2**	**3**	**4**	**5**
Species Diversity	40	50	60	70	80
Cover by Weeds[2]	140	130	120	110	100
Cover by Native Species[2]	60	70	80	90	100
[1]Values are percentages as compared with the reference site [2]Percent total cover					

B. MONITORING METHODS

Annual monitoring will be performed by the restoration specialist or by a qualified biologist with appropriate experience in site monitoring and transect measurements. This monitoring will include qualitative observations of overall plant survival, vigor, and recruitment, the status of irrigation, trash, and weeds, and the presence of wildlife species. In addition, monitoring will include quantitative measurements of native and non-native plant growth. Using the same techniques a designated reference site will also be sampled so that comparisons can be made between the functions and values of the mitigation site and previously existing habitat. The reference site shall be located on site.

Vegetation monitoring will be conducted for the mule fat scrub habitat created along the margins of the created ponds. Observations of plant health and vigor will be made at each pond and compared to observations of plant health and vigor at the two remaining reference ponds. All species that occur within the habitat shall be noted separately for each pond. Percent cover of native shrubs and annuals and non-native species will be noted for each pond. In addition to the observations and measurements described above, several permanent stations for photo-documentation shall be established in each habitat type and annual photographs taken.

All pools will be tested for the presence of Riverside fairy shrimp at monthly intervals while the ponds hold water.

Species Diversity

Species diversity usually increases with recruitment of new native species from the surrounding native habitats. The effect of recruitment on diversity should allow the mitigation to approach the level of species diversity at the reference site. After five years, the mitigation site should reach 80 percent of the species diversity of the reference site.

Cover by Weeds

Many weeds have become naturalized, and therefore, the weed cover should reflect (or be less than) what is present at the reference site. Although weeds are expected, they should not be allowed to get out of control on site. Weeds should be controlled during site maintenance.

Cover by Native Species

Cover by native vegetation should increase over time and ultimately approach that of the reference site. With sufficient site maintenance, proper irrigation, and natural rainfall, native vegetation cover should approach 100 percent of the reference site in five years.

C. ANNUAL REPORTS

Annual reports on the status of the project mitigation shall include an assessment of the site's status relative to yearly target criteria as well as overall site progress toward final success criteria. These reports will also include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- a copy of the Corps permit and any attachments including Special Conditions and subsequent Letters of Modification;
- an analysis of all qualitative and quantitative monitoring data;
- copies of all monitoring photographs; and
- maps identifying monitoring areas, transects, planting zones, and so forth as appropriate.

Remedial recommendations, if necessary, shall be made in the annual reports as well as a summary of whether or not the mitigation is meeting the success criteria for the appropriate year.

D. SCHEDULE

Monitoring and performance criteria will be tied to implementation. The first annual monitoring event will occur in June after the first full growing season. Annual technical monitoring reports shall be submitted to the ACOE by the end of January 1 of each year to ensure that there is adequate time remaining in the dry season to implement any necessary contingency measures.

IX. COMPLETION OF MITIGATION

A. NOTIFICATION OF COMPLETION

The project proponent shall notify the ACOE upon completion of the mitigation effort through the submittal of the final annual technical monitoring report. The final report shall include a jurisdictional delineation of the mitigation areas. This delineation must show that the goals of the mitigation (as described in section III of this document) have been met.

Performance standards may be waived by the ACOE in any area if monitoring indicates that good growth and functional habitats are otherwise achieved. If performance standards cannot be met because of adverse soil or other unmanageable site conditions, an alternative or auxiliary mitigation plan may be submitted to the ACOE for approval.

B. AGENCY CONFIRMATION

After receipt of the final annual technical monitoring report, the ACOE may inspect the mitigation site to confirm the completion of the mitigation and examine the jurisdictional delineation.

X. CONTINGENCY MEASURES

A. INITIATING PROCEDURES

If the ACOE determine upon receipt of any of the annual monitoring reports that the mitigation effort is not meeting success standards for the project, the ACOE shall notify the project proponent in writing that the mitigation effort may require augmentation for successful implementation. The project proponent shall have 30 days to respond to the ACOE correspondence, confirming their agreement that contingency measures will be required.

B. ALTERNATIVE LOCATIONS FOR CONTINGENCY MITIGATION

No alternative locations are proposed for this mitigation. If the success criteria are not being met on site, the ACOE and the project proponent will work towards a mutual solution.

C. FUNDING MECHANISM

The project proponent shall be responsible for all costs associated with any contingency measures.

D. RESPONSIBLE PARTIES

The project proponent shall be the responsible for any necessary contingency measures associated with this project.

XI. REFERENCES

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June 30, 2000

CQL-02

Ms. Vicki White
U.S. Army Corps of Engineers
Los Angeles District Regulatory Branch
P.O. Box 532711
Los Angeles, California 90053-2325

Subject: Saddleback Meadows

Dear Vicki:

HELIX Environmental Planning, Inc. (HELIX) has refined potential restoration areas and methods for implementing U.S. Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG) required wetland mitigation for the Saddleback Meadows project on the Hidden Ranch site (Figures 1 and 2). These refinements are based on our June 15, 2000 site visit to Hidden Ranch and presented as part of the overall mitigation program being implemented for the Saddleback Meadows project, including on-site conservation and restoration, off-site acquisition, enhancement and creation of wetlands at the Viejo Mitigation Bank and the mitigation outlined below on Hidden Ranch.

METHODS

During the initial June 15th site visit with David Zoutendyk of the U.S. Fish and Wildlife Service, Leslie MacNair of the CDFG and yourself, areas were identified that would be potentially suitable for wetland and streambed restoration. The site was revisited on June 19th by Larry Sward and Barry Jones of HELIX to assess in more detail appropriate areas for preservation/enhancement and creation of ACOE and CDFG jurisdictional habitats. Areas within and immediately adjacent to the existing creek on site were deemed to be the most appropriate areas for ACOE and CDFG enhancement and creation areas, while areas further removed from the creek centerline were identified as CDFG mitigation areas only. Additional oak restoration areas were also identified for use in meeting County of Orange oak mitigation requirements for the project. Each area was flagged and photographed. Survey feathers were also used to mark permanently the proposed restoration areas. These areas were then surveyed in using a Global Positioning System (GPS), allowing for very accurate area calculations.

RESULTS

Two distinct areas were identified for mitigation: the area within the existing ranch compound that has been the most heavily disturbed and an area along the creek immediately upstream of the ranch compound that has been disturbed by long-term cattle grazing (Figure 3).

The ranch compound area has two drainages traversing it (Figure 4). The main drainage channel has been completed denuded of vegetation from the existing creek crossing downstream to the fenceline (Figure 5). Upstream of the crossing, some riparian vegetation does exist (Figure 6). A second channel enters the compound from the east and flows south into the main channel. Currently, this channel has limited riparian vegetation due to cattle grazing activities (Figure 7).

Figure 4 shows the areas proposed for preservation, enhancement and creation in the ranch compound. The existing barn, corral and associated equipment will be removed from the site, while the existing homes and pump house will remain. The existing crossing will be expanded with additional pipes to allow a wider area of inundation upstream and downstream. Areas of the creek downstream of the existing crossing (Area 1) will be widened to the same grade as the existing channel. These areas will be considered ACOE/CDFG creation areas. The existing creek channel both downstream and upstream of the crossing will be enhanced (Area 2) and graded to within one foot of the existing creek channel to the east for use as CDFG creation area; another area (Area 3) will be graded down and restored along the smaller drainage to east of the primary drainage. The area upstream of the crossing (Area 4) will be graded down to provide for ACOE and CDFG creation.

Figures 8 through 10 show the areas proposed for preservation, enhancement and creation to the north of the compound area. The existing channel is of better quality in this area but has still been degraded by cattle grazing. Area 5 will be used for ACOE and CDFG creation. Adjacent areas to the east will be used for oak woodland restoration for County of Orange mitigation needs.

The existing channels will be enhanced by weeding and planting of mule fat (*Baccharis salicifolia*) and a limited number of willows (*Salix* sp.). The areas in the ranch compound will need to be planted at similar densities to areas proposed for creation given the highly disturbed nature of the channel. ACOE creation areas will be planted based on Table 1 below; CDFG creation areas will be planted based on Table 2 below. We feel that this two-zone approach is best suited to the site. Temporary irrigation will be used for all but the existing stream channel areas.

Table 1
ARMY CORPS OF ENGINEERS
RETORATION AREAS

SPECIES	PLANTS PER ACRE
Mule fat (*Baccharis salicifolia*)	250
Arroyo willow (*Salix lasiolepis*)	20
Black willow (*Salix gooddingii*)	20

Table 2 CALIFORNIA DEPARTMENT OF FISH AND GAME RESTORATION AREAS	
SPECIES	PLANTS PER ACRE
Mule fat (*Baccharis salicifolia*)	200
Mexican elderberry (*Sambucus mexicana*)	20
Western sycamore (*Platanus racemosa*)	40
Coast live oak (*Quercus agrifolia*)	20
California rose (*Rosa californica*)	50

It is anticipated that this restoration effort will be successful because the areas proposed for creation/enhancement occur within or adjacent to the existing channel, and the width of the proposed creation/enhancement areas is no wider than the existing vegetation within the channel upstream or downstream where cattle grazing has been eliminated. Additionally, the hydrology of the creation areas will be consistent with the hydrology of the existing channel.

The proposed restoration will result in the enhancement of 1.1 acres of existing degraded stream channel, creation of 0.9 acre of ACOE/CDFG jurisdictional areas and 0.34 acre of CDFG only jurisdictional areas. Combined with the Saddleback Meadows on-site preservation, enhancement and creation as well as preservation and creation at the Viejo Mitigation Bank, a total of 0.78 acre of ACOE jurisdictional mule fat scrub will be created on site, 0.9 acre of mule fat scrub/riparian will be created at the Hidden Ranch site and 0.9 acre of existing degraded mule fat/riparian will be preserved and enhanced at the Hidden Ranch site. The remaining 1.05 acres of waters of the U.S. mitigation will be mitigated through preservation of waters/wetlands on the Viejo and/or Hidden Ranch sites.

The combination of on- and off-site measures will result in ACOE mitigation ratios of 3:1 for mule fat scrub (1.95:1 of creation and 1.05:1 enhancement for the 0.86 acre impacted) and 1:1 for waters of the U.S./streambed (1.05 acres impacted).

Similarly, a total of 0.78 acre of CDFG jurisdictional mule fat scrub will be created on site, 1.24 acres of mule fat scrub/riparian will be created at the Hidden Ranch site, and 1.1 acres of existing degraded mule fat/riparian will be preserved and enhanced at the Hidden Ranch site. An additional 1.01 acres of CDFG oak woodland will be restored on Hidden Ranch. The remaining 1.0 acre of streambed mitigation will be mitigated through preservation of waters/wetlands on the Viejo and/or Hidden Ranch sites. Combined, these measures will result in mitigation ratios of 3:1 for mule fat scrub and oak woodland impacts and 1:01 for waters of the U.S./streambed impacts.

The combination of on- and off-site measures will result in CDFG mitigation ratios of 3:1 for mule fat scrub (2:1 of creation and 1:1 preservation and enhancement for the 1.54 acres impacted) and 1:1 for waters of the U.S./streambed (1.01 acres impacted).

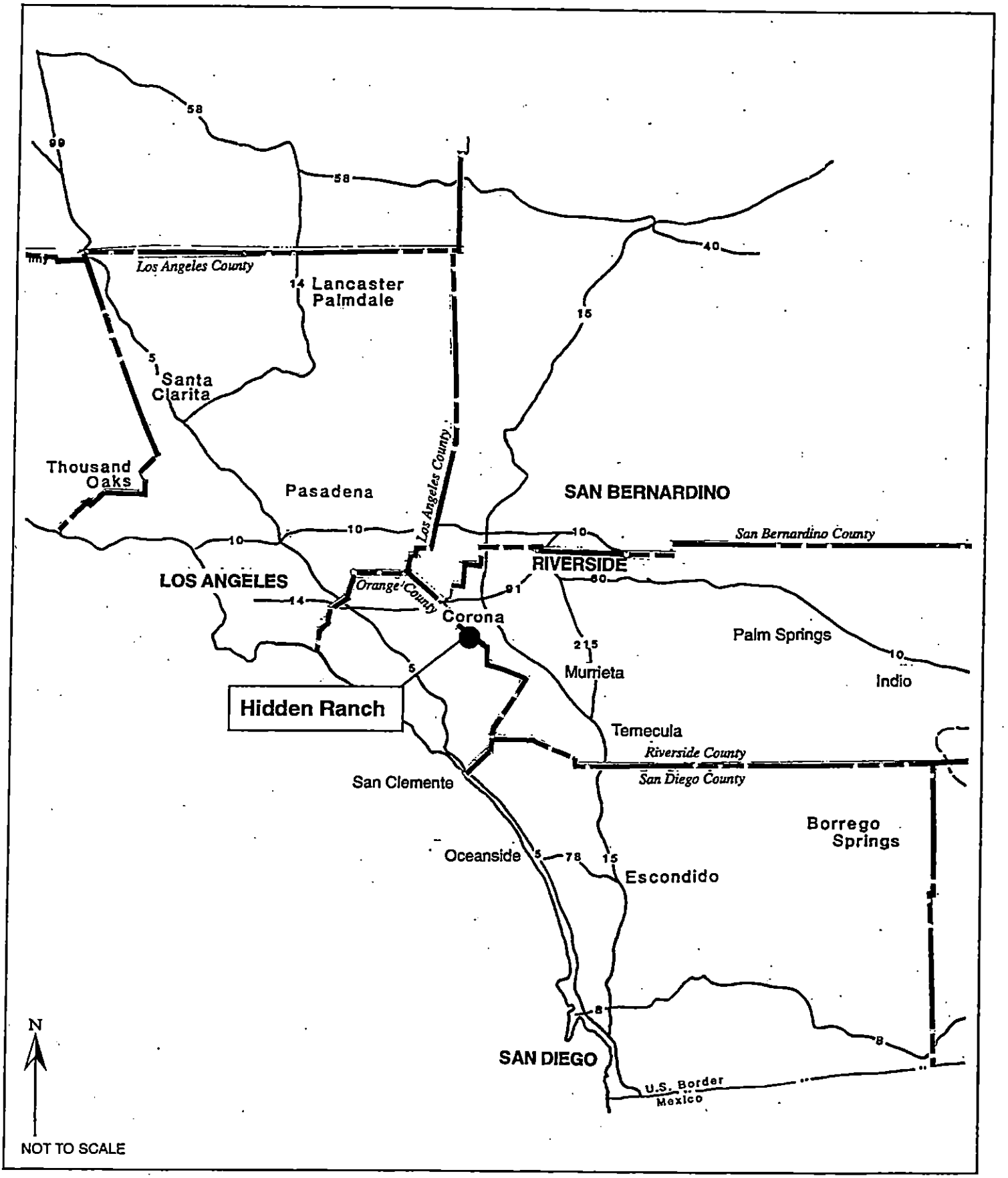
Please review the information provided and provide us with input as to whether this site and the methods proposed can provide the basis for formalizing this in greater detail in the mitigation plan. Please also let me know if you have any questions.

Sincerely,

Barry L. Jones
Senior Consulting Biologist

Attachments

cc: Leslie MacNair
David Zoutendyk
Joe LaCava
Mike McCollum

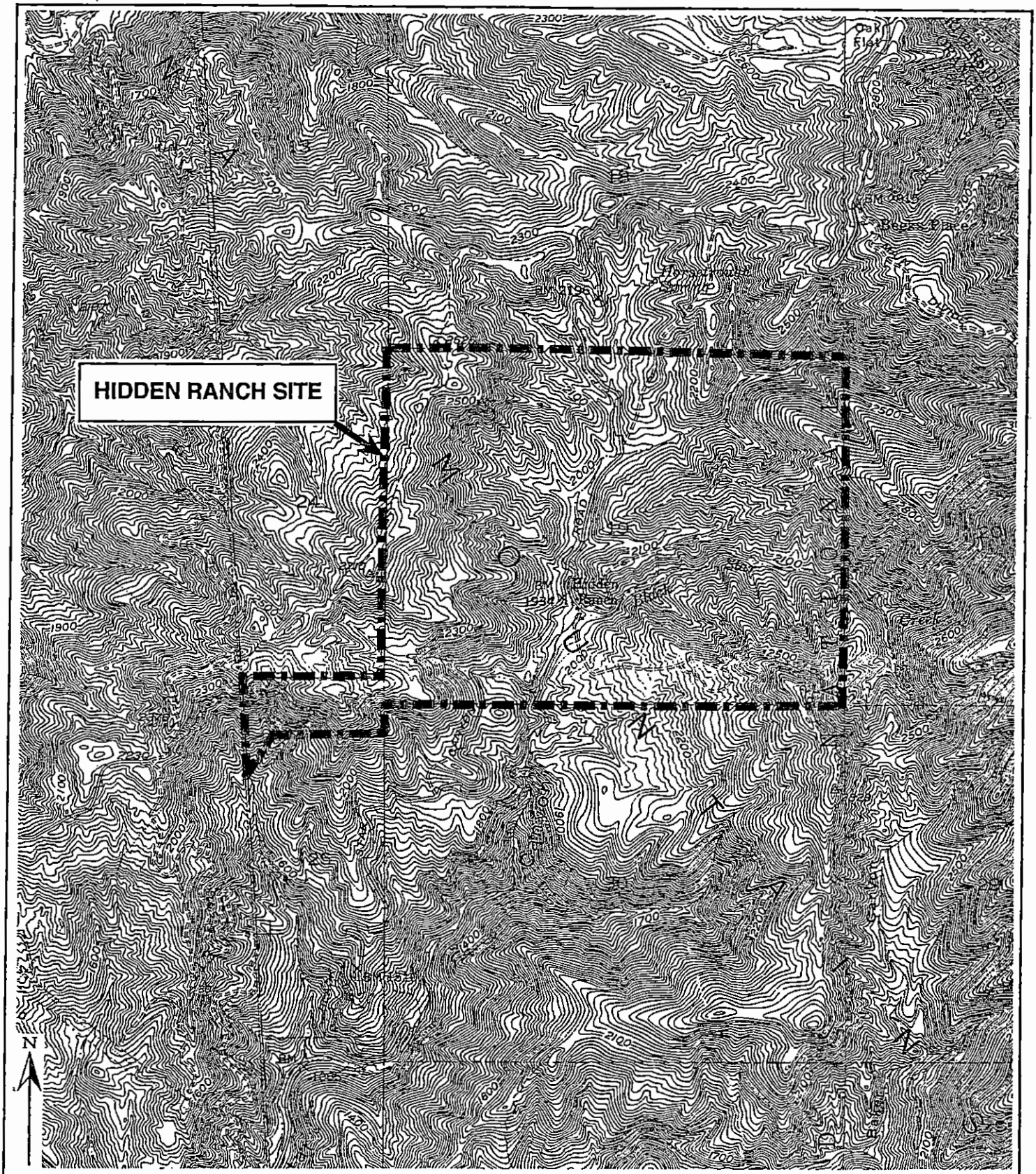


Hidden Ranch Location Map

SADDLEBACK MEADOWS

Figure 1

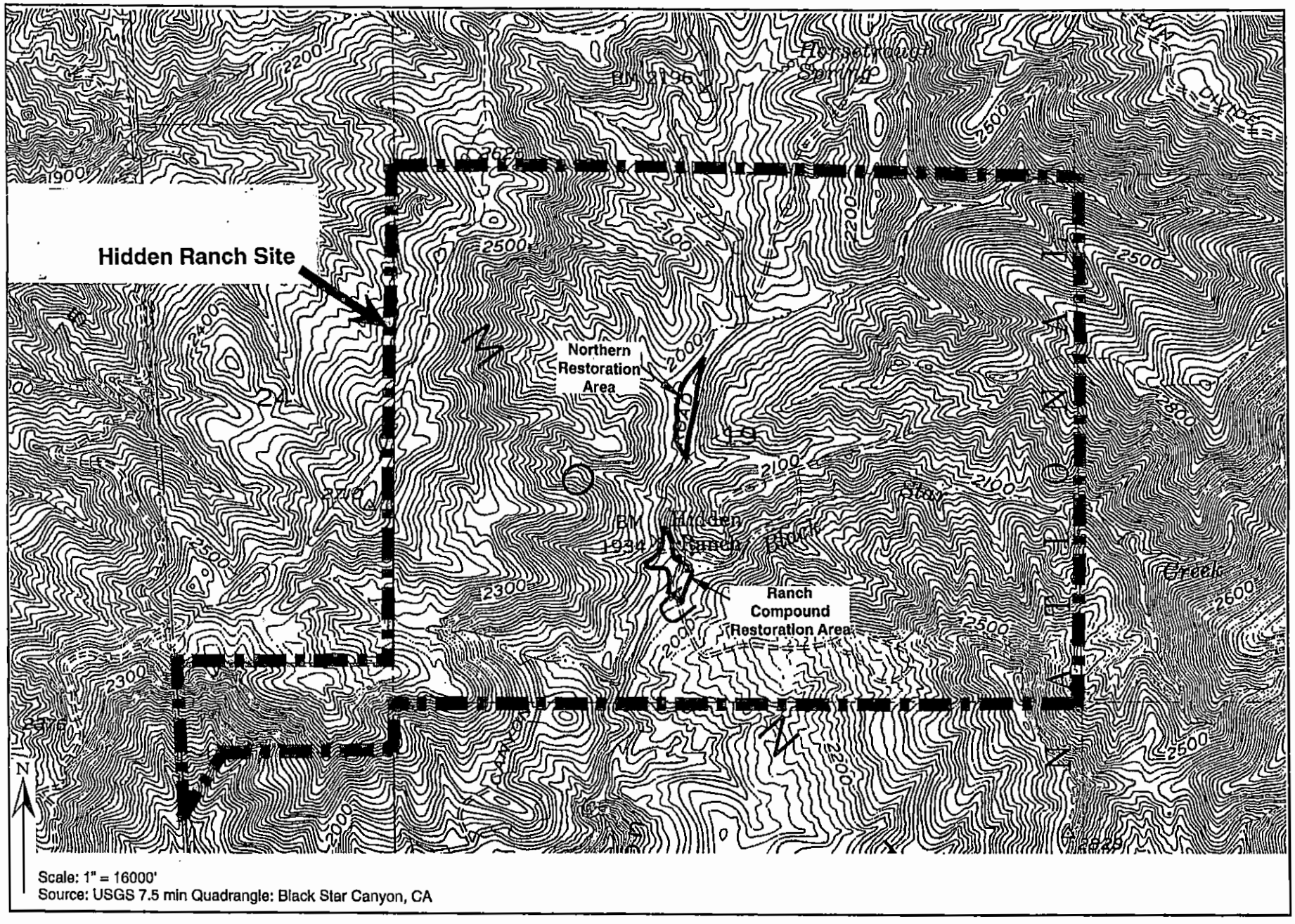
HELIX



Scale: 1" = 24000'
Source: USGS 7.5 min Quadrangle: Black Star Canyon, CA

Hidden Ranch Vicinity Map
SADDLEBACK MEADOWS
Figure 2

HELIX

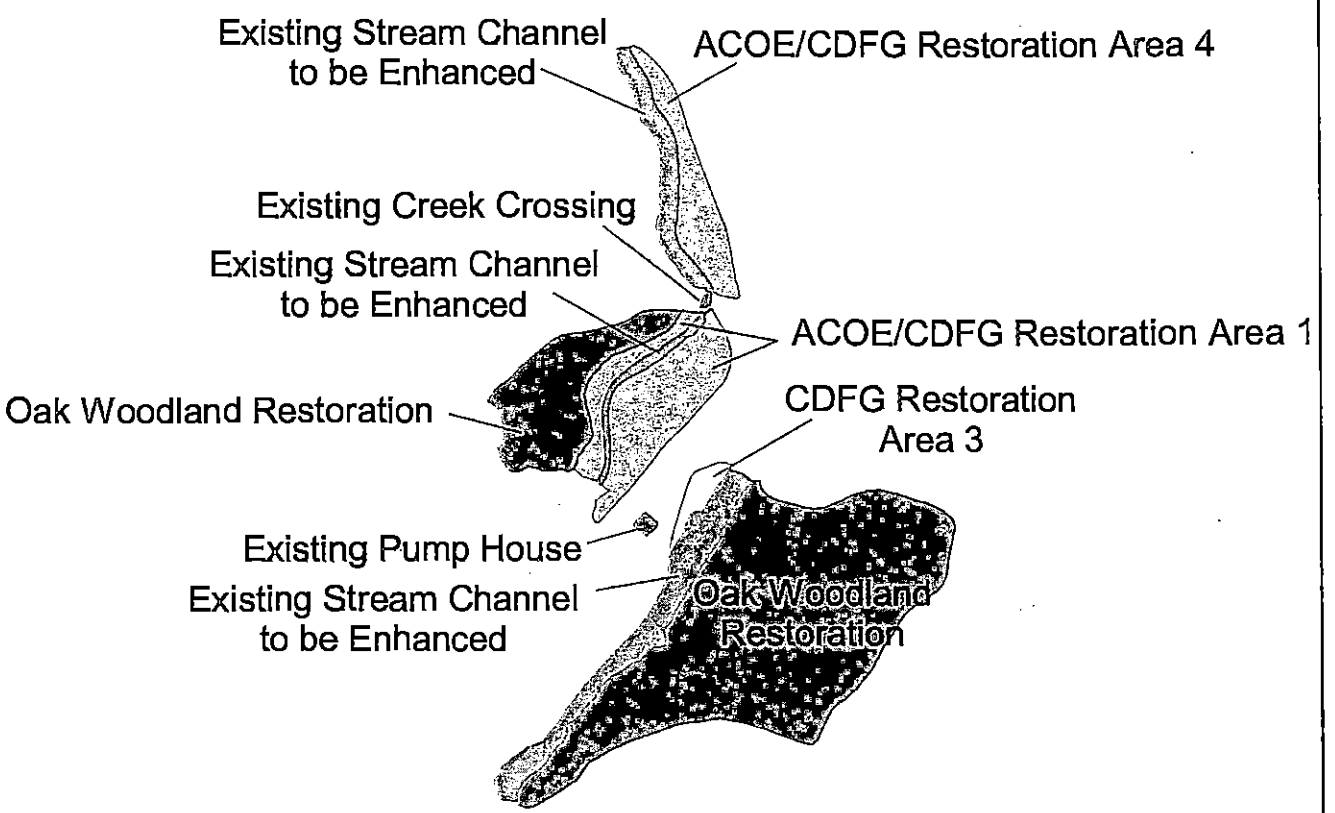


Hidden Ranch Restoration Locations

SADDLEBACK MEADOWS

Figure 3

HELIX



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200 0 200 Feet

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 6/28/00

Hidden Ranch - Ranch Compound Mitigation Site

SADDLEBACK MEADOWS

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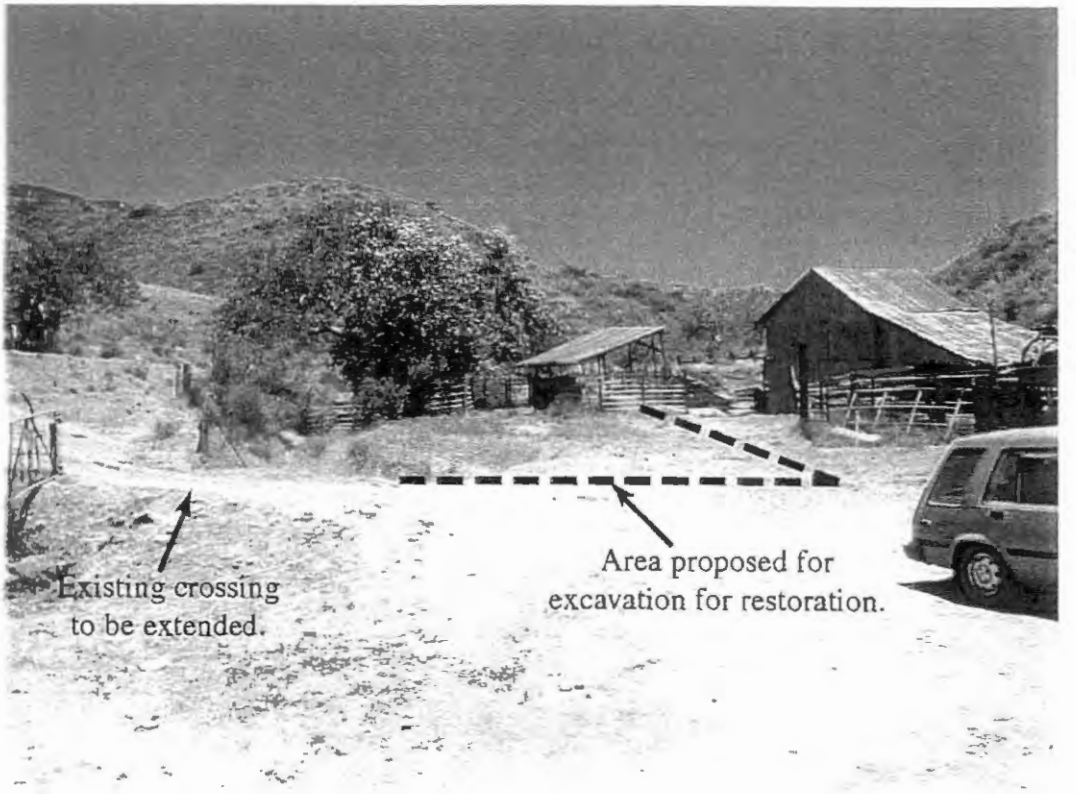
Figure 4

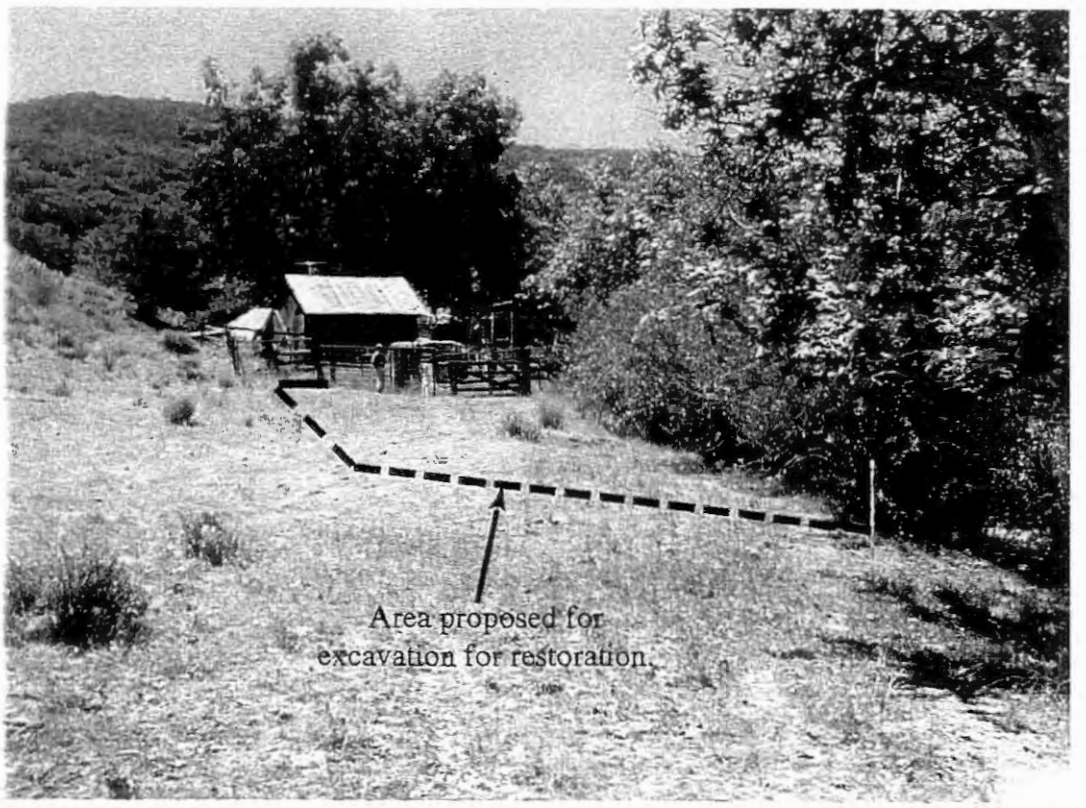
Areas 1 and 2

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

HELIX

Figure 5





Areas 4

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

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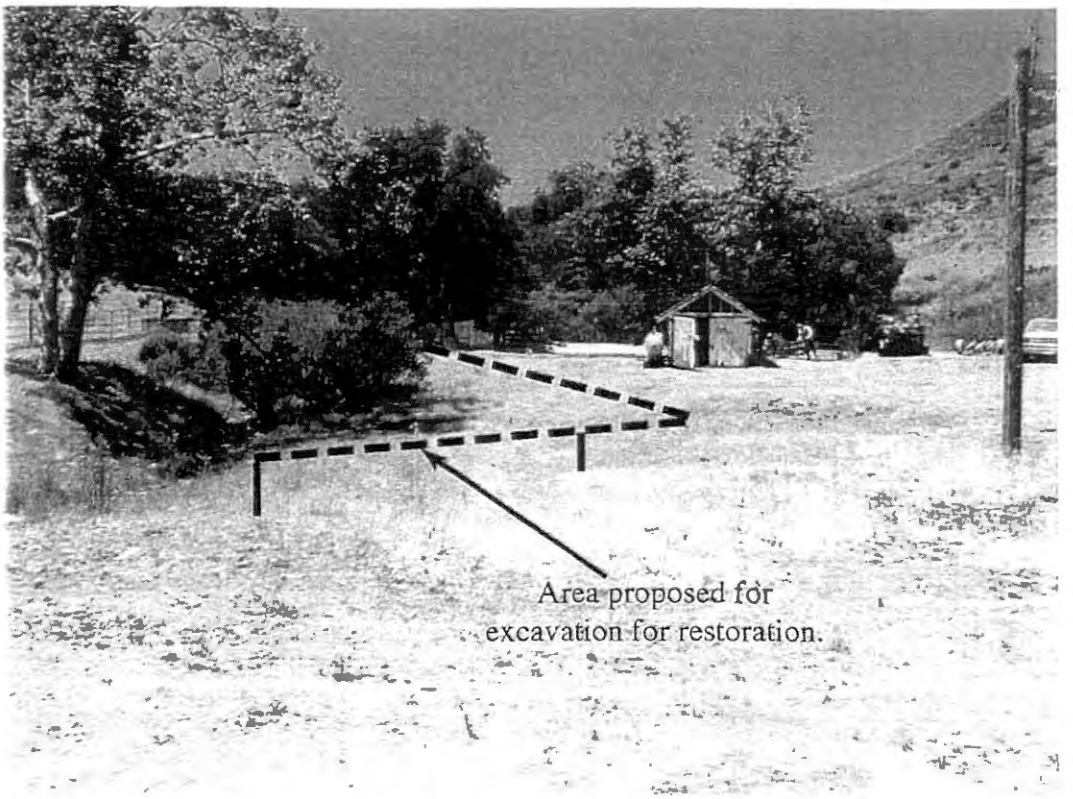
Figure 6



Area 3

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

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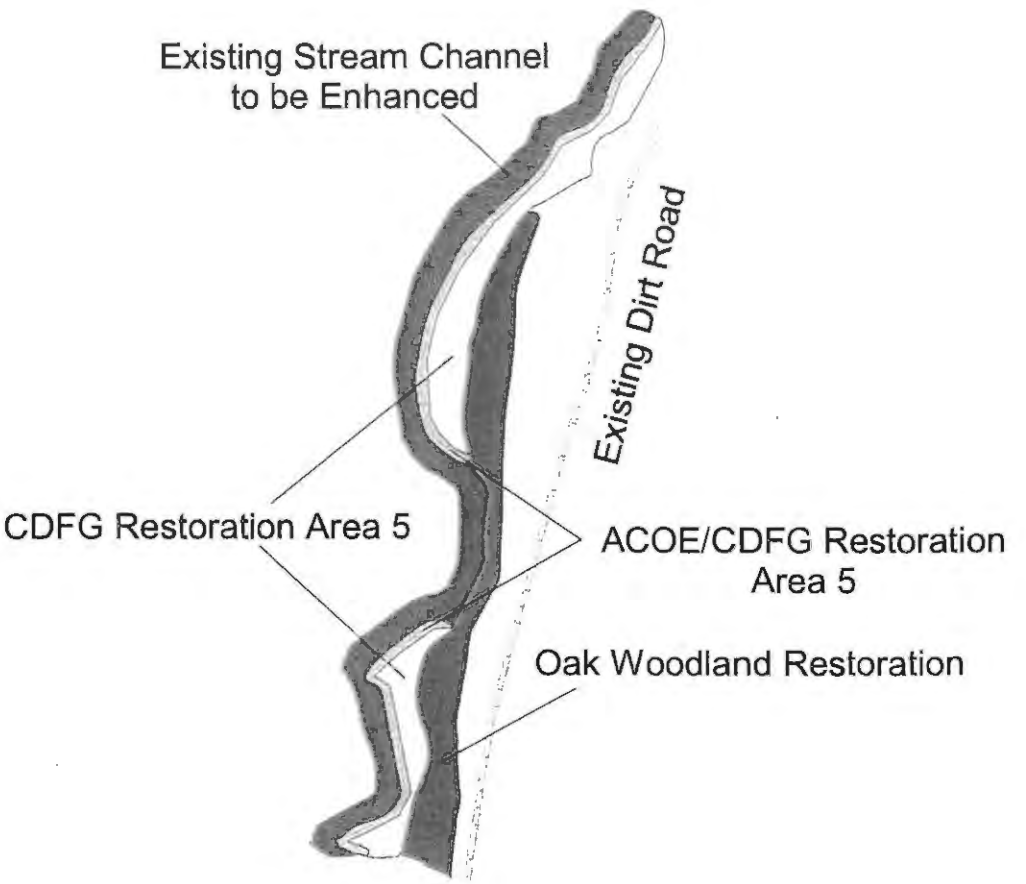
Figure 7



200 0 200 Feet

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 6/28/00

Hidden Ranch - Northern Mitigation Site

SADDLEBACK MEADOWS

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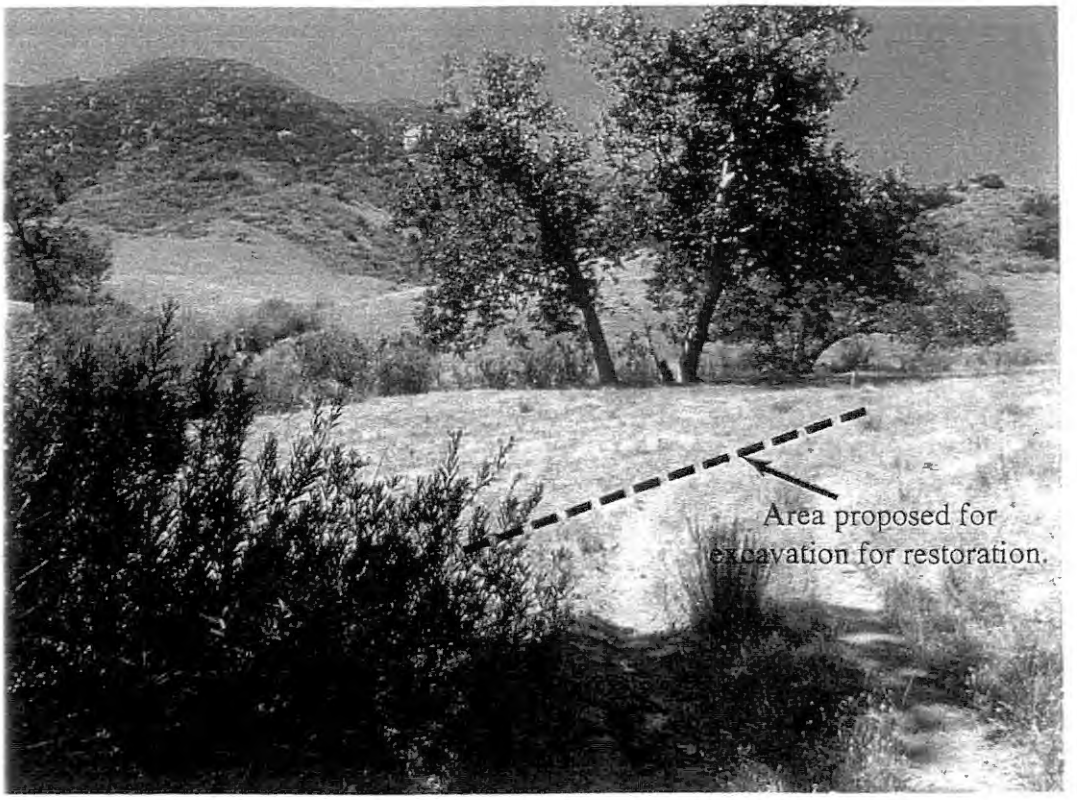
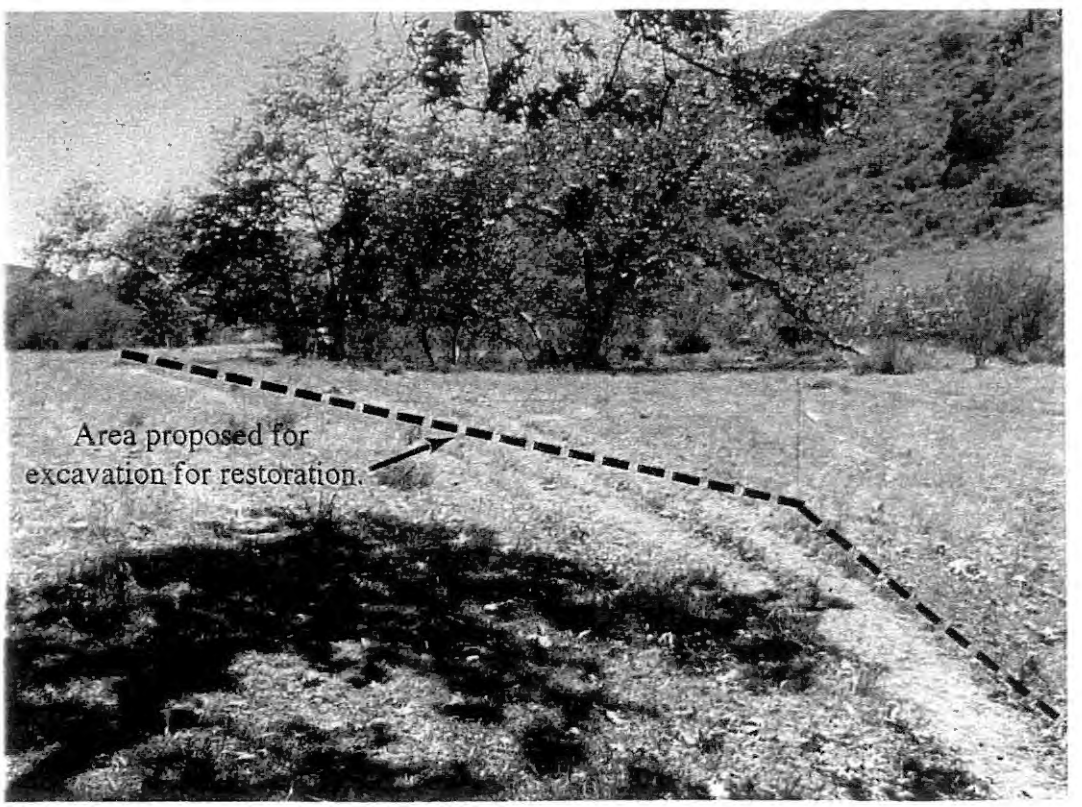
Figure 8



Southern segment.



Middle segment.

Areas 5

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

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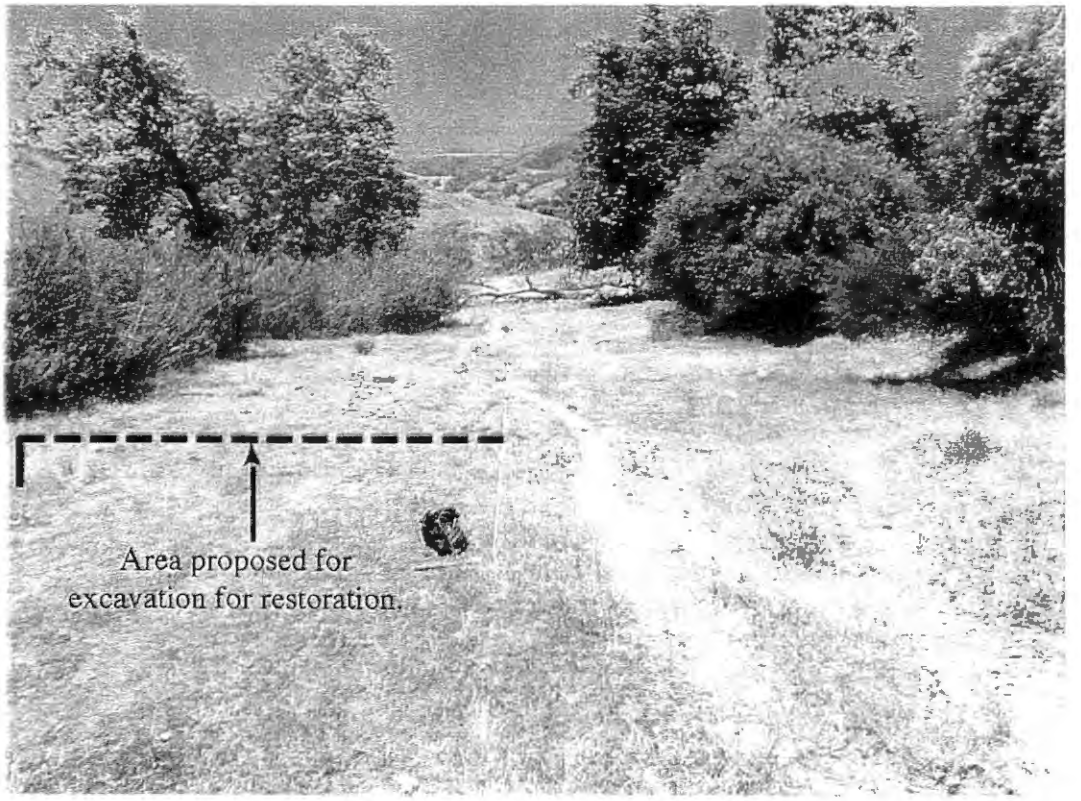
Figure 9



Northern segment.

Area 5

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

HELIX

Figure 10

HELIX environmental planning, inc.

MEMORANDUM

date: October 6, 2000

to: Vicki White
U.S. Army Corps of Engineers

from: Barry Jones

subject: Saddleback Meadows coastal California gnatcatcher surveys

job number: CQL- 02

message: The following is a summary of surveys conducted for the coastal California gnatcatcher (*Polioptila californica californica*) on the Saddleback Meadows project. A summary was also provided on page 6 of the Biological Assessment prepared for the project.

Focused surveys for the coastal California gnatcatcher were conducted on April 15, May 22, 29, June 5, 16, and June 23, 1998 by Mari Schroeder, Christine Mukai, and Michelle Dohrn of Chambers Group. These biologists are listed on Chambers Group's Federal Fish and Wildlife Permit (PRT-781217) to conduct coastal California gnatcatcher surveys and these surveys were performed in accordance with USFWS guidelines (1997). Surveys were also conducted by Sweetwater Environmental Biologists, Inc. in 1993 and 1994, and by Pacific Southwest Biological Services in 1993.

No coastal California gnatcatchers were observed during the reconnaissance-level or focused field surveys. Additionally, Sweetwater Environmental Biologists, Inc. and HELIX Environmental Planning, Inc. have been on the site dozens of times conducting a variety of biological assessments with biologists permitted to conduct gnatcatcher surveys over the past six years. No gnatcatchers have been observed during any of the surveys noted above.
We strongly disagree with the assertion by Royce Riggan that the sage scrub on site is excellent quality habitat on site for the gnatcatcher. A majority of the sage scrub has been heavily impacted by cattle and cardoon (*Cynara cardunculus*), and would not support breeding gnatcatchers. Most of the remaining sage scrub is dominated by black sage and is on steep slopes. Gnatcatchers typically do not occur in these areas, or occur in very low numbers. Additionally, elevations on site range from approximately 1,000 1,600 feet, which is considered the upper elevational limits for the gnatcatcher. There are significant populations at lower elevations to the west. However, this species is not known from areas to the north, east and south of the project. It should also be noted that Mr. Riggin's observations occurred in late September when this species typically expands its use areas.

Based on the discussion above, it is our opinion that the site is not occupied by breeding gnatcatchers.

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HELIX environmental planning, inc.

MEMORANDUM

date: October 6, 2000

to: Vicki White
U.S. Army Corps of Engineers

from: Barry Jones

subject: Saddleback Meadows minimization measures

job number: CQL- 02

message: Remedial grading for the project will be in close proximity to two of the existing ponds on site, Pond H and Pond I. Potential impacts from grading are being minimized by the following measures.

- A 25-foot buffer will be provided between the edge of pond H and remedial grading as shown in Figure 1. A 50-foot buffer will be provided between the edge of pond I and remedial grading as shown in Figure 2.
- All grading directly adjacent to the ponds will be done outside of the rainy season (May 15-November 15).
- Silt fencing and any other erosion control measures deemed necessary will be provided.
- Remedial grading areas will be revegetated with coastal sage scrub per the upland mitigation plan.

Combined, these measures will insure that both direct and indirect impacts to these basins will be minimized.

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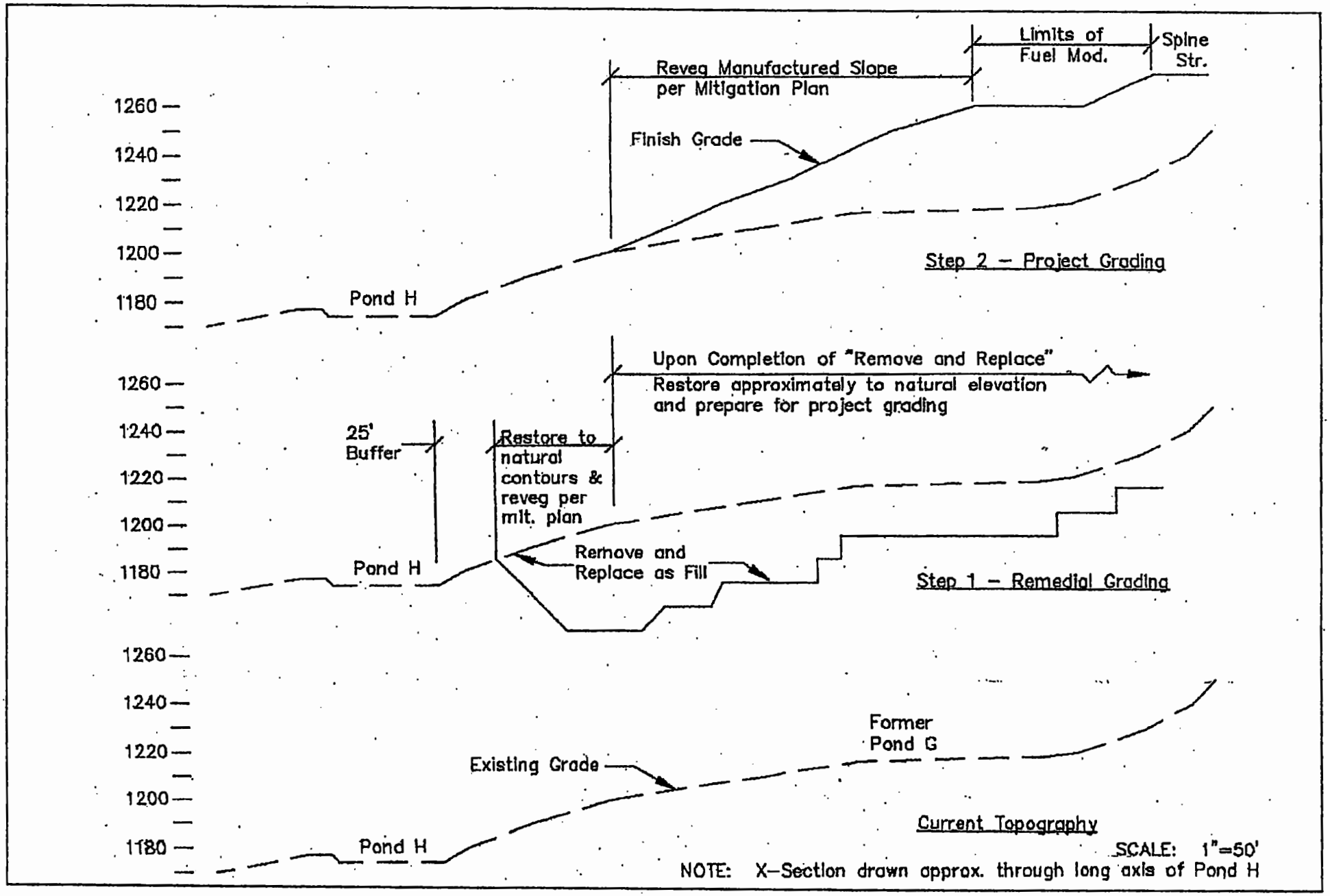
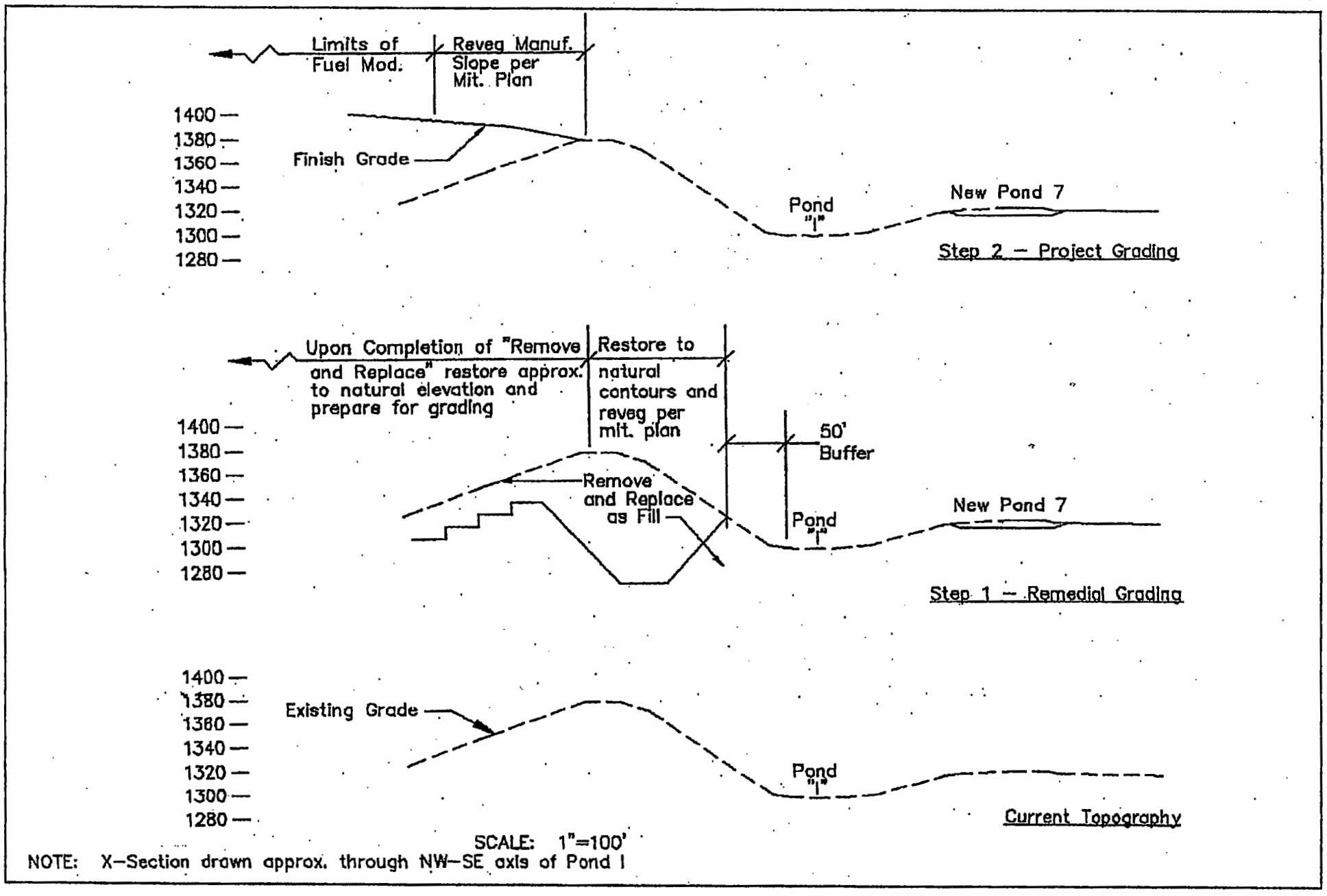


Cross-section of Grading for Pond H

SADDLEBACK MEADOWS

Figure 1

HELIX



Cross-section of Grading for Pond I

SADDLEBACK MEADOWS

Figure 2

HELIX

Viejo Conservation Bank
Vernal Pool Restoration/Creation Plan Outline

Proposed vernal pool restoration on the Viejo site would involve restoration and expansion of existing low quality pools on site in addition to creation of new pools in suitable areas. The attached table presents a pool by pool list of the proposed restoration activities. A wetland delineation and vernal pool analysis of the site was conducted by Planning Consultants Research (PCR) in 1998. HELIX Environmental planning, Inc., (HELIX) revisited the site in 2000 to relocate the pools and identify potential restoration areas. A global positioning satellite (GPS) system with an accuracy of approximately four inches was used to survey in the limits of vernal pool watershed and potential restoration areas. The state of each pool was noted and restoration requirements were recorded. A map showing the proposed vernal pool locations, watershed area and flow lines is attached.

Restoration on site will include the following:

Topography/Hydrology

Restored/created pools will be contoured to replicate hydrologic conditions of existing vernal pool habitat in the project vicinity. Care will be taken to avoid altering the watershed of the preserved pools. Material removed during pool excavation will be used to construct the mima mounds on site forming pool boundaries. Restoration within the preserved pools will be limited to minor recontouring and incorporation in the overall vernal pool weeding program. Existing roads not needed to service on site powerlines, and disturbed upland areas will be re-graded to restore natural hydrologic conditions of the preserve area.

Grading

Grading of the proposed restoration areas will begin in late fall. The revegetation specialist will mark all areas to be graded. Preserved vernal pools and their immediate watersheds will also be marked as avoidance areas. An on-site meeting will be held with the installation contractor and the revegetation specialist to identify sensitive areas and devise a strategy for avoidance prior to initiation of restoration activities. Sensitive areas to be avoided will be clearly marked with stakes and flagging. A staging area will be established outside of the preserve area. Grading shall be implemented using small tracked dozers with ripping tines and slope boards and rubber-tired loaders. A sheep's foot shall be used for mound construction. All vehicles and construction equipment will be restricted to the staging areas when not required for restoration activities.

Road De-compaction

All dirt roads and trails within the preserve area will be ripped to a depth of 8 inches prior to seeding with California sagebrush species. Roads within 5 feet of a vernal pool will be ripped using hand tools in order to avoid unnecessary impacts. Road shoulders will be feathered back

to original grades where possible. Following road de-compaction, the seed mix will be applied at the beginning of the rainy season to maximize the potential for germination.

Fencing

Prior to and during construction a temporary fence will restrict access to the preserve area. A split rail fence will be installed along the roadway boundary to preclude vehicle access.

Soil/Inoculum

Restoration of the native vernal pool habitat on site requires the reintroduction of plants and animals in addition to the physical construction described above. Partly because vernal pools recur reliably in the same location year after year, many vernal pool species are adapted for a strategy of non-dispersal. As a result, the restoration of vernal pool habitat can be greatly accelerated by the active transport of propagules from donor sites into the restored pools. This will be accomplished through redistribution of topsoil containing vernal pool seed and propagules collected from pools to be restored.

Topsoil from existing pools to be restored will be salvaged and stored. Hand tools (i.e., shovels and trowels) will be used to remove the first two inches of soil from these pools. All collected soils will be placed in labeled bags or boxes and stored in a cool, dry place before re-introduction into the newly restored/created pools. Soil storage may be avoided if the project schedule allows soil collection and introduction to occur at the same time. Each of the restored/created pools will receive a share of the total collected pool material proportionate to its surface area. The collected soils will be spread out and raked into the bottoms of the restored pools. The preserved pools will not receive inoculum.

Off-site inoculum may be required to supplement the on-site salvaged soils. Potential sources of inoculum include other vernal pools in the project vicinity. Care will be taken to minimize the introduction of weed seeds into the restored vernal pools. Prior to the use of off-site inoculum, the restoration specialist will contact the appropriate resource agencies for approval.

Maintenance/Monitoring

A five-year maintenance program is proposed to ensure the successful establishment and persistence of the preserved and restored vernal pool habitat. The maintenance program will involve removal of trash, weed control, fence repair, and any remedial measures deemed necessary for the success of the restoration program (e.g., re-seeding, re-contouring).

Particular emphasis will be placed on pro-active weed control. All weeding within and immediately adjacent to the vernal pools will be by hand. Weeds in the upland areas will be removed by hand whenever possible. Focused herbicide application will also be used to control weeds in the upland area. No herbicide will be used within or adjacent to the restored and preserved vernal pools. Mechanical removal of weed species with a weed-eater or other such device in the upland areas may also be necessary. All exotic species in the vernal pool and upland areas will be targeted for removal. Weed species of major concern on site include, but

are not limited to, filaree, star thistle, Italian ryegrass, rabbitfoot grass, yard knotweed, fennel and curly dock. Hydrologic conditions will be modified if necessary to assure prolonged periods of inundation to help control exotic species. Pools that hold water longer generally have fewer invasive species.

Monitoring will be carried out under the direction of the restoration specialist to assess the progress of the restoration effort and determine any appropriate remedial measures. Quantitative success criteria presented above will be used to measure the success of the mitigation. Final and yearly success criteria are included to measure interim and ultimate habitat development. If the annual goals are not being met, corrective measures will be implemented. Corrective measures may include, but are not limited to importing new soil inoculum from an off-site source, recontouring of non-functioning pools and re-seeding with collected or commercially available seeds from the immediate area. Prior to conducting any remedial measures, the ACOE and USFWS will be notified.

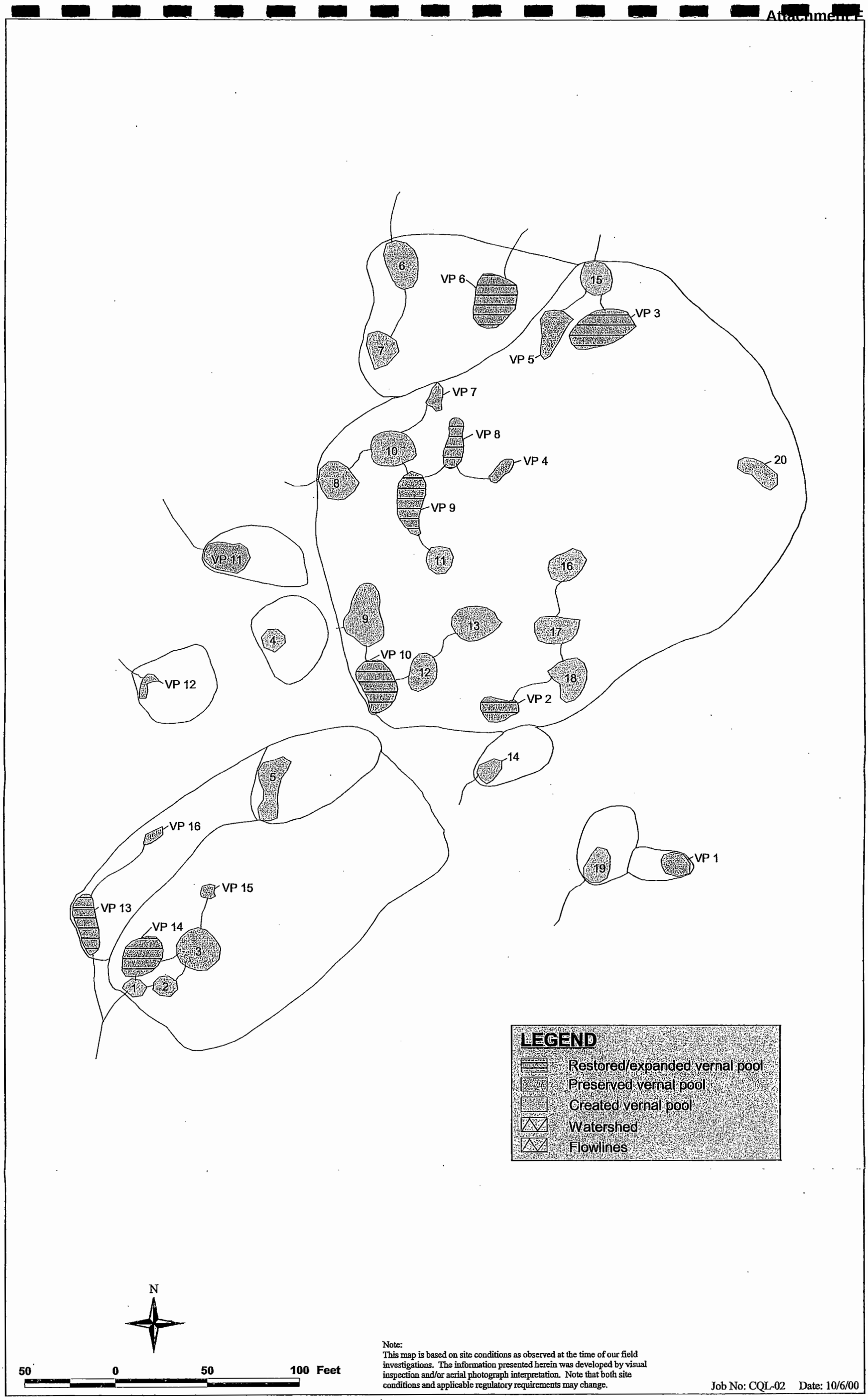
As part of the monitoring program, annual reports prepared by HELIX will be submitted to the ACOE and USFWS evaluating the success of the mitigation effort to date, along with any recommendations for future work that may be deemed necessary. The annual monitoring report will include data collected throughout the year in addition to the annual monitoring visit.

Viejo Conservation Bank
Vernal Pool Restoration/Creation Notes

			Conditions					
Pool No.	Original Area (ft^2)*	Expanded Area (ft^2)	Riverside F.S. habitat**	Debris	Ruts	Trail	Inoculum Needed	Restoration Notes
Preserved/Restored Pools								
VP1	158.11	158.11	•					No alteration, contains Riverside fairy shrimp
VP2	1	215.47			•			Remove ruts, recontour and expand pool
VP3	40.06	543.3			•			Remove ruts and high spot, recontour and expand
VP4	199.95	199.95						Preserved pool, no alteration
VP5	178.54	178.54				•		Minor recontouring of margins
VP6	18.75	18.75			•	•		Remove ruts and trail, expand and recontour
VP7	50.05	50.05						Preserved pool, no alteration
VP8	10.05	284.2		•	•	•		Remove ruts, hole and debris, expand and recontour
VP9	16.2	542.5			•	•		Expand and recontour
VP10	20.55	453.16			•			Remove ruts and expand to east
VP11	100.05	100.05						Preserved pool, no alteration
VP12	24.8	24.8						Preserved pool, no alteration
VP13	35.8	324.59			•	•		Remove ruts, expand and recontour
VP14	129.58	384.53			•	•		Remove NNG and ruts, expand and recontour
VP15	7	7						Preserved pool, no alteration
VP16	34.65	34.65						Preserved pool, no alteration
Subtotal	**1025.14**	**3519.65**						
New/Created Pools								
1	–	89.2			•		•	Create new pool in depression within disturbed area
2	–	114.05					•	Create new pool in depression within disturbed area
3	–	416.04					•	Create new pool in depression within disturbed area
4	–	113.65					•	Create new pool in depression within disturbed area
5	–	363.78					•	Create new pool adjacent to mounded soil
6	–	380.21					•	Create new pool in disturbed habitat area
7	–	251.39			•	•	•	Remove ruts, create new pool on trail
8	–	327.9			•		•	Create new pool in low area
9	–	527.35			•		•	Remove ruts and create new pool
10	–	374.13			•		•	Take out trail berming and create pool
11	–	173.64			•		•	Remove ruts, create new pool
12	–	249.84					•	Create new pool in low area above VP10
13	–	380.51			•		•	Create new pool, remove ruts
14	–	127.28					•	Create new pool in depression
15	–	257.41					•	Create new pool along canyon edge
16	–	255.77					•	Create new pool
17	–	298.23					•	Create new pool
18	–	330.88					•	Create new pool in depression
19	–	204.46			•	•	•	Remove rut and trail, create new pool
20	–	208.46					•	Create new pool
Subtotal	–	**5444.18**						
TOTAL	**1025.14**	**8963.83**						

* Area based on Wetland Delineation and Vernal Pool Technical Report (PCR 1998)

** Pools supporting the endangered Riverside fairy shrimp (*Streptocephalus woottoni*)



Viejo Conservation Bank Conceptual Vernal Pool Mitigation Plan

SADDLEBACK MEADOWS

HELIX

Figure 6

SADDLEBACK MEADOWS IMPACTS AND MITIGATION January 10, 2001							
HABITAT TYPE	EXISTING ACRES	IMPACTS	MITIGATION				TOTAL MITIGATION
			On-site Preservation	On-site Restoration	Off-site Preservation	Off-site Enhancement/ Restoration	
Pond Habitat (Wetlands)							
Ephemeral pond	0.48	0.40 (Ponds A, B, D, E, G)	0.08 (Ponds H, I)	1.15 (Ponds 1 through 8)	0.02 – Viejo mitigation bank	0.03 – Viejo mitigation bank	1.28 (1.20 excluding on-site preservation)
Mulefat scrub	1.07	0.86*	0.21	0.86		Creation – 0.9 Enhancement – 0.82 Hidden Ranch	2.79 (2.58 excluding on-site preservation)
Drainage Habitat (Waters of the U.S.)							
Vegetated intermittent non-wetland waters of the U.S.	3.63	0.17	2.14	0.17			2.31 (0.17 excluding on-site preservation)
Unvegetated ephemeral non-wetland waters of the U.S.	Included in 3.63 above	1.32	Included in 2.14 above	0.27	1.05 – either Viejo or Hidden Ranch	Enhancement – 0.05 Hidden Ranch	1.32

*Includes impacts to Pond F which has been breeched.

HELIX environmental planning, inc.

MEMORANDUM

date: December 20, 2000

to: David Zoutendyk

organization: U.S. Fish and Wildlife Service

from: Barry Jones

subject: Additional information requested for Saddleback Meadows

job number: CQL-02

Based on our November 16, 2000 meeting with the U.S. Fish and Wildlife Service, California Department of Fish and Game, and the U.S. Army Corps of Engineers we are providing you with the following additional information on the Saddleback Meadows project:

- Survey results for the Riverside fairy shrimp in Ponds C and F.
- Memo recommending use of the soils from Ponds C and F in new pond creation.
- Map and table of watersheds of existing ponds and and table of watersheds of created ponds.
- Proposed phasing plan of Riverside fairy shrimp mitigation and project development.

Please let me know if you have any questions.

Cc: Vicki White, USACOE
Leslie MacNair, CDFG
Stacey Baczkowski, RWQCB
Joe LaCava, TPG Management
Mike McCollum, McCollum Associates

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Proposed Phasing of Riverside Fairy Shrimp Mitigation and Project Development – Saddleback Meadows

Proposed Phasing

Timeframe	Pond Creation		Project Development			Net Pond Impact
	Ponds	Acreage Created	Residential Lots	Ponds Impacted	Acreage Impact	
Winter 2000/2001	1, 2, 7, 8[1]	0.61				+ 0.61 ac.[4]
Start: 2nd Qtr 2002			1 – 129	A, B	0.13	+ 0.48
Start: 2nd Qtr 2003			130 – 299	D, E, G[3]	0.27	+ 0.21
4th Qtr 2003	3, 4, 5, 6[2]	0.54				+ 0.75

[1]Ponds 1, 2, 7, 8 are independent of project remedial and mass grading. Pond 6 is also independent but it is very close to Pond 5 and is a small pond that early creation is not recommended.

[2]Ponds 3, 4, 5, 6 are located either immediately adjacent (50'+/-) or within the footprint of project remedial grading; therefore, construction of these ponds can not be initiated prior to substantial completion of the remedial and mass grading of Phase 2 of the project.

[3]The remedial and mass grading for Lots 1 through 129 will disturb neither the ponds nor the watershed of Ponds D, E, and G. There will be remedial grading within the watershed of Pond H.

[4]Ponds constructed prior to start of project represents a 1.5:1 ratio to total impact. Overall on-site mitigation ratio is 2.88:1

Proposed Ponds (as of November 6, 2000)

Pond	Acreage
1	0.16
2	0.15
3*	0.02
4	0.10
5	0.37
6	0.05
7	0.16
8**	0.14
Total	**1.15**

*Pond 3 identified in Apr-2000 conceptual mitigation plan has been discarded as not feasible. Expansion of Pond H per Apr-2000 plan and Oct-6-2000 memo has been renamed Pond 3 per package sent out Nov-10-2000.

**New pond added Nov-2000 based on field observation by Barry Jones and David Zoutendyk and documented in package sent out Nov-10-2000.

Proposed Impacts

Pond	Acreage Impacted*	Acreage Preserved*
A	0.10	0.00
B	0.03	0.00
C**	0.00	0.00
D	0.15	0.00
E	0.11	0.00
F**	0.00	0.00
G	0.01	0.00
H	0.00	0.02
I	0.00	0.06
Total	**0.40**	**0.08**

*Source: Jurisdiction Delineation, dated March 2000, Chambers Group.

**Ponds C and F were breached have been significantly impacted by sedimentation and base soil alternation. Cysts have been found although at a very low density. Since neither pond has the ability to impound water, neither pond is considered to be habitat.

HELIX environmental planning, inc.

MEMORANDUM

date: December 19, 2000

to: David Zoutendyk

organization: U.S. Fish and Wildlife Service

from: Barry Jones

subject: Saddleback Meadows fairy shrimp dry sampling results

job number: CQL-02

Dry sampling of Ponds C and F have confirmed the presence of Riverside fairy shrimp cysts in low densities (one cyst in Pond C and four cysts in Pond F). Neither basin is currently capable of retaining water, and hence no longer provides habitat capable of supporting Riverside fairy shrimp.

Although habitat for the fairy shrimp is no longer present, TPG Management is willing to collect soil (including fairy shrimp cysts) within these two basins for use as inoculum in basins proposed for creation on Saddleback meadows. This measure would offset impacts to cysts within the two basins, and would be incorporated into the overall mitigation for the Riverside fairy shrimp on the project.

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Watershed of Proposed and Existing Riverside Fairy Shrimp Ponds

Existing Ponds

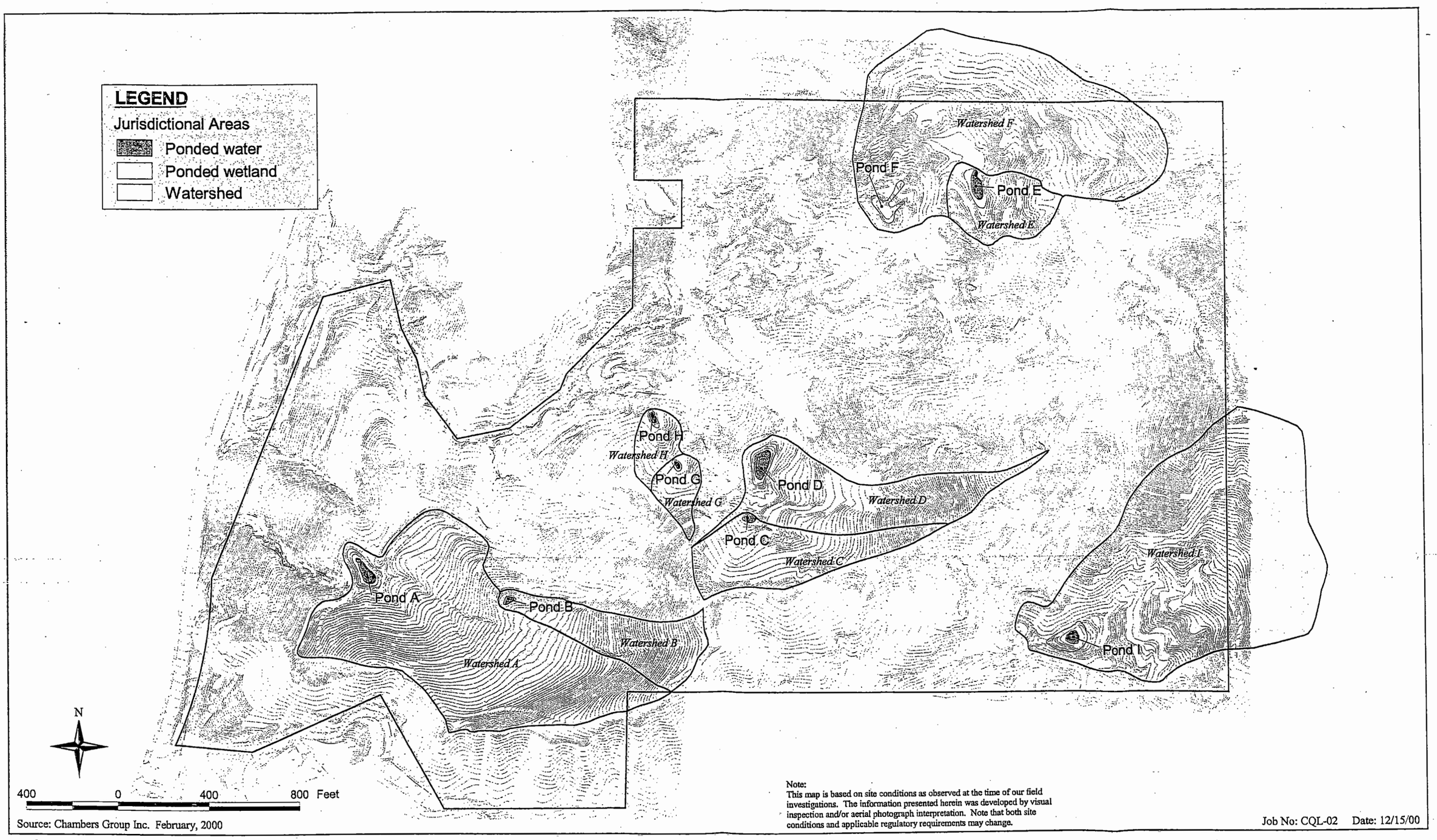
Pond	Pond Size*	Watershed	Ratio
A	0.10	21.3	213:1
B	0.03	3.8	127:1
C**	0.00	4.6	76:1
D	0.15	11.4	76:1
E	0.11	2.8	25:1
F**	0.00	18.3	N/A
G	0.01	1.1	110:1
H	0.02	1.2	60:1
I	0.06	22.3	371:1
Total	**0.48**	**86.80**	**181:1**

*Source: Jurisdiction Delineation, dated March 2000, Chambers Group.
**Ponds C and F are breached.

Proposed Ponds (as of November 6, 2000)

Pond	Pond Size	Watershed	Ratio
1	0.16	7.00	44:1
2	0.15	1.80	12:1
3*	0.02	1.20	60:1
4	0.10	1.80	18:1
5	0.37	1.30	3.5:1
6	0.05	0.25	5:1
7	0.16	7.90	49:1
8**	0.14	0.86	6:1
Total	**1.15**	**22.11**	**19:1**

*Pond 3 identified in Apr-2000 conceptual mitigation plan has been discarded as not feasible. Expansion of Pond H per Apr-2000 plan and Oct-6-2000 memo has been renamed Pond 3 per package sent out Nov-10-2000.
**New pond added Nov-2000 based on field observation by Barry Jones and David Zoutendyk, documented in package sent out Nov-10-2000.



Existing Stock Pond Watershed Limits

HELIX environmental planning, inc.

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June 30, 2000

CQL-02

Ms. Vicki White
U.S. Army Corps of Engineers
Los Angeles District Regulatory Branch
P.O. Box 532711
Los Angeles, California 90053-2325

Subject: Saddleback Meadows

Dear Vicki:

HELIX Environmental Planning, Inc. (HELIX) has refined potential restoration areas and methods for implementing U.S. Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG) required wetland mitigation for the Saddleback Meadows project on the Hidden Ranch site (Figures 1 and 2). These refinements are based on our June 15, 2000 site visit to Hidden Ranch and presented as part of the overall mitigation program being implemented for the Saddleback Meadows project, including on-site conservation and restoration, off-site acquisition, enhancement and creation of wetlands at the Viejo Mitigation Bank and the mitigation outlined below on Hidden Ranch.

METHODS

During the initial June 15th site visit with David Zoutendyk of the U.S. Fish and Wildlife Service, Leslie MacNair of the CDFG and yourself, areas were identified that would be potentially suitable for wetland and streambed restoration. The site was revisited on June 19th by Larry Sward and Barry Jones of HELIX to assess in more detail appropriate areas for preservation/enhancement and creation of ACOE and CDFG jurisdictional habitats. Areas within and immediately adjacent to the existing creek on site were deemed to be the most appropriate areas for ACOE and CDFG enhancement and creation areas, while areas further removed from the creek centerline were identified as CDFG mitigation areas only. Additional oak restoration areas were also identified for use in meeting County of Orange oak mitigation requirements for the project. Each area was flagged and photographed. Survey feathers were also used to mark permanently the proposed restoration areas. These areas were then surveyed in using a Global Positioning System (GPS), allowing for very accurate area calculations.

RESULTS

Two distinct areas were identified for mitigation: the area within the existing ranch compound that has been the most heavily disturbed and an area along the creek immediately upstream of the ranch compound that has been disturbed by long-term cattle grazing (Figure 3).

The ranch compound area has two drainages traversing it (Figure 4). The main drainage channel has been completed denuded of vegetation from the existing creek crossing downstream to the fenceline (Figure 5). Upstream of the crossing, some riparian vegetation does exist (Figure 6). A second channel enters the compound from the east and flows south into the main channel. Currently, this channel has limited riparian vegetation due to cattle grazing activities (Figure 7).

Figure 4 shows the areas proposed for preservation, enhancement and creation in the ranch compound. The existing barn, corral and associated equipment will be removed from the site, while the existing homes and pump house will remain. The existing crossing will be expanded with additional pipes to allow a wider area of inundation upstream and downstream. Areas of the creek downstream of the existing crossing (Area 1) will be widened to the same grade as the existing channel. These areas will be considered ACOE/CDFG creation areas. The existing creek channel both downstream and upstream of the crossing will be enhanced (Area 2) and graded to within one foot of the existing creek channel to the east for use as CDFG creation area; another area (Area 3) will be graded down and restored along the smaller drainage to east of the primary drainage. The area upstream of the crossing (Area 4) will be graded down to provide for ACOE and CDFG creation.

Figures 8 through 10 show the areas proposed for preservation, enhancement and creation to the north of the compound area. The existing channel is of better quality in this area but has still been degraded by cattle grazing. Area 5 will be used for ACOE and CDFG creation. Adjacent areas to the east will be used for oak woodland restoration for County of Orange mitigation needs.

The existing channels will be enhanced by weeding and planting of mule fat (*Baccharis salicifolia*) and a limited number of willows (*Salix* sp.). The areas in the ranch compound will need to be planted at similar densities to areas proposed for creation given the highly disturbed nature of the channel. ACOE creation areas will be planted based on Table 1 below; CDFG creation areas will be planted based on Table 2 below. We feel that this two-zone approach is best suited to the site. Temporary irrigation will be used for all but the existing stream channel areas.

Table 1
ARMY CORPS OF ENGINEERS
RETORATION AREAS

SPECIES	PLANTS PER ACRE
Mule fat (*Baccharis salicifolia*)	250
Arroyo willow (*Salix lasiolepis*)	20
Black willow (*Salix gooddingii*)	20

Table 2 CALIFORNIA DEPARTMENT OF FISH AND GAME RESTORATION AREAS	
SPECIES	PLANTS PER ACRE
Mule fat (*Baccharis salicifolia*)	200
Mexican elderberry (*Sambucus mexicana*)	20
Western sycamore (*Platanus racemosa*)	40
Coast live oak (*Quercus agrifolia*)	20
California rose (*Rosa californica*)	50

It is anticipated that this restoration effort will be successful because the areas proposed for creation/enhancement occur within or adjacent to the existing channel, and the width of the proposed creation/enhancement areas is no wider than the existing vegetation within the channel upstream or downstream where cattle grazing has been eliminated. Additionally, the hydrology of the creation areas will be consistent with the hydrology of the existing channel.

The proposed restoration will result in the enhancement of 1.1 acres of existing degraded stream channel, creation of 0.9 acre of ACOE/CDFG jurisdictional areas and 0.34 acre of CDFG only jurisdictional areas. Combined with the Saddleback Meadows on-site preservation, enhancement and creation as well as preservation and creation at the Viejo Mitigation Bank, a total of 0.78 acre of ACOE jurisdictional mule fat scrub will be created on site, 0.9 acre of mule fat scrub/riparian will be created at the Hidden Ranch site and 0.9 acre of existing degraded mule fat/riparian will be preserved and enhanced at the Hidden Ranch site. The remaining 1.05 acres of waters of the U.S. mitigation will be mitigated through preservation of waters/wetlands on the Viejo and/or Hidden Ranch sites.

The combination of on- and off-site measures will result in ACOE mitigation ratios of 3:1 for mule fat scrub (1.95:1 of creation and 1.05:1 enhancement for the 0.86 acre impacted) and 1:1 for waters of the U.S./streambed (1.05 acres impacted).

Similarly, a total of 0.78 acre of CDFG jurisdictional mule fat scrub will be created on site, 1.24 acres of mule fat scrub/riparian will be created at the Hidden Ranch site, and 1.1 acres of existing degraded mule fat/riparian will be preserved and enhanced at the Hidden Ranch site. An additional 1.01 acres of CDFG oak woodland will be restored on Hidden Ranch. The remaining 1.0 acre of streambed mitigation will be mitigated through preservation of waters/wetlands on the Viejo and/or Hidden Ranch sites. Combined, these measures will result in mitigation ratios of 3:1 for mule fat scrub and oak woodland impacts and 1:01 for waters of the U.S./streambed impacts.

The combination of on- and off-site measures will result in CDFG mitigation ratios of 3:1 for mule fat scrub (2:1 of creation and 1:1 preservation and enhancement for the 1.54 acres impacted) and 1:1 for waters of the U.S./streambed (1.01 acres impacted).

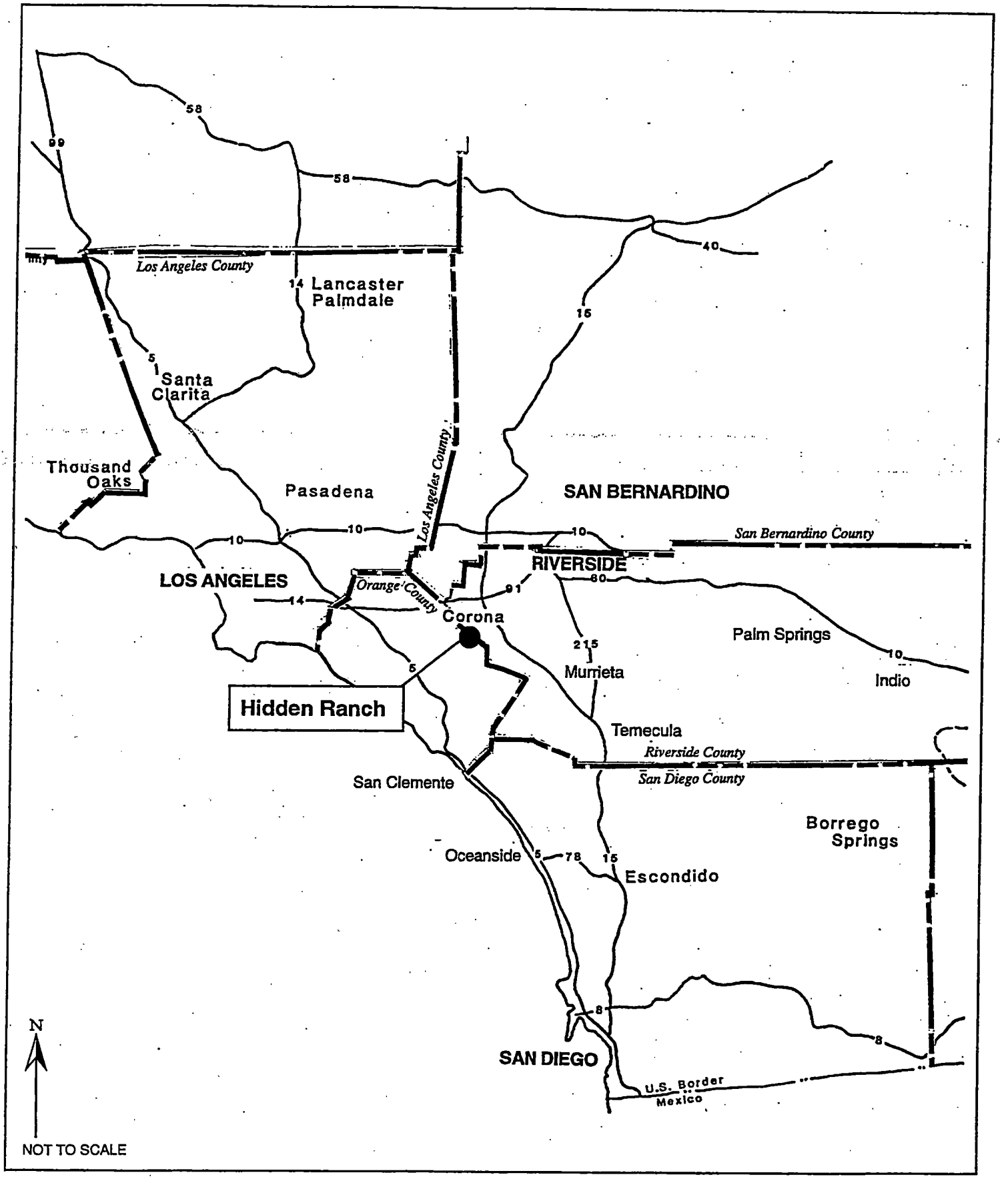
Please review the information provided and provide us with input as to whether this site and the methods proposed can provide the basis for formalizing this in greater detail in the mitigation plan. Please also let me know if you have any questions.

Sincerely,

Barry L. Jones
Senior Consulting Biologist

Attachments

cc: Leslie MacNair
David Zoutendyk
Joe LaCava
Mike McCollum

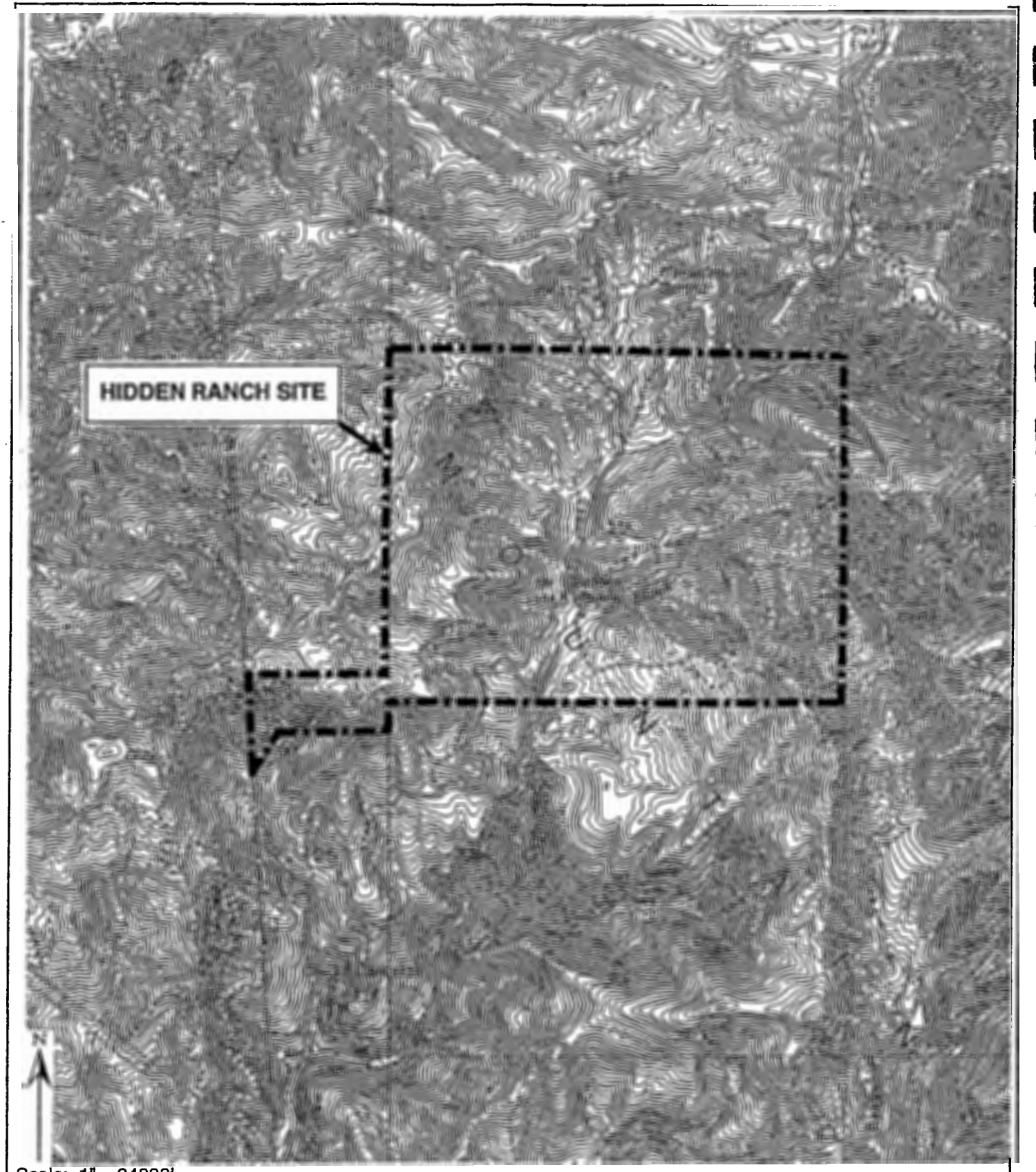


Hidden Ranch Location Map

SADDLEBACK MEADOWS

Figure 1

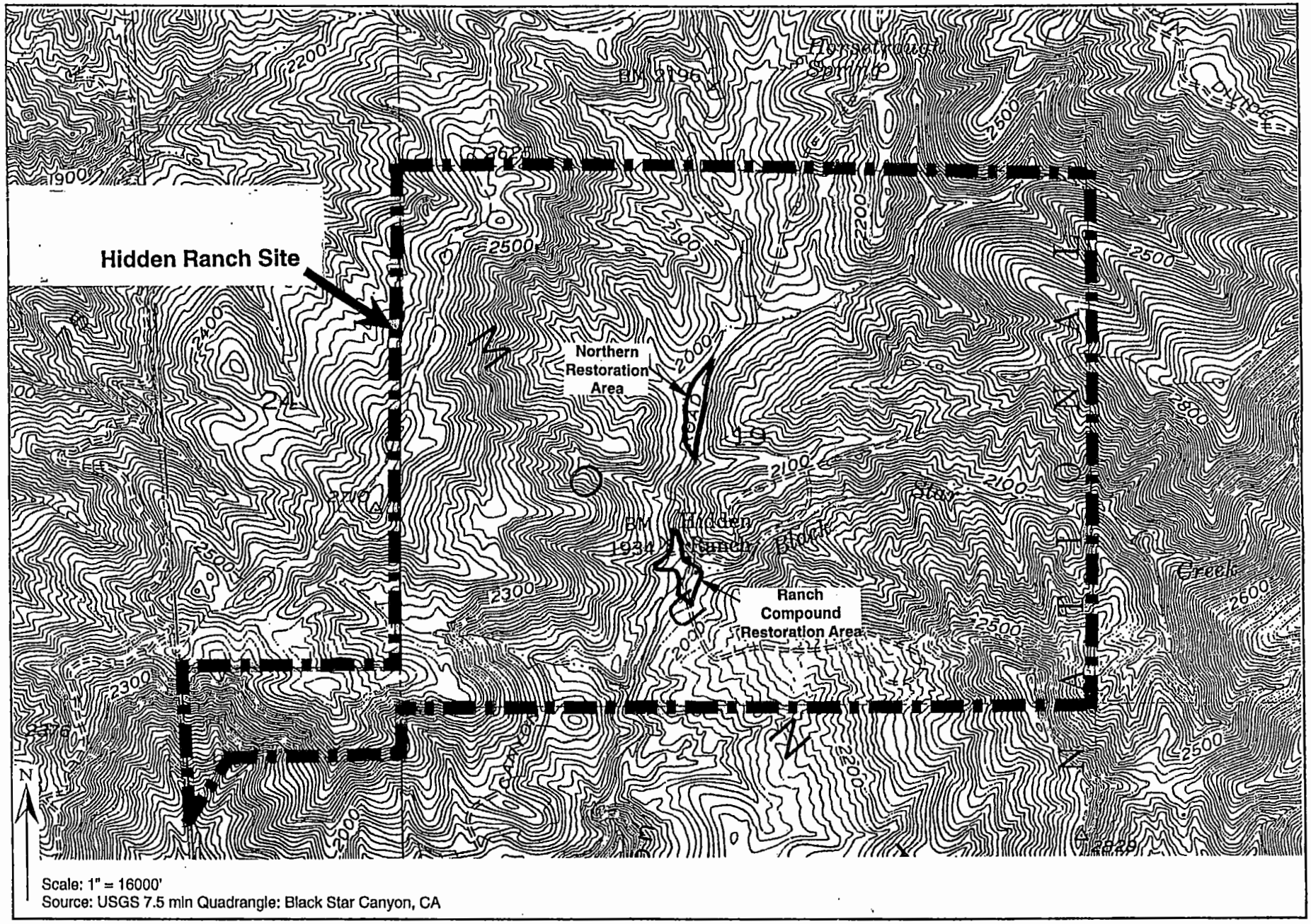
HELIX



Scale: 1" = 24000'
Source: USGS 7.5 min Quadrangle: Black Star Canyon, CA

Hidden Ranch Vicinity Map
SADDLEBACK MEADOWS
Figure 2

HELIX

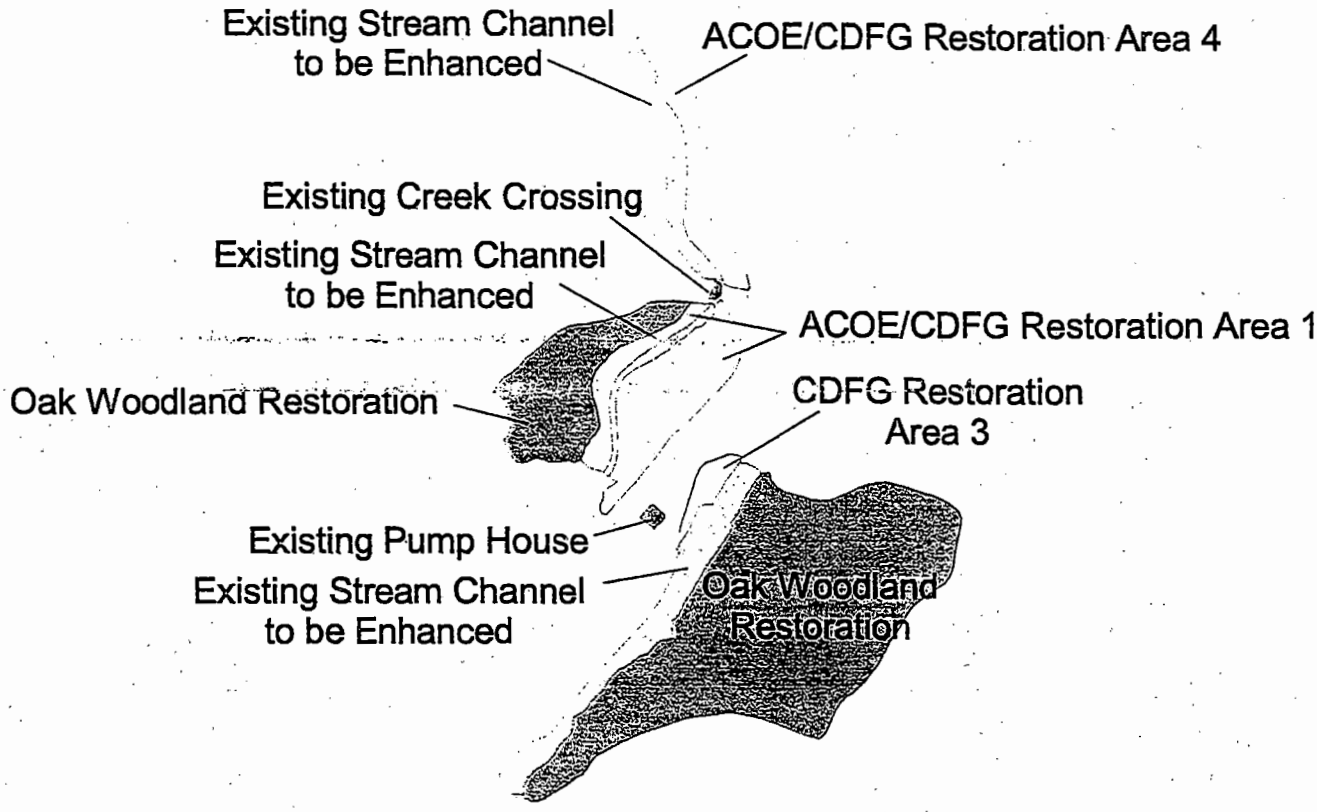


Hidden Ranch Restoration Locations

SADDLEBACK MEADOWS

Figure 3

HELIX



200 0 200 Feet

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 6/28/00

Hidden Ranch - Ranch Compound Mitigation Site

SADDLEBACK MEADOWS

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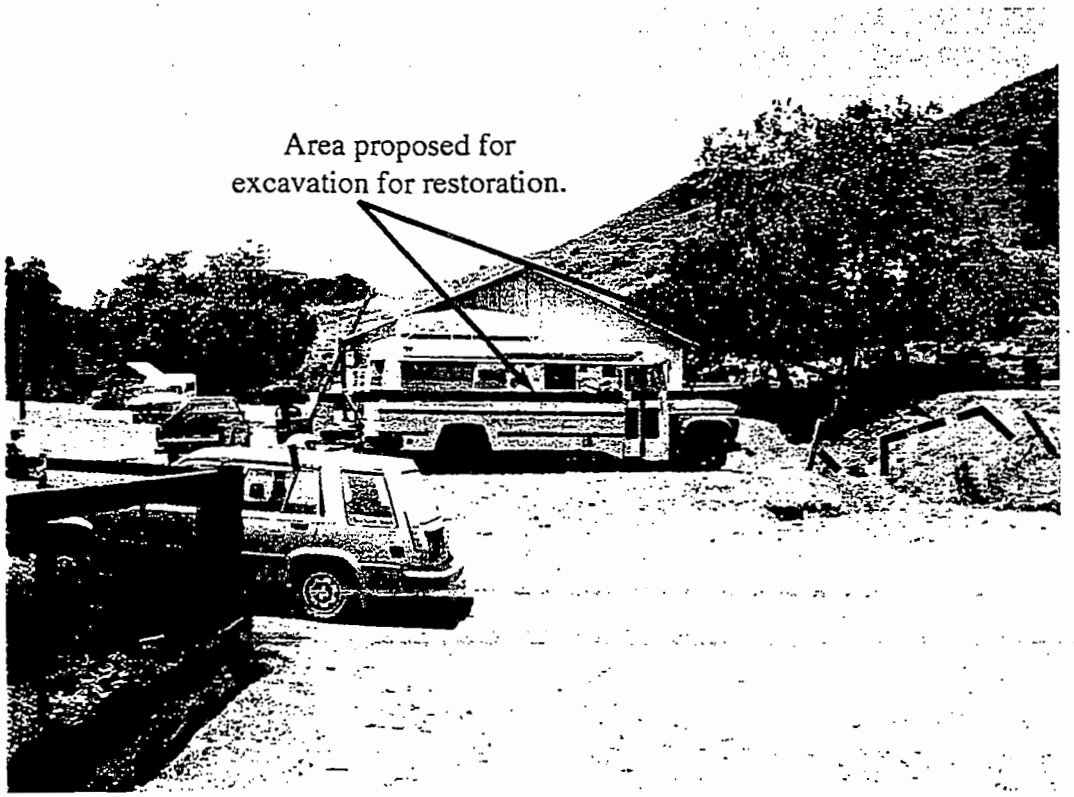
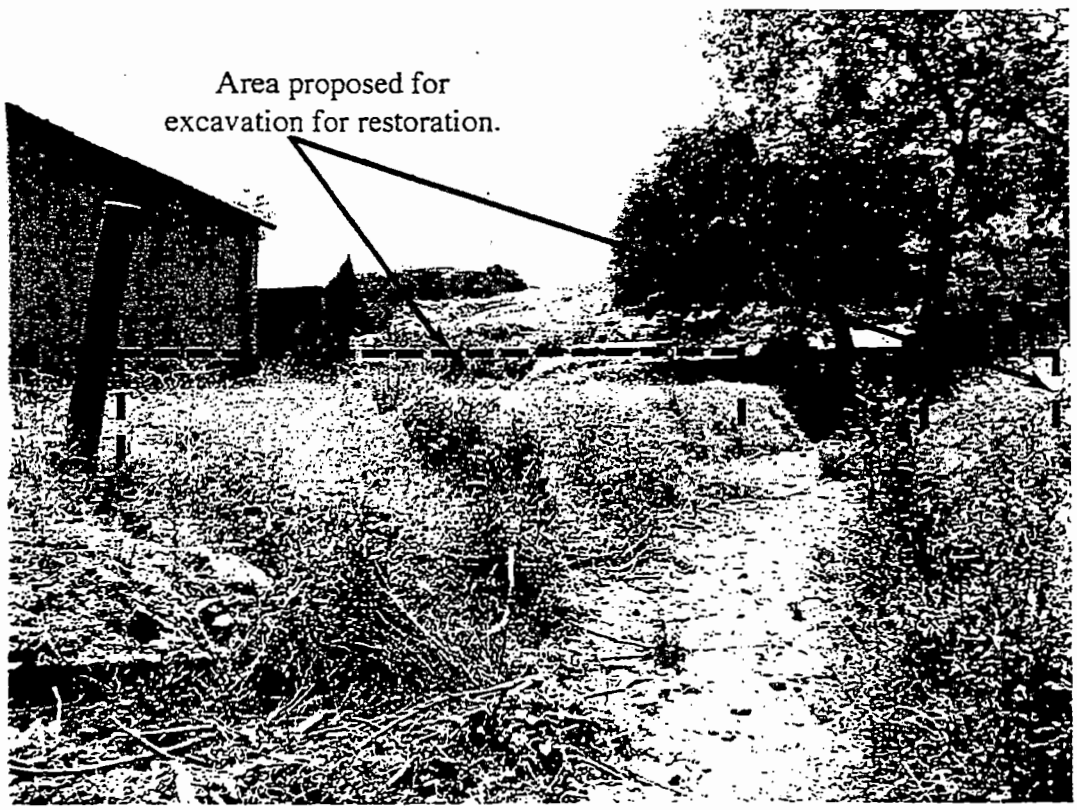
Figure 4





Areas 1 and 2

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

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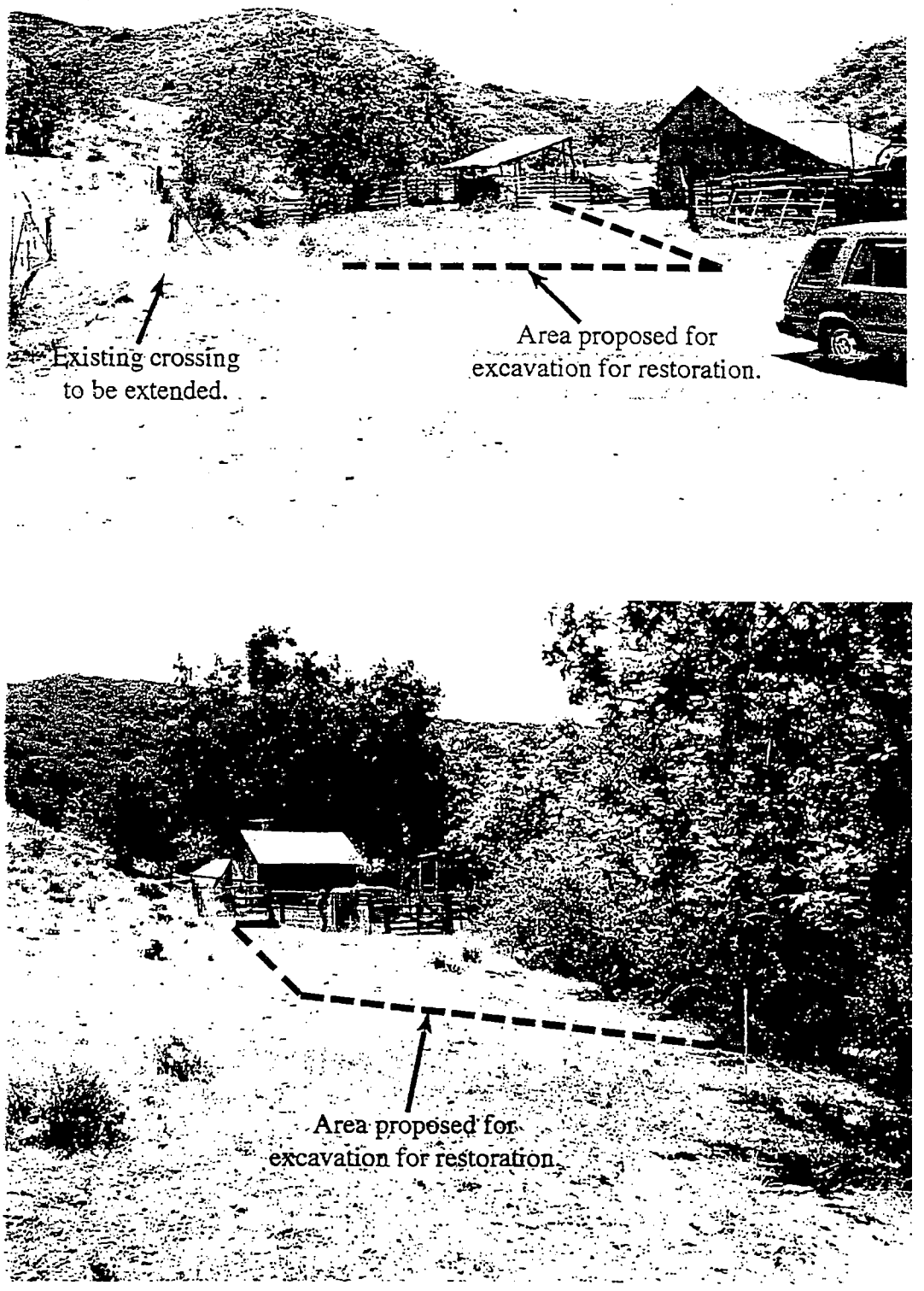
Figure 5



Areas 4

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

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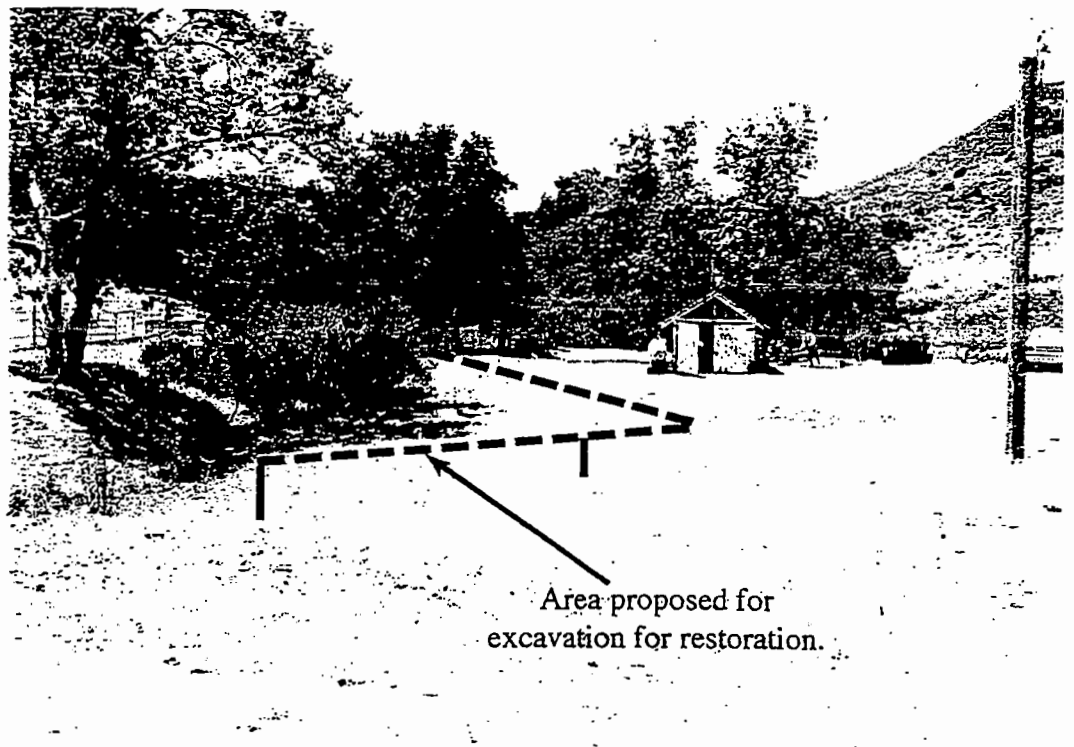
Figure 6



Area 3

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

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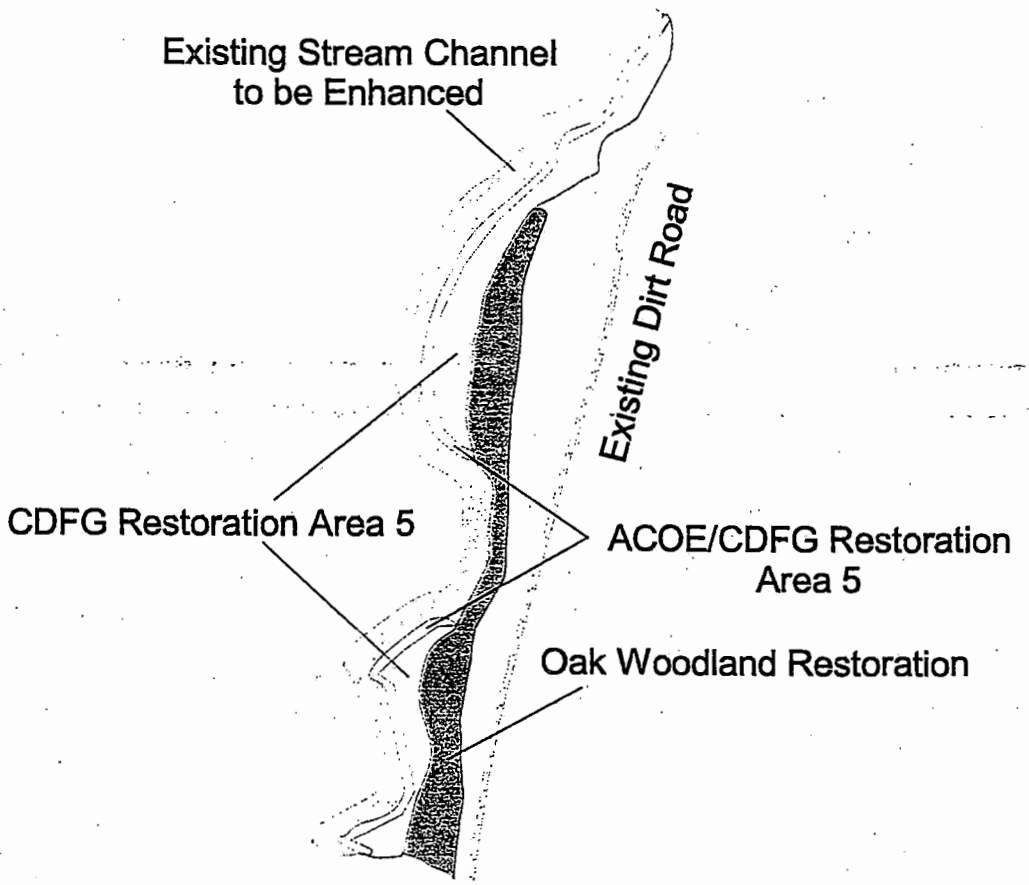
Figure 7



200 0 200 Feet

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 6/28/00

Hidden Ranch - Northern Mitigation Site

SADDLEBACK MEADOWS

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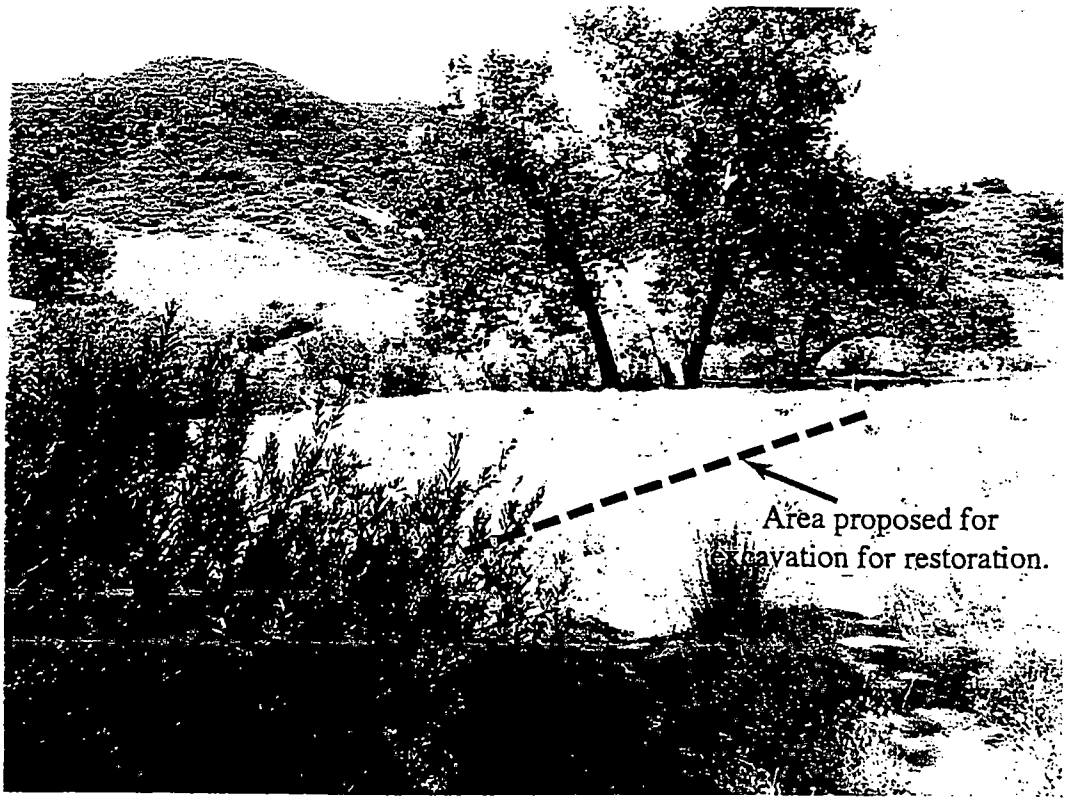
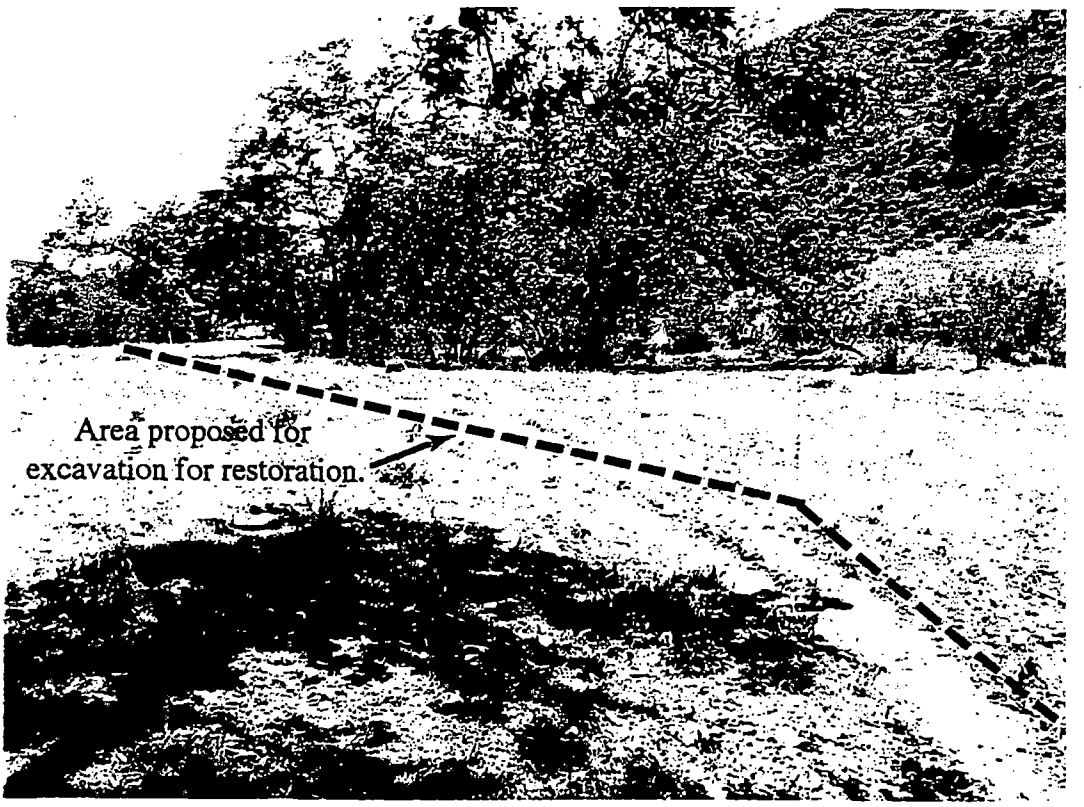
Figure 8



Southern segment.



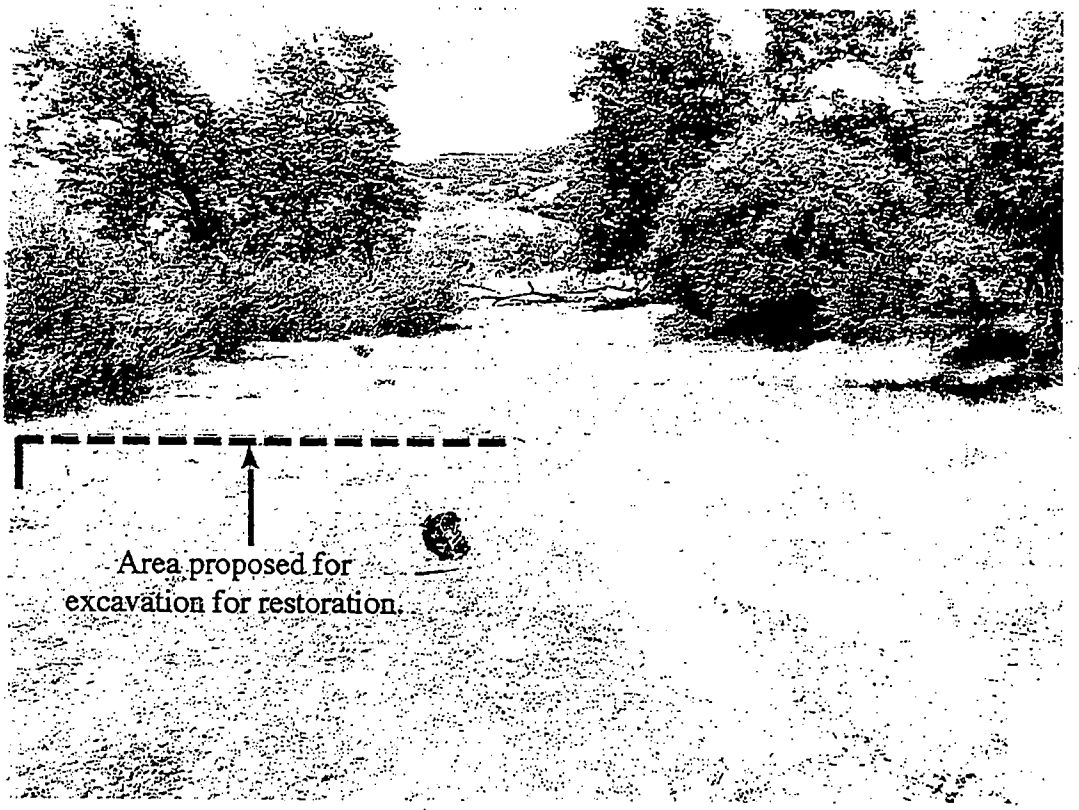
Middle segment.

Areas 5

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

HELIX

Figure 9



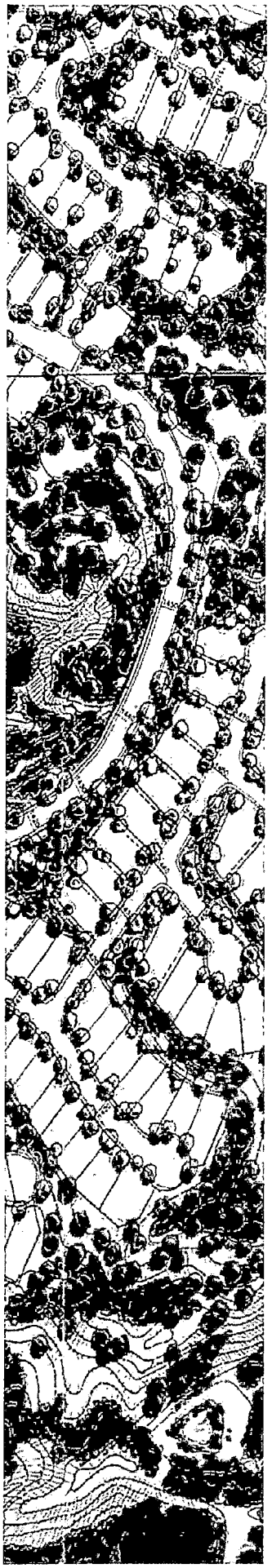
Northern segment.

Area 5

SADDLEBACK MEADOWS
HIDDEN RANCH WETLAND MITIGATION SITE

HELIX

Figure 10



FINAL REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

RESPONSE TO COMMENTS

EIR 566
State Clearinghouse No. 1996121072

Saddleback Meadows

Planning Application 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

Prepared For :
County of Orange
Planning and Development Services Department

Prepared By :

HDR
201 South Lake Avenue, Suite 705
Pasadena, California 91101

August 2002

FINAL REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566
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Prepared for Lead Agency:

County of Orange

Planning and Development Services Department
Environmental Planning Services Division

Tim Neely, Division Manager
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August 2002
11353-001-043

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
1.1 INTRODUCTION / SUMMARY 1-1
2.0 CORRECTIONS AND ADDITIONS 2-1
3.0 RESPONSE TO WRITTEN COMMENTS 3-1
3.1 INTRODUCTION 3-1
3.2 AGENCY COMMENT LETTERS 3-3
3.3 ORGANIZATIONS/BUSINESS LETTERS 3-45
3.4 INDIVIDUAL COMMENT LETTERS 3-127
4.0 REFERENCES 4-1

LIST OF TABLES

Table 3.1 – List of Commenters 3-2
Table 3.2 – Mitigation Measure (M 5-5) Fair Share Calculations 3-40

REVISED TABLES/FIGURES FROM DRAFT REVISED SUBSEQUENT EIR

Table 3.1 – Related Projects 2-1
Table 4.5.1 – Existing Intersection Capacity Utilization (ICU) and Level of Service 2-2
Table 4.5.8 – 2005 Intersection ICU and LOS With the Project 2-3
Table 4.5.9 – 2005 Intersection ICU and LOS Without the Project 2.4
Table 4.12.1 – Fire Station Locations 2.5
Table 5.7 – Comparison of Proposed Project and Alternative Impacts 2.8
Figure 4.12.1 – Fuel Modification Plan 2.9

LIST OF APPENDICES

APPENDIX A – DRAFT REVISED SUBSEQUENT EIR DISTRIBUTION/COMMENT LETTERS
A.1 - PUBLIC NOTICE / DISTRIBUTION LIST
A.2 – COMMENT LETTERS
APPENDIX B – STREAMBED ALTERATION AGREEMENT
APPENDIX C – LETTER FROM DENNIS MURPHY
APPENDIX D – CONCEPTUAL WATER QUALITY MANAGEMENT PLAN

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

1.1 INTRODUCTION / SUMMARY

This Response to Comments document has been prepared in accordance with the California Environmental Quality Act (CEQA) as amended (Public Resources Code Section 21000 *et seq.*), and *CEQA Guidelines* (California Administrative Code Section 15000 *et seq.*). The Final EIR contains the following components:

- Final Revised Subsequent EIR including Response to Comments (June 2002) (SCH No. 1996121072)
- Incorporated revisions and minor additions into the Draft Revised Subsequent EIR based upon public and agency comments
- Draft Revised Subsequent Environmental Impact Report (April 2002) (SCH No. 1996121072)

The above outlined documents are incorporated by reference into the Final EIR and are available for review at the Orange County Planning and Development Services Department and the following Orange County Public Libraries:

Orange County Library - Rancho Santa Margarita Branch
30902 La Pramera
Rancho Santa Margarita, California 92688

Orange County Library – El Toro Branch
24672 Raymond Avenue
El Toro, California 92630

Orange County Library – Silverado Branch
281922 Silverado Canyon Road
Silverado, California 92676

Orange County Library – Mission Viejo Branch
25209 Marguerite Parkway
Mission Viejo, California 92691

California State University, Fullerton
Library Documents Section

UC Irvine
Main Library – Government Publications/Microforms Department

The above outlined CEQA documents are collectively referred to as the Final EIR. Environmental Findings have been prepared for the Final EIR in accordance with Section 15091 of the *CEQA Guidelines*, and are contained in a separate document.

The Draft EIR was distributed to various public agencies, citizen groups and interested individuals on April 26, 2002 for a period of 45 days (see Appendix A.1 for a distribution list). The comment period closed June 10, 2002. However, the comment review period was extended an additional two-weeks per requests from California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS) (see Appendix A.1). Thus, the comment review period closed on June 24, 2002. Orange County Planning and Development Services Department received a total of 27 letters from responsible agencies and special interest groups (see Appendix A.2). This Response to Comments document contains responses to comments received on the Draft Revised Subsequent EIR during the public review period.

Comments have been retyped, numbered in sequential order, and are followed by responses. Copies of all comment letters are included in Appendix A.2 of this document.

In accordance with Public Resources Code 21092.5 of the *CEQA Guidelines*, this Response to Comments document will be provided to commenting public agencies, organizations, and individuals for a minimum of ten days prior to certification of the EIR.

SECTION 2.0

CORRECTIONS AND ADDITIONS

2.0 CORRECTIONS AND ADDITIONS

This section contains revisions to information included in the Draft Revised Subsequent EIR based upon: (1) additional or revised information required to prepare a response to a specific comment, (2) updated information which has become out-of-date as a result of the passage of time, and/or (3) typographical errors.

1. Page 1-4, Section 1.4.2 "Draft Revised Subsequent EIR": Add the following text to the second paragraph: "*The Initial Study identifies "Hazards" as a potentially significant impact which may result from project implementation. However, issues surrounding "Hazards" involve fire hazards, emergency response plans, as identification of unavoidable and cumulative hazard impacts. These issues are discussed and analyzed under Section 4.12 Fire Protection and Section 4.13 Police Protection rather than a separate section exclusive to Hazards.*"

2. Page 2-16, Section 2.3.2 "Project Phasing": Change "*However, project grading would be completed in one phase and require approximately 13 months to complete.*" to read "*However, project grading would be completed in one phase and require approximately 15 months to complete.*"

3. Page 3-5, Table 3.1: The following table reflects current information and shall replace "Table 3.1 – Related Projects" as found in the Draft Revised Subsequent EIR:

Table 3.1
Related Projects

Project	Type of Development	Size	Status
1. Saddle Creek/Saddle Crest	Single-family residential	200 du	Pending
2. Live Oak Plaza	Commercial center	41,900 sf	Approved
3. Gateway Commercial Center	Athletic Club Medical/Commercial Gas Station Nursery/Garden Center	83,000 sf	Approved
4. Mammoth Equities Office	Office	49,000 sf	Approved
5. Painted Trails Residential	Single-family residential; private parks	578 du	Approved
6. Country Suites Hotel	Hotel	118 rooms	Approved
7. Shea Properties	Multi-family residential; apartments	230 apartments	Approved
8. Rancho Protero Leadership Academy	Juvenile facility	90 beds	Approved

du - dwelling units; sf - square feet

Source: County of Orange, 2002 and City of Lake Forest 2002.

4. Page 4.2-18, M 2-14 under Section 4.2.6 "Mitigation Measures": Change "*Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal off-site*" to read "*Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas.*"

5. Page 4.2-18, M 2-15 under Section 4.2.6 "Mitigation Measures": Delete mitigation measure M 2-15.

6. Page 4.2-21, Section 4.2.6 "Mitigation Measures": Add new mitigation measure M 2-37:

M 2-37 *In the geotechnical report submitted per SC 2-1, the applicant shall provide evidence to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division that existing landslides in the undisturbed areas of the property will not be impacted by the discharge of project dry weather flows or storm water runoff and that new instability problems will not be created by rising ground water levels due to infiltration of irrigation and other new sources of water.*

7. Page 4.5-6, Table 4.5.1: The following table reflects current information and shall replace "Table 4.5.1 - Existing Intersection Capacity Utilization (ICU) and Level of Service (LOS)" as found in the Draft Revised Subsequent EIR:

Table 4.5.1
Existing Intersection Capacity Utilization (ICU) and Level of Service (LOS)

Intersection	Peak Hour ICU		Peak Hour LOS	
	A.M.	P.M.	A.M.	P.M.
Santiago Canyon Road (NS) at:				
Modjeska Canyon Road (EW)	0.33	0.22	A	A
Ridgeline Road (EW)	0.29	0.22	A	A
El Toro Road (NS) at:				
Live Oak Canyon Road (EW)	0.30	0.30	A	A
Ridgeline Road (EW)	0.38	0.32	A	A
Valley Vista Way (EW)	0.36	0.37	A	A
Glenn Ranch Road (EW)	0.37	0.40	A	A
Saddleback Ranch Road (NS) at:				
Glenn Ranch Road (EW)	0.41	0.56	A	A
Marguerite Parkway (NS) at:				
El Toro Road (EW)	0.27	0.40	A	A
Portola Parkway (NS) at:				
Glenn Ranch Road (EW)	0.62	0.50	B	A
Foothill Transportation Corridor (EW)	0.54	0.79	A	C
El Toro Road (EW)	0.75	0.65	C	B

Source: Urban Crossroads, Inc., 2002.

8. Page 4.5-21, Table 4.5.8: The following table reflects current information and shall replace "Table 4.5.8 - 2005 Intersection ICU and LOS With the Project" as found in the Draft Revised Subsequent EIR:

Table 4.5.8
2005 Intersection ICU and LOS With the Project

Intersection	With Project/Without Improvements				With Project/With Improvements			
	Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Santiago Canyon Road (NS) at:								
Modjeska Canyon Road (EW)	0.40	0.31	A	A	0.40	0.31	A	A
Ridgeline Road (EW)	0.38	0.36	A	A	0.38	0.36	A	A
El Toro Road (NS) at:								
Live Oak Canyon Road (EW)	0.42	0.52	A	A	0.42	0.52	A	A
Ridgeline Road (EW)	0.52	0.51	A	A	0.52	0.51	A	A
Project Entrance (EW)	0.52	0.55	A	A	0.52	0.55	A	A
Valley Vista Way (EW)	0.54	0.62	A	B	0.54	0.62	A	B
Glenn Ranch Road (EW)	0.48	0.60	A	A	0.48	0.60	A	A
Saddleback Ranch Road (NS) at:								
Glenn Ranch Road (EW)	0.48	0.63	A	B	0.48	0.63	A	A
Marguerite Parkway (NS) at:								
El Toro Road (EW)	0.31	0.44	A	A	0.31	0.44	A	A
Portola Parkway (NS) at:								
Glenn Ranch Road (EW)	0.73	0.62	C	B	0.73	0.62	C	B
Foothill Transportation Corridor (EW)	0.61	0.94	B	E	0.54	0.68	A	B
El Toro Road (EW)	0.87	0.73	D	C	0.87	0.73	D	C

Source: Urban Crossroads, Inc., 2003.

9. Page 4.5-21, Table 4.5.9: The following table reflects current information and shall replace "Table 4.5.9 – 2025 Intersections ICU and LOS Without the Project" as found in the Draft Revised Subsequent EIR:

Table 4.5.9
2025 Intersection ICU and LOS Without the Project

Intersection	Peak Hour ICU		Peak Hour LOS	
	A.M.	P.M.	A.M.	P.M.
Santiago Canyon Road (NS) at:				
Modjeska Canyon Road (EW)	0.69	0.61	B	B
Ridgeline Road (EW)	0.63	0.61	B	B
El Toro Road (NS) at:				
Live Oak Canyon Road (EW)	0.73	0.75	C	C
Ridgeline Road (EW)	1.06	0.79	F	C
Valley Vista Way (EW)	1.10	0.85	F	E
Glenn Ranch Road (EW)	0.72	0.91	C	E
Saddleback Ranch Road (NS) at:				
Glenn Ranch Road (EW)	0.80	0.82	C	D
Marguerite Parkway (NS) at:				
El Toro Road (EW)	0.46	0.58	A	A
Portola Parkway (NS) at:				
Glenn Ranch Road (EW)	0.93	1.03	E	F
Foothill Transportation Corridor (EW)	0.77	1.05	C	F
El Toro Road (EW)	1.14	0.95	F	E

Source: Urban Crossroads, Inc., 2002.

10. Page 4.5-30, M 5-5 under Section 4.5.6 "Mitigation Measures": Add the following sentence: "*The fair share funding amount agreed to by the TCA must be submitted prior to the issuance of any building permits for the project.*"

11. Page 4.8-32, Section 4.8.6 "Mitigation Measures": Add new mitigation measure M 8-4:

"*M 8-4* *Prior to grading, all Plummer's mariposa lily bulbs shall be salvaged. The bulbs shall be stored at a qualified native plant nursery prior to transplanting them for on-site habitat enhancement. All transplanted bulbs shall be maintained, including weed control. Monitoring and reporting shall be conducted. A qualified biologist/botanist shall oversee all aspects of this mitigation plan including bulb collection and transplanting, per the recommendations of the project biologist. The Plummer's mariposa lily mitigation plan shall be reviewed and approved by the Planning and Development Services Department, prior to issuance of grading permits.*"

12. Page 4.10-14, second paragraph under "Project Impacts": Change "*Data recovery would occur prior to ground disturbing activities.*" to read "*Additional mitigation would need to be accomplished if development plans change and the site is to be disturbed.*"

13. Page 4.12-1, second paragraph under Section 4.12.1: Change "*61 fire stations*" to read "*59 fire stations.*

14. Page 4.12-1, third paragraph, second bullet under Section 4.12: Remove *"only available from a medic van"* from the sentence and add the following sentence to the end of the bullet. *"OCFA provides paramedic service both paramedic assessment and full paramedic services through a number of configurations in addition to the medic vans."*

15. Page 4.12-2, Table 4.12.1 - Fire Station Locations: The following table reflects current information and shall replace "Table 4.12.1 – Fire Station Locations" as found in the Draft Revised Subsequent EIR.

Table 4.12.1
Fire Station Locations

Station No.	Staffing and Equipment	Response Distance (miles)[a]	Response Time (maximum, minutes: seconds)[b]
Fire Station No. 42: 19150 Ridgeline Drive Trabuco Canyon, CA 92679, Portola Hills	Paramedic Assessment Unit/Brush Engine, 3 Firefighters	0.3	4
Fire Station No. 18: O'Neill Park, Trabuco Canyon Road, Trabuco Canyon, CA 92679	Paramedic Assessment Unit/Brush Engine, 3 Firefighters	4.2	8:40
Fire Station No. 16: 28891 Modjeska Canyon Road Modjeska Canyon, CA 92676	Paramedic Assessment Unit/Brush Engine, 3 Firefighters	3.5	9:30
Fire Station No. 45: 30131 Adventura, Rancho Santa Margarita, CA 92688	Paramedic Assessment Unit, Truck, 1 Battalion Chief, 8 Firefighters	5.3	10:30
Fire Station No. 54 19811 Pauling Avenue Lake Forest, CA 92610	Paramedic Assessment Unit Engine, 3 Firefighters	2.8	6:20
Fire Station No. 31 22426 Olympiad Road Mission Viejo, CA 92692	Paramedic Assessment Unit Engine (closest one to the project site), Basic Life Support Engine, 3 Firefighters	3.7	7:50

[a] *Response distance is an approximate.*
[b] *Response time is an approximate based upon an average of 35 mph and 90 seconds of call processing and turnout time with the exception of Fire Station 16 which incorporates a two minute time period added for the volunteer personnel to get to the fire station (Fire Station 16 does not have full time firefighters, only volunteer firefighters).*

Sources: Service Letter from Battalion Chief Michael S. Rohde, Advance Planning, OCFA, July 13, 2001; Telephone communication with Battalion Chief Michael S. Rohde, Advance Planning, OCFA, August 29, 2001; Letter from Gene F. Begnell, Battalion Chief, Strategic Services, OFCA, June 6, 2002.

16. Page 4.12-2, third paragraph: Change *"average response time of six minutes"* to read *"average response time of nine minutes."*

17. Page 4.12-2, fourth paragraph: Replace the last sentence *"At this location three firefighters are on duty staffing either a paramedic assessment unit or a brush engine."* to read *"At this location, 20 volunteer firefighters staff the engine when called upon to do so."*

18. Page 4.12-3, first paragraph, last sentence: Change "*eight firefighters*" to read "*seven firefighters.*"

19. Page 4.12-9, under Section 4.12.4 "Project Design Features and Standard County Conditions": Add new Standard County Condition SC 12-16:

    "*SC 12-16* *Secured Fire Protection Agreement: Prior to grading, the applicant shall enter into a Secured Fire Protection Agreement with the OCFA.*"

20. Page 4.12-5, Figure 4.12.1 – Fuel Modification Plan: Please refer to the revised Figure 4.12.1 – Fuel Modification Plan as found at the end of Section 2.0 of this Response to Comments document.

21. Page 4.12-4, under Section 4.12.3 "Cumulative Impact", second paragraph: Delete the second sentence and replace with: *"Additional staffing and/or equipment may be needed to meet this demand. This issue will be addressed within the Secured Fire Protection Agreement and as with the proposed project, the related projects would be individually subject to protection and safety measures to adequately mitigate fire protection."*

22. Page 4.16-6, under Section 4.16.6 "Mitigation Measures": Add new mitigation measure: M 16-2:

    "*M 16-2* *Prior to undertaking construction of the project, the applicant shall enter into an improvement agreement with TCWD to provide for the design, construction, installation, dedication and funding of all necessary master plan and in tract storage facilities or alternatively pay TCWD's in lieu water storage fees.*"

23. Page 5-37, Alternative 6 – 44/178 Alternative "Public Services – Fire Protection and Police Protection": Replace text after first sentence with the following: *"However, the layout of the "Development Area" under this alternative would not allow for secondary access for emergency vehicles and may require the acquisition of additional easements or other mitigation measures to ensure that adequate access to the project is provided. As with the proposed project, this alternative would require a fuel modification plan to minimize or retard the spread of dry brush and wildfire into the area.*

    Fire protection impacts would be greater with implementation of Alternative 6, compared to those associated with the proposed project."

24. Page 5-47, under Section 5.5 "Environmentally Superior Alternative": Replace last sentence "*Alternative 8, the reduced residential alternative would be the environmentally superior alternative among the non no project alternatives.*" To read "*Alternative 4, the Foothill Trabuco Specific Plan EIR 531 Staff alternative would be the environmentally superior alternative among the non-no project alternatives. Although Alternative 4 is environmentally superior, it would be economically infeasible to develop. Land acquisition, engineering, construction, and implementation of mitigation measures could not be amortized over 100 single-family units. These costs combined with mitigation costs, such as those associated with stabilizing the geotechnical hazards would exceed project revenues.*"

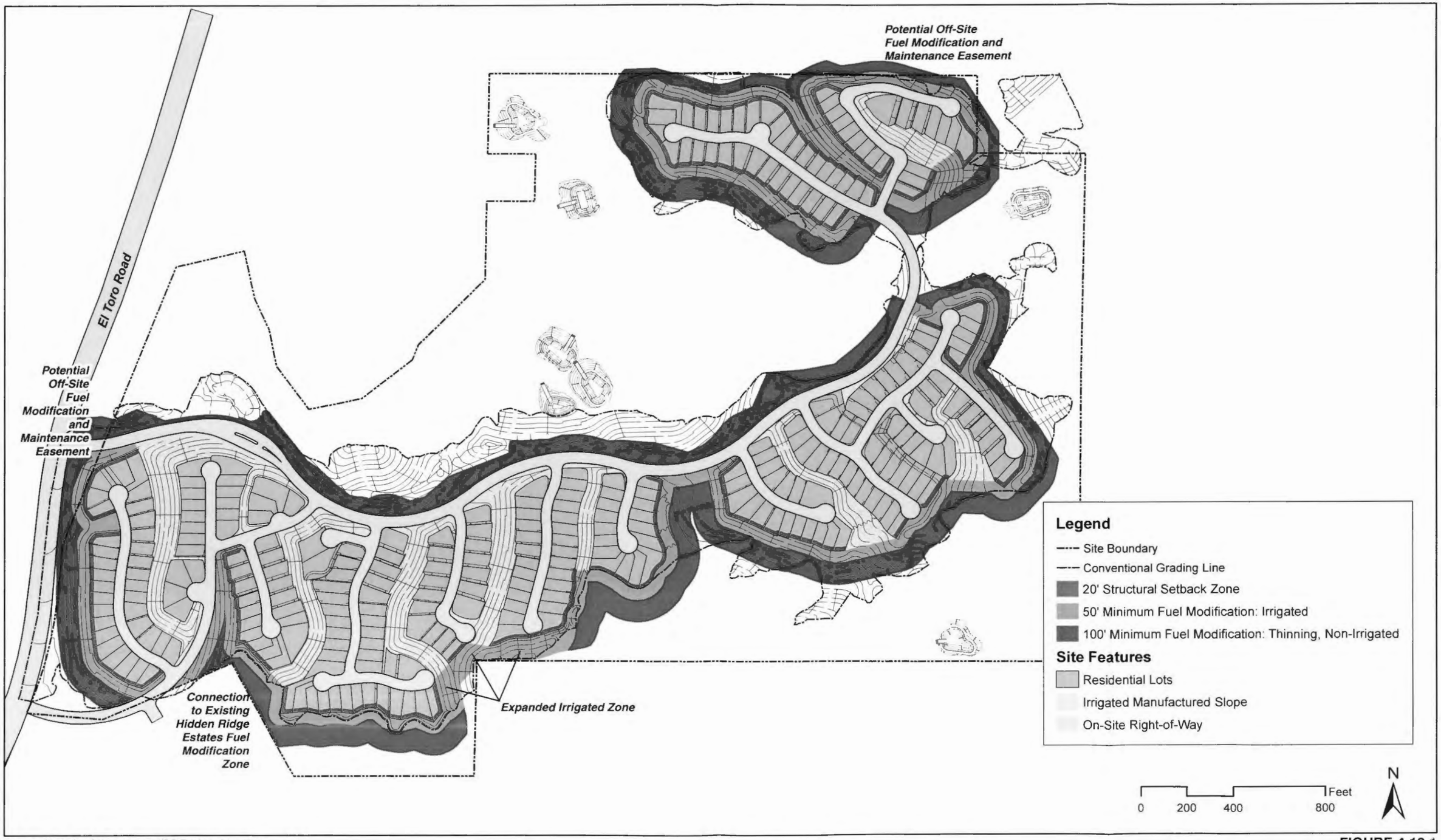
25. Page 5-48, Table 5.7: A revised Table 5.7 reflects current information and shall replace "Table 5.7 – Comparison of Proposed Project and Alternative Impacts" as found in the Draft Revised Subsequent EIR. The revised table is included at the end of Section 2.0 of this Response to Comments document.

Table 5.7
Comparison of Proposed Project and Alternative Impacts

Issue Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Meet Project Objectives?	No	No	No	Yes	Yes	Yes	No	Yes
Land Use and Planning	-	+	+	-	+	-	-	S
Geophysical Resources	+	+	+	-	S	-	+	S
Hydrology	-	+	+	-	S	-	-	S
Water Quality	-	+	+	-	S	-	-	S
Transportation/Traffic	-	+	-	-	-	-	-	-
Air Quality								
Construction	-	+	+	-	-	-	-	S
Operations	-	+	-	-	-	-	-	-
Noise	-	S	S	-	S	S	-	S
Biological Resources	-	+	+	-	-	-	-	-
Aesthetics/Visual Resources	-	+	+	-	S	-	-	S
Cultural Resources	-	+	+	-	-	-	-	S
Recreation	-	+	S	S	+	+	-	S
Public Services								
Fire Protection	-	+	-	-	+	+	-	-
Police Protection	-	+	-	-	+	-	-	-
Schools	-	+	-	-	+	-	-	-
Library	-	+	-	-	+	-	-	-
Utilities/Service Systems								
Water Supply	-	+	-	-	-	-	-	-
Wastewater	-	+	-	-	-	-	-	-
Solid Waste	-	+	-	-	-	-	-	-
Electricity	-	+	-	-	-	-	-	-
Natural Gas	-	+	-	-	-	-	-	-

S: Impacts would be similar to those of the proposed project.
(-): Impacts would be less than the proposed project.
(+): Impacts would be greater that the proposed project.

Source: HDR, 2002.



Source : Hunsaker & Associates / HDR Engineering; 2001

HDR

FIGURE 4.12.1
Fuel Modification Plan
Saddleback Meadows
Draft Revised Subsequent EIR 566

SECTION 3.0

RESPONSE TO WRITTEN COMMENTS

3.0 RESPONSE TO WRITTEN COMMENTS

3.1 INTRODUCTION

In order to comprehensively respond to all letters received on the Draft Revised Subsequent EIR and address each CEQA issue raised, a summary matrix has been developed which lists the commenter and the corresponding issues raised. The matrix contains the names of all commenters, and has been apportioned into 25 major comment categories, outlined as follows:

1. Land Use
2. Geophysical Resources
3. Hydrology
4. Water Quality
5. Transportation/Traffic
6. Air Quality
7. Noise
8. Biological Resources
9. Aesthetics/Visual
10. Cultural/Paleontological Resources
11. Recreation
12. Fire Protection
13. Police Protection
14. Schools
15. Libraries
16. Water Supply
17. Wastewater
18. Solid Waste
19. Electricity
20. Natural Gas
21. Procedural Issues
22. Mitigation Issues
23. Alternatives
24. Other Concerns/Issues
25. No Comment/No Response Required

All comment letters have been reviewed and placed into one or more of the above-outlined comment categories. Each original comment letter can be found in Appendix A.1 of this document. In total 27 comment letters were received during the comment period. Each comment letter has been retyped and divided into individual specific numbered comments. Each numbered comment is followed by a response.

All written comments are summarized in Table 3.1 and organized as follows:

- Draft EIR Public Agency Comment Letters (12 letters)
- Draft EIR Organization/Businesses Comment Letters (11 letters)
- Draft EIR Individual Comment Letters (4 letters)

Table 3.1
List of Commenters

Comment Section	Commenter	Comment Category
3.2	**Agency Comments**	
3.2.1	U.S. Fish and Wildlife Service / State of California, Department of Fish and Game	2, 3, 8, 23
3.2.2	State of California, Governor's Office of Planning and Research – State Clearinghouse	25
3.2.3	State of California, Business, Transportation, and Housing Agency – Department of Transportation	5, 6
3.2.4	California State University, Los Angeles - Anthropology	10
3.2.5	South Coast Air Quality Management District	6, 24, 25
3.2.6	Southern California Association of Governments	25
3.2.7	Transportation Corridor Agencies	5
3.2.8	Orange County Fire Authority	12, 23, 24, 25
3.2.9	Trabuco Canyon Water District	16, 17, 21, 22, 24, 25
3.2.10	City of Lake Forest	3, 4, 5, 8, 11, 24, 25
3.2.11	City of Mission Viejo	5
3.2.12	City of Rancho Santa Margarita	2, 25
3.3	**Organization/Business Comments**	
3.3.1	The Center for Biological Diversity	24
3.3.2	Connor, Blake & Griffin	1, 2, 3, 4, 8, 9, 10, 23, 24
3.3.3	The Gas Company	20, 25
3.3.4	Jauneno Band of Mission Indians	10
3.3.5	Mark R. McGuire	8
3.3.6	Orange County Regional Recreational Trails Advisory Committee	11
3.3.7	Rural Canyon Conservation Fund	1, 24
3.3.8	Saddleback Canyons Conservancy	1, 4, 8, 16, 24, 25
3.3.9	Sierra Club	21, 24
3.3.10	Trails 4 All	11
3.3.11	Terrell Watt	1, 2, 3, 4, 5, 6, 8, 9, 12, 22, 23, 24
3.4	**Individuals**	
3.4.1	Richard & Patti Gomez	1, 3, 4, 24
3.4.2	Mr. & Mrs. Michael Hodges	1
3.4.3	Kathleen Stockwell	1, 3, 4, 8, 22, 24
3.4.4	Andy Wing	5, 6

**See Sections 3.5.1-3.5.8 for a Complete Listing of Commenters*

3.2 AGENCY COMMENT LETTERS

The following agencies commented on the Draft Revised Subsequent EIR:

- U.S. Fish and Wildlife Service/State of California, Department of Fish and Game
- State of California, Governor's Office of Planning and Research - State Clearinghouse
- State of California, Department of Transportation
- California State University, Los Angeles
- South Coast Air Quality Management District
- Southern California Association of Governments
- Transportation Corridor Agencies
- Orange County Fire Authority
- Trabuco Canyon Water District
- City of Lake Forest
- City of Mission Viejo
- City of Rancho Santa Margarita

3.2.1 U.S. Fish and Wildlife Service / California Department of Fish and Game

Karen A. Evans, June 26, 2002

William E. Tippets, June 26, 2002

USFWS/CDFG 1 – Comment

The U.S. Fish and Wildlife Service (Service) and the California Department of Fish and Game (Department), hereafter referred to as the Wildlife Agencies, have reviewed the Draft Revised Subsequent Environmental Impact Report (DEIR) for the construction of the Saddleback Meadows Project, in the County of Orange, California. The project proposed development of 299 single-family houses on a 229.2-acre site in the lower foothills of the Santa Ana Mountains in southern Orange County. The proposed project also includes two new paved access roads off of El Toro road and an adjacent offsite 1.4 million-gallon water reservoir. The Wildlife Agencies have commented on various development proposals and environmental documents for this project since 1994. As we have stated in our previous comments, the proposed project poses significant unmitigated impacts to future Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) reserve design for the Southern Subregion of Orange County.

The Department is identified as a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) section 15386 and is responsible for the conservation, protection, and management of the State's biological resources. The Department is also responsible, pursuant to the California Endangered Species Act, California Fish and Game code 2050 et seq., *for the protection of species listed by the State as endangered or threatened or identified as species of concern, and the habitats they require. The Department also manages the NCCP Program (California Fish and Game Code 2800* et seq.*), a regional conservation planning effort, that includes Southern Orange County.*

The Service's primary mission is to work "with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American People." The Service has legal responsibility for the welfare of migratory birds, anadromous fish, and endangered animals and plants occurring in the United States. Specifically, we administer the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.*), and work in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401 as amended, 16 U.S.C. 661* et seq.*). Section 7 of the Act requires Federal Agencies to consult with the Service should it be determined that their actions may affect federally listed threatened or endangered species. Take incidental to otherwise lawful activities can be permitted under the provisions of Section 7 (Federal consultations) or 10 (permits) of the Act.*

USFWS/CDFG 1 – Response

This comment presents an overview of the project and discusses the role of U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). No response is required.

USFWS/CDFG 2 – Comment

As noted in the DEIR, the Service has completed formal consultation with the U.S. Army Corps of Engineers (Corps) and issued a biological opinion (FWS-OR-1023.8) on the Saddleback Meadows Project's effects on the federally endangered Riverside fairy shrimp (Streptocephalus woottoni, "fairy shrimp") and its designated critical habitat and designated critical habitat for the threatened coastal California gnatcatcher (Polioptila californica californica, "gnatcatcher"), in accordance with Section 7 of the Act. To clarify, however, our biological opinion evaluated the 283-unit alternative, not the proposed 299-unit alternative discussed in the DEIR. If the 299-unit Alternative is pursued, reinitiation of consultation with the Corps would be required. Although impacts to federally listed species and their designated critical habitat have been addressed in the cited biological opinion for the Saddleback Meadows project, evaluation of impacts to wildlife movement for non-listed species in relation to development of an NCCP/HCP is outside the purview of Section 7 of the Act.

USFWS/CDFG 2 – Response

Comment noted. Although the development footprint and related biological resources mitigation program associated with the 299 unit project presented in the Revised Draft Subsequent EIR is similar to the 283 plan evaluated by the USFWS and contained in the Biological Opinion, it is acknowledged that if the Section 7 is processed for the proposed 299-unit project, additional review and a revised opinion would be required.

USFWS/CDFG 3 – Comment

Relationship of the Project to Regional Conservation Planning Efforts

The NCCP Act was approved in 1991 and established a program to provide for regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. The program provides an alternative to "single-species" conservation via the formulation of regional, natural community-based habitat protection programs. The first NCCP/HCP projects in California focused on providing adequate conservation and mitigation for impacts to coastal sage scrub vegetation, the preferred plant community of the gnatcatcher.

Following the Federal listing of the gnatcatcher in 1993, the Service adopted a Special Rule for the gnatcatcher pursuant to section 4(d) of the Act incorporating the conservation and process guidelines established by the State under the NCCP Act. The guidelines set forth procedures for the creation of regional and subregional conservation plans. In accordance with the guidelines, jurisdictions enrolled in the NCCP planning program can authorize a limited amount of interim loss of coastal sage scrub during the planning period subject to six interim habitat loss provisions[1]. However, the interim habitat loss provisions are only applicable until the adoption of a regional or subregional conservation plan. In summary, per the NCCP program, conservation planning within enrolled jurisdictions may be governed by an adopted regional or subregional conservation plan, or is subject to the interim habitat loss provisions of the Special 4(d) Rule.

As an enrolled jurisdiction in the NCCP program, the County of Orange (County) has both an adopted subregional conservation plan that applies to its Central and Coastal subregions (the Orange County Central-Coastal NCCP/HCP) and is participating in development of the Southern Subregion NCCP/HCP. The County has committed to work with the Wildlife Agencies to ensure that projects within its jurisdiction do not prevent connectivity between areas of high habitat values or preclude reserve design options for the Southern Subregion NCCP/HCP.

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[1]The following mandatory findings must be met for a project to be approved pursuant to the interim habitat loss provisions of the Special 4(d) Rule: 1) The habitat loss does not cumulatively exceed the 5% guideline; 2) The habitat loss will not preclude connectivity between areas of high habitat values; 3) The habitat loss will not preclude or prevent the preparation of the subregional Natural Community Conservation Plan; 4) The habitat loss has been minimized and mitigated to the maximum extent practicable in accordance with the Conservation Guidelines; 5) The habitat loss will not appreciably reduce the likelihood of the survival recovery of listed species in the wild; and 6) The habitat loss is incidental to otherwise lawful activities.

USFWS/CDFG 3 – Response

The County has committed to work with the Wildlife Agencies to ensure that projects within its jurisdiction do not prevent connectivity between areas of high habitat values or preclude reserve design options for the Southern Subregion NCCP/HCP. Although the original Saddleback Meadows project was conceived and approved long before the inception of the NCCP, the project applicant nevertheless committed to work with the Wildlife Agencies during project redesign to minimize impacts to coastal sage scrub and provide for significant on-site preservation and off-site acquisition. As a result of the coastal sage scrub restoration efforts on-site, there will be no net loss of coastal sage scrub on-site, and the quality of the habitat would be enhanced over the long-term. Additionally, 14.8 acres of coastal sage scrub is proposed to be acquired off-site (see Table 4.8.3 of the Draft Revised Subsequent EIR).

USFWS/CDFG 4 – Comment

Reserve Design Inconsistency

Our primary concern with the proposed project is the significant impact it poses to the major lower elevation wildlife movement corridor/linkage along the Santa Ana Mountain foothills of southern Orange County. Saddleback Meadows, together with the adjacent Saddle Creek and Live Oak properties, represents the only remaining unobstructed low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP/HCP planning areas. To highlight its importance, Orange County's Central-Coastal NCCP/HCP identifies this area as a key corridor/linkage between the subregions. The proposed development on Saddleback Meadows along the eastern and northern portions of the site as shown in Alternative 2 (the No Project, "Existing Entitlement" Alternative), Alternative 3 (the F/TSP EIR 531 Staff Alternative A), Alternative 5 (the Cluster/Single-Family/Multi-Family Residential Alternative), or Alternative 8 (the Reduced Residential Alternative) of the DEIR could substantially eliminate this corridor/linkage and thereby, severely constrain movement of mule deer, coyote, mountain lion and other large mammals from O'Neill Regional Park in the Southern Subregion of the Central Subregion NCCP/HCP reserve. We raised similar concerns regarding the proposed development on

the Saddle creek property in our comments on the recently circulated DEIR- State Clearinghouse No. 199111120 (FWS-OR-1309.1).

Pursuant to the CEQA Guidelines (Section 15130), a revised DEIR should discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable and should review the impacts in light of past, present and future probably projects that could result in related impacts, including those outside of the control of the lead agency. However, this current, revised DEIR does not adequately address cumulative impacts to the low-elevation wildlife corridor/linkage through the Saddleback Meadows, Saddle Creek and Live Oak properties. Also, it appears that a comprehensive plan for maintaining a viable corridor/linkage through these properties has not been completed. For example, the Saddleback Meadows DEIR shows a northern wildlife corridor extending from Saddleback Meadows through the adjacent Saddle Creek property. However, the Saddle Creek DEIR does not show this corridor, which could be blocked by the residential development proposed in the DEIR. In addition, development on the Live Oak property could further limit wildlife movement between the subregions. Therefore, the Saddleback Meadows DEIR should evaluate cumulative impacts to wildlife movement in consideration of past development, the proposed development on the Saddle Creek and Live Oak properties and other probable developments, and demonstrate that the Saddleback Meadows project will not preclude the retention of a viable low-elevation wildlife corridor/linkage connecting the Central and Southern Subregions through all three properties. We wish to work with the County and property owners to develop a comprehensive plan to accomplish this vital component of the Southern Subregion NCCP/HCP.

analyzed

USFWS/CDFG 4 – Response

The Saddleback Meadows project site has not been identified as a major lower elevation corridor/linkage for the region in the Draft Revised Subsequent EIR. It is important to note that the NCCP/HCP planning documents also do not identify a major wildlife corridor on the Saddleback Meadows property, nor are any other properties in the vicinity identified. After distribution of the Draft Revised Subsequent EIR, a letter was received from Dennis Murphy, a Professor and Program Director at the University of Nevada, Reno, who was the chief architect ~~for~~ of the original guidelines for the NCCP (please see Appendix C of this Response to Comments document). According to Dr. Murphy, local wildlife would not be dependent on engineered habitat pathways within a suburban development, but instead on O'Neill Regional Park, Whiting Ranch Wilderness Park and Cleveland National Forest. Mule deer, mountain lion, and other large mammals are far more likely to use areas to the east and north of the site, even without project development. Further, mountain lions should hardly be encouraged into small natural spaces in already suburbanized Orange County. Nevertheless, at the request of the wildlife agencies during the project design process, the project retains an existing local corridor that allows for mammal movement through and around the property. This corridor was established after numerous consultations with the wildlife agencies.

The conceptual corridor shown through the proposed Saddle Creek/Saddle Crest project was intended to show potential wildlife movement in a generalized area where a local corridor could potentially be identified. With or without this local corridor, the regional wildlife movement will still move to the east and north of the project.

The cumulative analysis included in Section 4.8.3 of the Draft Revised Subsequent EIR does not require additional analysis regarding wildlife corridor/linkage through the adjacent properties.

USFWS/CDFG 5 – Comment

To address our concerns for Saddleback Meadows, the Wildlife Agencies recommend further consideration of Alternative 4 (F/TSP EIR 531 Staff Alternative B) of the DEIR as it would allow continued movement of wildlife through the area while still meeting the project's objective of "develop(ing) a single-family, rural community that balances residential development with protection of on-site sensitive resources and values of the surrounding community." Alternative 6 (the 44/178 Alternative) may be able to mitigate significant impacts to wildlife movement if remedial grading requirements can be limited within the corridor/linkage area.

USFWS/CDFG 5 – Response

Please see Section 3.3.2 (Connor 30 – Response) of this Response to Comments document regarding the feasibility of Alternatives 4 and 6.

USFWS/CDFG 6 – Comment

Geotechnical

According to the DEIR, the site is characterized by several unfavorable geothechnical conditions including unstable landslides and presence of ground water that could compromise the site's ability to support the project. Mitigation would include the construction of canyon subdrains and back drains to minimize or eliminate the effects of ground water. The Final EIR (FEIR) should discuss how these changes would affect groundwater availability and timing for use by riparian vegetation in upper Aliso Creek.

USFWS/CDFG 6 – Response

As discussed in Section 4.2.2 and Appendix C of the Draft Revised Subsequent EIR, the proposed remedial grading related subdrains have been proposed to prevent a buildup in groundwater pressure, which could potentially affect post grading on-site geotechnical conditions. Any groundwater intercepted by the proposed subdrains would ultimately discharge into Aliso Creek at the western edge of the project site, resulting in no net adverse effect to groundwater availability or timing for use by Aliso Creek vegetation.

USFWS/CDFG 7 – Comment

Hydrology/Beneficial Uses

The Santa Ana Regional Water Quality Control board has designated the existing biological beneficial uses of "warm freshwater habitat," "wildlife habitat," and "rare, threatened, or endangered species" for portions of Aliso Creek, including the reach downstream from the Saddleback Meadows project. The Wildlife Agencies are concerned about the onsite and downstream effects the project-related changes in the surface flows may have on these beneficial uses and on the habitats and biological resources supported by Aliso Creek. In addition to modifications in peak flows resulting from an increase in impervious surface, we are concerned about changes on the velocity, volume, duration, and frequency of dry-weather and non-peak wet-weather flows. Even small changes in the flow regime often effect changes in the stream community that, over time, can seriously damage stream habitats. Increases in flows from impervious surfaces associated with urbanization can result in: 1) stream bed scouring and habitat degradation; 2) shoreline erosion and stream bank widening; 3) loss of aquatic species; and 4) decreased baseflow (USEPA 1999). Downstream sections of Aliso Creek are known to be sediment-deficient and have already been adversely affected by scour, erosion and subsequent habitat degradation. The Wildlife Agencies recommend that every effort be made to integrate measures to ensure full protection of the beneficial uses and biological resources of Aliso Creek. The development design and construction operations should minimize the modifications of dry and wet-weather flows and integrate onsite best management practices (BMPs) that would attenuate the flows to reduce impacts on the stream morphology and habitats onsite and downstream. Examples of BMPs to consider include appropriately sized grassy swales and vegetated detention basins. Proper design of structural BMPs will require analyses of the sediment transport and hydrological regime of the headwaters of Aliso Creek. The project is located within Reach 1 of the Aliso Creek Watershed Management Feasibility Study, Orange County, California *prepared by the Corps. We recommend this study be consulted to determine possible effects of the project on the Aliso Creek watershed.*

USFWS/CDFG 7 – Response

The proposed project will comply with the requirements of Section 401 of the Clean Water Act (Water Quality Certification) as administered by the California Regional Water Quality Control Board (RWQCB). The concerns raised by the resource agencies regarding changes to surface flow and peak flow are addressed in Section 4.4 of the Draft Revised Subsequent EIR. The project design includes a drainage system which recreates existing flow regimes to the maximum extent practicable, in conjunction with stormwater management requirements. A comprehensive set of Best Management Practices (BMPs) have been proposed to minimize the effects of project-related urban runoff on Aliso Creek, including a riverine system of grassy swales and detention basins. All impacts to water quality and downstream surface flow impacts have been mitigated to less than significant levels.

USFWS/CDFG 8 – Comment

Significance Criteria for Biological Resources

The thresholds of significance for biological resources provided in section 4.8.2 of the DEIR do not appear to be consistent with the CEQA definition of rare, threatened, and endangered species (see CEQA Guidelines, § 15380). In addition, the Department recommends that the significance criteria in the body of the DEIR be revised to be consistent with CEQA Sections 15064.7 and 15065, and Appendix G of the CEQA Guidelines.

USFWS/CDFG 8 – Response

As stated in Section 15064.7 of the *CEQA Guidelines*, each public agency is encouraged to develop thresholds of significance. The significant thresholds included biological resources contained in the Draft Revised Subsequent EIR are derived from Public Resources Code Section 21001(c) and criteria established by the County and resource agencies. These thresholds, although not verbatim, include issues contained in Appendix G of the *CEQA Guidelines*, and adequately define potentially significant impacts.

USFWS/CDFG 9 – Comment

Annual Grasslands

The project proposes that mitigation requirements for cumulative impacts to raptor foraging habitat (consisting primarily of coastal sage scrub and grasslands) will be met in conjunction with the proposed coastal sage scrub mitigation. The Department recommends mitigation measures be incorporated specifically for impacts to annual grassland. These areas provide foraging areas for raptors and small mammals and proposed impacts to a total of 103.7 acres on-and offsite should be considered significant. Appendix I.1 of the DEIR indicated that raptor species including Cooper's hawk (Accipiter cooperii), a state species of special concern (CSC), sharp-shinned hawk (A. striatus, CSC), red tailed hawk (Buteo jamaicensis) red shouldered hawk (B. striatus), and American kestrel (Falco sparverius) were observed during the surveys of the project site, and other species including northern harrier (Circus cyaneus, CSC) and loggerhead shrike (Lanius ludovicianus, CSC) have at least a moderate potential of using the grasslands onsite for foraging. We therefore recommend that annual grassland mitigation at a 0.5:1 preservation-to-impact ratio in an offsite area with long-term conservation potential to be included in the FEIR.

USFWS/CDFG 9 – Response

As stated on page 4.8-11 of the Draft Revised Subsequent EIR, much of the annual grasslands on-site have been heavily disturbed by historic cattle ranching operations, and support significant amounts of cardoon (*Cynara cardunculus*), an artichoke-like plant that grows in areas where soils have been highly disturbed and compacted. This is an aggressive plant species that often dominates areas that have been heavily grazed. The raptor species noted as occurring on-site will benefit from the

sage scrub restoration effort, as well as from off-site preservation of sage scrub and off-site restoration of riparian and oak woodland habitat. As stated in Section 4.4.2 of the Draft Revised Subsequent EIR, impacts to annuals grasslands would not be significant and no additional mitigation is proposed.

USFWS/CDFG 10 – Comment

Intermediate Mariposa Lily

The DEIR states that impacts to intermediate mariposa lily (Calochortus weeddii var. intermedius) would not be significant. This species is listed by the California Native Plant Society as a "1B" plant (Plants rare threatened, or endangered In California and elsewhere). Species included on List 1B must be fully considered under CEQA. The Department recommends that the FEIR include mitigation for impacts to this species (for example, see Rancho Potrero Leadership Academy EIR, County of Orange, 2001).

USFWS/CDFG 10 – Response

Although impacts to this sensitive species were not assessed in the Draft Revised Subsequent EIR as being significant, due to the limited number of individuals impacted, an additional mitigation requirement has been added in response to this and other comments. The applicant has agreed to transplant potentially impacted bulbs of this species to appropriate open space areas on-site. Please see Section 2.0 of this Response to Comments document, which includes additional mitigation for the intermediate mariposa lily (new mitigation measure M 8-4).

USFWS/CDFG 11 – Comment

Cactus Wren

According to the DEIR, impacts to the cactus wren (Campylorhynchus brunneicapillus couesi) are not considered significant. As proposed in Appendix I.3 to the DEIR, the coastal sage scrub mitigation plan does not specifically include salvage or container stock planting of prickly-pear (Opuntia spp.) required for cactus wren nesting and foraging. By providing suitable replacement habitat, a potentially significant impact to cactus wren may be mitigated. To provide replacement habitat for cactus wren impacted by implementation of the project, we recommend that the coastal sage scrub palette is revised to include a substantial amount of prickly-pear. This may be achieved by salvage of existing plant material followed by direct replanting within the mitigation area or by collecting pads prior to impact and rooting them in containers. In addition, we recommend that reference sites are currently reporting cactus wren be chosen to provide an adequate baseline for comparison.

USFWS/CDFG 11 – Response

Comment noted. The salvage of prickly pear cactus will be incorporated into the final sage scrub restoration plan.

USFWS/CDFG 12 – Comment

Oak Woodland Mitigation Plan

Mitigation for oak woodland impacts is described on page 4.8-26 of the DEIR and we concur with the restoration approach in concept. However, unlike the coastal sage scrub mitigation plan, details of the oak woodland mitigation strategy are not adequately described in Appendix I.3 such that the impacts can be shown to be mitigated below a level of significance. For example, the proposed locations for oak woodland restoration should be depicted and described. In addition, container sizes, understory species, and maintenance activities specific to the oak woodland restoration should be detailed.

USFWS/CDFG 12 – Response

Figure 4.8.7 of the Draft Revised Subsequent EIR identifies the proposed oak woodland restoration areas on-site. SC 8-6 summarizes the size and number of container stock required for oak restoration (see Section 4.8.4 of the Draft Revised Subsequent EIR). Maintenance activities will be consistent with those proposed for sage scrub restoration (see PDF 8-1 of the Draft Revised Subsequent EIR).

USFWS/CDFG 13 – Comment

The Wildlife Agencies appreciate the opportunity to review and comment on the DEIR. If you have any questions please contact Mr. David Zoutendyk of the Service at (760) 431-9440 or Mr. Brad Henderson of the Department at (310) 214-9950.

USFWSCDFG 13 – Response

Comment noted.

3.2.2 State of California, Governor's Office of Planning and Research – State Clearinghouse

Tal Finney, May 9, 2002

Terry Roberts, June 11, 2002

State Clearinghouse 1 – Comment

This is to acknowledge that the State Clearinghouse has received your environmental document for state review. The review period assigned by the State Clearinghouse is:

Review Start Date: April 26, 2002

Review End Date: June 10, 2002

We have distributed your document to the following agencies and departments:

California highway Patrol
Caltrans, District 12
Department of Conservation
Department of Fish and Game, Region 5
Department of Forestry and Fire Protection
Department of Housing and Community Development
Department of Parks and Recreation
Department of Water Resources
Native American Heritage Commission
Office of Historic Preservation
Regional water Quality Control Board, Region 9
Resources Agency
State Lands Commission

The State Clearinghouse will provide a closing letter with any state agency comments to your attention on the date following the close of the review period.

Thank you for your participation in the State Clearinghouse review process.

State Clearinghouse 1 – Response

The comment has been received and noted. No response is required.

State Clearinghouse 2 – Comment

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 10, 2002, and the comments from the responding agency (ies) is (are) enclosed. If

this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the Project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please not that Section 21104(c) of the California Public Resources Code states that:

> *"A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."*

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 45-0613 if you have any questions regarding the environmental review process.

State Clearinghouse 2 – Response

The comment has been received and noted. No response is required.

3.2.3 State of California, Department of Transportation

Robert F. Joseph, May 28, 2002

Caltrans 1 – Comment

Thank you for the opportunity to review and comment on the Draft EIR dated April 2002 for Saddleback Meadows. The project is located on the eastern side of El Toro Road, one half mile from the Santiago Canyon/Live Oak Canyon Road junction.

The project consists of the development of 299 detached single family residences on 66.9 acres out of a total 222-acre site. The nearest State Routes are SR-241 and I-5.

Caltrans District 12 status is a reviewing agency on this project and has the following comments:

As indicated in the report, the proposed project will generate 3690 trips per day that mostly use El Toro Road. This report has not yet included west/south of El Toro beyond Santa Margarita Parkway towards I-5 interchange in the Traffic study section. We have concerns that this development will ultimately contribute to the cumulative impacts at El Toro Road/I-5.

Caltrans 1 – Response

By comparing the ICU values in Tables 2-2 and 4-1 of the traffic analysis (Appendix F of the Draft Revised Subsequent EIR), project-related changes at intersections can be determined. At the Portola Parkway/El Toro Road intersection, no change in the P.M. peak hour ICU occurs. During the A.M. peak hour, only a one percent change occurs. This condition defines the outer edge of measurable traffic impacts based upon County of Orange GMP criteria.

Caltrans 2 – Comment

We recommend that the project proponents work to coordinate their efforts with the City of Lake Forest and their project "The Arbor on El Toro Specific Plan" in terms of project phasing, filing a traffic management plan during construction, and avoiding impacts to El Toro Road and ultimately the I-5 during traffic peak periods.

Caltrans 2 – Response

As stated in Section 4.5.2 of the Draft Revised Subsequent EIR, impacts from construction activities would have short-term, but not significant impacts on vehicular traffic along streets adjacent to the project site during the grading and excavation phase. No significant impacts would occur to El Toro Road or Interstate 5 during these phases.

Caltrans 3 – Comment

Other than identifying the County Bikeway network, this project doesn't evaluate or stipulate the use of alternative modes of transportation, such as buses, to be incorporated into the development. Such alternatives would work to reduce future congestion in the region while at the same time help to improve the overall air quality.

Caltrans 3 – Response

As stated in Section 4.5.1 of the Draft Revised Subsequent EIR, the nearest bus route with a stop near the intersection of Glenn Ranch Road and Portola Parkway is located approximately 1.5 miles southwest of the project site. The traffic analysis included in the Draft Revised Subsequent EIR was prepared to evaluate the worst-case traffic impacts on the area circulation system. The use of alternative modes of transportation would reduce vehicle impacts. The Orange County Transportation Authority (OCTA) provides local transit service in the project area and is responsible for determining the need for additional transit facilities.

Caltrans 4 – Comment

The project proponents will insure that during construction all loads will be contained that may use state routes and that no net runoff increase will flow over, into or under State Right of Way.

Caltrans 5 – Response

As stated in Section 4.6.6 of the Draft Revised Subsequent EIR (mitigation measure 6-7), dirt hauled off-site shall be wet down or covered to ensure "spill-over" is minimized.

Caltrans 6 – Comment

Please continue to keep us informed of this project and other future developments, which could potentially impact our transportation facilities.

Caltrans 6 – Response

Comment noted.

3.2.4 California State University, Los Angeles

Patricia Martz, June 10, 2002

California State University, Los Angeles 1 – Comment

I have reviewed the cultural resources section of the DEIR and have the following comments:

The cultural resources section of the EIR does not accurately reflect the findings and recommendations provided in the cultural resources appendix. In some cases there are serious contradictions

California State University, Los Angeles 1 – Response

Although there may be some minor discrepancies between the Section 4.10 (cultural resources) of the Draft Revised Subsequent EIR and the findings and recommendations provided in Appendix J, due to summarizing all the information, the mitigation measures recommended in both documents are essentially equivalent. As in the Appendix J, CA-ORA-710 and CA-ORA-711 are the only two sites recommended eligible for listing on the National Register of Historic Places and/or the California Register of Historical Resources. CA-ORA-710 would remain undisturbed in dedicated open space and CA-ORA-711 would be subjected to data recovery excavation prior to disturbance.

California State University, Los Angeles 2 – Comment

The cultural resources appendix indicates that this project is subject to a Corps of Engineers 404 permit and therefore the cultural resources are subject to the provisions of Section 106 of the National Historic Preservation Act. The EIR does not indicate this and the treatment of the archaeological sites is not in compliance with the Act as amended in 1999.

California State University, Los Angeles 2 – Response

While Section 4.10 of the Draft Revised Subsequent EIR may not specifically indicate that a 404 permit was required and that the cultural resources portion of the project was subject to Section 106 of NHPA, it is not correct that the archaeological sites were not treated in compliance with the Act. The U.S. Army Corps of Engineers (USACE) claimed jurisdiction of seven of the sites on the Saddleback Meadows property (CA-ORA-710, -711, -713, -715, -1255, -1256, and CA-ORA-1435H). In accordance with stipulations in Section 106, test excavations at these (and the remainder) of the sites on the property, and subsequent consultation with the USACE, Native American groups, and the State Historic Preservation Officer (SHPO) established that only two of the sites (CA-ORA-710 and CA-ORA-711) were eligible for listing on the National Register. Consultation continued with a treatment plan being developed and circulated to guide mitigation of the adverse effects of the project via regional background research and data recovery excavation of CA-ORA-711.

California State University, Los Angeles 3 – Comment

The investigations to determine the significance/importance of the archaeological sites are inadequate. The excavation of three 1 x 1 meter units in CA-ORA-713 is not sufficient to determine the depth, nature, condition and extent of a site of this size. Since the site appears to be dispersed over a large area, remote sensing and/or geomorphological studies should be conducted to locate areas of the site that contain buried cultural deposits and features. The discovery of buried cultural deposits and features or human burials should not be done by bulldozer.

California State University, Los Angeles 3 – Response

The commenter is incorrect that the archaeological investigations are inadequate. Every site on the property underwent a test excavation program of a sufficient number of units to characterize the subsurface. As for CA-ORA-713, a surface collection, discing followed by a second surface collection and the excavation of three 1x1 meter units was undertaken at the site. Because these methods produced small numbers of artifacts relative to the size of the area studied and the subsurface investigation produced no artifactual material, the site was deemed not eligible for listing, because it is unlikely to yield important information. The USACE and SHPO agreed with this finding. Since minimal numbers of artifacts were scattered over a large area, it is possible that CA-ORA-713 actually represents a series of small, unrelated camps.

California State University, Los Angeles 4 – Comment

Likewise the determination that CA-ORA-715 is based on the excavation of four 1 X 1 meter units. This is not sufficient to determine the depth, nature, condition, and extent of this site and to determine that it is not "significant/important."

California State University, Los Angeles 4 – Response

The test excavation was sufficient to characterize the site. The excavation of four 1x1 meter units to a depth of 30 centimeters produced only four flakes. It appears that the site is confined to the surface. All the exposed surface artifacts were collected, and there are unlikely to be any additional significant resources within the site area. The USACE and SHPO agreed and the site was determined to be not significant.

California State University, Los Angeles 5 – Comment

Pg. 4.10-12 of the EIR states that a final test excavation of site CA-ORA-1437 was undertaken in November 2001, but does not indicate the methods used or the results. There is no information to support the determination that the site is not "significant/important."

California State University, Los Angeles 5 – Response

While the EIR indeed does not include the CA-ORA-1437 test excavation document, the site was tested near the end of 2001 and found to be not significant. The report on the excavation (including methods and results) is nearing completion. It will subsequently be filed with the South Central Coastal Information Center, California State University, Fullerton (SCCIC), the Los Angeles District, USACE, with the project applicant, and the County of Orange.

California State University, Los Angeles 6 – Comment

Pg. 4.10-14 – Project Impacts: The statements regarding CA-ORA-710 are contradictory and raise doubts regarding whether the site is going to be preserved. If the sit [sic] *is to be protected through the site burial and preserved within a biological mitigation area, then why does the EIR state that data recovery would occur prior to ground disturbing activities. If the site is to be protected, why should there be ground-disturbing activities? In addition, site burial has to be done very carefully to ensure that the site will be protected. The standards/specifications for covering the site should be indicated.*

California State University, Los Angeles 6 – Response

The Draft Revised Subsequent EIR correctly states that the site is to be protected through site burial and preserved within a biological mitigation area (page 4.10-14). The statement, "data recovery would occur prior to ground disturbing activities," is not correct if it refers to CA-ORA-710 and may be better understood if it reads, "Additional mitigation would need to be accomplished if development plans change and the site is to be disturbed" (please see Section 2.0 of this Response to Comments document for this clarification). However, the site would be preserved. Burial of the site will be done "very carefully" and according to accepted archaeological standards and practices.

California State University, Los Angeles 7 – Comment

CA-ORA-1257 has not been subsurface tested and should not be graded without further investigation.

California State University, Los Angeles 7 – Response

The site was originally recorded as a sandstone bedrock feature. The 1995 investigation revisited the site and determined that the sandstone rock was made of a very soft stone, most ineffective as a grinding implement. The site area was also carefully examined for the presence of artifacts. None were found. The lack of any obvious cultural resources, caused researchers to recommended that the site be considered not significant.

California State University, Los Angeles 8 – Comment

CA-ORA-711 is considered to be significant/important. According to the DEIR, only a small fraction of the total site area was tested. Grading with monitoring, as stated on pg. 4.10-14 is not adequate mitigation for the destruction of the site.

California State University, Los Angeles 8 – Response

The comment on page 4.10-14 of the Draft Revised Subsequent EIR is incorrect, but could be read as accurate if it is combined with the previous sentence: "Data recovery would occur prior to ground disturbing activities. If grading operations at CA-ORA-711 uncover additional material . . . *further* (emphasis added) data recovery work may be required." A more accurate statement related to mitigation measures, was included in Section 4.10.5 of the Draft Revised Subsequent EIR, "Level of Significance Before Mitigation" (page 4.10-19). Under the heading "Archaeological/Historical Resources." Here it states, "The project area may have a significant impact on archaeological site CA-ORA-711 unless data recovery excavation is performed."

California State University, Los Angeles 9 – Comment

Pg. 4.10-20: The DEIR makes the assumption that the completion of a data recovery excavation program, (or even worse, monitoring during grading) constitutes a no adverse effect. This is not the case. The implementing regulations for Section 106 of the National Historic Preservation Act (36 CFR 800.5(a)(2)(iii) along with 800.5(a)(2)(I), as amended May 1999, acknowledge the reality that destruction of a site and recovery of its information and artifacts is adverse and no longer consider data recovery as sufficient mitigation to reduce the impacts to a level of insignificance.

Even if this project were not under the jurisdiction of the federal government, CEQA was patterned after the National Environmental Policy Act and the pertinent federal regulations. Therefore, to ignore the reality that the destruction of an archaeological site, including the destructive process of archaeological excavations, is a significant impact seems counter to the spirit and intent of CEQA.

California State University, Los Angeles 9 – Response

The commenter is correct in noting that a reasonable and good faith effort should be made to protect and preserve sites, but is incorrect to say that the significant impact of data recovery excavation was ignored. A reasonable and good faith effort was made to prevent the destruction of significant sites on the property (e.g., CA-ORA-710 will be preserved by capping), but it was deemed infeasible to save CA-ORA-711. As stated in Section 21083.2 (c) of CEQA, "*to the extent that unique archaeological resources are not preserved in place or are not left in an undisturbed state, mitigation measures shall be required...*" Further, CEQA allows excavation as mitigation for archaeological resources per Section 21083.2 (d). As stated in the Draft Revised Subsequent EIR, impacts to archaeological site CA-ORA-711 will be mitigated through data recovery and therefore impacts would not be significant. The remainder of the sites on the property were considered not significant, but a qualified archaeologist will still monitor grading of those sites (see M 10-4 on page 4.10-19 of the Draft Revised Subsequent EIR).

All data recovery work at the site will be guided by a research design that follows the Office of Historic Preservation (OHP) Guidelines for Archaeological Research Designs, and is approved by the USACE and SHPO. The subsequent report documenting the excavation will follow the OHP Archaeological Resource Management Reports (ARMR) guidelines.

California State University, Los Angeles 10 – Comment

According to CEQA: When archaeological resources are involved, avoidance, or preservation in an undisturbed state is the preferable course of action. Section 21083.2 then provides that preservation may include:

a. Planning construction to avoid archaeological sites
b. Deeding sites into permanent conservation easements
c. Capping or covering sites with a layer of soil before building on the sites.
d. Planning parks, greenspace, or other open space to incorporate archaeological sites.

When avoidance is possible, then data recovery excavation may be the only feasible mitigation measure.

California State University, Los Angeles 10 – Response

Please see Section 3.2.4 (California State University, Los Angeles 9 – Response) of this Response to Comments document.

California State University, Los Angeles 11 – Comment

According to CEQA, data recovery is the last resort after the lead agency considers all of the above preservation methods and determines that they are not possible or feasible. With the exception of CA-ORA-710 (but the EIR also implies that the site may be impacted – see above) the only mitigation measures that have been considered for the remaining sites to be impacted by the proposed project are data recovery excavation, or worse yet, grading with monitoring.

California State University, Los Angeles 11 – Response

Please see Section 3.2.4 (California State University, Los Angeles 9 – Response) of this Response to Comments document.

California State University, Los Angeles 12 – Comment

Based on the above comments, the DEIR is inadequate in that (1) There is not sufficient information to support the determinations that all of the sites to be impacted by the project (except two) are not significant/important. (2) The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of six of the seven archaeological sites to be impacted by the proposed project have been considered. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. If the determination is that none of the preservation measures are possible or feasible, the justification for this determination and documentation that serious consideration was given to preservation methods should be included in the EIR, (3) Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

If it is determined that data recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

California State University, Los Angeles 12 – Response

Please see Section 3.2.4 (California State University, Los Angeles 9 – Response) of this Response to Comments document.

3.2.5 South Coast Air Quality Management District

Mike A. Nazemi, June 7, 2002

SCAQMD 1 – Comment

The South Coast Air quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The following comments are meant as guidance for the Lead Agency and should be incorporated into the Final Environmental Impact Report.

Pursuant to Public Resources Code Section 21092.5, please provide the AQMD with written responses to all comments contained herein prior to the certification of the Final Environmental Impact Report. The AQMD would be happy to work with the Lead Agency to address these issues and any other questions that may arise. Please contact Charles Blankson, PhD., Transportation Specialist – CEQA Section, at (909) 396-3304 if you have any questions regarding these comments.

SCAQMD 1 – Response

Comment noted. The South Coast Air Quality Management District (SCAQMD) has been provided with a copy of this Response to Comments document.

SCAQMD 2 – Comment

Project Size: In the Public Notice announcing the availability of the DRSEIR, it is stated that the proposed project will occupy an area measuring 229.2 acres and approximately 71 percent of this, or 158.6 acres will be devoted to open space. In the Project Summary in the DRSEIR on page 1-3, it is stated that the proposed project will occupy 222 acres and 70 percent or 155.1 acres will be devoted to open space. It is not clear from the above statements whether the project area is 229.2 acres or 222 acres? Please provide accurate information on the size of the project area since it has implications for grading emissions and subsequently air quality.

SCAQMD 2 – Response

The project size stated in the Draft Revised Subsequent EIR of 222 acres is correct. The Public Notice incorrectly stated the project as 229.2 acres.

SCAQMD 3 – Comment

Emissions Inventory: In table 4.6.2 on page 4.6-7 of the DRSEIR, emissions data are provided for the years 2000 and 2010. While the 2010 forecasts are the same as those reported in the SCAQMD Final 1997 AQMP, the 2000 data is different. See Table B-6 on page III-B of Appendix III of the SCAQMD Final 1997 AQMP. Please correct the discrepancy.

SCAQMD 3 – Response

The year 2000 data in Table 4.6.2 represent an update of those reported in the 1997 AQMP. The year 2000 data represent "actual" emissions reported by the California Air Resources Board for the air basin in the most recent "2000 California Air Quality Almanac." The updated almanac emissions inventory was believed to be more accurate than the AQMP forecasts prepared several years previously.

SCAQMD 4 – Comment

URBEMIS2001: It is reported in Appendix G of the DSEIR that the lead agency used URBEMIS7G to calculate project emissions. There are two points to be noted about this. The first is that both Appendix G and the SDEIR limit the discussion on the construction activity impacts to the fugitive dust and PM_{10} emissions. PM_{10} emissions are reported to be less than the PM_{10} significance threshold. However, as noted on page 4.6-12 of the DRSEIR, construction also entails the use of internal combustion engines and on-road and off-road mobile, semi-mobile and other diesel-powered equipment which generate emissions of NO_x, CO and also PM_{10}. There are also ROG emissions from paints and other architectural coatings. The lead agency fails to mention that the URBEMIS7G output table shows very large ROG construction emissions. At 1,171.19 pounds per day during the Summer, these are very significant emissions. The lead agency needs to address these high ROG emissions and propose measures to reduce them to less than the significance threshold in the Final SEIR. The second point is that URBEMIS2001 is currently available on ARB Webpage and has replaced URBEMIS7G as the model of choice and should be used to estimate project emissions. The lead agency is therefore encouraged to use URBEMIS200 [sic] *which uses current emission factors and therefore reflects project emissions more accurately. In discussing the proposed project's air quality impacts, construction and operational emissions as well as the corresponding significance thresholds should be presented in the main text of the Final SEIR. If construction ROG emissions still exceed the significance threshold, the lead agency should propose mitigation measures accordingly.*

SCAQMD 4 – Response

The algorithm that calculates ROG emissions from paints and coatings in the URBEMIS7G model has a "bug" that grossly distorts the likely daily emissions. The current VOC limit for architectural coatings is 100 grams/liter, or about 0.8 pounds/ gallon. The model estimate of 1,171.19 lbs/day would suggest that there is a daily application of almost 1,500 gallons of paint. Painting 299 homes in the project would occur over many days or even months. Extrapolation of this daily estimate over an extended project phasing would predict the use of tens of thousands of gallons of paint (hundreds of gallons per home). This model output clearly is incorrect. At 0.8 lbs/gallon, the application of 93.75 gallons of paint would create 75 lbs/day of VOC emissions, (SCAQMD threshold) or the paint needed for one to two homes per day is consistent with the probable phasing of the proposed development. VOCs from the application of paint may approach, but not likely exceed, the construction activity emissions significance threshold.

The URBEMIS2001 version of the model was not available when the calculations were initially performed. The result from the "new" model are reasonably identical from the older version. Because of a higher percentage of SUVs in the travel fleet than previously estimated, and because the emissions standards are less stringent on these vehicles, the project-related emissions increase, but remain at less than significant as follows (lbs/day):

	ROG	NOx	CO	PM-10	SOx
URBEMIS7G (Ver 5.1.0)	38.3	41.0	278.0	25.7	0.0
URBEMIS2001° (Ver 6.2.2)	50.0	45.4	504.2	26.4	0.0
SCAQMD Threshold	55	55	550	150	150

° = 75% auto, 10% light truck/SUV, 10% heavy SUV, 2% mid-truck, 1% lite-heavy truck, 1% bus, 1% motorcycle; Year = 2003.

Source: Giroux & Associates, 2002

The updated calculations above do not change any conclusions regarding impact (in)significance of the proposed project.

SCAQMD 5 – Comment

Screening Tables: The lead agency used the Screening Table in the SCAQMD 193 CEQA Air Quality Handbook (Table 6-2) to determine that construction-related equipment combustion emissions from the project will not be significant. See discussion on page 4.6-12 of the DRSEIR. Please note that although the screening tables were developed by the AQMD, the AQMD no longer supports the use of these tables in determining the significance of project emissions. This is because the mobile source emission factors used in computing the tables are from an old version of the California Air Resources Board EMFAC model.

SCAQMD 5 – Response

The construction-related equipment combustion emissions procedures have not changed from when the SCAQMD Handbook Screening Tables for Construction (Table 6-2) were developed. If anything, equipment and on-road vehicles are "cleaner" now than in 1993 when the tables were developed. If the tables were accurate for Conditions in 1993, and if the proposed project is determined to be less than significant under 1993 conditions, the project will be less than significant under current criteria with an even larger margin of safety.

3.2.6 Southern California Association of Governments

Jeffrey M. Smith, May 7, 2002

SCAG 1 – Comment

Thank you for submitting the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows to SCAG for review and comment. As areawide [sic] *clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.*

We have reviewed the Saddleback Meadows, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15208). The proposed project is not a residential development of more than 500 units. Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's April 30, 2002 Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1867. Thank you.

SCAG 1 – Response

The comment has been received and noted. No response is required.

3.2.7 Transportation Corridor Agencies

Macy Cleary-Milan, June 10, 2002

Transportation Corridor Agencies 1 – Comment

Thank you for forwarding the Draft Environmental Impact Report No. 566 for the proposed Saddleback Meadows Project. The Transportation Corridor Agencies (TCA) has reviewed the above-subject draft environmental document and would like to make the following comment for your review:

The DEIR identifies the intersection of Portola Parkway and the FTC-N as being impacted. The DEIR states, "The addition of one southbound left turn lane at the intersection of Portola Parkway (NS) at Foothill Transportation Corridor (EW) would be required for 2005 condition." Mitigation measure M 5-5 specifies that the project shall pay its fair share funding of this improvement. The fair share funding amount agreed to by the TCA must be submitted prior to the issuance of any building permits for the project.

Transportation Corridor Agencies 1 – Response

Comment noted. The mitigation measure M 5-5 has been amended to reflect this comment. Please see Section 2.0 of this Response to Comments document.

3.2.8 Orange County Fire Authority

Gene F. Begnell, June 6, 2002

OCFA 1 – Comment

Thank you for the opportunity to comment on the Draft EIR for the Saddleback Meadows project. In response to our review, we would like to offer the following:

Page 4.12-1, Section 4.12.1, Second paragraph. "61 fire stations" should read "59 fire stations.

Page 4.12-1, Section 4.12.1, Third paragraph, Third bullet. Remove "only available from a medic van" from the sentence. OCFA provides paramedic service both paramedic assessment and full paramedic services through a number of configurations in addition to the medic vans.

Page 4.12-2, Table 4.12.1, Fire Station Locations. Several things are wrong with this table.

- *Fire Station 18 is 4.2 miles from the project, not 1.5. The response time to the project for FS18 would be calculated at 8 minutes and 40 second using an average of 35 mph and 90 seconds of call processing and turnout time.*
- *Fire Station 16 is located 3.5 miles from the project and would calculate at 9 minutes and 30 seconds using the same formula as above with a two minute time period added for the volunteer personnel to get to the fire station. This station does NOT have paramedics or full time firefighters. It is staffed with volunteer firefighters only.*
- *Fire Station 45 is located 5.3 miles away with a response time calculation of 10 minutes and 30 seconds.*
- *Additionally, Fire Station 54 is located 2.8 miles from the project, with a response time calculation of 6 minutes and 20 seconds.*
- *Fire Station 31 is located 3.7 miles away with a response time of 7 minutes and 50 seconds. This is the closest paramedic unit to the project.*

Page 4.12-2, Third paragraph. Change "average response time of 6 minutes" to "average response time of nine minutes".

Page 4.12-2, Forth [sic] *paragraph. Replace the last sentence, "At this location three firefighters are on duty staffing either a paramedci* [sic] *assessment unit or a brush engine." With "At this location, 20 volunteer firefighters staff the engine when called upon to do so."*

Page 4.12-3. First paragraph, last sentence. Should read 7 firefighters rather than 8 firefighters.

OCFA 1 – Response

Comments noted. Section 4.12 of the Draft Revised Subsequent EIR has been amended to reflect these comments. Please see Section 2.0 of this Response to Comments document.

OCFA 2 – Comment

Page 4.12-9. Add new condition SC12-16. Secured Fire Protection Agreement. "Prior to grading, the applicant shall enter into a Secured Fire Protection Agreement with the OCFA. The reason for the timing this agreement is that the service needs for the project increases at the point of grading and continues to increase as the project is built. Service agreements will need to be in place at this time.

OCFA 2 – Response

Comment noted. An additional Standard County Condition has been added to reflect this comment. Please see Section 2.0 of this Response to Comments document.

OCFA 3 – Comment

As noted in Section 4.12.3, Cumulative Impact, the seven related projects in this area may have an effect on the service delivery within the area. Additional staffing and/or equipment may be needed to meet this demand. This issue will be addressed within the Secured Fire Protection Agreement.

OCFA 3 – Response

Comment noted. Section 4.12.3 has been amended to reflect this comment. Please see Section 2.0 of this Response to Comments document. However, this would not change the conclusions included in the Draft Revised Subsequent EIR that as related projects would be individually subject to protection and safety measures as required by the Orange County Fire Authority, no cumulative impacts would occur.

OCFA 4 – Comment

Page 5-9, Alternatives, Alternative 2 – No Project Alternative, this project would have many issues with fuel modification both "onsite" and "offsite."

OCFA 4 – Response

Comment noted. As stated in Section 5.4.2 of the Draft Revised Subsequent EIR, Alternative 2 – No Project Alternative would result in greater fire protection impacts as compared to the proposed project.

OCFA 5 – Comment

Page 5-38 [sic], *Alternatives, Alternative 6 – 44/178 Alternative. It should be noted that the layout of the "Development Area" does not allow for secondary access for emergency vehicles and may require the project to acquire additional easements or other mitigation measures to insure that adequate access to the project is provided.*

OCFA 5 – Response

Comment noted. Section 5.4.6 and Table 5.7 has been amended to reflect this comment. Please see Section 2.0 of this Response to Comments document.

OCFA 6 – Comment

The project area is within the designated Special Fire Protection Area and is as a result a significant wildfire risk. These risks will require special mitigation measures in accordance with OCFA standards. All other standard conditions of development including access will also be applicable to the proposed project.

OCFA 11 – Response

Comment noted. The Draft Revised Subsequent EIR includes Project Design Features, Standard County Conditions, and a mitigation measure to ensure impacts from the potential wildfire risk would be less than significant.

3.2.9 Trabuco Canyon Water District

Bruce Boner, May 8, 2002

TCWD 1 – Comment

Trabuco Canyon Water District (District) is in receipt of the Draft Revised Subsequent Environmental Impact Report No. 566 (DEIR 566) for the above captioned project (Project). Based upon our review of the document, the following comments are being submitted to the County of Orange (County) with regard to the project and the environmental proceedings being undertaken by the County with respect to the Project. Please note that the District reserves the right to provide or submit additional or supplemental comments relative to the DEIR566 and other or further documents provided or furnished by the County with respect to the Project or the environmental proceedings undertaken by the County with respect to the Project during the review and/or public hearing process for this matter.

TCWD 1 – Response

Comment noted. No additional response is required.

TCWD 2 – Comment

Request for Notices

Pursuant to the provisions of the California Environmental Quality Act (CEQA) and Public Resources Code Section 21091.1, the District hereby requests that copies of all notices and other documents mailed in relation to the above-referenced Project be furnished to the District. If there are any fees and charges required for the provision of such notices, please provide us with an invoice for such costs, and we will reimburse the appropriate County department. This request for notice specifically includes, but is not necessarily limited to, notices of all hearings, proposed actions to be taken with regard to the developmental process and, in particular, any Notice of Determination prepared, furnished or filed with regard to this Project.

TCWD 2 – Response

Comment noted. The Trabuco Canyon Water District has been provided with a copy of this Response to Comments document and will be provided with any additional notices with regard to the proposed project.

TCWD 3 – Comment

Background Information

Our general legal counsel, Bowie, Arneson, Wiled & Giannone, provided written comments on behalf of the District on August 11, 1997 and supplemental comments on October 17, 1997, photocopies of which are attached hereto.

We request that these letters be included as part of the record of proceedings for the environmental review of the Project, Including DEIR566.

TCWD 3 – Response

The above referenced letters were responded to in the Response to Comment for Subsequent EIR No. 566 (1997) and are included in Appendix A of this Response to Comments document.

TCWD 4 – Comment

As stated in the October 17, 1997 letter, there remains a "significant question as to whether the mitigation measure referenced includes and covers necessary master plan and in-tract wastewater facilities." We again request that mitigation monitoring language, as required by Public Resources Code Section 21081(a)(1) and Section 21081.6, be incorporated within the final environmental impact report prepared for the Project.

Trabuco Canyon Water District further states that the District's Rules and Regulations require improvement agreements to be entered into in order for the District to approve tract maps and for the District to provide water and wastewater service to any property within its boundaries. The District previously requested of California Quartet to undertake negotiations relative to entering new improvement agreements relative to the Project. No response has been received by the District.

TCWD 4 – Response

Comment noted. Please see Section 2.0 of this Response to Comments document regarding the additional mitigation measures.

TCWD 6 – Comment

In addition to the above, a Sub-Area Master Plan must be prepared and financed by the developer to define needed facility improvements which include:

> *Water: Pump stations, reservoir, pressure reducing valves and pipelines.*
> *Sewer: Local collection lines only. The project has already purchased regional wastewater collection, treatment and capacity.*

All fees and capacity charges must be reevaluated following completion of the Sub-Area Master Plan.

TCWD 6 – Response

See mitigation measures M 16-1 (Section 4.16) and M 17-1 (Section 4.17) included in the Draft Revised Subsequent EIR.

3.2.10 City of Lake Forest

Gayle Ackerman, May 29, 2002

City of Lake Forest 1 – Comment

The City of Lake Forest has received the Draft Environmental Impact Report for the Saddleback Meadows development. Public Works staff has reviewed the Water Quality Technical Report, Appendix E and Traffic Study, Appendix F of the EIR and offers the attached comments. Development Services staff has reviewed the body of the EIR and offers the following comments;

City of Lake Forest 1 – Response

Comment noted. No additional response is required.

City of Lake Forest 2 – Comment

Section 3.7 and Table 3-1 discuss related projects. Please confirm project 3, Los Angeles Athletic Club is the name of the self-storage facility located on the corner of Marguerite Parkway and El Toro Road. In addition, the Gateway Commercial Center Project located on the corner of Portola Parkway and El Toro Road, within the City of Lake Forest, should be considered in the EIR. Please see City staff for information on the approved project.

City of Lake Forest 2– Response

Comment noted. Please see Section 2.0 of this Response to Comments document for clarifications to Table 3.1. However, these revisions did not change any conclusions included in the Draft Revised Subsequent EIR.

City of Lake Forest 3 – Comment

The applicant should be advised that the City of Lake Forest does not permit any off-site signage. Therefore, there shall be no advertising or directional signage placed within the city of Lake Forest or along streets within the City's jurisdiction.

City of Lake Forest 3 – Response

Comment noted. No off-site signage for the proposed project is proposed within the City of Lake Forest.

City of Lake Forest 4 – Comment

We would like to continue to receive information and documents on the project. Please send all further correspondence to myself, Ms. Gayle Ackerman, AICP, Director of Development Services at 2361 Lake Center Drive, Suite 100, Lake Forest, CA 92630, telephone number (949) 461-3460.

City of Lake Forest 4 – Response

Comment noted. The City of Lake Forest will receive all future environmental documents and notices pertaining to the proposed project. No additional response is required.

City of Lake Forest 5 – Comment

I have reviewed the Conceptual Water Quality Management section of Saddleback Meadows EIR. The following are comments for the subject document.

In the Developed Conditions section of the Report, page 6, it states that "The permanent open space will be dedicated to the County of Orange as a regional park and will be maintained by the County or a third-party conservation group." The report indicated that this open space area is 88.2 acres.

- *Has the County of Orange agreed to accept the open space area and the maintenance responsibility associated with it?*
- *What impacts will this dedication have on the City if and when this area is annexed to the City of Lake Forest?*
- *Will the public have access to this regional park?*

Please respond to these questions and provide additional information to clarify this item and its impact on the City of Lake Forest.

City of Lake Forest 5 – Response

Section 2.3 of the Draft Revised Subsequent EIR described the details of the proposed open space, which includes approximately 83.25 acres as a natural resource protection area. This area would be an opportunity to expand O'Neill Regional Park (page 2-16 of the Draft Revised Subsequent EIR).

The proposed project site is not within the City of Lake Forest's sphere of influence and there are no plans at this time to annex any portion of the site to the City. It would therefore be speculative to assume annexation and discuss potential impacts to the City.

City of Lake Forest 6 – Comment

In the Developed Conditions section of the Report, Page 6, states that "Only lots 1 through 37 connect directly to an existing storm drain facility in El Toro Road". Please provide all required Hydrology and Hydraulic backup information to show that the existing facility has enough capacity to accommodate this portion of the development. Furthermore, provide detail information on the watershed that contributes to this existing facility on El Toro Road and the down stream impacts of this development.

City of Lake Forest 6 – Response

Project watershed drainage was discussed in Section 4.3 and Appendix D of the Draft Revised Subsequent EIR, which include all necessary hydrologic data for the proposed project. The water quality analysis was included in Section 4.4 and Appendix E of the Draft Revised Subsequent EIR.

City of Lake Forest 7– Comment

Section 7 entitled "Monitoring, Inspection and Maintenance, page 12, Subsection (g) entitled "Common Area Catch Basin Inspection", the inspection and power wash of the screen for the stormceptor should be performed more than once per year. In fact, the first few years after completion of this project, the inspection rate should be 3-4 times per year, or after a sizeable rainstorm. This rate of inspection will be needed until such time as the newly planted vegetation/landscaping begin to contribute to the reduction of erosion. After that, the rate may be reduced to 2-3 times per year to allow for continuous and proper clean screens for all stormceptors.

City of Lake Forest 7 – Response

As stated in PDF 4-16 included in the Draft Revised Subsequent EIR, structural BMPs (such as the stormceptors) will be maintained for effectiveness and a detailed plan for maintenance, inspection and for assessing effectiveness will be included in the project's final SWPPP and the WQMP (PDF 4-17). These plans will be prepared and approved by the applicable County departments and regional jurisdictions.

City of Lake Forest 8 – Comment

Same section as stated in item 3 above, page 12, subsection (h) entitled "Street Sweeping Private Streets and Parking Lots". Please be more specific in regards to statement "This procedure will be intensified around October 15th of each year... " In other words, is the street sweeping required twice a week or more? The term "intensified" needs to be clearly defined.

City of Lake Forest 8 – Response

"Intensified" is defined to mean an increase above the weekly basis, dependent on site conditions. As stated above, a detailed plan for maintenance will be included in the project's final SWPPP and WQMP.

City of Lake Forest 9 – Comment

75% of this area ultimately drains to Aliso Creek, which is an impaired water body and is under an enforcement action (California Water Code Section 13225) from the San Diego Regional Water Quality Control Board. What specific measures are to be undertaken by this development to eliminate pollutant runoff from entering the curb and gutter as required by the NPDES permit and in support of the enforcement action.

City of Lake Forest 9 – Response

Please see Section 4.4 of the Draft Revised Subsequent EIR for a discussion of detailed stormwater water quality runoff mitigation measures, including by not limited to the following: PDF 4-1, PDF 4-2 PDF 4-3, PDF 4-13, PDF 4-14, PDF 4-16, PDF 4-17, SC 4-1, SC 4-2, SC 4-3, SC 4-4. Please also see Section 3.3.8 (Saddleback Canyons Conservancy 4 – Response) of this Response to Comments document.

City of Lake Forest 10 – Comment

We have reviewed the Saddleback Meadows Traffic Report prepared by Urban Crossroads for the County of Orange. The following comments are for the subject document.

The following intersections are STOP sign controlled and should be analyzed utilizing the 2000 HCM: Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline Rd. and Santiago Canyon Rd./Live Oak Canyon Rd. The intersection analyses Tables should be updated to reflect the delay/LOS for each of these intersections under each scenario which was analyzed.

City of Lake Forest 10 – Response

Use of the 2000 HCM is used as a general guidance for traffic analysis. All intersections in the Saddleback Meadows Traffic Study were analyzed using the required Intersection Capacity Utilization (ICU) methodology, based on the County of Orange guidelines. The ICU approach is a planning methodology that expresses the volume of traffic as a percentage of the overall intersection capacity and a more appropriate model to analyze traffic impacts associated with the proposed project. To compare the operations at these study area intersections for Year 2005 with and without project conditions, as well as Year 2025 with and without project conditions, the same intersection methodology was utilized. This approach enables the analyst to provide a comparison of intersection peak volume-to-capacity relationships for different conditions. In effect, this methodology assumes that traffic signals will be installed when warranted as the area develops.

City of Lake Forest 11 – Comment

Although the intersection of El Toro Rd./Live Oak Canyon Rd. does not meet a warrant for signalization under existing conditions, the HCM worksheets indicate that this intersection is currently operating at acceptable Levels of Service B during both the AM and PM peak hours. Therefore, further analyses should be completed to determine if signalization is needed based upon other factors such as accident data or safety concerns.

City of Lake Forest 11 – Response

The project traffic analysis completed for the proposed project indicates that a signal is warranted under existing conditions based on the existing peak hour intersection turning movements.

Additional warrant issues should be explored by the County of Orange and City of Lake Forest prior to programming this location for installation of a traffic signal.

City of Lake Forest 12 – Comment

The volumes provided in the count data found in Appendix B do not match the northbound and southbound through volumes at the intersection of Portola Parkway and the Foothill Transportation Corridor Ramps under existing conditions as shown in Figures 2E and 2F. A discussion should be added on how the northbound and southbound existing through volumes were derived for the AM and PM peak hours.

City of Lake Forest 12 – Response

The intersection of Portola Parkway and the Foothill Transportation Corridor is considered an urban interchange. In effect, an urban interchange combines the movements of two intersection locations (the northbound and southbound ramps) into one intersection. The movements presented in Appendix F of the Draft Revised Subsequent EIR do in fact reflect the volumes presented on Exhibit 2-E and 2-F. Due to the configuration of the intersection, some counts actually include multiple movements. For example, the A.M. peak hour northbound through movement count volumes of 1,548 vehicles actually includes the northbound left turn movement of 478 vehicles. The actual A.M. peak hour northbound through movement is 1,070 (1548-478). Exhibits 2-E and 2-F present the actual turning movement counts.

City of Lake Forest 13 – Comment

On Table 2-2. the Level of Service at Portola Parkway/Glenn Ranch Road should be "B" and not "A."

City of Lake Forest 13 – Response

The peak hour Intersection Capacity Utilization (ICU) value of 0.62 presented on Table 2-2 (and Table 4.5.1) is consistent with results presented in Appendix F of the Draft Revised Subsequent EIR. The commenter is correct that this value should have been listed on Table 2-2 (and Table 4.5.1) with Level of Service of "B." The intersection would continue to operate at an acceptable level of service (LOS). Please see Section 2.0 of this Response to Comments document.

City of Lake Forest 14 – Comment

The peak hour project volumes for the AM inbound and PM outbound movements at the project access point on El Toro Road, as shown in Exhibits 3-C and 3-D, do not equate to the projected trip generation provided in Table 3-2. The Figures and intersection analyses worksheets should be revised to reflect the current numbers.

City of Lake Forest 14 – Response

The trip generation values presented in Table 3-2 in Appendix F of the Draft Revised Subsequent EIR are consistent with the project trip generation results shown on Exhibits 3-C and 3-D. For presentation purposes, the trip generation values included in Table 3-2 were rounded to the nearest 5 for all peak hour trips and the nearest 10 for all daily trips. This rounding explains the variation between Table 3-2 and Exhibits 3-C and 3-E.

City of Lake Forest 15 – Comment

Table 3-5 should be revised to reflect the Level of Service on each road segment based upon the roadway capacity values found in Table 2-1.

City of Lake Forest 15 – Response

Table 3-5 in Appendix F of the Draft Revised Subsequent EIR is not intended to provide a roadway capacity analysis. As noted on page 3-22 of Appendix F, Table 3-5 presents a summary of the average daily traffic volumes on Santiago Canyon Road.

City of Lake Forest 16 – Comment

On Table 4-4 the following Levels of Service should be corrected to reflect to following Levels of Service:

El Toro/Valley Vista Way – PM peak hour – LOS B
Saddleback Ranch/Glenn Ranch – PM peak hour – LOS B
Portola Parkway/El Toro – AM peak hour – LOS D
Portola Parkway/El Toro – PM peak hour – LOS C

City of Lake Forest 16 – Response

Comment noted. Please see Section 2.0 of this Response to Comments document for an updated Table 4-4 (Table 4.5.8), which has been corrected for three of these four items. The Saddleback Ranch/Glenn Ranch intersection was reported correctly as LOS A. The analysis conclusions remain unchanged.

City of Lake Forest 17 – Comment

It is unclear as to who is responsible for the Year 2005 improvement (Southbound Left Turn Lane) required at the study intersection of Portola Parkway/Foothill Transportation Corridor. This should be indicated in the study.

City of Lake Forest 17 – Response

This improvement is already accommodated by the overall physical design of the interchange. Project participation in the improvement is addressed in the following mitigation measure included in Section 4.5 of the Draft Revised Subsequent EIR:

M 5-5 The project shall pay its fair share of the improvement of the following intersections: Portola Parkway at Glenn Ranch Road, Portola Parkway at Foothill Transportation Corridor (FTC), and the Portola Parkway at El Toro Road.

The project traffic analysis indicates that the following improvements are needed to serve long-range future (Year 2025) traffic conditions with or without the proposed project:

- Portola Parkway (NS) at Glenn Ranch Road (EW):
  - Signal modification to provide northbound right turn overlap phase
- Portola Parkway (NS) at Foothill Transportation Corridor (EW):
  - Add one northbound through travel lane
  - Add one southbound left turn lane
  - Add one southbound through travel lane
- Portola Parkway (NS) at El Toro Road (EW):
  - Add one southbound through travel lane
  - Add one eastbound left turn lane
  - Signal modification to provide southbound right turn overlap phase

City of Lake Forest 18 – Comment

Table 4-6 should be corrected. The study intersection of El Toro Rd./Valley Vista Way should have a LOS value of E instead of D.

City of Lake Forest 18 – Response

Comment noted. Please see Section 2.0 of this Response to Comments document, for an updated Table 4-6 (Table 4.5.9), which has been corrected. The analysis conclusions remain unchanged.

City of Lake Forest 19 – Comment

A discussion/table should be added to the traffic study regarding the project's impacts at each study intersection where the Level of Service is unacceptable and the project increases the ICU value, and where the intersection's operation is degraded to an unacceptable operation with the project. In addition, the proposed improvements, which would mitigate

the project's impacts, should be shown along with additional improvements which are needed without the project for Year 2025 conditions. Responsibility of the improvements should also be provided.

City of Lake Forest 19 – Response

The County of Orange utilizes a procedure for determination of the project contribution, which focuses on changes in the Intersection Capacity Utilization (ICU) between existing conditions, future no-project conditions, and future with-project conditions. The distinction between new and existing traffic performance is a key point in this analysis. Table 3.2, below summarizes the fair share calculations for 2025 conditions.

Table 3.2
Mitigation Measure (M 5-5) Fair Share Calculations

Intersection Location	Peak Hour	Existing ICU	2025 No Project ICU	2025 With Project ICU	2025 With Project Mitigation ICU	Baseline (ICU)	Total Future Traffic Share (ICU)	Project Traffic Share (ICU)	Project Fair Share (%)
Portola Pkwy. (NS) at:									
• Glenn Ranch Rd. (EW)	A.M.	0.62	0.93	0.96	0.80	0.62	0.34	0.03	8.8%
	P.M.	0.50	1.03	1.07	0.85	0.50	0.57	0.04	7.0%
• Foothill Trans. Corridor (EW)	A.M.	0.54	0.77	0.77	0.67	0.54	0.23	-	0.0%
	P.M.	0.79	1.05	1.06	0.64	0.79	0.27	0.01	3.7%
• El Toro Rd. (EW)	A.M.	0.75	1.14	1.15	0.88	0.75	0.40	0.01	2.5%
	P.M.	0.65	0.95	0.95	0.70	0.65	0.30	-	0.0%

Source: Urban Crossroads, 2002

The baseline traffic share is a function of the existing ICU, the future with project ICU, and the ICU after mitigation. If the ICU after mitigation is acceptable, then all future (new) traffic should contribute equally to the improvement. This is the case for the three intersections shown on Table 3.2, above.

The project contributions to future improvement needs at these intersections range from 2.5 percent at Portola Parkway/El Toro Road to 8.8 percent at Portola Parkway/Glenn Ranch Road.

City of Lake Forest 20 – Comment

Peak hour traffic volumes for some improvements under the Year 2025 without the project scenario are decreasing when compared to volumes under the Year 2025 without the project scenario. The following intersections should be reviewed and changes made to the Figures and ICU worksheets or an explanation provided on why volumes are decreasing in the year 2025.

Santiago Canyon/Modjeska Canyon
El Toro/Live Oak Canyon
El Toro/Valley Vista
Saddleback Ranch/Glenn Ranch
Portola Pkwy/Glenn Ranch
Portola Pkwy/El Toro
Santiago Canyon/Ridgeline
El Toro/Ridgeline
El Toro/Glenn Ranch
Marguerite Parkway/El Toro
Portola Pkwy/Trans. Corr.

City of Lake Forest 20 – Response

As discussed in the Traffic Study (Appendix F of the Draft Revised Subsequent EIR), the 2005 traffic conditions were developed based on an annual background growth rate of three percent over a four-year time period (2001 to 2005). The 2005 traffic conditions also include all known project development such as Live Oak Plaza and the Saddle Creek/Saddle Crest development. Future 2025 traffic conditions were developed based on the latest OCTA traffic model forecasts contained in the Orange County Transportation Analysis Model (OCTAM 3.1) and the Irvine Transportation Analysis Model (ITAM 3.01).

In all cases the overall intersection traffic volumes show a substantial traffic volume increase for future 2025 conditions over 2005 conditions. However, individual turning movements may be lower in the projections for 2025 in some cases. This can occur as land uses change and additional network segments are improved in the circulation system.

City of Lake Forest 21 – Comment

Appendix J contains traffic signal warrants for the intersections of Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline and El Toro Rd./Live Oak Canyon Road under a variety of analyses and conditions. The body of the report does not discuss why traffic signal warrants were applied or when (under what time-frame) the signal may be required.

City of Lake Forest 21 – Response

Based on the County of Orange guidelines for traffic analysis, all intersections in the Saddleback Meadows Traffic Study were analyzed using the required Intersection Capacity Utilization (ICU) methodology. The ICU approach is a planning methodology that expresses the volume of traffic as

a percentage of the overall intersection capacity. To compare the operations at these study area intersections for Year 2005 with and without project conditions, as well as Year 2025 with and without project conditions, the same intersection methodology was utilized. This approach enables the analyst to provide a comparison of intersection peak volume-to-capacity relationships for different conditions. In effect, this methodology assumes that traffic signals will be installed when warranted as the area develops.

City of Lake Forest 22 – Comment

There is an existing bike path/trail, which runs along the eastside and parallel with El Toro Road. The main project access will intersect this bike path/trail. Provisions should be provided for signing the bike path/trail with the proper controls.

City of Lake Forest 22 – Response

Section 4.5.4 of the Draft Revised Subsequent EIR included a Standard County Condition to ensure that the bike lane along El Toro Road in the project area would meet County requirements (see SC 5-5).

City of Lake Forest 23 – Comment

There is a discrepancy in the trip generation provided in a letter dated October 17, 2001 to Mr. Pike Oliver, California Quarter LTD, from Mr. Bill Lawson, Urban Crossroads, Inc. regarding "Alternative Development Scenarios" for the Saddleback Meadows Alternatives. This letter should be revised so the trip generation data provided in the letter reflects the trip generation information indicated in Table 2 of the aforementioned letter.

City of Lake Forest 23 – Response

The trip generation rates contained in the Draft Revised Subsequent EIR, Appendix F (Traffic Study) are correct.

3.2.11 City of Mission Viejo

Charles E. Wilson, May 30, 2002

City of Mission Viejo 1 – Comment

Thank you for the opportunity to review and comment on Zone Change ZC98-3 and Area Plan AP98-2 for Saddleback Meadows (aka Bridlewood) in the County of Orange. Of particular interest to the City of Mission Viejo are the transportation-related components of the Draft Revised Subsequent Environmental Impact Report (EIR 566) for the Saddleback Meadows project filed with the County of Orange. The City's comments are as follows:

1. *Project Trip Generation:*

   The project traffic study identifies a residential trip distribution assumption wherein twenty-five percent of the daily traffic would enter/leave the project site, using El Toro road north of the project entrance, and with twenty five percent continuing along Santiago Canyon Road. Page 3-5 of the project traffic study states that "trip distribution patterns for this study are consistent with previous traffic studies and were reviewed by the County staff prior to completion of this traffic analysis." The City of Mission Viejo continues to believe that the 25% assignment of traffic to El Toro Road, north of the project access, is high. The City of Mission Viejo recommends that the Draft EIR provide narrative discussion which explains the land uses or destinations that exist or are proposed north of the project site, which would cause one-quarter of the project's daily trips to use this segment of El Toro Road, versus using El Toro Road south of the project site to access freeways, major highways, and public facilities. The assumptions used in the project trip distribution would have a resultant impact on analyzed intersections south of the project entrance to El Toro Road, and, in particular, would increase Intersection Capacity Utilization (ICU) calculations if a greater percentage of project trips were assigned southerly along El Toro Road.

City of Mission Viejo 1 – Response

The project distribution pattern is logical and consistent with other project traffic studies in the area. For example, the project trip distribution for Saddle Creek/Saddle Crest also indicates that 25 percent of the project traffic would be assigned north of El Toro Road.

Exhibit 2-D (Figure 4.5.3) included in the Draft Revised Subsequent EIR, indicates that the existing daily traffic volumes on El Toro Road north of Live Oak Canyon Road range from 5,300 to 5,700 vehicles per day. Existing average daily traffic volumes on El Toro Road south of the proposed project range from 8,400 to 28,700 daily vehicles. The traffic volumes on Santiago Canyon Road north of Live Oak Canyon Road represent approximately 18 percent to 63 percent of the daily traffic volumes on El Toro Road south of the proposed project site. The project traffic distribution pattern is therefore consistent with the relative magnitude of existing traffic activity in the Trabuco Canyon area.

North of the project site, El Toro Road becomes Santiago Canyon Road and continues to an interchange with the Eastern Transportation Corridor (SR-241). Santiago Canyon Road also extends into the City of Orange where it becomes Chapman Avenue. Chapman Avenue connects with the Costa Mesa Freeway (SR-55) and continues westerly to the City of Garden Grove. East of the Costa Mesa Freeway, the Santiago Canyon Road/Chapman Avenue corridor provides direct access from the project to Santiago Canyon College, Irvine Regional Park, numerous City of Orange commercial centers, and the Chapman Medical Center. The Santiago Canyon Road/Chapman Avenue corridor therefore provides access to many destinations, freeways, major highways, and public facilities without toll charges. Utilization of this corridor by at least 20 percent of the project traffic is to be expected.

City of Mission Viejo 2 – Comment

2. *El Toro/Glenn Ranch Road Intersection:*

   The El Toro/Glenn Ranch Road intersection is a Measure M intersection that is fully assigned to the City of Mission Viejo. In compliance with countywide Measure M requirements, the City of Mission Viejo must maintain this intersection at a Level of service "D" or better.

The project traffic study identifies that the El Toro/Glenn Ranch Road intersection will maintain a Level of service A through project buildout in Year 2005, but that the intersection is projected to operate at a Level of Service "E" in the pm peak period in Year 2025 buildout, with or without the project. The project traffic study further identifies that the completion of additional El Toro Road improvements, specifically, the addition of through lanes that increases El Toro Road's lane capacity from a two-lane to a four-lane facility, will allow this intersection to operate at a Level of Service "C" in the pm peak period, thus maintaining consistency with Measure M Growth Management Program level of service standards.

The City of Mission Viejo recognizes that the implementation of additional El Toro Road improvements is not necessitated by the Saddleback Meadows project, since project buildout, and associated levels of service standards, can be maintained at the El Toro/Glen Ranch Road intersection with existing improvements. In conjunction with Measure M Interjurisdictional Planning Forums, the City of Mission Viejo will monitor the operation of El Toro Road and will work with the County of Orange, to allow for the implementation of the additional El Toro Road lane improvements in advance of any failing intersection performance at the El Toro/Glenn Ranch Road intersection.

On behalf of the City of Mission Viejo, I thank you for your consideration of our comments. If you have any questions, please feel free to call Elaine Lister or me at (949) 470-3053.

City of Mission Viejo 2 – Response

As discussed above, future level-of-service issues at this intersection are projected to occur with or without the project. The project traffic contribution would be mitigated (please see Section 4.5 mitigation measure M 5-5, of the Draft Revised Subsequent EIR).

3.2.12 City of Rancho Santa Margarita

Kathleen Haton, May 16, 2002

City of RSM 1 – Comment

Thank you for the opportunity to review and comment on the Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the proposed Saddleback Meadows development. It is our understanding that the existing zoning allows for 705 manufactured homes, 1.7 acres of commercial, and 130 acres of open space. The proposed development will include 299 single-family detached dwelling units and 155 acres of open space.

The City of Rancho Santa Margarita has reviewed the Zone Change and Area Plan and has the following comments:

1. *Saddleback Meadows Rural Character Statement Page 6 (graphics): It is not clear from which direction the views from offsite are from.*

City of RSM 1 – Response

The comment refers to the Area Plan for the Saddleback Meadows project and does not pertain to the EIR. However, the illustrations are intended to be conceptual and are not from a specific location.

City of RSM 2 – Comment

Page 6-1: Grading Concept: Contour grading is discussed but there are not any graphics that show where cut and fill areas will occur.

City of RSM 2 – Response

The level of detail requested by the commenter is not required and the comment refers to the Area Plan for the Saddleback Meadows project. However, the extensive amount of remedial grading required will result in cut operations to stabilize existing landslide areas. Fill operations would be associated with the upper limits of areas. Please see Section 4.2 and Appendix C of the Draft Revised Subsequent EIR for a more detailed discussion of grading/landform alteration proposed for the site.

City of RSM 3 – Comment

Please include the City of Rancho Santa Margarita on your mailing list for review of any documents related to this project.

If you have any questions or concerns about our comments, please call me at (949) 635-1800.

City of RSM 3 – Response

Comment noted.

3.3 ORGANIZATIONS/BUSINESS LETTERS

The following organizations/business commented on the Draft Revised Subsequent EIR:

- The Center for Biological Diversity
- Connor, Blake & Griffin, LLP (representing the Vedanta Society of Southern California)
- The Gas Company
- Juaneno Band of Mission Indians
- Mark R. McGuire
- Orange County Regional Recreational Trails Advisory Committee
- Rural Canyon Conservation Fund
- Saddleback Canyons Conservancy
- Sierra Club
- Trails 4 All
- Terrell Watt, AICP (representing National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund)

3.3.1 The Center for Biological Diversity

Kassie Siegel, June 24, 2002

TCBD 1 – Comment

These comments are submitted on behalf of the Center for Biological Diversity ("Center"), a non-profit public interest membership organization dedicated to the preservation of native species and their habitats. On June 11, 2001 our Legal Assistant Susie Roe called the County of Orange Environmental Planning and Services Division requesting a copy of the EIR for the Saddleback Meadows Project, SCH No. 1996121072. Ms. Roe was told by staff that the EIR could only be sent via the authority of Mr. Bill Grieman, then on vacation. Ms. Roe left a voicemail for Mr. Grieman, who never returned the call. Today, June 24th, Ms Roe called Mr. Grieman to check on the status of the request for the EIR, and was told that he was unsure when and if it could be sent because the comment period is now over. This is outrageous. First, the comment period is not "over" as it is not yet the close of business. Second, the Center has a right to review the EIR regardless of whether the comment period is "over" or not. Third, the County of Orange Environmental Planning and Services Division should not be incapable of sending out a copy of an EIR while one staff member is on vacation. The actions of the County staff have deprived the Center, our members and staff, and members of the public with an interest in protecting the biological resources of the Saddleback Meadows project site with an opportunity to comment on this project.

From reviewing the comments of the Sierra Club and others, it seems apparent that the Draft Supplemental EIR is deeply flawed, the environmental impacts of this project are unacceptable, and the mitigation proposed is entirely inadequate. The Center will submit further comments once we have received the EIR. The Center requests that the comment period be extended due to the County's failure to timely release a copy of the EIR upon request. Should the deadline not be extended, the Center will submit comments and strongly urges the county to consider them and respond fully in the final EIR. As you know, the CEQA Amendments of 1994 make it clear that an organization exhausts its administrative remedies (and therefore preserves its rights to judicial review of the project approval) by submitting comments at any time prior to the certification of the EIR. Pub. Resources Code § 2177(a)(b); Galante Vineyards v. Monterey Peninsula Water Management District (6th Dist. 1997), 60 Cal. App.4th 1117-1121.

Thank you for your consideration of these comments. Please contact me at (909) 659-6053 x. 302 should you have any questions.

TCBD 1 – Response

Planning & Development Services Dept.

[County to provide further edits]

The County apologizes for the miscommunication regarding the commenter's request for a copy of the Draft Revised Subsequent EIR. However, it should also be noted that copies of the document were available at area libraries (see Section 1.0 of this Response to Comments document) and at the County of Orange. In addition, the commenter will have the opportunity to submit verbal and written comments and raise concerns or issues at the scheduled Planning Commission hearings (July 16 and August 28, 2002). Please see Section 3.3.9 of this Response to Comments document for responses to comments from the Sierra Club.

3.3.2 Connor, Blake & Griffin, LLP (representing the Vedanta Society of Southern California)

Edward M. Connor, June 9, 2002

Connor 1 – Comment

On behalf of the Vedanta Society of Southern California ("Vedanta"), we hereby submit our comments on "Draft Revised Subsequent Environmental Impact Report No. 566" ("DRSEIR 566" or the "DRSEIR") for the 299-unit single family housing project (the 299-Unit Project") proposed for the Saddleback Meadows property (the "Property"). Vedanta's specific comments on DRSEIR 566 are set forth in Exhibit "A" attached hereto and are incorporated herein by reference. We request that each of the comments set forth in Exhibit "A" receives full and complete response pursuant to section 15099 of the State CEQA Guidelines.

Connor 1 – Response

Comment noted, all written comments submitted on the Draft Revised Subsequent EIR are included in this Response to Comments document.

Connor 2 – Comment

We are particularly disappointed that, after having described the "44/178 Alternative" in detail in the letter which we sent you on August 31, 2001, in response to the Notice of Preparation DRSEIR 566, California Quartet's Consultant, HDR, has chosen to address a radically different alternative under the guise of the "44/178 Alternative." In our letter, we clearly described the "44/178 Alternative" as dividing the Property into a 44-acre "Development Parcel" and a 178-acre "Conservation Parcel." We stressed that the "Conservation Parcel" was to be permanently preserved in its natural condition as undeveloped and undisturbed open space, and that no development activities (e.g., remedial grading) were to be permitted outside of the 44-acres of the "Development Parcel." However, in the DRSEIR, the "44/178 Alternative" is inexplicably preserved as a 127-unit single family housing project.

As was disclosed by California Quartet's representatives during Vedanta's settlement negotiations with them and various County officials in 1998, a 127-unit alternative would require a development area of at least 75 acres and would entail massive remedial grading and a 50-foot loeffel wall that would destroy virtually all of the vernal ponds, oak trees, and sensitive habitat areas that would otherwise be preserved by the 44-acre development footprint that is the hallmark of the "44/178 Alternative" proposed by Vedanta.

We consider the unfair and distorted presentation of the "44/178 Alternative" that is contained in DRSEIR 566 to be so deceptive and misleading that it requires the DRSEIR to be redrafted and recirculated. Section 15088.5(a)(3) of the State CEQA Guidelines has clearly been triggered in this regard. Moreover, given the conclusory and deficient nature of many of the other sections of DRSEIR 566, recirculation is also required under section 15088.5(a)(4) of the State CEQA Guidelines.

What is required is a fair and honest evaluation of the merits of the "44/178 Alternative." As the County's own staff members proved in developing the 65-unit "Mathews Alternative" in April 1998, the "44/178 Alternative" would provide California Quartet with a feasible – albeit lower density – housing project which would preserve and protect the environmentally-sensitive resources on this unique "wildlife corridor" property. Regrettably, the County has so far allowed California Quartet's consultant to evade the state law requirements which mandate that this project alternative be adequately analyzed and reported on in the DRSEIR. We cannot believe the County has allowed this blatant misconduct to occur and we hope that you will rectify this immediately.

In the interest of providing the decision-makers of the County if Orange and the members of the public with a complete and non-deceptive evaluation of the project alternatives, environmental impacts, and feasible mitigation measures associated with the 299-Unit Project, we respectfully request that DRSEIR 566 be revised and recirculated before any public hearings are scheduled on this matter.

Connor 2 – Response

As stated in Section 5.1 of the Draft Revised Subsequent EIR, the range of alternatives required within an EIR is governed by the "rule of reason" which requires an EIR to include only those alternatives necessary to permit a reasoned choice. The alternative analysis included in the Draft Revised Subsequent EIR discussed eight alternatives to the proposed project. These alternatives were based on criteria pursuant to CEQA including the potential to reduce or eliminate significant impacts, and attain most of the project objectives. Further, the discussion of alternatives need not be exhaustive, and there is no requirement within CEQA that specific alternatives advocated by an individual or interest group be included. As stated in the *CEQA Guidelines* Section 15126.6(a) "An EIR need not consider every conceivable alternative to a project."

Nevertheless, Alternative 6 (44/178 Alternative) as described in the Draft Revised Subsequent EIR reflects the Memorandum of Understanding executed by the applicant and the Saddleback Lands Conservancy on November 3, 1998. The 65-unit alternative as suggested by the commenter was found by County staff in 1998 to not be economically feasible due to remedial grading requirements and was therefore, not included in the EIR. The remedial grading and fuel modification requirements of this alternative would extend into the area to be encompassed within the 178-acre conservation parcel regardless of whether 65 or 127 lots were included within the 44-acre development parcel.

The alternative analysis included in the Draft Revised Subsequent EIR meets the requirements of CEQA; therefore no revisions or re-circulation of the Draft Revised Subsequent EIR is required.

Connor 3 – Comment

1. *Draft Revised Subsequent Environmental Impact Report No. 566 ("DRSEIR 566" or the "DRSEIR") fails to identify, analyze, and mitigate the impacts associated with the failure of the 299-unit single family*

housing project (the 299-Unit Project") to comply and be consistent with the goals, objectives, components, regulations, and guidelines of the Foothill/Trabuco Specific Plan (the "FTSP"). At page 4.1-12, the DRSEIR simply concludes that the 299-Unit Project "would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692" and, therefore, as a result of the fact that the 705-unit manufactured housing project (the "705-Unit Project") described in Recorded Map 10692 was exempted – due to bankruptcy code concerns – from compliance with the FTSP, the 299-Unit Project should likewise be exempted. However, the DRSEIR fails to provide any legal or factual support for this conclusion. The FTSP provides an exemption for the development of the Saddleback Meadows property (the "Property") only if it is developed in accordance with the Recorded Map 10692 – i.e., if the 705-Unit Project is developed. If any proposed development "deviates" from the Recorded Map 10692, an amendment to the FTSP is required to "(1) determine an appropriate density cap for the property; (2) establish new development regulations for the Bridlewood Residential District; and (3) be consistent with all of the provisions of the Specific Plan." (FTSP at page III-20, para. 3.2(b).) By seeking to create an entirely new exemption from the FTSP for the Property, and by submitting an entirely new subdivision map for the Property, the developer has acknowledged that the 299-Unit Project deviates from Recorded Map 10692 and is not covered by the exemption from the FTSP provided for the 705-Unit Project. DRSEIR 566 incorrectly concludes that the 299-Unit Project is exempt from the FTSP because it "would be in substantial compliance with or consistent with previously approved and Recorded Map 10692." If the DRSEIR seeks to rely on this patently false conclusion, some attempt must be made to support it by providing a good faith comparison to the 705-Unit Project and the 299-Unit Project to prove that they are the same project. If they are essentially the same project, then the environmental analysis set forth in the DRSEIR is fatally flawed because the 299-Unit Project is portrayed as involving far fewer impacts.

Connor 3 – Response

The F/TSP established a specific "residential district" for the Saddleback Meadows property. The principal that either the approved map moves forward or an alternative is considered. The F/TSP never ruled out consideration of an alternative to the 705-lot plan, particularly that which would represent a lessening of environmental impact as compared to the recorded map. Section 3.2 "Special Provisions" of the F/TSP states: "Any development proposal which deviates from the approved Saddleback Meadows Planned Community zoning and Recorded Tract 10692 *and which cannot be found to be in substantial compliance* with these approvals shall require a Specific Plan amendment" (emphasis added). As stated in Section 4.1.2 of the Draft Revised Subsequent EIR, the proposed project would be in substantial compliance with the recorded map with respect to residential gross density and providing for the provision of a substantial increase in open space and the presence of a wildlife corridor as outlined in the F/TSP. Therefore the proposed project is in compliance with the residential district provisions of the F/TSP. Substantial compliance does not require that the proposed project (299 residential units) result in the same impacts as the recorded map (705 units). Many of the impacts associated with the 705-unit project were eliminated or substantially reduced due to compliance with the conditions of the Biological Opinion (BO)

(included as Appendix I.4 of the Draft Revised Subsequent EIR), changes in the existing environment, and reduction of trip generation and other impacts directly correlated with the number of residential units.

Connor 4 – Comment

2. *DRSEIR fails to identify, analyze, and mitigate the impacts – including the adverse precedent – associated with the creation of an entirely new exemption for the Property from the goals, objectives, components, regulations, and guidelines of the FTSP. If a new exemption is to be created, the DRSEIR should (a) identify all other projects, if any, which have received a similar exemption from the FTSP and (b) identify each of the goals, objectives, components, regulations, and guidelines of the FTSP with which the 299-Unit Project is inconsistent, but will nonetheless be exempted from, including, but are not limited to, (a) the goals and objectives relating to rural character and resource preservation; (b) the resources overlay component relating to wildlife corridors, oak woodlands, tree management/preservation, and streambeds; (c) Bridlewood Residential District Regulations; (d) landscaping regulations; (e) grading standards relating to the maximum height of manufactured slopes and the 70% "natural open space" requirement; (f) area plan submittal requirements; (g) grading, drainage and site planning guidelines; and (h) architectural guidelines.*

Connor 4 – Response

As stated in Section 3.3.2 (Connor 3 – Response) above, the proposed project is in substantial compliance with the approved map does not propose development beyond the boundaries of the previously approved impact area, and would not result in the " . . . creation of an entirely new exemption for the property from the goals, objectives, components, regulations and guidelines of the F/TSP." The proposed project is not an exemption from the Bridlewood Residential District. The proposed zone change would amend the F/TSP Bridlewood District.

Connor 5 – Comment

3. *DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on the Ramakrishna Monastery and St. Michael's Abbey. At page 4.1-13, under the heading "Level of Significance Before Mitigation," DRSEIR 566 concludes that "due to a natural space buffer, implementation of the proposed project would not result in significant land use compatibility impacts to the Rama Krishna Monastery or St. Michael's Abbey." However, at page 19, under the heading "Significant Impacts of the Project Prior to Mitigation," "Addendum PA980103 to Certified Final Subsequent Environmental Impact Report 566" ("Addendum No. 1") earlier concluded that the 299-Unit Project "would result in significant land use compatibility impacts to O'Neill Regional Park, the Ramakrishna Monastery, St. Michael's Abbey, and surrounding residential communities." Moreover, despite the incorporation of the identical "Project Design Features" which are proposed under DRSEIR 566, "Draft Environmental Impact Report No. 561" ("DEIR 561") concluded that the very similar 318-unit single family housing project which it analyzed would have a significant, unavoidable, adverse impact on land use*

compatibility with O'Neill Regional Park, the Ramakrishna Monastery, and St. Michael's Abbey. (DEIR 561 at page 8-1.) The DRSEIR fails to explain or reconcile these clearly inconsistent and contradictory conclusions.

Connor 5 – Response

It should be noted that Draft EIR 561 was not certified and therefore, its preliminary findings are subject to revision based on refined and/or updated analysis. As stated in Section 9.0 of the Draft Revised Subsequent EIR, as a result of changes in project design and the construction of other developments within the F/TSP, all unavoidable adverse impacts (with the exception of cumulative air quality) included in previous documentation have been eliminated. The proposed project includes additional buffer space between the Abbey and the development (from a 300-foot natural open space buffer to a 1,200-foot buffer). This refinement was in response to specific suggestions from the Abbey.

In addition, the current proposed project includes a 2,000-foot natural open space buffer between the project development and the Rama Krishna Monastery. Although, the dimension of this buffer is the same as for the project evaluated in the previous environmental document (Subsequent EIR No. 566), the impact is no longer significant due to the reduction of units in the project and average lot sizes that are more than twice as large as those included in the project evaluated in the previous environmental document[1] (from 705 manufactured residential units to 299 single-family units). Therefore, no impacts with regard to land use would occur.

Connor 6 – Comment

4. *DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on O'Neill Regional Park. At page 4.1-11, the DRSEIR concludes that the 299-Unit Project is "not incompatible" with O'Neill Regional Park. This conclusion is reached based on the fact that a portion of the Property is to be dedicated to the County of Orange (the "County") for incorporation into O'Neill Regional Park and that portion of the Property purportedly would cause O'Neill Regional Park to be "substantially buffered from the development by natural undisturbed, open space and topography." However, a comparison of the Open Space Plan for the 299-Unit Project (Figure 2.11) and any map or diagram indicating the surrounding property boundaries (e.g., Figure 4.1.2, 2.3, or 2.6) reveals that the 299-Unit Project abuts a significant portion of the property boundary shared by the Property and O'Neill Regional Park. Indeed, the 299-Unit Project will require grading and fuel modification activities to be conducted in a portion of O'Neill Regional Park. (See, e.g., Figure 4.2.5 (grading cannot conveniently stop at property boundary as indicated in Removal Area "C") and 4.12.1.) Hence, not only does the DRSEIR fail to provide any factual support for its conclusion that the 299-Unit Project is "not incompatible" with*

[1] *Residential units have been reduced from 705 to 299 and average lot sizes have increased from 3,900 square feet to about 7,000 square feet.*

O'Neill Regional Park, but it actually provides information demonstrating that this conclusion is obviously incorrect. Moreover, as noted in the previous paragraph, earlier environmental documents regarding the 299-Unit Project and the similar 318-Unit Project concluded that such projects did have significant land use compatibility impacts on O'Neill Regional Park, but DRSEIR 566 has not explained or reconciled these inconsistencies.

Connor 6 – Response

Land use compatibility is based on the long-term relationship between the proposed project and O'Neill Regional Park. Temporary construction impacts caused by grading are not considered a land use compatibility issue. Under existing conditions, a portion of the park abuts residential lots in the Hidden Ridge, Painted Trail and Rancho Santa Margarita residential projects (please refer to Figures 3.1 and 4.1.1 of the Draft Revised Subsequent EIR). This exposes park users to existing vistas of residential development. In addition, a portion of the park is operated as a private nursery.

The proposed project includes offsetting residential lots by 320 to 750 feet from the existing park boundary. Some lots are located at approximately 65 feet from the park boundary, but are 25 or more feet below a ridge and thus visually shielded from the park. Therefore, the proposed project would not be incompatible with the adjacent O'Neill Regional Park and no significant impacts would occur. No grading will occur in O'Neill Regional Park.

Please see Section 3.3.2 (Connor 8 – Response) of this Response to Comments document regarding fuel modification and potential grading encroachment.

Connor 7 – Comment

5. *DRSEIR 566 fails to properly identify, analyze, and mitigate any of the environmental impacts which would result if title and possession of a significant portion of O'Neill Regional Park were to revert back to Vedanta due to any construction or other activities associated with the 299-Unit Project. In 1974, Vedanta granted the approximately 245 acres located immediately to the south of the Property, and the west and southwest of the Monastery, to the County so that the land could be made a part of O'Neill Regional Park and be permanently maintained as open space. The grant of this land included several conditions subsequent pursuant to which the land would revert back to Vedanta in the event of a breach of any of those conditions. The conditions expressly prohibit any grading activities, the placement of any soils, and the removal of any trees, shrubs, or natural growth from the land gifted to the County. All of the grading maps in the DRSEIR attempt to show that no grading will be conducted in O'Neill Regional Park. For example, Figure 4.2.5 shows that when the limits of remedial grading– which generally trace the contours of the land and the outline of the geotechnical conditions which purportedly are to be remedied– reach the property line between the Property and O'Neill Regional Park, the limits of remedial grading miraculously make a sharp turn and follow precisely along the property line in order to stay out of O'Neill Regional Park. Clearly, this is not possible and, as currently designed, the 299-Unit Project requires certain grading – and also fuel-*

modification activities – to be conducted within the portion of O'Neill Regional Park which Vedanta gave to the County. Moreover, the 299-Unit Project provides for a storm drain to discharge into the natural drainage course which runs directly into O'Neill Regional Park. (See Figure 4.3.2.) Each of these constitutes a breach of the conditions subsequent to Vedanta's gift of land to the County and would cause such land to revert back to Vedanta. DRSEIR 566 should acknowledge his fact and identify, analyze, and mitigate the environmental impacts which would result therefrom. If the DRSEIR is going to continue to insist that no grading or other activities will be conducted within the O'Neill Regional Park, then DRSEIR 566 should provide an explanation of how grading and all other activities will be excluded from O'Neill Regional Park.

Connor 7 – Response

While the comment related to the remedial grading line for the proposed project is generally correct, the comment does not consider the opportunity to adjust the remedial grading line in response to site specific conditions. The remedial grading line shown in Figure 4.2.5 is located at the top of a back-cut into the development area. As such, the back-cut can be adjusted for short stretches in order to control its precise location and stay away from sensitive areas, such as O'Neill Regional Park. Adjacency to the area in question in the comment is an example of such a site-specific design.

The commenter is also correct regarding Figure 4.12.1 of the Draft Revised Subsequent EIR, which depicts off-site fuel modification. Figure 4.12.1 depicted the standard fuel modification of the Orange County Fire Authority (OCFA). However, the OCFA also allows alternate methods in response to site-specific conditions. A revised Figure 4.12.1 is included in Section 2.0 of this Response to Comments document and depicts the use of an alternative method (i.e., expansion of the 50-foot irrigated wet zone) to confine the fuel modification to the limits of the property.

As shown in Figure 4.3.1 in the Draft Revised Subsequent EIR, the project site currently drains towards O'Neill Regional Park. Post development hydrology would be in substantial conformance with existing hydrologic conditions and thus not result in a significant impact under CEQA. However, this would not constitute a breach of the conditions regarding gifting the land to the County, as it would not change the existing drainage conditions.

Connor 8 – Comment

6. *DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on all surrounding residential areas. At page 4.1-10, the DRSEIR states that the 299-Unit Project "has a lower gross density than the surrounding area projects." However, in reaching this conclusion, the DRSEIR 566 relies solely upon two nearby projects which are located outside the FTSP – i.e., Portola Hills and Hidden Hills/Hidden Ridge – while ignoring two nearby residential projects that are within the FTSP. (See Table 4.1.2.) DRSEIR 566 fails to acknowledge or analyze the fact that the "gross density" for the 299-Unit Project (1.3 dwelling units/acre) is double that of Santiago Canyon Estates (gross density*

of 0.66 dwelling units/acre) and four times that of the proposed Saddle Creek/Saddle Crest (gross density 0.33 dwelling units/acre.)

Connor 8 – Response

The commenter is correct in that gross density for that of Santiago Canyon Estates and the proposed Saddle Creek/Saddle Crest would be lower than that for the proposed project. As stated in Section 4.1.1 of the Draft Revised Subsequent EIR, density comparisons were made with two developments adjacent and closest to the proposed project: Hidden Hills/Hidden Ridge (which abuts the project site to the south) and Portola Hills (which is located west of the project site across El Toro Road). The existing density for the neighboring properties Portola Hills and Hidden Hills/Hidden Ridge, if applied to this site, would allow 666 dwelling units for the proposed project. The F/TSP zoning for the Upper Aliso Residential District to the north would allow 222 dwelling units, while the F/TSP zoning for the Trabuco Canyon Residential District to the east would allow 111 dwelling units.

The General Plan designates Saddleback Meadows and neighboring sites to the south and west as "Suburban Residential." Density allowed under this category ranges from 0.5 dwelling units/acre (du/ac) to 18 du/ac. The proposed project includes 1.4 du/ac. Neighboring property to the north and east are designated as "Rural Residential." Saddleback Meadows may be regarded as a rural transition area because of its location along a heavily traveled road (El Toro Road) and at the western edge of the F/TSP area. Thus, 299 units is a reasonable density for this location.

Connor 9 – Comment

7. *DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts associated with the inconsistency between the 299-Unit Project and the Aliso Creek Corridor Specific Plan. At page 4.1-12, the DRSEIR concludes that the 299-Unit Project "would be in conformance with the Aliso Creek Corridor Specific Plan" and, therefore, makes no attempt to mitigate the impact of any inconsistency with such Specific Plan. However, at page 19, Addendum No. 1 concludes that the 299-Unit Project "would also conflict with policies of the Aliso Creek Corridor Specific Plan." DRSEIR 566 fails to explain or reconcile these inconsistent and contradictory conclusions.*

Connor 9 – Response

As stated in Section 4.1.2 of the Draft Revised Subsequent EIR, the Aliso Creek Corridor Specific Plan pre-dates both the F/TSP and Recorded Tract Map 10692 and sets land use goals, objectives and policies for a large regional planning area from the Cleveland National Forest to the Pacific Ocean. The F/TSP further refines these goals, objectives and policies to guide future development in the Foothill-Trabuco area. The proposed project would incorporate several aspects of the Aliso Creek Corridor Specific Plan (i.e., riparian preservation and habitat conductivity, Section 4.8) and

have also been included to reduce impacts to Aliso Creek and the surrounding area (i.e., proposed drain system to reduce sediment transport, Section 4.3).

Connor 10 – Comment

8. *DRSEIR 566 fails to identify, analyze, and mitigate the grading and other geophysical impacts associated with the 299-Unit Project. The impacts and mitigation measures which DRSEIR 566 fails to address, include, but are not limited to, the following:*

   a *The impacts which the grading activities for the 299-Unit Project will have on the Trabuco Canyon area and its residents based on how long it will take to complete the proposed grading. Although all previous environmental impact reports the County has prepared for the Property have likewise failed to fully address these impacts, they did, at least, concede in the "Geophysical Resources" subsection that, depending on the project, grading would take between 10 and 18 months to complete, based on an average daily grading quantity of 30,000 cubic yards. (See Addendum No. 1 at p. 21; "Final Subsequent Environmental Impact Report No. 566" ("FSEIR 566") at p. 4-22; DEIR 561 at p. 4-28.) The "Geophysical Resources" subsection of the DRSEIR, however, is strangely silent on this issue and the "Project Description" section (p. 2-16) now simply contains a single sentence and footnote stating that grading will require approximately 13 months to complete based on an average of 30,000 cubic yards per day and 21-work days per month. Not only is this estimate incorrect using the County's own numbers (a total of 9.25 million cubic yards of grading at an average of 30,000 cubic yard per day and 21-work days per month translates to 14.68 months of grading), but, as Vedanta and its consultants have repeatedly stated in connection with all previously proposed projects, an average of 30,000 cubic yards per day – especially for the remedial grading – is very unrealistic. Although 30,000 cubic yards per say may possibly be achieved for the 2.45 million cubic yards of conventional grading, a figure of 1,000 cubic yards per day is a much more reasonable assumption for the 6.8 million cubic yards of remedial grading that is proposed. Using these figures (and DRSEIR 566's estimate of 21-work days per month), grading would take longer than 36 months or 3 years to complete. The DRSEIR fails to justify its estimate regarding how long grading for the 299-Unit Project will take, and it also fails to address the impacts that conducting grading activities for that amount of time would have on Trabuco Canyon and its residents – including, but not limited to, the excessive noise, dust, and traffic delays associated with excavating and recompacting more than nine million cubic yards of soil which will remain exposed to the wind during dry seasons, and the rain during wet seasons, over the course of the several years it will take to complete all of the proposed rough grading.*

Connor 10 – Response

The commenter is correct, the grading is projected to take about 15 months, not the 13 months stated on page 2-16 of the Draft Revised Subsequent EIR. Please see Section 2.0 of this Response to Comments document. The *average* grading rate of 30,000 cubic yards per day is based on the geotechnical engineer's experience of similar projects and has been confirmed by a local grading firm

based on their experience on similar projects. No traffic delays are projected due to the grading operations. Actual grading production on any given day will vary over the course of the project; however, the average grading rate of 30,000 cubic yards per days can be sustained over the course of the project. Dust and noise issues were analyzed in Sections 4.6 and 4.7, respectively, of the Draft Revised Subsequent EIR.

Connor 11 – Comment

b *The impacts associated with the heavy ground water seepage into the excavations at the site which DRSEIR 566 anticipates will occur (p. 4.2-18 mitigation measure M 2-20), including, but not limited to (i) the impact of the discharge of collected groundwater seepage, (ii) the impact of the interruption in subsurface ground water flow on downstream wells, and (iii) the impacts of the presence of the deep water shear keys for buttress fills on the final groundwater conditions. The DRSEIR also fails to address whether there is a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill.*

Connor 11 – Response

The comment is referred to the full discussion of mitigation (mitigation measure M 2-20) in Section 4.2 of the Draft Revised Subsequent EIR; which indicates that seepage will reach "... maximum discharge in two to five days... decreasing in volume with time... being less at higher site elevations as well as in cuts made in late in the year." Therefore, the discharge of collected groundwater seepage is expected to be minor over the course of the grading effort.

Connor 12 – Comment

c *The impact of buttress backcut failures. DRSEIR 566 projects a buttress backcut failure rate of 10 percent (See DRSEIR 566 at p. 4.2-20, mitigation measure M 2-34.) However, due to the subsurface conditions typified by landslides within landslides, this 10 percent estimate is overly optimistic. Moreover, the effect of backcut failures on upstream and asjacent properties, regardless of the percentage of failures, are not addressed.*

Connor 12 – Response

As noted in mitigation measure M 2-34 (page 4.2-20 of the Draft Revised Subsequent EIR), the ten percent back cut failure rate is a statistical probability and not site specific. The mitigation measure includes industry standards that would be employed to effectively reduce the risk of back cut failures and confine such failures to minor "pop outs" within the limits of grading.

Connor 13 – Comment

d *The impact of new soil stability problems which will be created by increasing the amount of water that is discharged into the Property's natural drainage courses and the ground water table. (As stated in the "Hydrology" and "Water Quality" subsections of DRSEIR 566 daily nuisance and storm water runoff will be discharged into the Property's natural drainage courses.) In particular, (i) the increased erosion that will occur in the Property's natural drainage courses during storm flows due to the fact that the weak alluvial soils which are present in those courses will have been softened by the daily nuisance runoff that will be discharged into such drainage courses, (ii) the weakened support for existing landslides which will also result from the discharge of daily nuisance runoff and increased storm water runoff into the Property's natural drainage courses, and (iii) the new instability problems which will be created by the ground water levels being raised by the infiltration of irrigation and other new sources of water.*

Connor 13 – Response

As noted in Section 4.3 of the Draft Revised Subsequent EIR, the property is currently subject to erosion as can be seen in the highly incised drainage courses that now characterize the property. The revegetation of the open space areas and the natural drainage courses as outlined in Section 4.8 Draft Revised Subsequent EIR would reduce or eliminate most of this erosion. The other two issues raised by the commenter have been considered by the geotechnical consultant and will be further analyzed in the final geotechnical report (Standard County Condition SC 2-1). However, to ensure compliance with these important issues an additional mitigation measures has been added. Please see Section 2.0 of this Response to Comments document.

Connor 14 – Comment

e *The special grading requirements which are necessary to perform the extremely deep fill that are proposed. Although the DRSEIR acknowledges that fill depths will exceed 50 feet and settlement associated with those fills of 4 to 6 inches can be expected (p. 4.2-20) mitigation measure M 2-33), fill depths of up to 130 feet will actually be required to construct the proposed shear keys for the buttress fills. Fills of such great depths require, inter alia, (i) additional evaluation that may necessitate compaction criteria well in excess of code minimums, (ii) special moisture conditioning of fill during compaction, and (iii) long-term settlement monitoring prior to building construction.*

Connor 14 – Response

Comment noted. Standard County Condition SC 2-1 in Section 4.2.4 of the Draft Revised Subsequent EIR requires the preparation of a final geotechnical report prior to issuance of grading permits, which would ensure compliance with the County's Grading Manual, soil compaction component. Additionally, mitigation measure M 2-16 specifies compaction requirements, and mitigation measure M 2-27 requires on-going testing and observation during construction.

Connor 15 – Comment

f *Imposing a 100 percent performance bond to cover the possibility of the developer's failure to complete the extremely large amount of conventional and remedial grading required for the 299-Unit Project.*

Connor 15 – Response

A 100 percent performance bond is a standard condition of obtaining a Grading Permit from the County of Orange. The bond would cover both remedial and mass grading for the proposed project.

Connor 16 – Comment

9. *DRSEIR 566 fails to properly identify, analyze, and mitigate the hydrology impacts associated with the 299-Unit Project. The impacts which the DRSEIR fails to address, include, but are not limited to, the impacts of discharging daily nuisance water runoff and increased storm water runoff into the natural drainage courses of the Property. The natural drainage courses of the Property are dry for a majority of the year (only receiving water during storms). However, the daily nuisance water runoff from the 299-Unit Project will cause the drainage courses to be wet year-round and, therefore, more susceptible to, inter alia, erosion. Moreover, the character of the water being dumped into the natural drainage courses will change from slower-moving water carrying soil and debris to faster-moving water that has less soil and debris and, therefore, is prone to picking up soil and debris. DRSEIR 566 acknowledges that, by increasing the flows in the Property's natural drainage courses, the 299-Unit Project will have erosion and sedimentation impacts, but the DRSEIR fails to address any of these impacts. Instead, any analysis of this issue is improperly deferred until after the certification of DRSEIR 566 – i.e., until a point in the approval process where the public is not permitted an opportunity to review and comment on that analysis, and the County is not required to respond to any public comments.*

Connor 16 – Response

Hydrology impacts have been addressed in both Sections 4.3 and 4.8 of the Draft Revised Subsequent EIR. The biological mitigation measures take into account the addition of nuisance flows and provides for a riparian habitat designed to thrive under the potentially year round flows, thus reducing the potential for increased erosion. In addition, the re-vegetation of the degraded portions of the property (which will remain in open space) will also result in reduced flows over that currently experienced on the project site. The project has been designed to provide more storm drain outlets than typically found in residential subdivisions. This will distribute flows to most of the natural drainages rather than concentrate runoff from the project in one or two of the natural drainages.

Connor 17 – Comment

10. *DRSEIR 566 fails to identify, analyze, or mitigate any of the water quality impacts associated with the 299-Unit Project because the entire "Water Quality" subsection of the DRSEIR is based upon a conceptual water quality management plan for a different project. At page 4.4-1, the DRSEIR states that its "Water Quality" subsection "summarizes the findings and conclusions of the Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230 County of Orange, California" which is included in the DRSEIR as Appendix "E." However, as its complete title indicates, the "Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230, Development Alternative for 283 Residential Home sites, County of Orange, CA" which is found in Appendix "E" was prepared to address a different project – i.e., the 283-unit single unit family housing project which is Alternative No. 8 in the DRSEIR. As such, the entire "Water Quality" subsection must be revised to correctly identify, analyze, and mitigate the water quality impacts of the 299-Unit Project as opposed to the 283-Unit Project which it currently addresses.*

Connor 17 – Response

The commenter is correct that the Conceptual Water Quality Management Plan included as Appendix E of the Draft Revised Subsequent EIR was for one of the project alternatives. The correct plan has been included as Appendix D of this Response to Comment document. However, Section 4.4 of the Draft Revised Subsequent EIR was developed based on a Water Quality Management Plan developed for the 299 proposed project.

Connor 18 – Comment

11. *Assuming arguendo that the "Water Quality" subsection of DRSEIR 566 did address the 299-Unit Project, such subsection nonetheless fails to fully and properly identify, analyze and mitigate the water quality impacts associated with the 299-Unit Project because, inter alia, it fails to fully describe how pollutants will be filtered from the daily nuisance and storm water runoff from the 299-Unit Project and what the impacts will be of discharging polluted runoff into the Property's natural drainage courses and O'Neill Regional Park, and the area's groundwater. The DRSEIR claims that a riverine system will be used to filter pollutants from the daily nuisance and storm water runoff from approximately 80 percent of the 299-Unit Project. (See, e.g., p. 4.4-13 at PDF 4-1.) In reliance on the riverine system, stormceptor filters will be installed on the storm drains serving the 20 percent of the Project which is located in the northeastern quadrant of the Property only. However, nowhere is it depicted or explained in DRSEIR 566 how flows from the 299-Unit Project will be directed into the riverine system. Indeed, Figure 4.3.2, entitled Proposed Drainage Improvements, shows that all of the runoff from the 299-Unit Project will be directed into the storm drain system and discharged into the Property's natural drainage courses, but the storm drains serving a majority of the 299-Unit Project will not have filters to reduce the amount of pollution and runoff. The DRSEIR also acknowledges that the riverine system is designed to accommodate low flows only, but it fails to explain how any flows that exceed the capacity of the riverine system will be filtered for pollutants given that*

the storm drains collecting runoff from 80 percent of the Project will not have filters installed due to the existence of the riverine system. Moreover, the DRSEIR acknowledges that the filters that will be installed will not trap bacterial indicators or toxic constituents. (DRSEIR 566 at p. 4.4-11.) Instead the DRSEIR relies upon 3,300 lineal feet of the Property's natural drainage courses to filter these pollutants. However, the DRSEIR does not in any way address the impacts that these pollutants will have on the Property's natural drainage courses – some of which flow into O'Neill Regional Park – and the area's groundwater.

Connor 18 – Response

Figure 4.3.2 of the Draft Revised Subsequent EIR depicts graphical representations of the storm drain system and is not intended to depict actual storm drain locations. As noted, the design of the riverine system is designed to accommodate low flows since it is the nuisance flows and the first flows of the rainy season that carry the predominant urban pollutants. High stage flows are generally free from pollutants and can bypass the riverine system. As stated in Section 4.3 of the Draft Revised Subsequent EIR, use of the riverine system and the stormceptors would remove the urban pollutants and result in less than significant impacts. Detailed design of the storm drain and water quality components will be accomplished as noted in the Standard County Conditions (SC 3-2 and SC 4-2).

Connor 19 – Comment

12. *DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts the 299-Unit Project would have on the Natural Communities Conservation Plan ("NCCP") program and the County's ability to complete its Southern NCCP Subregion and to link the Southern and Central/Coastal NCCP Subregions. Previous environmental impact reports for the Property included four or more pages of text addressing the NCCP and the impacts of the proposed projects on the NCCP. (See, e.g., FSEIR 566 at pp. 4-127 – 4-130, 4-144; DEIR 561 at 99. 4-123 – 4-126, 4-139 – 4-140.) The DRSEIR, however, contains less than one page of very cursory discussion regarding the NCCP and it fails in any way to address the impacts of the 299-Unit Project on the NCCP and the County's NCCP planning efforts. Moreover, DRSEIR 566 fails to, inter alia, (i) acknowledge that the United States Fish and Wildlife Service and the California Department of Fish and Game (collectively, the "Wildlife Agencies") have repeatedly informed the County that the Property provides a critical habitat corridor/linkage necessary for the completion of the NCCP Southern Subregion and (ii) identify the findings which the NCCP requires to be made with respect to the impacts of the 299-Unit Project will have on the coastal sage scrub habitat located on the Property. The DRSEIR should be revised to include an appropriate and complete discussion of the impacts of the 299-Unit Project on the NCCP.*

Connor 19 – Response

Section 4.8 of the Draft Revised Subsequent EIR discusses the key issues of wildlife connectivity and preservation of significant resources (i.e., Riverside fairy shrimp, wetlands, coastal sage scrub and coast live oak woodland). The goals of the Natural Community Conservation Planning Program (NCCP) are discussed in Section 4.8.1. Please see Section 3.2.1 (USFWS/CDFG 4 – Response) of this Response to Comments document.

Connor 20 – Comment

13. *DRSEIR 566 fails to properly identify, analyze, and mitigate the impact of the 299-Unit Project on wildlife movement on the Property and throughout the NCCP Southern and Central/Coastal Subregions. The DRSEIR touts that the 299-Unit Project has been designed to incorporate a wildlife movement corridor that will permit wildlife to continue to travel safely across the Property. (See, e.g., DRSEIR 566 at p. 4.8-27.) However, the DRSEIR fails to acknowledge that the Wildlife Agencies have previously informed the County that the wildlife corridor proposed as part of the 299-Unit Project does not "retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows." (October 29, 1998 Letter from the Wildlife Agencies to the Orange County Board of Supervisors.) As such, the DRSEIR needs to be revised to contain an analysis of the adequacy of the proposed wildlife movement corridor/linkage and the impact of failing to provide an adequate corridor/linkage.*

Connor 20 – Response

Please see Section 3.2.1 (USFWS/CDFG 4 – Response) of this Response to Comments document.

Connor 21 – Comment

14. *DRSEIR 566 fails to identify, analyze, and mitigate the biological resources impacts associated with the 299-Unit Project because, inter alia:*

    a *The DRSEIR fails to properly identify the sensitivity of the intermediate mariposa lily (calochortus weedii var intermedius) and based thereon erroneously concludes that there will be no significant impact of it requiring any mitigation. (See DRSEIR 566 at p. 4.8-21 and Appendix I.1 at p. 17). In Appendix I.1, the DRSEIR erroneously identifies the sensitivity of the intermediate mariposa lily as California Native Plant Society ("CNPS") List 4. (See Appendix I.1 at p. 9.) In the text, the DRSEIR correctly lists the intermediate mariposa lily as CNPS List 1B, but then proceeds to conclude that, due to its low sensitivity status, the impact of destroying all plants found on the Property is not significant. (See DRSEIR 566 at pp. 4.8-13, 4.8-21.) However, as explained in Appendix "C" to Appendix I..1 of the DRSEIR, the presence of intermediate mariposa lily on the CNPS List 1B means that it is "rare, threatened, or endangered in California and elsewhere and is eligible for state*

listing." Indeed, the only higher listing under the CNPS system is List 1A which includes only those plants that are presumed to be extinct. DRSEIR 566 needs to be revised to correct the inconsistency between its text and Appendix I.1 and, if it is going to maintain its conclusion that there will be no significant impacts on the intermediate mariposa lily, it need to provide facts to support such conclusion because, contrary to how the DRSEIR currently reads, the intermediate mariposa lily does not have a low sensitivity status.

Connor 21 – Response

Section 4.8 and Appendix I of the Draft Revised Subsequent EIR correctly identify the intermediate Mariposa lily as a CNPS list 1B species. However, the commenter is correct regarding an inconsistency as Table 2 of Appendix I.1 incorrectly identifies the species as a list 4 species.

Under CEQA, the Final EIR (which consists of the Draft EIR and the Response to Comments) is the primary document considered during approval or rejection of a project by the lead agency. Although impacts to this sensitive species were not assessed in the Draft EIR as being significant, due to the limited number of individuals impacted, an additional mitigation requirement has been added to the project in response to this and other comments. The applicant has agreed to transplant the potentially impacted bulbs of this species to appropriate open space areas on-site. Please see Section 2.0 of this Response to Comments document.

Connor 22 – Comment

b *The DRSEIR erroneously concludes that the 299-Unit Project will not have a significant impact on the federally-listed endangered Riverside fairy shrimp because the impacts to it will be mitigated to a level of insignificance by the creation of several ephemeral ponds on the Property. However, as the Biological Opinion on the Saddleback Meadows Residential Development Project found in Appendix I.4 states, at pages 19-20, creation of such ponds is experimental and has never been done successfully, especially with respect to the conditions found on the Property.*

Connor 22 – Response

The mitigation for the Riverside fairy shrimp was developed through extensive discussions with USFWS. Additionally, the biological consultant for the project has constructed several restoration sites in San Diego County that currently support Riverside fairy shrimp populations. Many of the known locations of Riverside fairy shrimp, including ponds on-site, occur in man-made ponds. The proposed mitigation basins will be designed to provide appropriate hydrological conditions necessary for the shrimp to persist. The ponds are being created at a greater than 2:1 mitigation ratio, resulting in a net long-term increase in fairy shrimp on-site. The proposed project also provides for a detailed ten-year monitoring program, as well as permanent management of open space on-site including existing ponds proposed for preservation. At the conclusion of the ten-year

monitoring period, the ponds as well as the open space will be managed and maintained by a third-party conservation group. Under existing conditions, that is with no active monitoring or maintenance, two of the ponds have been lost due to siltation or breaching with a third under constant repair by the rancher.

Connor 23 – Comment

c *Although one of the technical reports found in the appendices to the DRSEIR 566 acknowledges that the Property has been designated as critical habitat for the Riverside fairy shrimp and the coastal California gnatcatcher pursuant to the U.S. Endangered Species Act, the text of the DRSEIR fails to acknowledge this fact. Neither the text of DRSEIR 566, nor any of the appendices thereto, address in any way the significance of the designation.*

Connor 23 – Response

The Biological Opinion (BO) referenced and included as Appendix I.4 in the Draft Revised Subsequent EIR specifically addresses critical habitat for both the Riverside fairy shrimp and the coastal California gnatcatcher. As noted in Standard County Conditions SC 8-5 in Section 4.8.4 of the Draft Revised Subsequent EIR, the applicant is required to provide written proof that the activity complies with the Federal Endangered Species Act. SC 8-5 specifically states, "A BO issued by the USFWS shall be considered written proof." The BO issued for the proposed project provides that written proof.

Connor 24 – Comment

d *The DRSEIR fails to properly and adequately mitigate the impacts the 299-Unit Project will have by destroying the hundreds of acres of oak woodlands, vernal ponds, coastal sage scrub habitat, and other biotic communities on the Property which are home to sensitive, threatened, or endangered flora and fauna. The mitigation DRSEIR 566 offers regarding these impacts fall far below that which is required by law, inter alia, the FTSP, the NCCP, the state and federal endanger [sic] species legislation.*

Connor 24 – Response

The biological resources and impacts to those resources were discussed in Section 4.8 and detailed technical reports included as Appendix I of the Draft Revised Subsequent EIR. The proposed project has been subject to review of the regulatory agencies including CDFG, which issued a draft Streambed Alteration Agreement (1603) for the applicant's signature in December 2001; USFWS, which issued a final BO in October 2001; and the U.S. Army Corps of Engineers (USACE) as part of their processing of an Individual 404 Permit. The draft 1603 Permit is included in Appendix B of this Response to Comments document.

See also Section 3.2.1 (USFWS/CDFG comments/responses) of this Response to Comments document.

Connor 25 – Comment

15. *DRSEIR 566 fails to properly identify, analyze and mitigate the "Aesthetic/Visual" impacts associated with the 299-Unit Project. At page 4.9-22 through 4.9-23, the DRSEIR concludes that the 299-Unit Project will not have a significant aesthetic or visual impact prior to mitigation. However, at page 4-192, DEIR 561 concludes that, despite the use of many of the same contoured grading and viewshed screening techniques which are proposed for the 299-Unit Project, the 318-unit single family housing project which was the subject of DEIR 561 would nonetheless have unavoidable significant aesthetic and visual impacts (including night glare impacts) on the Ramakarishna Monastery, St. Michael's Abbey, and O'Neill Regional Park. DRSEIR 566 fails to explain and reconcile these inconsistent and conflicting conclusions.*

Connor 25 – Response

As noted above (Connor 5 – Response), Draft EIR 561 was not certified and therefore its preliminary findings are subject to revision based on refined and/or updated analysis. The state of the art of computer modeling has allowed a more sophisticated analysis of visual impact than was possible at the time Draft EIR 561 was prepared. The commenter is referred to Section 4.9 of the Draft Revised Subsequent EIR for the updated visual analysis provided for the proposed project.

Connor 26 – Comment

16. *DRSEIR 566 fails to fully and properly identify and analyze the importance of the archaeological sites found on the Property. At page 4.10-19, the DRSEIR concludes that archaeological site CA-ORA-711 is the only site on the Property which is deemed to be important or significant. However, at page 104, Addendum No. 1 concludes that there are a total of four archaeological sites on the Property which are deemed to be important or significant. Those sites are CA-ORA-710, CA-ORA-713, CA-ORA-715, and CA-ORA-1435H. DRSEIR 566 should have an analysis explaining and reconciling these inconsistent conclusions regarding the important of certain of the archaeological sites found on the Property.*

Connor 26 – Response

As stated in Appendix J of the Draft Revised Subsequent EIR, CA-ORA-1435H was deemed not eligible for testing per guidelines of the National Registrar of Historic Places, and CA-ORA-713 and CA-ORA-715 were determined to not be significant (see letter dated August 6, 2001 in Appendix J).

Site CA-ORA-710 will be covered and protected as part of a biological mitigation area within the project site (please see Project Design Feature PDF 10-1 on pages 4.10-15/4.10-16 of the Draft Revised Subsequent EIR).

Connor 27 – Comment

17. *DRSEIR 566 fails to identify, analyze, and mitigate the impacts associated with project "Hazards" as both the Initial Study and the Introduction to the DRSEIR (see [page I-4) indicated that it would. Indeed, the Initial Study identifies "Hazards" as one of six areas of potentially significant impacts which might result from the 299-Unit Project, but DRSEIR 566 fails to contain a section identifying and analyzing such impacts. All previous environmental documentation for the Property contained a separate section in which "Hazards" such as wildfire, emergency access, and wildlife interaction were all identified and analyzed. (See Addendum No. 1 at pp. 4-219 – 4-228.) Although the DRSEIR does address certain wildfire hazards and fuel modification requirements under the "Public Services – Fire Protection" subsection, it does not address any other hazards, such as the fact that the Project has only one main access road, which Addendum No. 1 identifies as an area of concern and which the Orange County Fire Authority proposed mitigation measures to specifically address. An analysis of the "Hazards" analyzed in the previous environmental documents for the Property should be conducted with respect to the 299-Unit Project.*

Connor 27 – Response

Section 4.12 of the Draft Revised Subsequent EIR includes an analysis of the appropriate hazards relevant to the proposed project, in the context of existing conditions. The Initial Study identified wildland fire as the only hazard for the proposed project (see Appendix A of the Draft Revised Subsequent EIR). The inconsistency in Section 1.4.2 of the Draft Revision Subsequent EIR is acknowledged. Please see Section 2.0 of this Response to Comments document regarding a revision to page 1-4 of the Draft Revised Subsequent EIR.

Connor 28 – Comment

18. *DRSEIR 566 fails to properly describe the "44/178 Alternative" as initially proposed by Vedanta in October 1998 and again in the comments Vedanta submitted regarding the Notice of Preparation (the "NOP") for the DRSEIR. As proposed by Vedanta, although the developer would be free to develop the project of its choice on the 44-acre "Development Parcel," the 178-acre "Conservation Parcel" would be left in its undisturbed natural state – i.e., no development activities of any kind would be conducted on such parcel, including, but not limited to, grading of any kind. However, as described in the DRSEIR, the "44/178 Alternative" allows for the development of 127 single-family housing units on the "Development Parcel" which, as Vedanta indicated in its comments on the NOP, can only be developed on such Parcel if a substantial amount of remedial grading and other construction activities are conducted on the "Conservation Parcel." Indeed, shortly after Vedanta proposed the "44/178 Alternative" in October 1998, the developer conceded that, in order to develop 127 single-family housing units on the "Development Parcel" – which is not contemplated under the "44/178 Alternative" as proposed by Vedanta. Therefore, a new analysis of the "44/178 Alternative" should be conducted based upon a proper description of the alternative which identifies a range of units which can safely be accommodated within the "Development Parcel." This analysis should include, inter alia, an analysis of the geotechnical conditions to determine the greatest number of units*

that can be developed on the 44-acre "Development Parcel" with the least amount of rough grading. The grading study is of critical importance because it will not only address the economic feasibility of the "44/178 Alternative," but also determines the nature and extent of the environmental resources which can be spared from the bulldozer's blade. As requested in Vedanta's comments on the NOP, this analysis should consider two versions of the "44/178 Alternative," one in which the developer is required to dedicate the 178-acre "Conservation Parcel" to the County (which has been the County's standard practice on all other major development projects approved during the past 25 years) and another in which the "Conservation Parcel" is purchased by a governmental entity (such as the United States Fish and Wildlife Service and the California Department of Fish and Game), a private entity, private person (s), or any combination thereof.

Connor 28 – Response

Please see Section 3.3.2 (Connor 2 – Response) of this Response to Comments document regarding alternatives.

Connor 29 – Comment

19. *DRSEIR 566 fails to provide sufficient factual information about each of the proposed alternatives to allow for meaningful evaluation, analysis, and comparison with the 299-Unit Project. The DRSEIR provides very little factual information regarding the proposed alternatives and their environmental impacts. Instead, DRSEIR 566 simply makes very general and conclusory statements regarding whether each impact will be greater or less than the 299-Unit Project and each of the other alternatives. Very little factual information is provided which permits differential impacts to be quantified and meaningfully analyzed. For example, no information is provided to allow the number of acres of oak trees, vernal ponds, coastal sage scrub, or any of the other biological resources which are affected under each alternative to be compared with the 299-Unit Project. Similarly, the extent to which each of the alternatives comply with the various goals, objectives, components, regulations, and guidelines of the FTSP is not provided so as to allow a comparison of the alternatives with the 299-Unit Project. Indeed, the alternatives analysis in DRSEIR 566 is almost entirely devoid of any factual information which would support its conclusions regarding the relative impacts of the 299-Unit Project and each of the alternatives. Accordingly, an entirely new analysis of each of the alternatives is necessary to provide the factual information required to conduct a meaningful evaluation, analysis, and comparison of the alternatives with the 299-Unit Project. (Note: Although the DRSEIR provides grading quantities for many of the alternatives, it curiously fails to state a remedial grading quantity for the "44/178 Alternative" while nonetheless conceding that remedial grading will be required for that alternative.)*

Connor 29 – Response

The discussion of alternatives need not be exhaustive. As stated in the *CEQA Guidelines* Section 15126.6(d), "the EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major

characteristics and significant environmental effects of each alternative may be used to summarize the comparison." The alternative analysis included in Section 5.0 of the Draft Revised Subsequent EIR included the appropriate level of detail per the requirements of CEQA; therefore no revisions or new alternative analysis would be required.

Connor 30 – Comment

20. *DRSEIR 566 fails to provide any factual information which supports its conclusion that, except for the "No Project Alternative," Alternative No. 8 is the environmentally superior alternative. Alternative 8 is a "reduced density alternative" which simply lowers the number of single family dwelling units by 16 units – i.e., from 299 down to 283. In reaching this conclusion, the DRSEIR provides absolutely no explanation or factual support for how a 283-unit single family housing project – which has virtually the identical environmental impacts as a 299-Unit Project – could possibly be an environmentally superior alternative to Alternative 4 (a 100-unit single family housing project which leaves 85% of the Property as natural open space), Alternative 6 (the "44/178 Alternative") or Alternative 7 (the "Acquisition Alternative" in which the entire property is purchased by a governmental entity, private entity, or private person (s) for preservation as permanent open space).*

Connor 30 – Response

As stated in Section 5.1 of the Draft Revised Subsequent EIR, the *CEQA Guidelines* require an EIR to "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (*CEQA Guidelines* Section 15126.6(a)).

As noted by the commenter, Alternative 4 (Foothill Trabuco Specific Plan EIR 531 Staff Alternative B) is the development alternative that is most environmentally superior to the proposed project. This is correctly summarized in a review of each impact by alternative in Table 5.7 of the Draft Subsequent Revised EIR. Further, as correctly identified by the commenter, although Alternative No. 8 is environmentally superior to the proposed project, Alternative 4 is environmentally superior to Alternative 8. This clarification has been made in Section 2.0 of this Final EIR.

However, it should be noted that economic feasibility is inherent to any project and the *CEQA Guidelines* state, "Among factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, . . . " (Section 15126.6(f)(1)). Although Alternative 4 is environmentally superior, it would be economically infeasible to develop. Land acquisition, engineering, construction, and implementation of mitigation measures could not be amortized over 100 single-family units. These costs combined with mitigation costs such as those associated with stabilizing the geotechnical hazards would exceed project revenues.

Similarly, Alternatives 6 (44/178 Alternative) and 7 (Acquisition Alternative) would not be feasible. Alternative 6 would meet the project objectives, but would result in an increase in impacts to recreation resources and fire protection as compared to the proposed project (see Section 5.4.6 of the Draft Revised Subsequent EIR and Section 2.0 of this Response to Comments document). In addition, it should be noted that full property acquisition is necessary for Alternative No. 7 and partial acquisition of the "Conservation Parcel" is integral to the feasibility of Alternative 6. No party with the resources and willingness to consummate a transaction has materialized, in spite of intensive exploration regarding this issue in late 1996, early 1997, early 1998 and from late spring through fall 1998.

Connor 31 – Comment

21. *DRSEIR 566 fails to consider a residential housing alternative which complies with the goals, objectives, components, regulations, and guidelines of the FTSP, nor does it explain why such an alternative would be unacceptable. In its comments on the NOP, Vedanta specifically requested that the DRSEIR identify and analyze at least one reduced-density alternative which complies with all of the goals, objectives, components, regulations, and guidelines of the FTSP. Instead, in Alternative No. 8, the DRSEIR identifies and analyzes a reduced-density alternative that eliminates only 16 out of 299 dwelling units and which complies with virtually none of the goals, objectives, components, regulations, and guidelines of the FTSP. Indeed, DRSEIR 566 fails to provide any explanation for why an FTSP-compliant alternative was not considered.*

Connor 31 – Response

Please see Section 3.3.2 (Connor 2 – Response) regarding the range of alternatives required for an EIR. The commenter is incorrect in indicating that no alternatives were discussed in the Draft Revised Subsequent EIR that would meet the goals, objectives, components, regulations and guidelines of the F/TSP. Alternative 4 would meet the requirements of the F/TSP. In addition, Alternative 2 would also meet the F/TSP goals, as the Bridlewood Residential District was established to recognize the existing zoning and tract map approvals for the Bridlewood (Saddleback Meadows) property.

3.3.3 The Gas Company

Robert S. Warth, May 16, 2002

The Gas Company 1 – Comment

This letter is not to be interpreted as a contractual commitment to serve the proposed project but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served without any significant impact on the environment. Gas facility additions for the expansion would be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Estimates of gas usage for non-residential and residential projects are developed on an individual basis and are obtained from the Commercial-Industrial/Residential Market Services Staff by calling (800) 427-2000. We have developed several programs, which are available upon request to provide assistance in selecting the most energy efficient appliances or systems for a particular project. If you desire further information on any of our energy conservation programs, please contact this office for assistance.

The Gas Company 1 – Response

Section 4.20 of the Draft Revised Subsequent EIR includes an evaluation of the impact of the proposed project on existing natural gas utilities and service systems. The ability of The Gas Company to serve the proposed project, without any significant impact on the environment is noted.

3.3.4 Juaneño Band of Mission Indians, Acjachemen Nation

Damien Shilo, June 10, 2002

Juaneño Band of Mission Indians 1 – Comment

After review of the cultural resources section of the DEIR, we, the Juaneño Band of Mission Indians ("tribe") are concerned about the protection of this land regarding both archaeological and anthropological impact. We feel that there has been an inadequate investigation into the significance/importance of the archaeological sites. The report indicates that there were three 1 x 1 meter units used to determine the archaeological significance/importance. This is an inadequate sampling of the area to make a determination for the size of this project. Also, we feel that the monitors should be from the local tribe. The practice of finding out of area monitors who do not understand the cultural significance of the local area needs to be corrected. There is also a concern for the wildlife corridor and endangered species, neither of which are adequately addressed.

Juaneño Band of Mission Indians 1 – Response

Please see Section 3.2.4 (California State University, Los Angeles 2 – Response, and California State University, Los Angeles 3 – Response) of this Response to Comments document.

Juaneño Band of Mission Indians 2 – Comment

There is not sufficient information to support the determinations made. The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of archaeological sites be impacted. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

Juaneño Band of Mission Indians 2 – Response

Prior to the commencement of the current study, a Native American Contacts List and Sacred Lands File Search was requested from Rob Wood of the Native American Heritage Commission. Any Native American monitor hired for the project will be selected from this list.

Juaneño Band of Mission Indians 3 – Comment

If it is determined that date recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Preservation Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

Juaneño Band of Mission Indians 3 – Response

Please see Section 3.2.4 (California State University, Los Angeles 10 – Response) of this Response to Comments document.

3.3.5 Mark R. McGuire
June 25, 2002

McGuire 1 – Comment

I represent the Rutter Development Corporation in connection with its entitlement and natural resources permitting efforts for the Saddle Crest and Saddle Creek residential development projects near the Saddleback Meadows project site. The southern boundary of the Saddle Creek project constitutes the northern border of the Saddleback Meadows project. Rutter Development supports the current proposed project and certainly sees it as preferable to the massive mobilehome [sic] park previously approved for the site. However, Rutter Development takes exception to Figures 4.8.2 and 4.8.4 in the Biological Resources section of the SEIR.

Figure 4.8.2 is labeled "Proposed NCCP Southern Subregional Planning Area," but it does more than simply delineate the subregional boundaries. The "reserve area" overlay on this exhibit has no basis in any approved or even proposed plan. Consequently, this exhibit should be replaced with one that simply shows the boundaries of the southern subregional planning are and overlays the project's boundaries. Similarly, Figure 4.8.4 is labeled "Proposed Regional Wildlife Movement Corridors" but there is no discussion regarding who is "proposing" the establishment of these corridors or for what species they are proposed to function as corridors. The "proposed" corridors in the exhibit do not correspond to the wildlife corridors shown in the adopted Foothill Trabuco Specific Plan or any other formally adopted or even proposed plan. Therefore, this exhibit should also be deleted, replaced or modified in the Final SEIR.

McGuire 1 – Response

Please refer to Section 3.2.1 (USFWS/CDFG 4 - Response) of this Response to Comments document. The wildlife corridor locations shown in Figures 4.8.2 and 4.8.4 are conceptual and are intended to depict local small mammal wildlife movement between localized areas. Regional wildlife movement corridors are located to the east and north within and adjacent to the Cleveland National Forest. The depicted wildlife movement corridors have been the subject of numerous meeting with both USFWS and CDFG and the exhibits depict the conceptual locations of these corridors.

Figure 4.8.2 shows the proposed boundary of the NCCP Southern Subregional Planning Area and depicts the draft NCCP proposal which was in place at the time of Draft Revised Subsequent EIR circulation.

McGuire 2 – Comment

Thank you for the opportunity to comment on the draft SEIR for the Saddleback Meadows project. Please feel free to call if you have any questions or wish to discuss this matter.

McGuire 2 – Response

Comment noted.

3.3.6 Orange County Regional Recreational Trails Advisory Committee
Alice Sorenson, May 31, 2002

RRTAC 1 – Comment

As you know, the Regional Recreational Trails Advisory Committee (RRTAC) is a Board-appointed committee composed of equestrians, mountain bicyclists, and hikers. Recently, the RRTAC approved a motion to provide an additional riding and hiking trail through the proposed Saddleback Meadows project site.

The Committee was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route we suggest an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would then connect with the proposed Live Oak Plaza project site and connect to the Live Oak Canyon Regional Trail. We also request an additional link from Trail B to the proposed Saddle Creek project at the north edge of the Saddleback Meadows project near the connection to Live Oak Plaza. Mr. Jeff Dickman, County's Chief of Trail Planning, concurred with this concept.

The RRTAC hereby expresses its support for the additional local trail through the proposed Saddleback Meadows project ("Trail B"). We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

RRTAC 1 – Response

Recreational impacts associated with implementation of the proposed project have been mitigated to less than significant and therefore, no further mitigation (such as the additional trail suggested by the commenter) is required. However, the commenter's suggestion will be forwarded on to the decision makers.

3.3.7 Rural Canyons Conservation Fund

Ray Chandos, May 28, 2002

Rural Canyons 1 – Comment

The Rural Canyons Conservation Fund, founded in 1983, advocates for the preservation of Orange County's unique inland rural canyon areas through a program of public education and participation in land use decisions affecting the area's unique scenic natural resources.

We comment as follows on the above referenced proposals:

1. *The area plan application is incomplete.*

The Foothill Trabuco Specific Plan (FTSP) lists certain informational items that must be provided when a proposed area plan is submitted. Several such items are missing from the subject proposal, including:

- *a site-specific resources assessment by a qualified field biologist;*
- *a site-specific oak woodlands analysis;*
- *a site-specific wildlife corridor analysis;*
- *a hydrological analysis;*
- *detailed mapping of areas within 50 vertical feet or 200 horizontal feet of designated major ridgelines or rock outcroppings;*
- *a detailed viewshed analysis of the proposed development as viewed from scenic highways;*
- *a conceptual grading plan at a minimum scale of 1:40 clearly delineating existing and proposed contour elevations, the location and elevation of all building pads, access roads, driveways, slope percentages, heights of manufactured slopes, the total area of disturbance, area of the flat graded pad on each parcel, and the location of retaining and crib walls;*
- *clear delineation of the building lines for assessing setbacks;*
- *a consistency report evaluating the project's consistency with each of the regulations and guidelines contained in the FTSP; and*
- *three-dimensional models of the site before and after proposed grading.*

(FTSP III G.2.0(e), pages III-90 through III-93.)

Because key information is missing from the application we received, we cannot fully assess the extent of non-compliance with the FTSP at this time, and therefore reserve the right to comment further if and when complete information becomes available.

Rural Canyons 1 – Response

The comments refer to the Area Plan for the Saddleback Meadows project and do not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA. No additional response is required. However, the commenter is directed to additional information regarding the project included in Tentative Tract Map 15230 and the Draft Revised Subsequent EIR. See also Section 3.3.2 (Connor 3 – Response) of this Response to Comments document regarding consistency with the F/TSP.

Rural Canyons 2 – Comment

2. *The proposed spot amendment of the Foothill Trabuco Specific Plan improperly renders the FTSP internally inconsistent and inequitable, and is therefore invalid in its face.*

State law requires that general and specific plans maintain internal consistency. However, the FTSP amendment proposed as part of this project renders the FTSP internally inconsistent. This inconsistency arises from the following language contained in the proposed spot amendment:

> *"Any development shall be in compliance with every regulation of this District (BWR) and* shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District." (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4 (c) italics added.)

This spot amendment conflicts with other general language within the FTSP:

> *"This specific plan is adopted pursuant to regulations contained in the Orange County Zoning Code. It is specifically intended by such adoption that the development standards and provisions contained herein shall regulate* all development *within the Specific Plan area." (FTSP III.C.3.0, page II-29, emphasis added.)*

> *"It is uncertain whether this development cap can be achieved* since all development is required to be consistent with the Specific Plan regulations and guidelines." *(FTSP II.D.3.0(b), page II-29, emphasis added.)*

> *"All development within the Specific Plan Area shall be required to be phased in a manner, which is consistent with the requirements of the Growth Management Plan (GMP) Element." (FTSP II.F.1.0(a), page II-43.)*

> *"For all development projects, a minimum of 50 percent of all shrubs to be planted should be native species." (FTSP IV.G.1.0(a), page IV-16.)*

Moreover, as will be shown below, the proposed development which the above spot amendment attempts to legitimize actually conflicts with and undermines the overarching goals and objectives for the Specific Plan area at the expense of the Specific Plan's integrity.

The proposed "wildcard" zoning also creates a class of unwarranted special privileges for this project's applicant, effectively denying other persons subject to the FTSP the equal protection of the law, in violation of the state and federal constitutions.
The proposed spot zoning amendment, therefore, is invalid on its face and thereby subject to nullification by the courts.

Rural Canyons 2 – Response

This comment does not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA.

Rural Canyons 3 – Comment

3. *The proposed spot amendment of the FTSP is barred by the FTSP itself.*

The FTSP explicitly provides how the Specific Plan may be amended to allow for development, as is now being proposed, that deviates from the recorded tract map for the Saddleback Meadows site:

> *"If a development proposal on the aforementioned [Bridlewood, Lyon Ranch, Santiago Ranch, and Zadeh] sites deviates from these approvals and cannot be found to be in substantial compliance with these approvals, a Specific Plan Amendment shall be required for the individual site. Said Specific Plan Amendment* shall *1) determine an appropriate density cap for the property; 2) establish new Land Use District Regulations for the site; and 3) be consistent with all of the provisions of the Specific Plan, as amended." (FTSP III.C.10.0(d), page III-4.)*

> *"Any development proposal, which deviates from the approved Saddleback Meadows Planned Community zoning and Recorded Tract 10692 and which cannot be found in substantial compliance with these approvals shall require a Specific Plan Amendment which* shall: *1) determine an appropriate density cap for the property; 2) establish new development regulations for the Bridlewood Residential District; and 3) be consistent with all the provisions of the Specific Plan." (FTSP III.D.3.2.(b), page III-20, italics added.)*

The proposed spot amendment exempting Saddleback Meadows from all but the revised district regulations clearly conflicts with the above requirements of the FTSP, which unequivocally mandate that the amended zoning regulations for Saddleback Meadows must be consistent with all *of the provisions of the FTSP. Thus the proposed spot amendment is facially invalid, and, as will be shown below, the proposed area plan is in actual conflict with numerous of the FTSP's substantive requirements.*

Rural Canyons 3 – Response

This comment does not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA.

Rural Canyons Conservation Fund 4 – Comment

4. *A site development or use permit is required prior to any grading.*

The proposed spot amendment explicitly allows issuance of a "preliminary grading permit" prior to approval of a site development or use permit. (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4(d).) This flies directly in the face of the following general regulation of the FTSP:

> *"Grading: Grading shall be permitted within the Specific Plan Area only upon approval of a site development permit or use permit by the Planning Commission. No grading permits shall be issued without the approval of a precise plan of development, i.e., site development permit or use permit." (FTSP III.C.6.1, page III-2.)*

Rural Canyons 4 – Response

This comment does not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA.

Rural Canyons Conservation Fund 5 – Comment

5. *Development depicted on the proposed area plan improperly conflicts with the FTSP.*

Since, as shown above, the proposed wildcard exemption from all of the FTSP's general substantive and procedural requirements is invalid, all of the FTSP's general provisions apply to this project. Unfortunately, the proposed development violates numerous of these provisions, including:

- *"Rural Character/Forest Buffer: To preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." (FTSP I.C.1.0(a)," Goals and Objectives," page I-5.)*

By any measure of the term, the proposed development, due to its extreme intensity and scale, is anything but "rural" in character. On the contrary, it is a conventional suburban housing tract, to be constructed after mass grading the site in the amount of 11.7 million cubic yards. At 5,000 square feet minimum, the lot sizes are far below the minimum ½ acre permitted in the adjacent FTSP areas, and the proposed average density of 1.35 dwelling units per acre vastly exceeds the prevailing minimum of 1 dwelling unit per 2 acres. The proposal includes manufactured slopes 120 feet high, contour elevation changes of 91 vertical feet, and retaining walls 40 feet high.

Characterizing such a proposal as "rural" can only be described as "Orwellian." The submitted area plan application does include a "Rural Character Statement." However, this document merely sets forth general platitudes and idealized sketches on the subject, not specific to the proposed project, and not demonstrating how the concepts would actually be implemented. In the context of this project, "rural" must in large measure be defined in terms of compliance *with the regulations and guidelines of the FTSP, which purport and serve to implement the general goal of* preserving *the area's rural character. Thus the subject proposal is rural to the extent of its compliance with the detailed requirements of the FTSP, and that compliance leaves much to be desired.*

- *"Except for those legal building sites existing at the time of Specific Plan adoption where compliance with this requirement would preclude development of a single residence on the existing building site, mapping shall identify a minimum corridor width (other than for the wildlife corridor parallel to Live Oak Canyon Road) at all locations of 400 feet measured perpendicular to the corridor's boundary." (FTSP II.C.2.2(c)(3), page II-11, underlining in original.)*

The proposal fails to delineate a 400-foot-wide wildlife corridor through the project. The corridor mentioned in the text of the area plan actually diminishes to under 200 feet wide where it passes between the main spine road on the south and St. Michael's Abbey on the north.

- *"Development shall maintain a 50-foot setback of all structures and barrier fencing from all corridors. Uses within the setback zone shall be limited to low-intensity, residential-related activities such as recreation and private open space." (FTSP II.C.2.4(a), page II-14.)*

The proposed wildlife corridor violates this setback requirement where it passes between the southern and northern clusters of housing units.

Please include this letter in the official record of proceedings for this project. Thank you for the opportunity to comment.

Rural Canyons 5 – Response

Please see Section 3.3.2 (Connor 3 - Response) of this Response to Comments document regarding the proposed project's consistency with the F/TSP.

3.3.8 Saddleback Canyons Conservancy
Gloria D. Sefton, June 10, 2002

Saddleback Canyons Conservancy 1 – Comment

The Saddleback Canyons Conservancy is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Canyon Specific Plan (FTSP) area and surrounding areas of Orange County. The following comments are provided in response to the DEIR.

NONCOMPLIANCE WITH THE FTSP

The proposed project lies within the FTSP area. The proponents of the project have proposed a zone change (ZC 98-3) that would be required to amend the FTSP for the project ("Bridlewood Residential District"). Such an amendment to the FTSP would exempt the project from all regulations and guidelines ion the FTSP other than those provided by Bridlewood Residential District.

Upholding the integrity of the FTSP is of utmost concern to the Saddleback Canyons Conservancy. The proposed project site serves as a transitional buffer between the suburban developments of Lake Forest and Mission Viejo to the rural canyons area. The project's proximity to the Cleveland National Forest (within 1 mile) speaks to the need to for compliance to – not exemption from – the development guidelines set forth in the FTSP.

The proposed development violates the spirit and letter of the FTSP. The primary goals of the FTSP are to "preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." The project in no way conforms to such a goal. Indeed, 299 tract homes on a mass-graded site is anything but "rural." It is time to stop suburban sprawl, say "no" to continued mass development, and "yes" to a preservation and conservation plan.

Saddleback Canyons Conservancy 1 – Response

Please see Section 3.3.2 (Connor 3 - Response) of this Response to Comments document regarding the proposed project's consistency with the F/TSP.

Saddleback Canyons Conservancy 2 – Comment

DESTRUCTION OF HABITAT AND INTERFERENCE WITH WILDLIFE CORRIDORS

The project site is within the Southern Orange County Natural Communities Conservation Plan (NCCP) and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for the federally endangered Riverside fairy shrimp, and the federally threatened coastal California gnatcatcher, among other special status species. In view of the fact that the County, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game have initiated the Southern

Subregion NCCP process and that preliminary reserve designs are scheduled for completion in July 2002, a revised environmental document should be prepared to incorporate this critical information.

Saddleback Canyons Conservancy 2 – Response

Please see Section 3.3.2 (Connor 19 - Response) of this Response to Comments document regarding the NCCP. The Southern Subregion NCCP process was started several years ago, while a preliminary reserve design is protected for July 2002, it will be two or three years before the reserve design is adopted.

Saddleback Canyons Conservancy 3 – Comment

FAILURE TO ADEQUATELY ANALYZE CUMULATIVE IMPACTS

The list of "related" projects is limited to a small area near the project and excludes other major projects on the NCCP Southern Subregion. Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Rancho Mission Viejo project (14,000 homes and 427 acres of "urban activity"). Additionally the DEIR fails to mention the Rancho Protrero Leadership Academy, which also lies within the FTSP area, for which the Board of Supervisors filed a Notice of Determination in December 2001. The cumulative analysis of land use and planning, geology and soils, hydrology and water quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider all foreseeable projects.

Saddleback Canyons Conservancy 3 – Response

It would be inappropriate to include the Rancho Mission Viejo project in the cumulative analysis as it is in the early planning stages and not within the project study area. Please see Section 2.0 of this Response to Comments document for a revised Table 3.1, which includes the Rancho Protero Leadership Academy. However, it should be noted that this additional information did not change the conclusions of the EIR.

Saddleback Canyons Conservancy 4 – Comment

NONCOMPLIANCE WITH NEW WATER QUALITY REGULATIONS

Aliso Creek, adjacent to the project site, is listed as a Category I Priority Impaired Water Body in the EPA's National Water Quality Report (2000). New water quality regulations have recently been ordered against the County of Orange by the Regional Water Quality Control Board. These stricter regulations supplant the 1994 NPDES permit referenced in the DEIR, and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek. The DEIR fails to explain how the project can comply with these new water quality regulations.

Saddleback Canyons Conservancy 4 – Response

Section 4.4.2 of the Draft Revised Subsequent EIR describes in detail potential impacts to water quality and Aliso Creek. Implementation of the Project Design Features and compliance with the Standard County Conditions, in addition to other applicable regulatory requirements, impacts to water quality would be less than significant. In addition, a mitigation measure was included to facilitate the implementation of alternate and/or supplemental regional water quality mitigation to ensure the proposed project is consistent with the requirements of the new storm water NPDES permit (see M 4-1 on page 4.4-17 through 4.4-18 of the Draft Revised Subsequent EIR).

Saddleback Canyons Conservancy 5 – Comment

LACK OF WATER TO SUPPORT THE DEVELOPMENT

The Orange County Register recently reported (May 18, 2002) that "drought conditions have dried up two wells that the Trabuco Canyon Water District relies on to supply Trabuco Canyon and Rancho Santa Margarita residents." The TCWD is seeking additional appropriative water rights from the State Water Resources Control Board. Yet, as reported in correspondence to me dated May 14, 2002 from the State Water Resources Control Board, further processing of the TCWD's request for additional water rights is being held in abeyance until several senior priority applications in the watershed are processed. This water shortage should be recognized as an impediment to the advancement of any new development in the area served by the TCWD.

Saddleback Canyons Conservancy 5 – Response

As stated in Section 4.16.2 of the Draft Revise Subsequent EIR, the Trabuco Canyon Water District (TCWD) indicates that it would be able to accommodate the required water supply demand for the proposed project. A letter received from TCWD on July 15, 2002 indicates that the district has sufficient capacity to serve the site.[1]

Saddleback Canyons Conservancy 6 – Comment

CONCLUSION

The project is out of compliance with the FTSP. The project is not rural. The project significantly and negatively impacts biological resources and wildlife corridors. The project site is adjacent to the impaired Aliso Creek. The water district has severe water shortage problems. An additional 299 homes adds to suburban sprawl and downstream negative environmental impacts. The project should not proceed. The site should be set aside as a preserved habitat/wildlife corridor, and protected as open space for generations to come.

[1] *Letter to Kris Weber, Hunsaker & Associates, dated July 15, 2002 from Brian Bertsch, Project Manager, Trabuco Canyon Water District*

Please incorporate this letter in to the official record of proceedings for this project.

Saddleback Canyons Conservancy 6 – Response

This comment is a summary of comments included above. No additional response is required.

3.3.9 Sierra Club

Gail Prothero, June 23, 2002

Sierra Club 1 – Comment

The Sierra Club appreciates the opportunity to comment upon the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows – EIR 566 (DRSEIR). As strong supporters of protecting the ecological integrity and aesthetic value of the remaining open space in Orange County, our members are closely monitoring projects proposed for properties in the vicinity of the Cleveland National Forest. To facilitate this monitoring process, as well as to properly inform the general public and decision-makers, it is essential that all environmental assessment related to such projects be conducted in strict compliance with the provisions of CEQA and the CEQA Guidelines.

Unfortunately, as it is currently written, the DRSEIR does not adequately address significant issues related to the proposed Saddleback Meadows residential development and its effect on the local environment. These issues include those justifiably raised by a number of individuals in comments already provided to you; therefore, the Sierra Club wishes to incorporate into this letter, by reference, each of the following documents:

- *Comments by Terrell Watt, AICP, submitted in a letter dated June 7, 2002, on behalf of the National Audubon Society, Endangered Habitats League, and Rural Canyons Conservation Fund*
- *Comments by Edmond M. Connor, submitted in a letter dated June 9, 2002, in behalf of the Vedanta Society of Southern California*
- *Comments by Ray Chandos, submitted in a letter to Frank McGill dated May 28, 2002, in behalf of the Rural Canyons Conservation Fund*
- *Comments by Patricia Martz, PhD., submitted in a letter dated June 10, 2002*

Sierra Club 1 – Response

The Draft Revised Subsequent EIR was completed in compliance with the provisions of Public Resources Code, Division 13, Sections 21000 et seq. and the California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000, et seq. The comment letters and responses listed above have been included in this Response to Comments document.

Sierra Club 2 – Comment

Although the Sierra Club believes that all of the issues discussed in the above documents warrant full consideration and thorough analysis in a revised DRSEIR, two are of overarching significance to our members and deserve particular emphasis.

Suburban Sprawl

The significant negative impacts of the proposed Saddleback Meadows development are all attributable to the fact that the project would further extend suburban-style development into the remaining wildlands of Eastern Orange County. Attendant to such sprawl are the inevitable habitat destruction and fragmentation; watershed and water quality degradation; increases in vehicle miles traveled, traffic congestion, and air pollution; and deterioration of viewsheds and noisesheds. An adequate DRSEIR must honestly identify the true nature of the proposed Saddleback Meadows development as suburban sprawl, analyze the cumulative impacts of allowing similar sprawl-type projects to encroach upon remaining wildlands, and propose alternative locations for providing similar amounts of housing within the existing footprint of urban/suburban Orange County.

Sierra Club 2 – Response

Impacts associated with implementation of the proposed project were discussed in Section 4.0 and various technical appendices of the Draft Revised Subsequent EIR. Cumulative impacts to biological resources were discussed in Section 4.8.3.

Alternative locations for development of the proposed project were discussed in Section 5.3 of the Draft Revised Subsequent EIR. This alternative was eliminated from further consideration due to the fact that the project applicant does not own or control any other project sites within the region and the fact that no other property within the vicinity of the project site exhibits similar existing project specific General Plan and Zoning designations that would accommodate the proposed project. Further, it is speculative and unlikely that the project applicant would assemble other contiguous properties within the area to accommodate the number and type of residences proposed. Moreover, if such properties were identified and acquired, the properties would likely have resources and environmental constraints similar to the project site. Development of the proposed project at an alternative location is unlikely to be economically viable and would be unlikely to reduce impacts in comparison to the proposed project.

Sierra Club 4 – Comment

Benefits of Preservation

Although serious and ongoing consideration has been given to acquiring the Saddleback Meadows site for preservation in its natural state, only passing attention is given to acquisition in the DRSEIR. An adequate DRSEIR would thoroughly analyze the environmental and economic benefits of acquisition, potential sources of funding and the relationship of acquisition to fulfilling the goals and objectives of all of the following: The Orange County General Plan, Foothill/Trabuco Specific Plan, Aliso Creek Corridor Specific Plan, and Central-Coastal Subregion National Community Conservation Planning/Habitat Conservation Plan.

Sierra Club 4 – Response

Section 5.0 of the Draft Revised Subsequent EIR included a discussion of various no development and/or conservation alternatives. The project applicant has engaged in numerous discussions regarding acquisition of the project site for open space and conservation purposes, with each discussion resulting in no action based upon a lack of appropriate acquisition funding.

Please see Section 3.3.2 (Connor 2 – Response) of this Response to Comments document for a discussion of the feasibility of property acquisition.

Sierra Club 5 – Comment

The Sierra Club recommends that the DRSEIR be revised to properly address all issues raised in this letter, both directly and by reference, and recirculated for public comment.

Sierra Club 5 – Response

Please refer to Section 3.3.9 (Sierra Club 1 – Response) of this Response to Comments document. No recirculation of the document is required.

3.3.10 Trails 4 All

Jim Meyer, June 4, 2002

Trails 4 All 1 – Comment

Recently the County's Regional Riding and Hiking Trails Advisory Committee (RRHTAC) that I serve on was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route, the RRHTAC supported an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would them connect with the proposed Love Oak Plaza project site and connect to the Live Oak Canyon Regional Trail.

Upon review, Trails4All would also like to offer our support for the additional local trails through the proposed Saddleback Meadows project, linking with Live Oak Plaza and the Saddle Creek projects. We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

Trails 4 All 1 – Response

Please see Section 3.3.6 (RRTAC 1 – Response) of this Response to Comments document.

3.3.11 Terrell Watt, AICP

June 7, 2002

Watt 1 – Comment

This comment letter on the Draft Revised Subsequent Environmental Impact Report ("DRSEIR") for the proposed Saddleback Meadows development project ("project") is submitted on behalf of National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund ("the commenting groups"). These comments provide a detailed and explicit outline of the problems and inadequacies presented by: (1) the project itself, including its geological impacts and impacts to the habitat of several endangered and sensitive species; (2) the DRSEIR, including fatal deficiencies under the California Environmental Quality Act ("CEQA") (Pub. Res. Code §§ 21000 et seq.) and the CEQA Guidelines (14 Cal. Code Regs. §§ 15000 et seq.); and (3) the project's inconsistency with the County General Plan.[1]

Watt 1 – Response

This comment presents an overview of the comments detailed below. Please see responses to detailed comments.

Watt 2 – Comment

A summary of the DRSEIR's major defects follows:

Inadequate Project Description: The DRSEIR's project description remains incomplete and, therefore, inadequate. Specifically, the project description lacks important details about the project that are critical to an adequate analysis of project-related and cumulative impacts. Such details include, but are not limited to: (1) fundamental engineering aspects of the project related to mass grading and the probable need for export of unsuitable cut and importation of suitable fill; (2) a detailed description and proposed uses of open space; (3) the complete Project Design Feature that includes the final drainage plan; (4) proposed home size and total development contemplated, including accessory structures and paving; (5) hazards and hazards-related project features, such as possible presence of on-site contamination; among other information about the project. Without this information, the evaluation of impacts cannot be complete.

Watt 2 – Response

As stated in Section 2.0 of the Draft Revised Subsequent EIR, the purpose of the Project Description is to describe the project in a way that will be meaningful to the public, reviewing agencies, and decision-makers. Section 15124 of the CEQA Guidelines requires that a complete Project Description contain the following information: (1) the location and boundaries of the proposed project; (2) a statement of project objectives; (3) a general description of the project's technical, economic, and environmental characteristics; and (4) a statement briefly describing the intended uses of the EIR, including a list of the agencies that are expected to use the EIR in their decision making, and a list of the approvals for which the EIR will be used. According to CEQA

(Section 15124) an adequate Project Description need not be exhaustive, but should supply the detail that is necessary for project evaluation.

The Project Description meets the requirements of CEQA and discusses grading, open space, drainage, land use and hazards. The details requested by the commenter (i.e., specific housing design, etc.) are not required.

Watt 3 – Comment

Inadequate Project Setting: The DRSEIR fails to describe key elements of the project setting adequately and completely. Such elements include, but are not limited to: (1) key general plan policies and regional policies relating to habitat planning, in particular the Southern Orange County Natural Communities Conservation Plan (NCCP); and (2) a list of cumulative projects, geographic study area for the cumulative analysis or plan based approach to cumulative impacts. This information is critical to the analysis of project-related and cumulative impacts.

Watt 3 – Response

The existing general plan designation and zoning are discussed in Section 2.1.2 and general plan policies and regional policies are discussed in Section 4.1.1 of the Draft Revised Subsequent EIR. Applicable plans and policies related to biological issues are discussed in Section 4.8 and Appendix I of the Draft Revised Subsequent EIR. Cumulative projects were summarized in Table 3.1 of the Draft Revised Subsequent EIR, please see Section 2.0 of this Response to Comments document for an updated table.

Watt 4 – Comment

Failure to Identify or Analyze the Full Extent of Significant Environmental Impacts: The DRSEIR is riddled with conclusions unsupported by facts and analysis on the significance of environmental impacts. Specifically the DRSEIR concludes, based on improperly deferred mitigation measures and mitigation measures of unproven efficacy, that all potentially significant impacts except cumulative air quality will be reduced to less than significant with mitigation. Insufficient evidence is provided to support the conclusion that all but one impact will be less than significant after mitigation.

Watt 4– Response

The Draft Revised Subsequent EIR was prepared according to the requirements of CEQA. The commenter offers no specific areas where the EIR is deficient. No further response is required.

Watt 5 – Comment

Inadequate Cumulative Impacts Analyses: The DRSEIR's cumulative impacts section is non-existent. The DRSEIR fails to provide a complete list of cumulative projects or to outline a plan based approach to the cumulative

analysis. The list of "related" projects is limited to a small area near the project and excludes other major projects in the NCCP Southern Subregion. Brief, conclusory statements are made concerning cumulative impacts throughout the DRSEIR. Moreover, the DRSEIR fails to consider feasible mitigation for the project's incremental contribution to cumulative impacts. Notwithstanding this complete lack of analysis, the DRSEIR concludes that all cumulative impacts will be less than significant with the exception of cumulative air quality.

Watt 5 – Response

Cumulative impacts were discussed under each environmental issue area within Section 4.0 of the Draft Revised Subsequent EIR. As stated in Section 3.7 of the Draft Revised Subsequent EIR, the cumulative analysis for each respective environmental subsection was described based on the related projects, as appropriate. The Natural Community Conservation Planning Program (NCCP) is discussed in Section 4.8 and Appendix I. Additionally, the NCCP represents 64,100 acres as compared to the proposed project's 222 acres.

Watt 6 – Comment

Inadequate Growth-Inducing Impacts Analysis: The DRSEIR's growth-inducing impacts section is likewise inadequate. For example, the DRSEIR fails to analyze the potentially significant growth-inducing impacts associated with the extension of utilities and roads, and the placement of a water tank and access road beyond the project site. The DRSEIR offers no analysis or even recognition of the precedent-setting effect the proposed project would have on development in the area, and development on sites where the topography and presence of biological habitat and wildlife corridors should limit such projects.

Watt 6 – Response

The F/TSP and Tract Map 10692 allow for a 705-unit manufactured housing development within the boundary of the project site. As stated in Section 2.3.4 of the Draft Revised Subsequent EIR, the water tank site was previously dedicated to the Trabuco Canyon Water District when the existing Final Tract Map 10692 was recorded, to be used for development of the water distribution facility for the proposed project site. The proposed on-site roadways and utility systems would serve only the proposed project and would not accommodate any additional development. No off-tract infrastructure improvements are proposed.

Watt 7 – Comment

Inappropriate Deferral of Feasible Mitigation Measures: The DRSEIR improperly defers mitigation measures. Many of the deferred mitigation measures, including measures related to drainage and hazards mitigation, are relied upon to reduce significant impacts without any supporting facts or analysis.

Watt 7 – Response

The mitigation measures included in the Draft Revised Subsequent EIR are based on current regulations and do not defer mitigation requirements. It is unclear as to what specific mitigation measures the commenter is regarding drainage. Upon implementation of the identified Project Design Features and Standard County Conditions, no mitigation measures would be required (see Section 4.3.6 of the Draft Revised Subsequent EIR).

Watt 8 – Comment

Failure to Analyze a Reasonable Range of Alternatives: The DRSEIR includes numerous alternatives, but fails to analyze an alternative that fully mitigates for on- and off-site impacts. Moreover, the DRSEIR fails to properly identify the environmentally superior alternative, after the no-project alternatives, as Alternative 4.

These and other major defects in the DRSEIR described below render the document inadequate as a basis for informed decision-making and legally deficient under CEQA and the planning and zoning law. The County should give no further consideration to the project until an EIR is prepared and circulated that fully complies with CEQA and the CEQA Guidelines.

Watt 8 – Response

Please see Section 3.3.2 (Connor 2 – Response and Connor 30 – Response) of this Response to Comments document.

Watt 9 – Comment

CONSIDERATION OF THE PROJECT IS PREMATURE

The County, the U.S. Fish and Wildlife Service and the Department of Fish and Game have initiated the Southern Subregion NCCP process. Preliminary reserve designs are scheduled for completion in July 2002. The project site is within the Southern Subregion and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for a number of special status species.

The NCCP reserve design(s) will suggest where development should and should not occur based on biological resources. This new information is fundamental to a determination of whether all or a portion of the project site should be included in a "reserve," or alternatively in a development area. A revised environmental document must include this information.

Watt 9 – Response

Please see Section 3.2.1 (USFWS/CDFG 4 – Response) and Section 3.3.2 (Connor 19 – Response) of this Response to Comments document. The NCCP process was initiated in 1993 and is only now proposing alternative palns for consideration by the public and decision makers. Final approval of the NCCP is not expected for another year or two. CEQA has no requirement that a project be evaluated against a planning or regulatory document that has not been adopted/approved. The project applicant has been in communication with U.S. Army Corps of Engineers (USACE), California Department of Fish and Game (CDFG), and U.S. Fish and Wildlife Service (USFWS) regarding NCCP related issues and has included a detailed Biological Resources Mitigation Plan (including a wildlife movement corridor) as a Project Design Feature (see Section 4.8 of the Draft Revised Subsequent EIR). Additionally, the proposed project seeks to replace the existing 705 residential lot subdivision with a new development plan that provides a wildlife corridor.

Watt 10 – Comment

BACKGROUND AND PROJECT CONTEXT

The property is located in the lower, southeastern foothills of the Santa Ana Mountains and is currently used for horse and cattle grazing. The site's topography is hilly with several steep slopes and ravines. Soils on site are highly erodable. Aliso Creek is located nears the western site boundary and generally follows El Toro Road. Drainage from the site flows to the west into Aliso Creek, which drains into the Pacific Ocean at Aliso Beach, and Oso Creek, a tributary of Trabuco and San Juan Creeks, and south to O'Neill Regional Park. DRSEIR at page 4.2-2. The site provides an essential low elevation wildlife corridor between the Central and Southern NCCP areas and the Cleveland National Forest. Such a low elevation corridor is needed for gnatcatchers and other species. The site also supports important wetlands that provide habitat for Riverside fairy shrimp and western spade foot toad.

Watt 10 – Response

This comment restates the existing setting of the proposed project. No response is required.

Watt 11 – Comment

Under the proposed project, a gated community of 299 single-family residential lots would be built on approximately 222 acres. The total developed area would be approximately 66.9 acres and the total open space would be on approximately 155.1 acres. Only a portion of the area, approximately 83.25 acres would be in "natural resource preservation area." However, this area is subject to remedial grading and biological enhancement activities, thereby potentially degrading the resources even within this "natural resource preservation area." DRSEIR at page 2-16. Massive grading is needed to accommodate the project on this site. Grading would involve 70%+ of the site. It is still unclear to what extent remedial grading will extend beyond the area illustrated in the preliminary grading plan.

Watt 11 – Response

Project Design Features (PDF 8-1) and Standard County Conditions (SC 2-3) have been included to protect the natural resource preservation area (see Sections 4.8.4 and 4.2.4 of the Draft Revised Subsequent EIR). The biological impact analysis considered areas that would be impacted by both conventional and remedial grading. No grading would occur outside the project site boundary.

The final Grading Plan will be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division prior to issuance of a grading permit (Standard County Condition SC 2-2). The level of detail included in Section 4.2 and Appendix C of the Draft Revised Subsequent EIR is appropriate.

Watt 12 – Comment

In summary, the site plan can best be characterized as "suburban sprawl," with roads and units extending across the entire site, thereby fragmenting the open space areas and extending into wildlands and interfering with wildlife corridors. This pattern of development would severely impact biological resource values on- and off-site and impede wildlife migration.

Watt 12 – Response

A Final Subdivision Map (Final Map 10692) for 705 manufactured housing/mobile home units was recorded for the property in 1988. Furthermore, the property is surrounded by existing development or approved projects on nearly 50 percent of its perimeter. A Biological Resource Mitigation Plan has been incorporated into the proposed project to mitigate impacts to biological resources and enhance currently degraded habitat. In addition, the proposed project leaves a substantial amount of the site (approximately 70 percent) as open space and/or biological reserve.

Watt 13 – Comment

ANALYSIS

I. THE DRSEIR IS INADEQUATE UNDER CEQA.

The DRSEIR is deeply flawed under CEQA. An EIR must provide enough analysis and detail about environmental impacts to enable decision-makers to make intelligent judgments in light of the environmental consequences of their decisions. See CEQA Guidelines § 15151; Kings County Farm Bureau v. City of Hanford, 221 Cal.App.3d 692 (1990). Under the law, the lead agency must make a good faith effort to fully disclose the environmental impacts of the project. This requirement cannot be met unless the project is adequately described and existing setting information is complete. See County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 199(1977). Both the public and decision-makers need to fully understand the implications of the choices presented by

the project, mitigation measures, and alternatives. See Laurel Heights Improvement Ass'n v Regents of University of California (Laurel Heights I), 6 Cal.4th 1112,1123 (1988). The DRSEIR fails to provide sufficient information to enable informed decision-making by the County, the public, and the permitting agencies. Much important information remains improperly omitted or deferred until a later date in violation of CEQA; what information is provided remains vague and flawed.

The DRSEIR is a construction level EIR and therefore would allow for the issuance of a rough grading permit. Many of the most significant impacts are irreversible after rough grading has occurred. Thus, detailed information concerning project level impacts must be provided at this stage of project consideration so that the public, agencies and County decision-makers can fully understand the impacts of the proposed project and alternatives. Deferral of information concerning project-related and cumulative impacts, mitigation measures and alternatives is improper and unacceptable given the types of activities that will result from the approval of the project at this stage.

Watt 13 – Response

The commenter is correct in citing Section 15151 of the *CEQA Guidelines*, which states "An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. However, this section goes on to state, "An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible." The Draft Revised Subsequent EIR includes a detailed analysis of environmental factors based on a publicly circulated Initial Study and technical appendices for the following: geology, hydrology, water quality, traffic, air quality, noise, biology, and archaeology.

Please see Section 3.3.12 (Watt 11 – Response) of this Response to Comments document regarding grading.

Watt 14– Comment

- *The DRSEIR Fails to Describe the Project Adequately.*

The DRSEIR fails to describe the project and its setting accurately and completely. It omits key project features that have the potential to result in significant impacts.

The CEQA Guidelines define "project" as "the whole of an action, which has a potential for resulting in a physical change in the environment, directly or ultimately . . .." CEQA Guidelines § 15378. Among other components, an EIR's project description must contain a "general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities." CEQA Guidelines § 15124(c). As the Court of Appeal has noted, "The defined project and not some other project must be the EIR's bona fide subject." County of Inyo, 71 Cal.App.3d at 185. An accurate and complete project description

is indispensable because, "[a] curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal . . . and weigh other alternatives in the balance. An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR" id. at 192.

The DRSEIR also fails to provide an adequate description of the setting for the project. Such a failure is fatal under CEQA. CEQA and the CEQA Guidelines mandate that an EIR include a description of "the physical environmental conditions in the vicinity of the project... from both a local and a regional perspective . . . Knowledge of the regional setting is critical to the assessment of environmental impacts." CEQA Guidelines §§ 15125(a) and (c). This requirement derives from the principle that without an adequate description of the project's local and regional context, the EIR, and thus the decision-makers and the public who rely on the EIR, cannot accurately assess the potentially significant impacts of the proposed project.

The DRSEIR for the project is inadequate. It fails to describe key aspects of the proposed project with the potential to result in significant environmental impacts. Additionally, it fails to describe accurately and completely the environmental setting impacted by the project. Accordingly, potentially significant environmental impacts cannot be adequately analyzed or addressed by the DRSEIR and, for this reason, the DRSEIR is fatally deficient under CEQA.

Watt 14 – Response

Please see Section 3.3.12 (Watt 2 – Response) of this Response to Comments document. In addition, the environmental setting for the proposed project is described in Sections 2.1, 3.0 and throughout 4.0 of the Draft Revised Subsequent EIR for each environmental issue area. The environmental setting is adequately described under the requirements of CEQA.

Watt 15 – Comment

1. *The DRSEIR Fails to Describe Adequately the Source and Placement of Cut and Fill Material and the Extent of Grading Required to Accommodate Roads and Dwelling Units.*

Massive earthwork will be required to prepare the site for access roads and houses. More than ½ of the site (126 acres) has slopes in excess of 26% with about 32 acres with slopes exceeding 50%. Preliminary estimates in the DRSEIR are that about 2.45 million cubic yards of conventional excavation (cut) and an equal amount of fill will be required. In addition, about 6.8 million cubic yards of remedial grading are required. The DRSEIR states that cut and fill (including several areas exceeding 50 feet in depth) will be balanced on site. However, the DRSEIR and geotechnical report present information that indicates on-site materials may not be suitable to support the project without imported materials. See DRSEIR at page 4.2-11. Moreover, mitigation measures M 2-14 and M 2-15 suggests that off-site borrow materials will be needed and on-site material removed:

M 2-14 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal off-site. DRSEIR at page 4.2-l 8

M 2-15 All borrow sites shall be approved by the Soil Engineer/Geologist prior to on-site delivery. This will permit the timely allocation of such available materials for use on the project site.

To the extent that exportation of cut and importation of fill will be required to implement the project, this information must be provided. Related impacts to air quality, off-site grading and stockpiling and traffic, among other issues must be disclosed and analyzed in a revised environmental document.

Watt 15 – Response

The mitigation measures referenced above are standard with regard to material selection and have been included in case small amounts of on-site material would not be acceptable. It is not meant to indicate that large quantities of material will have to exported or imported. As indicated in the Draft Revised Subsequent EIR, all grading operations would be balanced on-site and import/export of cut/fill material is not proposed. However, the commenter is correct in noting that mitigation measures M 2-14 and M 2-15 could be misleading or misinterpreted. Please see Section 2.0 of this Response to Comments document for a clarification of M 2-14. M 2-15 has been deleted.

Watt 16 – Comment

Although the DRSEIR fails to provide adequate information concerning proposed cuts and fills in terms of their location and extent, the document does refer to fills in excess of 50 feet in height. The DRSEIR provides virtually no information regarding the source and placement of cut and fill material, the full extent of grading required to accommodate roads and dwelling units, and the phasing of the cut and fill operation. Without this information, the DRSEIR environmental impacts analysis does not and cannot analyze the impacts of transporting such a significant amount of fill to the project site in terms of increased traffic and air pollutants, or the impacts of the cutting and filling itself including impacts to air quality, open space, habitat, and special status species. Without an accurate and complete description of the proposed site grading and fill, the DRSEIR cannot adequately analyze environmental impacts or comment on the proposed project's consistency with the County's General Plan and grading ordinance.

A revised environmental document should include clear graphics that show cross sections where cuts and fills will exceed 50 feet. In addition, a revised environmental document must identity the sources of fill that are suitable to support the proposed development. Additional information must be provided concerning the suitability of on-site material for fill if the DRSEIR continues to assume that cut and fill will balance on-site.

Watt 16 – Response

Please see Section 3.2.12 (City of RSM 2 – Response) and Section 3.3.12 (Watt 15 – Response) of this Response to Comments document. As stated in Section 2.4 of the Draft Revised Subsequent

EIR, the proposed project includes the approval of Vesting Tentative Tract Map 15230, which provides a greater level of detail. The tentative map is on file with the County of Orange and is incorporated by reference.

Watt 17 -- Comment

2. *The DRSEIR Fails to Describe Adequately the "Open Space" Areas.*

The DRSEIR fails to provide a complete description of the "open space" areas of the proposed project. Little or no information is provided regarding, among other aspects: the extent of grading to the open space; to what degree the open space will be altered from its present natural condition; the uses to which the open space will be put and the extent of those uses, including trails and recreation; and, the presence and location in the open space of utility lines, access roads and other services.

The lack of a complete description in the DRSEIR of alteration to, and ultimate uses of the open space areas renders any analysis of either project-related or cumulative impacts thoroughly inadequate. A revised description of any alteration to the open space and the uses proposed for the open space land, including the proposed water reservoir, must be completed. Once a complete description has been obtained, the DRSEIR's analysis of the environmental impacts to biological resources, geology, and air quality, among others, must be revised.

Watt 17 – Response

The Draft Revised Subsequent EIR includes descriptions of open space areas in Sections 2.1; 4.1.2; 4.8.4 and 4.8.6; 4.9.4; and 4.11.2, 4.11.4 and 4.11.6. Open space is also discussed in Table 2.1 and shown on Figures 2.8; 2.10; 2.11; 4.8.7; 4.9.10 and 4.11.2.

Watt 18 – Comment

3. *The DRSEIR Fails to Describe Adequately the Project's Master Drainage Concept and Project Features Directed as Maintaining Water Quality.*

The DRSEIR fails to adequately describe the project's drainage concept and project features purportedly directed at maintaining water quality. Specifically, the DRSEIR's environmental impacts analysis concerning hydrology states that the "Project Design Feature" to mitigate drainage impacts is "being prepared in consultation with USACE." DRSEIR at page 4.3-7. Thus, the complete master drainage concept is not included in the DRSEIR for public, decision-maker and agency review. Although a final description of the master drainage concept is still being developed, the DRSEIR nonetheless concludes that no significant impacts associated with drainage will occur. In part, this is correct: no significant impacts can be identified based on such an inadequate project description. Without a complete description of the necessary drainage facilities, the DRSEIR fails under CEQA because impacts to water quality, biological resources, habitat, special status species, and human safety cannot be assessed. Once a complete description has been obtained, a revised impacts analysis must be completed.

The DRSEIR continues to describe other aspects of the project intended to mitigate water quality impacts:

"The remainder of the project site (the northerly development area) does not have sufficient room to accommodate the land-intensive requirements of the riverine system Therefore, runoff from the balance of the developed portion of the project site would be primarily cleansed through stormceptors prior to discharge into natural drainage courses. Stormceptors trap trash, sediment, and oils. They would also trap phosphorus that is attached to the sediment. However, they have no known effect on bacterial indicators or toxic constituents, both of which are constituents of concern for Aliso Creek. Removal of bacterial indicators would occur as the runoff continues through 3,300 linear feet of natural [sic] *before reaching Aliso Creek. As part of the final design ponds and swales would be incorporated to the maximum extent feasible in the development area within many small-scale features, such as, medians, parkways, and other developed open space in order to maximize the opportunity for removal of bacterial indicators and toxic constituents prior to outletting in the natural drainages." DRSEIR at page 4.4-12.*

This paragraph suggests that:

> *Key elements of the project that are critical to reducing significant impacts to drainage and water quality have not been designed. Therefore, the project description lacks key information to support both an adequate analysis of impacts and to support a conclusion that project impacts will be less than significant.*
>
> *Mitigation may not be sufficient to address impacts associated with bacterial indicators or toxic constituents.*

A revised environmental document, based on a complete description of drainage and water quality features and feasible mitigation measures must be completed.

Watt 18 – Response

Tentative map level hydrology and water quality analysis is included in Sections 4.3 (Hydrology) and 4.4 (Water Quality) of the Draft Revised Subsequent EIR, which is consistent with the manner in which development projects are processed. Additional technical information was also included in Appendix D and Appendix E of the Draft Revised Subsequent EIR.

Watt 19 – Comment

4. *The DRSEIR Fails to Describe Adequately the Characteristics of Residential Uses*

The DRSEIR lacks a complete description of proposed uses at the project site. Specifically, the DRSEIR fails to describe key aspects of the proposed residential project including, but not limited to: the size of the houses; their lot coverage; paving for roads driveways and parking lots; and accessory uses, such as swimming pools and storage. Without an adequate description of home size, lot coverage, and accessory uses, significant environmental impacts to aesthetics and water quality, among other impacts, cannot be identified or assessed and suitable mitigation measures

cannot be proposed. To the extent this information is not available, a worst-case estimate of total site soft and hard cover must be developed and used to determine the extent of environmental impacts associated with site coverage. Without a clear understanding of how much land is to be covered by development, potentially significant environmental impacts to drainage, water quality, habitat, and special status species, among others, and the creation of geologic and flooding hazards cannot be identified, let alone assessed.

Watt 19 – Response

[County to provide further edits]

The level of detail requested in this comment such as a description of swimming pools and accessory uses is not required for an EIR. Residences will be developed in accordance with County zoning standards for the lot sizes shown on the Vesting Tentative Tract Map. Paving for roads and driveways have been incorporated into analyses regarding geologic and flood hazards.

Watt 20 – Comment

5. *The DRSEIR Fails to Describe Adequately the Proposed Project's Construction Activities and Phasing.*

The project description provides a cursory description of construction phasing and activities. Among the information that is not sufficient is information about the extent and duration of grading activities. Without a description of these activities and phasing and the assumptions underlying the air quality estimates, the DRSEIR cannot adequately identify and analyze environmental impacts to air and water quality, among others, due to truck traffic and emissions, construction noise and dust. An EIR for a project such as this must include a description of the construction period activities, including, but not limited to: phasing; types of equipment; construction employment; staging areas, borrow sites and spoils disposal sites, among other details of the construction that could result in impacts. A revised environmental document must be prepared that includes this information and revised impact analyses as warranted based on the information.

Watt 20 – Response

Please see Section 3.3.2 (Connor 10 – Response) of this Response to Comments document.

Watt 21 – Comment

6. *The DRSEIR Fails to Describe the Project Site's Biological Resources and Habitats Adequately.*

The DRSEIR fails to adequately describe biological resources on- and off-site. The document contains inadequate information concerning on-site biological resources, including oak woodlands, aquatic resources, raptor nesting locations and wildlife corridors, and fails to provide any description of biological resources within an adequate cumulative study area, which at a minimum should include the entire Southern Subregion and Central NCCP areas.

Finally, the relationship of the project site to the Southern Orange County NCCP is not described or analyzed. There is a Figure in the DRSEIR, which illustrates a proposed Southern reserve, but the DRSEIR fails to state how this related to the proposed project. See Figure 4.8-2. Clarification is needed concerning the Southern NCCP process and its implications for this project. Without the inclusion of these, and other, key details of the on- and off-site biological regime, the DRSEIR cannot adequately analyze project-related and cumulative impacts.

Watt 21 – Response

Biological resources are described in Section 4.8 and in detail in Appendix I of the Draft Revised Subsequent EIR. Please also see Section 3.3.2 (Connor 19 – Response) of this Response to Comments document.

The commenter's request for inclusion of the entire Central and Southern Sub regions of the NCCP is not appropriate. These tow sub regions represent over 87,300 acres, as compared to the project's 222 acres.

Watt 22 – Comment

7. *The DRSEIR Fails to Describe Project Inconsistencies with Applicable Plans.*

A number of plans are applicable to the project site including, but not limited to:

The Orange County General Plan
The Foothill/Trabuco Specific Plan
Aliso Creek Corridor Specific Plan
The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCP/HCP)

The DRSEIR provides a very cursory policy consistency review in the Land Use section and the biological resources sections. The consistency review does not include a table of key policies and "findings" as to project consistency with these policies. It appears that the section omits several key policy inconsistencies, including the following:

Orange County General Plan

The Orange County General Plan Resources Element includes several policies concerning protection of natural resources as follows:

Goal 1: Protect wildlife and vegetation resources and promote development that preserves these resources.

Goal 3: Manage and utilize wisely the County's landform resources.

Objective 3.1: To minimize to the extent feasible the disruption of significant natural landforms in Orange County.

Policy 1. To identify and preserve the significant wildlife and vegetation habitats of the County.

Policy 5. To protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities.

The project as proposed appears to conflict with these overarching goals, objectives and policies of the Orange County General Plan. A revised analysis of project consistency with applicable General Plan policies must be included in a revised and recirculated environmental document.

Watt 22 – Response

Section 4.1 of the Draft Revised Subsequent EIR includes a discussion of the proposed project's consistency with applicable plans. Further, the proposed project would not conflict with the goals objective or policies of the plans identified by the commenter. As discussed in Section 2.0 of the Draft Revised Subsequent EIR, approximately 70 percent of the site would remain as open space and detailed mitigation has been developed to protect and enhance the biological resources on-site (Goal 1 and Policy 1), and contour grading would provide for edge treatments responsive to the natural terrain (Goal 3, Objective 3.1, and Policy 5).

Watt 23 – Comment

The Foothill Trabuco Specific Plan

The Foothill Trabuco Specific Plan calls for preservation of significant landform, biological, cultural and scenic resources on-site. According to the DRSEIR's alternatives analysis, only Alternative 4 is consistent with the Specific Plan requirements. Also according to the DRSEIR, "[t]he proposed project would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692 with respect to proposed residential gross density and providing for the provision of a substantial increase in open space and the presence of a wildlife corridor as outlined in the F/TSP." DRSEIR at page 4.1-12. However, the proposed project would amend the F/TSP. DRSEIR at page 4.1-12. Nowhere in the DRSEIR are the proposed amendments to the F/TSP outlined.

The proposed project is inconsistent with the F/TSP in other major respects, including, but not limited to its failure to provide information required by the F/TSP (see Letter submitted by Rural Canyons Conservation Fund, dated May 28,2002, hereby incorporated by reference).

Watt 23 – Response

Please see Section 3.3.2 (Connor 3 – Response and Connor 4 – Response) of this Response to Comments document.

As stated in Section 2.4 of the Draft Revised Subsequent EIR, the project requires approval of the following discretionary approvals: Area Plan 98-2, Zone Change 98-3, Tentative Tract Map 15784 and Vesting Tentative Tract Map 15230, all of which are incorporated by reference. These documents provide the level of information required by the F/TSP.

Watt 24 – Comment

The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCPHCP)

Figure 4.8.2 indicates that the entire project site is located within an NCCP "reserve area." The DRSEIR fails to point this out or to analyze the implications of this for the project. A significant theme of all of these plans is the protection of key wildlife corridors in the area. It is clear from the project site plan that minimal provisions will be made for continued wildlife movement and those species that attempt to traverse the on-site corridor will be subject to significant additional constraints including: modified topography, new road corridors, presence of new residents in the area, increased noise and lighting as well as residential units in the path of the Northern Corridor. See Figure 4.8.4. The project will have significant impacts on wildlife migration that must be identified in the environmental document and called out as inconsistencies with applicable policies in the above-listed Plans. To the extent that wildlife corridors are assumed on adjacent privately owned properties, the revised environmental document should explain how these corridors would be maintained and not destroyed by cumulative development projects.

Watt 24 – Response

Please see Section 3.2.1 (USFWS/CDFG 4 - Response) of this Response to Comments document.

Watt 25 – Comment

B. The DRSEIR's Analysis of Environmental Impacts Is Inadequate.

The DRSEIR's analysis of environmental impacts fails to provide the necessary facts and analysis to allow the County and the public to make an informed decision. Without such detail, the DRSEIR is deficient under CEQA. The role of the EIR is to make manifest a fundamental goal of CEQA: to "inform the public and responsible officials of the environmental consequences of their decisions before they are made." Laurel Heights I, 6 Cal.4th at 1123. To do this, an EIR must contain facts and analysis, not merely bare conclusions. See Citizens of Goleta Valley v. Board of Supervisors, 52 Cal.3d 553,568 (1990). Any conclusion regarding the significance of an environmental impact not based on analysis of the relevant facts fails to achieve CEQA's informational goal.

As set forth below, the DRSEIR is riddled with conclusory statements regarding environmental impacts, unsupported by facts and necessary analysis. Furthermore, the DRSEIR attempts to defer analysis of environmental impacts to a later date. As discussed below, such deferral is not an option. CEQA mandates that environmental impacts be

identified and analyzed in the EIR, not at a later date. See Sundstom v County of Mendocino, 202 Cal.App.3d 296 (1988) (holding that a negative declaration was invalid when county approved a project while postponing the resolution of uncertainties regarding environmental impacts to a later date).

Watt 25 – Response

Please see Section 3.3.12 (Watt 4 – Response) of this Response to Comments document. It is unclear as to what the commenter is referring to regarding "... defer analysis..." The Draft Revised Subsequent EIR fully analyzed impacts to each environmental resource area, please see Section 4.0.

Watt 26 – Comment

1. *The DRSEIR Fails to Analyze Impacts to Biological Resources Adequately.*

The DRSEIR's biological impacts analysis is inadequate in numerous respects, including, but not limited to:

Underestimation of project-related impacts to biological resources: The DRSEIR fails to adequately characterize the extent of project-related impacts to biological resources: First, the uses and management of the open spaces on the project-site are not sufficiently defined and "locked-in" to ensure that biological resources located in these areas will not be impacted. For example, if there are recreational uses in the open space areas, wildlife may not use these migration corridors. In addition, impacts could be associated with the public and private landscaping plans, which are not required to be prepared until after project approval and EIR certification. See SC 8-7 and SC 8-8. No criteria are specified in the DRSEIR for these plans. Moreover, because the full extent of grading and importation of fill/exportation of cut is not disclosed, there are likely to be additional impacts to biological resources on- and off-site that are not described in the DRSEIR. If recreation and other uses are to be prohibited in the open space areas, a revised DRSEIR must state how these restrictions will be enforced and cite examples where similar restrictions have been effective (e.g. more effective than "fencing," which is a proposed mitigation measure).

Watt 26 – Response

The proposed project's potential impacts to biological resources have been thoroughly analyzed and detailed mitigation has been developed. The project was re-designed at the request of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) to provide an east/west wildlife corridor to connect the project area to the Cleveland National Forest. Please see Section 4.8 and Appendix I of the Draft Revised Subsequent EIR and Appendix B of this Final Revised Subsequent EIR.

SC 8-7 and SC 8-7 both include detailed criteria regarding the preparation of public and private area landscape plans (please see page 4.8-30 of the Draft Revised Subsequent EIR). These Standard County Conditions require review and approval of all landscape plans by the County. Said plans must take into account the County standard plans for landscaped areas, adopted plant palette guides,

applicable scenic requirements, and water conservation measures. The level of detail required regarding landscape plans for the proposed project is consistent with the standard manner in which development projects are processed.

Please see Section 3.3.11 (Watt 16 – Response) of this Response to Comments document regarding grading.

Watt 27 – Comment

Deferral of analysis and mitigation: The DRSEIR improperly defers surveys for trees that host nesting raptors. Trees on the project site that provide nesting should be identified prior to certification of the EIR and protection provided as required under the federal MTBA. DRSEIR at page 4.8-22.

Watt 27 – Response

PDF 8-1 included in Section 4.8.4 of the Draft Revised Subsequent EIR does not defer surveys for trees that host raptors but instead requires an *additional* survey prior to the start of construction. Please see Section 4.8.1 and Appendix I of the Draft Revised Subsequent EIR for details of all of the biological surveys, including raptor surveys, completed for the proposed project.

Watt 28 – Comment

Insufficient evidence to support a conclusion that indirect effects would be insignificant. The DRSEIR's conclusion that indirect effects are insignificant is not supported by evidence. The proposed site plan results in a pattern of development (roads and houses) that fragments the property, extends to adjacent undeveloped lands and has an extensive edge. Moreover, the project would introduce lighting, noise and residents in a wildlife area - the effects of which are not adequately disclosed or analyzed in the DRSEIR. Mitigation measures recommend "fencing" adjacent to undisturbed areas of open space. DRSEIR at page 4.8-32. Not only could such fencing result in additional impacts (e.g. impeding wildlife migration), but there is no evidence such fencing will effectively protect open space areas from trespass by children, pets and the like. Additional evidence must be provided in a revised environmental document to support the conclusion that these indirect effects are not significant, particularly where there are a number of alternative projects that would significant [sic] avoid these impacts (e.g. Alternatives 4 and 7).

Watt 28 – Response

The project site is currently being used for horse and cattle grazing. Portions of the site have been previously grazed, cleared or disturbed. As stated in Section 4.8.2 of the Draft Revised Subsequent EIR, indirect impacts would not be significant due to the inclusion of a primary wildlife corridor and the proposed open space. This would minimize indirect impacts such as fragmentation, edge effects, lighting and noise.

Fencing described in M 8-2 of the Draft Revised Subsequent EIR was included at the request of USFWS. Please see Section 3.2.1 (USFWS/CDFG 2 – Response) of this Response to Comments document regarding wildlife corridors.

Watt 29 – Comment

Insufficient evidence is provided that mitigation measures will be effective. The DRSEIR does not provide sufficient evidence that proposed mitigation measures will actually mitigate impacts to less than significant levels. First, the DRSEIR implies that the biological resource mitigation plan has the blessing of the resource agencies:

"The biological resource mitigation plan has been reviewed by the effectual regulatory agencies and a biological opinion has been issued by USFWS. The biological resource mitigation plan mitigates project related impacts to wetland/riparian habitats, sensitive upland habitats and wildlife movement..." DRSEIR at page 4.8-23

Yet, there are no letters in the DRSEIR which document that these agencies have agreed that the biological resource mitigation plan will adequately mitigate project related impacts to biological resources. Furthermore, the referenced biological opinion purports only to "transmit our biological opinion based on our review of the proposed Saddleback Meadows Residential Development Project located in Orange County, California and its effects on the federally endangered Riverside fairy shrimp (Streptocephalus woottoni "fairy shrimp") and its designated critical habitat, and designated critical habitat for the threatened coastal California gnatcatcher (Polioptila californica californica, "gnatcatcher"), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.)." (Biological Opinion, dated October 26, 2001, at page 1.) I.e., this biological opinion is confined to assessing the project's effects on two species, only, and their designated critical habitats, under the federal Endangered Species Act, not CEQA. If these agencies have not signed off on the adequacy of the biological resource plan under CEQA, the DRSEIR should not leave the impression that they have done so. A revised DRSEIR must include information from the agencies concerning the adequacy of the biological resources plan so that the public and the decision-makers are fully informed about the likely changes these agencies will require in order to issue permits for the project (such changes may include additional mitigation or reconfiguration of the site plan).

Watt 29 – Response

Please see Section 3.2.1 (USFWS/CDFG Responses) of this Response to Comments document.

Watt 30 – Comment

The letters previously submitted by the wildlife agencies on prior project environmental documents raise significant concerns about the project's impacts on biological resources. Specifically, the October 29th letter states:

"Our biologists' professional opinion is that neither of the two previously submitted preferred projects (318 DU and 705 DU) nor the 299 DU Contingency Plan retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows. As currently proposed, the

299 DU Contingency Plan development "footprint" would severely constrain wildlife movement from O'Neill Regional Park (i.e. southern NCCP planning area) to the Central NCCP reserve and Cleveland National Forest and is not acceptable." October 29, 1998 letter at page 2. See Letters from the wildlife agencies dated October 29, 1998 and August 8, 1997, hereby attached as attachments 2 and 3 and incorporated herein by reference.

Watt 30 – Response

Please see Section 3.3.2 (Connor 20 – Response) of this Response to Comments document.

Watt 31 – Comment

Second, the DRSEIR assumes that Project Features and mitigation measures will reduce project-related impacts to biological resources to less than significant levels. Such measures include highly experimental elements such as creation of new ponds and relocation of species (fairy shrimp) the possible failure of which is explicitly anticipated by the cited biological opinion. No documentation is provided about projects that have successfully used these techniques.

Watt 31 – Response

Please see Section 3.3.2 (Connor 22 – Response) of this Response to Comments document.

Watt 32 – Comment

Third, the DRSEIR makes clear that drainage and water quality mitigation "features" are not yet completely designed. Questions remain whether the proposed system will maintain water quality, particularly with respect to bacterial indicators and toxic constituents. DRSEIR at page 4.4-1. Yet, the DRSEIR contains no mention of, or analysis concerning the potentially significant project-related and cumulative impacts of bacterial and toxic constituents on species in the creek system downstream of the project site. This analysis must be included in a revised environmental document. Nor does the DRSEIR explain how the project can comply with new water quality regulations recently ordered against the County of Orange by the Regional Water Quality Control Board (CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION ORDER NO. R9-2002-0001 NPDES NO. CAS0108740 WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF URBAN RUNOFF FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) DRAINING THE WATERSHEDS OF THE COUNTY OF ORANGE, THE INCORPORATED CITIES OF ORANGE COUNTY, AND THE ORANGE COUNTY FLOOD CONTROL DISTRICT WITHIN THE SAN DIEGO REGION), February 13.2001.) These stricter regulations supplant the 1994 NPDES permit referenced in the DSEIR and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek, adjacent to the project, resulting in numerous beach closures at Aliso Beach.

Watt 32 – Response

Please see Section 3.3.8 (Saddleback Canyons Conservancy 4 – Response) of this Response to Comments document. The proposed project will meet the permit requirements of the RWQCB.

Watt 33 – Comment

Fourth, the DRSEIR clearly relies on the long-term maintenance of wildlife corridors on adjacent privately owned properties, some of which are planned for future development. Yet, there is no description of how these corridors would be protected from development, and no analysis of the cumulative impact of future developments that could interfere with essential corridors.

Watt 33 – Response

Figure 4.8.4 of the Draft Revised Subsequent EIR depicts the relationship between the proposed on-site wildlife movement corridor and the regional wildlife movement corridors. The project site currently has a recorded map for 705 manufactured housing/mobile home units with no provision for a wildlife corridor. Future developments would be subject to the same requirements as the proposed project with regard to potential impacts to wildlife corridors and would be required to mitigate any impacts to less than significant.

Watt 34 – Comment

Finally, the DRSEIR fails to state how the project will comply with the NCCP/Coastal Sage Scrub agreement. This information must be included in a revised DRSEIR.

Watt 34 – Response

Although the proposed project is consistent with the NCCP, the plan for this portion of the County has not been completed. The project applicant has worked with wildlife agencies to minimize impacts to coastal sage scrub and provide for significant on-site preservation and off-site acquisition. Combined, these measures fully mitigate impacts to coast sage scrub.

Watt 35 – Comment

Inadequate cumulative analysis. Similar to other cumulative discussions in the DRSEIR the biological resource section cumulative "analysis" is nonexistent. The brief discussion concludes that "... all identified related projects in the region would have to mitigate biological impacts to less than significant." DRSEIR at page 4.8-22. This statement is not sufficient to support finding that there would be no cumulatively significant impacts to biological resources in the region. A revised discussion must identify cumulative projects and their collective impacts (by species, habitat and acreage), disclose the mitigation measures that would be required, provide evidence that the mitigation would be effective and document the conclusion that there would be no significant cumulative impacts.

Watt 35 – Response

Cumulative biological impacts were discussed in Section 4.8.3 of the Draft Revised Subsequent EIR. In addition, as shown on Table 4.8.3, the project would mitigate for more habitat (on-site/off-site) than it would actually impact (53.07 acres impacted/80.48 acres as mitigation).

Watt 36 – Comment

Failure to identify potential inconsistencies with applicable plans and policies. The preliminary reserve design for the Southern Subregion NCCP, Figure 4.8-2, appears to include the site in the reserve. Not only does the DRSEIR fail to discuss the fact that the Southern Subregion NCCP is underway, with updated reserve designs due in July 2002, the DRSEIR fails to disclose that the site is identified as part of the reserve on Figure 4.8-2. A revised environmental document must discuss how the NCCP process applies to the proposed project. Specifically, since the Board of Supervisors agreed to participate in the NCCP process in 1993, can the Board properly take action on this project in advance of the NCCP process reaching major milestones concerning proposed reserve design or even more advanced outcomes? What is the relevance of the site being shown as part of the "reserve" in Figure 4.8-2?

Watt 36 – Response

Please see Section 3.3.12 (Watt 34 – Response) of this Response to Comments document. The entire project is not included as preserve in Figure 4.3.2 of the Draft Revised Subsequent EIR. As noted, the proposed project has been designed to ensure connectivity through the project and meet the objectives of the NCCP for this portion of the County.

Watt 37 – Comment

2. *The DRSEIR Fails to Disclose and Analyze Impacts to Geology and Soils Adequately.*

The DRSEIR is deficient in its analysis of geologic impacts. As noted above, the project description and the DRSEIR as a whole provide little information regarding the massive grading and fill required to actualize this proposed project. The extent of cut and fill also appears to underestimate what could be required to accommodate the project as proposed. It is not clear from the DRSEIR whether importation and exportation of fill will be necessary. If necessary, no analysis is provided of the additional impacts of such activities, including, but not limited to: traffic associated with hauling materials, direct impacts to borrow and spoils sites, air quality implications and the like. A revised analysis must include evidence that supports the DRSEIR's assertion that grading will balance on site, or in the alternatives, the true extent of project-related impacts must be disclosed. Also, clearer graphics showing the extent and location of cuts and fills must be included in a revised document so that the public and decision-makers can fully appreciate the impacts of this project on the topography.

Watt 37 – Response

Please see Section 3.3.12 (Watt 16 – Response) of this Response to Comments document.

Watt 38 – Comment

3. *The DRSEIR's Analysis of Air Quality Impacts Is Incomplete.*

The Air Quality section states:

"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end."

The discussion fails to discuss the fact that a leading contributor to emissions, and the least likely land use configuration to successfully result in TSM program trip reductions is suburban sprawl - the land use configuration proposed by the project. No discussion is included in the DRSEIR about meaningful ways to address air quality in terms of major policy changes to how the County uses and develops land (e.g. the County could refocus its efforts to accommodate new housing in "infill" areas, and the like). No TSM mitigation measure is included for the project, because the type of land use proposed by the project is not conducive to TSM programs. In light of the fact the County is located within a non-attainment basin, the County should evaluate bolder land use policy measures to address air quality emissions. Such measures (alternatives such as locating housing in infill areas) should be discussed in the DRSEIR.

The DRSEIR appears to understate the impacts on air quality that will be generated both by project construction and by the built project itself. As noted above, the DRSEIR fails to adequately describe construction activities and phasing, and fails to analyze potential air quality impacts associated with hauling cut and fill on-and off-site. Therefore, the DRSEIR fails to analyze and disclose the potentially significant impacts associated with these activities. As stated above, additional information concerning the suitability of on-site soils as fill for the project must be provided if the DRSEIR is going to assume that cut and fill will balance on-site. Alternatively, a revised environmental document must analyze the impacts associated with exportation of unsuitable cut material and importation of suitable fill material. This analysis must include disclosure of both 1) where the materials will be disposed of and 2) locations for imported fill.

The other major deficiency in the analysis is the lack of any meaningful analysis of cumulative air quality impacts. A revised environmental document must include such an analysis (e.g. other construction projects in the area generating air pollutants; etc.).

Watt 38 – Response

Please see Section 3.3.2 (Connor 10 – Response) of this Response to Comments document regarding construction activities. As stated above, the reference to export/import of material is

incorrect. The air quality analysis correctly analyzed impacts with regard to construction activities and phasing.

As stated in Section 4.6.3, a related project with a similar timeframe as the proposed project would increase the short-term emissions for concurrent activities during any day of the construction period. Any additional construction activity during this time and in the vicinity of the project would add additional air pollutant emissions. However, these other projects would be required to include mitigation to reduce these emissions to less than significant levels.

Watt 39 – Comment

4. *The DRSEIR Fails to Analyze Hazards Adequately.*

The DRSEIR defers analysis of potential on-site contamination. Specifically, the potential for on-site contamination is deferred until prior to recordation of the subdivision map. See SC 2-13 at page 4.2-l 6 of the DRSEIR. At a minimum the results of a phase I site assessment should be included in a revised environmental document.

Watt 39 – Response

As stated in Section 2.1.1 of the Draft Revised Subsequent EIR, the project site is largely undeveloped and portions of the site have been previously grazed, cleared or disturbed. The site is currently being used for horse and cattle grazing and there is no historical use that would indicate the potential for on-site contamination. A Phase I study was completed in 1978 and included as Appendix O of the Draft EIR No. 561, which was incorporated by reference in Section 1.1 of the Draft Revised Subsequent EIR.

Watt 40 – Comment

5. *The DRSEIR Fails to Analyze Land Use and Planning Impacts Adequately.*

The DRSEIR fails to describe all relevant policies and plans, and fails to evaluate the consistency of the project with each policy. Each relevant County and other agency policy, general plan policy, regulation, guideline or standard should be summarized in a table, noting whether the project is consistent with the applicable provision and what must be done to reconcile the two [sic] *where they are inconsistent. Instead, the DRSEIR fails to identify key County policies and fails to discuss the applicable policies and regulations of other agencies (e.g., policies of the U.S. Fish and Wildlife Service and the Regional Water Quality Control Board among others). A revised environmental document must include this analysis.*

Watt 40 – Response

Please see Section 3.3.12 (Watt 22 – Response) of this Response to Comments document. All applicable plans and policies related to the proposed project were discussed in the EIR. In addition to the land use policies included in Section 4.1; Section 4.4 included a discussion of regulatory policies of the State Water Resources Control Board and the Regional Water Quality Control Board; Section 4.5 included a discussion of Congestion Management Plans and traffic related policies of the County of Orange General Plan and the F/TSP; Section 4.6 included a discussion of the federal and state clean air standards, the Air Quality Management Plan; and Section 4.8 included a discussion of the Endangered Species Act, California Fish and Game Code, the Clean Water Act and the NCCP.

Watt 41 – Comment

6. *The DRSEIR Fails to Analyze Impacts to Traffic Adequately.*

The DRSEIR fails to disclose that the project's proposed land use pattern would not support sound transportation management practices because of its location, low density and contribution to the suburban sprawl pattern in Orange County. As a result, the project will perpetuate the exclusive use of automobiles for transportation, the very practice that has contributed to the traffic and air quality problems that are so acute in the County.

The Air Quality section states:

> *"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end."*

No TSM mitigation measure is included for the project because the type of land use proposed by the project is not conducive to TSM programs. The DRSEIR should disclose this fact and acknowledge the poor pattern of land uses represented by this and other projects in the area, will continue to frustrate the County's progress toward acceptable traffic flows and clean air quality. A revised environmental document should discuss alternatives to the general plan land uses in the area - and explore the potential for transferring these planned units to infill sites.

Finally, the DRSEIR fails to adequately analyze cumulative traffic impacts including how projects of this type are likely to frustrate the County's attempts at a meaningful TSM program. The geographic study area for the analysis of cumulative projects is artificially small in size, and fails to provide a sufficiently large study area for many impacts, including traffic, air quality and biological resources. See Table 3.1, Related projects. Moreover, there is no information provided on construction period traffic for even these related projects; information which must be provided and included in a revised cumulative analysis for traffic and air quality. The study area for the revised analysis should extend at least to the likely areas where new residents in the proposed project and related projects are employed. No such information is included in the DRSEIR. Thus, it is unclear how the study area was selected. Information concerning

where new residents in these areas work and therefore commute, must be developed and used to form the basis for the new analysis of traffic and transit impacts.

Watt 41 - Response

Traffic issues related to land use and development of this site have been analyzed in the context of the Orange County Congestion Management Program (CMP) and the County of Orange Growth Management Program (GMP). Although each of these programs involves different specific objectives and requirements, the underlying goal from a transportation perspective is to eliminate or mitigate the impact of changes in land use on the transportation system. The CMP recommends that the study area for CMP highway system links be defined by a measure of significant traffic impact represented by three percent of roadway capacity. The GMP utilizes a more stringent test (than the CMP) of the effect of the project traffic on existing intersection operations to determine whether or not an intersection should be included in a project traffic impact analysis study effort. Intersections where the existing plus project intersection capacity utilization (ICU) increases by one percent (or more) compared to the existing ICU are included within the traffic impact analysis study area. The analysis area addresses project impacts based on direction from the County of Orange and in accordance with the GMP one percent test.

The basic approach taken in assessing the effects of the proposed project on traffic circulation in the study area has assumed that the worst case conditions would occur in association with the build-out of the General Plan land uses (as reflected in the officially adopted countywide population and employment growth forecasts) in the vicinity of the project site. A comprehensive travel demand forecasting analysis has, therefore, been undertaken for the express purpose of developing long-range traffic projections for a variety of conditions. Future conditions both with and without the proposed project have been evaluated.

The CMP also requires that the basic inputs to any model being used for traffic analysis purposes must be compared to the official regional projections of growth to verify model consistency with the official regional projections. The OCP-2000 growth forecasts are the currently adopted official projections for the County of Orange. These data has been incorporated into the OCTAM 3.1 tool used for this analysis.

The approach taken to this analysis was to use a computerized forecasting tool or traffic model to represent the interaction of the proposed project with the surrounding study area. The computerized traffic modeling forecasts used to evaluate future build-out conditions for this traffic study were produced using a derivative of the Orange County Transportation Analysis Model (OCTAM). The OCTAM was developed by the Orange County Transportation Authority (OCTA). Inputs to OCTAM include the MPAH roadway structure and most current OCP-2000 socioeconomic data. Documentation of the traffic model is contained in the report OCTAM 3.1 Orange County

Transportation Analysis Model Summary Documentation and Validation Report (OCTA, June, 2001). The commenter is also referred to that report for information concerning development of the traffic model and validation of the model. The area encompassed by the OCTAM contains the five Southern California Counties (Ventura, Los Angeles, Riverside, San Bernardino, and Orange) with most focus on Orange County.

Both the CMP and GMP are based on the evaluation of peak hour intersection operations using the ICU methodology. LOS "D" is the limit of acceptable peak hour intersection operations, with LOS "E" being defined as the beginning of deficient operations. Any peak hour intersection operations of LOS "E" or worse are, therefore, considered deficient in the project traffic analysis.

A traffic impact is considered significant if the project both: (1) contributes measurable traffic to; and (2) substantially and adversely changes the level of service to any intersection projected to experience deficient operations under foreseeable worst-case conditions.

Project Design Features, Standard County Conditions, and mitigation measures have been identified to reduce the project impact to a level of insignificance (see Section 4.5. of the Draft Revised Subsequent EIR). The feasibility of proposed mitigation measures has been evaluated on the basis of field reconnaissance and/or review of aerial photographs of the study area. The CMP and GMP then require that a project contribute a pro-rata contribution for improvements at locations requiring improvements.

Watt 42 – Comment

7. *The DRSEIR Fails to Analyze Adequately Impacts to Hydrology, Drainage and Water Quality.*

Pollution carried by storm water and urban runoff is the largest source of contamination to surface water both in California and nationwide. Construction sites, in particular, have been identified as significant dischargers of polluted storm water, involving high concentrations of silt and turbidity as well as oil and grease, trash, sewage, and other chemicals used in construction activities and equipment maintenance. Despite this well-known and well-documented problem, the DRSEIR fails to adequately describe construction activities and on-site and off-site drainage "improvements," both of which could impact the water quality of the area. See concerns raised above about the inadequate and incomplete description of the project drainage and water quality features.

Watt 42 – Response

Hydrology and drainage (Section 4.2 and Appendix D), and water quality (Section 4.4 and Appendix F) were discussed in detail in the Draft Revised Subsequent EIR.

Watt 43 – Comment

The DRSEIR concludes that there will be no significant drainage impacts after mitigation because of a highly engineered system of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to "control project drainage." DRSEIR at page 4.3-7. A "riverine water quality titration system" is proposed next to the road to "cleanse low flow urban runoff." DRSEIR at page 4.3-7. There is no evidence in the DRSEIR that confirms this combination of features will mitigate for the impacts associated with the introduction of impervious surfaces, the complete alteration of the on-site drainage system and redirection of the natural drainages. No examples of successful projects that are similar in features are provided in the DRSEIR.

Moreover, there is no discussion of what kind of long-term maintenance and monitoring will be needed to maintain this highly engineered system The DRSEIR merely states that the "structural and non-structural BMPs would be owned, operated and maintained by the home owner's association (HOA) or community services district." DRSEIR at page 4.4-12. Specific information about the drainage and water quality features and how they will be maintained and monitored over the long-term (including information about the cost of maintenance and monitoring) is essential to determine: first, whether the extent of drainage alterations is an acceptable project feature; and second, whether the proposed system of drainage features will actually be a viable system over the long-term, and effectively mitigate significant impacts to the natural drainage system Specific information about the Riverine system, and the fact that the northerly development area does not have sufficient room to continue this system, suggests that the proposed project features may fall short of ensuring water quality is not adversely impacted by the project. DRSEIR at page 4.4- 11.

The revised document should include examples of projects that incorporated similar features and have been demonstrated to result in effectively addressing drainage and water quality impacts. Absent this information, the conclusion reached in the DRSEIR that "[u]pon implementation of the Project Design Features and compliance with the Standard County Conditions, water quality impacts would be mitigated to a less than significant level," is not supported by evidence.

Watt 43 – Response

The master drainage concept for the proposed project has been prepared in consultation with the County of Orange and utilizes standards and criteria of the Orange County Flood Control District (page 4.3-7 of the Draft Revised Subsequent EIR). The proposed Drainage Master Plan provides a series of water quality enhancement features designed to reduce stormwater quality impacts to Aliso Creek

Watt 44 – Comment

Finally, the significance of project-related impacts requires that the analysis of cumulative impacts to drainage and water quality be extensive. The DRSEIR fails to complete any analysis of these admittedly significant cumulative impacts, yet concludes that as a result of "required mitigation," cumulative impacts would not be significant. DRSEIR at pages 4.3-7 and 4.4-13.

Watt 44 – Response

The Draft Revised Subsequent EIR includes a comprehensive evaluation of project impacts on hydrology and water quality and a series of Project Design Features and mitigation to reduce impacts to less than significant (see Sections 4.3 and 4.4 and Appendices D and E).

Watt 45 – Comment

C. The DRSEIR Fails to Analyze Cumulative Impacts Adequately.

The DRSEIR utterly fails to analyze cumulative impacts in the manner or to the degree required by CEQA. The CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." CEQA Guidelines §§ 15355(a). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." Id.

A legally adequate cumulative impacts analysis views a particular project over time and must consider the impact of the project combined with other projects causing related impacts, including past, present, and probable future projects. CEQA Guidelines 15130(b)(l). Projects currently under environmental review unequivocally qualify as reasonably probable future projects to be considered in a cumulative impacts analysis. See San Franciscans for Reasonable Growth v. City and County of San Francisco, 151 Cal.App.3d 61, 74 & n. 13 (1984). In addition, projects anticipated beyond the near future should be analyzed for their cumulative effect if they are reasonably foreseeable. See Bozung v. Local Agency Formation Comm'n, 13 Cal.3d 263.284(1975). Alternatively, an EIR may utilize:

A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact.

CEQA Guidelines § 15130(b)(l)(B). Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. Id.

The discussion of cumulative impacts must include a summary of the expected environmental effects to be produced by those projects, a reasonable analysis of the cumulative impacts, and full consideration of all feasible mitigation measures that could reduce or avoid any significant cumulative effects of a proposed project. See CEQA Guidelines §§ 15126.4(a)(1) and 15130(b)(3).

The cumulative impacts concept recognizes that "[t]he full environmental impact of a proposed... action cannot be gauged in a vacuum." Whitman v. Board of Supervisors, 88 Cal.App.3d 397,408 (1097). The requirement of a cumulative impacts analysis of a project's regional impacts is considered a "vital provision" of CEQA. Bozung, 13 Cal.3d at 283. Moreover, an EIR must examine not only the anticipated cumulative impacts, but also reasonable

options for mitigating or avoiding the project's contribution to significant cumulative impacts. CEQA Guidelines § 15130(b)(3). The DRSEIR does not come close to meeting these requirements for the reasons described below.

Watt 45 – Response

Please see Section 3.3.12 (Watt 3 – Response) of this Response to Comments document.

Watt 46 – Comment

1. *The DRSEIR's Cumulative Impacts Analysis' Geographic Study Area Is Too Small and Thus Inadequate Under CEQA.*

The DRSEIR considers a geographic study area far to small to reveal the true nature of the proposed project's cumulative impacts and, thus, is deficient under CEQA. The analysis of cumulative impacts appears to be based on a short list of "related" projects in the immediate area of the project. See Table 3.1 and Figure 3.2.

Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Mission Viejo project and other projects in the Southern Subregion NCCP area. In September of 2001, the Mission Viejo Company filed an application for development of its land. As such, the cumulative analyses of land use and planning, geology and soils, hydrology and water quality, air quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider this potentially massive foreseeable project.

Furthermore, the document does not provide even minimal information regarding other projects within the Southern Orange County NCCP Study area. Analysis of these additional projects is particularly important given the project's location in the Southern Orange County Natural Community Conservation Program Study area.

Although the DRSEIR concludes that the project's cumulative impacts, with the exception of air quality, will not be significant, such a conclusion cannot be supported in light of the inadequacy of the geographic study area. The DRSEIR's failure to consider the 14,000 home Rancho Mission Viejo Project alone renders its scope inadequate. The DRSEIR must also acknowledge and analyze the project's significant cumulative impact on the existing severely "impacted" water quality in adjacent Aliso Creek. This failure to consider regional or area wide cumulative impacts is fatal under CEQA and, as such, the document must be revised.

Watt 46 – Response

The geographic study area used for the cumulative analysis in the Draft Revised Subsequent EIR was appropriate for this size and scale of project. Please see Section 3.2.6 of the Response to Comments document, which includes a letter from the Southern California Association of Governments (SCAG). As stated in SCAG's letter, the proposed project is not of regional significance. The project's cumulative impacts have been adequately addressed.

Watt 47 – Comment

2. *The DRSEIR Fails to Analyze any of the Cumulative Impacts Adequately.*

In addition to relying on a far too small geographic study area, the level of analysis in the DRSEIR's cumulative impacts analysis is far too cursory. An EIR must include objective measurements of a cumulative impact when such data are available or can be produced by further study and are necessary to ensure disclosure of the impact. See Kinas County, 221 Cal.App.3d at 729. Despite this mandate, the DRSEIR fails to analyze adequately a number of cumulative impacts, including, but not limited to, impacts to biological resources, water quality and drainage, and aesthetics, among others.

For example, with regard to cumulative water quality impacts, the DRSEIR states that "Ultimate development planned in the watershed in conjunction with the proposed project would potentially impact both surface and groundwater quality. Without controls, both short-term construction-related and long-term impacts due to pollutants in urban runoff could substantially impact water quality." DRSEIR at page 4.4-13. Despite this finding and despite the project's location in the watershed streams, the DRSEIR concludes that: "... as with the proposed project, related projects would be required to mitigate impacts to water quality to less than significant levels." Id. The DRSEIR fails to adequately summarize any information that would support the conclusion, and offers no supporting analysis itself. A revised environmental document must include analysis of cumulative impacts in order to support the conclusions throughout the DRSEIR that cumulative impacts will be reduced to less than significant levels. Statements such as: "cumulative projects are required to mitigate their impacts, therefore they will," are insufficient to support findings that all cumulative impacts, except air quality, will be less than significant.

Moreover, none of the cumulative impact discussions provide quantified information concerning cumulative project impacts, including, but not limited to: acres of habitat types directly/indirectly impacted by development or total construction trips. This information must be provided in revised cumulative analyses in a revised environmental document. Without such information, there is insufficient evidence to support the DRSEIR's conclusion that cumulative impacts to biological resources, traffic and water quality, among other impacts, will be insignificant. A revised document must also specify mitigation measures for cumulative impacts. Currently, the DRSEIR includes conclusory statements in each section concerning potentially significant cumulative impacts. In each case, "required mitigation" is assumed to reduce significant cumulative impacts to less than significant levels. For example, the biology section contains the following statement concerning cumulative impacts:

"However, as with the proposed project, all identified related projects within the region would have to mitigate biological project impacts to less than significant." DRSEIR at page 4.8-22.

This conclusory statement provides no evidence that cumulative impacts to biological impacts will or can in fact be mitigated, nor is there any legal requirement that "all proposed projects" mitigate biological project impacts to less than significant. CEQA requires only that such impacts be mitigated to the extent feasible, which may not be to a less

than significant level. See also DRSEIR at pages 4.1-12 (cumulative loss of open space would be adverse, but not significant); 4.4-13 (ultimate development in the watershed would potentially impact both surface and groundwater quality, but such impacts would be required to be mitigated to less than significant levels); 4.12-4, and other cumulative sections throughout the DRSEIR.

Watt 47 – Response

Cumulative impacts of the proposed and related projects were evaluated for each environmental factor in Section 4.0 of the Draft Revised Subsequent EIR.

Watt 48 – Comment

Finally, as described above, the DRSEIR fails to explore the full range of mitigation measures that could potentially reduce cumulative impacts below a level of significance. An EIR must examine reasonable options for mitigating or avoiding the project's contribution to cumulative impacts. See CEQA Guidelines §15130(b)(3).

Watt 48 – Response

Project Design Features and mitigation measures were included in the Draft Revised Subsequent EIR that would serve to incrementally reduce cumulative impacts. These include, but are not limited to, remedial grading activities that would stabilize slopes currently subject to landslides above El Toro Road (PDF 2-1); reduce sediment and pollutant transport to Aliso and Oso Creeks (PDF 3-1, PDF 4-4, PDF 4-6, and PDF 4-12); transportation improvements (M 5-3, M 5-4, and M 5-5); enhancement of biological resources (PDF 8-1); and additional recreational resources (PDF 11-1, PDF 11-2, PDF 11-3, PDF 11-4, PDF 11-5).

Watt 49 – Comment

D. The DRSEIR's Discussion of Growth-Inducing Impacts is Inadequate Under CEQA.

The DRSEIR must consider the growth-inducing potential of the project in this undeveloped area. CEQA requires that an EIR include a "detailed statement" setting forth the growth-inducing impacts of the proposed project .See Public Resources Code § 21100(b)(5); City of Antioch v City Council of Pittsburg, 187 Cal.App.3d 1325, 1337 (1986). The statement must "[d]iscuss the ways in which the proposed project could foster economic growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." CEQA Guidelines § 15126.2(d). It must also discuss how a project may "encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively" or "remove obstacles to population growth." Id.

The DRSEIR's brief growth-inducing section concludes that the project is consistent with growth management policies of SCAG's RCP and would not extend or serve beyond the project boundaries. There is no analysis of whether the extension of roads and services on-site, and the development of a water tank and access road off-site, would facilitate

growth on adjacent properties. Nor does the discussion reach any conclusion as to whether the project is or is not growth inducing as required by CEQA. The DRSEIR fails to address the potential for the off-site water tank to support development on adjacent, currently undeveloped parcels. In addition, wastewater pipes would be extended on site. The DRSEIR fails to describe the potential for these pipes to support development beyond the project site. A revised environmental document must include an adequate analysis of the project's potential for growth inducement.

Finally, the DRSEIR fails to consider the precedent set by approval of this project. Specifically, the project interprets the general plan and other County plan policies to allow this development. No information is provided on the status of "permitted" development under the applicable plans for the area including the site and beyond. Figure 4.1.3, Foothill/Trabuco Specific Plan Land Use Designations, indicates development potential on a number of presently undeveloped properties that are contiguous to the project site. No information is provided in the DRSEIR concerning the status of development within the Specific Plan (e.g., the current statistical summary). It is clear that the development of the project site could have a growth inducing effect on these adjacent properties. Overall, the DRSEIR provides little evidence that the improvements to infrastructure, it will involve and the precedent it will set will not induce growth to adjacent undeveloped properties.

Watt 49 – Response

The proposed project would not effect growth inducement related to adjacent property, as the project does not extend access or utility infrastructure to accommodate additional growth. Furthermore, the project site has a recorded Final Subdivision Map for 705 manufactured/mobile home units, which was record in 1988.

Please see Section 3.2.6 of the Response to Comments document, which includes a letter from (SCAG). As stated in SCAG's letter, the proposed project is not of regional significance.

Watt 50 – Comment

In addition, the DRSEIR must analyze the potentially eviscerating effect of all other undeveloped sites within the Foothill Trabuco Specific Plan area seeking to follow the precedent of spot-amending the Specific Plan to explicitly exempt proposed development from all of the regulations and guidelines of the Specific Plan.

A revised growth inducing analysis must be prepared and include the status of development permitted on adjacent properties under all applicable plan and policies. This analysis should inform a revised analysis of cumulative impacts, including, but not limited to the long-term sustainability of an adequate wildlife corridor system.

Watt 50 – Response

Please see Section 3.3.12 (Watt 49 – Response) of this Response to Comments document. As stated previously, an amendment to the F/TSP is not proposed or required.

Watt 51 – Comment

E. The DRSEIR Improperly Attempts to Defer Mitigation to a Later Date, Fails to Identify Feasible Mitigation Measures, and Relies on Inadequate Mitigation Measures.

CEQA requires that mitigation measures be identified and analyzed. "The purpose of an environmental impact report is... to list ways in which the significant effects of such a project might be minimized..." Pub. Res. Code § 21061. The Supreme Court has described the mitigation and alternative sections of the EIR as the "core" of the document. Citizens of Goleta Valley v Board of Supervisors, 52 Cal. 3d 553 (1990). As explained below, the DRSEIR's identification and analysis of mitigation measures, like its analysis throughout, is thoroughly inadequate. An EIR is inadequate if it fails to suggest mitigation measures, or if its suggested mitigation measures are so undefined that it is impossible to evaluate their effectiveness. See San Franciscans for Reasonable Growth v City and County of San Francisco, 15 1 Cal.App.3d 61,79 (1984). Moreover, an EIR may not use the inadequacy of its impacts review to avoid mitigation: "The agency should not be allowed to hide behind its own failure to collect data." Sundstrom v County of Mendocino, 202 Cal.App.3d 296,361 (1988). Nor may the agency use vague mitigation measures to avoid disclosing impacts. See Stanislaus Natural Heritage Project v County of Stanislaus, 48 Cal.App.4th 182, 195 (1996). Lastly, the formulation of mitigation measures may not properly be deferred until after Project approval; rather, "[m]itigation measures must be fully enforceable through permit conditions, agreements, or legally biding instruments." 14 CCR § 15126.4 (a). In the present case, the DRSEIR does not come close to satisfying these basic CEQA requirements regarding impact mitigation. Most egregiously, it attempts to defer discussion and development of suitable mitigation measures until after the certification of the environmental document and the conclusion of public review

Watt 51– Response

Please see Section 3.3.12 (Watt 7 – Response) of this Response to Comments document.

Watt 52 – Comment

1. The DRSEIR Improperly Defers Mitigation

The DRSEIR impermissibly concludes that all of the project's environmental impacts, with the exception of cumulative air quality, will be mitigated below a level of significance, while at the same time deferring necessary analysis of mitigation measures. DRSEIR at page 9-1. Under CEQA, an EIR may conclude that impacts are insignificant only if it provides an adequate analysis of the magnitude of the impacts and the degree to which they will be mitigated. See Sundstrom, 202 Cal.App.3d at 306-07. Thus, if an agency fails to investigate a potential impact, its finding of insignificance simply will not stand. Id. Further, CEQA generally requires that all mitigation measures be adopted simultaneously with, or prior to, project approval. An agency may defer preparation of a plan for mitigation only when the agency commits itself and/or the project proponent to satisfying specified performance standards that will ensure the avoidance of any significant effects. Id.

In the present case, the DRSEIR violates CEQA by deferring critical analyses of project impacts and necessary mitigation. The following is a non-exhaustive list of the project design features and mitigation measures that the DRSEIR improperly defers to a later date:

a. *PDF 3-1. A master drainage concept has been incorporated into project design to mitigate hydrology impacts to existing OCFCDs requirement sand standards... This Project Design Feature is being prepared in consultation with USACE.*
b. *M 4-l. The applicant shall have the option to research off-site water quality improvements to determine the technical and economic feasibility of implementing improvements that have regional water quality benefits and can also mitigate project-related impacts...*
c. *PDF 4-9. The storm drain system shall be designed to mimic natural drainage patterns as closely as possible. Emphasis added.*
d. *As part of final design, ponds and swales would be incorporated to the maximum extent feasible... DRSEIR at page 4.4-l 2.*

The DRSEIR's failure to adequately analyze the potentially significant effects of the project, and to design proper mitigation measures prior to project approval, renders the document inadequate and vulnerable to legal challenge. With the DRSEIR in its current form, decision-makers, the public and permitting agencies cannot evaluate the advisability of project approval. Too little is known, and too much is entirely unknown, about the project's environmental impacts.

Watt 52 – Response

Please see Section 3.3.12 (Watt 7 – Response) of this Response to Comment document.

Watt 53 – Comment

2. *The DRSEIR Fails to Identify Feasible Mitigation Measures.*

The DRSEIR's consideration of mitigation is inadequate because it fails to identify several feasible measures that could reduce or eliminate identified significant impacts. Mitigation is defined by CEQA as including:

a. *Avoiding the impact altogether by not taking a certain action or parts of an action.*
b. *Minimizing impacts by limiting the degree or magnitude of the action and its implementation.*
c. *Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.*
d. *Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.*
e. *Compensating for the impact by replacing or providing substitute resources or environments.*

CEQA Guidelines § 15370. The DRSEIR fails to consider measures, which could mitigate in the fashion described above significant impacts in several resource categories, including, but not limited to, biology, geologic hazards, hydrology and water quality, among others.

Watt 53 – Response

Project Design Features, Standard County Conditions, and mitigation measures have been included to mitigate impacts associated with the proposed project. Please see the following sections of the Draft Revised Subsequent EIR: Sections 4.8.4 and 4.8.6 regarding biology; Sections 4.2.4 and 4.2.6 regarding geologic hazards; and Section 4.3.4 regarding water quality.

Watt 54 – Comment

Furthermore, the DRSEIR improperly concludes that all impacts except cumulative air quality, are mitigated to below a level of significance based either on deferred mitigation measures, as discussed above, incomplete and "future" project features, or on mitigation measures of unproven efficacy. These determinations are not supported by substantial evidence. A partial list of impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to the following:

Project impacts to biological resources: *There is insufficient information in the DRSEIR to establish the efficacy of proposed mitigation measures including wildlife corridors and replacement ponds, and to support a finding that the impacts to biological resources will be less than significant with mitigation. Moreover, the applicant has not secured all of the necessary permits for the project and the agencies have not signed off on the adequacy of the proposed measures. Even with such agency approvals, significant impacts may remain. For these reasons, and because a feasible project alternative is proposed that would significantly reduce impacts to resources (Alt. 4), a revised environmental document should identify project related impacts to biological resources as significant and unavoidable.*

Cumulative impacts to biological resources. *In the USFWS biological opinion, the Service states under cumulative impacts:*

"At this time, we do not have adequate information to fully evaluate the potential impacts of the Saddlecreek/Saddlecrest Residential Development Project, Whispering Hills Development Project, and the Capistrano Valley Water District Pipeline Project on designated critical habitat for the gnatcatcher." Biological Opinion at page 23.

Another major project in the Southern NCCP area, the Mission Viejo Project, implicates some of the same species and habitats as the proposed project. Based on: 1) the significant amount of habitat loss involved with these development projects in combination with properties surrounding the project site "planned" for development; 2) the lack of information concerning the efficacy of proposed mitigation measures; and 3) the lack of information concerning mitigation measures for cumulative projects, a revised environmental document should identify cumulative impacts to biological resources as a cumulatively significant and unavoidable impact.

Watt 54 – Response

Please see Section 3.3.12 (Watt 35 – Response) of this Response to Comments document.

Watt 55 – Comment

Project-related aesthetic impacts: The DRSEIR finds that impacts to aesthetic and visual resources would be less than significant. DRSEIR at page 4.9-23. In support of this finding, the text of the document states:

> *"The proposed project would not have a substantial negative aesthetic effect. As depicted in the visual simulations, Saddleback Meadows would be low-density and rural in character and would not conflict with the surrounding environment... " DRSEIR at page 4.9-23.*

The project is not "rural in character." Figure 2.9, Conceptual Streetscape, clearly illustrates a project that is suburban in character. Lot sizes averaging 6,672 square feet clearly represent urban/suburban development densities. The protection of fragmented areas of the project site in open space does not "transform" this suburban development into "rural" character. Based on Appendix G of the CEQA Guidelines, the transformation of this site from undeveloped to suburban in the midst of wildlife habitat would constitute a substantial degradation of the existing visual character of the site and its surroundings. Therefore, this impact should be identified as significant and unavoidable as clearly demonstrated by the visual simulations (Compare figures 4.8.4 and 4.9.1, and see Figures 4.9.4, 4.9.5, and 4.9.9, among other exhibits in the DRSEIR, which demonstrate the significant change in character of the site and surrounding area with development as proposed.)

Cumulative Aesthetic Impacts. Figure 2.6 and 4.1.3 clearly indicate that other properties in the project area are designated for development. Cumulative development in the area should have been analyzed and mitigation measures proposed to ensure that the area's visual resources are not further degraded by planned development. Since no cumulative analysis was undertaken, and no cumulative mitigation measures are proposed, the potential for cumulatively significant and unavoidable aesthetic and visual impacts should be identified in a revised environmental document.

Watt 55 – Response

As stated in Section 4.9 of the Draft Revised Subsequent EIR, with implementation of Project Design Features and Standard County Conditions, impacts to visual resources would be less than significant.

Watt 56 – Comment

Other impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to: plan and policy inconsistencies; landform alteration; project-related and cumulative drainage and water quality impacts; cumulative traffic impacts; and cumulative impacts to public services and utilities. Growth inducement should also be identified as a significant adverse result of the project. The DRSEIR does not include sufficient evidence to identity these and other impacts as less than significant after mitigation

Watt 56 – Response

These environmental factors were evaluated in the Draft Revised Subsequent EIR and found to be less than significant with implementation of Project Design Features, Standard County Conditions and mitigation measures.

Please see Section 3.3.11 (Watt 49 – Response) of this Response to Comments document.

Watt 57 – Comment

F. The DRSEIR Does Not Adequately Discuss Alternatives to the Proposed Project.

Although the alternatives section of the DRSEIR describes a number of alternatives, this section continues to fall short of the standard set by CEQA. Under CEQA, an EIR must analyze a reasonable range of alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives while avoiding or substantially lessening the project's significant impacts. See Pub. Res. Code § 21100(b)(4); CEQA Guidelines § 15126.6(a); Citizens for Quality Growth v. City of Mount Shasta, 198 Cal.App.3d 433,443-45 (1988). As stated in Laurel Heights I, "Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process... [Courts will not] countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the consequences of action by their public officials." 47 Cal.3d 376,404 (1988). The DRSEIR's discussion of alternatives fails to meet these standards.

First, none of the development alternatives are "transparently" based on a comprehensive constraints map that identifies areas of high resource values and areas that should be avoided based on County plan policies. However, one of the alternatives, Alternative 4 – F/TSP EIR 531 Staff Alternative B, appears to avoid substantially more of the impacts than the proposed project and the other development alternatives. Alternative 7 - Acquisition Alternative, would protect key on-site resources because the site would be acquired rather than developed. Because of the resource values represented on the site, the site's sensitive location and its topography, all development alternatives, including Alternatives 4 and 6 would result in substantial grading of sensitive areas, impacts to water quality and biological resources and other significant impacts. A revised analysis should include an alternative based on a site constraints map, which represents current information about high value resources.

Watt 57 – Response

Please see Section 3.3.2 (Connor 2 – Response, Connor 29 – Response, and Connor 30 – Response) of this Response to Comments document.

Watt 58 – Comment

Second, the DRSEIR fails to describe an alternative location for the project housing. Therefore, no off-site alternative was evaluated. No information is contained in the DRSEIR concerning the potential for in-fill housing within the County, including on sites assembled by the applicant within incorporated and unincorporated areas to accommodate the units proposed by the project. Such sites should include "infill" sites with reuse, redevelopment and additional development potential (e.g. under performing shopping centers and other underutilized/vacant sites). The explanation in the DRSEIR concerning such sites is not supported by a methodology, analysis or facts. Moreover, the DRSEIR applied criteria to alternative sites that is unreasonably constrained. According to the DRSEIR:

"It is speculative, but unlikely that the project applicant could assemble other contiguous properties within the area to accommodate the number and type or [f] residences proposed for the project. Moreover, if such properties were identified and acquired by the applicant, the properties would likely have resources and environmental constraints similar to Saddleback Meadows. Development of the proposed project at an alternative location, therefore, is unlikely to be economically viable and would probably not reduce environmental impacts in comparison to the proposed project." DRSEIR at page 5-3.

Off-site alternatives to accommodate housing in the County should not be limited to contiguous properties. Recently, the Planning Center completed an analysis of where development could be accommodated in Orange County. See LA Times, June 17,2001 article. The study concluded that there are sufficient underutilized shopping center sites to accommodate significant development demand. Based on this information and a reasonable methodology for off-site locations, a revised analysis must describe specifically the methodology used to determine that alternative sites do not exist.

Watt 58– Response

Section 5.3 of the Draft Revised Subsequent EIR included a discussion of alternative locations for the proposed project. However, this alternative was eliminated from consideration due to the limited number of developable sites remaining in Orange County and alternative sites within outlying areas of the County are neither within the control of the applicant or unlikely to meet the project objectives. Further, it is speculative but unlikely that the applicant would assemble other contiguous properties within the area to accommodate the number and type of residences included as part of the proposed project. No additional analysis is required.

Watt 59 – Comment

Third, the DRSEIR fails to identify appropriate environmentally superior alternatives as required by CEQA. Specifically, the DRSEIR fails to identify Alternative 4 as the environmentally superior development alternative. See Table 5.7, which clearly indicates that Alternative 4 is the superior development alternative and meets the applicant's objectives. The DRSEIR improperly identities Alternative 8 as the environmentally superior alternative of the "non-no project alternatives." DRSEIR at page 5-47. This section of the DRSEIR must be revised to report the

appropriate environmentally superior alternative based on the facts contained in the DRSEIR. Moreover, because Alternative 4 has fewer impacts than the proposed project, and meets project objectives, facts must be presented that this alternative is infeasible if it is rejected in favor of another development alternative.

Watt 59 – Response

Please see Section 3.3.2 (Connor 30 – Response) of this Response to Comments document.

Watt 60 – Comment

Finally, the DRSEIR fails to adequately analyze the feasibility of Alternative 7 – Acquisition Alternative. No information is provided concerning interest expressed by agencies and other conservation organizations to purchase the property and whether the applicant is a "willing seller." This information is critical to the County's consideration of the project and must be provided in a revised analysis. Moreover, this section should identify potential funding sources for purchase of the property, including Proposition 40 funding and the possibility of funding under the NCCP program if the site is upheld as important for inclusion in a reserve. The DRSEIR's statement that this alternative would not meet project objectives assumes that the County cannot develop an aggressive infill program as part of its housing element to provide for needed housing in the County. Information about the feasibility of meeting housing needs without relying on parcels that contain sensitive biological and environmental resources must be included in a revised analysis.

Watt 60 – Response

Please see Section 3.3.2 (Connor 30 – Response) of this Response to Comments document.

Watt 61 – Comment

II. THE PROJECT MUST BE DISAPPROVED OR THE DEIR MUST AGAIN BE REVISED AND RECIRCULATED.

The serious inadequacies of the DRSEIR are symptomatic of fundamental deficiencies in the project itself. Only a project as deeply flawed as this would fail to result in an adequate revised DEIR after the extensive and highly detailed comments provided by the groups and many others on the first DEIR. The enormous mass grading and placement of fill on erosion-prone soils required for the project seriously call into question the suitability of the site for residential development. The project would wreak unnecessary havoc on the habitat and corridors of several sensitive and endangered species, including the gnatcatcher. For these reasons, the project application should be denied as inadequate and infeasible.

In the alternative and at a minimum, the County may not approve the project unless the DRSEIR is again revised and recirculated to fully disclose and analyze the project's impacts and a proper range of alternatives. Given the multiple inadequacies discussed above, this DRSEIR cannot properly form the basis of a final EIR. CEQA and the

CEQA Guidelines require recirculation of a draft EIR where, as here, the document is so fundamentally inadequate in nature that meaningful public review and comment are precluded. See CEQA Guidelines § 15088.5.

CONCLUSION

As set forth above, the DRSEIR suffers from numerous deficiencies, many of which would independently render it inadequate under CEQA. Taken as a whole, the deficiencies of the DRSEIR are so pervasive as to necessitate further extensive revision of the document- and recirculated for public comment. National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund respectfully request that the County deny the project at this time. The project should not be reconsidered until a legally adequate EIR is prepared.

Watt 61 – Response

This comment is a summary of statements included in the above comments. Responses to specific comments have been provided. The commenter's opposition to the project is noted and will be forwarded on to the decision makers.

3.4 INDIVIDUAL COMMENT LETTERS

The following individuals commented on the Draft Revised Subsequent EIR:

- Richard and Patti Gomez
- Mr. and Mrs. Michael Hodges
- Kathleen Stockwell
- Andy Wing

3.4.1 Richard T. Gomez And Patti A. Gomez
June 10, 2002

Gomez 1 – Comment

My wife and I are members of The Saddleback Canyons Conservancy which is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Specific Plan (FTSP) area and surrounding areas of Orange County; however, we submit these comments as residents and members of the concerned general public.
Compliance with the FTSP:

The FTSP was chartered by the Orange County Board of Supervisors to assure the "rural character of the area and preserve, forever, open space." The current request for exemption to the FTSP is not in keeping with the spirit or letter of the plan. Furthermore, such exemptions only serve those who would gain financially by such exemptions and do not serve the intended constituents, area residents or the planned protection envisioned by the plan.

We find this request inappropriate, unfair and a blatant disregard for the development guidelines that all residents must comply with. It is no coincidence the new project cannot comply with FTSP guidelines; it is simply too destructive. Just because a project cannot comply foes not warrant exemption; it is simply inappropriate planning, and that planning process must be revisited.

Gomez 1 – Response

Please see Section 3.3.2 (Connor 3 – Response) of this Response to Comments document regarding the proposed project's consistency with the F/TSP.

Gomez 2 – Comment

Cumulative impacts:

As you know this is not the only project currently being considered for this area. Unfortunately, each project is only evaluated with regard to itself and not for its cumulative impact on the environment. Water quality is a key component of this certain degradation and to ignore such cumulative impacts is not only a dereliction of duty and responsibility but an error in favor if an exception for a special interest project.

We encourage you to be diligent and objective in your analysis, not cursory and subjective.

Specific projects include the planned RPLA facility, SaddleCreek and SaddleCrest and the development at the Rancho Mission Viejo. All projects will increase overall pollutant loads and receiving waters should be properly analyzed. We ask that your agency require the applicant to comply with this request and address critical concerns of the FTSP compliance and protection of precious water quality resources.

Gomez 2 – Response

As stated in Section 4.4.2 of the Draft Revised Subsequent EIR, no significant impacts to water quality would occur with implementation of Project Design Features and compliance with Standard County Conditions. Please also see Section 3.3.8 (Saddleback Canyons Conservancy 4 – Response) of this Response to Comments document.

3.4.2 Mr. And Mr. Michael Hodges
April 30, 2002

Hodges 1 – Comment

As a longtime resident of Orange County, my wife and I are strongly opposed to further residential growth in South County and cannot support a zone change to the Foothill/Trabuco Specific Plan. Mission Viejo has done enough already with the enormous amount of homes and apartments being developed off El Toro road between Live Oak and Marguerite.

Hodges 1 – Response

The comment is noted and will be forwarded on to the decision makers. No additional response is required.

3.4.3 Kathleen Stockwell

June 7, 2002

Stockwell 1 – Comment

My name is Kathleen Stockwell and I reside in Mission Viejo, Please include my entire comment in the official record of proceedings for this project.

Of major concern are the sensitive biological resources that are present at Saddleback Meadows, and in particular the proposed mitigation and related hydrological/water quality issues closely related to the preservation of those resources. The Riverside fairy shrimp (Streptocephalus woottoni), present at Saddleback Meadows, is a Federal endangered species with a USFWS recovery priority of 5C, indicating "that it is a species facing a high degree of threat and having a low potential for recovery" (USFWS Recovery Plan for Vernal Pools of Southern California, Sept. 1998, pg. 19). This extremely rare, beautiful, and wonderful species has very limited geographical distribution, existing only in Southern California. Another Branchiopod that exists in one of the Saddleback Meadows ephemeral pools, Cyzicus californicus (a "clam shrimp") is equally fascinating and beautiful, and is related to fossil clam shrimps that date back in the fossil record ca. 350 million years!

DRSEIR566 implies that the "pilot" mitigation proposed to artificially create "ephemeral ponds/vernal pools" will bring the direct and significant impact to the existing ephemeral pools and the Riverside fairy shrimp to a less than significant level. This assumption is based on insufficient scientific evidence, since ***this type of mitigation is "experimental in nature with many uncertainties"*** *(USFWS Biological Opinion for Saddleback Meadows, pg. 19). The Riverside fairy shrimp, as a highly endangered species having a low potential for recovery, deserves the highest level of protection where it exists, and it is not being afforded this protection by allowing experimental mitigation that has a high potential for failure.*

Stockwell 1 – Response

Please see Section 3.3.2 (Connor 19 – Response) of this Response to Comments document. Additionally, the proposed project has attempted to avoid impacts to ponds supporting fairy shrimp. Without human maintenance of the ponds, they would eventually breach and/or silt in. The long-term management of the ponds and creation of additional ponds provides for significant long-term protection.

Stockwell 2 – Comment

The "Implementation Plan/Rationale for Expecting Implementation Success" (Appendix I.2, Section VI. Pg. 9) cites as justification for this mitigation a "recent review of vernal pool rehabilitation and creation projects" which mentions:

- *Ephemeral ponds created in San Diego County where one obligate vernal pool plant (Pogogyne abramsii) was sustained 5-10 years adjacent to existing habitat.*
- *A Del Sol Reserve vernal pool project in Santa Barbara County that demonstrated "pools created and restored in 1986 are self-sustaining and support native vernal pool plant species".*

- *One vernal pool construction project in Folsom, California where density and composition of microinvertebrae populations, including "several" species of fairy shrimp, were similar to adjacent reference pools. (Rogers 1998).*

What justification do these few and poorly explained examples provide? *The first two give vernal pool plant restoration examples. Furthermore, upon examination of the Folsom project in Sacramento County, California (Aquatic Macroinvertebrate Occurrences and Population Trends in Constructed and Natural Vernal Pools in Folsom, California, D. Christopher Rogers, 1996):*

- *This project is geographically far removed from southern California, and cannot represent unique ecological parameters that exist here.*

- *The two kinds of fairy shrimp occurring in the pools at the Folsom project are different species with requirements that vary from the southern California Riverside Fairy Shrimp. For example, both of these species, the Vernal Pool Fairy Shrimp (Branchinecta lynchi) and the California Fairy Shrimp (Linderiella packardi), develop to maturity in less time than the Riverside Fairy Shrimp. The Riverside Fairy Shrimp needs 1-2 weeks to hatch and another 7-8 weeks to reach maturity. The span in which the right conditions can occur must cover several month, not just two. This strongly suggests that created pools that are* ***only required to hold rainwater for a minimum of 60 days*** *at depths required for the Riverside Fairy Shrimp will not be adequate for long term survival of the Riverside Fairy Shrimp. Ephemeral pools in which large numbers of Riverside Fairy Shrimp can successfully breed in Orange County are deep pools that persist for four to five months, or even longer.* ***"Because these constructed pools are mitigation for impacted vernal pools, they need to demonstrate that they are functioning ecologically like naturally occurring vernal pools to be considered adequate compensation".*** *This takes time, a minimum of 10 years, according to the USFWS, and should not be allowed as an experiment unless the original ephemeral pools and their watersheds are left entirely intact until success is proven.*

Stockwell 2 – Response

Please see Section 3.3.2 (Connor 19 – Response) of this Response to Comments document. The reference cited is relevant in that it shows that pools with sensitive resources, including other fairy shrimp species can be successfully created. More importantly, as noted in Section 3.3.2 (Connor 19 – Response), ponds supporting Riverside fairy shrimp have been successfully created. The standard will be to create ponds capable of supporting Riverside Fairy shrimp over the long-term, not the creation of vernal pools since vernal pools are not the sensitive resource being impacted.

Stockwell 3 – Comment

Why is it that only a five year monitoring program is mentioned in the EIR, when 10 years is required? Why is deferral of mitigation allowed in case of failure? This is not acceptable.

- *The Folsom project that is quoted in the EIR only presented the results of the first two years in a nine year monitoring program, which began in 1994.* ***What is the current status of its results, and how does this relate to such projects in Orange County?***

- *The Folsom project site contains 273 natural vernal pools on 246.0 hectares, where 37 pools were constructed. The high number of natural vernal pools alone points to a higher chance for success of the created pools, in my opinion. This project, although admirable, does not seem to be in itself adequate justification for experimental mitigation for an entirely different species of endangered fairy shrimp and a different set of ecological circumstances in Orange County, where such high numbers of natural vernal pools never occur in one complex.*

*The USFWS Biological Opinion for Saddleback Meadows, pg. 13 and 18, state: "The 9 ponds at Saddleback Meadows represent 53 percent of the 17 remaining occupied pools/ponds, making it the largest fairy shrimp habitat complex found in Unit 2" (L.A. Basin-Orange Management Area). "Implementation of the proposed project... represents a 56 percent loss of fairy shrimp ponds, and a 68 percent loss of the pond basin area, onsite." **Why is it deemed acceptable to gamble with perhaps the most valuable habitat complex for the Riverside Fairy Shrimp in Orange County?** Page 19 of this same Biological Opinion states that "..construction of an artificial impervious layer to retain water [in sandy soils] for a minimum of 60 days..has never been done successfully. It is obvious to me that there should be a more concentrated effort to acquire the Saddleback Meadows property and preserve it as it now is. It is a real treasure for Orange County and very important for the NCCP process as well, since it "**represents the only low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP planning areas.**" (page 18) Much effort has gone into the NCCP, but it seems the endangered fairy shrimp species and their ephemeral/vernal pond habitats of Orange County were never an integral part of the NCCP planning as they should have been. **The proposed wildlife corridor as presented in DSEIR 566 is also inadequate,** being much too narrow and poorly designed. Other sensitive species certainly exist at Saddleback Meadows, such as the Catalina and Intermediate Mariposa Lily populations, which have not been adequately considered either. Two well known host plants for the endangered Quino checkerspot butterfly also exist on this site, and should be in the preservation plan since existence of the Quino in Orange County is still possible.*

Stockwell 3 – Response

The Biological Opinion (BO) for the proposed project requires a ten-year monitoring program for the ponds (see Section 4.8.4 and Appendix I of the Draft Revised Subsequent EIR). The ponds on-site currently supporting fairy shrimp were created in the same soils as proposed for in the restoration plan. Soils tests conducted by the project geologist indicate that appropriate soils are available on-site to create an impervious layer capable of holding water for in excess of 60 days. The proposed project has been analyzed within the context of the Natural Community Conservation Planning Program (NCCP) and provides for wildlife movement through the project (please see Section 3.2.1, USFWS/CDFG 4 - Response, of this Response to Comments document).

Please see Section 3.3.2 (Connor 20 – Response) of this Response to Comments document regarding the intermediate Mariposa lily.

No Quino checkerspot butterflies were observed on-site and none are anticipated to occur.

Stockwell 4 – Comment

DSEIR566 fails to adequately define, analyze, and show mitigation for the hydrological aspects of the project, my concern is especially related to the proposed ephemeral pool mitigation. Nuisance water and non-point source pollution appear to be directed into the natural drainage courses, and may seriously alter any chance for a successful mitigation.

It seems obvious that such a drastic change in the watershed caused by grading, etc. will alter that natural regime of the ephemeral ponds no matter what "mitigation" takes place, further placing them in jeopardy.

Stockwell 4 – Response

The mitigation for the Riverside fairy shrimp was developed through extensive discussions with USFWS. The hydrological design for the proposed project reflects these discussions with USFWS and the proposed mitigation basins are being carefully designed to provide appropriate hydrological conditions necessary for the shrimp to persist. With implementation of the mitigation measures, impacts to Riverside fairy shrimp would be less than significant.

Stockwell 5 – Comment

Will you please explain in specific detail how Basins 1,3,4,5, and 6 (shown directly below houses and slopes on Fig.4 of Appendix I.2) will be unaffected by changes in hydrology and water quality? I have observed the "mitigation" carried out at the Santiago Canyon Estates/Beazer project for the Riverside Fairy Shrimp, and it appears to be sadly inadequate for long term survival of this endangered species. It is directly below homes and slopes similar to the illustration in Fig. 4 mentioned above, has multiple rows of PVC irrigation pipe (made of a very toxic material that may leach into the rainwater?) in and around it (for what purpose?), and cement drainage structures of some kind that look very foreign to a so-called "ephemeral pond". The slopes directly above it are landscaped with non-native plants that may require chemicals. Will you please tell me where the "inoculent" of Riverside fairy shrimp/cysts originated that were put there? Is this questionable mitigation being used as a model for Saddleback Meadows? Please explain the status of the Santiago Canyon Estates "mitigation", and how it relates to Saddleback Meadows.

Stockwell 5 – Response

All of the proposed watershed areas for ponds on Saddleback Meadows will be planted only with native species, and no irrigation is proposed within the pond watersheds. The Santiago Canyon Estates project is not being used as a "model" for Saddleback Meadows, and a comparison of the two is not warranted.

Stockwell 6 – Comment

My last questions/comments are these:

Page 5 of the USFWS Biological Opinion states that the created ponds must demonstrate the ability to hold "water" for a minimum of 60 days. As I have stated above in more detail, a 60 day minimum is not long enough. Does the term "water" mean natural rainwater only? Professor Emeritus Clyde Ericksen has stated, "Attempts to maintain these pools, and thus their fairy shrimp populations, by keeping them full with tap water has proven useless. Tap water chloramines which kills living shrimps."

Why does the first sentence of point C (Schedule) under section VI of Appendix I.2, pg. 9, state that, "Grading is to be completed no later than December 31, 2000". Please explain?

The following should be incorporated into the project proposal as mitigation measures:

1. *A 10 year monitoring program for the ephemeral pool mitigation plan should be in place, not 5 years. No development impacts should be allowed to proceed in any of the nine existing occupied ephemeral pools or their watersheds until this 10 year period has proven that successful mitigation can occur.*

2. *The 60 day minimum requirement for created mitigation pools to hold rainwater at depths required for the Riverside Fairy Shrimp (Streptocephalus woottoni) should be increased to a period appropriate to the life cycle of this particular species.*

Stockwell 6 – Response

Sixty days of natural rainwater is the time necessary for the Riverside fairy shrimp to complete its life cycle. No tap water would be used; only natural runoff. The reference to completing grading by December 31, 2000 is incorrect. As noted above, ten years of monitoring is required for the Riverside fairy shrimp.

3.4.4 Andy Wing

June 23, 2002

Wing 1 – Comment

The question which occurs to me, having experienced weekly for several years severe eye irritation with each trip to Saddleback Valley, continually seen the great brown haze of smog, and read that the area ranks among the top as most polluted on the country, how ANY development of the area can be contemplated?

Wing 1 – Response

As stated in Section 4.6 of the Draft Revised Subsequent EIR, impacts to air quality would not be significant (with the exception of cumulative impacts), with incorporation of Standard County Conditions and mitigation measures.

Wing 2 – Comment

Anything more than "open space, habitat preservation, recreation", and agriculture should not be permitted because it will further exacerbate the already horrendous existing problems, including traffic.

Wing 2 – Response

As stated in Section 4.5 of the Draft Revised Subsequent EIR, impacts to traffic from implementation of the proposed project would not be significant with implementation of Project Design Features, Standard County Conditions and mitigation measures.

The commenter's opposition to the project is noted and will be forwarded on to the decision makers.

SECTION 4.0

REFERENCES

4.0 REFERENCES

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APPENDIX A

DRAFT SUPPLEMENTAL EIR DISTRIBUTION AND COMMENTS

APPENDIX A.1

PUBLIC NOTICE / DISTRIBUTION LIST

PUBLIC NOTICE
of Time Extension

DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT: SADDLEBACK MEADOWS

DESCRIPTION: Pursuant to the California Environmental Quality Act (CEQA), the Orange County Planning & Development Services Department has prepared Environmental Impact Report No. 566 to evaluate the environmental impacts resulting from the proposed Saddleback Meadows project. The project proposes the phased development of 299 single-family residential units on a 220.2-acre site. The gross density proposed is 1.4 dwelling units per acre, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6-acres) of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding & hiking trail connections and biological resource enhancement. Project implementation requires the approval of Zone Change (Foothill/Trabuco Specific Plan Amendment), Area Plan and Vesting Tentative Tract Map.

EIR 566 examines the potential impacts generated by the proposed project in relation to the following CEQA Checklist categories: Land Use & Planning; Geophysical; Hydrology & Drainage; Water Quality; Transportation/Circulation; Air Quality; Noise; Biological Resources; Aesthetics; Cultural/Scientific Resources; Recreation; Hazards; Public Services; and, Utilities & Service Systems. The proposal will result in unavoidable adverse impacts to air quality.

The purpose of this notice is to inform local residents, institutions and other interested parties about a TIME EXTENSION for the review of the Draft EIR. THE REVISED PUBLIC COMMENT PERIOD IS: APRIL 25TH, 2002 TO JUNE 24TH, 2002. Written comments on the Draft EIR must be submitted by June 24th, 2002, by 5:00 p.m. to: anager, OCPDS/Environmental Planning Services Division, 300 N. Flower St., Box 4048, Santa Ana, California 92702-4048.

Location: Easterly side of El Toro Road, approximately ½ mile south of the intersection of Santiago Canyon Road/El Toro and Live Oak Canyon Road, in east-central unincorporated Orange County.

REVIEWING LOCATIONS

COPIES OF THE DRAFT EIR ARE AVAILABLE FOR PUBLIC REVIEW AT THE FOLLOWING LOCATIONS:

County of Orange/Planning & Development Services Department/
Environmental Planning Services Division
Contacts: Bill Grieman 834-5550
Chuck Shoemaker 834-5550

ORANGE COUNTY BRANCH LIBRARIES:
25209 Marguerite Parkway, Mission Viejo
28192 Silverado Canyon Road, Silverado
24672 Raymond Avenue, El Toro
30902 La Promesa Drive, Rancho Santa Margarita
California State University, Fullerton, Library Documents Section
UC Irvine Main Library/Government Publications/Microforms Department

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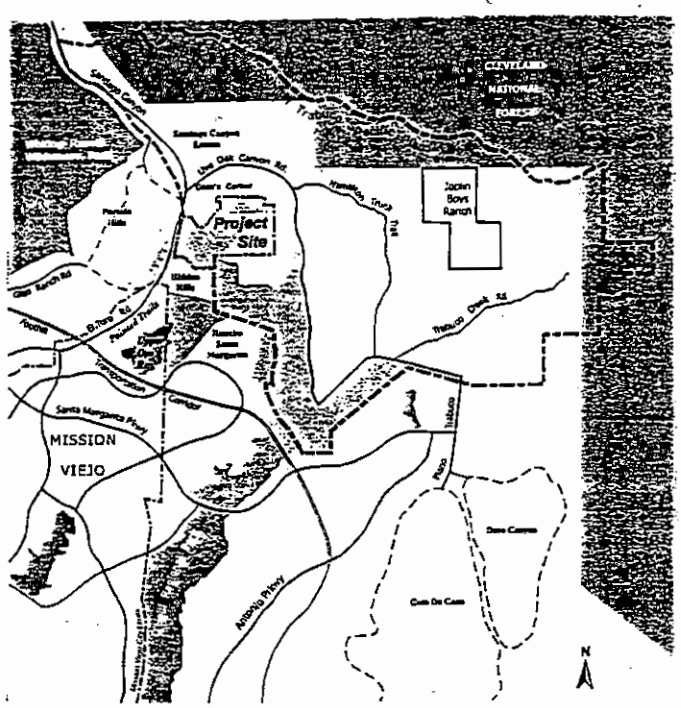
Hidden Ridge HOA, c/o Mr. Jerry Kacsir
rtola Hills HOA I, c/o Rinevol & Co.
ortola Hills HOA II, c/o Ms. Elizabeth Wallace
Canyon View Homeowners Association
Inter-Canyon League, c/o Bob Hunt
California Native Plant Society
National Audubon Society, Inc.

PROJECT LOCATION MAP



Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies	Signature File Received
7920-2243-2229	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95814	Fed Ex	Y	4/25/2002 10:11	M. Hoze	7 Vol. 1	Y
7918-2339-2201	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95815	Fed Ex	Y	4/25/2002 10:11	M. Hoze	8 Vol. 1	Y
7920-2243-2343	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95816	Fed Ex	Y	4/25/2002 10:11	M. Hoze	7 Vol. 2	Y
7920-2243-2354	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95817	Fed Ex	Y	4/25/2002 10:11	M. Hoze	8 Vol. 2	Y
7918-2340-9163	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95818	Fed Ex	Y	4/25/2002 10:11	M. Hoze	7 Vol. 3	Y
7920-2244-5549	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95819	Fed Ex	Y	4/25/2002 10:11	M. Hoze	8 Vol. 3	Y
7918-2342-2712	Bryan Speegle	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/25/2002 9:23	B. Hardwick	5 Vol. 1, 5 Area Plan	Y
7918-2342-2675	Bryan Speegle	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/25/2002 9:23	B. Hardwick	5 Vol. 2, 5 Vol. 3	Y
7903-9588-5750	Jim Bartel	U.S. Fish & Wildlife Services	2730 Liker Avenue West	Carlsbad	CA	92008	Fed Ex	Y	4/25/2002 9:30	E. Gouch	1 set	Y
7905-1304-4272	William E. Tippets	CA Dept of Fish & Game	4949 Viewridge Avenue	San Diego	CA	92123	Fed Ex	Y	4/25/2002 9:59	B. Young	1 set	Y
7903-9589-4273	Stacey Baczkowksi	CA Reg. Water Quality Control Board	9174 Sky Park Court, Suite 100	San Diego	CA	92123	Fed Ex	Y	4/25/2002 8:52	D. Smith	1 set	Y
7903-9589-8717	Management District	South Coast Air Quality	21865 E. Copley Drive	Diamond Bar	CA	91765	Fed Ex	Y	4/25/2002 9:12	J. Caldero	1 set	Y
7905-1304-9045		O.C. Transportation Authority	550 So. Main Street	Orange	CA	92868	Fed Ex	Y	4/25/2002 10:17	N. Buzenes	1 set	Y
7903-9590-2919		CA Dept of Transportation - District 12	3337 Michelson Drive, Suite CN-380	Irvine	CA	92612	Fed Ex	Y	4/25/2002 9:21	R. Marquez	1 set	Y
7905-1305-0966		Southern California Association Of Governments (SCAG)	818 W. 7th Street	Los Angeles	CA	90017	Fed Ex	Y	4/25/2002 10:04	C. Milner	1 set	Y - no signature
7918-2357-6667	Laura Blaul	Orange County Fire Authority	180 South Water Street	Orange	CA	92866	Fed Ex	Y	4/25/2002 9:40	S. Morris	1 set	Y
7903-9590-7450		Orange County Library - Silverado Branch	28192 Silverado Canyon Road	Silverado	CA	92676	Fed Ex	Y	4/25/2002 11:05	M. Flagal	1 set	Y
7918-2357-8600		Orange County Library - Mission Viejo Branch	25209 Marguerite Parkway	Mission Viejo	CA	92691	Fed Ex	Y	4/25/2002 9:37	C. Sands	1 set	Y
7918-2357-9416		Orange County Library - El Toro Branch	24672 Raymond Avenue	El Toro	CA	92630	Fed Ex		4/26/2002 10:53	R. Jane	1 set	Y
7903-9591-1887	Shiley Land	City of Mission Viejo	25909 Pala, Suite 200	Mission Viejo	CA	92691	Fed Ex	Y	4/25/2002 9:35	S. King	1 set	Y
7905-1305-5990		Orange County Library	30902 La Promesa Drive	Rancho Santa Margarita	CA	92688	Fed Ex	Y	4/25/2002 10:18	K. Paul	1 set	Y
8329-7953-8390	Y. Jae Chung	ACOE - Los Angeles District	911 Wilshire Blvd., 11th Floor	Los Angeles	CA	90017	Fed Ex	Y	4/25/2002 9:48	J. Jimeson	1 set	Y
7903-9589-5409		CA Dept. Parks & Rec	8885 Rio San Diego Drive	San Diego	CA	92108	Fed Ex	Y	4/25/2002 10:13	G. Bobotis	1 set	Y
7903-9724-1780		Saddleback Valley Unified - School District	25631 Diseno Drive	Mission Viejo	CA	92691	Fed Ex	Y	04/26/2002 at 11:28 A	B.KOWALCZ.	1 set	Y
7903-9725-5261		So. California Edison Company	1325 S. Grand Avenue	Santa Ana	CA	92705	Fed Ex	Y	4/26/2002 9:23	D.AGUILERA	1 set	Y

Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies	Signature File Received
7905-1382-2188	Jacqueline Wyland	Environmental Protection Agency	75 Hawthorne Street	San Francisco	CA	94105	Fed Ex	Y	4/29/2002 10:30	K. CLARK	1 set	Y
7920-2330-7677	Lisa Egelhardt	Canyon View Homeowners Association c/o Professional Community Management	23726 Birtcher Drive	Lake Forest	CA	92630	Fed Ex	Y	4/26/2002 12:23	K. WOESSNER	1 set	Y
7903-9727-1522	Christine Diemer Iger	Building Industry Association	9 Executive Circle, Suite 100	Irvine	CA	92614	Fed Ex	Y	4/26/2002 9:11	K. WARD	1 set	Y
7903-9727-7152	Bowie, Arneson, Kadi Wiles & Giannone	Trabuco Canyon Water District	4920 Campus Drive	Newport Beach	CA	92660	Fed Ex	Y	04/26/2002 at 2:41	N. HERNANEZ	1 set	Y
7920-2331-4874		O.C. Horseman's Association	25301 Travuco Road, Box 26	El Toro	CA	92630	Fed Ex	Y	4/26/2002 11:25	S. HILLMAN	1 set	Y
7903-9729-3527		Orange County Grand Jury	700 Civic Center West	Santa Ana	CA	92701	Fed Ex	Y	4/26/2002 10:04	L. CENTENO	1 set	Y
7918-2453-1361	Robert A. Hamilton	Conservation Chair & Section - Orange County CNPS	34 Rivo Alto Canal	Long Beach	CA	90803	Fed Ex	Y	4/26/2002 14:17	14439241	1 set	Y - no sig required
7918-2453-6328	Elizabeth Brown	Laguna Greenbelt, Inc.	1377 Lewellyn Drive	Laguna Beach	CA	92651	Fed Ex	Y	4/29/2002 5:18pm	1377RLS	1 set	Returned to HDR - waiting on new Address
7903-9730-6060	Conservation Chair	Sierra Club - South OC Chapter	908 La Mirada Street	Laguna Beach	CA	92651	Fed Ex	Y	4/26/2002 11:12	S.IERA CLUB	1 set	Y - no signature because of waiver
7920-2334-9960	Rinevot & Co (Tina Volpe)	Portola Hills HOA	23421 South Pointe Drive, Suite 200	Laguna Beach	CA	92653	Fed Ex	Y	04/26/2002 at 11:47	J.NOLAN.	1 set	Y
7905-1387-7541	Bob Hunt	Inter-Canyon League	28371 Modjeska Canyon Road	Modjeska Canyo	CA	92676	Fed Ex	Y	4/30/2002 17:09	R. HUNT	1 set	Y
7918-2457-6620	Fr. Hugh Barbour	Saint Michael's Abbey	19292 El Toro Road	Silverado	CA	92676	Fed Ex	Y	4/26/2002 1:24	N. HARRIS	1 set	Y
7905-1388-2231	Cisca Stellhorn Attorney	Cisca Stellhorn	38 Corporate Park, Suite 200	Irvine	CA	92605	Fed Ex	Y	4/26/2002 9:12	B.RERICHA	1 set	Y
7903-9736-9823		Orange County Tomorrow	4509 West Coast Highway	Newport Beach	CA	92663	Fed Ex				1 set	Returned to HDR - waiting on new Address
7903-9737-2083	Adam Smith	F/TSP Review Board	30672 Hamilton Trail	Trabuco Canyo	CA	92678	Fed Ex	Y	5/1/02 5:04pm	M. Lontney	1 set	Y
7903-9731-0008	Elizabeth Wallace	Portola Hills HOA	19241 Jasper Road	Trabuco Canyo	CA	92679	Fed Ex	Y	4/26/2002 14:54	1485343	1 set	Y - no sig required
7927-2334-3620	Jerry Kacsir	Hidden Ridge HOA	23 Riverside Drive	Trabuco Canyo	CA	92679	Fed Ex	Y	4/26/2002 1:09	11327232	1 set	Y - no sig required
7920-2333-8264	Gayle Ackerman, Director of Development Services	City of Lake Forest	23161 Lake Center Drive #100	Lake Forest	CA	92630	Fed Ex		4/29/2002 11:30	J. LAWRENCE	1 set	Y
7903-9737-8482	Dean Brown	The Planning Consortium	1111 W. Town & Country Road #37	Orange	CA	926868	Fed Ex	y	04/26/2002 at 11:42am	B.MINNIS	1 set	Y
7903-9736-0666	Sue Cook	Canyon Rim Association	2492 Walnut Avenue, Suite 100	Tustin	CA	92680	Fed Ex	Y	4/26/2002 10:38	C. WHITE	1 set	Y
7918-2459-0818		Trabuco Canyon Water District	30575 Trabuco Canyon Road, Suite 200	Trabuco Canyo	CA	92678	Fed Ex	Y	4/26/2002 14:36	A. NICOLA	1 set	Y
7905-1389-4176	Trabuco Ranger District	Cleveland National Forest	1147 E. Sixth Street	Corona	CA	91719	Fed Ex	Y	4/29/2002 2:47	J. Johnson	1 set	Y
7927-2335-3296	Shellie Xanthos	Santiago Estates HOA Trans Pacific Management Services	2112 East Fourth Street, Suite 200	Santa Ana	CA	92705	Fed Ex	Y	4/26/2002 10:59	G. ALLEN	1 set	Y
7927-2335-3626		Accell Property Management Hidden Ridge HOA	23052-A Alicica Parkway, Suite 235	Mission Viejo	CA	92693	Fed Ex	Y	4/26/2002 9:39	C.DISCHINI	1 set	Y
7920-2337-4803	Planning Department	Rancho Santa Margarita	30211 Avenida de las Banderas, Suite 101	Rancho Santa Margarita	CA	92688	Fed Ex	Y	4/26/2002 11:50	J. NICHOALS	1 set	Y
7905-1390-2373	Matt Rayl	Serrano Creek Ranch Equestrian Center	25201 Trabuco Road	Lake Forest	CA	92630	Fed Ex	Y	04/26/2002 at 11:22	S.HILLMAN	1 set	Y
7905-1390-3370	Raymond C. Mills	F/TSP Review Board	13651 Yellowstone Drive	Santa Ana	CA	92705	Fed Ex	Y	4/29/2002 1:52pm	R. Mills	1 set	Y
7903-9740-7243	Mary Ann Milbourn	Orange County Register	22481 Aspan Street	Lake Forest	CA	92630	Fed Ex	Y	4/26/2002 11:46	D. SALAZAR	1 set	Y
7903-9740-9750	Bruce R. Conn		19471 Live Oak Canyon	Trabuco Canyo	CA	92679	Fed Ex	Y	4/26/2002 10:52	Release waiver on file	1 set	Y - no sig required
7920-2338-3587	Bob Bennyhof	Foothill Sentry	10642 Morada Drive	Orange	CA	92869	Fed Ex	Y	4/26/2002 1:15	169459	1 set	Y - no sig required
7927-2335-7328	Sandra Jacobs	SFC Consultants	26012 Marguerite Parkway, Suite H424	Mission Viejo	CA	92692	Fed Ex	Y	4/26/2002 8:58	L.SHAPIRO	1 set	Y
7920-2338-6656	Edmond M. Conner, Esq.	Connor, Culver, Blake & Griffin	2600 Michelson Drive, Suite 1450	Irvine	CA	92612	Fed Ex	Y	4/26/2002 13:01	D. HESSETT	1 set	Y
7903-9742-4989	Rachel J. Sater, Esq.	Law Offices of Rachel J. Sater	436 14th Street, Suite 1300	Oakland	CA	94612	Fed Ex	Y	4/29/2002 11:43	G. Shnider	1 set	Y - returned to HDR per Rachel J. Sater, not on project
7918-2461-7715	Mary L. Hudson, Esq.	Law Offices of Mary L. Hudson	1505 Bridgeway, Suite 206	Sausalito	CA	94965	Fed Ex		4/29/2002 11:32am	A. Hardy	1 set	Y
7918-2461-9270	VerLyn N. Jensen, Esq.	Jensen & Coeur-Barron, LLP	5100 Campus Drive, Suite 200	Newport Beach	CA	92660	Fed Ex	Y	4/26/2002 14:05	J. FREDIAN	1 set	Y
7905-1391-7376	Robert K. Break, Esq.	Latham & Watkins	650 Town Center Drive, 20th Flr	Costa Mesa	CA	92626	Fed Ex	Y	4/26/2002 9:04	J.COWLING	1 set	Y

Attachment F

Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies	Signature File Received
7905-1425-6315	Bob Caustin	Defend the Bay	471 Old Newport Blvd., Suite 200	Newport Beach	CA	92663	Fed Ex	Y	4/29/2002 2:52	W. Karges	1 set	Y
7911-8738-7476	Gary Brown	Orange County Coastkeep	3416 Via Oporto, Suite 201	Newport Beach	CA	92663	Fed Ex	Y	5/2/02 12:37pm	E. Nerrie	1 set	Y
7903-9803-0372	Richard Garner		27001 Calle Maria	apistrano Beac	CA	92624	Fed Ex	Y	4/29/2002 11:40am	6676679	1 set	
7903-9803-2732	Rick Wilson	Surfrider Foundation	658 North Coast Highway #266	Laguna Beach	CA	92651	Fed Ex	Y	4/29/2002 1:28pm	C. Wineman	1 set	Y
0000-0093-1119	Evan Halper	LA Times, Orange County	1375 Sunflower Avenue	Costa Mesa	CA	92626	Lightning Express	Y	4/25/2002	Kathy Prichard	1 set	
0000-0093-1120	Jim Radcliffe	Orange County Register	22481 Asran Street	Lake Forest	CA	926301	Lightning Express	Y	4/25/2002	Jim Radcliff	1 set	
7905-1420-2267	Bill Grieman	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/29/2002 2:54pm	B. Bart	5 Vol. 1	Y- no sig
7903-9792-6908	Bill Grieman	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/29/2002 2:54	B. Bart	5 Vol. 2, 5 Vol. 3	Y - no sig.

Saddleback Meadows Draft EIR Distribution 4/24/2002

Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies
230103700000058897523	Laura Simonek	MWD of Southern California	P.O. Box 54143	Los Angeles	CA	90054		Y	4/26/2002 8:18am	Waiver	1 set
230027300000028056187	Wally Kreitzen	TCA (Transportation Coordination Agency)	P.O. Box 53770	Irvine	CA	92619-3770	resent on 05/01/02 - **previously sent to P.O. Box 26870, Santa Ana, CA 92799	Y	5/2/2002 3:01pm	waiver	1 set
230103700000058892608	Eve Mitchell		P.O. Box 406	Trabuco Canyon	CA	92678		Y	4/26/2002 3:17pm	B. Parker	1 set
230103700000058896057	Pete DeSimone	National Audobon Society, Inc.	100 Bell Canyon Road	Trabuco Canyon	CA	92679	resent on 05/01/02 - ** previously sent to P.O. Box 967, Trabuco Canyon, CA 92678	Y	5/3/2002 7:58	S. Callen	1 set
230103700000042433492		Orange County Vector Control District	P.O. BOX 87	Santa Ana	CA	92702		Y	4/29/2002 11:47am	V. Blaycock	1 set
230103700000058892585	Technical Supervisor	So. California Gas Company	P.O. Box 3334	Anaheim	CA	92803		Y	4/29/2002 6:03am	Waiver	1 set
230103700000056668526		Gabrieleno Tribal Council	P.O. Box 693	San Gabriel	CA	91778		Y	4/26/2002 4:49pm	Anthony Morales	1 set
230103700000058892615	Library Documents Section	Cal-State University Fullerton	P.O. Box 4150	Fullerton	CA	92834		Y	4/26/2002 11:23am	Thuy Le	1 set
230103700000056668519		Mission Viejo Report	P.O. Box 2247	Mission Viejo	CA	92675	NEED NEW ADDRESS - still waiting for address 5/6/02				1 set
230103700000058892578	Ms. Katherine Swiss	San Michael's Abbey	P.O. Box 721	Trabuco Canyon	CA	92678		Y	5/01/02 3:53pm	K. Swiss	1 set
230103700000058892516	Jerry Boone	Montecido at Portola Hills Assn	P.O. BOX 4708	Irvine	CA	92616		Y	4/30/02 9:31am	A. Uribe	1 set
230103700000058892509	Microforms Dept.	UCI Main Library/Gov. Pub	P.O. BOX 19557	Irvine	CA	92623		Y	4/30/02 8:03am	Y. Barra	1 set
230103700000058896064		Saddleback Valley News	22481 Aspan Street	Lake Forest	CA	92630-1630	resent on 05/01/02 - **previously sent to P.O. Box 3629, Mission Viejo, CA 92691	Y	5/2/2002 3:08pm	Dianna Balizar	1 set
230103700000058892639	Jeanne E. Porter	F/TSP Review Board	P.O. Box 243	Trabuco Canyon	CA	92678	pending delivery as of 5/6/02	Y	5/7/2002 10:33am	Tracy Eddy	1 set
230103700000058892646	Ray Chandos	Rural Canyons Conservation Fund	P.O. Box 556	Trabuco Canyon	CA	92678		Y	4/29/2002 2:29pm	R. Chandos	1 set
230103700000058892530	Richard Jennings	Vedanta Soc. Of So. Cal Ramakrishma Monastery	P.O. Box 408	Trabuco Canyon	CA	92678		Y	4/26/2002 2:27pm	P. Hamilton	1 set
230103700000058892592	Stephen Nordeck	F/TSP Review Board	P.O. Box 440	Trabuco Canyon	CA	92678	pending delivery as of 5/6/02				1 set
230103700000056668261	Sherry Lee Meddick		P.O. BOX 771	Silverado	CA	92676		Y	4/29/2002 9:30am	S. Meddick	1 set
230103700000058892561	Robert A. Wilkes	F/TSP Review Board	P.O. Box 81	Trabuco Canyon	CA	92678		Y	4/30/02 10:31am	M. Wilkes	1 set
230103700000028047659	Roger von Butow	Clear Water Now	P.O. Box 4711	Laguna Beach	CA	92652		Y	4/29/2002 11:51am	Roger von Butrow	1 set

APPENDIX A.2

COMMENT LETTERS

US Fish and Wildlife Service
Carlsbad Fish and Wildlife
2730 Loker Avenue West
Carlsbad, CA 92008
(760) 431-9440
FAX (760) 431-9624

CA Dept. of Fish & Game
South Coast Regional Office
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201
FAX (858) 467-4299

In Reply Refer To:
FWS-OR-1023.10

JUN 2 6 2002

Mr. Tim Neely, Division Manager
Orange County Planning and Development Services
Environmental Planning Services Division
300 North Flower Street
Santa Ana, California 92702-4048

Re: Draft Revised Subsequent Environmental Impact Report (State Clearing House No. 19996121072) for the Saddleback Meadows Project, County of Orange, California

Dear Mr. Neely:

The U.S. Fish and Wildlife Service (Service) and the California Department of Fish and Game (Department), hereafter referred to as the Wildlife Agencies, have reviewed the Draft Revised Subsequent Environmental Impact Report (DEIR) for the construction of the Saddleback Meadows Project, in the County of Orange, California. The project proposes development of 299 single-family houses on a 229.2-acre site in the lower foothills of the Santa Ana Mountains in southern Orange County. The proposed project also includes two new paved access roads off of El Toro Road and an adjacent offsite 1.4 million-gallon water reservoir. The Wildlife Agencies have commented on various development proposals and environmental documents for this project since 1994. As we have stated in our previous comments, the proposed project poses significant unmitigated impacts to future Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) reserve design for the Southern Subregion of Orange County.

Responsibilities of the Wildlife Agencies

The Department is identified as a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) section 15386 and is responsible for the conservation, protection, and management of the State's biological resources. The Department is also responsible, pursuant to the California Endangered Species Act, California Fish and Game Code 2050 *et seq.*, for the protection of species listed by the State as endangered or threatened or identified as species of concern, and the habitats they require. The Department also manages the NCCP Program (California Fish and Game Code 2800 *et seq.*), a regional conservation planning effort, that includes southern Orange County.

The Service's primary mission is to work "with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." The

Service has legal responsibility for the welfare of migratory birds, anadromous fish, and endangered animals and plants occurring in the United States. Specifically, we administer the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), and work in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401 as amended,16 U.S.C. 661 *et seq.*). Section 7 of the Act requires Federal agencies to consult with the Service should it be determined that their actions may affect federally listed threatened or endangered species. Take incidental to otherwise lawful activities can be permitted under the provisions of sections 7 (Federal consultations) or 10 (permits) of the Act.

As noted in the DEIR, the Service has completed formal consultation with the U.S. Army Corps of Engineers (Corps) and issued a biological opinion (FWS-OR-1023.8) on the Saddleback Meadows Project's effects on the federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*, "fairy shrimp") and its designated critical habitat and designated critical habitat for the threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher"), in accordance with section 7 of the Act. To clarify, however, our biological opinion evaluated the 283-unit alternative, not the proposed 299-unit alternative discussed in the DEIR. If the 299-unit Alternative is pursued, reinitiation of consultation with the Corps would be required. Although impacts to federally listed species and their designated critical habitat have been addressed in the cited biological opinion for the Saddleback Meadows project, evaluation of impacts to wildlife movement for non-listed species in relation to development of an NCCP/HCP is outside the purview of section 7 of the Act.

Relationship of the Project to Regional Conservation Planning Efforts

The NCCP Act was approved in 1991 and established a program to provide for regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. The program provides an alternative to "single-species" conservation via the formulation of regional, natural community-based habitat protection programs. The first NCCP/HCP projects in California focused on providing adequate conservation and mitigation for impacts to coastal sage scrub vegetation, the preferred plant community of the gnatcatcher.

Following the Federal listing of the gnatcatcher in 1993, the Service adopted a Special Rule for the gnatcatcher pursuant to section 4(d) of the Act incorporating the conservation and process guidelines established by the State under the NCCP Act. The guidelines set forth procedures for the creation of regional and subregional conservation plans. In accordance with the guidelines, jurisdictions enrolled in the NCCP planning program can authorize a limited amount of interim loss of coastal sage scrub during the planning period subject to six interim habitat loss provisions[1]. However, the interim habitat loss provisions are only applicable until adoption of a regional or

[1] The following mandatory findings must be met for a project to be approved pursuant to the interim habitat loss provisions of the Special 4(d) Rule: 1) The habitat loss does not cumulatively exceed the 5% guideline; 2) The habitat loss will not preclude connectivity between areas of high habitat values; 3) The habitat loss will not preclude or prevent the preparation of the subregional Natural Community Conservation Plan; 4) The habitat loss has been minimized and mitigated to the maximum extent practicable in accordance with the Conservation Guidelines; 5) The habitat loss will not appreciably reduce the likelihood of the survival and recovery of listed species in the wild; and 6) The habitat loss is incidental to otherwise lawful activities.

subregional conservation plan. In summary, per the NCCP program, conservation planning within enrolled jurisdictions may be governed by an adopted regional or subregional conservation plan, or is subject to the interim habitat loss provisions of the Special 4(d) Rule.

As an enrolled jurisdiction in the NCCP program, the County of Orange (County) has both an adopted subregional conservation plan that applies to its Central and Coastal subregions (the Orange County Central-Coastal NCCP/HCP) and is participating in development of the Southern Subregion NCCP/HCP. The County has committed to work with the Wildlife Agencies to ensure that projects within its jurisdiction do not prevent connectivity between areas of high habitat values or preclude reserve design options for the Southern Subregion NCCP/HCP.

Reserve Design Inconsistency

Our primary concern with the proposed project is the significant impact it poses to the major lower elevation wildlife movement corridor/linkage along the Santa Ana Mountain foothills of southern Orange County. Saddleback Meadows, together with the adjacent Saddle Creek and Live Oak properties, represents the only remaining unobstructed low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP/HCP planning areas. To highlight its importance, Orange County's Central-Coastal NCCP/HCP identifies this area as a key corridor/linkage between the subregions. The proposed development on Saddleback Meadows along the eastern and northern portions of the site as shown in Alternative 2 (the No Project, "Existing Entitlement" Alternative), Alternative 3 (the F/TSP EIR 531 Staff Alternative A), Alternative 5 (the Cluster/Single-Family/Multi-Family Residential Alternative), or Alternative 8 (the Reduced Residential Alternative) of the DEIR could substantially eliminate this corridor/linkage and, thereby, severely constrain movement of mule deer, coyote, mountain lion and other large mammals from O'Neill Regional Park in the Southern Subregion to the Central Subregion NCCP/HCP reserve. We raised similar concerns regarding the proposed development on the Saddle Creek property in our comments on the recently circulated DEIR- State Clearing House No. 199111120 (FWS-OR-1309.1).

Pursuant to the CEQA Guidelines (Section 15130), a revised DEIR should discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable and should review the impacts in light of past, present and future probable projects that could result in related impacts, including those outside of the control of the lead agency. However, this current, revised DEIR does not adequately address cumulative impacts to the low-elevation wildlife corridor/linkage through the Saddleback Meadows, Saddle Creek and Live Oak properties. Also, it appears that a comprehensive plan for maintaining a viable corridor/linkage through these properties has not been completed. For example, the Saddleback Meadows DEIR shows a northern wildlife corridor extending from Saddleback Meadows through the adjacent Saddle Creek property. However, the Saddle Creek DEIR does not show this corridor, which would be blocked by the residential development proposed in the DEIR. In addition, development on the Live Oak property could further limit wildlife movement between the subregions. Therefore, the Saddleback Meadows DEIR should evaluate cumulative impacts to wildlife movement in consideration of past development, the proposed development on the Saddle Creek and Live Oak properties and other probable developments, and demonstrate that the Saddleback Meadows

project will not preclude the retention of a viable low-elevation wildlife corridor/linkage connecting the Central and Southern Subregions through all three properties. We wish to work with the County and property owners to develop a comprehensive plan to accomplish this vital component of the Southern Subregion NCCP/HCP.

To address our concerns for Saddleback Meadows, the Wildlife Agencies recommend further consideration of Alternative 4 (F/TSP EIR 531 Staff Alternative B) of the DEIR as it would allow continued movement of wildlife through the area while still meeting the project's objective of "develop(ing) a single-family, rural community that balances residential development with protection of on-site sensitive resources and values of the surrounding community." Alternative 6 (the 44/178 Alternative) may be able to mitigate significant impacts to wildlife movement if remedial grading requirements can be limited within the corridor/linkage area.

Geotechnical

According to the DEIR, the site is characterized by several unfavorable geotechnical conditions including unstable landslides and presence of ground water that could compromise the site's ability to support the project. Mitigation would include the construction of canyon subdrains and back drains to minimize or eliminate the effects of ground water. The Final EIR (FEIR) should discuss how these changes would affect groundwater availability and timing for use by riparian vegetation in upper Aliso Creek.

Hydrology/Beneficial Uses

The Santa Ana Regional Water Quality Control Board has designated the existing biological beneficial uses of "warm freshwater habitat," "wildlife habitat," and "rare, threatened, or endangered species" for portions of Aliso Creek, including the reach downstream from the proposed Saddleback Meadows project. The Wildlife Agencies are concerned about the onsite and downstream effects the project-related changes in the surface flows may have on these beneficial uses and on the habitats and biological resources supported by Aliso Creek. In addition to modifications in peak flows resulting from an increase in impervious surface, we are concerned about changes in the velocity, volume, duration, and frequency of dry-weather and non-peak wet-weather flows. Even small changes in the flow regime often effect changes in the stream community that, over time, can seriously damage stream habitats. Increases in flows from impervious surfaces associated with urbanization can result in: 1) stream bed scouring and habitat degradation; 2) shoreline erosion and stream bank widening; 3) loss of aquatic species; and 4) decreased baseflow (USEPA 1999). Downstream sections of Aliso Creek are known to be sediment-deficient and have already been adversely affected by scour, erosion and subsequent habitat degradation. The Wildlife Agencies recommend that every effort be made to integrate measures to ensure full protection of the beneficial uses and biological resources of Aliso Creek. The development design and construction operations should minimize the modifications of dry and wet-weather flows and integrate onsite best management practices (BMPs) that would attenuate the flows to reduce impacts on the stream morphology and habitats onsite and downstream. Examples of BMPs to consider include appropriately sized grassy swales and vegetated detention basins. Proper design of structural BMPs will require analyses of the

sediment transport and hydrological regime of the headwaters of Aliso Creek. The project is located within Reach 1 of the *Aliso Creek Watershed Management Feasibility Study, Orange County, California* prepared for the Corps. We recommend this study be consulted to determine possible effects of the project on the Aliso Creek watershed.

Significance Criteria for Biological Resources

The thresholds of significance for biological resources provided in section 4.8.2 of the DEIR do not appear to be consistent with the CEQA definition of rare, threatened, and endangered species (see CEQA Guidelines, § 15380). In addition, The Department recommends that the significance criteria in the body of the DEIR be revised to be consistent with CEQA Sections 15064.7 and 15065, and Appendix G of the CEQA guidelines.

Annual Grasslands

The project proposes that mitigation requirements for cumulative impacts to raptor foraging habitat (consisting primarily of coastal sage scrub and grasslands) will be met in conjunction with the proposed coastal sage scrub habitat mitigation. The Department recommends mitigation measures be incorporated specifically for impacts to annual grassland. These areas provide foraging areas for raptors and small mammals and proposed impacts to a total of 103.7 acres on- and offsite should be considered significant. Appendix I.1 of the DEIR indicates that raptor species including Cooper's hawk (*Accipiter cooperii*), a state species of special concern (CSC), sharp-shinned hawk (*A. striatus*, CSC), red tailed hawk (*Buteo jamaicensis*) red shouldered hawk (*B. strianus*), and American kestrel (*Falco sparverius*) were observed during surveys of the project site, and other species including northern harrier (*Circus cyaneus*, CSC) and loggerhead shrike (*Lanius ludovicianus*, CSC) have at least a moderate potential of using the grasslands onsite for foraging. We therefore recommend that annual grassland mitigation at a 0.5:1 preservation-to-impact ratio in an offsite area with long-term conservation potential be included in the FEIR.

Intermediate Mariposa Lily

The DEIR states that impacts to intermediate mariposa lily (*Calochortus weeddii* var. *intermedius*) would not be significant. This species is listed by the California Native Plant Society as a "1B" plant (Plants rare, threatened, or endangered in California and elsewhere). Species included on List 1B must be fully considered under CEQA. The Department recommends that the FEIR include mitigation for impacts to this species (for example, see Rancho Potrero Leadership Academy EIR, County of Orange, 2001).

Cactus Wren

According to the DEIR, impacts to the cactus wren (*Campylorhynchus brunneicapillus cousei*) are not considered significant. As proposed in Appendix I.3 to the DEIR, the coastal sage scrub mitigation plan does not specifically include salvage or container stock planting of prickly-pear

(*Opuntia* spp.) required for cactus wren nesting and foraging. By providing suitable replacement habitat, a potentially significant impact to cactus wren may be mitigated. To provide replacement habitat for cactus wren impacted by implementation of the project, we recommend that the coastal sage scrub plant palette is revised to include a substantial amount of prickly-pear. This may be achieved by salvage of existing plant material followed by direct replanting within the mitigation area or by collecting pads prior to impact and rooting them in containers. In addition, we recommend that reference sites currently supporting cactus wren be chosen to provide an appropriate baseline for comparison.

Oak Woodland Mitigation Plan

Mitigation for oak woodland impacts is described on page 4.8-26 of the DEIR and we concur with the restoration approach in concept. However, unlike the coastal sage scrub mitigation plan, details of the oak woodland mitigation strategy are not adequately described in Appendix L3 such that the impacts can be shown to be mitigated below a level of significance. For example, the proposed locations for oak woodland restoration should be depicted and described. In addition, container sizes, understory species, and maintenance activities specific to the oak woodland restoration should be detailed.

The Wildlife Agencies appreciate the opportunity to review and comment on the DEIR. If you have any questions please contact Mr. David Zoutendyk of the Service at (760) 431-9440 or Mr. Brad Henderson of the Department at (310) 214-9950.

Sincerely,

Karen A. Evans
Assistant Field Supervisor
U.S. Fish and Wildlife Service

William E. Tippets
Environmental Program Manager
CA Department of Fish and Game

Literature Cited

U.S. Environmental Protection Agency. 1999. Preliminary Data Summary of Urban Storm Water Best Management Practices. EPA-821-R-99-012. Pp. 4-24

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

ACKNOWLEDGEMENT OF RECEIPT

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

DATE: May 9, 2002

TO: Bill Grieman/Chuck Shoemaker
Orange County Planning and Development Services Department
300 North Flower Street 3rd Floor
P.O. Box 4048
Santa Ana, CA 92702

RE: Saddleback Meadows
SCH#: 1996121072

This is to acknowledge that the State Clearinghouse has received your environmental document for state review. The review period assigned by the State Clearinghouse is:

Review Start Date: April 26, 2002
Review End Date: June 10, 2002

We have distributed your document to the following agencies and departments:

California Highway Patrol
Caltrans, District 12
Department of Conservation
Department of Fish and Game, Region 5
Department of Forestry and Fire Protection
Department of Housing and Community Development
Department of Parks and Recreation
Department of Water Resources
Native American Heritage Commission
Office of Historic Preservation
Regional Water Quality Control Board, Region 9
Resources Agency
State Lands Commission

The State Clearinghouse will provide a closing letter with any state agency comments to your attention on the date following the close of the review period.

Thank you for your participation in the State Clearinghouse review process.

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

June 11, 2002

Bill Grieman/Chuck Shoemaker
Orange County Planning and Development Services Department
300 North Flower Street 3rd Floor
P.O. Box 4048
Santa Ana, CA 92702

Subject: Saddleback Meadows
SCH#: 1996121072

Dear Bill Grieman/Chuck Shoemaker:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 10, 2002, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

Attachment P

Document Details Report
State Clearinghouse Data Base

SCH# 1996121072
Project Title Saddleback Meadows
Lead Agency Orange County

Type EIR Draft EIR

Description Phased development 299 single-family residential lots on approximately 222 acres. Approximately 71 percent of the project site is proposed to remain in open space.

Lead Agency Contact

Name Bill Grieman/Chuck Shoemaker
Agency Orange County Planning and Development Services Department
Phone 714-834-5550 **Fax** 714-834-6132
email
Address 300 North Flower Street 3rd Floor
P.O. Box 4048
City Santa Ana **State** CA **Zip** 92702

Project Location

County Orange
City
Region
Cross Streets El Toro Road/Live Oak Canyon Road
Parcel No. 856-071-81,91
Township **Range** **Section** **Base**

Proximity to:

Highways 241
Airports
Railways
Waterways Upper Oso Reservoir
Schools Portola Hills Elementary
Land Use Vacant/Residential/Suburban Residential

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Conservation; Department of Fish and Game, Region 5; Department of Forestry and Fire Protection; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 12; Department of Housing and Community Development; Regional Water Quality Control Board, Region 9; Native American Heritage Commission; State Lands Commission

Date Received 04/26/2002 **Start of Review** 04/26/2002 **End of Review** 06/10/2002

Note: Blanks in data fields result from insufficient information provided by lead agency.

Attachment F

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894

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Clear 6.10.02

May 28, 2002

Mr. Bill Grieman
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

File: IGR/CEQA
SCH#: 1996121072
Log #: 952B
SR: 241, I-5

Subject: Saddleback Meadows

Dear Mr. Grieman,

Thank you for the opportunity to review and comment on the Draft EIR dated April 2002 for **Saddleback Meadows.** The project is located on the eastern side of El Toro Road, one half mile from the Santiago Canyon/Live Oak Canyon Road junction.

The project consists of the development of 299 detached single family residences on 66.9 acres out of a total 222-acre site. The nearest State Routes are SR-241 and I-5.

Caltrans District 12 status is a reviewing agency on this project and has the following comments:

1. As indicated in the report, the proposed project will generate 3690 trips per day that mostly use El Toro Road. This report has not included west/south of El Toro beyond Santa Margarita Parkway towards I-5 interchange in the Traffic study section. We have concerns that this development will ultimately contribute to the cumulative impacts at El Toro Road/I-5.

2. We recommend that the project proponents work to coordinate their efforts with the City of Lake Forest and their project " The Arbor on El Toro Specific Plan" in terms of project phasing, filing a traffic management plan during construction, and avoiding impacts to El Toro Road and ultimately the I-5 during traffic peak periods.

3. Other than identifying the County Bikeway network, this project doesn't evaluate or stipulate the use of alternative modes of transportation, such as buses, to be incorporated into the development. Such alternatives would work to reduce future congestion in the region while at the same time help to improve the overall air quality.

4. The project proponents will insure that during construction all loads will be contained that may use state routes and that no net runoff increase will flow over, onto or under State Right of Way.

Please continue to keep us informed of this project and other future developments, which could potentially impact our transportation facilities. If you have any questions or need to contact us, please do not hesitate to call Maureen El Harake at (949) 724-2086.

Sincerely,

Robert F. Joseph, Chief
IGR/Community Planning Branch

c: Terry Roberts, Office of Planning and Research
Ron Helgeson, HQ IGR/Community Planning
Raouf Moussa, Traffic Operations – South
Joe El Harake, Traffic Operations – Toll Roads

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

Memorandum

Date: June 20, 2002

To: All Reviewing Agencies

From: Scott Morgan, Project Analyst

Re: SCH # 1996121072
Saddleback Meadows

Pursuant to the attached letter, the Lead Agency has extended the review period for the above referenced project to June 24, 2002 to accommodate the review process. All other project information remains the same.

cc: Bill Greiman
Orange County Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

PUBLIC NOTICE
of Time Extension
DRAFT ENVIRONMENTAL IMPACT REPORT

RECEIVED
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PROJECT: SADDLEBACK MEADOWS SCH# 1996121072

DESCRIPTION: Pursuant to the California Environmental Quality Act (CEQA), the Orange County Planning & Development Services Department has prepared Environmental Impact Report No. 566 to evaluate the environmental impacts resulting from the proposed Saddleback Meadows project. The project proposes the phased development of 299 single-family residential units on a 229.2-acre site. The gross density proposed is 1.4 dwelling units per acre, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6-acres) of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding & hiking trail connections and biological resource enhancement. Project implementation requires the approval of Zone Change (Foothill/Trabuco Specific Plan Amendment), Area Plan and Vesting Tentative Tract Map.

EIR 566 examines the potential impacts generated by the proposed project in relation to the following CEQA Checklist categories: Land Use & Planning; Geophysical; Hydrology & Drainage; Water Quality; Transportation/Circulation; Air Quality; Noise; Biological Resources; Aesthetics; Cultural/Scientific Resources; Recreation; Hazards; Public Services; and, Utilities & Service Systems. The proposal will result in unavoidable adverse impacts to air quality.

The purpose of this notice is to inform local residents, institutions and other interested parties about a TIME EXTENSION for the review of the Draft EIR. THE REVISED PUBLIC COMMENT PERIOD IS: APRIL 25TH, 2002 TO JUNE 24TH, 2002. Written comments on the Draft EIR must be submitted by June 24th, 2002, by 5:00 p.m. to: Manager, OCPDS/Environmental Planning Services Division, 300 N. Flower St., Box 4048, Santa Ana, California 92702-4048.

Location: Easterly side of El Toro Road, approximately ½ mile south of the intersection of Santiago Canyon Road/El Toro and Live Oak Canyon Road, in east-central unincorporated Orange County.

REVIEWING LOCATIONS

COPIES OF THE DRAFT EIR ARE AVAILABLE FOR PUBLIC REVIEW AT THE FOLLOWING LOCATIONS:

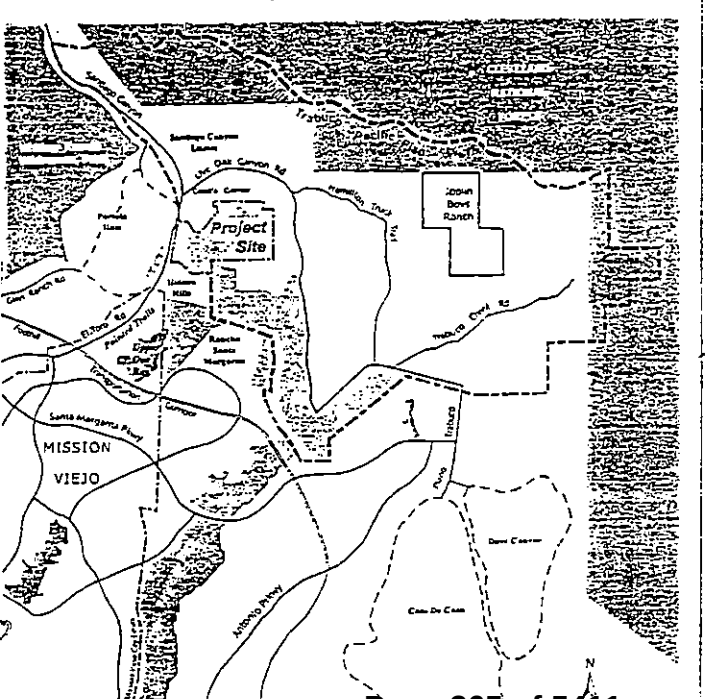
County of Orange/Planning & Development Services Department/
Environmental Planning Services Division
Contacts: Bill Grieman 834-5550
Chuck Shoemaker 834-5550

ORANGE COUNTY BRANCH LIBRARIES:
25209 Marguerite Parkway, Mission Viejo
28192 Silverado Canyon Road, Silverado
24672 Raymond Avenue, El Toro
30902 La Promesa Drive, Rancho Santa Margarita
California State University, Fullerton, Library Documents Section
UC Irvine Main Library/Government Publications/Microforms Department

COPIES OF THE DRAFT EIR HAVE BEEN PROVIDED TO THE FOLLOWING GROUPS:

FOOTHILL/TRABUCO REVIEW BOARD MEMBERS: Adam Smith, Jeanne Porter, Robert Wilkes, Raymond Mills, & Stephen Nordeck
Hidden Ridge HOA, c/o Mr. Jerry Kacsir
Portola Hills HOA I, c/o Rinevol & Co.
Portola Hills HOA II, c/o Ms. Elizabeth Wallace
Canyon View Homeowners Association
Inter-Canyon League, c/o Bob Hunt
California Native Plant Society
National Audubon Society, Inc.

PROJECT LOCATION MAP



See NOTE below

SCH#1996121072

NOTICE OF COMPLETION

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

Project Title: Saddleback Meadows — DEIR 566

Lead Agency:	County of Orange	Contact Person:	Bill Griemen/Chuck Shoemaker
Street Address:	300 North Flower Street	Phone:	(714) 834-5550
City:	Santa Ana	County:	Orange

Project Location: Easterly side of El Toro Road, approximately ½ mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County.

County:	Orange	City/Nearest Community:	Mission Viejo		
Cross Streets:	El Toro Road/Live Oak Canyon Road	Zip Code:	92679	Total Acres:	222
Assessor's Parcel No.:	859-071, 81 & 91	Section:	Twp:	Range:	Base:
Within 2 Miles: State Hwy. #:	241	Waterways:	Upper Oso Reservoir		
Airports:	N/A	Railways:	N/A	Schools:	Portola Hills Elementary

Document Type (Check one)

RECEIVED
APR 25 2002
STATE CLEARING HOUSE

	CEQA	NEPA	OTHER
_ NOP	_ Supplement/Subsequent	_ NOI	_ Joint Document
_ Early Cons	_ Prior EIR (SCH #)	_ EA	_ Final Document
_ Neg Dec	_ Other	_ Draft EIS	_ Other
X Draft EIR		_ FONSI	

Local Action Type (Check all that apply)

_ General Plan Update	_ Specific Plan	X Rezone	_ Annexation
_ General Plan Amend.	_ Master Plan	_ Prezone	_ Redevelopment
_ General Plan Element	_ Planned Unit Dev.	_ Use Permit	_ Coastal Permit
X Community Plan	_ Site Plan	X Land Division subdivision	_ Other
		_ parcel, tract maps etc.)	

Development Type (Check all that apply)

	Units/Sq Ft	Acres	Employees		Type	
X Residential	299	222		_ Water Facilities		MGD
_ Office				_ Transportation		
_ Commercial				_ Mining	Mineral:	
_ Industrial				_ Power		Watts
_ Educational				_ Waste Treatment		
_ Recreational				_ Hazardous Waste		
				_ Other	Open Space – 158-acres	

Project Issues Discussed in Document (Check all that apply)

X Aesthetics/Visual	X Flood Plain/Flooding	X Schools/Universities	X Water Quality
_ Agricultural Land	X Forest Land/Fire Hazard	_ Septic Systems	X Water Supply/Ground Water
X Air Quality	X Geologic/Seismic	X Sewer Capacity	X Wetland/Riparian
X Archaeo/History	_ Minerals	X Soil Erosion/Compaction	X Wildlife
_ Coastal Zone	X Noise	X Solid Waste	X Growth Inducing
X Drainage Absorption	_ Population Housing Balance	X Toxic/Hazardous	X Land Use
_ Economic/Jobs	_ Public Services/Facilities	X Traffic/Circulation	X Cumulative Effects
_ Fiscal	X Recreation/Parks	X Vegetation	_ Other

Present Land Use/Zoning/General Plan Designation

Vacant/Residential/Suburban Residential

Project Description:

Phased development 299 single-family residential lots on approximately 222 acres. Approximately 71 percent of the project site is proposed to remain in open space.

State Clearinghouse Contact: Scott Morgan (916) 445-0613

State Review Began: 4-26-2002

SCH COMPLIANCE: 6-24 6-26-2002

Please note State Clearinghouse Number (SCH#) on all Comments

SCH#: 1996121072

Please forward late comments directly to the Lead Agency

AQMD/APCD 33

(Resources: 4/27)

Project Sent to the following State Agencies

X Resources	Boating & Waterways	Coastal Comm
Colorado Rvr Bd	X Conservation	X Fish & Game # 5
Delta Protection Comm	X Forestry & Fire Prot	X Historic Preservation
X Parks & Rec	Reclamation Board	Bay Cons & Dev Comm
X DWR	OES (Emergency Svcs)	

Bus Transp Hous

Aeronautics	X CHP	X Caltrans # 12
Trans Planning	X Housing & Com Dev	X Food & Agriculture
Health Services		

State/Consumer Svcs

General Services		

Cal EPA

ARB – Airport Projects	ARB – Transportation Projects	ARB – Major Industrial Projects
Integrated Waste Mgmt Bd	SWRCB: Clean Wtr Prog	SWRCB: Wtr Quality
SWRCB: Wtr Rights	X Reg. WQCB # 9	Toxic Sub Ctrl-CTC

Yth/Adlt Corrections

Corrections		

Independent Comm

Energy Commission	X NAHC	Public Utilities Comm
Santa Monica Mtns	X State Lands Comm	Tahoe Rgl Plan Agency

Other:

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

June 25, 2002

Bill Grieman/Chuck Shoemaker
Orange County Planning and Development Services Department
300 North Flower Street 3rd Floor
P.O. Box 4048
Santa Ana, CA 92702

Subject: Saddleback Meadows
SCH#: 1996121072

Dear Bill Grieman/Chuck Shoemaker:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 24, 2002, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 1996121072
Project Title Saddleback Meadows
Lead Agency Orange County

Type EIR Draft EIR

Description Phased development 299 single-family residential lots on approximately 222 acres. Approximately 71 percent of the project site is proposed to remain in open space.

Lead Agency Contact

Name Bill Grieman/Chuck Shoemaker
Agency Orange County Planning and Development Services Department
Phone 714-834-5550 **Fax** 714-834-6132
email
Address 300 North Flower Street 3rd Floor
P.O. Box 4048
City Santa Ana **State** CA **Zip** 92702

Project Location

County Orange
City
Region
Cross Streets El Toro Road/Live Oak Canyon Road
Parcel No. 856-071-81,91
Township **Range** **Section** **Base**

Proximity to:

Highways 241
Airports
Railways
Waterways Upper Oso Reservoir
Schools Portola Hills Elementary
Land Use Vacant/Residential/Suburban Residential

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Conservation; Department of Fish and Game, Region 5; Department of Forestry and Fire Protection; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 12; Department of Housing and Community Development; Regional Water Quality Control Board, Region 9; Native American Heritage Commission; State Lands Commission

Date Received 04/26/2002 **Start of Review** 04/26/2002 **End of Review** 06/24/2002

Note: Blanks in data fields result from insufficient information provided by lead agency.

STATE OF CALIFORNIA---BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894

Flex your power!
Be energy efficient!

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May 28, 2002

Mr. Bill Grieman
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

File: IGR/CEQA
SCH#: 1996121072
Log #: 952B
SR: 241, I-5

Subject: Saddleback Meadows

Dear Mr. Grieman

Thank you for the opportunity to review and comment on the Draft EIR dated April 2002 for **Saddleback Meadows.** The project is located on the eastern side of El Toro Road, one half mile from the Santiago Canyon/Live Oak Canyon Road junction.

The project consists of the development of 299 detached single family residences on 66.9 acres out of a total 222-acre site. The nearest State Routes are SR-241 and I-5.

Caltrans District 12 status is a reviewing agency on this project and has the following comments:

1. As indicated in the report, the proposed project will generate 3690 trips per day that mostly use El Toro Road. This report has not included west/south of El Toro beyond Santa Margarita Parkway towards I-5 interchange in the Traffic study section. We have concerns that this development will ultimately contribute to the cumulative impacts at El Toro Road/I-5.

2. We recommend that the project proponents work to coordinate their efforts with the City of Lake Forest and their project " The Arbor on El Toro Specific Plan" in terms of project phasing, filing a traffic management plan during construction, and avoiding impacts to El Toro Road and ultimately the I-5 during traffic peak periods.

3. Other than identifying the County Bikeway network, this project doesn't evaluate or stipulate the use of alternative modes of transportation, such as buses, to be incorporated into the development. Such alternatives would work to reduce future congestion in the region while at the same time help to improve the overall air quality.

4. The project proponents will insure that during construction all loads will be contained that may use state routes and that no net runoff increase will flow over, onto or under State Right of Way.

Please continue to keep us informed of this project and other future developments, which could potentially impact our transportation facilities. If you have any questions or need to contact us, please do not hesitate to call Maureen El Harake at (949) 724-2086.

Sincerely,

Robert F. Joseph, Chief
IGR/Community Planning Branch

c: Terry Roberts, Office of Planning and Research
Ron Helgeson, HQ IGR/Community Planning
Raouf Moussa, Traffic Operations – South
Joe El Harake, Traffic Operations – Toll Roads

Attachment F

STATE OF CALIFORNIA---BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894

Flex your power!
Be energy efficient!

May 28, 2002

Mr. Bill Grieman
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

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Sincerely,

Robert F. Joseph, Chief
IGR/Community Planning Branch

c: Terry Roberts, Office of Planning and Research
Ron Helgeson, HQ IGR/Community Planning
Raouf Moussa, Traffic Operations – South
Joe El Harake, Traffic Operations – Toll Roads

CALIFORNIA STATE UNIVERSITY, LOS ANGELES

COLLEGE OF NATURAL AND SOCIAL SCIENCES
Department of Anthropology

Anthropology Department

June 10, 2002

Manager,
OCPDS/Environmental Planning Services Division
300 N. Flower Street
Box 4048
Santa Ana, CA 92702

RE: Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows

I have reviewed the cultural resources section of the DEIR and have the following comments:

1. The cultural resources section of the EIR does not accurately reflect the findings and recommendations provided in the cultural resources appendix. In some cases there are serious contradictions.

2. The cultural resources appendix indicates that this project is subject to a Corps of Engineers 404 permit and therefore the cultural resources are subject to the provisions of Section 106 of the National Historic Preservation Act. The EIR does not indicate this and the treatment of the archaeological sites is not in compliance with the Act as amended in 1999

3. The investigations to determine the significance/importance of the archaeological sites are inadequate. The excavation of three 1 X 1 meter units in CA-ORA-713 is not sufficient to determine the depth, nature, condition and extent of a site of this size. Since the site appears to be dispersed over a large area, remote sensing and/or geomorphological studies should be conducted to locate areas of the site that contain buried cultural deposits and features. The discovery of buried cultural deposits and features or human burials should not be done by bulldozer.

4. Likewise the determination that CA-ORA-715 is based on the excavation of four 1 X 1 meter units. This is not sufficient to determine the depth, nature, condition, and extent of this site and to determine that it is not "significant/important".

5. Pg. 4.10-12 of the EIS states that a final test excavation of site CA-ORA-1437 was undertaken in November 2001, but does not indicate the methods used or the results. There is no information to support the determination that the site is not "significant/important".

6. Pg. 4.10-14 – Project impacts: The statements regarding CA-ORA-710 are contradictory and raise doubts regarding whether the site is going to be preserved. If

5151 State University Drive, Los Angeles, CA 90032-8220 (323) 343-2440 FAX: (323) 343-2445 www.calstatela.edu

The California State University: Bakersfield, Channel Islands, Chico, Dominguez Hills, Fresno, Fullerton, Hayward, Humboldt, Long Beach, Los Angeles, Maritime Academy, Monterey Bay, Northridge, Pomona, Sacramento, San Bernardino, San Diego, San Francisco, San Jose, San Luis Obispo, San Marcos, Sonoma, Stanislaus

the sit is to be protected through site burial and preserved within a biological mitigation area, then why does the EIR state that data recovery would occur prior to ground disturbing activities. If the site is to be protected, why should there be ground-disturbing activities? In addition, site burial has to be done very carefully to ensure that the site will be protected. The standards/specifications for covering the site should be indicated.

7. CA-ORA-1257 has not been subsurface tested and should not be graded without further investigation.

8. CA-ORA-711 is considered to be significant/important. According to the DEIR, only a small fraction of the total site area was tested. Grading with monitoring as stated on pg. 4.10-14 is not adequate mitigation for the destruction of the site.

9. Pg. 4.10-20: The DEIR makes the assumption that the completion of a data recovery excavation program, (or even worse, monitoring during grading) constitutes a no adverse effect. This is not the case. The implementing regulations for Section 106 of the National Historic Preservation Act (36 CFR 800.5(a)(2)(iii) along with 800.5(a)(2)(I), as amended May 1999, acknowledge the reality that destruction of a site and recovery of its information and artifacts is adverse and no longer consider data recovery as sufficient mitigation to reduce the impacts to a level of insignificance.

10. Even if this project were not under the jurisdiction of the federal government, CEQA was patterned after the National Environmental Policy Act and the pertinent federal regulations. Therefore, to ignore the reality that the destruction of an archaeological site, including the destructive process of archaeological excavations, is a significant impact seems counter to the spirit and intent of CEQA.

11. According to CEQA: **When archaeological resources are involved, avoidance, or preservation in an undisturbed state is the preferable course of action.** Section 21083.2 then provides that preservation methods may include:
a. Planning construction to avoid archaeological sites
b. Deeding sites into permanent conservation easements
c. Capping or covering sites with a layer of soil before building on the sites.
d. Planning parks, greenspace, or other open space to incorporate archaeological sites.

When avoidance is not possible, then data recovery excavation may be the only feasible mitigation measure.

11. According to CEQA data recovery is the last resort after the lead agency considers all of the above preservation methods and determines that they are not possible or feasible. With the exception of CA-ORA-710 (but the EIR also implies that the site may be impacted – see above) the only mitigation measures that have been considered for the remaining sites to be impacted by the proposed project are data recovery excavation, or worse yet, grading with monitoring.

Attachment F

Based on the above comments, the DEIR is inadequate in that (1) There is not sufficient information to support the determinations that all of the sites to be impacted by the proposed project (except two) are not significant/important. (2) The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of six of the seven archaeological sites to be impacted by the proposed project have been considered. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. If the determination is that none of the preservation measures are possible or feasible, the justification for this determination and documentation that serious consideration was given to preservation methods should be included in the EIR. (3) Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

If it is determined that data recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Preservation Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

If you have any questions or comments I can be reached at (323) 343-2445 or pmartz@calstatela.edu.

Sincerely,

Patricia Martz

Patricia Martz, Ph.D.
Professor

South Coast
Air Quality Management District
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • http://www.aqmd.gov

FAXED: JUNE 7, 2002

June 7, 2002

Chuck Shoemaker
Manager, Environmental Planning Services
County of Orange
300 N. Flower Street
Box 4048
Santa Ana, CA 92702-4048

Dear Mr. Shoemaker

Draft Revised Subsequent Environmental Impact Report (DRSEIR)
Saddleback Meadows

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The following comments are meant as guidance for the Lead Agency and should be incorporated in the Final Environmental Impact Report.

Pursuant to Public Resources Code Section 21092.5, please provide the AQMD with written responses to all comments contained herein prior to the certification of the Final Environmental Impact Report. The AQMD would be happy to work with the Lead Agency to address these issues and any other questions that may arise. Please contact Charles Blankson, Ph.D., Transportation Specialist – CEQA Section, at (909) 396-3304 if you have any questions regarding these comments.

Sincerely

Mike A. Nazemi
Manager
Planning, Rule Development & Area Sources

Attachment

MN: CB

ORC020425-02
Control Number

Draft Revised Subsequent Environmental Impact Report (DRSEIR)
Saddleback Meadows

1. **Project Size**: In the Public Notice announcing the availability of the DRSEIR, it is stated that the proposed project will occupy an area measuring 229.2 acres and approximately 71 percent of this or 158.6 acres will be devoted to open space. In the Project Summary in the DRSEIR on page 1-3, it is stated that the proposed project will occupy 222 acres and 70 percent or 155.1 acres will be devoted to open space. It is not clear from the above statements whether the project area is 229.2 acres or 222 acres? Please provide accurate information on the size of the project area since it has implications for grading emissions and subsequently air quality.

2. **Emissions Inventory**: In Table 4.6.2 on page 4.6-7 of the DRSEIR, emissions data are provided for the years 2000 and 2010. While the 2010 forecasts are the same as those reported in the SCAQMD Final 1997 AQMP, the 2000 data is different. See Table B-6 on page III-B-18 of Appendix III of the SCAQMD Final 1997 AQMP. Please correct the discrepancy.

3. **URBEMIS2001**: It is reported in Appendix G of the DSEIR that the lead agency used URBEMIS7G to calculate project emissions. There are two points to be noted about this. The first is that both Appendix G and the SDEIR limit the discussion on construction activity impacts to fugitive dust and PM_{10} emissions. PM_{10} emissions are reported to be less than the PM_{10} significance threshold. However, as noted on page 4.6-12 of the DRSEIR, construction also entails the use of internal combustion engines in on-road and off-road mobile, semi-mobile and other diesel-powered equipment which generate emissions of NO_X, CO and also PM_{10}. There are also ROG emissions from paints and other architectural coatings. The lead agency fails to mention that the URBEMIS7G output table shows very large ROG construction emissions. At 1,171.19 pounds per day during the Summer, these are very significant emissions. The lead agency needs to address these high ROG emissions and propose measures to reduce them to less than the significance threshold in the Final SEIR. The second point is that URBEMIS2001 is currently available on ARB Webpage and has replaced URBEMIS7G as the model of choice and should be used to estimate project emissions. The lead agency is therefore encouraged to use URBEMIS200 which uses current emission factors and therefore reflects project emissions more accurately. In discussing the proposed project's air quality impacts, both construction and operational emissions as well as the corresponding significance thresholds should be presented in the main text of the Final SEIR. If construction ROG emissions still exceed the significance threshold, the lead agency should propose mitigation measures accordingly.

4. **Screening Tables**: The lead agency uses the Screening Table in the SCAQMD 1993 CEQA Air Quality Handbook (Table 6-2) to determine that construction-related equipment combustion emissions from the project will not be significant. See discussion on page 4.6-12 of the DRSEIR. Please note that although the screening tables were developed by the AQMD, the AQMD no longer supports the use of these tables in determining the significance of project emissions. This is because the mobile source emission factors used in computing the tables are from an old version of the California Air Resources Board EMFAC model.

Attachment P

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

t (213) 236-1800
f (213) 236-1825

www.scag.ca.gov

Officers: President: Supervisor Jon Mikels, County of San Bernardino • First Vice President: Councilmember Hal Bernson, Los Angeles • Second Vice President: Mayor Pro Tem Ron Perry, Brea • Immediate Past President: Mayor Ron Bates, Los Alamitos

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Orange County: Charles Smith, Orange County • Art Brown, La Habra • Ralph Bauer, Huntington Beach • Art Brown, Buena Park • Lou Bone, Tustin • Elizabeth Cowan, Costa Mesa • Cathryn DeYoung, Laguna Niguel • Richard Dixon, Lake Forest • Alta Duke, La Palma • Shirley McCracken, Anaheim • Bev Perry, Brea • Tod Ridgeway, Newport Beach

Riverside County: Bob Buster, Riverside County • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Ron Roberts, Temecula • Jan Stedman, Corona • Charles Weber, Moreno Valley

San Bernardino County: Jon Mikels, San Bernardino County • Bill Alexander, Rancho Cucamonga • David Eshleman, Fontana • Lee Ann Garcia, Grand Terrace • Rob Mouton, Yucaipa • Gwenn Norton-Perry, Chino Hills • Judith Valles, San Bernardino

Ventura County: Judy Mikels, Ventura County • Glen Becerra, Simi Valley • Donna De Paola, San Buenaventura • Toni Young, Port Hueneme

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Bill Davis, Simi Valley

May 7, 2002

Mr. Bill Grieman
County of Orange
Planning & Development Services Department/
Environmental Planning Services Division
300 N. Flower Street, P. O. Box 4048
Santa Ana, CA 92702-4048

RE: SCAG Clearinghouse No. I 20020232 Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows

Dear Mr. Grieman:

Thank you for submitting the **Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the **Saddleback Meadows**, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). The proposed project is not a residential development of more than 500 units. Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's **April 30, 2002** Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1867. Thank you.

Sincerely,

JEFFREY M. SMITH, AICP
Senior Planner
Intergovernmental Review

Received: 6/10/02 3:18PM; 9497543491 -> CURRENT PLANNING DIVISION ; Page 1
06/10/02 15:05 FAX 9497543491 TRANSP CORRIDOR 001

FAX

Date: June 10, 2002

Number of pages including cover sheet 16

TO:

Bill Grierman or
Chuck Shoemaker

Phone: 714-834-6105
Fax: 714-834-4652

FROM: Valarie McFall

Transportation Corridor Agencies
125 Pacifica, Suite 100
Irvine, CA 92618-3304

Phone: 949-754-3483

Fax: 949-754-3491

REMARKS: ___ Urgent _X_ For your review ___ Reply ASAP ___ Please comment

Please find attached a letter re: DEIR No./ 566: Saddleback Meadows.

Attachment F

San Joaquin Hills Corridor Agency
Chairwoman: Linda Lindholm Laguna Niguel

TRANSPORTATION CORRIDOR AGENCIES

Foothill/Eastern Corridor Agency
Chairman: Scott Diehl San Clemente

June 10, 2002

Manager
OCPDS/Environmental Planning Services Division
300 N. Flower Street
P.O. Box 4048
Santa Ana, CA 92702-4048

Subject: DEIR No. 566; Saddleback Meadows

To Whom It May Concern:

Thank you for forwarding the Draft Environmental Impact Report No. 556 for the proposed Saddleback Meadows Project. The Transportation Corridor Agencies (TCA) has reviewed the above-subject draft environmental document and would like to offer the following comment for your review:

- The DEIR identifies the intersection of Portola Parkway and the FTC-N as being impacted. The DEIR states; "The addition of one southbound left turn lane at the intersection of Portola Parkway (NS) at Foothill Transportation Corridor (EW) would be required for 2005 condition." Mitigation measure M 5-5 specifies that the project shall pay its fair share funding of this improvement. The fair share funding amount agreed to by the TCA must be submitted to the TCA prior to the issuance of any building permits for the project.

Should you have any questions regarding this letter, or the submission of payment, please contact me at (949) 754-3483.

Sincerely,

Macie Cleary-Milan

Macie Cleary-Milan, Deputy Director
Environmental and Planning

cc: Valarie McFall

Walter D. Kreutzen, Chief Executive Officer
125 PACIFICA, SUITE 100, IRVINE CA 92618-3304 • P.O. BOX 53770, IRVINE CA 92619-3770 • 949/754-3400 FAX 949/754-3467
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Mission Viejo • Orange • Newport Beach • Rancho Santa Margarita • Santa Ana • San Clemente • San Juan Capistrano • Tustin • Yorba Linda

ORANGE COUNTY FIRE AUTHORITY
P.O. Box 86, Orange, CA 92856-0086 • 145 South Water St., Orange, CA 92866
Chip Prather, Fire Chief *(714) 744-0400*

RECEIVED
JUN - 7 2002

June 6, 2002

Manager, OPDS/Environmental Planning Services
300 North Flower Street
P. O. Box 4048
Santa Ana, CA 92702-4048

Re: Draft EIR Saddleback Meadows

Dear Sir(s):

Thank you for the opportunity to comment on the Draft EIR for the Saddleback Meadows project. In response to our review, we would like to offer the following:

Page 4.12-1, Section 4.12.1, Second paragraph. "61 fire stations" should read "59 fire stations"

Page 4.12-1, Section 4.12.1, Third paragraph, Third bullet. Remove "only available from a medic van" from the sentence. OCFA provides paramedic service both paramedic assessment and full paramedic services through a number of configurations in addition to the medic vans.

Page 4.12-2, Table 4.12.1, Fire Station Locations. Several things are wrong with this table.

- Fire Station 18 is 4.2 miles from the project not 1.5. The response time to the project for FS18 would be calculated at 8 minutes and 40 second using an average of 35 mph and 90 seconds of call processing and turnout time.
- Fire Station 16 is located 3.5 miles from the project and would calculate at 9 minutes and 30 seconds using the same formula as above with a two minute time period added for the volunteer personnel to get to the fire station. This station does NOT have paramedics or full time firefighters. It is staffed with volunteer firefighters only.
- Fire Station 45 is located 5.3 miles away with a response time calculation of 10 minutes and 30 seconds.
- Additionally, Fire Station 54 is located 2.8 miles from the project with a response time calculation of 6 minutes and 20 seconds.
- Fire Station 31 is located 3.7 miles away with a response time of 7 minutes and 50 seconds. This is the closest paramedic unit to the project.

Page 4.12-2, Third paragraph. Change "average response time of six minutes" to "average response time of nine minutes".

Page 4.12-2, Forth paragraph. Replace the last sentence, "At this location three firefighters are on duty staffing either a paramedci assessment unit or a brush engine." With "At this location, 20 volunteer firefighters staff the engine when called upon to do so."

Page 4.12-3. First paragraph, last sentence. Should read 7 firefighters rather than 8 firefighters.

Page 4.12-9. Add new Condition SC12-16. Secured Fire Protection Agreement. "Prior to grading, the applicant shall enter into a Secured Fire Protection Agreement with the OCFA. The reason for the timing this agreement is that the service needs for the project increases at the point of grading and continues to increase as the project is built. Service agreements will need to be in place at this time.

As noted in Section 4.12.3, Cumulative Impact, the seven related projects in this area have an effect on the service delivery within the area. Additional staffing and/or equipment may be needed to meet this demand. This issue will be addressed within the Secured Fire Protection Agreement.

Page 5-9, Alternatives, Alternative 2 – No project Alternative, this project would have many issues with fuel modification both "onsite" and "offsite".

Page 5-38, Alternatives, Alternative 6 – 44/178 Alternative. It should be noted that the layout of the "Development Area" does not allow for secondary access for emergency vehicles and may require the project to acquire additional easements or other mitigation measures to insure that adequate access to the project is provided.

The project area is within the designated Special Fire Protection Area and is as a result a significant wildfire risk. These risks will require special mitigation measures an accordance with OCFA standards. All other standard conditions of development including access will also be applicable to the proposed project. Guidelines for these issues are available on the OCFA website at (http://www.ocfa.org/business/pandd/guidelin.htm).

If you have any additional questions or concerns regarding this project, please contact my officer at (714) 744-0484 or at genebegnell@ocfa.org.

Sincerely,

Gene F. Begnell
Battalion Chief, Strategic Services

STAFF MEMBERS

Bruce Boner, General Manager

TRABUCO CANYON WATER DISTRICT

BOARD OF DIRECTORS

James Hasselton, President
Matthew Dissinn, Vice President
Don Gladd, Director
Michael Safranski, Director
Corinne Loskot, Director

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

May 8, 2002

Manager
County of Orange
Planning & Development Services Department
Environmental Planning Services Division
300 N. Flower Street
P. O. Box 4048
Santa Ana, CA 92701-4048

Re: Comments of Trabuco Canyon Water District
Draft Revised Subsequent Environmental Impact, Report No. 566
Saddleback Meadows
Planning Application 980103, Zone Change (ZC) 98-3, Area Plan (AP) 98-2
Tentative Tract Map 15784, Vesting Tentative Tract Map 15230

Gentlemen:

Trabuco Canyon Water District (District) is in receipt of the Draft Revised Subsequent Environmental Impact Report No. 566 (DEIR 566) for the above-captioned project (Project). Based upon our review of the document, the following comments are submitted to the County of Orange (County) with regard to the Project and the environmental proceedings being undertaken by the County with respect to the Project. Please note that the District reserves its right to provide or submit additional or supplemental comments relative to the DEIR566 and any other or further documents provided or furnished by the County with respect to the Project or the environmental proceedings undertaken by the County with respect to the Project during the review period and/or public hearing process for this matter.

Request for Notices

Pursuant to the provisions of the California Environmental Quality Act (CEQA) and Public Resources Code Section 21091.1, the District hereby requests that copies of all notices and other documents mailed in relation to the above-referenced Project be furnished to the District. If there are any fees and charges required for the provision of such notices, please provide us with an invoice for such costs, and we will reimburse the appropriate County department. This

32003 Dove Canyon Drive, Trabuco Canyon, CA 92679 · 949/858-0277 · Fax: 949/858-3025
Mailing Address: P.O. Box 500, Trabuco Canyon, CA 92678
www.tcwd.ca.gov

request for notice specifically includes, but is not necessarily limited to, notices of all hearings, proposed actions to be taken with regard to the developmental process and, in particular, any Notice of Determination prepared, furnished or filed with regard to this Project.

Background Information

Our general legal counsel, Bowie, Arneson, Wiles & Giannone, provided written comments on behalf of the District on August 11, 1997 and supplemental comments on October 17, 1997, photocopies of which are attached hereto. We request that these letters be included as part of the record of proceedings for the environmental review of the Project, Including DEIR566.

As stated in the October 17, 1997 letter, there remains a "significant question as to whether the mitigation measure referenced includes and covers necessary master plan and in-tract water transmission and distribution facilities, and necessary master plan in-tract wastewater facilities." We again request that mitigation monitoring language, as required by Public Resources Code Section 21081(a)(1) and Section 21081.6, be incorporated within the final environmental impact report prepared for the Project.

Trabuco Canyon Water District further states that the District's Rules and Regulations require improvement agreements to be entered into in order for the District to approve tract maps and for the District to provide water and wastewater service to any property within its boundaries. The District previously requested of California Quartet to undertake negotiations relative to entering new improvement agreements relative to the Project. No response has been received by the District.

In addition to the above, a Sub-Area Master Plan must be prepared and financed by the developer to define needed facility improvements which include:

> Water: Pump stations, reservoir, pressure reducing valves and pipelines.
> Sewer: Local collection lines only. The project has already purchased regional wastewater collection, treatment and disposal capacity.

All fees and capacity charges must be reevaluated following completion of the Sub-Area Master Plan.

Sincerely,

Bruce Boner
General Manager

BB:ses

attachments

CITY OF LAKE FOREST

Celebrating 10 Years of Cityhood

Mayor
Richard T. Dixon

Mayor Pro Tem
Peter Herzog

Council Members
Kathryn McCullough
Marcia Rudolph
Helen Wilson

City Manager
Robert C. Dunek

June 6, 2002

Manager
OCPDS/Environmental Planning Services Division
300 N. Flower St.
Box 4048
Santa Ana, CA 92702-4048

SUBJECT: Saddleback Meadows Draft EIR

Dear County Staff:

The City of Lake Forest has received the Draft Environmental Impact Report for the Saddleback Meadows development. Public Works staff has reviewed the Water Quality Technical Report, Appendix E and Traffic Study, Appendix F of the EIR and offers the attached comments. Development Services staff has reviewed the body of the EIR and offers the following comments;

1. Section 3.7 and Table 3-1 discuss related projects. Please confirm project 3, Los Angeles Athletic Club is the name of the self-storage facility located on the corner of Marguerite Parkway and El Toro Road. In addition, the Gateway Commercial Center Project located on the corner of Portola Parkway and El Toro Road, within the City of Lake Forest, should be considered in the EIR. Please see City staff for information on the approved project.

2. The applicant should be advised that the City of Lake Forest does not permit any off-site signage. Therefore, there shall be no advertising or directional signage placed within the City of Lake Forest or along streets within the City's jurisdiction.

We would like to continue to receive information and documents on the project. Please send all further correspondence to myself, Ms. Gayle Ackerman, AICP, Director of Development Services at 23161 Lake Center Drive, Suite 100, Lake Forest, CA 92630, telephone number (949) 461-3460.

Sincerely,
CITY OF LAKE FOREST

Gayle Ackerman

Gayle Ackerman, AICP
Director of Development Services

Attachments: Memo from Nabil Kassih, June 4, 2002 and Memo from John Squire, May 29, 2002

CC: Bob Woodings, P.E., Director of Public Works
Interjurisdictional File

DRUG USE IS LIFE ABUSE

MEMORANDUM

DATE: JUNE 4, 2002

TO: STEPHANIE EKLUND
DEVELOPMENT SERVICES PLANNER

FROM: NABIL KASSIH, P.E.
CIVIL ENGINEERING ASSOCIATE

SUBJECT: REVIEW OF WATER QUALITY MANAGEMENT PLAN FOR THE SADDLEBACK MEADOWS DRAFT EIR

I have reviewed the Conceptual Water Quality Management Plan section of Saddleback Meadows EIR. The following are comments for the subject document.

1. In the Developed Conditions section of the Report, page 6, it states that "The permanent open space will dedicated to the County of Orange as a regional park and will be maintained by the County or a third-party conservation group". The report indicated that this open space area is 88.2 acres.

   - Has the County of Orange agreed to accept the open space area and the maintenance responsibility associated with it?
   - What impacts will this dedication have on the City if and when this area is annexed to the City of Lake Forest?
   - Will the public have access to this regional park?

   Please respond to these questions and provide additional information to clarify this item and its impact on the City of Lake Forest.

2. In the Developed Conditions section of the Report, Page 6, states that "Only lots 1 through 37 connect directly to an existing storm drain facility in El Toro Road". Please provide all required Hydrology and Hydraulic backup information to show that the existing facility has enough capacity to accommodate this portion of the development. Furthermore, provide detail information on the watershed that contributes to this existing facility on El Toro Road and the down stream impacts of this development.

3. Section 7 entitled "Monitoring, Inspection and Maintenance, page 12, Subsection (g) entitled "Common Area Catch Basin Inspection", the inspection and power wash of the screen for the stormceptor should be performed more than once per year. In fact,

the first few years after completion of this project, the inspection rate should be 3-4 times per year, or after a sizeable rainstorm. This rate of inspection will be needed until such time the newly planted vegetation/landscaping begin to contribute to the reduction of erosion. After that, the rate may be reduced 2-3 times per year to allow for continuos and proper clean screens for all stormceptors.

4. Same section as stated in item 3 above, page 12, subsection (h) entitled "Street Sweeping Private Streets and Parking Lots". Please be more specific in regards to statement "This procedure will be intensified around October 15th of each year..." In other words, is the street sweeping required twice a week or more? The term "intensified" needs to be clearly defined.

5. 75% of this area ultimately drains to Aliso Creek, which is an impaired water body and is under an enforcement action (California Water Code Section 13225) from the San Diego Regional Water Quality Control Board. What specific measures are to be undertaken by this development to eliminate pollutant runoff from entering the curb and gutter as required by the NPDES permit and in support of the enforcement action.

cc: Robert L. Woodings, P.E., Director of Public Works/City Engineer
Ted Simon, P.E., Engineering Services Manager
John Squier, P.E., City Traffic Engineer

f\c\e\n\n\saddleback meadows EIR.doc

MEMORANDUM

DATE: MAY 29, 2002

TO: STEPHANIE ECKLUND
DEVELOPMENT SERVICES PLANNER

FROM: JOHN SQUIER, P.E.
TRAFFIC ENGINEER

SUBJECT: REVIEW OF TRAFFIC SADDLEBACK MEADOWS DRAFT EIR

Please find attached comments on the subject traffic study.

Attachment

cc: Gayle Ackerman, AICP, Director of Development Services
Robert L. Woodings, P.E., Director of Public Works/City Engineer
Theodore G. Simon, P.E., Engineering Services Manager

F:\Public Works\TOM\SM Draft EIR Trans 052902.doc

WILLDAN
Serving Public Agencies

Memorandum

TO: Mr. Bob Woodings, Director of Public Works/City Engineer
Mr. John Squier, Traffic Engineer
- City of Lake Forest

FROM: Mr. R. Scott Bacsikin, P.E., Division Manager RSB (by HK)

SUBJECT: Saddleback Meadows Traffic Impact Report

DATE: May 23, 2002

We have reviewed the *Saddleback Meadows Traffic Report* prepared by Urban Crossroads for the County of Orange. The following are comments for the subject document.

1. The following intersections are STOP sign controlled and should be analyzed utilizing the 2000 HCM: Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline Rd. and Santiago Canyon Rd./Live Oak Canyon Rd. The intersection analyses Tables should be updated to reflect the delay/LOS for each of these intersections under each scenario which was analyzed.

2. Although the intersection of El Toro Rd./Live Oak Canyon Rd. does meet a warrant for signalization under existing conditions, the HCM worksheets indicate that this intersection is currently operating at acceptable Levels of Service B during both the AM and PM peak hours. Therefore, further analyses should be completed to determine if signalization is needed based upon other factors such as accident data or safety concerns.

3. The volumes provided in the count data found in Appendix B do not match the northbound and southbound through volumes at the intersection of Portola Parkway and the Foothill Transportation Corridor Ramps under existing conditions as shown in Figures 2E and 2F. A discussion should be added on how the northbound and southbound existing through volumes were derived for the AM and PM peak hours.

4. On Table 2-2, the Level of Service at Portola Parkway/Glenn Ranch Road should be "B" and not "A".

5. The peak hour project volumes for the AM inbound and PM outbound movements at the project access point on El Toro Road, as shown in Exhibits 3-C and 3-D, do not equate to the projected trip generation provided in Table 3-2. The Figures and intersection analyses worksheets should be revised to reflect the correct numbers.

6. Table 3-5 should be revised to reflect the Level of Service on each road segment based upon the roadway capacity values found in Table 2-1.

7. On Table 4-4 the following Levels of Service should be corrected to reflect to following Levels of Service:

   El Toro/Valley Vista Way - PM peak hour - LOS B
   Saddleback Ranch/Glenn Ranch - PM peak hour - LOS B
   Portola Parkway/El Toro - AM peak hour - LOS D
   Portola Parkway/El Toro - PM peak hour - LOS C

8. It is unclear who is responsible for the Year 2005 improvement (Southbound Left Turn Lane) required at the study intersection of Portola Parkway/Foothill Transportation Corridor. This should be indicated in the study.

9. Table 4-6 should be corrected. The study intersection of El Toro Rd./Valley Vista Way should have a LOS value of E instead of D.

10. A discussion/table should be added to the traffic study regarding the project's impacts at each study intersection where the Level of Service is unacceptable and the project increases the ICU value, and where the intersection's operation is degraded to an unacceptable operation with the project. In addition, the proposed improvements, which would mitigate the project's impacts, should be shown along with additional improvements which are needed without the project for Year 2025 conditions. Responsibility of the improvements should also be provided.

11. Peak hour traffic volumes for some movements under the Year 2025 without the project scenario are decreasing when compared to volumes under the Year 2005 without the project scenario. The following intersections should be reviewed and changes made to the Figures and ICU worksheets or an explanation provided on why the volumes are decreasing in the Year 2025.

Santiago Canyon/Modjeska Canyon	Santiago Canyon/Ridgeline
El Toro/Live Oak Canyon	El Toro/Ridgeline
El Toro/Valley Vista	El Toro/Glenn Ranch
Saddleback Ranch / Glenn Ranch	Marguerite Parkway/El Toro
Portola Pkwy/Glenn Ranch	Portola Pkwy/Foothill Trans. Corr.
Portola Pkwy/El Toro	

12. Appendix J contains traffic signal warrants for the intersections of Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline and El Toro Rd./Live Oak Canyon Road under a variety of analyses conditions. The body of the report does not discuss why traffic signal warrants were applied or when (under what time-frame) the signal may be required. This should be included in the text of the report.

13. There is an existing bike path/trail, which runs along the eastside and parallel with El Toro Road. The main project access will intersect this bike path/trail. Provisions should be provided for signing the bike path/trail with the proper controls.

14. There is a discrepancy in the trip generation provided in a letter dated October 17, 2001 to Mr. Pike Oliver, California Quartet LTD, from Mr. Bill Lawson, Urban Crossroads, Inc regarding "Alternative Development Scenarios" for the *Saddleback Meadows* Alternatives. This letter should be revised so the trip generation data provided in the letter reflects the trip generation information indicated in Table 2 of the aforementioned letter.

Susan Withrow
Mayor
Sherri M. Butterfield
Mayor Pro Tempore
William S. Craycraft
Council Member
John Paul "J.P." Ledesma
Council Member
Gail Reavis
Council Member

City of Mission Viejo

Community Development Department

May 30, 2002

Frank McGill
Senior Planner
County of Orange
P.O. Box 4048
Santa Ana, CA 92702

SUBJECT: Zone Change ZC98-3 and Area Plan AP98-2 for Saddleback Meadows (aka Bridlewood) in the County of Orange

Dear Mr. McGill:

Thank you for the opportunity to review and comment on Zone Change ZC98-3 and Area Plan AP98-2 for Saddleback Meadows (aka Bridlewood) in the County of Orange. Of particular interest to the City of Mission Viejo are the transportation-related components of the Draft Revised Subsequent Environmental Impact Report (EIR 566) for the Saddleback Meadows project filed with the County of Orange. The City's comments are as follows:

1. Project Trip Generation:
   The project traffic study identifies a residential trip distribution assumption wherein twenty-five percent of the daily traffic would enter/leave the project site, using El Toro Road north of the project entrance, and with twenty percent continuing along Santiago Canyon Road. Page 3-5 of the project traffic study states that "trip distribution patterns for this study are consistent with previous traffic studies and were reviewed by County staff prior to completion of this traffic analysis." The City of Mission Viejo continues to believe that the 25% assignment of traffic to El Toro Road, north of the project access, is high. The City of Mission Viejo recommends that the Draft EIR provide narrative discussion which explains the land uses or destinations that exist or are proposed north of the project site, which would cause one-quarter of the project's daily trips to use this segment of El Toro Road, versus using El Toro Road south of the project site to access freeways, major highways, and public facilities. The assumptions used in the project trip distribution would have a resultant impact on analyzed intersections south of the project entrance to El Toro Road, and, in particular, would increase Intersection Capacity Utilization (ICU) calculations if a greater percentage of project trips were assigned southerly along El Toro Road.

2. El Toro/Glenn Ranch Road Intersection:
   The El Toro/Glenn Ranch Road intersection is a Measure M intersection that is fully assigned to the City of Mission Viejo. In compliance with countywide Measure M

200 Civic Center • Mission Viejo, California 92691
http://www.ci.mission-viejo.ca.us
949/470-3053
FAX 949/951-7176

requirements, the City of Mission Viejo must maintain this intersection at a Level of Service "D" or better.

The project traffic study identifies that the El Toro/Glenn Ranch Road intersection will maintain a Level of Service A through project buildout in Year 2005, but that the intersection is projected to operate at a Level of Service "E" in the pm peak period in Year 2025 buildout, with or without the project. The project traffic study further identifies that the completion of additional El Toro Road improvements, specifically, the addition of through lanes that increases El Toro Road's lane capacity from a two-lane to a four-lane facility, will allow this intersection to operate at a Level of Service "C" in the pm peak period, thus maintaining consistency with Measure M Growth Management Program level of service standards.

The City of Mission Viejo recognizes that the implementation of additional El Toro Road improvements is not necessitated by the Saddleback Meadows project, since project buildout, and associated levels of service standards, can be maintained at the El Toro/Glenn Ranch Road intersection with existing improvements. In conjunction with Measure M Interjurisdictional Planning Forums, the City of Mission Viejo will monitor the operation of El Toro Road and will work with the County of Orange, to allow for the implementation of the additional El Toro Road lane improvements in advance of any failing intersection performance at the El Toro/Glenn Ranch Road intersection.

On behalf of the City of Mission Viejo, I thank you for your consideration of our comments. If you have any questions, please feel free to call Elaine Lister or me at (949) 470-3053.

Sincerely,

Charles E. Wilson, AICP
Director of Community Development

cc: Dennis Wilberg, Assistant City Manager/ Director of Public Works
Loren Anderson, City Engineer
Shirley Land, Transportation Manager
Elaine Lister, Planning Manager

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CITY OF RANCHO SANTA MARGARITA

May 16, 2002

Mayor
James M. Thor
Mayor Pro Tempore
Gary Thompson
Council Members
Neil C. Blais
Carol Gamble
Christy Riley

County of Orange Planning and Development Services Department
Attn: Frank McGill
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: Saddelback Meadows Zone Change and Area Plan

Dear Mr. McGill:

Thank you for the opportunity to review and comment on the Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the proposed Saddleback Meadows development. It is our understanding that the existing zoning allows for 705 manufactured homes, 1.7 acres of commercial, and 130 acres of open space. The proposed development will include 299 single-family detached dwelling units and 155 acres of open space.

The City of Rancho Santa Margarita has reviewed the Zone Change and Area Plan and has the following comments:

1. Saddleback Meadows Rural Character Statement Page 6 (graphics): It is not clear which direction the views from off-site are from.

2. Page 6-1: Grading Concept: Contour grading is discussed but there are not any graphics that show where cut and fill areas will occur.

Please include the City of Rancho Santa Margarita on your mailing list for review of any documents related to this project.

30211 Avenida de las Banderas, Suite 101 • Rancho Santa Margarita • California 92688
Phone: (949) 635-1800 • Fax: (949) 635-1840 • www.cityofrsm.org

CITY OF RANCHO SANTA MARGARITA

If you have any questions or concerns about our comments, please call me at (949) 635-1800.

SINCERELY,

Rich Fisher

for Kathleen Haton
Planning Director

Mayor
James M. Thor

Mayor Pro Tempore
Gary Thompson

Council Members
Neil C. Blais
Carol Gamble
Christy Riley

30211 Avenida de las Banderas, Suite 101 • Rancho Santa Margarita • California 92688
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CENTER FOR BIOLOGICAL DIVERSITY

CALIFORNIA AND PACIFIC OFFICE

protecting and restoring natural ecosystems and imperiled species through science, education, policy, and environmental law

VIA FACSIMILE AND U.S. MAIL

June 24, 2002

Project Manager
Environmental Planning Services Division
County of Orange
300 N. Flower, Room 321
Box 4048
Santa Ana, California 92702-4048
Facsimile: (714) 834-6132

RE: Comments on Draft Revised Subsequent EIR 565 (SCH No. 1996121072) for Saddleback Meadows.

Dear Mr. Britton:

These comments are submitted on behalf of the Center for Biological Diversity ("Center"), a non-profit public interest membership organization dedicated to the preservation of native species and their habitats. On June 11, 2001 our Legal Assistant Susie Roe called the County of Orange Environmental Planning and Services Division requesting a copy of the EIR for the Saddleback Meadows Project, SCH No. 1996121072. Ms. Roe was told by staff that the EIR could only be sent via the authority of Mr. Bill Grieman, then on vacation. Ms. Roe left a voicemail for Mr. Grieman, who never returned the call. Today, June 24th, Ms. Roe called Mr. Grieman to check on the status of the request for the EIR, and was told that he was unsure when and if it could be sent because the comment period is now over. This is outrageous. First, the comment period is not "over" as it is not yet the close of business. Second, the Center has right to review the EIR regardless of whether the comment period is "over" or not. Third, the County of Orange Environmental Planning and Services Division should not be incapable of sending out a copy of an EIR while one staff member is on vacation. The actions of County staff have deprived the Center, our members and staff, and members of the public with an interest in protecting the biological resources of the Saddleback Meadows project site with an opportunity to comment on this project.

From reviewing the comments of the Sierra Club and others, it seems apparent that the Draft Supplemental EIR is deeply flawed, the environmental impacts of this project are unacceptable, and the mitigation proposed is entirely inadequate. The Center will submit further comments once we have received the EIR. The Center requests that the comment period be extended due to the County's

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Kassie Siegel, Associate Attorney
PO Box 493, Idyllwild, CA 92549
TEL: (909) 659-6053 x. 302 • FAX: (909) 659-2484
Email: ksiegel@biologicaldiversity.org • www.biologicaldiversity.org

Attachment F

failure to timely release a copy of the EIR upon request. Should the deadline not be extended, the Center will still submit comments and strongly urges the County to consider them and respond fully in the Final EIR. As you know, the CEQA Amendments of 1994 make it clear that an organization exhausts its administrative remedies (and therefore preserves its right to judicial review of the project approval) by submitting comments at any time prior to the certification of the EIR. Pub. Resources Code § 21177(a),(b); *Galanta Vineyards v. Monterey Peninsula Water Management District* (6th Dist. 1997), 60 Cal. App.4th 1117-1121.

Thank you for your consideration of these comments. Please contact me at (909) 659-6053 x. 302 should you have any questions.

Sincerely,

Kassie Siegel
Center for Biological Diversity

Cc:
Gail Prothero
Conservation Chair, Sierra Sage Group
Angeles Chapter Sierra Club – Orange County
29302 Sandalwood Court
San Juan Capistrano, CA 92675
(949)347-1255

CONNOR, BLAKE & GRIFFIN LLP

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INTERNET: businesslit.com

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June 9, 2002

George Britton
Manager
Environmental Planning Services Division
County of Orange
300 N. Flower, Room 321
Box 4048
Santa Ana, California 92702-4048

VIA TELEFACSIMILE AND MESSENGER

Re: *Draft Revised Subsequent Environmental Impact Report No. 566 for Saddleback Meadows 299-Unit Single Family Housing Project*

Dear Mr. Britton:

On behalf of the Vedanta Society of Southern California ("Vedanta"), we hereby submit our comments on "Draft Revised Subsequent Environmental Impact Report No. 566" ("DRSEIR 566" or the "DRSEIR") for the 299-unit single family housing project (the "299-Unit Project") proposed for the Saddleback Meadows property (the "Property"). Vedanta's specific comments on DRSEIR 566 are set forth in Exhibit "A" attached hereto and are incorporated herein by reference. We request that each of the comments set forth in Exhibit "A" receives a full and complete response pursuant to section 15088 of the State CEQA Guidelines.

We are particularly disappointed that, after having described the "44/178 Alternative" in detail in the letter which we sent to you on August 31, 2001, in response to the Notice of Preparation for DRSEIR 566, California Quartet's consultant, HDR, has chosen to address a *radically different* alternative under the guise of the "44/178 Alternative." In our letter, we clearly described the "44/178 Alternative" as dividing the Property into a 44-acre "Development Parcel" and a 178-acre "Conservation Parcel" with all residential dwelling units and related improvements being confined to the "Development Parcel." We stressed that the "Conservation Parcel" was to be permanently preserved in its natural condition as undeveloped and undisturbed open space, and that no development activities (*e.g.*, remedial

grading) were to be permitted outside the 44-acres of the "Development Parcel." However, in the DRSEIR, the "44/178 Alternative" is inexplicably presented as a 127-unit single family housing project.

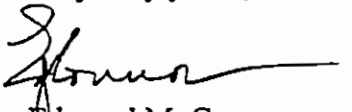
As was disclosed by California Quartet's representatives during Vedanta's settlement negotiations with them and various County officials in 1998, a 127-unit alternative would require a development area of at least 75 acres and would entail massive remedial grading and a 50-foot loeffel wall that would destroy virtually all of the vernal ponds, oak trees, and sensitive habitat areas that would otherwise be preserved by the 44-acre development footprint that is the hallmark of the "44/178 Alternative" proposed by Vedanta.

We consider the unfair and distorted presentation of the "44/178 Alternative" that is contained in DRSEIR 566 to be so deceptive and misleading that it requires the DRSEIR to be redrafted and recirculated. Section 15088.5(a)(3) of the State CEQA Guidelines has clearly been triggered in this regard. Moreover, given the conclusory and deficient nature of many of the other sections of DRSEIR 566, recirculation is also required under section 15088.5(a)(4) of the State CEQA Guidelines.

What is required is a fair and honest evaluation of the merits of the "44/178 Alternative." As the County's own staff members proved in developing the 65-unit "Mathews Alternative" in April 1998, the "44/178 Alternative" would provide California Quartet with a feasible--albeit lower density--housing project which would preserve and protect the environmentally-sensitive resources on this unique "wildlife corridor" property. Regrettably, the County has so far allowed California Quartet's consultant to evade the state law requirements which mandate that this project alternative be adequately analyzed and reported on in the DRSEIR. We cannot believe that the County has allowed this blatant misconduct to occur and we hope that you will rectify it immediately.

In the interest of providing the decision-makers of the County of Orange and the members of the public with a complete and non-deceptive evaluation of the project alternatives, environmental impacts, and feasible mitigation measures associated with the 299-Unit Project, we respectfully request that DRSEIR 566 be revised and recirculated before any public hearings are scheduled on this matter.

Very truly yours,



Edmond M. Connor

Enclosure

EXHIBIT "A"

COMMENTS OF VEDANTA SOCIETY OF SOUTHERN CALIFORNIA ON DRAFT REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT NO. 566

1. Draft Revised Subsequent Environmental Impact Report No. 566 ("DRSEIR 566" or the "DRSEIR") fails to identify, analyze, and mitigate the impacts associated with the failure of the 299-unit single family housing project (the "299-Unit Project") to comply and be consistent with the goals, objectives, components, regulations, and guidelines of the Foothill/Trabuco Specific Plan (the "FTSP"). At page 4.1-12, the DRSEIR simply concludes that the 299-Unit Project "would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692" and, therefore, as a result of the fact that the 705-unit manufactured housing project (the "705-Unit Project") described in Recorded Map 10692 was exempted--due to bankruptcy code concerns--from compliance with the FTSP, the 299-Unit Project should likewise be exempted. However, the DRSEIR fails to provide any legal or factual support for this conclusion. The FTSP provides an exemption for the development of the Saddleback Meadows property (the "Property") *only* if it is developed in accordance with Recorded Map 10692--*i.e.*, if the 705-Unit Project is developed. If any proposed development "deviates" from Recorded Map 10692, an amendment to the FTSP is required to "(1) determine an appropriate density cap for the property; (2) establish new development regulations for the Bridlewood Residential District; and (3) be consistent with all of the provisions of the Specific Plan." (FTSP at page III-20, para. 3.2(b).) By seeking to create an entirely new exemption from the FTSP for the Property, and by submitting an entirely new subdivision map for the Property, the developer has acknowledged that the 299-Unit Project deviates from Recorded Map 10692 and is not covered by the exemption from the FTSP provided for the 705-Unit Project. DRSEIR 566 incorrectly concludes that the 299-Unit Project is exempt from the FTSP because it "would be in substantial compliance with or consistent with previously approved and Recorded Map 10692." If the DRSEIR seeks to rely on this patently false conclusion, some attempt must be made to support it by providing a good faith comparison of the 705-Unit Project and the 299-Unit Project to prove that they are the same project. If they are essentially the same project, then the environmental analysis set forth in the DRSEIR is fatally flawed because the 299-Unit Project is portrayed as involving far fewer impacts.

2. DRSEIR 566 fails to identify, analyze, and mitigate the impacts--including the adverse precedent--associated with the creation of an entirely new exemption for the Property from the goals, objectives, components, regulations, and guidelines of the FTSP. If a new exemption is to be created, the DRSEIR should (a) identify all other projects, if any, which have received a similar exemption from the FTSP and (b) identify each of the goals, objectives, components, regulations, and

guidelines of the FTSP with which the 299-Unit Project is inconsistent, but will nonetheless be exempted from, including, but are not limited to, (a) the goals and objectives relating to rural character and resource preservation; (b) the resources overlay component relating to wildlife corridors, oak woodlands, tree management/preservation, and streambeds; (c) the Bridlewood Residential District Regulations; (d) landscaping regulations; (e) grading standards relating to the maximum height of manufactured slopes and the 70% "natural open space" requirement; (f) area plan submittal requirements; (g) grading, drainage and site planning guidelines; and (h) architectural guidelines.

3. DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on the Ramakrishna Monastery and St. Michael's Abbey. At page 4.1-13, under the heading "Level of Significance Before Mitigation," DRSEIR 566 concludes that "due to a natural space buffer, implementation of the proposed project would not result in significant land use compatibility impacts to the Rama Krishna Monastery or St. Michael's Abbey." However, at page 19, under the heading "Significant Impacts of the Project Prior to Mitigation," "Addendum PA980103 to Certified Final Subsequent Environmental Impact Report 566" ("Addendum No. 1") earlier concluded that the 299-Unit Project "would result in significant land use compatibility impacts to O'Neill Regional Park, the Ramakrishna Monastery, St. Michael's Abbey, and surrounding residential communities." Moreover, despite the incorporation of the identical "Project Design Features" which are proposed by DRSEIR 566, "Draft Environmental Impact Report No. 561" ("DEIR 561") concluded that the very similar 318-unit single family housing project which it analyzed would have a significant, *unavoidable*, adverse impact on land use compatibility with O'Neill Regional Park, the Ramakrishna Monastery, and St. Michael's Abbey. (DEIR 561 at page 8-1.) The DRSEIR fails to explain or reconcile these clearly inconsistent and contradictory conclusions.

4. DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on O'Neill Regional Park. At page 4.1-11, the DRSEIR concludes that the 299-Unit Project is "not incompatible" with O'Neill Regional Park. This conclusion is reached based on the fact that a portion of the Property is to be dedicated to the County of Orange (the "County") for incorporation into O'Neill Regional Park and that portion of the Property purportedly would cause O'Neill Regional Park to be "substantially buffered from the development by natural undisturbed, open space and topography." However, a comparison of the Open Space Plan for the 299-Unit Project (Figure 2.11) and any map or diagram indicating the surrounding property boundaries (*e.g.*, Figure 4.1.2, 2.3, or 2.6) reveals that the 299-Unit Project abuts a significant portion of the property boundary shared by the Property and O'Neill Regional Park. Indeed, the 299-Unit Project will require grading and fuel modification activities to be conducted in a portion of O'Neill Regional Park. (*See, e.g.*, Figure 4.2.5 (grading cannot conveniently stop at property boundary as indicated in Removal Area "C")

and 4.12.1.) Hence, not only does the DRSEIR fail to provide any factual support for its conclusion that the 299-Unit Project is "not incompatible" with O'Neill Regional Park, but it actually provides information demonstrating that this conclusion is obviously incorrect. Moreover, as noted in the previous paragraph, earlier environmental documents regarding the 299-Unit Project and the similar 318-Unit Project concluded that such projects did have significant land use compatibility impacts on O'Neill Regional Park, but DRSEIR 566 has not explained or reconciled these inconsistencies.

5. DRSEIR 566 fails to properly identify, analyze, and mitigate any of the environmental impacts which would result if title and possession of a significant portion of O'Neill Regional Park were to revert back to Vedanta due to any construction or other activities associated with the 299-Unit Project. In 1974, Vedanta granted the approximately 245 acres located immediately to the south of the Property, and the west and southwest of the Monastery, to the County so that the land could be made a part of O'Neill Regional Park and be permanently maintained as open space. The grant of this land contained several conditions subsequent pursuant to which the land would revert back to Vedanta in the event of a breach of any of those conditions. The conditions expressly prohibit any grading activities, the placement of any soils, and the removal of any trees, shrubs, or natural growth from the land gifted to the County. All of the grading maps in the DRSEIR attempt to show that no grading will be conducted in O'Neill Regional Park. For example, Figure 4.2.5 shows that when the limits of remedial grading--which generally trace the contours of the land and the outline of the geotechnical conditions which purportedly are to be remedied--reach the property line between the Property and O'Neill Regional Park, the limits of remedial grading miraculously make a sharp turn and follow precisely along the property line in order to stay out of O'Neill Regional Park. Clearly, this is not possible and, as currently designed, the 299-Unit Project requires certain grading--and also *fuel-modification* activities--to be conducted within the portion of O'Neill Regional Park which Vedanta gave to the County. Moreover, the 299-Unit Project provides for a storm drain to discharge into the natural drainage course which runs directly into O'Neill Regional Park. (*See* Figure 4.3.2.) Each of these constitutes a breach of the conditions subsequent to Vedanta's gift of land to the County and would cause such land to revert back to Vedanta. DRSEIR 566 should acknowledge this fact and identify, analyze, and mitigate the environmental impacts which would result therefrom. If the DRSEIR is going to continue to insist that no grading or other activities will be conducted within O'Neill Regional Park, then DRSEIR 566 should provide an explanation of how grading and all other activities will be excluded from O'Neill Regional Park.

6. DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on all surrounding residential areas. At page 4.1-10, the DRSEIR states that the 299-Unit Project "has a lower gross density than the surrounding area projects." However, in reaching this

conclusion, DRSEIR 566 relies solely upon two nearby projects which are located *outside* the FTSP--*i.e.*, Portola Hills and Hidden Hills/Hidden Ridge--while ignoring two nearby residential projects that are *within* the FTSP. (*See* Table 4.1.2.) DRSEIR 566 fails to acknowledge or analyze the fact that the "gross density" for the 299-Unit Project (1.3 dwelling units/acre) is double that of Santiago Canyon Estates (gross density of 0.66 dwelling units/acre) and four times that of the proposed Saddle Creek/Saddle Crest (gross density of .33 dwelling units/acre).

7. DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts associated with the inconsistency between the 299-Unit Project and the Aliso Creek Corridor Specific Plan. At page 4.1-12, the DRSEIR concludes that the 299-Unit Project "would be in conformance with the Aliso Creek Corridor Specific Plan" and, therefore, makes no attempt to mitigate the impact of any inconsistency with such Specific Plan. However, at page 19, Addendum No. 1 concludes that the 299-Unit Project "would also conflict with policies of the Aliso Creek Corridor Specific Plan." DRSEIR 566 fails to explain or reconcile these inconsistent and contradictory conclusions.

8. DRSEIR 566 fails to properly identify, analyze, and mitigate the grading and other geophysical impacts associated with the 299-Unit Project. The impacts and mitigation measures which DRSEIR 566 fails to address, include, but are not limited to, the following:

   (a) The impacts which the grading activities for the 299-Unit Project will have on the Trabuco Canyon area and its residents based on how long it will take to complete the proposed grading. Although all previous environmental impact reports the County has prepared for the Property have likewise failed to fully address these impacts, they did, at least, concede in the "Geophysical Resources" subsection that, depending on the project, grading would take between 10 and 18 months to complete, based on an average daily grading quantity of 30,000 cubic yards. (*See* Addendum No. 1 at p. 21; "Final Subsequent Environmental Impact Report No. 566" ("FSEIR 566") at p.4-22; DEIR 561 at p.4-28.) The "Geophysical Resources" subsection of the DRSEIR, however, is strangely silent on this issue and the "Project Description" section (p. 2-16) now simply contains a single sentence and footnote stating that grading will require approximately 13 months to complete based on an average of 30,000 cubic yards per day and 21-work days per month. Not only is this estimate incorrect using the County's own numbers (a total of 9.25 million cubic yards of grading at an average of 30,000 cubic yard per day and 21-work days per month translates to 14.68 months of grading), but, as Vedanta and its consultants have repeatedly stated in connection with all previously proposed projects, an average of 30,000 cubic yards per day--especially for the remedial grading--is very unrealistic. Although

30,000 cubic yards per day may possibly be achieved for the 2.45 million cubic yards of conventional grading, a figure of 10,000 cubic yards per day is a much more reasonable assumption for the 6.8 million cubic yards of remedial grading that is proposed. Using these figures (and DRSEIR 566's estimate of 21-work days per month), grading would take longer than 36 months or 3 years to complete. The DRSEIR fails to justify its estimate regarding how long grading for the 299-Unit Project will take, and it also fails to address the impacts that conducting grading activities for that amount of time would have on Trabuco Canyon and its residents--including, but not limited to, the excessive noise, dust, and traffic delays associated with excavating and recompacting more than nine million cubic yards of soil which will remain exposed to the wind during dry seasons, and the rain during wet seasons, over the course of the several years it will take to complete all of the proposed rough grading.

(b) The impacts associated with the heavy ground water seepage into the excavations at the site which DRSEIR 566 anticipates will occur (p.4.2-18 mitigation measure M 2-20), including, but not limited to, (i) the impact of the discharge of collected ground water seepage, (ii) the impact of the interruption in subsurface ground water flow on downstream wells, and (iii) the impacts of the presence of the deep shear keys for buttress fills on the final ground water conditions. The DRSEIR also fails to address whether there is a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill.

(c) The impact of buttress backcut failures. DRSEIR 566 projects a buttress backcut failure rate of 10 percent. (*See* DRSEIR 566 at p. 4.2-20, mitigation measure M 2-34.) However, due to the subsurface conditions typified by landslides within landslides, this 10 percent estimate is overly optimistic. Moreover, the effect of backcut failures on upstream and adjacent properties, regardless of the percentage of failures, are not addressed.

(d) The impact of new soil stability problems which will be created by increasing the amount of water that is discharged into the Property's natural drainage courses and the ground water table. (As stated in the "Hydrology" and "Water Quality" subsections of DRSEIR 566 daily nuisance and storm water runoff will be discharged into the Property's natural drainage courses.) In particular, (i) the increased erosion that will occur in the Property's natural drainage courses during storm flows due to the fact that the weak alluvial soils which are present in those courses will have been softened by the daily nuisance runoff that will be discharged into such drainage courses, (ii) the weakened support for existing landslides which will also result from the discharge of daily nuisance runoff and increased storm water runoff into the Property's natural

drainage courses, and (iii) the new instability problems which will be created by the ground water levels being raised by the infiltration of irrigation and other new sources of water.

(e) The special grading requirements which are necessary to perform the extremely deep fill that are proposed. Although the DRSEIR acknowledges that fill depths will exceed 50 feet and settlement associated with those fills of 4 to 6 inches can be expected (p. 4.2-20 mitigation measure M 2-33), fill depths of up to 130 feet will actually be required to construct the proposed shear keys for the buttress fills. Fills of such great depths require, *inter alia*, (i) additional evaluation that may necessitate compaction criteria well in excess of code minimums, (ii) special moisture conditioning of fill during compaction, and (iii) long-term settlement monitoring prior to building construction.

(f) Imposing a 100 percent performance bond to cover the possibility of the developer's failure to complete the extremely large amount of conventional and remedial grading required for the 299-Unit Project.

9. DRSEIR 566 fails to properly identify, analyze, and mitigate the hydrology impacts associated with the 299-Unit Project. The impacts which the DRSEIR fails to address, include, but are not limited to, the impacts of discharging daily nuisance water runoff and increased storm water runoff into the natural drainage courses of the Property. The natural drainage courses of the Property are dry for a majority of the year (only receiving water during storms). However, the daily nuisance water runoff from the 299-Unit Project will cause the drainage courses to be wet year-round and, therefore, more susceptible to, *inter alia*, erosion. Moreover, the character of the water being dumped into the natural drainage courses will change from slower-moving water carrying soil and debris to faster-moving water that has less soil and debris and, therefore, is prone to picking up soil and debris. DRSEIR 566 acknowledges that, by increasing the flows in the Property's natural drainage courses, the 299-Unit Project will have erosion and sedimentation impacts, but the DRSEIR fails to address any of these impacts. Instead, any analysis of this issue is improperly deferred until *after* the certification of DRSEIR 566--*i.e.*, until a point in the approval process where the public is not permitted an opportunity to review and comment on that analysis, and the County is not required to respond to any public comments.

10. DRSEIR 566 fails to identify, analyze, or mitigate any of the water quality impacts associated with the 299-Unit Project because the entire "Water Quality" subsection of the DRSEIR is based upon a conceptual water quality management plan for a *different* project. At page 4.4-1, the DRSEIR states that its "Water Quality" subsection "summarizes the findings and conclusions of the *Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230 County of Orange, California*" which is included in the DRSEIR as

Appendix "E." However, as its complete title indicates, the "Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230, Development Alternative for 283 Residential Home Sites, County of Orange, CA" which is found in Appendix "E" was prepared to address a different project—*i.e.*, the 283-unit single family housing project which is Alternative No. 8 in the DRSEIR. As such, the entire "Water Quality" subsection must be revised to correctly identify, analyze, and mitigate the water quality impacts of the 299-Unit Project as opposed to the 283-Unit Project which it currently addresses.

11. Assuming *arguendo* that the "Water Quality" subsection of DRSEIR 566 did address the 299-Unit Project, such subsection nonetheless fails to fully and properly identify, analyze, and mitigate the water quality impacts associated with the 299-Unit Project because, *inter alia*, it fails to fully describe how pollutants will be filtered from the daily nuisance and storm water runoff from the 299-Unit Project and what the impacts will be of discharging polluted runoff into the Property's natural drainage courses and O'Neill Regional Park, and the area's groundwater. The DRSEIR claims that a riverine system will be used to filter pollutants from the daily nuisance and storm water runoff from approximately 80 percent of the 299-Unit Project. (*See, e.g.*, p.4.4-13 at PDF 4-1.) In reliance on the riverine system, stormceptor filters will be installed on the storm drains serving the 20 percent of the Project which is located in the northeastern quadrant of the Property only. However, nowhere is it depicted or explained in DRSEIR 566 how flows from the 299-Unit Project will be directed into the riverine system. Indeed, Figure 4.3.2, entitled Proposed Drainage Improvements, shows that all of the runoff from the 299-Unit Project will be directed into the storm drain system and discharged into the Property's natural drainage courses, but the storm drains serving a majority of the 299-Unit Project will not have filters to reduce the amount of pollution in the runoff. The DRSEIR also acknowledges that the riverine system is designed to accommodate low flows only, but it fails to explain how any flows that exceed the capacity of the riverine system will be filtered for pollutants given that the storm drains collecting runoff from 80 percent of the Project will not have filters installed due to the existence of the riverine system. Moreover, the DRSEIR acknowledges that the filters that will be installed will not trap bacterial indicators or toxic constituents. (DRSEIR 566 at p. 4.4-11.) Instead, the DRSEIR relies upon 3,300 lineal feet of the Property's natural drainage courses to filter these pollutants. However, the DRSEIR does not in any way address the impacts that these pollutants will have on the Property's natural drainage courses--some of which flow into O'Neill Regional Park--and the area's groundwater.

12. DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts the 299-Unit Project would have on the Natural Communities Conservation Plan ("NCCP") program and the County's ability to complete its Southern NCCP Subregion and to link the Southern and Central/Coastal NCCP Subregions. Previous environmental impact reports for the Property included four or more

pages of text addressing the NCCP and the impacts of the proposed projects on the NCCP. (*See, e.g.*, FSEIR 566 at pp. 4-127 -- 4-130, 4-144; DEIR 561 at pp. 4-123 -- 4-126, 4-139 -- 4-140.) The DRSEIR, however, contains less than one page of very cursory discussion regarding the NCCP and it fails in any way to address the impacts of the 299-Unit Project on the NCCP and the County's NCCP planning efforts. Moreover, DRSEIR 566 fails to, *inter alia*, (i) acknowledge that the United States Fish and Wildlife Service and the California Department of Fish and Game (collectively, the "Wildlife Agencies") have repeatedly informed the County that the Property provides a critical habitat corridor/linkage necessary for the completion of the NCCP Southern Subregion and (ii) identify the findings which the NCCP requires to be made with respect to the impacts the 299-Unit Project will have on the coastal sage scrub habitat located on the Property. The DRSEIR should be revised to include an appropriate and complete discussion of the impacts of the 299-Unit Project on the NCCP.

13. DRSEIR 566 fails to properly identify, analyze, and mitigate the impact of the 299-Unit Project on wildlife movement on the Property and throughout the NCCP Southern and Central/Coastal Subregions. The DRSEIR touts that the 299-Unit Project has been designed to incorporate a wildlife movement corridor that will permit wildlife to continue to travel safely across the Property. (*See, e.g.*, DRSEIR 566 at p. 4.8-27.) However, the DRSEIR fails to acknowledge that the Wildlife Agencies have previously informed the County that the wildlife corridor proposed as part of the 299-Unit Project does not "retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows." (October 29, 1998 Letter from the Wildlife Agencies to the Orange County Board of Supervisors.) As such, the DRSEIR needs to be revised to contain an analysis of the adequacy of the proposed wildlife movement corridor/linkage and the impact of failing to provide an adequate corridor/linkage.

14. DRSEIR 566 fails to properly identify, analyze, and mitigate the biological resources impacts associated with the 299-Unit Project because, *inter alia*:

(a) The DRSEIR fails to properly identify the sensitivity of the intermediate mariposa lily (*calochortus weedii var. intermedius*) and based thereon erroneously concludes that there will be no significant impact of it requiring any mitigation. (*See* DRSEIR 566 at p. 4.8-21 and Appendix I.1 at p.17.) In Appendix I.1, the DRSEIR erroneously identifies the sensitivity of the intermediate mariposa lily as California Native Plant Society ("CNPS") List 4. (*See* Appendix I.1 at p. 9.) In the text, the DRSEIR correctly lists the intermediate mariposa lily as CNPS List 1B, but then proceeds to conclude that, due to its low sensitivity status, the impact of destroying all plants found on the Property is not significant. (*See* DRSEIR 566 at pp. 4.8-13, 4.8-21.) However, as explained in Appendix "C" to Appendix I.1 of the DRSEIR, the presence of the

intermediate mariposa lily on the CNPS List 1B means that it is "rare, threatened, or endangered in California and elsewhere and is eligible for state listing." Indeed, the only higher listing under the CNPS system is List 1A which includes only those plants that are presumed to be extinct. DRSEIR 566 needs to be revised to correct the inconsistency between its text and Appendix I.1 and, if it is going to maintain its conclusion that there will be no significant impacts on the intermediate mariposa lily, it need to provide facts to support such conclusion because, contrary to how the DRSEIR currently reads, the intermediate mariposa lily does not have a low sensitivity status.

(b) The DRSEIR erroneously concludes that the 299-Unit Project will not have a significant impact on the federally-listed endangered Riverside fairy shrimp because the impacts to it will be mitigated to a level of insignificance by the creation of several ephemeral ponds on the Property. However, as the Biological Opinion on the Saddleback Meadows Residential Development Project found in Appendix I.4 states at pages 19-20, creation of such ponds is experimental and has *never* been done successfully, especially with respect to the conditions found on the Property.

(c) Although one of the technical reports found in the appendices to DRSEIR 566 acknowledges that the Property has been designated as critical habitat for the Riverside fairy shrimp and the coastal California gnatcatcher pursuant to the U.S. Endangered Species Act, the text of the DRSEIR fails to acknowledge this fact. Neither the text of DRSEIR 566, nor any of the appendices thereto, address in any way the significance of this designation.

(d) The DRSEIR fails to properly and adequately mitigate the impacts the 299-Unit Project will have by destroying the hundreds of acres of oak woodlands, vernal ponds, coastal sage scrub habitat, and other biotic communities on the Property which are home to sensitive, threatened, or endangered flora and fauna. The mitigation DRSEIR 566 offers regarding these impacts fall far below that which is required by, *inter alia*, the FTSP, the NCCP, the state and federal endanger species legislation

15. DRSEIR 566 fails to properly identify, analyze, and mitigate the "Aesthetic/Visual" impacts associated with the 299-Unit Project. At page 4.9-22 through 4.9-23, the DRSEIR concludes that the 299-Unit Project will not have a significant aesthetic or visual impact prior to mitigation. However, at page 4-192, DEIR 561 concludes that, despite the use of many of the same contoured grading and viewshed screening techniques which are proposed for the 299-Unit Project, the 318-unit single family housing project which was the subject of DEIR 561 would nonetheless have *unavoidable* significant aesthetic and visual impacts (including night glare impacts) on the Ramakrishna Monastery, St. Michael's

Abbey, and O'Neill Regional Park. DRSEIR 566 fails to explain and reconcile these inconsistent and conflicting conclusions.

16. DRSEIR 566 fails to fully and properly identify and analyze the importance of the archaeological sites found on the Property. At page 4.10-19, the DRSEIR concludes that archaeological site CA-ORA-711 is the only site on the Property which is deemed to be important or significant. However, at page 104, Addendum No. 1 concludes that there are a total of four archeological sites on the Property which are deemed to be important or significant. Those sites are CA-ORA-710, CA-ORA-713, CA-ORA-715, and CA-ORA-1435H. DRSEIR 566 should have an analysis explaining and reconciling these inconsistent conclusions regarding the importance of certain of the archeological sites found on the Property.

17. DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts associated with project "Hazards" as both the Initial Study and the Introduction to the DRSEIR (*see* page 1-4) indicated that it would. Indeed, the Initial Study identifies "Hazards" as one of six areas of potentially significant impacts which might result from the 299-Unit Project, but DRSEIR 566 fails to contain a section identifying and analyzing such impacts. All previous environmental documentation for the Property contained a separate section in which "Hazards" such as wildfire, emergency access, and wildlife interaction were all identified and analyzed. (*See* Addendum No. 1 at pp. 113-17; FSEIR 566 at pp. 4-203 -- 4-212, and DEIR 561 at pp. 4-219 -- 4-228.) Although the DRSEIR does address certain wildfire hazards and fuel modification requirements under the "Public Services--Fire Protection" subsection, it does not address any other hazards, such as the fact that the Project has only one main access road, which Addendum No. 1 identifies as an area of concern and which the Orange County Fire Authority proposed mitigation measures to specifically address. An analysis of the "Hazards" analyzed in the previous environmental documents for the Property should be conducted with respect to the 299-Unit Project.

18. DRSEIR 566 fails to properly describe the "44/178 Alternative" as initially proposed by Vedanta in October 1998 and again in the comments Vedanta submitted regarding the Notice of Preparation (the "NOP") for the DRSEIR. As proposed by Vedanta, although the developer would be free to develop the project of its choice on the 44-acre "Development Parcel," the 178-acre "Conservation Parcel" would be left in its undisturbed natural state--*i.e.*, no development activities of any kind would be conducted on such parcel, including, but not limited to, grading of any kind. However, as described in the DRSEIR, the "44/178 Alternative" allows for the development of 127 single-family housing units on the "Development Parcel" which, as Vedanta indicated in its comments on the NOP, can only be developed on such Parcel if a substantial amount of remedial grading and other construction activities are conducted on the "Conservation Parcel." Indeed, shortly after Vedanta proposed the "44/178

Alternative" in October 1998, the developer conceded that, in order to develop 127 single-family housing units on the "Development Parcel" it would have to grade at least 30 acres of the "Conservation Parcel"--which is not contemplated under the "44/178 Alternative" as proposed by Vedanta. Therefore, a new analysis of the "44/178 Alternative" should be conducted based upon a proper description of the alternative which identifies a range of units which can safely be accommodated within the "Development Parcel." This analysis should include, *inter alia*, an analysis of the geotechnical conditions to determine the greatest number of units that can be developed on the 44-acre "Development Parcel" with the least amount of rough grading. The grading study is of critical importance because it will not only address the economic feasibility of the "44/178 Alternative," but it also determines the nature and extent of the environmental resources which can be spared from the bulldozer's blade. As requested in Vedanta's comments on the NOP, this analysis should consider two versions of the "44/178 Alternative," one in which the developer is required to dedicate the 178-acre "Conservation Parcel" to the County (which has been the County's standard practice on all other major development projects approved during the past 25 years) and another in which the "Conservation Parcel" is purchased by a governmental entity (such as the United States Fish and Wildlife Service and the California Department of Fish and Game), a private entity, private person(s), or any combination thereof.

19. DRSEIR 566 fails to provide sufficient factual information about each of the proposed alternatives to allow for meaningful evaluation, analysis, and comparison with the 299-Unit Project. The DRSEIR provides very little factual information regarding the proposed alternatives and their environmental impacts. Instead, DRSEIR 566 simply makes very general and conclusory statements regarding whether each impact will be greater or less than the 299-Unit Project and each of the other alternatives. Very little factual information is provided which permits differential impacts to be quantified and meaningfully analyzed. For example, no information is provided to allow the number or acres of oak trees, vernal ponds, coastal sage scrub, or any of the other biological resources which are affected under each alternative to be compared with the 299-Unit Project. Similarly, the extent to which each of the alternatives comply with the various goals, objectives, components, regulations, and guidelines of the FTSP is not provided so as to allow a comparison of the alternatives with the 299-Unit Project. Indeed, the alternatives analysis in DRSEIR 566 is almost entirely devoid of any factual information which would support its conclusions regarding the relative impacts of the 299-Unit Project and each of the alternatives. Accordingly, an entirely new analysis of each of the alternatives is necessary to provide the factual information required to conduct a meaningful evaluation, analysis, and comparison of the alternatives with the 299-Unit Project. (Note: Although the DRSEIR provides grading quantities for many of the alternatives, it curiously fails to state a remedial grading quantity for the "44/178 Alternative" while nonetheless conceding that remedial grading will be required for that alternative.)

20. DRSEIR 566 fails to provide any factual information which supports its conclusion that, except for the "No Project Alternative," Alternative No. 8 is the environmentally superior alternative. Alternative 8 is a "reduced density alternative" which simply lowers the number of single family dwelling units by 16 units--*i.e.*, from 299 down to 283. In reaching this conclusion, the DRSEIR provides absolutely no explanation or factual support for how a 283-unit single family housing project--which has virtually the identical environmental impacts as the 299-Unit Project--could possibly be an environmentally superior alternative to Alternative 4 (a 100-unit single family housing project which leaves 85% of the Property as natural open space), Alternative 6 (the "44/178 Alternative"), or Alternative 7 (the "Acquisition Alternative" in which the entire property is purchased by a governmental entity, private entity, or private person(s) for preservation as permanent open space).

21. DRSEIR 566 fails to consider a residential housing alternative which complies with the goals, objectives, components, regulations, and guidelines of the FTSP, nor does it explain why such an alternative would be unacceptable. In its comments on the NOP, Vedanta specifically requested that the DRSEIR identify and analyze at least one reduced-density alternative which complies with all of the goals, objectives, components, regulations, and guidelines of the FTSP. Instead, in Alternative No. 8, the DRSEIR identifies and analyzes a reduced-density alternative that eliminates only 16 out of 299 dwelling units and which complies with virtually none of the goals, objectives, components, regulations, and guidelines of the FTSP. Indeed, DRSEIR 566 fails to provide any explanation for why an FTSP-compliant alternative was not considered.

The Gas Company

A Sempra Energy company

Southern California
Gas Company
1919 S. State College, Bldg. A
Anaheim, CA 92803

May 16, 2002

Manager, OCPDS
Environmental Planning Services Division
300 N. Flower St., Box 4048
Santa Ana, CA 92702-4048

Attention: Manager

Subject: Draft Environmental Impact Report – Saddleback Meadows.

This letter is not to be interpreted as a contractual commitment to serve the proposed project but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served without any significant impact on the environment. Gas facility additions for the expansion would be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Estimates of gas usage for non-residential and residential projects are developed on an individual basis and are obtained from the Commercial-Industrial/Residential Market Services Staff by calling (800) 427-2000. We have developed several programs, which are available upon request to provide assistance in selecting the most energy efficient appliances or systems for a particular project. If you desire further information on any of our energy conservation programs, please contact this office for assistance.

Sincerely,

Robert S. Warth
Technical Supervisor
Orange Coast Region

ep
eir.doc

Juaneño Band of Mission Indians
Acjachemen Nation

Tribal Council
Damien Shilo•Chairman Alice Lopez-Sainz•Vice Chair
Christopher A. Lobo•Secretary/Treasurer
Fran Yorba•Member at Large Andrea Cole•Member at Large

Anthropology Department Manager,
OCPDS/Environmental Planning Services Division
300 N. Flower Street
Box 4048
Santa Ana CA 92702

June 10, 2002

Re: Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows

After review of the cultural resources section of the DEIR, we, the Juaneño Band of Mission Indians ("tribe") are concerned about the protection of this land regarding both archaeological and anthropological impact. We feel that there has been an inadequate investigation into the significance/importance of the archaeological sites. The report indicates that there were three 1 x 1 meter units used to determine the archaeological significance /importance. This is an inadequate sampling of the area to make a determination for the size of this project. Also, we feel that the monitors should be from the local tribe. The practice of finding out of area monitors who do not understand the cultural significance of the local area needs to be corrected. There is also a concern for the wildlife corridor and endangered species, neither of which are adequately addressed.

There is not sufficient information to support the determinations made. The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of archaeological sites to be impacted. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

If it is determined that data recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Preservation Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

Sincerely,

Damien Shilo, Chairman
Juaneño Band of Mission Indians
Acjachemen Nation

31411-A La Matanza Street San Juan Capistrano CA 92675-2674 Phone (949)488-3484 Fax (949)488-3294 www.juaneno.com

Attachment F

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June 25, 2002

Via Facsimile and U.S. Mail
Bill Grieman, Project Manager
County of Orange, PDSD
Environmental Planning Services Division
P.O. Box 4048
Santa Ana, California 92702-4048

Re: Saddleback Meadows Revised SEIR No. 566

Dear Mr.Grieman:

I represent Rutter Development Corporation in connection with its entitlement and natural resources permitting efforts for the Saddle Crest and Saddle Creek residential development projects near the Saddleback Meadows project site. The southern boundary of the Saddle Creek project constitutes the northern border of the Saddleback Meadows project. Rutter Development supports the current proposed project and certainly sees it as preferable to the massive mobilehome park previously approved for the site. However, Rutter Development takes exception to Figures 4.8.2 and 4.8.4 in the Biological Resources section of the SEIR.

Figure 4.8.2 is labeled "Proposed NCCP Southern Subregional Planning Area," but it does more than simply delineate the subregional boundaries. The "reserve area" overlay on this exhibit has no basis in any approved or even proposed plan. Consequently, this exhibit should be replaced with one that simply shows the boundaries of the southern subregional planning area and overalys the project's boundaries. Similarly, Figure 4.8.4 is labeled "Proposed Regional Wildlife Movement Corridors" but there is no discussion regarding who is "proposing" the establishment of these corridors or for what species they are proposed to function as corridors. The "proposed" corridors in the exhibit do not correspond to the wildlife corridors shown in the adopted Foothill Trabuco Specific Plan or any other formally adopted or even proposed plan. Therefore, this exhibit should also be deleted, replaced or modified in the Final SEIR.

Thank you for the opportunity to comment on the draft SEIR for the Saddleback Meadows project. Please feel free to call if you have any questions or wish to discuss this matter.

Very truly yours,

Mark R. McGuire

Cc: D. Eadie, RDC

ORANGE COUNTY
REGIONAL RECREATIONAL TRAILS
ADVISORY COMMITTEE

May 31, 2002

Thomas Mathews, Director
Planning and Development Services Department
300 North Flower Street, 3rd Floor
Santa Ana, CA 92703-5000

Subject: Saddleback Meadows Residential Project – Additional Trail Alignment

Dear Mr. Mathews:

As you know, the Regional Recreational Trails Advisory Committee (RRTAC) is a Board-appointed committee composed of equestrians, mountain bicyclists, and hikers. Recently, the RRTAC approved a motion to provide an additional riding and hiking trail through the proposed Saddleback Meadows project site.

The Committee was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route we suggest an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would then connect with the proposed Live Oak Plaza project site and connect to the Live Oak Canyon Regional Trail. **We also request an additional link from Trail B to the proposed Saddle Creek project at the north edge of the Saddleback Meadows project near the connection to Live Oak Plaza.** Mr. Jeff Dickman, County's Chief of Trail Planning, concurred with this concept.

The RRTAC hereby expresses its support for the additional local trail through the proposed Saddleback Meadows project ("Trail B"). We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

Should you have any questions, please feel free to contact me at (714) 456-1157.

Sincerely,

Alice Sorenson
Chair, RRTAC

RURAL CANYONS CONSERVATION FUND

P.O. Box 556, Trabuco Canyon, CA 92678-0556(ruralcyn@yahoo.com)

May 28, 2002

Frank McGill, Senior Planner
Current Planning Services Division
Planning and Development Services Department
County of Orange
P.O. Box 4048
Santa Ana, CA 92702-4048

VIA fax (714) 834-6132 and U.S. mail

Re: Proposed Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for Saddleback Meadows

Dear Mr. McGill:

The Rural Canyons Conservation Fund, founded in 1983, advocates for the preservation of Orange County's unique inland rural canyon areas through a program of public education and participation in land use decisions affecting the area's unique and scenic natural resources.

We comment as follows on the above referenced proposals:

1. THE AREA PLAN APPLICATION IS INCOMPLETE.

The Foothill Trabuco Specific Plan (FTSP) lists certain informational items that must be provided when a proposed area plan is submitted. Several such items are missing from the subject proposal, including:

- a site-specific resources assessment by a qualified field biologist;
- a site-specific oak woodlands analysis;
- a site-specific wildlife corridor analysis;
- a hydrological analysis;
- detailed mapping of areas within 50 vertical feet or 200 horizontal feet of designated major ridgelines or rock outcroppings;
- a detailed viewshed analysis of the proposed development as viewed from scenic highways;

- a conceptual grading plan at a minimum scale of 1:40 clearly delineating existing and proposed contour elevations, the location and elevation of all building pads, access roads, driveways, slope percentages, heights of manufactured slopes, the total area of disturbance, area of the flat graded pad on each parcel, and the location of retaining and crib walls;

- clear delineation of the building lines for assessing setbacks;

- a consistency report evaluating the project's consistency with each of the regulations and guidelines contained in the FTSP; and,

- three-dimensional models of the site before and after proposed grading.

(FTSP III.G.2.0(e), pages III-90 through III-93.)

Because key information is missing from the application we received, we cannot fully assess the extent of non-compliance with the FTSP at this time, and therefore reserve the right to comment further if and when complete information becomes available.

2. THE PROPOSED SPOT AMENDMENT OF THE FOOTHILL TRABUCO SPECIFIC PLAN IMPROPERLY RENDERS THE FTSP INTERNALLY INCONSISTENT AND INEQUITABLE, AND IS THEREFORE INVALID ON ITS FACE.

State law requires that general and specific plans maintain internal consistency. However, the FTSP amendment proposed as part of this project renders the FTSP internally inconsistent. This inconsistency arises from the following language contained in the proposed spot amendment:

> "Any development shall be in compliance with every regulation of this District (BWR) *and shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.*" (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4(c), italics added.)

This spot amendment conflicts with other general language within the FTSP:

> "This specific plan is adopted pursuant to regulations contained in the Orange County Zoning Code. It is specifically intended by such adoption that the development standards and provisions contained herein shall regulate *all development* within the Specific Plan area." (FTSP III.C.3.0, page III-1, emphasis added.)

> "It is uncertain whether this development cap can be achieved *since all development is required to be consistent with the Specific Plan regulations and guidelines.*" (FTSP II.D.3.0(b), page II-29, emphasis added.)

> "All development within the Specific Plan Area shall be required to be phased in a manner, which is consistent with the requirements of the Growth Management Plan (GMP) Element." (FTSP II.F.1.0(a), page II-43.)

> "For all development projects, a minimum of 50 percent of all shrubs to be planted should be native species." (FTSP IV.G.1.0(a), page IV-16.)

> "For all development projects, a minimum of 50 percent of all shrubs to be planted should be native species." (FTSP IV.G.1.0(a), page IV-16.)

Moreover, as will be shown below, the proposed development which the above spot amendment attempts to legitimize actually conflicts with and undermines the overarching goals and objectives for the Specific Plan area at the expense of the Specific Plan's integrity.

The proposed "wildcard" zoning also creates a class of unwarranted special privileges for this project's applicant, effectively denying other persons subject to the FTSP the equal protection of the law, in violation of the state and federal constitutions.

The proposed spot zoning amendment, therefore, is invalid on its face and thereby subject to nullification by the courts.

3. THE PROPOSED SPOT AMENDMENT OF THE FTSP IS BARRED BY THE FTSP ITSELF.

The FTSP explicitly provides how the Specific Plan may be amended to allow for development, as is now being proposed, that deviates from the recorded tract map for the Saddleback Meadows site:

> "If a development proposal on the aforementioned [Bridlewood, Lyon Ranch, Santiago Ranch, and Zadeh] sites deviates from these approvals and cannot be found to be in substantial compliance with these approvals, a Specific Plan Amendment shall be required for the individual site. Said Specific Plan Amendment *shall*: 1) determine an appropriate density cap for the property; 2) establish new Land Use District Regulations for the site; and 3) *be consistent with all of the provisions of the Specific Plan, as amended.*" (FTSP III.C.10.0(d), page III-4.)

> "Any development proposal, which deviates from the approved Saddleback Meadows Planned Community zoning and Recorded Tract 10692 and which cannot be found to be in substantial compliance with these approvals shall require a Specific Plan Amendment which *shall:* 1) determine an appropriate density cap for the property; 2) establish new development regulations for the Bridlewood Residential District; and 3) *be consistent with all of the provisions of the Specific Plan.*" (FTSP III.D.3.2.(b), page III-20, italics added.)

The proposed spot amendment exempting Saddleback Meadows from all but the revised district regulations clearly conflicts with the above requirements of the FTSP, which unequivocally mandate that the amended zoning regulations for Saddleback Meadows must be consistent with *all* of the provisions of the FTSP. Thus the proposed spot amendment is facially invalid, and, as will be shown below, the proposed area plan is in actual conflict with numerous of the FTSP's substantive requirements.

4. A SITE DEVELOPMENT OR USE PERMIT IS REQUIRED PRIOR TO ANY GRADING.

The proposed spot amendment explicitly allows issuance of a "preliminary grading permit" prior to approval of a site development or use permit. (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4(d).) This flies directly in the face of the following general regulation of the FTSP:

> "Grading: Grading shall be permitted within the Specific Plan Area only upon approval of a site development permit or use permit by the Planning Commission. No grading permits shall be issued without the approval of a precise plan of development, i.e., site development permit or use permit." (FTSP III.C.6.1, page III-2.)

issued without the approval of a precise plan of development, i.e., site development permit or use permit." (FTSP III.C.6.1, page III-2.)

5. DEVELOPMENT DEPICTED ON THE PROPOSED AREA PLAN IMPROPERLY CONFLICTS WITH THE FTSP.

Since, as shown above, the proposed wildcard exemption from all of the FTSP's general substantive and procedural requirements is invalid, all of the FTSP's general provisions apply to this project. Unfortunately, the proposed development violates numerous of these provisions, including:

⇒"Rural Character/Forest Buffer: To preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." (FTSP I.C.1.0(a), "Goals and Objectives," page I-5.)

By any measure of the term, the proposed development, due to its extreme intensity and scale, is anything but "rural" in character. On the contrary, it is a conventional suburban housing tract, to be constructed after mass grading the site in the amount of 11.7 million cubic yards. At 5,000 square feet minimum, the lot sizes are far below the minimum ½ acre permitted in the adjacent FTSP areas, and the proposed average density of 1.35 dwelling units per acre vastly exceeds the prevailing minimum of 1 dwelling unit per 2 acres. The proposal includes manufactured slopes 120 feet high, contour elevation changes of 91 vertical feet, and retaining walls 40 feet high.

Characterizing such a proposal as "rural" can only be described as Orwellian. The submitted area plan application does include a "Rural Character Statement." However, this document merely sets forth general platitudes and idealized sketches on the subject, not specific to the proposed project, and not demonstrating how the concepts would actually be implemented. In the context of this project, "rural" must in large measure be defined in terms of *compliance* with the regulations and guidelines of the FTSP, which purport and serve to implement the general goal of *preserving* the area's rural character. Thus the subject proposal is rural to the extent of its compliance with the detailed requirements of the FTSP, and that compliance leaves much to be desired.

⇒"Except for those legal building sites existing at the time of Specific Plan adoption where compliance with this requirement would preclude development of a single residence on the existing building site, mapping shall identify a minimum corridor width (other than for the wildlife corridor parallel to Live Oak Canyon Road) at all locations of 400 feet measured perpendicular to the corridor's boundary." (FTSP II.C.2.2(c)(3), page II-11, underlining in original.)

The proposal fails to delineate a 400-foot-wide wildlife corridor through the project. The corridor mentioned in the text of the area plan actually diminishes to under 200 feet wide where it passes between the main spine road on the south and St. Michael's Abbey on the north.

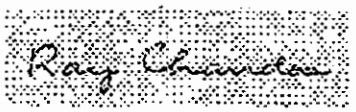
⇒"Development shall maintain a minimum 50-foot setback of all structures and barrier fencing from all corridors. Uses. within the setback zone shall be limited to low-intensity, residential-related activities such as recreation and private open space." (FTSP II.C.2.4(a), page II.14.)

The proposed wildlife corridor violates this setback requirement where it passes between the southern and northern clusters of housing units.

The proposed wildlife corridor violates this setback requirement where it passes between the southern and northern clusters of housing units.

Please include this letter in the official record of proceedings for this project. Thank you for the opportunity to comment.

Sincerely,



Ray Chandos
Secretary/Treasurer

cc
Foothill/Trabuco Specific Plan Review Board

Saddleback Canyons Conservancy

PO BOX 714
TRABUCO CANYON, CALIFORNIA 92678
Phone (949) 589-9230
Fax (949) 459-1147

VIA FACSIMILE 714 834-4652/714 834-6132
June 10, 2002

Manager, OCPDS/Environmental Planning Services Division
300 N. Flower Street,
Box 4048
Santa Ana, CA 92702-4048

Re: Comments of Saddleback Canyons Conservancy on the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows (DEIR), State Clearinghouse No. 1996121072

Dear Sir or Madam:

The Saddleback Canyons Conservancy is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Specific Plan (FTSP) area and surrounding areas of Orange County. The following comments are provided in response to the DEIR.

NONCOMPLIANCE WITH THE FTSP

The proposed project lies within the FTSP area. The proponents of the project have proposed a zone change (ZC 98-3) that would be required to amend the FTSP for the project ("Bridlewood Residential District"). Such an amendment to the FTSP would exempt the project from all regulations and guidelines in the FTSP other than those provided for by the Bridlewood Residential District.

Upholding the integrity of the FTSP is of utmost concern to the Saddleback Canyons Conservancy. The proposed project site serves as a transitional buffer between the suburban developments of Lake Forest and Mission Viejo to the rural canyons area. The project's proximity to the Cleveland National Forest (within 1 mile) speaks to the need for compliance to – not exemption from – the development guidelines set forth in the FTSP.

The proposed development violates the spirit and letter of the FTSP. The primary goals of the FTSP are to "preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." The project in no way conforms to such a goal. Indeed, 299 tract

homes on a mass-graded site is anything but "rural." It is time to stop suburban sprawl, say "no" to continued mass development, and "yes" to a preservation and conservation plan.

DESTRUCTION OF HABITAT AND INTERFERENCE WITH WILDLIFE CORRIDORS

The project site is within the Southern Orange County Natural Communities Conservation Plan (NCCP) and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for the federally endangered Riverside fairy shrimp, and the federally threatened coastal California gnatcatcher, among other special status species. In view of the fact that the County, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game have initiated the Southern Subregion NCCP process and that preliminary reserve designs are scheduled for completion in July 2002, a revised environmental document should be prepared to incorporate this critical information.

FAILURE TO ADEQUATELY ANALYZE CUMULATIVE IMPACTS

The list of "related" projects is limited to a small area near the project and excludes other major projects in the NCCP Southern Subregion. Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Rancho Mission Viejo project (14,000 homes and 427 acres of "urban activity"). Additionally, the DEIR fails to mention the Rancho Potrero Leadership Academy, which also lies within the FTSP area, for which the Board of Supervisors filed a Notice of Determination in December 2001. The cumulative analyses of land use and planning, geology and soils, hydrology and water quality, air quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider all foreseeable projects.

NONCOMPLIANCE WITH NEW WATER QUALITY REGULATIONS

Aliso Creek, adjacent to the project site, is listed as a Category 1 Priority Impaired Water Body in the EPA's National Water Quality Report (2000). New water quality regulations have recently been ordered against the County of Orange by the Regional Water Quality Control Board. These stricter regulations supplant the 1994 NPDES permit referenced in the DEIR, and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek. The DEIR fails to explain how the project can comply with these new water quality regulations.

LACK OF WATER TO SUPPORT THE DEVELOPMENT

The Orange County Register recently reported (May 18, 2002) that "drought conditions have dried up two wells that the Trabuco Canyon Water District relies on to supply Trabuco Canyon and Rancho Santa Margarita residents." The TCWD is seeking additional appropriative water rights from the State Water Resources Control Board. Yet, as reported in correspondence to me dated May 14, 2002 from the State Water Resources Control Board, further processing of the TCWD's request for

additional water rights is being held in abeyance until several senior priority applications in the watershed are processed. This water shortage should be recognized as an impediment to the advancement of any new development in the area served by the TCWD.

CONCLUSION

The project is out of compliance with the FTSP. The project is not rural. The project significantly and negatively impacts biological resources and wildlife corridors. The project site is adjacent to the impaired Aliso Creek. The water district has severe water shortage problems. An additional 299 homes adds to suburban sprawl and downstream negative environmental impacts. The project should not proceed. The site should be set aside as a preserved habitat/wildlife corridor, and protected as open space for generations to come.

Please incorporate this letter into the official record of proceedings for this project.

Very truly yours,

Gloria D. Sefton Richard T. Gomez (GDS)

Gloria D. Sefton
Richard T. Gomez
Co-Founders, Saddleback Canyons Conservancy

3435 Wilshire Boulevard
Suite 320
Los Angeles, CA 90010-1904

SIERRA CLUB
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June 23, 2002

VIA TELEFACSIMILE AND U.S. MAIL

Manager
OCPDS/Environmental & Project Planning Services Division
300 N. Flower St.
Box 4048
Santa Ana, CA 92702-4048

Subject: Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows—EIR 566

Dear Manager:

The Sierra Club appreciates the opportunity to comment upon the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows—EIR 566 (DRSEIR). As strong supporters of protecting the ecological integrity and aesthetic value of the remaining open space in Orange County, our members are closely monitoring projects proposed for properties in the vicinity of the Cleveland National Forest. To facilitate this monitoring process, as well as to properly inform the general public and decision-makers, it is essential that all environmental assessment related to such projects be conducted in strict compliance with the provisions of CEQA and the CEQA Guidelines.

Unfortunately, as it is currently written, the DRSEIR does not adequately address significant issues related to the proposed Saddleback Meadows residential development and its effect on the local environment. These issues include those justifiably raised by a number of individuals in comments already provided to you; therefore, the Sierra Club wishes to incorporate into this letter, by reference, each of the following documents:

- Comments by Terrell Watt, AICP, submitted in a letter dated June 7, 2002, on behalf of the National Audubon Society, Endangered Habitats League, and Rural Canyons Conservation Fund
- Comments by Edmond M. Connor, submitted in a letter dated June 9, 2002, on behalf of the Vedanta Society of Southern California
- Comments by Ray Chandos, submitted in a letter to Frank McGill dated May 28, 2002, on behalf of the Rural Canyons Conservation Fund
- Comments by Patricia Martz, Ph.D., submitted in a letter dated June 10, 2002

Although the Sierra Club believes that *all* of the issues discussed in the above documents warrant full consideration and thorough analysis in a revised DRSEIR, two are of overarching significance to our members and deserve particular emphasis.

SIERRA CLUB

Suburban Sprawl
The significant negative impacts of the proposed Saddleback Meadows development are all attributable to the fact the project would further extend suburban-style development into the remaining wildlands of eastern Orange County. Attendant to such sprawl are the inevitable habitat destruction and fragmentation; watershed and water quality degradation; increases in vehicle miles traveled, traffic congestion, and air pollution; and deterioration of viewsheds and noisesheds. An adequate DRSEIR must honestly identify the true nature of the proposed Saddleback Meadows development as suburban sprawl, analyze the cumulative impacts of allowing similar sprawl-type projects to encroach upon remaining wildlands, and propose alternative locations for providing similar amounts of housing within the existing footprint of urban/suburban Orange County.

Benefits of Preservation
Although serious and ongoing consideration has been given to acquiring the Saddleback Meadows site for preservation in its natural state, only passing attention is given to acquisition in the DRSEIR. An adequate DRSEIR would thoroughly analyze the environmental *and* economic benefits of acquisition, potential sources of funding, and the relationship of acquisition to fulfilling the goals and objectives of all of the following: The Orange County General Plan, Foothill/Trabuco Specific Plan, Aliso Creek Corridor Specific Plan, and Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan.

The Sierra Club recommends that the DRSEIR be revised to properly address all issues raised in this letter, both directly and by reference, and recirculated for public comment.

Respectfully submitted,

Gail Prothero

Gail Prothero
Conservation Chair, Sierra Sage Group
Angeles Chapter Sierra Club – Orange County
29302 Sandalwood Court
San Juan Capistrano, CA 92675
(949)347-1255

JK

Attachment F

TRAILS4ALL

June 4, 2002

Thomas Mathews, Director
Planning and Development Services Department
300 North Flower Street, 3rd Floor
Santa Ana, CA 92703-5000

Subject: Saddleback Meadows Residential Project – Additional Trail Alignment

Dear Tom:

Recently, the County's Regional Riding and Hiking Trails Advisory Committee (RRHTAC) that I serve on was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route, the RRHTAC supported an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would then connect with the proposed Live Oak Plaza project site and connect to the Live Oak Canyon Regional Trail.

Upon review, Trails4All would also like to offer our support for the additional local trails through the proposed Saddleback Meadows project, linking with Live Oak Plaza and the Saddle Creek projects. We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

Should you have any questions, please feel free to contact me at (714) 834-3136.

Sincerely,

Jim Meyer,
Executive Director

300 North Flower Street - Box 4048 - Santa Ana, CA 92702-4048 - (714) 834-3136 - fax (714) 834-7651

TERRELL WATT, AICP
PLANNING CONSULTANT
1757 UNION STREET
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(415) 563-0543
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terrellwatt@yahoo.com

June 7, 2002

Manager, OCPDS/Environmental Planning Services Division
300 N. Flower Street,
Box 4048
Santa Ana, CA 92702-4048

Re: Comments on the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows (DRSEIR), State Clearinghouse No. 1996121072

Manager

This comment letter on the Draft Revised Subsequent Environmental Impact Report ("DRSEIR") for the proposed Saddleback Meadows development project ("project') is submitted on behalf of National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund ("the commenting groups"). These comments provide a detailed and explicit outline of the problems and inadequacies presented by: (1) the project itself, including its geological impacts and impacts to the habitat of several endangered and sensitive species; (2) the DRSEIR, including fatal deficiencies under the California Environmental Quality Act ("CEQA") (Pub. Res. Code §§ 21000 et seq.) and the CEQA Guidelines (14 Cal. Code Regs. §§ 15000 et seq.); and (3) the project's inconsistency with the County General Plan.[1]

[1] This comment letter was prepared by Terrell Watt, Planning Consultants, with assistance from legal counsel to the commenting groups. Terrell Watt has over twenty years of land use and environmental planning experience. She has expertise in conservation planning, "smart growth" development projects, CEQA and NEPA, NCCPs/HCPs and government reorganization projects. Her recent projects include: (1) development of conservation plans for the Central Coast under a grant from the David and Lucile Packard Foundation; (3) project management of a Sphere of Influence Study for Marin County; (3) consulting on a habitat conservation planning program for the City of Livermore, partially funded with a grant from the California Department of Fish and Game; and (4) project management of the Los Angeles Infill Working Group Project under a grant from Caltrans. The latter is a joint effort by the State Department of Housing and Community Development, the City and County of Los Angeles and Environment Now. A current resume for Ms. Watt is attached.

A summary of the DRSEIR's major defects follows:

Inadequate Project Description: The DRSEIR's project description remains incomplete and, therefore, inadequate. Specifically, the project description lacks important details about the project that are critical to an adequate analysis of project-related and cumulative impacts. Such details include, but are not limited to: (1) fundamental engineering aspects of the project related to mass grading and the probable need for export of unsuitable cut and importation of suitable fill; (2) a detailed description and proposed uses of open space; (3) the complete Project Design Feature that includes the final drainage plan; (4) proposed home size and total development contemplated, including accessory structures and paving; (5) hazards and hazards-related project features, such as possible presence of on-site contamination; among other information about the project. Without this information, the evaluation of impacts cannot be complete.

Inadequate Project Setting: The DRSEIR fails to describe key elements of the project setting adequately and completely. Such elements include, but are not limited to: (1) key general plan policies and regional policies relating to habitat planning, in particular the Southern Orange County Natural Communities Conservation Plan (NCCP); and (2) a list of cumulative projects, geographic study area for the cumulative analysis or plan based approach to cumulative impacts. This information is critical to the analysis of project-related and cumulative impacts.

Failure to Identify or Analyze the Full Extent of Significant Environmental Impacts: The DRSEIR is riddled with conclusions unsupported by facts and analysis on the significance of environmental impacts. Specifically the DRSEIR concludes, based on improperly deferred mitigation measures and mitigation measures of unproven efficacy, that all potentially significant impacts except cumulative air quality will be reduced to less than significant with mitigation. Insufficient evidence is provided to support the conclusion that *all but one* impact will be less than significant after mitigation.

Inadequate Cumulative Impacts Analyses: The DRSEIR's cumulative impacts section is non-existent. The DRSEIR fails to provide a complete list of cumulative projects or to outline a plan based approach to the cumulative analysis. The list of "related" projects is limited to a small area near the project and excludes other major projects in the NCCP Southern Subregion. Brief, conclusory statements are made concerning cumulative impacts throughout the DRSEIR. Moreover, the DRSEIR fails to consider feasible mitigation for the project's incremental contribution to cumulative impacts. Notwithstanding this complete lack of analysis, the DRSEIR concludes that all cumulative impacts will be less than significant with the exception of cumulative air quality.

Inadequate Growth-Inducing Impacts Analysis: The DRSEIR's growth-inducing impacts section is likewise inadequate. For example, the DRSEIR fails to analyze the potentially significant growth-inducing impacts associated with the extension of utilities and roads, and the placement of a water tank and access road beyond the project site. The DRSEIR

offers no analysis or even recognition of the precedent-setting effect the proposed project would have on development in the area, and development on sites where the topography and presence of biological habitat and wildlife corridors should limit such projects.

Inappropriate Deferral of Feasible Mitigation Measures: The DRSEIR improperly defers mitigation measures. Many of the deferred mitigation measures, including measures related to drainage and hazards mitigation, are relied upon to reduce significant impacts without any supporting facts or analysis.

Failure to Analyze a Reasonable Range of Alternatives: The DRSEIR includes numerous alternatives, but fails to analyze an alternative that fully mitigates for on- and off-site impacts. Moreover, the DRSEIR fails to properly identify the environmentally superior alternative, after the no-project alternatives, as Alternative 4.

These and other major defects in the DRSEIR described below render the document inadequate as a basis for informed decision-making and legally deficient under CEQA and the planning and zoning law. The County should give no further consideration to the project until an EIR is prepared and circulated that fully complies with CEQA and the CEQA Guidelines.

CONSIDERATION OF THE PROJECT IS PREMATURE

The County, the U.S. Fish and Wildlife Service and the Department of Fish and Game have initiated the Southern Subregion NCCP process. Preliminary reserve designs are scheduled for completion in July 2002. The project site is within the Southern Subregion and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for a number of special status species.

The NCCP reserve design(s) will suggest where development should and should not occur based on biological resources. This new information is fundamental to a determination of whether all or a portion of the project site should be included in a "reserve," or alternatively in a development area. A revised environmental document must include this information.

BACKGROUND AND PROJECT CONTEXT

The property is located in the lower, southeastern foothills of the Santa Ana Mountains and is currently used for horse and cattle grazing. The site's topography is hilly with several steep slopes and ravines. Soils on site are highly erodable. Aliso Creek is located nears the western site boundary and generally follows El Toro Road. Drainage from the site flows to the west into Aliso Creek, which drains into the Pacific Ocean at Aliso Beach, and Oso Creek, a tributary of Trabuco and San Juan Creeks, and south to O'Neill Regional Park. DRSEIR at page 4.2-2. The site provides an essential low elevation wildlife corridor between the Central and Southern NCCP areas and the Cleveland National Forest. Such a low elevation corridor is needed for gnatcatchers and other species. The site also supports important wetlands that provide habitat for Riverside fairy shrimp and western spade foot toad.

Under the proposed project, a gated community of 299 single-family residential lots would be built on approximately 222 acres. The total developed area would be approximately 66.9 acres and the total open space would be on approximately 155.1 acres. Only a portion of the area, approximately 83.25 acres would be in "natural resource preservation area." However, this area is subject to remedial grading and biological enhancement activities, thereby potentially degrading the resources even within this "natural resource preservation area." DRSEIR at page 2-16. Massive grading is needed to accommodate the project on this site. Grading would involve 70%+ of the site. It is still unclear to what extent remedial grading will extend beyond the area illustrated in the preliminary grading plan.

In summary, the site plan can best be characterized as "suburban sprawl," with roads and units extending across the entire site, thereby fragmenting the open space areas and extending into wildlands and interfering with wildlife corridors. This pattern of development would severely impact biological resource values on- and off-site and impede wildlife migration.

ANALYSIS

I. THE DRSEIR IS INADEQUATE UNDER CEQA.

The DRSEIR is deeply flawed under CEQA. An EIR must provide enough analysis and detail about environmental impacts to enable decision-makers to make intelligent judgments in light of the environmental consequences of their decisions. See CEQA Guidelines § 15151; Kings County Farm Bureau v. City of Hanford, 221 Cal.App.3d 692 (1990). Under the law, the lead agency must make a good faith effort to fully disclose the environmental impacts of the project. This requirement cannot be met unless the project is adequately described and existing setting information is complete. See County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 199 (1977). Both the public and decision-makers need to fully understand the implications of the choices presented by the project, mitigation measures, and alternatives. See Laurel Heights Improvement Ass'n v. Regents of University of California (Laurel Heights I), 6 Cal.4th 1112, 1123 (1988). The DRSEIR fails to provide sufficient information to enable informed decision-making by the County, the public, and the permitting agencies. Much important information remains improperly omitted or deferred until a later date in violation of CEQA; what information is provided remains vague and flawed.

The DRSEIR is a construction level EIR and therefore would allow for the issuance of a rough grading permit. Many of the most significant impacts are irreversible after rough grading has occurred. Thus, detailed information concerning project level impacts must be provided at this stage of project consideration so that the public, agencies and County decision-makers can fully understand the impacts of the proposed project and alternatives. Deferral of information concerning project-related and cumulative impacts, mitigation measures and alternatives is improper and unacceptable given the types of activities that will result from the approval of the project at this stage.

A. The DRSEIR Fails to Describe the Project Adequately.

The DRSEIR fails to describe the project and its setting accurately and completely. It omits key project features that have the potential to result in significant impacts.

The CEQA Guidelines define "project" as "the whole of an action, which has a potential for resulting in a physical change in the environment, directly or ultimately . . .." CEQA Guidelines § 15378. Among other components, an EIR's project description must contain a "general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities." CEQA Guidelines § 15124(c). As the Court of Appeal has noted, "The defined project and not some other project must be the EIR's bona fide subject." County of Inyo, 71 Cal.App.3d at 185. An accurate and complete project description is indispensable because, "[a] curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal . . . and weigh other alternatives in the balance. An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR." Id. at 192.

The DRSEIR also fails to provide an adequate description of the setting for the project. Such a failure is fatal under CEQA. CEQA and the CEQA Guidelines mandate that an EIR include a description of "the physical environmental conditions in the vicinity of the project . . . from both a local and a regional perspective . . . Knowledge of the regional setting is critical to the assessment of environmental impacts." CEQA Guidelines §§ 15125(a) and (c). This requirement derives from the principle that without an adequate description of the project's local and regional context, the EIR, and thus the decision-makers and the public who rely on the EIR, cannot accurately assess the potentially significant impacts of the proposed project.

The DRSEIR for the project is inadequate. It fails to describe key aspects of the proposed project with the potential to result in significant environmental impacts. Additionally, it fails to describe accurately and completely the environmental setting impacted by the project. Accordingly, potentially significant environmental impacts cannot be adequately analyzed or addressed by the DRSEIR and, for this reason, the DRSEIR is fatally deficient under CEQA.

1. **The DRSEIR Fails to Describe Adequately the Source and Placement of Cut and Fill Material and the Extent of Grading Required to Accommodate Roads and Dwelling Units.**

Massive earthwork will be required to prepare the site for access roads and houses. More than ½ of the site (126 acres) has slopes in excess of 26% with about 32 acres with slopes exceeding 50%. Preliminary estimates in the DRSEIR are that about 2.45 million cubic yards of conventional excavation (cut) and an equal amount of fill will be required. In addition, about 6.8 million cubic yards of remedial grading are required. The DRSEIR states that cut and fill (including several areas exceeding 50 feet in depth) will be balanced on site. However, the DRSEIR and geotechnical report present information that indicates on-site materials may not be suitable to support the project without imported materials. See DRSEIR at page 4.2-11. Moreover, mitigation measures M 2-14 and M 2-15 suggests that off-site borrow materials will be needed and on-site material removed:

> M 2-14 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal off-site. DRSEIR at page 4.2-18
>
> M 2-15 All borrow sites shall be approved by the Soil Engineer/Geologist prior to on-site delivery. This will permit the timely allocation of such available materials for use on the project site.

To the extent that exportation of cut and importation of fill will be required to implement the project, this information must be provided. Related impacts to air quality, off-site grading and stockpiling and traffic, among other issues must be disclosed and analyzed in a revised environmental document.

Although the DRSEIR fails to provide adequate information concerning proposed cuts and fills in terms of their location and extent, the document does refer to fills in excess of 50 feet in height. The DRSEIR provides virtually no information regarding the source and placement of cut and fill material, the full extent of grading required to accommodate roads and dwelling units, and the phasing of the cut and fill operation. Without this information, the DRSEIR environmental impacts analysis does not and cannot analyze the impacts of transporting such a significant amount of fill to the project site in terms of increased traffic and air pollutants, or the impacts of the cutting and filling itself, including impacts to air quality, open space, habitat, and special status species. Without an accurate and complete description of the proposed site grading and fill, the DRSEIR cannot adequately analyze environmental impacts or comment on the proposed project's consistency with the County's General Plan and grading ordinance.

A revised environmental document should include clear graphics that show cross sections where cuts and fills will exceed 50 feet. In addition, a revised environmental document must identify the sources of fill that are suitable to support the proposed development. Additional information

must be provided concerning the suitability of on-site material for fill if the DRSEIR continues to assume that cut and fill will balance on-site.

2. The DRSEIR Fails to Describe Adequately the "Open Space" Areas.

The DRSEIR fails to provide a complete description of the "open space" areas of the proposed project. Little or no information is provided regarding, among other aspects: the extent of grading to the open space; to what degree the open space will be altered from its present natural condition; the uses to which the open space will be put and the extent of those uses, including trails and recreation; and, the presence and location in the open space of utility lines, access roads and other services.

The lack of a complete description in the DRSEIR of alteration to, and ultimate uses of the open space areas renders any analysis of either project-related or cumulative impacts thoroughly inadequate. A revised description of any alteration to the open space and the uses proposed for the open space land, including the proposed water reservoir, must be completed. Once a complete description has been obtained, the DRSEIR's analysis of the environmental impacts to biological resources, geology, and air quality, among others, must be revised.

3. The DRSEIR Fails to Describe Adequately the Project's Master Drainage Concept and Project Features Directed as Maintaining Water Quality.

The DRSEIR fails to adequately describe the project's drainage concept and project features purportedly directed at maintaining water quality. Specifically, the DRSEIR's environmental impacts analysis concerning hydrology states that the "Project Design Feature" to mitigate drainage impacts is "being prepared in consultation with USACE." DRSEIR at page 4.3-7. Thus, the complete master drainage concept is not included in the DRSEIR for public, decision-maker and agency review. Although a final description of the master drainage concept is still being developed, the DRSEIR nonetheless concludes that no significant impacts associated with drainage will occur . In part, this is correct: no significant impacts <u>can</u> be identified based on such an inadequate project description. Without a complete description of the necessary drainage facilities, the DRSEIR fails under CEQA because impacts to water quality, biological resources, habitat, special status species, and human safety cannot be assessed. Once a complete description has been obtained, a revised impacts analysis must be completed.

The DRSEIR continues to describe other aspects of the project intended to mitigate water quality impacts:

"The remainder of the project site (the northerly development area) does not have sufficient room to accommodate the land-intensive requirements of the riverine system. Therefore, runoff from the balance of the developed portion of the project site would be primarily cleansed through stormceptors prior to discharge into natural drainage courses. Stormceptors trap trash, sediment,

and oils. They would also trap phosphorus that is attached to the sediment. However, they have no known effect on bacterial indicators or toxic constituents, both of which are constituents of concern for Aliso Creek. Removal of bacterial indicators would occur as the runoff continues through 3,300 linear feet of natural before reaching Aliso Creek. As part of the final design, ponds and swales would be incorporated to the maximum extent feasible in the development area within many small-scale features, such as, medians, parkways, and other developed open space in order to maximize the opportunity for removal of bacterial indicators and toxic constituents prior to outletting in the natural drainages." DRSEIR at page 4.4-12.

This paragraph suggests that:

> Key elements of the project that are critical to reducing significant impacts to drainage and water quality have not been designed. Therefore, the project description lacks key information to support both an adequate analysis of impacts and to support a conclusion that project impacts will be less than significant.
>
> Mitigation may not be sufficient to address impacts associated with bacterial indicators or toxic constituents.

A revised environmental document, based on a complete description of drainage and water quality features and feasible mitigation measures must be completed.

4. The DRSEIR Fails to Describe Adequately the Characteristics of Residential Uses

The DRSEIR lacks a complete description of proposed uses at the project site. Specifically, the DRSEIR fails to describe key aspects of the proposed residential project including, but not limited to: the size of the houses; their lot coverage; paving for roads driveways and parking lots; and accessory uses, such as swimming pools and storage. Without an adequate description of home size, lot coverage, and accessory uses, significant environmental impacts to aesthetics and water quality, among other impacts, cannot be identified or assessed and suitable mitigation measures cannot be proposed. To the extent this information is not available, a worst-case estimate of total site soft and hard cover must be developed and used to determine the extent of environmental impacts associated with site coverage. Without a clear understanding of how much land is to be covered by development, potentially significant environmental impacts to drainage, water quality, habitat, and special status species, among others, and the creation of geologic and flooding hazards cannot be identified, let alone assessed.

5. The DRSEIR Fails to Describe Adequately the Proposed Project's Construction Activities and Phasing.

The project description provides a cursory description of construction phasing and activities.

Among the information that is not sufficient is information about the extent and duration of grading activities. Without a description of these activities and phasing and the assumptions underlying the air quality estimates, the DRSEIR cannot adequately identify and analyze environmental impacts to air and water quality, among others, due to truck traffic and emissions, construction noise and dust. An EIR for a project such as this must include a description of the construction period activities, including, but not limited to: phasing; types of equipment; construction employment; staging areas, borrow sites and spoils disposal sites, among other details of the construction that could result in impacts. A revised environmental document must be prepared that includes this information and revised impact analyses as warranted based on the information.

6. The DRSEIR Fails to Describe the Project Site's Biological Resources and Habitats Adequately.

The DRSEIR fails to adequately describe biological resources on- and off-site. The document contains inadequate information concerning on-site biological resources, including oak woodlands, aquatic resources, raptor nesting locations and wildlife corridors, and fails to provide any description of biological resources within an adequate cumulative study area, which at a minimum, should include the entire Southern Subregion and Central NCCP areas.

Finally, the relationship of the project site to the Southern Orange County NCCP is not described or analyzed. There is a Figure in the DRSEIR, which illustrates a proposed Southern reserve, but the DRSEIR fails to state how this related to the proposed project. See Figure 4.8-2. Clarification is needed concerning the Southern NCCP process and its implications for this project. Without the inclusion of these, and other, key details of the on- and off-site biological regime, the DRSEIR cannot adequately analyze project-related and cumulative impacts.

7. The DRSEIR Fails to Describe Project Inconsistencies with Applicable Plans.

A number of plans are applicable to the project site including, but not limited to:

The Orange County General Plan

The Foothill/Trabuco Specific Plan

Aliso Creek Corridor Specific Plan

The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCP/HCP)

The DRSEIR provides a very cursory policy consistency review in the Land Use section and the biological resources sections. The consistency review does not include a table of key policies and

"findings" as to project consistency with these policies. It appears that the section omits several key policy inconsistencies, including the following:

Orange County General Plan

The Orange County General Plan Resources Element includes several policies concerning protection of natural resources as follows:

Goal 1: Protect wildlife and vegetation resources and promote development that preserves these resources.

Goal 3: Manage and utilize wisely the County's landform resources.

Objective 3.1: To minimize to the extent feasible the disruption of significant natural landforms in Orange County.

Policy 1. To identify and preserve the significant wildlife and vegetation habitats of the County.

Policy 5. To protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities.

The project as proposed appears to conflict with these overarching goals, objectives and policies of the Orange County General Plan. A revised analysis of project consistency with applicable General Plan policies must be included in a revised and recirculated environmental document.

The Foothill/Trabuco Specific Plan

The Foothill/Trabuco Specific Plan calls for preservation of significant landform, biological, cultural and scenic resources on-site. According to the DRSEIR's alternatives analysis, only Alternative 4 is consistent with the Specific Plan requirements. Also according to the DRSEIR, "[t]he proposed project would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692 with respect to proposed residential gross density and providing for the provision of a substantial increase in open space and the presence of a wildlife corridor as outlined in the F/TSP." DRSEIR at page 4.1-12. However, the proposed project would amend the F/TSP. DRSEIR at page 4.1-12. Nowhere in the DRSEIR are the proposed amendments to the F/TSP outlined.

The proposed project is inconsistent with the F/TSP in other major respects, including, but not limited to its failure to provide information required by the F/TSP (see Letter submitted by Rural Canyons Conservation Fund, dated May 28, 2002, hereby incorporated by reference).

The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCP/HCP)

Figure 4.8.2 indicates that the entire project site is located within an NCCP "reserve area." The DRSEIR fails to point this out or to analyze the implications of this for the project.

A significant theme of all of these plans is the protection of key wildlife corridors in the area. It is clear from the project site plan that minimal provisions will be made for continued wildlife movement and those species that attempt to traverse the on-site corridor will be subject to significant additional constraints including: modified topography, new road corridors, presence of new residents in the area, increased noise and lighting as well as residential units in the path of the Northern Corridor. See Figure 8.4.4. The project will have significant impacts on wildlife migration that must be identified in the environmental document and called out as inconsistencies with applicable policies in the above-listed Plans. To the extent that wildlife corridors are assumed on adjacent privately owned properties, the revised environmental document should explain how these corridors would be maintained and not destroyed by cumulative development projects.

B. The DRSEIR's Analysis of Environmental Impacts Is Inadequate.

The DRSEIR's analysis of environmental impacts fails to provide the necessary facts and analysis to allow the County and the public to make an informed decision. Without such detail, the DRSEIR is deficient under CEQA. The role of the EIR is to make manifest a fundamental goal of CEQA: to "inform the public and responsible officials of the environmental consequences of their decisions before they are made." Laurel Heights I, 6 Cal.4th at 1123. To do this, an EIR must contain facts and analysis, not merely bare conclusions. See Citizens of Goleta Valley v. Board of Supervisors, 52 Cal.3d 553, 568 (1990). Any conclusion regarding the significance of an environmental impact not based on analysis of the relevant facts fails to achieve CEQA's informational goal.

As set forth below, the DRSEIR is riddled with conclusory statements regarding environmental impacts, unsupported by facts and necessary analysis. Furthermore, the DRSEIR attempts to defer analysis of environmental impacts to a later date. As discussed below, such deferral is not an option. CEQA mandates that environmental impacts be identified and analyzed in the EIR, not at a later date. See Sundstom v. County of Mendocino, 202 Cal.App.3d 296 (1988) (holding that a negative declaration was invalid when county approved a project while postponing the resolution of uncertainties regarding environmental impacts to a later date).

1. The DRSEIR Fails to Analyze Impacts to Biological Resources Adequately.

The DRSEIR's biological impacts analysis is inadequate in numerous respects, including, but not limited to:

Underestimation of project-related impacts to biological resources: The DRSEIR fails to adequately characterize the extent of project-related impacts to biological resources: First, the uses and management of the open spaces on the project-site are not sufficiently defined and "locked-in" to ensure that biological resources located in these areas will not be impacted. For example, if there are recreational uses in the open space areas, wildlife may not use these migration corridors. In addition, impacts could be associated with the public and private landscaping plans, which are not required to be prepared until after project approval and EIR certification. See SC 8-7 and SC 8-8. No criteria are specified in the DRSEIR for these plans. Moreover, because the full extent of grading and importation of fill/exportation of cut is not disclosed, there are likely to be additional impacts to biological resources on- and off-site that are not described in the DRSEIR. If recreation and other uses are to be prohibited in the open space areas, a revised DRSEIR must state how these restrictions will be enforced and cite examples where similar restrictions have been effective (e.g. more effective than "fencing," which is a proposed mitigation measure).

Deferral of analysis and mitigation: The DRSEIR improperly defers surveys for trees that host nesting raptors. Trees on the project site that provide nesting should be identified prior to certification of the EIR and protection provided as required under the federal MTBA. DRSEIR at page 4.8-22.

Insufficient evidence to support a conclusion that indirect effects would be insignificant. The DRSEIR's conclusion that indirect effects are insignificant is not supported by evidence. The proposed site plan results in a pattern of development (roads and houses) that fragments the property, extends to adjacent undeveloped lands and has an extensive edge. Moreover, the project would introduce lighting, noise and residents in a wildlife area – the effects of which are not adequately disclosed or analyzed in the DRSEIR. Mitigation measures recommend "fencing" adjacent to undisturbed areas of open space. DRSEIR at page 4.8-32. Not only could such fencing result in additional impacts (e.g. impeding wildlife migration), but there is no evidence such fencing will effectively protect open space areas from trespass by children, pets and the like. Additional evidence must be provided in a revised environmental document to support the conclusion that these indirect effects are not significant, particularly where there are a number of alternative projects that would significant avoid these impacts (e.g. Alternatives 4 and 7).

Insufficient evidence is provided that mitigation measures will be effective. The DRSEIR does not provide sufficient evidence that proposed mitigation measures will actually mitigate impacts to less than significant levels. First, the DRSEIR implies that the biological resource mitigation plan has the blessing of the resource agencies:

"The biological resource mitigation plan has been reviewed by the effectual regulatory agencies and a biological opinion has been issued by USFWS. The biological resource mitigation plan mitigates project related impacts to wetland/riparian habitats, sensitive upland habitats and wildlife movement..." DRSEIR at page 4.8-23

Yet, there are no letters in the DRSEIR which document that these agencies have agreed that the biological resource mitigation plan will adequately mitigate project related impacts to biological resources. Furthermore, the referenced biological opinion purports only to "transmit[] our biological opinion based on our review of the proposed Saddleback Meadows Residential Development Project located in Orange County, California and its effects on the federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*, "fairy shrimp") and its designated critical habitat, and designated critical habitat for the threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher"), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*)." (Biological Opinion, dated October 26, 2001, at page 1.) I.e., this biological opinion is confined to assessing the project's effects on two species, only, and their designated critical habitats, under the federal Endangered Species Act, not CEQA. If these agencies have not signed off on the adequacy of the biological resource plan under CEQA, the DRSEIR should not leave the impression that they have done so. A revised DRSEIR must include information from the agencies concerning the adequacy of the biological resources plan so that the public and the decision-makers are fully informed about the likely changes these agencies will require in order to issue permits for the project (such changes may include additional mitigation or reconfiguration of the site plan).

The letters previously submitted by the wildlife agencies on prior project environmental documents raise significant concerns about the project's impacts on biological resources. Specifically, the October 29th letter states:

"Our biologists' professional opinion is that neither of the two previously submitted preferred projects (318 DU and 705 DU) nor the 299 DU Contingency Plan retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows. As currently proposed, the 299 DU Contingency Plan development "footprint" would severely constrain wildlife movement from O'Neill Regional Park (i.e. southern NCCP planning area) to the Central NCCP reserve and Cleveland National Forest and is not acceptable." October 29, 1998 letter at page 2. See Letters from the wildlife agencies dated October 29, 1998 and August 8, 1997, hereby attached as attachments 2 and 3 and incorporated herein by reference.

Second, the DRSEIR assumes that Project Features and mitigation measures will reduce project-related impacts to biological resources to less than significant levels. Such measures include highly experimental elements such as creation of new ponds and relocation of species (fairy shrimp) the possible failure of which is explicitly anticipated by the cited biological opinion No documentation is provided about projects that have successfully used these techniques.

Third, the DRSEIR makes clear that drainage and water quality mitigation "features" are not yet completely designed. Questions remain whether the proposed system will maintain water quality, particularly with respect to bacterial indicators and toxic constituents. DRSEIR at page 4.4-1. Yet, the DRSEIR contains no mention of, or analysis concerning the potentially significant project-related and cumulative impacts of bacterial and toxic constituents on species in the creek

system downstream of the project site. This analysis must be included in a revised environmental document. Nor does the DRSEIR explain how the project can comply with new water quality regulations recently ordered against the County of Orange by the Regional Water Quality Control Board (CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION ORDER NO. R9-2002-0001 NPDES NO. CAS0108740 WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF URBAN RUNOFF FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) DRAINING THE WATERSHEDS OF THE COUNTY OF ORANGE, THE INCORPORATED CITIES OF ORANGE COUNTY, AND THE ORANGE COUNTY FLOOD CONTROL DISTRICT WITHIN THE SAN DIEGO REGION), February 13, 2001.) These stricter regulations supplant the 1994 NPDES permit referenced in the DSEIR, and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek, adjacent to the project, resulting in numerous beach closures at Aliso Beach.

Fourth, the DRSEIR clearly relies on the long-term maintenance of wildlife corridors on adjacent privately owned properties, some of which are planned for future development. Yet, there is no description of how these corridors would be protected from development, and no analysis of the cumulative impact of future developments that could interfere with essential corridors.

Finally, the DRSEIR fails to state how the project will comply with the NCCP/Coastal Sage Scrub agreement. This information must be included in a revised DRSEIR.

Inadequate cumulative analysis. Similar to other cumulative discussions in the DRSEIR, the biological resource section cumulative "analysis" is nonexistent. The brief discussion concludes that "...all identified related projects in the region would have to mitigate biological impacts to less than significant." DRSEIR at page 4.8-22. This statement is not sufficient to support a finding that there would be no cumulatively significant impacts to biological resources in the region. A revised discussion must identify cumulative projects and their collective impacts (by species, habitat and acreage), disclose the mitigation measures that would be required, provide evidence that the mitigation would be effective and document the conclusion that there would be no significant cumulative impacts.

Failure to identify potential inconsistencies with applicable plans and policies. The preliminary reserve design for the Southern Subregion NCCP, Figure 4.8-2, appears to include the site in the reserve. Not only does the DRSEIR fail to discuss the fact that the Southern Subregion NCCP is underway, with updated reserve designs due in July 2002, the DRSEIR fails to disclose that the site is identified as part of the reserve on Figure 4.8-2. A revised environmental document must discuss how the NCCP process applies to the proposed project. Specifically, since the Board of Supervisors agreed to participate in the NCCP process in 1993, can the Board properly take action on this project in advance of the NCCP process reaching major milestones concerning proposed reserve design or even more advanced outcomes? What is the relevance of the site being shown as part of the "reserve" in Figure 4.8-2?

2. The DRSEIR Fails to Disclose and Analyze Impacts to Geology and Soils Adequately.

The DRSEIR is deficient in its analysis of geologic impacts. As noted above, the project description and the DRSEIR as a whole provide little information regarding the massive grading and fill required to actualize this proposed project. The extent of cut and fill also appears to underestimate what could be required to accommodate the project as proposed. It is not clear from the DRSEIR whether importation and exportation of fill will be necessary. If necessary, no analysis is provided of the additional impacts of such activities, including, but not limited to: traffic associated with hauling materials, direct impacts to borrow and spoils sites, air quality implications and the like. A revised analysis must include evidence that supports the DRSEIR's assertion that grading will balance on site, or in the alternatives, the true extent of project-related impacts must be disclosed. Also, clearer graphics showing the extent and location of cuts and fills must be included in a revised document so that the public and decision-makers can fully appreciate the impacts of this project on the topography.

3. The DRSEIR's Analysis of Air Quality Impacts Is Incomplete.

The Air Quality section states:

"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end."

The discussion fails to discuss the fact that a leading contributor to emissions, and the least likely land use configuration to successfully result in TSM program trip reductions is suburban sprawl – the land use configuration proposed by the project. No discussion is included in the DRSEIR about meaningful ways to address air quality in terms of major policy changes to how the County uses and develops land (e.g. the County could refocus its efforts to accommodate new housing in "infill" areas, and the like). No TSM mitigation measure is included for the project, because the type of land use proposed by the project is not conducive to TSM programs. In light of the fact the County is located within a non-attainment basin, the County should evaluate bolder land use policy measures to address air quality emissions. Such measures (alternatives such as locating housing in infill areas) should be discussed in the DRSEIR.

The DRSEIR appears to understate the impacts on air quality that will be generated both by project construction and by the built project itself. As noted above, the DRSEIR fails to adequately describe construction activities and phasing, and fails to analyze potential air quality impacts associated with hauling cut and fill on-and off-site. Therefore, the DRSEIR fails to analyze and disclose the potentially significant impacts associated with these activities. As stated above, additional information concerning the suitability of on-site soils as fill for the project must

be provided if the DRSEIR is going to assume that cut and fill will balance on-site. Alternatively, a revised environmental document must analyze the impacts associated with exportation of unsuitable cut material and importation of suitable fill material. This analysis must include disclosure of both 1) where the materials will be disposed of and 2) locations for imported fill.

The other major deficiency in the analysis is the lack of any meaningful analysis of cumulative air quality impacts. A revised environmental document must include such an analysis (e.g. other construction projects in the area generating air pollutants; etc.).

4. The DRSEIR Fails to Analyze Hazards Adequately.

The DRSEIR defers analysis of potential on-site contamination. Specifically, the potential for on-site contamination is deferred until prior to recordation of the subdivision map. See SC 2-13 at page 4.2-16 of the DRSEIR. At a minimum, the results of a phase I site assessment should be included in a revised environmental document.

5. The DRSEIR Fails to Analyze Land Use and Planning Impacts Adequately.

The DRSEIR fails to describe all relevant policies and plans, and fails to evaluate the consistency of the project with each policy. Each relevant County and other agency policy, general plan policy, regulation, guideline or standard should be summarized in a table, noting whether the project is consistent with the applicable provision and what must be done to reconcile the two where they are inconsistent. Instead, the DRSEIR fails to identify key County policies and fails to discuss the applicable policies and regulations of other agencies (e.g., policies of the U.S. Fish and Wildlife Service and the Regional Water Quality Control Board, among others). A revised environmental document must include this analysis.

6. The DRSEIR Fails to Analyze Impacts to Traffic Adequately.

The DRSEIR fails to disclose that the project's proposed land use pattern would not support sound transportation management practices because of its location, low density and contribution to the suburban sprawl pattern in Orange County. As a result, the project will perpetuate the exclusive use of automobiles for transportation, the very practice that has contributed to the traffic and air quality problems that are so acute in the County.

The Air Quality section states:

"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward

achieving that end."

No TSM mitigation measure is included for the project because the type of land use proposed by the project is not conducive to TSM programs. The DRSEIR should disclose this fact and acknowledge the poor pattern of land uses represented by this and other projects in the area, will continue to frustrate the County's progress toward acceptable traffic flows and clean air quality. A revised environmental document should discuss alternatives to the general plan land uses in the area – and explore the potential for transferring these planned units to infill sites.

Finally, the DRSEIR fails to adequately analyze cumulative traffic impacts including how projects of this type are likely to frustrate the County's attempts at a meaningful TSM program. The geographic study area for the analysis of cumulative projects is artificially small in size, and fails to provide a sufficiently large study area for many impacts, including traffic, air quality and biological resources. See Table 3.1, Related projects. Moreover, there is no information provided on construction period traffic for even these related projects; information which must be provided and included in a revised cumulative analysis for traffic and air quality. The study area for the revised analysis should extend at least to the likely areas where new residents in the proposed project and related projects are employed. No such information is included in the DRSEIR. Thus, it is unclear how the study area was selected. Information concerning where new residents in these areas work and therefore commute, must be developed and used to form the basis for the new analysis of traffic and transit impacts.

7. The DRSEIR Fails to Analyze Adequately Impacts to Hydrology, Drainage and Water Quality.

Pollution carried by storm water and urban runoff is the largest source of contamination to surface water both in California and nationwide. Construction sites, in particular, have been identified as significant dischargers of polluted storm water, involving high concentrations of silt and turbidity, as well as oil and grease, trash, sewage, and other chemicals used in construction activities and equipment maintenance. Despite this well-known and well-documented problem, the DRSEIR fails to adequately describe construction activities and on-site and off-site drainage "improvements," both of which could impact the water quality of the area. See concerns raised above about the inadequate and incomplete description of the project drainage and water quality features.

The DRSEIR concludes that there will be no significant drainage impacts after mitigation because of a highly engineered system of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to "control project drainage." DRSEIR at page 4.3-7. A "riverine water quality filtration system" is proposed next to the road to "cleanse low flow urban runoff." DRSEIR at page 4.3-7. There is no evidence in the DRSEIR that confirms this combination of features will mitigate for the impacts associated with the introduction of impervious surfaces, the complete alteration of the on-site drainage system and redirection of the natural drainages. No examples of successful projects that are similar in features are provided in the DRSEIR.

Moreover, there is no discussion of what kind of long-term maintenance and monitoring will be needed to maintain this highly engineered system. The DRSEIR merely states that the "structural and non-structural BMPs would be owned, operated and maintained by the home owner's association (HOA) or community services district." DRSEIR at page 4.4-12. Specific information about the drainage and water quality features and how they will be maintained and monitored over the long-term (including information about the cost of maintenance and monitoring) is essential to determine: first, whether the extent of drainage alterations is an acceptable project feature; and second, whether the proposed system of drainage features will actually be a viable system over the long-term, and effectively mitigate significant impacts to the natural drainage system. Specific information about the Riverine system, and the fact that the northerly development area does not have sufficient room to continue this system, suggests that the proposed project features may fall short of ensuring water quality is not adversely impacted by the project. DRSEIR at page 4.4-11.

The revised document should include examples of projects that incorporated similar features and have been demonstrated to result in effectively addressing drainage and water quality impacts. Absent this information, the conclusion reached in the DRSEIR that "[u]pon implementation of the Project Design Features and compliance with the Standard County Conditions, water quality impacts would be mitigated to a less than significant level," is not supported by evidence.

Finally, the significance of project-related impacts requires that the analysis of cumulative impacts to drainage and water quality be extensive. The DRSEIR fails to complete any analysis of these admittedly significant cumulative impacts, yet concludes that as a result of "required mitigation," cumulative impacts would not be significant. DRSEIR at pages 4.3-7 and 4.4-13.

C. The DRSEIR Fails to Analyze Cumulative Impacts Adequately.

The DRSEIR utterly fails to analyze cumulative impacts in the manner or to the degree required by CEQA. The CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." CEQA Guidelines § 15355(a). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." Id.

A legally adequate cumulative impacts analysis views a particular project over time and must consider the impact of the project combined with other projects causing related impacts, including past, present, and probable future projects. CEQA Guidelines 15130(b)(1). Projects currently under environmental review unequivocally qualify as reasonably probable future projects to be considered in a cumulative impacts analysis. See San Franciscans for Reasonable Growth v. City and County of San Francisco, 151 Cal.App.3d 61, 74 & n. 13 (1984). In addition, projects anticipated beyond the near future should be analyzed for their cumulative effect if they are reasonably foreseeable. See Bozung v. Local Agency Formation Comm'n, 13 Cal.3d 263, 284 (1975). Alternatively, an EIR may utilize:

> A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact.

CEQA Guidelines § 15130(b)(1)(B). Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. Id.

The discussion of cumulative impacts must include a summary of the expected environmental effects to be produced by those projects, a reasonable analysis of the cumulative impacts, and full consideration of all feasible mitigation measures that could reduce or avoid any significant cumulative effects of a proposed project. See CEQA Guidelines §§ 15126.4(a)(1) and 15130(b)(3).

The cumulative impacts concept recognizes that "[t]he full environmental impact of a proposed . . . action cannot be gauged in a vacuum." Whitman v. Board of Supervisors, 88 Cal.App.3d 397, 408 (1097). The requirement of a cumulative impacts analysis of a project's regional impacts is considered a "vital provision" of CEQA. Bozung, 13 Cal.3d at 283. Moreover, an EIR must examine not only the anticipated cumulative impacts, but also reasonable options for mitigating or avoiding the project's contribution to significant cumulative impacts. CEQA Guidelines § 15130(b)(3). The DRSEIR does not come close to meeting these requirements for the reasons described below.

1. The DRSEIR's Cumulative Impacts Analysis' Geographic Study Area Is Too Small and Thus Inadequate Under CEQA.

The DRSEIR considers a geographic study area far to small to reveal the true nature of the proposed project's cumulative impacts and, thus, is deficient under CEQA. The analysis of cumulative impacts appears to be based on a short list of "related" projects in the immediate area of the project. See Table 3.1 and Figure 3.2.

Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Mission Viejo project and other projects in the Southern Subregion NCCP area. In September of 2001, the Mission Viejo Company filed an application for development of its land. As such, the cumulative analyses of land use and planning, geology and soils, hydrology and water quality, air quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider this potentially massive foreseeable project.

Furthermore, the document does not provide even minimal information regarding other projects within the Southern Orange County NCCP Study area. Analysis of these additional projects is

particularly important given the project's location in the Southern Orange County Natural Community Conservation Program Study area.

Although the DRSEIR concludes that the project's cumulative impacts, with the exception of air quality, will not be significant, such a conclusion cannot be supported in light of the inadequacy of the geographic study area. The DRSEIR's failure to consider the 14,000 home Rancho Mission Viejo Project alone renders its scope inadequate. The DRSEIR must also acknowledge and analyze the project's significant cumulative impact on the existing severely "impacted" water quality in adjacent Aliso Creek. This failure to consider regional or area wide cumulative impacts is fatal under CEQA and, as such, the document must be revised.

2. The DRSEIR Fails to Analyze any of the Cumulative Impacts Adequately.

In addition to relying on a far too small geographic study area, the level of analysis in the DRSEIR's cumulative impacts analysis is far too cursory. An EIR must include objective measurements of a cumulative impact when such data are available or can be produced by further study and are necessary to ensure disclosure of the impact. See Kings County, 221 Cal.App.3d at 729. Despite this mandate, the DRSEIR fails to analyze adequately a number of cumulative impacts, including, but not limited to, impacts to biological resources, water quality and drainage, and aesthetics, among others.

For example, with regard to cumulative water quality impacts, the DRSEIR states that "Ultimate development planned in the watershed in conjunction with the proposed project would potentially impact both surface and groundwater quality. Without controls, both short-term construction-related and long-term impacts due to pollutants in urban runoff could substantially impact water quality." DRSEIR at page 4.4-13. Despite this finding and despite the project's location in the watershed streams, the DRSEIR concludes that: "...as with the proposed project, related projects would be required to mitigate impacts to water quality to less than significant levels." Id. The DRSEIR fails to adequately summarize any information that would support the conclusion, and offers no supporting analysis itself. A revised environmental document must include analysis of cumulative impacts in order to support the conclusions throughout the DRSEIR that cumulative impacts will be reduced to less than significant levels. Statements such as: "cumulative projects are required to mitigate their impacts, therefore they will," are insufficient to support findings that all cumulative impacts, except air quality, will be less than significant.

Moreover, none of the cumulative impact discussions provide quantified information concerning cumulative project impacts, including, but not limited to: acres of habitat types directly/indirectly impacted by development or total construction trips. This information must be provided in revised cumulative analyses in a revised environmental document. Without such information, there is insufficient evidence to support the DRSEIR's conclusion that cumulative impacts to biological resources, traffic and water quality, among other impacts, will be insignificant. A revised document must also specify mitigation measures for cumulative impacts. Currently, the

DRSEIR includes conclusory statements in each section concerning potentially significant cumulative impacts. In each case, "required mitigation" is assumed to reduce significant cumulative impacts to less than significant levels. For example, the biology section contains the following statement concerning cumulative impacts:

"However, as with the proposed project, all identified related projects within the region would have to mitigate biological project impacts to less than significant." DRSEIR at page 4.8-22.

This conclusory statement provides no evidence that cumulative impacts to biological impacts will or can in fact be mitigated, nor is there any legal requirement that "all proposed projects" mitigate biological project impacts to less than significant. CEQA requires only that such impacts be mitigated to the extent feasible, which may not be to a less than significant level. See also DRSEIR at pages 4.1-12 (cumulative loss of open space would be adverse, but not significant); 4.4-13 (ultimate development in the watershed would potentially impact both surface and groundwater quality, but such impacts would be required to be mitigated to less than significant levels); 4.12-4, and other cumulative sections throughout the DRSEIR.

Finally, as described above, the DRSEIR fails to explore the full range of mitigation measures that could potentially reduce cumulative impacts below a level of significance. An EIR must examine reasonable options for mitigating or avoiding the project's contribution to cumulative impacts. See CEQA Guidelines § 15130(b)(3).

D. The DRSEIR's Discussion of Growth-Inducing Impacts is Inadequate Under CEQA.

The DRSEIR must consider the growth-inducing potential of the project in this undeveloped area. CEQA requires that an EIR include a "detailed statement" setting forth the growth-inducing impacts of the proposed project. See Public Resources Code § 21100(b)(5); City of Antioch v. City Council of Pittsburg, 187 Cal.App.3d 1325, 1337 (1986). The statement must "[d]iscuss the ways in which the proposed project could foster economic growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." CEQA Guidelines § 15126.2(d). It must also discuss how a project may "encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively" or "remove obstacles to population growth." Id.

The DRSEIR's brief growth-inducing section concludes that the project is consistent with growth management policies of SCAG's RCP and would not extend or serve beyond the project boundaries. There is no analysis of whether the extension of roads and services on-site, and the development of a water tank and access road off-site, would facilitate growth on adjacent properties. Nor does the discussion reach any conclusion as to whether the project is or is not growth inducing as required by CEQA. The DRSEIR fails to address the potential for the off-site water tank to support development on adjacent, currently undeveloped parcels. In addition, wastewater pipes would be extended on site. The DRSEIR fails to describe the potential for these

pipes to support development beyond the project site. A revised environmental document must include an adequate analysis of the project's potential for growth inducement.

Finally, the DRSEIR fails to consider the precedent set by approval of this project. Specifically, the project interprets the general plan and other County plan policies to allow this development. No information is provided on the status of "permitted" development under the applicable plans for the area including the site and beyond. Figure 4.1.3, Foothill/Trabuco Specific Plan Land Use Designations, indicates development potential on a number of presently undeveloped properties that are contiguous to the project site. No information is provided in the DRSEIR concerning the status of development within the Specific Plan (e.g. the current statistical summary). It is clear that the development of the project site could have a growth inducing effect on these adjacent properties. Overall, the DRSEIR provides little evidence that the improvements to infrastructure it will involve and the precedent it will set will not induce growth to adjacent undeveloped properties.

In addition, the DRSEIR must analyze the potentially eviscerating effect of all other undeveloped sites within the Foothill Trabuco Specific Plan area seeking to follow the precedent of spot-amending the Specific Plan to explicitly exempt proposed development from all of the regulations and guidelines of the Specific Plan.

A revised growth inducing analysis must be prepared and include the status of development permitted on adjacent properties under all applicable plan and policies. This analysis should inform a revised analysis of cumulative impacts, including, but not limited to the long-term sustainability of an adequate wildlife corridor system.

E. The DRSEIR Improperly Attempts to Defer Mitigation to a Later Date, Fails to Identify Feasible Mitigation Measures, and Relies on Inadequate Mitigation Measures.

CEQA requires that mitigation measures be identified and analyzed. "The purpose of an environmental impact report is . . . to list ways in which the significant effects of such a project might be minimized . . . ." Pub. Res. Code § 21061. The Supreme Court has described the mitigation and alternative sections of the EIR as the "core" of the document. Citizens of Goleta Valley v. Board of Supervisors, 52 Cal. 3d 553 (1990). As explained below, the DRSEIR's identification and analysis of mitigation measures, like its analysis throughout, is thoroughly inadequate. An EIR is inadequate if it fails to suggest mitigation measures, or if its suggested mitigation measures are so undefined that it is impossible to evaluate their effectiveness. See San Franciscans for Reasonable Growth v. City and County of San Francisco, 151 Cal.App.3d 61, 79 (1984). Moreover, an EIR may not use the inadequacy of its impacts review to avoid mitigation: "The agency should not be allowed to hide behind its own failure to collect data." Sundstrom v. County of Mendocino, 202 Cal.App.3d 296, 361 (1988). Nor may the agency use vague mitigation measures to avoid disclosing impacts. See Stanislaus Natural Heritage Project v. County of Stanislaus, 48 Cal.App.4th 182, 195 (1996). Lastly, the formulation of mitigation

measures may not properly be deferred until after Project approval; rather, "[m]itigation measures must be fully enforceable through permit conditions, agreements, or legally binding instruments." 14 CCR § 15126.4 (a). In the present case, the DRSEIR does not come close to satisfying these basic CEQA requirements regarding impact mitigation. Most egregiously, it attempts to defer discussion and development of suitable mitigation measures until after the certification of the environmental document and the conclusion of public review.

1. The DRSEIR Improperly Defers Mitigation.

The DRSEIR impermissibly concludes that all of the project's environmental impacts, with the exception of cumulative air quality, will be mitigated below a level of significance, while at the same time deferring necessary analysis of mitigation measures. DRSEIR at page 9-1. Under CEQA, an EIR may conclude that impacts are insignificant only if it provides an adequate analysis of the magnitude of the impacts and the degree to which they will be mitigated. See Sundstrom, 202 Cal.App.3d at 306-07. Thus, if an agency fails to investigate a potential impact, its finding of insignificance simply will not stand. Id. Further, CEQA generally requires that all mitigation measures be adopted simultaneously with, or prior to, project approval. An agency may defer preparation of a plan for mitigation only when the agency commits itself and/or the project proponent to satisfying specified performance standards that will ensure the avoidance of any significant effects. Id.

In the present case, the DRSEIR violates CEQA by deferring critical analyses of project impacts and necessary mitigation. The following is a non-exhaustive list of the project design features and mitigation measures that the DRSEIR improperly defers to a later date:

a. PDF 3-1. A master drainage concept has been incorporated into project design to mitigate hydrology impacts to existing OCFCDs requirements and standards...This Project Design Feature is being prepared in consultation with USACE.
b. M 4-1. The applicant shall have the option to research off-site water quality improvements to determine the technical and economic feasibility of implementing improvements that have regional water quality benefits and can also mitigate project-related impacts...
c. PDF 4-9. The storm drain system shall be designed to mimic natural drainage patterns as closely as possible. Emphasis added.
d. As part of final design, ponds and swales would be incorporated to the maximum extent feasible...DRSEIR at page 4.4-12.

The DRSEIR's failure to adequately analyze the potentially significant effects of the project, and to design proper mitigation measures prior to project approval, renders the document inadequate and vulnerable to legal challenge. With the DRSEIR in its current form, decision-makers, the

public and permitting agencies cannot evaluate the advisability of project approval. Too little is known, and too much is entirely unknown, about the project's environmental impacts.

2. The DRSEIR Fails to Identify Feasible Mitigation Measures.

The DRSEIR's consideration of mitigation is inadequate because it fails to identify several feasible measures that could reduce or eliminate identified significant impacts. Mitigation is defined by CEQA as including:

> (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
> (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
> (c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.
> (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
> (e) Compensating for the impact by replacing or providing substitute resources or environments.

CEQA Guidelines § 15370. The DRSEIR fails to consider measures, which could mitigate in the fashion described above significant impacts in several resource categories, including, but not limited to, biology, geologic hazards, hydrology and water quality, among others.

Furthermore, the DRSEIR improperly concludes that all impacts except cumulative air quality, are mitigated to below a level of significance based either on deferred mitigation measures, as discussed above, incomplete and "future" project features, or on mitigation measures of unproven efficacy. These determinations are not supported by substantial evidence. A partial list of impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to the following:

Project impacts to biological resources: There is insufficient information in the DRSEIR to establish the efficacy of proposed mitigation measures including wildlife corridors and replacement ponds, and to support a finding that the impacts to biological resources will be less than significant with mitigation. Moreover, the applicant has not secured all of the necessary permits for the project and the agencies have not signed off on the adequacy of the proposed measures. Even with such agency approvals, significant impacts may remain. For these reasons, and because a feasible project alternative is proposed that would significantly reduce impacts to resources (Alt. 4), a revised environmental document should identify project related impacts to biological resources as significant and unavoidable.

Cumulative impacts to biological resources. In the USFWS biological opinion, the Service

states under cumulative impacts:

"At this time, we do not have adequate information to fully evaluate the potential impacts of the Saddlecreek/Saddlecrest Residential Development Project, Whispering Hills Development Project, and the Capistrano Valley Water District Pipeline Project on designated critical habitat for the gnatcatcher." Biological Opinion at page 23.

Another major project in the Southern NCCP area, the Mission Viejo Project, implicates some of the same species and habitats as the proposed project. Based on: 1) the significant amount of habitat loss involved with these development projects in combination with properties surrounding the project site "planned" for development; 2) the lack of information concerning the efficacy of proposed mitigation measures; and 3) the lack of information concerning mitigation measures for cumulative projects, a revised environmental document should identify cumulative impacts to biological resources as a cumulatively significant and unavoidable impact.

Project-related aesthetic impacts: The DRSEIR finds that impacts to aesthetic and visual resources would be less than significant. DRSEIR at page 4.9-23. In support of this finding, the text of the document states:

"The proposed project would not have a substantial negative aesthetic effect. As depicted in the visual simulations, Saddleback Meadows would be low-density and rural in character and would not conflict with the surrounding environment..." DRSEIR at page 4.9-23.

The project is not "rural in character." Figure 2.9, Conceptual Streetscape, clearly illustrates a project that is suburban in character. Lot sizes averaging 6,672 square feet clearly represent urban/suburban development densities. The protection of fragmented areas of the project site in open space does not "transform" this suburban development into "rural" character. Based on Appendix G of the CEQA Guidelines, the transformation of this site from undeveloped to suburban in the midst of wildlife habitat would constitute a substantial degradation of the existing visual character of the site and its surroundings. Therefore, this impact should be identified as significant and unavoidable as clearly demonstrated by the visual simulations (Compare figures 4.8.4 and 4.9.1, and see Figures 4.9.4, 4.9.5, and 4.9.9, among other exhibits in the DRSEIR, which demonstrate the significant change in character of the site and surrounding area with development as proposed.)

Cumulative Aesthetic Impacts. Figure 2.6 and 4.1.3 clearly indicate that other properties in the project area are designated for development. Cumulative development in the area should have been analyzed and mitigation measures proposed to ensure that the area's visual resources are not further degraded by planned development. Since no cumulative analysis was undertaken, and no cumulative mitigation measures are proposed, the potential for cumulatively significant and unavoidable aesthetic and visual impacts should be identified in a revised environmental document.

Other impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to: plan and policy inconsistencies; landform alteration; project-related and cumulative drainage and water quality impacts; cumulative traffic impacts; and cumulative impacts to public services and utilities. Growth inducement should also be identified as a significant adverse result of the project. The DRSEIR does not include sufficient evidence to identify these and other impacts as less than significant after mitigation.

F. The DRSEIR Does Not Adequately Discuss Alternatives to the Proposed Project.

Although the alternatives section of the DRSEIR describes a number of alternatives, this section continues to fall short of the standard set by CEQA. Under CEQA, an EIR must analyze a reasonable range of alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives while avoiding or substantially lessening the project's significant impacts. See Pub. Res. Code § 21100(b)(4); CEQA Guidelines § 15126.6(a); Citizens for Quality Growth v. City of Mount Shasta, 198 Cal.App.3d 433, 443-45 (1988). As stated in Laurel Heights I, "Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process . . . [Courts will not] countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the consequences of action by their public officials." 47 Cal.3d 376, 404 (1988). The DRSEIR's discussion of alternatives fails to meet these standards.

First, none of the development alternatives are "transparently" based on a comprehensive constraints map that identifies areas of high resource values and areas that should be avoided based on County plan policies. However, one of the alternatives, Alternative 4 – F/TSP EIR 531 Staff Alternative B, appears to avoid substantially more of the impacts than the proposed project and the other development alternatives. Alternative 7 – Acquisition Alternative, would protect key on-site resources because the site would be acquired rather than developed. Because of the resource values represented on the site, the site's sensitive location and its topography, all development alternatives, including Alternatives 4 and 6 would result in substantial grading of sensitive areas, impacts to water quality and biological resources and other significant impacts. A revised analysis should include an alternative based on a site constraints map, which represents current information about high value resources.

Second, the DRSEIR fails to describe an alternative location for the project housing. Therefore, no off-site alternative was evaluated. No information is contained in the DRSEIR concerning the potential for in-fill housing within the County, including on sites assembled by the applicant within incorporated and unincorporated areas to accommodate the units proposed by the project. Such sites should include "infill" sites with reuse, redevelopment and additional development potential (e.g. under performing shopping centers and other underutilized/vacant sites). The explanation in the DRSEIR concerning such sites is not supported by a methodology, analysis or facts. Moreover, the DRSEIR applied criteria to alternative sites that is unreasonably constrained. According to the DRSEIR:

"It is speculative, but unlikely that the project applicant could assemble other contiguous properties within the area to accommodate the number and type or[f] residences proposed for the project. Moreover, if such properties were identified and acquired by the applicant, the properties would likely have resources and environmental constraints similar to Saddleback Meadows. Development of the proposed project at an alternative location, therefore, is unlikely to be economically viable and would probably not reduce environmental impacts in comparison to the proposed project." DRSEIR at page 5-3.

Off-site alternatives to accommodate housing in the County should not be limited to contiguous properties. Recently, the Planning Center completed an analysis of where development could be accommodated in Orange County. See LA Times, June 17, 2001 article. The study concluded that there are sufficient underutilized shopping center sites to accommodate significant development demand. Based on this information and a reasonable methodology for off-site locations, a revised analysis must describe specifically the methodology used to determine that alternative sites do not exist.

Third, the DRSEIR fails to identify appropriate environmentally superior alternatives as required by CEQA. Specifically, the DRSEIR fails to identify Alternative 4 as the environmentally superior development alternative. See Table 5.7, which clearly indicates that Alternative 4 is the superior development alternative and meets the applicant's objectives. The DRSEIR improperly identifies Alternative 8 as the environmentally superior alternative of the "non-no project alternatives." DRSEIR at page 5-47. This section of the DRSEIR must be revised to report the appropriate environmentally superior alternative based on the facts contained in the DRSEIR. Moreover, because Alternative 4 has fewer impacts than the proposed project, and meets project objectives, facts must be presented that this alternative is infeasible if it is rejected in favor of another development alternative.

Finally, the DRSEIR fails to adequately analyze the feasibility of Alternative 7 – Acquisition Alternative. No information is provided concerning interest expressed by agencies and other conservation organizations to purchase the property and whether the applicant is a "willing seller." This information is critical to the County's consideration of the project and must be provided in a revised analysis. Moreover, this section should identify potential funding sources for purchase of the property, including Proposition 40 funding and the possibility of funding under the NCCP program if the site is upheld as important for inclusion in a reserve. The DRSEIR's statement that this alternative would not meet project objectives assumes that the County cannot develop an aggressive infill program as part of its housing element to provide for needed housing in the County. Information about the feasibility of meeting housing needs without relying on parcels that contain sensitive biological and environmental resources must be included in a revised analysis.

II. THE PROJECT MUST BE DISAPPROVED OR THE DRSEIR MUST AGAIN BE REVISED AND RECIRCULATED.

The serious inadequacies of the DRSEIR are symptomatic of fundamental deficiencies in the project itself. Only a project as deeply flawed as this would fail to result in an adequate revised DEIR after the extensive and highly detailed comments provided by the groups and many others on the first DEIR. The enormous mass grading and placement of fill on erosion-prone soils required for the project seriously call into question the suitability of the site for residential development. The project would wreak unnecessary havoc on the habitat and corridors of several sensitive and endangered species, including the gnatcatcher. For these reasons, the project application should be denied as inadequate and infeasible.

In the alternative and at a minimum, the County may not approve the project unless the DRSEIR is again revised and recirculated to fully disclose and analyze the project's impacts and a proper range of alternatives. Given the multiple inadequacies discussed above, this DRSEIR cannot properly form the basis of a final EIR. CEQA and the CEQA Guidelines require recirculation of a draft EIR where, as here, the document is so fundamentally inadequate in nature that meaningful public review and comment are precluded. See CEQA Guidelines § 15088.5.

CONCLUSION

As set forth above, the DRSEIR suffers from numerous deficiencies, many of which would independently render it inadequate under CEQA. Taken as a whole, the deficiencies of the DRSEIR are so pervasive as to necessitate further extensive revision of the document– and recirculated for public comment. National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund respectfully request that the County deny the project at this time. The project should not be reconsidered until a legally adequate EIR is prepared.

Very truly yours,

Terrell Watt

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EXPERIENCE

1989 - **TERRELL WATT PLANNING CONSULTANTS**
Planning consulting firm owner.

1981-1989 **SHUTE, MIHALY & WEINBERGER**
Urban Planner/Paralegal:
Reviewed planning and environmental review documents for adequacy, advised on planning and environmental review processes, prepared planning documents, and provided expert witness testimony.

1981-1983 **MUNDIE & ASSOCIATES**
Economic and Environmental Planner:
Project Manager for preparation of agricultural land analyses, planning documents and environmental impact reports.

1979-1980 **EDAW, INC.**
Project Manager:
Projects included drafting of general plans, specific plans, environmental documents, and project design plans.

PROFESSIONAL MEMBERSHIPS

American Institute of Certified Planners (AICP)
American Planning Association (APA)

EDUCATION

USC GRADUATE SCHOOL OF URBAN AND REGIONAL PLANNING
Masters degree in City and Regional Planning

STANFORD UNIVERSITY
Bachelors degree in Urban Studies

RECENT PROJECTS

- Santa Clara County Parks and Recreation Department: Currently working with 2M Associates, Inc., to assist the Department to develop a Countywide Strategic Plan primarily directed at managing and improving existing parks and recreation facilities. Work effort includes: 1) working with the Advisory Committee to develop the Strategic Plan and draft action plans, including a resource management plan, and 2) facilitating public workshops related to Plan development. Reference: Lisa Killough, Assistant Director, (408) 355-2219.

- Santa Clara County Land Trust: Assisted the Land Trust to develop an agricultural conservation strategy for agricultural lands adjacent to Gilroy and Morgan Hill (a willing seller/agricultural easement program). Reference: Nancy Richardson, Executive Director, (408) 224-0114.

- David and Lucile Packard Foundation - Conserving California Landscapes Initiative Grant: Developed a Conservation Plan for the Central Coast of California, including Monterey, Santa Cruz and Santa Clara counties. The Plan identifies "no regrets" acquisition parcels based on habitat, agricultural and scenic values and identifies long-term conservation strategies. Reference: Bill Leahy, The Nature Conservancy, (415) 777-0487.

- Mid-Peninsula Regional Open Space District: Currently working with 2M Associates, Inc., to assist the District in its proposed boundary change to include San Mateo Coast within its jurisdiction. The work effort includes: 1) facilitating meetings of the Advisory Committee, and 2) development of a project description for the area including acquisition and management policies, preparation of the Local Agency Formation Commission annexation applications, and responsibility for the LAFCO process. Reference: Craig Britton, General Manager (650) 691-1200.

- City of Livermore Habitat Conservation Plan: Advised the City on the development of a Memorandum of Agreement with the USFWS and CDFG for the completion of a regional HCP. Obtained a Section 6 Grant for the City's effort. Reference: Marc Roberts, Community Development Director, (925) 373-5200.

- Bay Conservation and Development Commission (BCDC): Assisted in the development of a revised San Francisco Bay Plan that will result in (1) additional piers being removed to create new public open spaces and bay views, (2) new land uses in return for new public plazas in conjunction with development, and (3) public access within and around piers. Reference: Jeff Blanchfield, Director of Planning.

- Infill Working Group: Assisted Environment Now to launch an "Infill Working Group," including representatives of the development community, the State Department of Housing and Community Development and Caltrans to develop a model infill assessment methodology. The work efforts includes facilitation of the Infill Working Group monthly meetings. Funding provided by an Environmental Equity grant from Caltrans, and matching funding from Environment Now and the City and County of Los Angeles. Reference: Dave Myerson, Environment Now (310) 829-5568.

- Marin Local Agency Formation Commission: Assisted in the review of Sphere's of Influences (SOI's) in response to the Hertzberg amendments to the Cortese-Knox-Hertberg Local Government Reorganization Act. Currently working on the Southern Marin Sphere of Influence report, which includes a public agency and community outreach component. Reference: Peter Banning, Executive Officer (415) 446-4409.

- Monterey County Planning: Currently assisting local community groups in Monterey County to promote policies that are supportive of "smart growth" and resource conservation in the County General Plan update. The effort includes significant community outreach and agency coordination. Reference: Jean Driscoll, Resources Law Group.

- City of Livermore: Assisted the City in preparing general plan amendments, and a specific plan for the South Livermore Valley "winecountry." The plans were developed collaboratively with members of the community and landowners. The plan includes: (1) fees and dedication requirements in return for limited, clustered new development; (2) development of a model conservation easement; (3) transfer of development rights to protect open space; and (4) protection of up to 10,000 acres of agricultural lands beyond an urban growth boundary. The effort also resulted in the launching of a land trust and a voter approved urban growth boundary.

- Silicon Valley Conservation Council: Assisted in the passage of a local measure to raise funding for open space in the region. Headed up the campaign and public outreach effort, which will raise $8 million per year for open space acquisition and management. The Council includes representatives of the Silicon Valley Manufacturing Group, Cisco Systems, Greenbelt Alliance, the Santa Clara County Land Trust and Santa Clara County Open Space Authority, The Nature Conservancy, among other groups.

- The Nature Conservancy and Sierra Los Tulares Land Trust: Currently assisting these organizations to develop a conservation plan for Tulare County and to develop strategies for agricultural and habitat land conservation. Reference: Alex Mas, TNC (415) 777-0487.

- Endangered Habitats League: Provide ongoing assistance reviewing and commenting on general plan updates and environmental documents for Orange, San Bernadino, San Diego and Riverside counties. Assisting in the development of a transfer of development rights concept to address rural property rights issues in San Diego County. Reference: Dan Silver, Director (323-654-1456).

- Cambria Pine Forest Committee: Prepared a "white paper" on alternative organizational structures and funding sources for the management of the remaining stands of native Monterey Pine forest in San Luis Obispo County. Reference: Paul Cylinder, Jones and Stokes (916)373-7000.

Richard T. Gomez & Patti A. Gomez
P.O. Box 1022
Trabuco Canyon, CA 92678
Phone (949) 888-1604
Fax (949) 855-3045

June 10, 2002

Manager, OCPDS/Environmental Planning Services Division
300 N. Flower Street,
Box 4048
Santa Ana, CA 92702-4048
(714) 834-6132 fax

Re: Comments on the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows (DEIR), State Clearinghouse No. 1996121072

Dear Sir or Madam:

My wife and I are members of The Saddleback Canyons Conservancy which is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Specific Plan (FTSP) area and surrounding areas of Orange County; however, we submit these comments as residents and members of the concerned general public.

Compliance with the FTSP:

The FTSP was chartered by the Orange County Board of Supervisors to assure the "rural character of the area and preserve, forever, open space." The current request for exemption to the FTSP is not in keeping with the spirit or letter of the plan. Furthermore, such exemptions only serve those who would gain financially by such exemptions and do not serve the intended constituents, area residents or the planned protection envisioned by the plan.

We find this request inappropriate, unfair and a blatant disregard for the development guidelines that all residents must comply with. It is no coincidence the new project cannot comply with FTSP guidelines; it is simply too destructive. Just because a project cannot comply does not warrant exemption; it is simply inappropriate planning, and that planning process must be revisited.

Cumulative impacts:

As you know this is not the only project currently being considered for this area. Unfortunately, each project is only evaluated with regard to itself and not for its cumulative impact on the environment. Water quality is a key component of this certain degradation and to ignore such cumulative impacts is not only a dereliction of duty and responsibility but an error in favor of an exception for a special interest project.

We encourage you to be diligent and objective in your analysis, not cursory and subjective.

Specific projects include the planned RPLA facility, SaddleCreek and SaddleCrest and the development at the Rancho Mission Viejo. All projects will increase overall pollutant loads and receiving waters should be properly analyzed. We ask that your agency require the applicant to comply with this request and address critical concerns of FTSP compliance and protection of precious water quality resources.

Sincerely,

Richard and Patti Gomez

Attachment F

PPSD

04/30/02
Manager
OCPDS/Environmental Planning Services Division
Sarita Ana, CA 92702

RE: EIR 566
Saddleback Meadows

As a longtime resident of Orange County, my wife and I are strongly opposed to further residential growth in South County and cannot support a Zone Change to the Foothill/Trabuco Specific Plan. Mission Viejo has done enough already with the enormous amount of homes and apartments being developed off of El Toro road between Live Oak and Marguerite.

Sincerely,

Mr. & Mrs. Michael Hodges
28491 Cedar Ridge
Trabuco Canyon, CA 92679

June 7, 2002 Pg. 1 of 5

Mr. Grieman, Project Manager
Environmental Planning Services Division
Planning and Development Services Department
County of Orange
P.O. Box 4048 (300 N. Flower Street)
Santa Ana, California 92702-4048

Sent via FAX to (714) 834-~~5413~~ 6132 and by U.S. Postal Service

RE: Comments on Draft Revised Subsequent EIR 566 (State Clearinghouse No. 1996121072) for Saddleback Meadows.

Dear Mr. Grieman:

My name is Kathleen Stockwell and I reside in Mission Viejo. **Please include my entire comment in the official record of proceedings for this project.**

Of major concern are the sensitive biological resources that are present at Saddleback Meadows, and in particular the proposed mitigation and related hydrological/water quality issues closely related to the preservation of these resources. The Riverside fairy shrimp (Streptocephalus woottoni), present at Saddleback Meadows, is a Federal endangered species with a USFWS recovery priority of 5C, indicating "that it is a species facing a high degree of threat and having a low potential for recovery" (USFWS Recovery Plan for Vernal Pools of Southern California, Sept. 1998, pg. 19). This extremely rare, beautiful, and wonderful species has very limited geographic distribution, existing only in southern California. Another Branchiopod that exists in one of the Saddleback Meadows ephemeral pools, Cyzicus californicus (a "clam"shrimp) is equally fascinating and beautiful, and is related to fossil clam shrimps that date back in the fossil record ca. 350 million years!

DRSEIR566 implies that the "pilot" mitigation proposed to artificially create "ephemeral ponds/vernal pools" will bring the direct and significant impact to the existing ephemeral pools and the Riverside fairy shrimp to a less than significant level. This assumption is based on insufficient scientific evidence, since **this type of mitigation is "experimental in nature with many uncertainties"** (USFWS Biological Opinion for Saddleback Meadows, pg.19). The Riverside fairy shrimp, as a highly endangered species having a low potential for recovery, deserves the highest level of protection where it exists, and it is not being afforded this protection by allowing experimental mitigation that has a high potential for failure.

The "Implementation Plan/Rationale for Expecting Implementation Success" (Appendix 1.2, section VI. pg.9) cites as justification for this mitigation a "recent review of vernal pool rehabilitation and creation projects" which mentions:

*Ephemeral ponds created in San Diego County where **one obligate vernal pool plant** (Pogogyne abramsii) was sustained 5-10 years adjacent to existing habitat.

*A Del Sol Reserve vernal pool project in Santa Barbara County that demonstrated "pools created and restored in 1986 are self-sustaining and **support native vernal pool plant species".**

***One vernal pool construction project in Folsom, California** where density and composition of macroinvertebrate populations, including "several" species of fairy shrimp, were similar to adjacent reference pools. (Rogers 1998).

What justification do these few and poorly explained examples provide? The first two give vernal pool **plant** restoration as examples. Furthermore, upon examination of the Folsom project in Sacramento County, California (Aquatic Macroinvertebrate Occurrences and Population Trends in Constructed and Natural Vernal Pools in Folsom, California, D. Christopher Rogers, 1996) :

*This project is geographically far removed from southern California, and cannot represent unique ecological parameters that exist here.

*The two kinds of fairy shrimp occurring in the pools at the Folsom project are different species with requirements that vary from the southern California Riverside Fairy Shrimp. For example, both of these species, the Vernal Pool Fairy Shrimp (Branchinecta lynchi) and the California Fairy Shrimp Linderiella packardi), develop to maturity in less time than the Riverside Fairy Shrimp. The Riverside Fairy Shrimp needs 1-2 weeks to hatch and another 7-8 weeks to reach maturity. The span in which the right conditions can occur must cover several months, not just two. This strongly suggests that created pools that are **only required to hold rainwater for a minimum of 60 days** at depths required for the Riverside Fairy Shrimp will not be adequate for long term survival of the Riverside Fairy Shrimp. Ephemeral pools in which large numbers of Riverside Fairy Shrimp can successfully breed in Orange County are deep pools that persist for four to five months, or even longer. The paper presented by D. Christopher Rogers on the Folsom project states that, **"Because these constructed pools are mitigation for impacted vernal pools, they need to demonstrate that they are functioning ecologically like naturally occurring vernal pools to be considered adequate compensation".** This takes time, a minimum of 10 years according to the USFWS, and should not be allowed as an experiment unless the original ephemeral pools and their watersheds are left entirely intact until success is proven.

Why is it that only a five year monitoring program is mentioned in the EIR, when 10 years is required? Why is deferral of mitigation allowed in case of failure? This is not acceptable.

* The Folsom project that is quoted in the EIR only presented results of the first two years in a nine year monitoring program, which began in 1994. **What is the current status of its results, and how does this relate to such projects in Orange County?**

*The Folsom project site contains 273 natural vernal pools on 246.9 hectares, where 37 pools were constructed. The high number of natural vernal pools alone points to a higher chance for success of the created pools, in my opinion. This project, although admirable, does not seem to be in itself adequate justification for experimental mitigation for an entirely different species of endangered fairy shrimp and a different set of ecological circumstances in Orange County, where such high numbers of natural vernal pools never occur in one complex.

The USFWS Biological Opinion for Saddleback Meadows, pg. 13 and 18, state: "**The 9 ponds at Saddleback Meadows represent 53 percent of the 17 remaining occupied pools/ponds, making it the largest fairy shrimp habitat complex found in Unit 2**" (L.A. Basin-Orange Management Area). "Implementation of the proposed project ...represents a 56 percent loss of fairy shrimp ponds, and a 68 percent loss of the pond basin area, onsite." **Why is it deemed acceptable to gamble with perhaps the most valuable habitat complex for the Riverside Fairy Shrimp in Orange County?** Page 19 of this same Biological Opinion states that "..construction of an artificial impervious layer to retain water [in sandy soils] for a minimum of 60 days..**has never been done successfully**. It is obvious to me that there should be a more concentrated effort to acquire the Saddleback Meadows property and preserve it as it now is. It is a real treasure for Orange County, and very important for the NCCP process as well, since it **"represents the only low elevation wildlife corridor /linkage between the Central and Southern Subregionsof the Orange County NCCP planning areas."** (pg. 18) Much effort has gone into the NCCP, but it seems the endangered fairy shrimp species and their ephemeral/vernal pool habitats of Orange County were never an integral part of the NCCP planning as they should have been. **The proposed wildlife corridor as presented in DSEIR566 is also inadequate**, being much too narrow and poorly designed. Other sensitive species certainly exist at Saddleback Meadows, such as the Catalina and Intermediate Mariposa Lily populations, which have not been adequately considered either. Two well known host plants for the endangered Quino checkerspot butterfly also exist on this site, and should be in the preservation plan since existence of the Quino in Orange County is still possible.

DSEIR566 fails to adequately define, analyze, and show mitigation for the hydrological aspects of the project, my concern is especially related to the proposed ephemeral pool

mitigation. Nuisance water and non-point source pollution appear to be directed into the natural drainage courses, and may seriously alter any chance for a successful mitigation. It seems obvious that such a drastic change in the watershed caused by grading, etc.will alter the natural regime of the ephemeral ponds no matter what "mitigation" takes place, further placing them in jeopardy.

Will you please explain in specific detail how Basins 1,3,4,5,and 6 (shown directly below houses and slopes on Fig.4 of Appendix I.2) will be unaffected by changes in hydrology and water quality? I have observed the "mitigation" carried out at the Santiago Canyon Estates/Beazer project for the Riverside Fairy Shrimp, and it appears to be sadly inadequate for long term survival of this endangered species. It is directly below homes and slopes similar to the illustration in Fig. 4 mentioned above, has multiple rows of PVC irrigation pipe (made of a very toxic material that may leach into the rainwater?) in and around it (for what purpose?), and cement drainage structures of some kind that look very foreign to a so-called "ephemeral pond". The slopes directly above it are landscaped with non-native plants that may require chemicals. **Will you please tell me where the "inoculent" of Riverside fairy shrimp/cysts originated that were put there? Is this questionable mitigation being used as a model for Saddleback Meadows? Please explain the status of the Santiago Canyon Estates "mitigation", and how it relates to Saddleback Meadows.**

My last questions/comments are these:

Page 5 of the USFWS Biological Opinion states that the created ponds must demonstrate the ability to hold **"water"** for a minimum of 60 days. As I have stated above in more detail, a 60 day minimum is not long enough. **Does the term "water" mean natural rainwater only?** Professor Emeritus Clyde Ericksen has stated, "Attempts to maintain these pools, and thus their fairy shrimp populations, by keeping them full with tap water has proven useless. Tap water contains chloramines which kills living shrimps."

Why does the first sentence of point C (Schedule) under section VI of Appendix I.2, pg.9, state that, "Grading is to be completed no later than December 31, 2000". Please explain?

The following should be incorporated into the project proposal as mitigation measures :

1) **A 10 year monitoring program for the ephemeral pool mitigation plan should be in place,** not 5 years. **No** development impacts should be allowed to proceed in any of the nine existing occupied ephemeral pools or their watersheds until this 10 year period has proven that successful mitigation can occur.

2) The **60 day minimum requirement** for created mitigation pools to hold rainwater at depths required for the Riverside Fairy Shrimp (Streptocephalus woottoni) **should be increased to a period appropriate to the life cycle of this particular species.**

Thank you for including and responding to my comments.

Sincerely,

K. Stockwell

Kathleen Stockwell
22792 Orense
Mission Viejo, CA 92691

Planning and Development Services Dept., Orange County
P. O. Box 4048, Santa Ana, CA. 92702-4048

The question which occurs to me, having experienced weekly for several years severe eye irritation with each trip to Saddleback Valley, continually seen the great brown haze of smog, and read that the area ranks among the top as most polluted in the country, how ANY development of the area can be contemplated?

Anything more than "open space, habitat preservation, recreation", and agriculture should not be permitted because it will further exacerbate the already horrendous existing problems, including traffic.

Andy Wing
1244 Victory Walk,
Laguna Beach, CA. 92651

6-23-02
494-2709

Andy Wing
1244 Victory Walk
Laguna Beach CA 92651-1845

Planning and Development Services Dept.,
Orange County
P. O. Box 4048
Santa Ana, CA.
92702-4048

RECEIVED
JUN 25

92702-4048

APPENDIX B

STREAMBED ALTERATION ALTERATION AGREEMENT

STATE OF CALIFORNIA - THE RESOURCES AGENCY GRAY DAVIS, Governor

DEPARTMENT OF FISH AND GAME
South Coast Region (Region 5)
Habitat Conservation Planning
4949 Viewridge Avenue
San Diego, California 92123
Tel. No. (858) 467-4201/02
(858) 467-4299

December 4, 2001

California Quartet
c/o TPG Management, Inc.
ATTN: Pike Oliver
3341 Norris Avenue
Sacramento, CA 95821

Dear: Mr. Oliver

Enclosed is your copy of Streambed Alteration Agreement **5-178-99**. If you agree with the conditions/measures set forth in the agreement, please make a copy, then sign and return both copies to our office for signature. Send the copies to Brad Henderson; Department of Fish and Game; Post Office Box 1879; Redondo Beach, CA 90278. Written notice of your intent to commence project activities needs to be provided to the Department at least five days in advance of commencing project activities.

The California Fish and Game Code requires that you notify the Department in writing within 14 days of receipt of this Proposal as to its acceptability. If you do not respond within this time period you will lose your right to request binding arbitration. For minor changes we suggest you contact the person responsible for writing your agreement prior to sending the written response.

Please be advised the Department cannot execute (sign) your Streambed Alteration Agreement without your:

- CEQA (California Environmental Quality Act) document,
- certified Notice of Determination (NOD),
- CEQA Findings (if applicable), and
- proof of payment of CEQA document filing fee, or filing of De Minimis Fee Exemption

If these documents were not included with the Streambed Alteration notification package, please provide copies of these documents when you return the Agreement to the Department for the Department's signature. If the lead agency determined that the project is exempt from CEQA analysis and public comment, please provide a copy of the Notice of Exemption or other appropriate documentation. Also, be advised that this Agreement is subject to change upon receipt and review of your CEQA documents.

If you have any questions regarding the proposed conditions please contact me at (310) 214-9950.

Thank you for your cooperation in this matter.

Brad Henderson
Environmental Scientist
Habitat Conservation Planning, Region 5

Enclosure: SAA #5-178-99 CC (via Fax): Mike McCollum; Barry Jones; Joe LaCava

CALIFORNIA DEPARTMENT OF FISH AND GAME
4949 Viewridge Avenue
San Diego, California 92123

Notification No. 5-178-99
Page 1 of 9

December 4, 2001

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and Pike Oliver, 3341 Norris Avenue Sacramento, CA 95821, hereinafter called the Operator, is as follows:

WHEREAS, pursuant to Section 1603 of California Fish and Game Code, the Operator, on the 15th day of June, 1999, notified the Department that they intend to divert or obstruct the natural flow of, or change the bed, channel, or bank of, or use material from the streambeds of, the following waters: Aliso Creek, unnamed tributaries and impoundment (Pond A); unnamed tributary drainages to Oso Creek, unincorporated Orange County, California, Section 4, Township 6 South; Range 7 West, SBBM.

WHEREAS, the Department (represented by Brad Henderson during a site visit on the eighth day of March, 2001) has determined that such operations may substantially adversely affect those existing fish and wildlife resources within the Aliso Creek and Oso Creek and tributaries thereto within the project site and the vicinity of the site, specifically identified as follows: invertebrates: Riverside fairy shrimp (*Streptocephalus woottoni*); amphibians: western spadefoot toad (*Scaphiopus hammondii*), California treefrog (*Hyla cadaverina*), western toad (*Bufo boreas*), California slender salamander (*Batrachoseps attenuatus*); reptiles: orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Gerrhonotus multicarinatus*), western skink (*Eumeces skiltonianus*), gopher snake (*Pituophis melanoleucus*) ; birds: yellow-breasted chat (*Icteria virens*), western yellow warbler (*Dendroica petechia brewsteri*), song sparrow (*Melospiza melopdia*), Cooper's hawk (*Accipiter cooperii*), Nuttall's woodpecker (*Picoides nuttallii*), bushtit (*Psaltriparus minimus*), spotted towhee (*Pipilo maculatus*); mammals: desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), bobcat (*Lynx rufus*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*) ; riparian vegetation which provides habitat for those species: western sycamore (*Platanus racemosa*) willows (*Salix* spp.), mule fat (*Baccharis salicifolia*), mugwort (*Artimesia douglasiana*), laurel sumac (*Malosma laurina*), coast live oak (*Quercus agrifolia*), Mexican elderberry (*Sambucus mexicana*), and all other aquatic and riparian wildlife resources in the area.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife resources during the Operator's work. The Operator hereby agrees to accept the following measures/conditions as part of the proposed work.

If the Operator's work changes from that stated in the notification specified above, this Agreement is no longer valid and a new notification shall be submitted to the Department of Fish and Game. Failure to comply with the provisions of this Agreement and with other pertinent code sections, including but not limited to Fish and Game Code Sections 5650, 5652, 5937, and 5948, may result in prosecution.

Nothing in this Agreement authorizes the Operator to trespass on any land or property, nor does it relieve the Operator of responsibility for compliance with applicable federal, state,

or local laws or ordinances. A consummated Agreement does not constitute Department of Fish and Game endorsement of the proposed operation, or assure the Department's concurrence with permits required from other agencies.

This Agreement becomes effective on the date of Department's signature and terminates December 31, 2004 for project construction only. This Agreement shall remain in effect for that time necessary to satisfy the terms/conditions of this Agreement.

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

1. The following provisions constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that the Operator is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this Agreement shall be subject to separate notification pursuant to Fish and Game Code Sections 1600 et seq.

Project Description

2. Saddleback Meadows is a 222-acre site located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains. The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area. Aliso Creek runs north and south along the western boundary of the site, and drains the central and western portion of the site. Streams in the southeastern portion of the site are tributary to Oso Creek. Residential communities are located to the south and west, pasture land is located to the east, and Saint Michael's Abbey is located to the north. The project site supports 8.47 acres of Department jurisdictional streams, including 0.34 acre of impounded intermittent ponds, 4.32 acres of wetland/riparian vegetation, and 3.58 acres of streambeds. The proposed project would impact approximately 3.78 acres of Department jurisdiction, including 0.11 acre of intermittent Pond A, 2.22 acres of wetland vegetation (1.51 acres of mule fat scrub, 0.61 acre of oak woodland, and 0.10 acre of sycamore woodland), and 1.45 acres of ephemeral streambeds traversing upland habitats.

The Operator proposes to alter the streambeds and impoundments to develop 283 single-family residential lots, roads, and recreational trails on approximately 121.8 acres of the property. An additional 28.2 acres will be impacted by remedial grading and shall be revegetated with coastal sage scrub vegetation. The Operator will avoid portions of Drainages (i.e., jurisdictional streams) 5, 10, 14, 15, and 16 and associated oak woodlands near the center of the property as identified in Figure 3 of the *Jurisdictional Delineation of the Saddleback Meadows Property in Orange County* dated March 2000 prepared by Chambers Group, Inc. The remedial grading areas occurring within proposed open space will be recontoured to preconstruction elevations, revegetated and preserved as open space. The remaining remedial grading areas will be landscaped for fuel management purposes. A total of approximately 159 acres of the property's 222 acres will be dedicated in permanent open space, including 90 acres dedicated to the County of Orange as an extension of O'Neill Regional Park. Manufactured slopes extending outside of the fuel modification zones will be revegetated with native vegetation and dedicated as open space.

3. The agreed work includes activities associated with No. 2 above. Specific work areas are described in the documents submitted by the Operator, including the Notification of Lake or

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

Streambed Alteration dated June 15, 1999, the revised Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas dated May 21, 2001 prepared by Helix Environmental Planning, Inc., the Draft Biological Resources Technical Report dated June 1999 prepared by Chambers Group, Inc., the Biological Assessment dated July 6, 2000 prepared by Helix Environmental Planning, Inc., the Jurisdictional Delineation dated March 2000 prepared by Chambers Group, Inc., and the Addendum to Certified Final Subsequent Environmental Impact Report 566 dated August 1998. The project shall be implemented as proposed in the aforementioned documents unless directed differently by this agreement.

4. The Operator shall not impact more than 3.78 acres of jurisdictional streams. Disturbance to streambeds or removal of vegetation beyond the 3.78-acre jurisdictional area to be impacted, as described in the documents referenced in Condition Number 3, will require additional mitigation at an acreage ratio of 5:1. The form of additional mitigation, if necessary, shall be determined by the Department and may include on- or off-site riparian/wetland habitat creation, enhancement, or preservation.

Mitigation

5. Mitigation for project impacts has been proposed in the Saddleback Meadows Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas dated May 21, 2001 prepared by Helix Environmental Planning, Inc. (Mitigation Plan). The Operator shall submit a revised Saddleback Meadows Conceptual Mitigation and Monitoring Plan reflecting recent project changes (reduction of impacts) to the proposed project and mitigation measures within 60 days of executing this agreement. Specific locations for the off-site creation and/or protection of riparian habitat and ephemeral streams shall be described in the revised Mitigation and Monitoring Plan.

6. The Operator shall mitigate for the loss of 0.11 acre of intermittent ponds at a 3:1 ratio, or a total of 0.33 acre. A total of 0.82acres of intermittent ponds will be created, 0.49 acre in excess of the 3:1 ratio. The excess intermittent pond mitigation totaling 0.49 acre shall apply toward mitigation for impacts to mule fat scrub. Impacts to 2.22 acres of wetland vegetation (1.51 acres of mule fat scrub, 0.61 acre of oak woodland, and 0.10 acre of sycamore woodland) will be mitigated at a 3:1 ratio with the on-site creation of 2.74 acres of wetlands, the off-site creation of 2.25 acres of riparian habitat, the off-site preservation and enhancement of 1.18 acres of riparian habitat, and the aforementioned 0.49-acre credit from the creation of intermittent ponds.

Creation of ponds and streambeds and the surrounding wetland vegetation on site requires the excavation, grading, and contouring in disturbed upland areas or areas disturbed by remedial grading to form basins or streambeds, and revegetating the margin of these areas with riparian cuttings, container stock, and seeds of native understory species. The depth and shape of the constructed basins will be based on the contours of the existing ponds. In addition, soils from the bottom of the existing ponds will be collected prior to impacts and the collected soils will be used to innoculate the created ponds. Approximately 0.86 acre of mule fat scrub will be created around the pond margins. Additional mitigation measures include relocation and monitoring of western spadefoot toad, and the installation of fencing to deter vandalism and other disturbance of the mitigation sites. The fencing around the ponds will be maintained until mitigation success criteria have been met and will be of a 5-strand rounded wire design.

Creation and enhancement of riparian and oak woodland habitat off site is proposed on the Hidden Ranch property. If the Hidden Ranch mitigation bank is not available for use, the

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

Operator may propose alternate locations subject to approval by the Department. The final location(s) and site-specific mitigation measures shall be described in the revised Mitigation Plan.

Impacts to 1.45 acres of CDFG-jurisdictional streambeds will be mitigated on site by the creation of streambeds within areas proposed for remedial grading previously supporting streambeds (0.44 acre), and off site by purchase of 1.01 acre of existing streambeds at the Hidden Ranch Mitigation Bank or other location acceptable to the Department. Impacts will be mitigated at a 1:1 ratio for a total of 1.45 acres to be purchased.

7. All mitigation areas shall be protected in perpetuity under a conservation easement prior to initiation of project-related streambed impacts. The format of the conservation easement shall be approved by the Department's legal advisor prior to the conveyance of the easement. The 1.01-acre streambed(s) shall also be purchased and protected in perpetuity under an approved conservation easement prior to project-related streambed impacts.

8. The Operator will be responsible for financing pre-grading plan hydrological testing, installation, maintenance, and monitoring of the habitat creation and enhancement areas. In order to ensure the success of mitigation, the Operator will enter into a five-year, secured agreement to cover the projected cost to install, monitor, and report on the mitigation. The Operator shall submit a draft of the bond and/or letter of credit with an itemized cost list to the Department for approval at least 60 days prior to impacting jurisdictional streams. The operator shall submit the final bond and/or letter of credit for the amount approved by the Department within 20 days of receiving approval of the draft bond/and or letter of credit. Either of the following options would satisfy the security requirement:

(Option A) The agreement shall be in the form of a 120 percent letter of credit in favor of the Department for mitigation costs within the entire 8.44-acre area to be created or enhanced.

(Option B) The agreement shall be in the form of: (1) a 120 percent bond or letter of credit in favor of the Corps and/or Service for mitigation costs associated with Corps jurisdiction; and (2) a 120 percent letter of credit in favor of the Department for mitigation costs associated with the remaining acreage (i.e., Department jurisdiction) such that the entire 8.44-acre area to be created or enhanced is covered by both secured agreements.

9. Grading of the mitigation areas is to be completed no later than December 31, 2004. Planting and then seeding shall occur between November 15 and February 15 to take advantage of winter rains. Since irrigation will be provided for the container stock, planting (but not seeding) may occur into early spring. Container stock will be installed no later than April 30; cuttings will be installed no later than February 1, and seed will be planted no later than December 31.

10. Grading associated with providing adequate hydrology for habitat creation or riparian revegetation on the project site and at the Hidden Ranch site shall not impact nesting birds. Therefore, grading shall not take place in vegetated areas from March 1 to September 15 to avoid impacts to nesting birds. Alternately, an independent qualified biologist may perform a nesting bird survey no more than three days prior to grading. The results of the nesting bird survey, including site conditions and a list of all vertebrate species observed, shall be provided to the Department for concurrence prior to grading. If active nests are observed, the operator shall provide a buffer zone of at least 100 feet (300 feet for raptors) until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the project.

11. Grading associated with providing adequate hydrology for riparian revegetation on the project

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

site or at the Hidden Ranch mitigation site shall not impact any California Species of Special Concern. The day before grading, an independent qualified biologist shall perform a survey for Coast Range California newt (*Taricha torosa torosa*) in reaches of the Creek and adjacent areas to be disturbed by excavation, deposition of overburden, or staging of vehicles to ensure that the grading or other activities do not impact individuals. Any individuals encountered shall be relocated at least 1/4 mile upstream from the disturbance in areas of suitable habitat. Relocated individuals shall be dispersed and not released in a single area.

12. Mitigation site preparation shall be carried out pursuant to condition nos. 22-26; 28-31; and 33-39 below.

13. Plant material (seeds, container plants and cuttings) to be used for the revegetation effort will be derived from on-site material at each site. On-site material is anticipated to be adapted to the site conditions and exhibit local genotypes.

14. Pond basins 1, 2, 5 and 8, as identified in Figure 4 of the *revised Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas* dated May 21, 2001 prepared by Helix Environmental Planning, Inc., shall be constructed concurrently with grading. A grading plan will be developed for all the new ponds based on their position in the watershed, and the contours of the existing ponds. The new ponds will mimic as closely as possible the depths and areas of the existing ponds. Soils at the proposed sites shall be tested for permeability characteristics prior to initiation of pond construction. Rough grading contours will be deep enough to allow for the application of a surface soil layer removed from the existing ponds. Only non-vegetative erosion control measures may be used in areas with native vegetation. Such erosion control measures may include sandbags, soil binders, waterbars, trenches, or dissipators. These measures preclude the introduction of non-native weedy species into the seed bank of areas with native vegetation. Drainage and sedimentation control devices shall be routinely cleaned, maintained, and repaired prior to and during the rainy season for three years following completion of project grading. All repairs to these systems will be immediately executed to minimize erosion problems. Garbage and debris will be removed from all areas of the mitigation site. Dead or downed wood will not be removed.

15. After finish grading of the relocation ponds, the upper 24 inches of soils from existing ponds proposed to be impacted will be collected and spread over the bottom of the relocation ponds in two layers. The top layer shall be 1" deeper than the cracks in the soil and the second layer will be the remaining depth to 24". Initial grading of the mitigation site must include over excavation to allow for placement of the salvaged soil. Relocation ponds must also support a sufficient prey base population. If ponds do not support sufficient algal populations they will be inoculated with resources from the original ponds.

16. Western spadefoot toad individuals to be impacted shall be relocated and dispersed within all of the created ponds.

17. The operator shall retain an independent qualified biologist to survey all of the pond basins on site to be impacted to identify western spadefoot toad activity. Surveys to identify tadpoles shall begin the first week of January or following the first one-inch or greater rain event, and will be repeated as necessary to monitor their development. An estimate of the total larval population for each pond and total density for all of the impacted ponds shall be recorded and provided to the Department in monitoring reports. The biologist shall attempt to capture approximately 25% of the western spadefoot tadpoles present in each impacted pond prior to metamorphosis. The tadpoles shall be relocated by netting the individuals, placing them in containers with pond water, and quickly moving the containers to each designated translocation pond. Once the water in the containers has equilibrated to the same temperature as the translocation pond, the tadpoles shall

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

be carefully released into the pond. An estimate of the number of tadpoles captured and released into each translocation pond shall be recorded and provided to the Department in monitoring reports. Because western spadefoot toad are episodic breeders, larvae may not be present for collection during the first year. If spadefoot toad larvae are not present during the first year, spadefoot toadlets shall be collected from the preserved ponds as described in Condition 18 below.

18. The juvenile western spadefoot toad relocation shall occur at each impacted pond during the peak day of metamorphosis and the day immediately following. Spadefoot toadlets (recently metamorphosed juveniles) will be relocated from all impacted ponds supporting spadefoot toad into the ponds created in advance of construction. The toadlets shall be relocated prior to leaving the ponds by netting the individuals, placing them in containers with pond water, and moving the containers to the translocation pond. Once the water in the containers has equilibrated to the same temperature as the translocation pond, the toadlets shall be carefully released into the pond. An effort shall be made to remove all the toadlets from the ponds to be impacted. An estimate of the number of toadlets captured from each impacted pond and released into each created pond shall be recorded and provided to the Department in monitoring reports. If toadlets are unavailable for collection during the first year due to low precipitation, the Operator shall collect and relocate approximately 25% of the toadlets from the site's preserved ponds during at least one subsequent year.

19. Maintenance/ monitoring methods and performance criteria for revegetation are provided on pages 18-23 of the Mitigation Plan. A mule fat scrub reference site shall be designated with the concurrence of the Department. Mule fat scrub shall achieve a native cover of 80% by the third year after planting, 90% by the fourth year after planting, and 100% by the fifth year after planting. Native species diversity of the planted mule fat scrub will be 60%, 70%, and 80% of the designated reference site in years three, four, and five, respectively. In planted oak and sycamore woodland habitats, the mitigation sites shall achieve a native cover of 40% by the third year after planting, 55% by the fourth year after planting, and 65% by the fifth year after planting. The planted oaks shall achieve at least 50% survivorship by the end of the fifth year. Replacement plants shall be monitored with the same survival and growth requirements for 5 years after planting.

20. Monitoring of the spadefoot toad relocation sites shall include annual bimonthly surveys for tadpoles in the translocation ponds between January 1 and June 1. An estimate of the number of tadpoles in each translocation pond shall be recorded, along with an estimate of tadpole density for all of the translocation ponds. Because the spadefoot toad is reported to become reproductively mature within two to three years, the identification of tadpoles at the relocation sites during years three through five following the initial relocation may indicate the successful breeding of the relocated individuals. The success criteria will be the natural reproduction of spadefoot toad at the relocation sites, indicated by the presence of tadpoles in the relocation ponds. If spadefoot toad tadpoles are observed in each of the relocation ponds (i.e., Ponds 1, 2, 5, and 8) at any time during the monitoring period beginning the second year after the ponds have been created, filled with water, and stocked with spadefoot tadpoles, the translocation effort shall be deemed successful.

21. An annual report shall be submitted to the Department by January 1 of each year for five years after planting. This report shall include: (1) a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year; (2) a copy of the agreement and any attachments including Special Conditions and subsequent Letters of Modification; (2) an analysis of all qualitative and quantitative monitoring data including spadefoot toad monitoring results; (3) copies of all monitoring photographs; and (4) maps identifying monitoring areas, transects, planting zones, and so forth as appropriate. Remedial recommendations, if necessary, shall be made in the annual reports as well as a

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

summary of whether or not the mitigation is meeting the success criteria for the appropriate year. Monitoring and performance criteria will be tied to implementation. The first annual monitoring event will occur in June after the first full growing season. Annual technical monitoring reports shall be submitted to the Department by the end of August of each year to ensure that there is adequate time remaining in the dry season to implement any necessary contingency measures.

Specific Work Conditions to Protect Fish and Wildlife Resources

22. Riparian/wetland habitat and ponds to be retained in open space shall be protected from construction disturbance through construction fencing and silt fencing or other erosion protection devices around the construction limits to prevent the flow of sediment into the ponds.

23. The removal of vegetation within any streams from March 1 to September 15 must avoid impacts to nesting birds. If vegetation must be cleared within this period, an independent qualified biologist may perform a nesting bird survey no more than three days prior to grading. The results of the nesting bird survey, including site conditions and a list of all vertebrate species observed, shall be provided to the Department for concurrence prior to grading. If active nests are observed, the operator shall provide a buffer zone of at least 100 feet (300 feet for raptors) until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the project.

24. In areas outside of the mass grading footprint, access to the work site shall be via existing roads, access ramps and previously disturbed areas. Vehicles shall not cross streams at any time to gain access to the work site.

25. No equipment shall be operated in ponded or flowing areas.

26. Disturbance or removal of vegetation shall not exceed the limits approved by the Department.

27. Installation of bridges, culverts, or other structures shall be such that water flow is not impaired. Bottoms of temporary culverts shall be placed at stream channel grade; bottoms of permanent culverts shall be placed at or below stream channel grade.

28. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

29. Water containing mud, silt or other pollutants from aggregate washing or other activities shall not be allowed to enter a lake or flowing stream or placed in locations that may be subjected to high storm flows.

30. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

31. Staging/storage areas for equipment and materials shall be located outside of the stream.

32. If a stream's low flow channel, bed or banks/lake bed or banks have been altered, these shall be returned as nearly as possible to their original configuration and width, without creating future erosion problems.

33. Spoil sites shall not be located within a stream/lake, where spoil shall be washed back into a stream/lake, or where it will cover aquatic or riparian vegetation.

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

34. Materials associated with project related activities shall be prevented from contaminating the soil and/or entering the waters of the state. These materials include (but are not limited to) the following: raw cement/concrete or washings thereof; asphalt; paint or other coating material; oil or other petroleum products; or any other substances which could be hazardous to aquatic life. These materials, placed within or where they may enter any stream, by the Operator or any party working under contract, or with the permission of the Operator, shall be removed immediately.

35. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

36. The Operator shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the operator to ensure compliance.

37. No equipment maintenance shall be done within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.

38. The Operator will submit final grading plans to the Department for approval prior to initiating impacts. Avoidance areas will be clearly delineated on the grading plans.

39. The Operator shall request an extension of this agreement prior to its termination. Extensions may be granted for up to 12 months prior to the date of termination of the agreement and are subject to Departmental approval. The extension request and fees shall be submitted to the Department's South Coast Regional Office at the above address. If the Operator fails to request the extension prior to the agreement's termination then the Operator shall submit a new notification with fees and required information to the Department. Any activities conducted under an expired agreement is a violation of Fish and Game Code Section 1600 et. seq. The Operator may request up to a maximum of one extension of this agreement.

40. The Operator shall **provide a copy of this** Agreement **to all contractors, subcontractors, and the Operator's project supervisors. Copies of the** Agreement **shall be readily available at work sites at all times during periods of active work** and must be presented to any Department personnel, or personnel from another agency upon demand.

41. The Department reserves the right to enter the project site and mitigation areas at any time to ensure compliance with terms/conditions of this Agreement.

42. The Operator **shall** notify the Department, **in writing, at least five (5) days prior to initiation of construction (project) activities and at least five (5) days prior to completion of construction (project) activities.**

43. It is understood the Department has entered into this Streambed Alteration Agreement for purposes of establishing protective features for fish and wildlife. The decision to proceed with the project is the sole responsibility of the Operator, and is not required by this agreement. **It is further agreed all liability and/or incurred cost related to or arising out of the Operator's project and the fish and wildlife protective conditions of this agreement, remain the sole responsibility of the Operator.** The Operator agrees to hold harmless the State of California and the Department of Fish and Game against any related claim made by any party or parties for

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

personal injury or any other damages.

44. The Department reserves the right to suspend or cancel this Agreement for other reasons, including but not limited to the following

a. The Department determines that the information provided by the Operator in support of the Notification/Agreement is incomplete or inaccurate;
b. The Department obtains new information that was not known to it in preparing the terms and conditions of the Agreement;
c. The project or project activities as described in the Notification/Agreement have changed;
d. The conditions affecting fish and wildlife resources change or the Department determines that project activities will result in a substantial adverse effect on the environment.

45. Before any suspension or cancellation of the Agreement, the Department will notify the Operator in writing of the circumstances which the Department believes warrant suspension or cancellation. The Operator will have seven (7) working days from the date of receipt of this notification to respond in writing to the circumstances described in the Department's notification. During the seven (7) day response period, the Operator shall immediately cease any project activities which the Department specified in its notification. The Operator shall not continue the specified activities until that time when the Department notifies the Operator in writing that adequate methods and/or measures have been identified and agreed upon to mitigate or eliminate the significant adverse effect.

CONCURRENCE

OPERATOR	CALIFORNIA DEPT. OF FISH AND GAME
_____ (signature) (date)	_____ (signature) (date)
_____ (Type or print name and title)	C.F. Raysbrook, Regional Manager

Prepared by: Brad Henderson, Environmental Scientist

APPENDIX C

LETTER FROM DENNIS MURPHY

UNIVERSITY OF NEVADA RENO

Ecology, Evolution and
Conservation Biology/314
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Reno, Nevada 89557
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5 July 2002

Mr. Thomas Mathews
Planning and Environmental Services
County of Orange
P.O. Box 4048
Santa Ana, CA 92702

Dear Tom,

It's been almost a decade since we last crossed paths, and it's hardly a surprise that again we touch bases regarding an issue related to NCCP. Developers of the Saddleback Meadows property adjacent to El Toro Road asked me to visit their property and to convey to you my observations in reference to a letter jointly signed by staff of the U. S. Fish and Wildlife Service and California Department of Fish and Game (to Tim Neely, dated 26 June 2002). The landowner's concern involves the contention by the agencies that the proposed project will sever landscape linkages between reserved lands in "lower elevation Santa Ana Mountain foothills," thereby compromising the persistence of key (but not state or federal listed) species, and in turn compromising the goals of NCCP. The immediate concern is attenuated by a long history of negotiations over this property, previously agreed upon mitigations, and (apparently) full resolution of listed species issues.

As chief architect of the original guidelines for NCCP, I must admit to being heartened by the wildlife agencies' general approach to multiple species planning, which calls not just for reserve designs to meet the habitat needs of imperiled species, but goes further to add landscape connectivity that can be necessary to sustain certain more abundant and wide ranging species, which can play important roles in ecosystem function. Ultimately, conservation of species at risk requires protection of all of the constituent elements of their habitats, including species not equally so imperiled. Unfortunately for this developer, the regulatory approach of providing connectivity to more common species is being applied on the Saddleback Meadows property without any clear benefit to species of concern, either common or imperiled.

Any extant wildlife corridor through Saddleback Meadows currently must be funneling dispersing animals from the extensive open spaces of O'Neill Regional Park and the Cleveland National Forest toward busy El Toro Road and the small (and degraded) low elevation coastal sage scrub patches beyond, or to O'Neill Park from the National Forest, a route that is redundant with available reserve lands. While those sage patches north and east of the Foothill Transportation Corridor have habitat value for California Gnatcatcher, which can fly between them, they have little value and make no sense in planning for larger mammals -- deer have access to much superior open spaces to the north and east, mountain lions should hardly be encouraged into small natural spaces in already suburbanized Orange County, and coyotes, they will find their ways to those patches with or without the proposed development. The fates of gnatcatcher and other coastal sage-dependent species in this lower elevation corner of Orange County's two NCCP's are already sealed. The proposed project will make no difference. The local fates of large mammals are not going to be dependent on engineered habitat stringers and pathways within suburban development, but on the wildlands of O'Neill Regional Park, Whiting Ranch Wilderness Park, and National Forest lands beyond.

This observation begs the biological rationale for the corridors map presented in the draft EIR (figure 4.8.4) referenced on page 3 of the agency letter. A more nonsensical map would be hard to conjure up. Two of four named "corridors," central and southern, show connections between open space reserves (to the east) west through a transportation gauntlet to essentially dead-ended habitat remnants. The other two "corridors," northern and eastern, are not corridors in any application of the term. They are open space habitat; in fact reserves, not corridors.

The purpose of a wildlife corridor is to facilitate the dispersal or movement of organisms between reserve land units that otherwise would be isolated. In 1993, my colleagues and I on the scientific review panel to NCCP called on land planners to include such corridors where necessary to connect reserves. This is not, however, such a circumstance.

At lower elevations northeast of the foothill Transportation the gnatcatcher will fly between remnant patches of coastal sage scrub without corridors and despite extant land barriers. Reserved lands are continuous at higher elevations; animal dispersal will not require corridors. In between and around currently proposed Saddleback Meadows development, anticipated open space set asides should contribute to local and regional species conservation, facilitate dispersal of many species known to successfully inhabit mosaics of developed land, and provide important ecosystem services, such as controlling local hydrodynamics and stabilizing soils. What Saddleback Meadows developers cannot

offer the Orange County NCCPs is a wildlife corridor where one simply does not and cannot exist.

It is my best professional judgement that the agencies's call for a low elevation wildlife corridor across the Saddleback Meadows property is not warranted and should be rejected. If I can be of any further assistance please feel free to contact me at (775) 784-1303.

Sincerely,

Dennis D. Murphy, PhD.
Professor and Program Director

APPENDIX D

CONCEPTUAL WATER QUALITY MANAGEMENT PLAN

CONCEPTUAL WATER QUALITY MANAGEMENT PLAN

FOR

SADDLEBACK MEADOWS PROPOSED VTTM 15230

Development for 299 Residential Home Sites

COUNTY OF ORANGE, CA

November 21, 2001

PREPARED FOR:

CALIFORNIA QUARTET, LTD.
TPG MANAGEMENT, INC.
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Sacramento, CA 95821-3609
(916) 482-7200

PREPARED BY:

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W.O. 1665-1T

TABLE OF CONTENTS

I. Purpose

II. Existing Conditions

III. Developed Conditions

IV. Best Management Practices

a. Introduction

b. Highlights

c. Selection Criteria

V. Summary

EXHIBITS

1. Riverine exhibit (cross section)

I. PURPOSE

The goal of the Saddleback Meadows Water Quality Management Plan (WQMP) is to reduce pollutants and/or specific sources of pollution which affect or may affect the project property as well as the downstream properties in its development. Such reductions should result in cleaner water in onsite runoff, storm water and incidental flows, including those flows emptying towards offsite facilities and features downstream.

When implemented, the pollution control measures proposed by the WQMP will create cleaner water runoff associated with development in compliance with all applicable water quality ordinances and laws. These laws include, but are not limited to, San Diego Region, California State Regional Water Quality Control Board directives; the County of Orange's NPDES Drainage Area Management Plan (DAMP); and the Clean Water Act of the United States of America.

II. EXISTING CONDITIONS

A. Saddleback Meadows

Saddleback Meadows is located primarily within the Aliso Creek Watershed area. Its hillside topography is incised with drainage courses that mainly drain west to Aliso Creek. Aliso Creek is located just west of the project's western flank. Some remaining courses drain south to Oso Creek. Oso Creek is located south of the project's southeast boundary.

The vacant, 222.2 acre project site comprises hillside topography covered with native grasses and dirt trails. Remnants related to agricultural and ranching uses employed since the 1930's include an abandoned, worn out wooden house, corrals, an overgrown olive orchard and eight stock ponds. The remainder of the site is covered by coastal sage scrub, chapparel and oak woodland. The property has been heavily grazed for the past several decades. This is evident as the native vegetation has been replaced by grasslands on over 50% of the property. Significant portions of the property are also covered by artichoke thistle, another indicator of overgrazing. Accordingly, evidence on the property indicates poor hydrologic conditions with high stormwater runoff and highly erosive overland flow. Over the past several years, numerous highly incised drainage courses have been cut into the natural rolling topography. During low flow conditions, for example a 2-year storm event, peak discharges are 30% higher than in its pre-grazing natural state.

An east-west running ridgeline located in the southern portion of the property rises up from the west (elevation 1,200') and extends east approximately 3,000 LF. This ridge spans two thirds of the east-west width of Saddleback Meadows. The ridgeline then turns north-northeast, continuing to rise and extending 2,200 LF towards the northeast property corner. Existing site elevations exceeding 1,600' are typical at the northern portion of the east property line.

In general, storm water runoff flows drain to the west across the property, eventually emptying into Aliso Creek. In the project's area, Aliso Creek flows parallel to and at the **west side** of existing El Toro Road. Existing El Toro Road, in this same area, forms the western boundary of Saddleback Meadows.

Existing storm drain facilities on the **east side** of El Toro Road picks up water runoff from the project site and conveys it westerly under El Toro Road, to outlets discharging into Aliso Creek. These existing storm drain facilities are maintained by the County of Orange. They are:

- The J01 facility per the J01-701-15 storm drain improvements approved by the County of Orange located north of the project's spine road intersection with El Toro Road.
- The Line "B", 24" RCP storm drain line per J01-701-15 plans (described directly above) located south of the project's spine road intersection with El Toro Road.
- Lines "A", "B" and "C", 24" RCP storm drain lines per the improvement plans for Tract 12724, County of Orange, located at the southern most entry street (existing Valley Vista Street) intersection with El Toro Road.

However, some stormwater runoff flows at the eastern two thirds of the southern portion of the property surface drain to the south property line, then southerly across natural vegetation of the adjacent property and empties into Oso Creek. Oso Creek runs as close as 200 LF from Saddleback Meadow's southern boundary.

B. Regional

Down stream to this project there is drainage from the newer projects which are tributary to the Aliso Creek which is a natural water course. Recently, the Regional Water Quality Board has issued a new directive to clean the high bacteria count (Coliform) from the Creek. The Board's goal is to make Aliso Creek Beach safe for swimming.

III. DEVELOPED CONDITIONS

A. Saddleback Meadows

Residential development for up to 299 single-family homes is proposed in two project areas. 173 residential lots are proposed in the southwest quadrant of the project, 70 residential lots are proposed for the southeasterly quadrant and the remaining 56 residential lots are located in the northeasterly quadrant. While stabilization of the existing land slides and conventional mass grading will disturb approximately 71% of the entire project site, approximately 69% of the property will be placed into permanent open space.

Table 1

Summary of Proposed Land Uses

Land Use	Area (acres)	Portion of Site
Single-Family Residential Lots (299)	47.9	21.5%
Streets (private)	19.0	8.5%
Regional Park *	83.25	37.6%
Biological Open Space Easement**	11.65	5.2%
Restricted Scenic Preservation Easement***	60.2	27.2%
Total	**222.0**	**100%**

*Regional Park, as required by the County of Orange, excludes manufactured slopes and fuel modification areas. Regional Park may include areas subject to remedial grading and biological enhancement.

** Biological Open Space Easement includes biologically restored manufactured slopes outside fuel modification areas.

*** Restricted Scenic Preservation Easement included fuel modification areas owned and maintained by homeowner's association/community management district.

Table 2

Summary of Grading Disturbance

Land Use	Area (acres)	Portion of Site
Single-Family Residential Lots (299)+ Roads	66.9	30%
Manufactured Slopes	63.2	28%
Remedial Grading*	27.9	13%
Undisturbed Areas **	64.0	29%
Total	**222.0**	**100%**

* Landfill stabilization beyond the limits of the conventional mass grading

** Undisturbed areas may include Fuel Modification Zones and may be subject to biological enhancement; i..e., annual grasslands replaced with Coastal Sage Scrub or Oak Woodlands as discussed in the Biological Technical Report

Open space areas are proposed for both the project's northwest quadrant and significant areas along the project's eastern and southern flanks. The permanent open space will be dedicated to the County of Orange as a regional park and will be maintained by the County or a third-party conservation group. Maintenance of the permanent open space will be funded by a permanent endowment created by the developer.

Saddleback Meadows will be served by urban type drainage systems. Drainage systems will conform to County of Orange Flood Control District standards, and basically comprised of paved street gutters, catch basins, and underground concrete pipes.

Storm drain improvements for the southwest development area will drain westerly into existing Orange County maintained storm drains at the west-southwest project boundary where the main storm drain and low-flow channel will cross. Only Lots 1 through 37 connect directly to an existing storm drain facility in El Toro Road. Storm drain improvements for the northeastern development area, in general, will drain easterly and outlet into the project's open space area located in the north central portion of the project. Drainage flows through the open space and collects in a tributary which drains westerly about 2,000 feet before draining into Aliso Creek. Aliso Creek continues another 600 feet before emptying into the existing J01 storm drain facility inlet located north of the El Toro Road/Spine road intersection.

The Storm drain outlets have been carefully located so that they discharge into natural channels in order to replicate natural flow patterns as closely as possible. In some cases, this has resulted in multiple outlets; for example, the drainage system in the northwest development area.

B. Regional

The project is located within the boundaries of two primary watershed areas:

Aliso Creek Approximately 75% of the site *is within the Aliso Creek Watershed.* Aliso Creek is located west of the project site. The natural creek is located along the eastside of El Toro Road but crosses under the roadway near the project's entrance, continuing southwesterly along the west side of El Toro Road. The creek flows through natural open space and urban development and outlets at the ocean at Aliso Creek Beach. Aliso Creek's watershed encompasses 23,000 acres, and includes natural open space, rural and urban development, agriculture and ranching, regional parks and other recreational facilities. There are a number of street crossings over Aliso Creek which have been built as the result of newer or existing developments downstream. Saddleback Meadows represents less than 1% of the Aliso Creek watershed.

Oso Creek The remaining 25% of the site located on the southeasterly portion of the project is part of the Oso Creek watershed. Flows from the project

drain offsite through natural drainages. The natural drainages converge and flow into a concrete storm drain system that runs in a southwesterly direction though Tract 12724 (Hidden Ridge residential development). The system outlets onto a concrete energy dissipator and then into the natural drainage course of Oso Creek. The creek drains into the Upper Oso Reservoir. Overflows from the reservoir continue westerly eventually draining into San Juan Creek which outlets into the Pacific Ocean at Doheney State Beach.

A small area at the extreme eastern portion of the site drains into the Trabuco Creek watershed.

IV. BEST MANAGEMENT PRACTICES (BMP'S)

A. Introduction

In order to reduce, control, prevent, remove or eliminate pollution, BMPs will be proposed, implemented and followed for development of Saddleback Meadows. BMPs are construction devices, procedures, rules or methods that will be used to control predictable pollutant runoff associated with the development of Saddleback Meadows.

B. BMP Highlights for Saddleback Meadows

The Saddleback Meadows BMP's have been chosen based on local industry standards and the existing constraints on the property. The site plan for Saddleback Meadows has been carefully designed to minimize the impact to the natural topography and vegetation. The proposed development area is the minimum area possible which accommodates the project's 299 Single Family Residential lots. This reduces the opportunity to use structural BMPs that require larger areas (created wetlands, basins) within the development area. Sensitive biological habitat also prevents locating such facilities within the open space areas. The structural BMP's therefore have been designed to take advantage of excess space for created wetlands and basins and in-line solutions where space is not available.

Saddleback Meadows BMP's will include the following.

1. **Restore Natural Watershed** – The portion of the property that will not be disturbed by grading, approximately 30%, will be restored by cessation of cattle grazing. Furthermore, the annual grasslands and artichoke thistle will be replaced with coastal sage scrub and oak woodlands. Existing disturbed coastal sage scrub will be enhanced. All of these actions will reduce stormwater runoff by up to 30%. This will also significantly reduce erosion potential and should eliminate the erosion that is currently plaguing the property. The remaining 40% of the property that will be placed into permanent open space will be revegetated with coastal sage scrub and oak woodlands ensuring that these disturbed areas are stabilized.

2. **Minimize Impervious Areas** – The project has been designed to minimize impervious areas through the use of larger lots (5,000 square foot minimum, nearly 6,700 square foot average) and narrower private streets. This will limit impervious areas to less than 17% of the property.

3. **Storm Drain System** – The storm drain system has been designed to mimic natural drainage patterns as closely as possible. Storm drain outlets will be provided to return runoff into each natural drainage that intersects the development area. This serves the dual purpose of ensuring that the natural drainages are receiving no more runoff than they can accommodate and ensuring that natural riparian habitat continue to receive an adequate supply of water. Appropriate energy dissipaters will be installed at each outlet to reduce flows to non-erosive velocities.

4. **Riverine System** – The southwest and southeast quadrants of development, approximately 80% of the residential lots and streets, will be served by a riverine system designed to provide a natural cleansing of the urban run-off. Incidental and low flows produced by the completed project will be filtered by the riverine system. The riverine system will collect low flows at strategically located catch basins. Underground pipes will then convey the low flows to a vegetated swale. This swale is located parallel to and along the north side of the project's spine road attached exhibit provides the detail and cross section of the proposed Riverine system. The swale design will filter pollutants from low flows. It will also allow dissipation of a portion of the flows through percolation and evaporation. The downstream terminus of the riverine system is a 1200' long by 60' wide earthen and vegetated detention basin) located just north of the spine road and 700' east of the El Toro Road/spine road intersection. The effectiveness of the Riverines generally depend on the length and the amount of vegetation within the Riverines along the path. The typical vegetation within the Riverine system include PlatanusRacemosa, Schinus Molle, Baccharis Sacfolia, Juncus Mexicanus, Scripus Californicus.

5. **Stormceptors** – Stormceptors are in-line storm drain devices designed to separate sediment and oil from low-flow runoff flowing through underground storm drain pipes. The trapped sediment and oil is then removed during routine maintenance and disposed of at an approved landfill. All storm drain pipe flows within the northeastern quadrant, the remaining 20% of the development, will pass through strategically located Stormceptors prior to discharging into project open space areas. The Stormceptors will be able to remove up to 80% of the total sediment load (TDS). The Stormceptors will also remove free oil from stormwater during normal flow conditions. It should be noted that the stormceptor will retain trapped pollutants during peak stormflows.

6. **Erosion and Sedimentation Control** – The Saddleback Meadows erosion and sedimentation control plan will be prepared and implemented in order to achieve the following two primary goals:

a. Soil erosion shall be minimized by keeping soil stabilized as long as possible.

b. Runoff from remaining disturbed areas shall be directed to locations where sediments will be removed prior to discharge into water courses.

Installation of temporary sediment basins, sand bag debris dams and temporary sand bag sediment catchment areas at catch basins during construction, are examples of ways the goal outlined in paragraph (b) directly above will be achieved by implementation of project BMP's.

7. **Monitoring, Inspection and Maintenance** – Structural BMPs will be monitored periodically and maintained sufficiently for their effectiveness. BMPs, such as the Stormceptors and the riverine system, will be privately maintained by the homeowner's association. A detailed plan for maintenance, inspection and for assessing the effectiveness of the BMPs including testing, will be included in the project's final WQMP and SWPPP. The final plans will be submitted to the applicable County departments and regional jurisdictions for their review and approval prior to issuance of the project grading permit. It is anticipated that the maintenance responsibilities will entail the following:

a. **Homeowners/Tenant Education**

California Quartet or its' assigns will insure that all homeowners will be given a copy of the recorded CC&R's which will contain a section outlining the environmental awareness education materials. The Master HOA will establish requirements for the implementation of a community awareness program that informs home buyers of the impacts of dumping oil, paints, solvents or other potentially harmful chemicals into the storm drain; the proper use and management of fertilizers, pesticides and herbicides in home landscaping and gardening practices; the impacts of littering and improper watering. Environmental awareness education materials, shall be provided to all members of the Master HOA periodically thereafter.

b. **Activity Restrictions**

Within the Master CC&R's prepared by California Quartet or its assigns, language will be included to identify surface water quality protection required by the Master HOA. Surface water quality activities shall also be conducted in conformance with the Water Quality Management Plan as it relates to the handling and disposal of contaminants. The following language provides additional direction for controlling activities that may affect the environment of the project and/or surrounding areas.

PROPOSED LANGUAGE

POLLUTANT RUNOFF
The Master HOA and its members shall comply with plans for the regulation and control of pollutant run-off by using "Best Management Practices" in accordance with the residential provisions of the California and Orange County Storm Water Best Management Practices Handbook, which include the following:

The Master HOA shall periodically provide to their members environmental awareness education materials made available by the local municipalities. These materials will describe the use of chemicals (including household types) that should be limited to the Covered Property with no discharge of specified wastes via hosing or other direct discharge to gutter, catch basins, settling basins and storm drains. The materials shall also provide a description of fertilizer and pesticide usage guidelines consistent with County Management Guidelines for Use of Fertilizers and Pesticides.

The Master HOA shall establish trash management and litter control procedures aimed at reducing pollution of drainage water.

The Master HOA shall have any drainage systems, streets and catch basins on property they maintain inspected and cleaned, and any streets and parking areas they maintain swept prior to the storm season (no later than October 15th of each year).

The Master HOA shall implement irrigation and landscaping practices which will include provision of water sensors, programmable irrigation times, grouping of plants with similar water requirements in order to reduce excess irrigation runoff and to promote surface filtration. The Master HOA shall maintain erosion control devices on the property they maintain until adequate vegetation coverage has been achieved following establishment of the landscape plantings.

c. **Common Area Landscape Management**

Management programs will be designed and established by the Master HOA, who will own and maintain all common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage. Ongoing maintenance will be consistent with the County Water Conservation Resolution (Ordinance. No. 3802) and the State of California Model Water-Efficient Landscape Ordinance. Fertilizer and Pesticide usage

shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

d. **BMP Maintenance**

As indicated above, the CC&R's identify the Master HOA as being responsible for implementation of each applicable non-structural BMP as well as scheduling cleaning of all applicable structural BMP facilities and will be responsible for inspection and maintenance activities in landscape areas. Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the Master HOA. California Quartet or its' assigns will be responsible for maintenance during construction.

e. **Common Area Litter Control**

The Master HOA will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Master HOA may contract with their landscape maintenance firm to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations by homeowners and reporting the violations to the Master HOA for investigation.

f. **Employee Training**

An employee training/education program will be established as it would apply to future employees, contractors of the Master HOA, and volunteers to inform and train employees engaged in maintenance activities regarding the impact of dumping oil, paints, solvents or other potentially harmful chemicals into storm drain; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal. In addition, California Quartet or its' assigns will make available training and education materials to their contractors and subcontractors and their employees during construction.

g. **Common Area Catch Basin Inspection**

The proposed storm drain mainline along with its catch basins and the stormceptor shall be constructed by California Quartet or its' assigns and maintained and cleaned by the Maintenance Landscape Company hired by the Master HOA. This will be done on a regular basis and prior to the storm season, no later than October 15th of each year. The Master HOA will maintain all catch basins on-site.

California Quartet or its' assigns will be responsible for on-site inspection and maintenance during construction.

The proposed stormceptor will have the following maintenance performed by the HOA:

- Annual inspection and power wash of the screen.
- Inspection of the unit after the first major seasonal storm.
- Removal of captured pollutants by a vac truck when the sump becomes 2/3 to ¾ full.
- Remove and replace oil and grease sorbents when fully discolored/coated with oil.

h. **Street Sweeping Private Streets and Parking Lots**

The Master HOA shall have all private streets and parking lots vacuum swept on a weekly basis. This procedure will be intensified around October 15th of each year prior to the "first flush" storm.

8. **Routine Structural BMP's** – Structural BMP's shall be installed initially by California Quartet or its' assigns, the developer, through the construction and development of the project, for instance; slope planting and irrigation systems shall be designed by licensed landscape architects and installed by qualified contractors to specifications and standards of the County of Orange.

a. **Filtration**

This BMP is considered a "routine" BMP and will be implemented through the provisions of a grassy swale. This grassy swale will be located on the north side of the project spine road. Low flow, dry weather, nuisance flows will be directed to the grassy swale areas for "polishing" prior to being discharged downstream.

The proposed riverine system/grassy swale will have the following maintenance performed by the HOA.

- Vegetation within the grassy swale shall be monitored monthly to identify and remove any dead or dying material. Vegetation removed shall be replaced in a timely manner to ensure the continued effectiveness of the grassy swale.

- The grassy swale shall be inspected monthly for trash and debris. Any trash and debris shall be removed and disposed of properly. The density of the vegetation shall be monitored monthly to ensure that the grassy swale contains adequate material to "polish" the runoff flows. Any areas found to be deficient shall be planted with the appropriate material.

- The vegetation shall be monitored twice yearly to ensure that the growth and condition of the plant materials are consistent with the approved fuel modification program.

- The grasses shall be mowed or weed whipped (depending on the type of grass) on a monthly basis during the dry weather months. All grass clippings shall be disposed of properly.

b. **Common Area Efficient Irrigation**

As a part of the design of all common area landscape irrigation, implementation of the County Water Conservation Resolution including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc., will be used. Such common areas will be maintained by the Master HOA.

c. **Common Area Runoff - Minimizing Landscape Design**

As a part of the design of all common area landscape areas, similar planting material with similar water requirements will be used in order to reduce excess irrigation runoff and promote surface filtration. Such common areas will be maintained by the Master HOA.

d. **Energy Disapators**

Energy disapators will be installed per the approved storm drain plans and maintained by the Master HOA.

e. **Catch Basin Stenciling**

As a part of the final civil engineering drawings, it will be required by California Quartet or its' assigns to stencil on all catch basins, where applicable in paved areas, the words, "No Dumping - Drains to Ocean." This will be done in a location that can be clearly seen by all and will be routinely inspected and restenciled as required.

9. **BMP Selection Criteria** – BMP selection for Saddleback Meadows will be refined during the preparation of the project's grading and drainage plans. Final selection will be made in accordance with two major objectives of the WQMP. These two WQMP objectives are:

   a. To identify the sources of pollution that affects the quality of storm water discharges from the project construction sites.

   b. To identify, assign and implement control measures and management practices to reduce pollutants in the storm water discharges before and after the completion of construction activities.

   The final analysis and design of the BMP's will meet or exceed the minimum standard BMPs set forth by County of Orange and State of California Water Quality Regulations, Permits and Guidelines.

10. **Standard Conditions** – In addition to this Conceptual Plan, implementation of the project will be controlled by the County of Orange through compliance with the conditions of approval for the Tentative Tract Map. The following will be part of those conditions:

   a. Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/subdivision and Grading Services Division, County of Orange.

   b. Prior to issuance of a grading permit, a Water Quality Management Plan specially identifying Best Management Practices that will be used onsite to control predictable pollutant runoff shall be prepared and approved by the County of Orange.

   c. Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, County of Orange, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

IV. SUMMARY

Saddleback Meadows WQMP, when implemented, will achieve the primary objectives of applicable governmental storm water permits and water quality management for construction activities in that it will:

A. Reduce excessive erosion potential

B. Minimize excessive sedimentation.

C. Prevent materials used at construction sites from causing on-site or offsite contamination.

D. Prevent non-storm water discharges from the project's construction activities.

E. Install appropriate measures to reduce impacts on downstream waterways from the completed project, and provide a commitment that these measures will be maintained.

F. Establish maintenance commitments on post-construction sites.

There are standard conditions of approval and Mitigation Measures that this project will have to comply with during the development process. These conditions are part of the Tentative Tract Map conditions and below are a few of these measures. Overall, these Mitigation Measures will ensure that all the above goals will be achieved.

Following are the standard County of Orange Mitigation Measures:

A. Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/subdivision and Grading Services Division.

B. Prior to issuance of a grading permit, a Water Quality Management Plan specially identifying Best Management Practices that will be used onsite to control predictable pollutant runoff shall be prepared and approved by the County of Orange.

C. Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

During the planning phase of this project, the following items have been incorporated into the project plans to minimize the impact from the development:

A. Preservation of natural topography, existing drainage and existing vegetation to the extent possible.

B. Reduction of the paved area by means of narrower streets to the extent allowed by the local jurisdiction.

C. Use of existing vegetation and creation of new standards vegetated area to promote infiltration.

D. The street lay out and storm drain systems have been designed for easy maintenance and cleaning.

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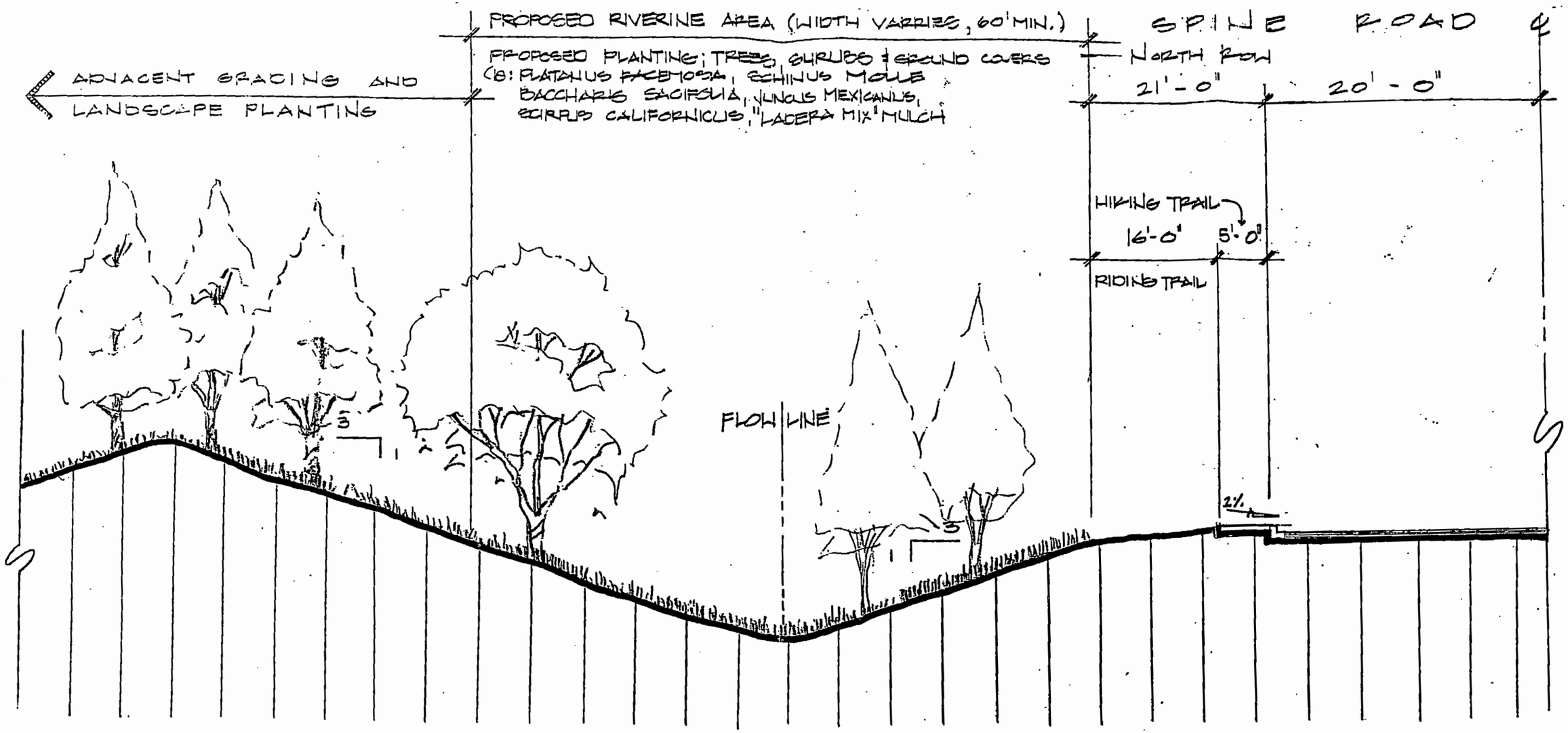

TYPICAL SECTION @ RIVERINE AREA NTS

Attachment F

DRAFT REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
EIR 566
State Clearinghouse No. 1996121072

Volume 3 of 3

Saddleback Meadows

Planning Application 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

Prepared For :
County of Orange
Planning and Development Services Department

Prepared By :

HDR
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April 2002

TABLE OF CONTENTS

VOLUME I

LIST OF TABLES
LIST OF FIGURES

1.0 INTRODUCTION AND SUMMARY 1-1
1.1 INTRODUCTION/HISTORY 1-1
1.2 PROJECT SETTING 1-2
1.3 PROJECT SUMMARY 1-3
1.4 ENVIRONMENTAL PROCEDURES 1-3
1.5 ENVIRONMENTAL IMPACTS 1-7
1.6 MITIGATION MEASURE STRUCTURE 1-7
1.7 ALTERNATIVES 1-9

2.0 PROJECT DESCRIPTION 2-1
2.1 PROJECT LOCATION AND SETTING 2-1
2.2 STATEMENT OF OBJECTIVES 2-9
2.3 PROJECT CHARACTERISTICS 2-9
2.4 DISCRESTIONARY APPROVALS 2-19

3.0 GENERAL ENVIRONMENTAL SETTING 3-1
3.1 BACKGROUND 3-1
3.2 GENERAL PLAN AND ZONING 3-1
3.3 FOOTHILL/TRABUCO SPECIFIC PLAN 3-2
3.4 ALISO CREEK CORRIDOR SPECIFIC PLAN 3-2
3.5 ENVIRONMENTAL RESOURCES 3-3
3.6 EXISTING INFRASTRUCTURE AND SERVICES 3-3
3.7 RELATED PROJECTS 3-4

4.0 ENVIRONMENTAL IMPACT ANALYSIS 4.1-1
4.1 LAND USE 4.1-1
4.2 GEOPHYSICAL RESOURCES 4.2-1
4.3 HYDROLOGY 4.3-1
4.4 WATER QUALITY 4.4-1
4.5 TRANSPORTATION/TRAFFIC 4.5-1
4.6 AIR QUALITY 4.6-1
4.7 NOISE 4.7-1
4.8 BIOLOGICAL RESOURCES 4.8-1
4.9 AESTHETICS/VISUAL 4.9-1
4.10 CULTURAL/PALEONTOLOGICAL RESOURCES 4.10-1
4.11 RECREATION 4.11-1
4.12 PUBLIC SERVICES - FIRE PROTECTION 4.12-1
4.13 PUBLIC SERVICES - POLICE PROTECTION 4.13-1
4.14 PUBLIC SERVICES - SCHOOLS 4.14-1
4.15 PUBLIC SERVICES - LIBRARIES 4.15-1
4.16 UTILITIES AND SERVICE SYSTEMS - WATER SUPPLY 4.16-1
4.17 UTILITIES AND SERVICE SYSTEMS -WASTEWATER 4.17-1
4.18 UTILITIES AND SERVICE SYSTEMS - SOLID WASTE 4.18-1
4.19 UTILITIES AND SERVICE SYSTEMS - ELECTRICITY 4.19-1
4.20 UTILITIES AND SERVICE SYSTEMS - NATURAL GAS 4.20-1

5.0 ALTERNATIVES 5-1
5.1 INTRODUCTION 5-1
5.2 CRITERIA FOR ALTERNATIVE ANALYSIS 5-2
5.3 ALTERNATIVES ELIMINATED FROM CONSIDERATION 5-2
5.4 EVALUATION OF ALTERNATIVES 5-3
5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE 5-47

6.0 LONG-TERM IMPLICATIONS OF THE PROPOSED PROJECT 6-1
6.1 SIGNIFICANT IRREVERAIBLE ENVIRONMENTAL CHANGES 6-1
6.2 GROWTH INDUCING IMPACTS 6-1

7.0 INVENTORY OF MITIGATION MEASURES 7-1

8.0 MITIGATION MONITORING PROGRAM 8-1

9.0 INVENTORY OF UNAVOIDABLE ADVERSE IMPACTS 9-1

10.0 PERSONS & ORGANIZATIONS CONSULTED/ REFERENCES 10-1

10.1 PERSONS AND ORGANIZATIONS CONSULTED 10-1

10.2 REFERENCES 10-5

VOLUME II

APPENDIX A: NOP/COMMENTS

Appendix A.1 – Notice of Preparation/Initial Study
Appendix A.2 – Comments on NOP/Initial Study
Appendix A.3 – Comments from County of Orange Departments

APPENDIX B: PROJECT CHRONOLOGY
APPENDIX C: GEOTECHNICAL REPORT
APPENDIX D: HYDROLOGY TECHNICAL REPORT

VOLUME III

APPENDIX E: WATER QUALITY TECHNICAL REPORT
APPENDIX F: TRAFFIC STUDY
APPENDIX G: AIR QUALITY TECHNICAL REPORT
APPENDIX H: NOISE TECHNICAL REPORT
APPENDIX I: BIOLOGICAL REPORTS

Appendix I.1 – Biological Technical Report
Appendix I.2 – Conceptual Mitigation and Monitoring Plan for CDFG
Appendix I.3 – Coastal Sage Scrub Restoration Plan
Appendix I.4 – U.S. Fish and Wildlife Service Biological Opinion

APPENDIX J: PHASE I/PHASE II ARCHAEOLOGICAL SURVEY
APPENDIX K: SCHOOL IMPACT MITIGATION AGREEMENT
APPENDIX L: SERVICE PROVIDERS REFERENCE DOCUMENTS

APPENDIX E

WATER QUALITY TECHNICAL REPORT

CONCEPTUAL WATER QUALITY MANAGEMENT PLAN

FOR

SADDLEBACK MEADOWS PROPOSED VTTM 15230

Development Alternative for 283 Residential Home Sites

COUNTY OF ORANGE, CA

November 21, 2001

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W.O. 1665-1T

TABLE OF CONTENTS

I. Purpose

II. Existing Conditions

III. Developed Conditions

IV. Best Management Practices

a. Introduction

b. Highlights

c. Selection Criteria

V. Summary

EXHIBITS

1. Riverine exhibit (cross section)

I. PURPOSE

The goal of the Saddleback Meadows Water Quality Management Plan (WQMP) is to reduce pollutants and/or specific sources of pollution which affect or may affect the project property as well as the downstream properties in its development. Such reductions should result in cleaner water in onsite runoff, storm water and incidental flows, including those flows emptying towards offsite facilities and features downstream.

When implemented, the pollution control measures proposed by the WQMP will create cleaner water runoff associated with development in compliance with all applicable water quality ordinances and laws. These laws include, but are not limited to, San Diego Region, California State Regional Water Quality Control Board directives; the County of Orange's NPDES Drainage Area Management Plan (DAMP); and the Clean Water Act of the United States of America.

II. EXISTING CONDITIONS

A. Saddleback Meadows

Saddleback Meadows is located primarily within the Aliso Creek Watershed area. Its hillside topography is incised with drainage courses that mainly drain west to Aliso Creek. Aliso Creek is located just west of the project's western flank. Some remaining courses drain south to Oso Creek. Oso Creek is located south of the project's southeast boundary.

The vacant, 222.2 acre project site comprises hillside topography covered with native grasses and dirt trails. Remnants related to agricultural and ranching uses employed since the 1930's include an abandoned, worn out wooden house, corrals, an overgrown olive orchard and eight stock ponds. The remainder of the site is covered by coastal sage scrub, chapparel and oak woodland. The property has been heavily grazed for the past several decades. This is evident as the native vegetation has been replaced by grasslands on over 50% of the property. Significant portions of the property are also covered by artichoke thistle, another indicator of overgrazing. Accordingly, evidence on the property indicates poor hydrologic conditions with high stormwater runoff and highly erosive overland flow. Over the past several years, numerous highly incised drainage courses have been cut into the natural rolling topography. During low flow conditions, for example a 2-year storm event, peak discharges are 30% higher than in its pre-grazing natural state.

An east-west running ridgeline located in the southern portion of the property rises up from the west (elevation 1,200') and extends east approximately 3,000 LF. This ridge spans two thirds of the east-west width of Saddleback Meadows. The ridgeline then turns north-northeast, continuing to rise and extending 2,200 LF towards the northeast property corner. Existing site elevations exceeding 1,600' are typical at the northern portion of the east property line.

In general, storm water runoff flows drain to the west across the property, eventually emptying into Aliso Creek. In the project's area, Aliso Creek flows parallel to and at the **west side** of existing El Toro Road. Existing El Toro Road, in this same area, forms the western boundary of Saddleback Meadows.

Existing storm drain facilities on the **east side** of El Toro Road picks up water runoff from the project site and conveys it westerly under El Toro Road, to outlets discharging into Aliso Creek. These existing storm drain facilities are maintained by the County of Orange. They are:

- The J01 facility per the J01-701-15 storm drain improvements approved by the County of Orange located north of the project's spine road intersection with El Toro Road.
- The Line "B", 24" RCP storm drain line per J01-701-15 plans (described directly above) located south of the project's spine road intersection with El Toro Road.
- Lines "A", "B" and "C", 24" RCP storm drain lines per the improvement plans for Tract 12724, County of Orange, located at the southern most entry street (existing Valley Vista Street) intersection with El Toro Road.

However, some stormwater runoff flows at the eastern two thirds of the southern portion of the property surface drain to the south property line, then southerly across natural vegetation of the adjacent property and empties into Oso Creek. Oso Creek runs as close as 200 LF from Saddleback Meadow's southern boundary.

B. Regional

Down stream to this project there is drainage from the newer projects which are tributary to the Aliso Creek which is a natural water course. Recently, the Regional Water Quality Board has issued a new directive to clean the high bacteria count (Coliform) from the Creek. The Board's goal is to make Aliso Creek Beach safe for swimming.

III. DEVELOPED CONDITIONS

A. Saddleback Meadows

Residential development for up to 283 single-family homes is proposed in two project areas. 163 residential lots are proposed in the southwest quadrant of the project, 68 residential lots are proposed for the southeasterly quadrant and the remaining 52 residential lots are located in the northeasterly quadrant. While stabilization of the existing land slides and conventional mass grading will disturb approximately 70% of the entire project site, approximately 71% of the property will be placed into permanent open space.

Table 1

Summary of Proposed Land Uses

Land Use	Area (acres)	Portion of Site
Single-Family Residential Lots (283)	46.2	21%
Streets (private)	18.4	8%
Regional Park *	88.2	40%
Biological Open Space Easement**	9.2	4%
Restricted Scenic Preservation Easement***	60.2	27%
Total	**222.0**	100%

*Regional Park, as required by the County of Orange, excludes manufactured slopes and fuel modification areas. Regional Park may include areas subject to remedial grading and biological enhancement.

** Biological Open Space Easement includes biologically restored manufactured slopes outside fuel modification areas.

*** Restricted Scenic Preservation Easement included fuel modification areas owned and maintained by homeowner's association/community management district.

Table 2

Summary of Grading Disturbance

Land Use	Area (acres)	Portion of Site
Single-Family Residential Lots (283)+ Roads	64.6	29%
Manufactured Slopes	57.2	26%
Remedial Grading*	28.2	13%
Undisturbed Areas **	72.0	32%
Total	222.0	100%

* Landfill stabilization beyond the limits of the conventional mass grading

** Undisturbed areas may include Fuel Modification Zones and may be subject to biological enhancement; i..e., annual grasslands replaced with Coastal Sage Scrub or Oak Woodlands as discussed in the Biological Technical Report

Open space areas are proposed for both the project's northwest quadrant and significant areas along the project's eastern and southern flanks. The permanent open space will be dedicated to the County of Orange as a regional park and will be maintained by the County or a third-party conservation group. Maintenance of the permanent open space will be funded by a permanent endowment created by the developer.

Saddleback Meadows will be served by urban type drainage systems. Drainage systems will conform to County of Orange Flood Control District standards, and basically comprised of paved street gutters, catch basins, and underground concrete pipes.

Storm drain improvements for the southwest development area will drain westerly into existing Orange County maintained storm drains at the west-southwest project boundary The main storm drain and low-flow channel will crossing. Only Lots 1 through 37 connect directly to an existing storm drain facility in El Toro Road. Storm drain improvements for the northeastern development area, in general, will drain easterly and outlet into the project's open space area located in the north central portion of the project. Surface flows through the open space and collects in a tributary which drains westerly about 2,000 feet before draining into Aliso outlet into Aliso Creek after reaching the main El Toro under creek. Aliso Creek continues another 600 feet before emptying into the existing J01 storm drain facility inlet located north of the El Toro Road/Spine road intersection.

The Storm drain outlets have been carefully located so that they discharge into natural channels in order to replicate natural flow patterns as closely as possible. In some cases, this has resulted in multiple outlets; for example, the drainage system in the northwest development area.

B. Regional

The project is located within the boundaries of two primary watershed areas:

Aliso Creek Approximately 75% of the site *is within the Aliso Creek Watershed.* Aliso Creek is located west of the project site. The natural creek is located along the eastside of El Toro Road but crosses under the roadway near the project's entrance, continuing southwesterly along the west side of El Toro Road. The creek flows through natural open space and urban development and outlets at the ocean at Aliso Creek Beach. Aliso Creek's watershed encompasses 23,000 acres, and includes natural open space, rural and urban development, agriculture and ranching, regional parks and other recreational facilities. There are a number of street crossings over Aliso Creek which have been built as the result of newer or existing developments downstream. Saddleback Meadows represents less than 1% of the Aliso Creek watershed.

Oso Creek The remaining 25% of the site located on the southeasterly portion of the project is part of the Oso Creek watershed. Flows from the project drain offsite through natural drainages. The natural drainages converge and flow into a concrete storm drain system that runs in a southwesterly direction though Tract 12724 (Hidden Ridge residential development). The system outlets onto a concrete energy dissipator and then into the natural drainage course of Oso Creek. The creek drains into the Upper Oso Reservoir. Overflows from the reservoir continue westerly eventually draining into San Juan Creek which outlets into the Pacific Ocean at Doheney State Beach.

A small area at the extreme eastern portion of the site drains into the Trabuco Creek watershed.

IV. BEST MANAGEMENT PRACTICES (BMP'S)

A. Introduction

In order to reduce, control, prevent, remove or eliminate pollution, BMPs will be proposed, implemented and followed for development of Saddleback Meadows. BMPs are construction devices, procedures, rules or methods that will be used to control predictable pollutant runoff associated with the development of Saddleback Meadows.

B. BMP Highlights for Saddleback Meadows

The Saddleback Meadows BMP's have been chosen based on local industry standards and the existing constraints on the property. The site plan for Saddleback Meadows has been carefully designed to minimize the impact to the natural topography and vegetation. The proposed development area is the minimum area possible which accommodates the project's 283 Single Family Residential lots. This reduces the opportunity to use structural BMPs that require larger areas (created wetlands, basins) within the development area. Sensitive biological habitat also prevents locating such facilities within the open space areas. The structural BMP's therefore have been designed to take advantage of excess space for created wetlands and basins and in-line solutions where space is not available.

Saddleback Meadows BMP's will include the following.

1. **Restore Natural Watershed** – The portion of the property that will not be disturbed by grading, approximately 30%, will be restored by cessation of cattle grazing. Furthermore, the annual grasslands and artichoke thistle will be replaced with coastal sage scrub and oak woodlands. Existing disturbed coastal sage scrub will be enhanced. All of these actions will reduce stormwater runoff by up to 30%. This will also significantly reduce erosion potential and should eliminate the erosion that is currently plaguing the property. The remaining 40% of the property that will be placed into

permanent open space will be revegetated with coastal sage scrub and oak woodlands ensuring that these disturbed areas are stabilized.

2. **Minimize Impervious Areas** – The project has been designed to minimize impervious areas through the use of larger lots (5,000 square foot minimum, nearly 6,700 square foot average) and narrower private streets. This will limit impervious areas to less than 17% of the property.

3. **Storm Drain System** – The storm drain system has been designed to mimic natural drainage patterns as closely as possible. Storm drain outlets will be provided to return runoff into each natural drainage that intersects the development area. This serves the dual purpose of ensuring that the natural drainages are receiving no more runoff than they can accommodate and ensuring that natural riparian habitat continue to receive an adequate supply of water. Appropriate energy dissipaters will be installed at each outlet to reduce flows to non-erosive velocities.

4. **Riverine System** – The southwest and southeast quadrants of development, approximately 80% of the residential lots and streets, will be served by a riverine system designed to provide a natural cleansing of the urban run-off. Incidental and low flows produced by the completed project will be filtered by the riverine system. The riverine system will collect low flows at strategically located catch basins. Underground pipes will then convey the low flows to a vegetated swale. This swale is located parallel to and along the north side of the project's spine road attached exhibit provides the detail and cross section of the proposed Riverine system. The swale design will filter pollutants from low flows. It will also allow dissipation of a portion of the flows through percolation and evaporation. The downstream terminus of the riverine system is a 1200' long by 60' wide earthen and vegetated detention basin) located just north of the spine road and 700' east of the El Toro Road/spine road intersection. The effectiveness of the Riverines generally depend on the length and the amount of vegetation within the Riverines along the path. The typical vegetation within the Riverine system include PlatanusRacemosa, Schinus Molle, Baccharis Sacfolia, Juncus Mexicanus, Scripus Californicus.

5. **Stormceptors** – Stormceptors are in-line storm drain devices designed to separate sediment and oil from low-flow runoff flowing through underground storm drain pipes. The trapped sediment and oil is then removed during routine maintenance and disposed of at an approved landfill. All storm drain pipe flows within the northeastern quadrant, the remaining 20% of the development, will pass through strategically located Stormceptors prior to discharging into project open space areas. The Stormceptors will be able to remove up to 80% of the total sediment load (TDS). The Stormceptors will also remove free oil from stormwater during normal flow conditions. It should be noted that the stormceptor will retain trapped pollutants during peak stormflows.

6. **Erosion and Sedimentation Control** – The Saddleback Meadows erosion and sedimentation control plan will be prepared and implemented in order to achieve the following two primary goals:

   a. Soil erosion shall be minimized by keeping soil stabilized as long as possible.

   b. Runoff from remaining disturbed areas shall be directed to locations where sediments will be removed prior to discharge into water courses.

   Installation of temporary sediment basins, sand bag debris dams and temporary sand bag sediment catchment areas at catch basins during construction, are examples of ways the goal outlined in paragraph (b) directly above will be achieved by implementation of project BMP's.

7. **Monitoring, Inspection and Maintenance** – Structural BMPs will be monitored periodically and maintained sufficiently for their effectiveness. BMPs, such as the Stormceptors and the riverine system, will be privately maintained by the homeowner's association. A detailed plan for maintenance, inspection and for assessing the effectiveness of the BMPs including testing, will be included in the project's final WQMP and SWPPP. The final plans will be submitted to the applicable County departments and regional jurisdictions for their review and approval prior to issuance of the project grading permit. It is anticipated that the maintenance responsibilities will entail the following:

   a. **Homeowners/Tenant Education**

   California Quartet or its' assigns will insure that all homeowners will be given a copy of the recorded CC&R's which will contain a section outlining the environmental awareness education materials. The Master HOA will establish requirements for the implementation of a community awareness program that informs home buyers of the impacts of dumping oil, paints, solvents or other potentially harmful chemicals into the storm drain; the proper use and management of fertilizers, pesticides and herbicides in home landscaping and gardening practices; the impacts of littering and improper watering. Environmental awareness education materials, shall be provided to all members of the Master HOA periodically thereafter.

   b. **Activity Restrictions**

   Within the Master CC&R's prepared by California Quartet or its assigns, language will be included to identify surface water quality protection required by the Master HOA. Surface water quality activities shall also be conducted in conformance with the Water

Quality Management Plan as it relates to the handling and disposal of contaminants. The following language provides additional direction for controlling activities that may affect the environment of the project and/or surrounding areas.

PROPOSED LANGUAGE

POLLUTANT RUNOFF
The Master HOA and its members shall comply with plans for the regulation and control of pollutant run-off by using "Best Management Practices" in accordance with the residential provisions of the California and Orange County Storm Water Best Management Practices Handbook, which include the following:

The Master HOA shall periodically provide to their members environmental awareness education materials made available by the local municipalities. These materials will describe the use of chemicals (including household types) that should be limited to the Covered Property with no discharge of specified wastes via hosing or other direct discharge to gutter, catch basins, settling basins and storm drains. The materials shall also provide a description of fertilizer and pesticide usage guidelines consistent with County Management Guidelines for Use of Fertilizers and Pesticides.

The Master HOA shall establish trash management and litter control procedures aimed at reducing pollution of drainage water.

The Master HOA shall have any drainage systems, streets and catch basins on property they maintain inspected and cleaned, and any streets and parking areas they maintain swept prior to the storm season (no later than October 15th of each year).

The Master HOA shall implement irrigation and landscaping practices which will include provision of water sensors, programmable irrigation times, grouping of plants with similar water requirements in order to reduce excess irrigation runoff and to promote surface filtration. The Master HOA shall maintain erosion control devices on the property they maintain until adequate vegetation coverage has been achieved following establishment of the landscape plantings.

c. **Common Area Landscape Management**

Management programs will be designed and established by the Master HOA, who will own and maintain all common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage. Ongoing

maintenance will be consistent with the County Water Conservation Resolution (Ordinance. No. 3802) and the State of California Model Water-Efficient Landscape Ordinance. Fertilizer and Pesticide usage shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

d. **BMP Maintenance**

As indicated above, the CC&R's identify the Master HOA as being responsible for implementation of each applicable non-structural BMP as well as scheduling cleaning of all applicable structural BMP facilities and will be responsible for inspection and maintenance activities in landscape areas. Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the Master HOA. California Quartet or its' assigns will be responsible for maintenance during construction.

e. **Common Area Litter Control**

The Master HOA will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Master HOA may contract with their landscape maintenance firm to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations by homeowners and reporting the violations to the Master HOA for investigation.

f. **Employee Training**

An employee training/education program will be established as it would apply to future employees, contractors of the Master HOA, and volunteers to inform and train employees engaged in maintenance activities regarding the impact of dumping oil, paints, solvents or other potentially harmful chemicals into storm drain; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal. In addition, California Quartet or its' assigns will make available training and education materials to their contractors and subcontractors and their employees during construction.

g. **Common Area Catch Basin Inspection**

The proposed storm drain mainline along with its catch basins and the stormceptor shall be constructed by California Quartet or its' assigns and maintained and cleaned by the Maintenance Landscape Company hired by the Master HOA. This will be done on a regular

basis and prior to the storm season, no later than October 15th of each year. The Master HOA will maintain all catch basins on-site. California Quartet or its' assigns will be responsible for on-site inspection and maintenance during construction.

The proposed stormceptor will have the following maintenance performed by the HOA:

- Annual inspection and power wash of the screen.
- Inspection of the unit after the first major seasonal storm.
- Removal of captured pollutants by a vac truck when the sump becomes 2/3 to ¾ full.
- Remove and replace oil and grease sorbents when fully discolored/coated with oil.

h. **Street Sweeping Private Streets and Parking Lots**

The Master HOA shall have all private streets and parking lots vacuum swept on a weekly basis. This procedure will be intensified around October 15th of each year prior to the "first flush" storm.

8. **Routine Structural BMP's** – Structural BMP's shall be installed initially by California Quartet or its' assigns, the developer, through the construction and development of the project, for instance; slope planting and irrigation systems shall be designed by licensed landscape architects and installed by qualified contractors to specifications and standards of the County of Orange.

a. **Filtration**

This BMP is considered a "routine" BMP and will be implemented through the provisions of a grassy swale. This grassy swale will be located on the north side of the project spine road. Low flow, dry weather, nuisance flows will be directed to the grassy swale areas for "polishing" prior to being discharged downstream.

The proposed riverine system/grassy swale will have the following maintenance performed by the HOA.

- Vegetation within the grassy swale shall be monitored monthly to identify and remove any dead or dying material. Vegetation removed shall be replaced in a timely manner to ensure the continued effectiveness of the grassy swale.

- The grassy swale shall be inspected monthly for trash and debris. Any trash and debris shall be removed and disposed of properly. The density of the vegetation shall be monitored monthly to ensure that the grassy swale contains adequate material to "polish" the runoff flows. Any areas found to be deficient shall be planted with the appropriate material.

- The vegetation shall be monitored twice yearly to ensure that the growth and condition of the plant materials are consistent with the approved fuel modification program.

- The grasses shall be mowed or weed whipped (depending on the type of grass) on a monthly basis during the dry weather months. All grass clippings shall be disposed of properly.

b. **Common Area Efficient Irrigation**

As a part of the design of all common area landscape irrigation, implementation of the County Water Conservation Resolution including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc., will be used. Such common areas will be maintained by the Master HOA.

c. **Common Area Runoff - Minimizing Landscape Design**

As a part of the design of all common area landscape areas, similar planting material with similar water requirements will be used in order to reduce excess irrigation runoff and promote surface filtration. Such common areas will be maintained by the Master HOA.

d. **Energy Disapators**

Energy disapators will be installed per the approved storm drain plans and maintained by the Master HOA.

e. **Catch Basin Stenciling**

As a part of the final civil engineering drawings, it will be required by California Quartet or its' assigns to stencil on all catch basins, where applicable in paved areas, the words, "No Dumping - Drains to Ocean." This will be done in a location that can be clearly seen by all and will be routinely inspected and restenciled as required.

9. **BMP Selection Criteria** – BMP selection for Saddleback Meadows will be refined during the preparation of the project's grading and drainage plans. Final selection will be made in accordance with two major objectives of the WQMP. These two WQMP objectives are:

   a. To identify the sources of pollution that affects the quality of storm water discharges from the project construction sites.

   b. To identify, assign and implement control measures and management practices to reduce pollutants in the storm water discharges before and after the completion of construction activities.

   The final analysis and design of the BMP's will meet or exceed the minimum standard BMPs set forth by County of Orange and State of California Water Quality Regulations, Permits and Guidelines.

10. **Standard Conditions** – In addition to this Conceptual Plan, implementation of the project will be controlled by the County of Orange through compliance with the conditions of approval for the Tentative Tract Map. The following will be part of those conditions:

    a. Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/subdivision and Grading Services Division, County of Orange.

    b. Prior to issuance of a grading permit, a Water Quality Management Plan specially identifying Best Management Practices that will be used onsite to control predictable pollutant runoff shall be prepared and approved by the County of Orange.

    c. Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, County of Orange, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

IV. SUMMARY

Saddleback Meadows WQMP, when implemented, will achieve the primary objectives of applicable governmental storm water permits and water quality management for construction activities in that it will:

A. Reduce excessive erosion potential

B. Minimize excessive sedimentation.

C. Prevent materials used at construction sites from causing on-site or offsite contamination.

D. Prevent non-storm water discharges from the project's construction activities.

E. Install appropriate measures to reduce impacts on downstream waterways from the completed project, and provide a commitment that these measures will be maintained.

F. Establish maintenance commitments on post-construction sites.

There are standard conditions of approval and Mitigation Measures that this project will have to comply with during the development process. These conditions are part of the Tentative Tract Map conditions and below are a few of these measures. Overall, these Mitigation Measures will ensure that all the above goals will be achieved.

Following are the standard County of Orange Mitigation Measures:

A. Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/subdivision and Grading Services Division.

B. Prior to issuance of a grading permit, a Water Quality Management Plan specially identifying Best Management Practices that will be used onsite to control predictable pollutant runoff shall be prepared and approved by the County of Orange.

C. Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

During the planning phase of this project, the following items have been incorporated into the project plans to minimize the impact from the development:

A. Preservation of natural topography, existing drainage and existing vegetation to the extent possible.

B. Reduction of the paved area by means of narrower streets to the extent allowed by the local jurisdiction.

C. Use of existing vegetation and creation of new standards vegetated area to promote infiltration.

D. The street lay out and storm drain systems have been designed for easy maintenance and cleaning.

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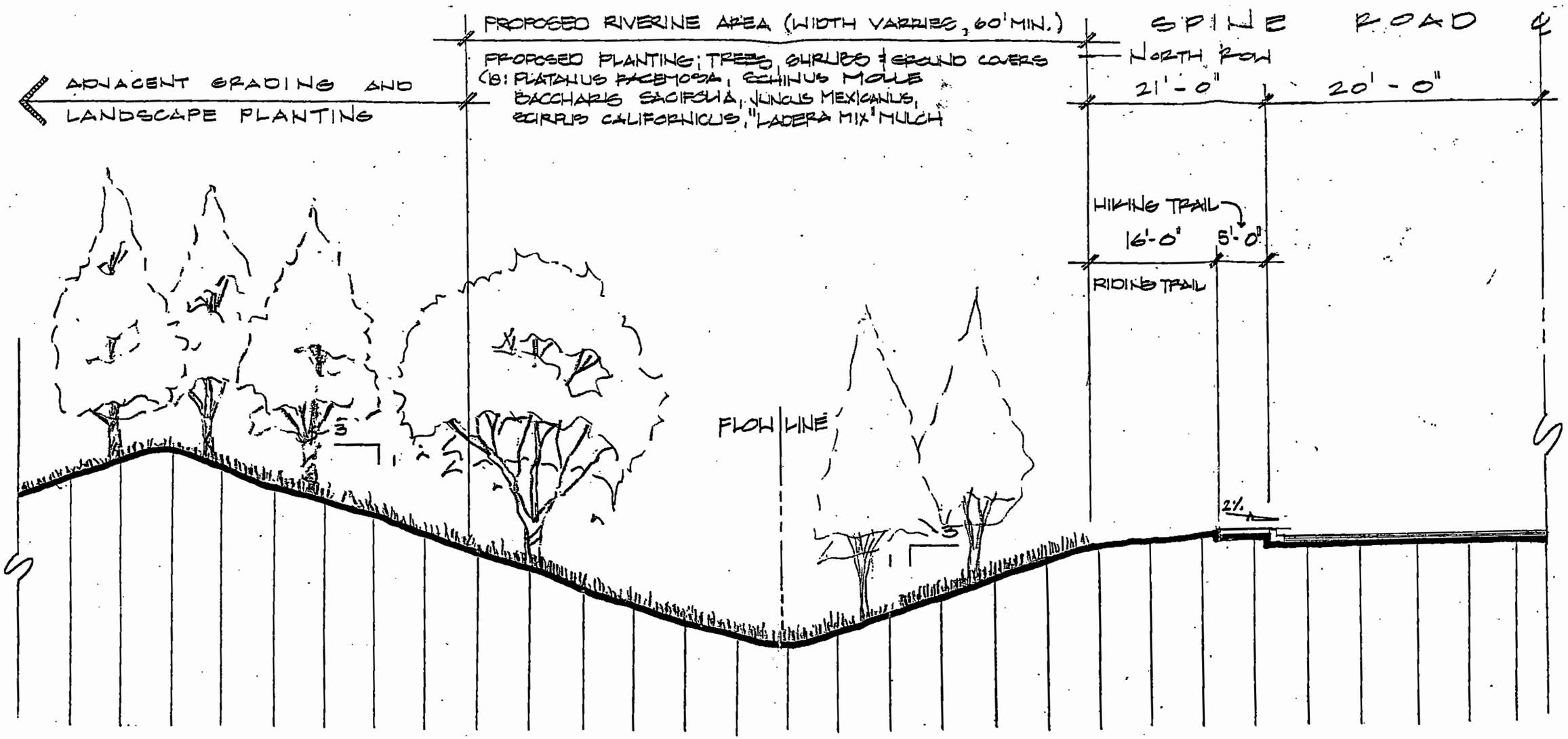

TYPICAL SECTION @ RIVERINE AREA NTS

APPENDIX F

TRAFFIC STUDY

URBAN
CROSSROADS

SADDLEBACK MEADOWS GROWTH MANAGEMENT/CMP TRAFFIC ANALYSIS (REVISED) Orange County, California

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SADDLEBACK MEADOWS
GROWTH MANAGEMENT/CMP TRAFFIC ANALYSIS (REVISED)
ORANGE COUNTY, CALIFORNIA

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March 29, 2001
November 13, 2001 (Revised)
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00146-08

TABLE OF CONTENTS

SECTION		PAGE
1.0	INTRODUCTION AND SUMMARY	1-1
	A. Purpose of Report and Study Objectives	
	B. Executive Summary	
	1. Site Location and Study Area	
	2. Development Description	
	3. Principal Findings	
	4. Project Recommendations	
2.0	AREA CONDITIONS	2-1
	A. Study Area	
	1. Area of Significant Traffic Impact	
	B. Site Accessibility	
	1. Area Roadway System	
	2. Existing Master Plan of Arterial Highways	
	3. Traffic Volumes and Conditions	
3.0	PROJECTED TRAFFIC	3-1
	A. Site Traffic	
	1. Trip Generation	
	2. Trip Distribution	
	3. Modal Split	
	4. Trip Assignment	
	B. Other Development Traffic	
	1. Method of Projection	
	2. Forecast Refinement/Post-Processing	
	3. Non-Site Traffic for Study Area	
	C. Total Traffic	
4.0	TRAFFIC ANALYSIS	4-1
	A. Capacity and Level of Service and Improvement Analysis, Existing Plus Project	
	1. Level of Service at Existing Plus Project	
	B. Capacity and Level of Service and Improvement Analysis, Year 2005	
	1. Level of Service at Year 2005 Without Project	
	2. Level of Service at Year 2005 With Project	

C. Capacity and Level of Service and Improvement Analysis, Year 2025
1. Level of Service at Year 2025 Without Project
2. Level of Service at Year 2025 With Project
D. Santiago Canyon Road Analysis

5.0 RECOMMENDATIONS 5-1

A. Site Access
B. Roadway Improvements
1. Off-Site
2. On-Site

APPENDICES

LEVEL OF SERVICE DESCRIPTION ..... A

TRAFFIC COUNT WORKSHEETS ..... B

ICU CALCULATIONS- EXISTING C

ITAM 3.01 POST-PROCESSING REPORT ..... D

ICU CALCULATIONS- EXISTING PLUS PROJECT ..... E

ICU CALCULATIONS - YEAR 2005 WITHOUT PROJECT ..... F

ICU CALCULATIONS - YEAR 2005 WITH PROJECT ..... G

ICU CALCULATIONS - YEAR 2025 WITHOUT PROJECT ..... H

ICU CALCULATIONS - YEAR 2025 WITH PROJECT I

TRAFFIC SIGNAL WARRANTS ..... J

SIGHT DISTANCE STANDARDS ..... K

LIST OF EXHIBITS

EXHIBIT		PAGE
1-A	LOCATION MAP	1-2
1-B	SITE PLAN	1-4
2-A	EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS	2-4
2-B	ORANGE COUNTY MASTER PLAN OF ARTERIAL HIGHWAYS	2-5
2-C	ORANGE COUNTY CROSS-SECTIONS AND LEVEL OF SERVICE "C" ADT VALUES	2-6
2-D	EXISTING AVERAGE DAILY TRAFFIC (ADT)	2-7
2-E	EXISTING AM PEAK HOUR INTERSECTION VOLUMES	2-13
2-F	EXISTING PM PEAK HOUR INTERSECTION VOLUMES	2-14
2-G	EXISTING INTERSECTION LANES	2-15
3-A	PROJECT TRIP DISTRIBUTION	3-6
3-B	PROJECT AVERAGE DAILY TRAFFIC (ADT)	3-7
3-C	PROJECT AM PEAK HOUR INTERSECTION VOLUMES	3-8
3-D	PROJECT PM PEAK HOUR INTERSECTION VOLUMES	3-9
3-E	LIVE OAK PLAZA PROJECT TRIP DISTRIBUTION	3-17
3-F	SADDLE CREEK/SADDLE CREST PROJECT TRIP DISTRIBUTION	3-18
3-G	OTHER DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)	3-19
3-H	OTHER DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES	3-20
3-I	OTHER DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES	3-21
3-J	EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)	3-23

3-K	YEAR 2005 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)	3-24
3-L	YEAR 2005 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)	3-25
3-M	YEAR 2025 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)	3-26
3-N	YEAR 2025 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)	3-27
4-A	EXISTING PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES	4-3
4-B	EXISTING PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES	4-4
4-C	YEAR 2005 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	4-6
4-D	YEAR 2005 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	4-7
4-E	YEAR 2005 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	4-11
4-F	YEAR 2005 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	4-12
4-G	YEAR 2025 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	4-15
4-H	YEAR 2025 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	4-16
4-I	YEAR 2025 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	4-20
4-J	YEAR 2025 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	4-21
5-A	EL TORO ROAD CROSS-SECTIONS	5-4
5-B	CIRCULATION RECOMMENDATIONS	5-5

LIST OF TABLES

TABLE		PAGE
2-1	ROADWAY CAPACITY VALUES	2-8
2-2	EXISTING INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS	2-12
3-1	TRIP GENERATION RATES	3-2
3-2	PROJECT TRIP GENERATION	3-3
3-3	PROPOSED PROJECT TRIP GENERATION COMPARISON	3-4
3-4	OTHER DEVELOPMENT TRIP GENERATION	3-16
3-5	SANTIAGO CANYON/EL TORO ROAD LINK ANALYSIS	3-28
4-1	EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS	4-2
4-2	YEAR 2005 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT	4-5
4-3	YEAR 2005 INTERSECTION LEVEL OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITHOUT IMPROVEMENTS	4-9
4-4	YEAR 2005 INTERSECTION LEVEL OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITH IMPROVEMENTS	4-10
4-5	YEAR 2025 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT	4-14
4-6	YEAR 2025 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT WITHOUT IMPROVEMENTS	4-17

4-7 YEAR 2025 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT WITH IMPROVEMENTS 4-18

5-1 POTENTIAL ROADWAY FEES 5-2

SADDLEBACK MEADOWS
GROWTH MANAGEMENT/CMP TRAFFIC ANALYSIS (REVISED)
ORANGE COUNTY, CALIFORNIA

1.0 INTRODUCTION AND SUMMARY

A. Purpose of Report and Study Objectives

The purpose of this revised traffic study is to evaluate the development of the Saddleback Meadows from a traffic circulation standpoint. The proposed development is included within the unincorporated portion of Orange County.

Study objectives include (1) documentation of existing traffic conditions in the vicinity of the site; (2) calculation of existing plus project traffic conditions; (3) evaluation of traffic conditions for the Year 2005; (4) analysis of traffic conditions for Year 2025; and (5) determination of off-site improvements and system management actions needed to achieve County of Orange level of service requirements.

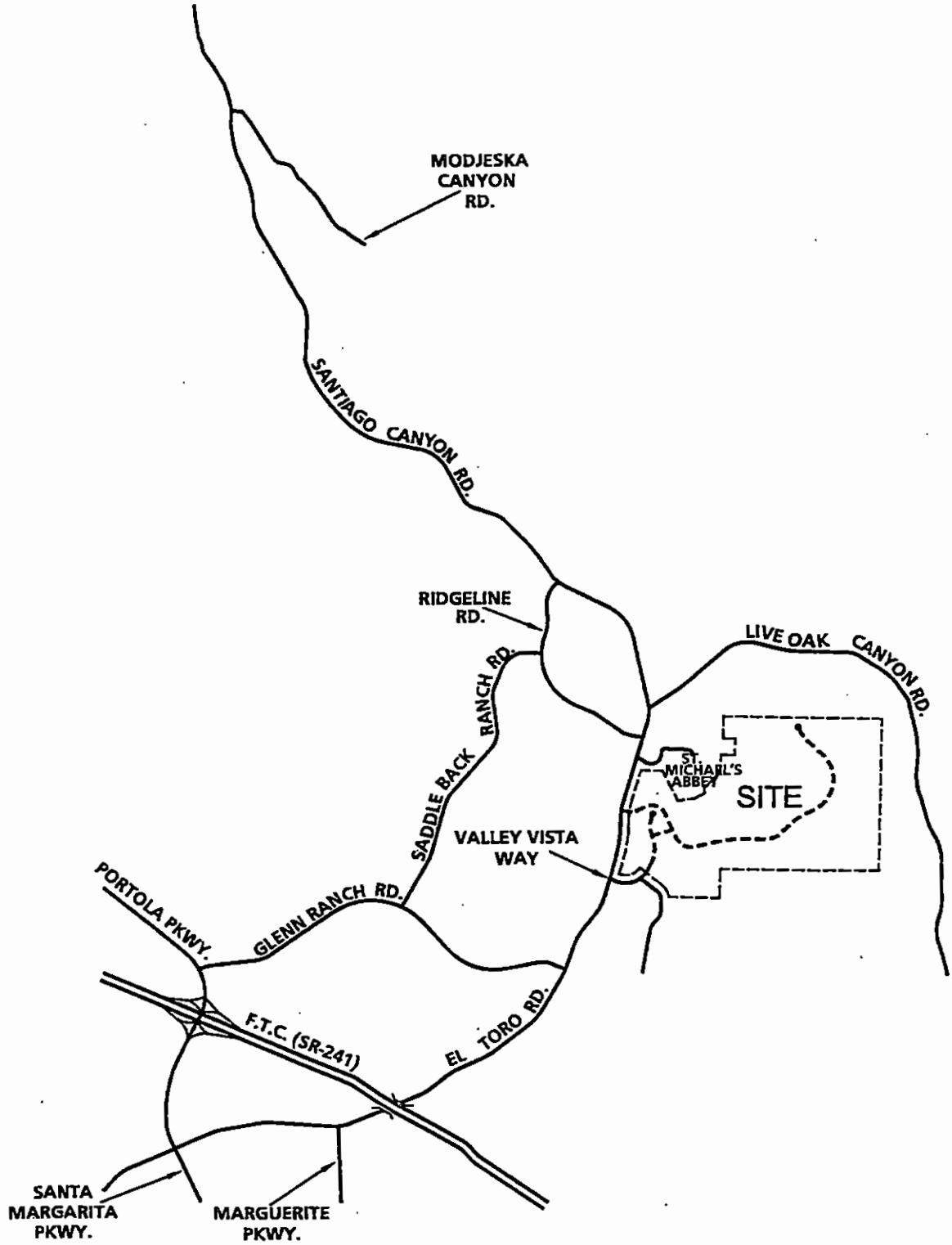
B. Executive Summary

1. Site Location and Study Area

The project site is located east of El Toro Road and south of Live Oak Canyon Road in the County of Orange. Exhibit 1-A illustrates the traffic analysis study area.

EXHIBIT 1-A

LOCATION MAP



The study area includes the following intersections:

Santiago Canyon Road (NS) at:

- Modjeska Canyon Road (EW)
- Ridgeline Road (EW)

El Toro Road (NS) at:

- Live Oak Canyon Road (EW)
- Ridgeline Road (EW)
- Valley Vista Way (EW)
- Glenn Ranch Road (EW)

Saddleback Ranch Road (NS) at:

- Glenn Ranch Road (EW)

Marguerite Parkway (NS) at:

- El Toro Road (EW)

Portola Parkway (NS) at:

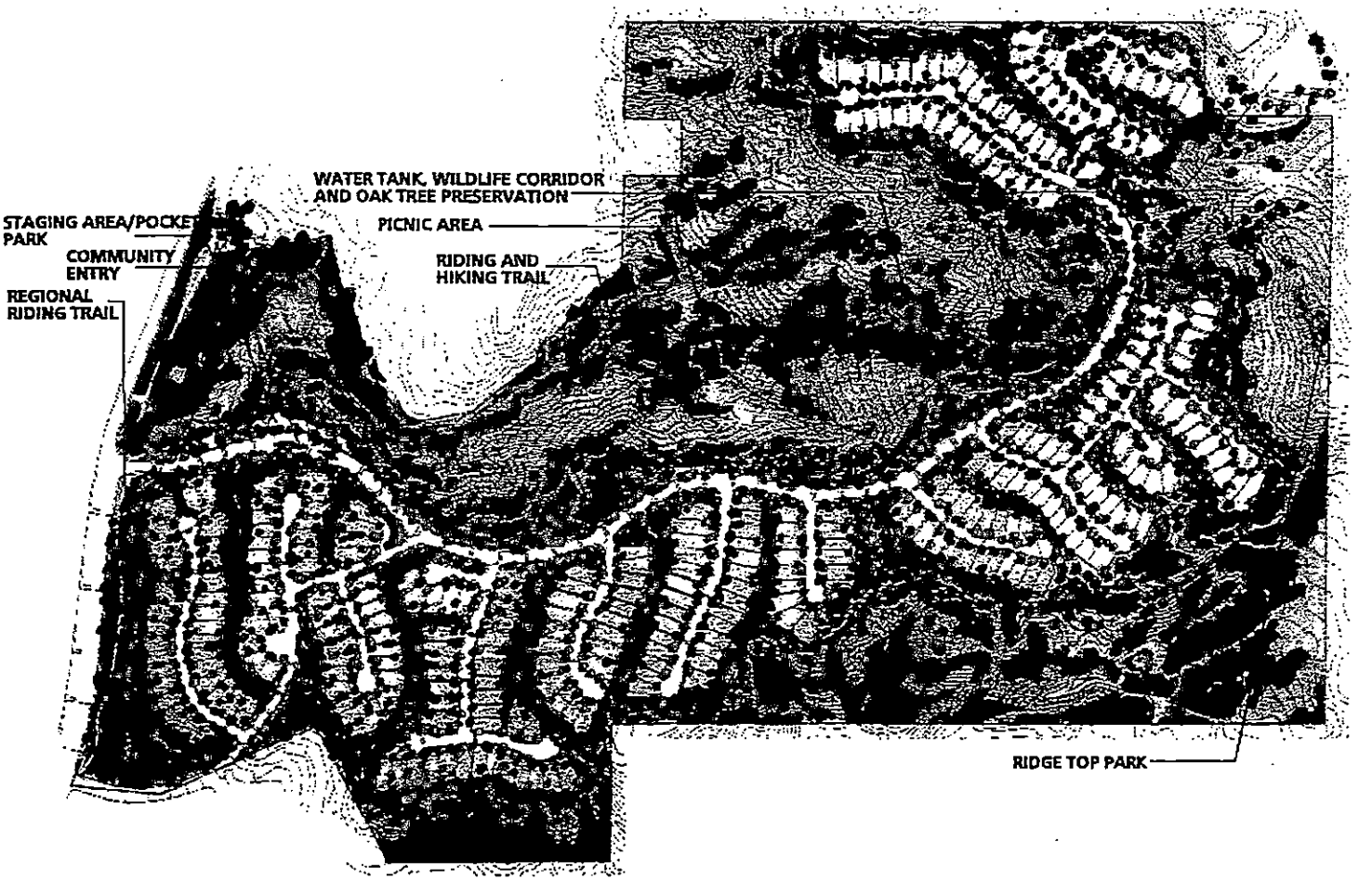
- Glenn Ranch Road (EW)
- Foothill Transportation Corridor (EW)
- El Toro Road (EW)

2. Development Description

The 223 acre project site is currently undeveloped and does not generate any significant traffic. Proposed uses for the project site include 299 single-family detached dwelling units. The site plan for the project is shown on Exhibit 1-B.

EXHIBIT 1-B

SITE PLAN



3. Principal Findings

The proposed development is projected to generate a total of approximately 3,590 trip-ends per day with 265 vehicles per hour during the AM peak hour and 355 vehicles per hour during the PM peak hour.

For existing traffic conditions, the intersections in the vicinity of the site are operating at Level of Service "D" or better during the peak hours, as shown in Table 2-2. A traffic signal appears to presently be warranted at the following intersection (see Appendix "J"):

El Toro Road (NS) at:

- Live Oak Canyon Road (EW)

For existing plus project traffic conditions, the intersections in the vicinity of the site are projected to continue to operate at Level of Service "D" or better during the peak hours, as shown in Table 4-1. A traffic signal is projected to be warranted at the intersection of El Toro Road/Project Entrance for existing plus project traffic conditions (see Appendix "J").

For Year 2005 traffic conditions, the intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with improvements, as shown in Table 4-4.

For Year 2025 traffic conditions, the intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with improvements that include the ultimate widening of El Toro Road and Santiago Canyon Road to four through travel lanes (two in each direction), as shown in Table 4-7.

Pursuant to the County of Orange Growth Management Plan (GMP), segments of Santiago Canyon Road are required to function at a Level of Service "C". Capacity improvements along Santiago Canyon Road will be required in conjunction with future growth to achieve Level of Service "C". The Santiago Canyon Road Major Thoroughfare and Bridge Fee Program has been designed to provide up to $34 million in improvements to Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road. However, the March, 1994 Project Report for improvements to Santiago Canyon Road indicates that the total cost of improvements is approximately $52.3 million for a "limited project" scenario.

4. Project Recommendations

The proposed project will have primary access to El Toro Road. The El Toro Road turn-lane improvements needed at the Project Entrance to serve Year 2005 conditions should be completed in conjunction with development. Secondary access will be provided via an access to Valley Vista Way.

For Year 2005 and Year 2025 traffic conditions with the project and with off-site improvements, study area intersections that are impacted by the proposed development are projected to operate at Level of Service "D" or better during the peak hours. Significant off-site improvements will be needed at study area intersections to accommodate Year 2025 traffic conditions. Improvements are programmed to be implemented through existing funding programs (i.e., Measure "M", existing road fee programs, etc.) and pro-rata participation by individual developments based upon

vesting tentative map conditions and existing development agreements. Potential roadway fees for the Saddleback Meadows development are shown in Table 5-1.

North of the Foothill Transportation Corridor, El Toro Road can accommodate cumulative Year 2025 traffic volumes with the proposed project on four travel lanes divided by a raised or striped median. Exhibit 5-A illustrates the alternative cross-sections for El Toro Road in the vicinity of the project. Implementation of a full Major arterial cross-section (six lanes divided) is not needed to serve future traffic volumes.

Exhibit 5-A depicts an alternative section which would provide four travel lanes along El Toro Road divided by a striped median. This alternative section represents a modification of the typical cross-section for a Primary arterial. Appropriate transitions would be required between this cross-section and other modified cross-sections along El Toro Road south of Glenn Ranch Road.

It is anticipated that the main project access point to El Toro Road will require a traffic signal in conjunction with the project. The project should provide this improvement as well as a southbound left turn lane and northbound right turn lane on El Toro Road at the project entry.

In order to accommodate the anticipated traffic and the potential traffic signal, it is recommended that the entry street to Saddleback Meadows be designed as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12 foot exiting lanes and two 12 foot entering lanes with a 10 foot median. The Collector cross-section should be maintained for approximately 160 feet where it could then

be transitioned to a standard 40 foot wide curb-to-curb width Collector roadway, as shown on Exhibit 5-B.

Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan.

The project should participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Program, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program.

Sight distance at each of the project access intersections should be reviewed with respect to Standard Plan Number 1117 (see Appendix "K") in conjunction with the preparation of precise grading and landscape plans.

2.0 AREA CONDITIONS

A. Study Area

1. Area of Significant Traffic Impact

Existing roadways in the study area include the Foothill Transportation Corridor (SR-241), Santiago Canyon Road, El Toro Road, Marguerite Parkway, Portola Parkway, Santa Margarita Parkway, Live Oak Canyon Road, Ridgeline Road, Saddleback Ranch Road and Glenn Ranch Road.

Foothill Transportation Corridor (SR-241) extends south to Oso Parkway and north to the Eastern Transportation Corridor. The construction of corridors has resulted in a significant reduction in traffic on El Toro Road and Santiago Canyon Road near the project study area.

Santiago Canyon Road is classified as a Primary (four-lane divided) Arterial highway on the Orange County Master Plan of Arterial Highways (MPAH). It is currently two lanes in the vicinity of the site. Santiago Canyon Road currently accommodates approximately 5,300 to 5,700 ADT in the study area.

El Toro Road is classified as a Major (six-lane divided) Arterial highway south of Live Oak Canyon Road on the Orange County MPAH. It is partially constructed to its Master Plan classification near Santa Margarita Parkway and has not yet been fully improved in the vicinity of the project site. El Toro Road currently accommodates approximately 6,000 to 9,300 ADT in the study area.

Marguerite Parkway is classified as a Primary (four-lane divided) Arterial highway south of El Toro Road on the Orange County MPAH. Marguerite Parkway in the study area has been fully constructed and currently carries approximately 9,800 ADT in the study area.

Portola Parkway is classified as a Major (six-lane divided) Arterial highway north of El Toro Road to Alton Parkway on the Orange County MPAH. It is fully improved and currently accommodates approximately 24,900 ADT in the study area.

Santa Margarita Parkway is classified as a Major (six-lane divided) Arterial highway on the Orange County MPAH. It has been fully improved to its Master Plan of Arterial Highways classification in the study area. Traffic volumes on Santa Margarita Parkway are approximately 30,400 ADT in the study area.

Live Oak Canyon Road is currently two lanes east of El Toro Road. It currently carries approximately 3,000 ADT in the study area.

Ridgeline Road is currently two lanes west of El Toro Road.

Saddleback Ranch Road is currently two to four lanes in the study area.

Glenn Ranch Road provides a direct connection between El Toro Road south of the project site and Portola Parkway north of the Foothill Transportation Corridor (SR-241). Glenn Ranch Road is classified as a Primary (four-lane divided) Arterial highway on the Orange County MPAH. It is fully constructed and currently carries approximately 11,300 ADT in the study area.

B. Site Accessibility

1. Area Roadway System

Exhibit 2-A identifies the existing roadway conditions for study area roadways. The number of through travel lanes for existing roadways and the existing intersection controls are identified.

2. Existing Master Plan of Arterial Highways

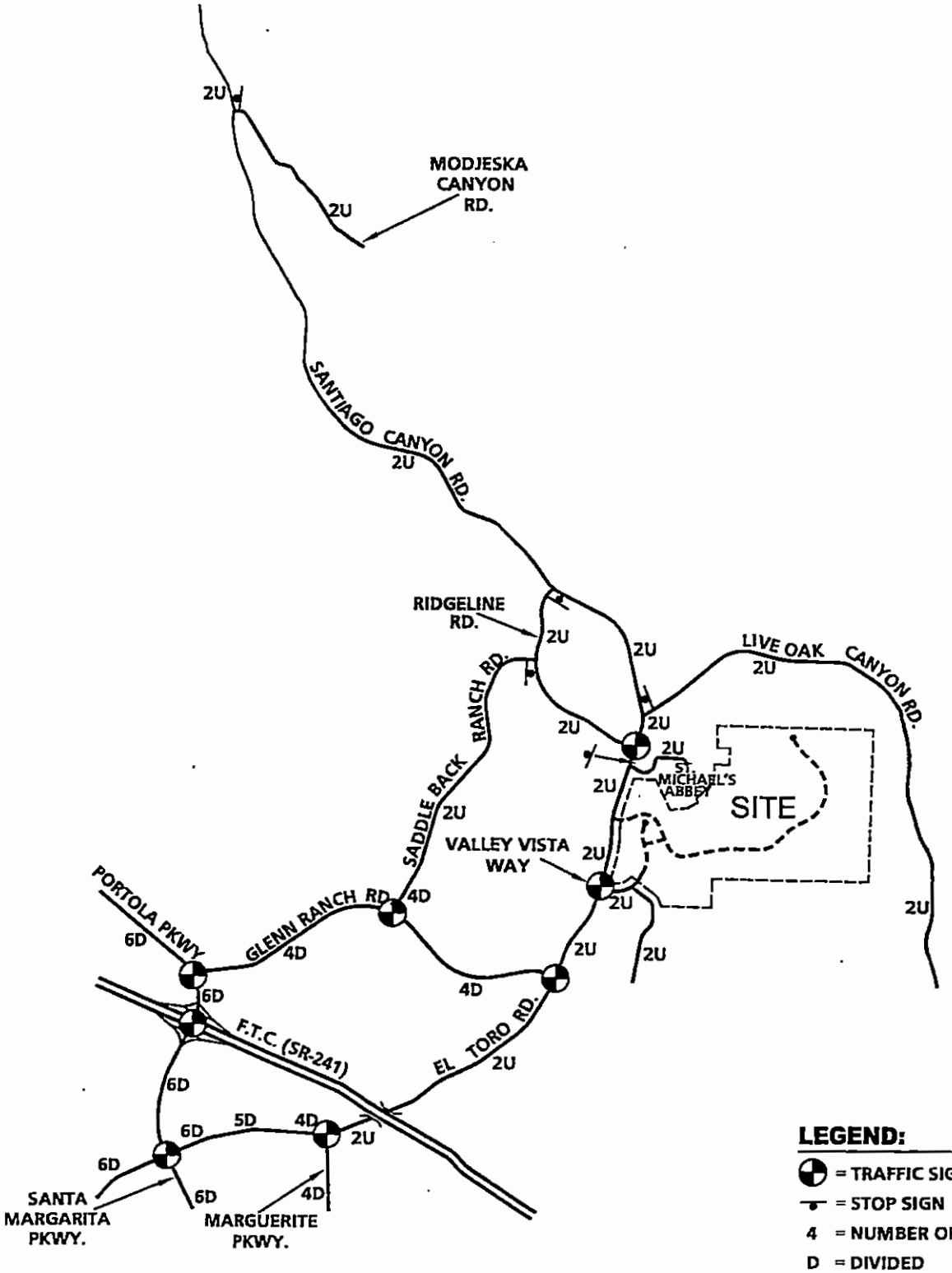
Existing and future roadways are included in the latest Orange County Master Plan of Arterial Highways (MPAH) and are illustrated on Exhibit 2-B. This exhibit shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan and serves to coordinate future arterial highways between local jurisdictions. Exhibit 2-C illustrates the typical Orange County cross-sections and design capacity values for various roadway classifications.

3. Traffic Volumes and Conditions

Existing average daily traffic (ADT) on arterial highways throughout the study area are shown on Exhibit 2-D. Existing ADT volumes are based upon the traffic data collected by the County of Orange and counts made for Urban Crossroads, Inc. in February, 2001 (see Appendix "B"). Additional existing ADT volumes were derived from the existing AM and PM peak hour counts. ADT volumes at these locations were calculated by adding the AM and PM counts and applying a factor of 5.56. This factor has been calculated based upon an analysis of over 200 24-hour traffic counts collected in South Orange County. Typical daily capacity values for arterial highways are shown in Table 2-1.

EXHIBIT 2-A

EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



ORANGE COUNTY MASTER PLAN OF ARTERIAL HIGHWAYS

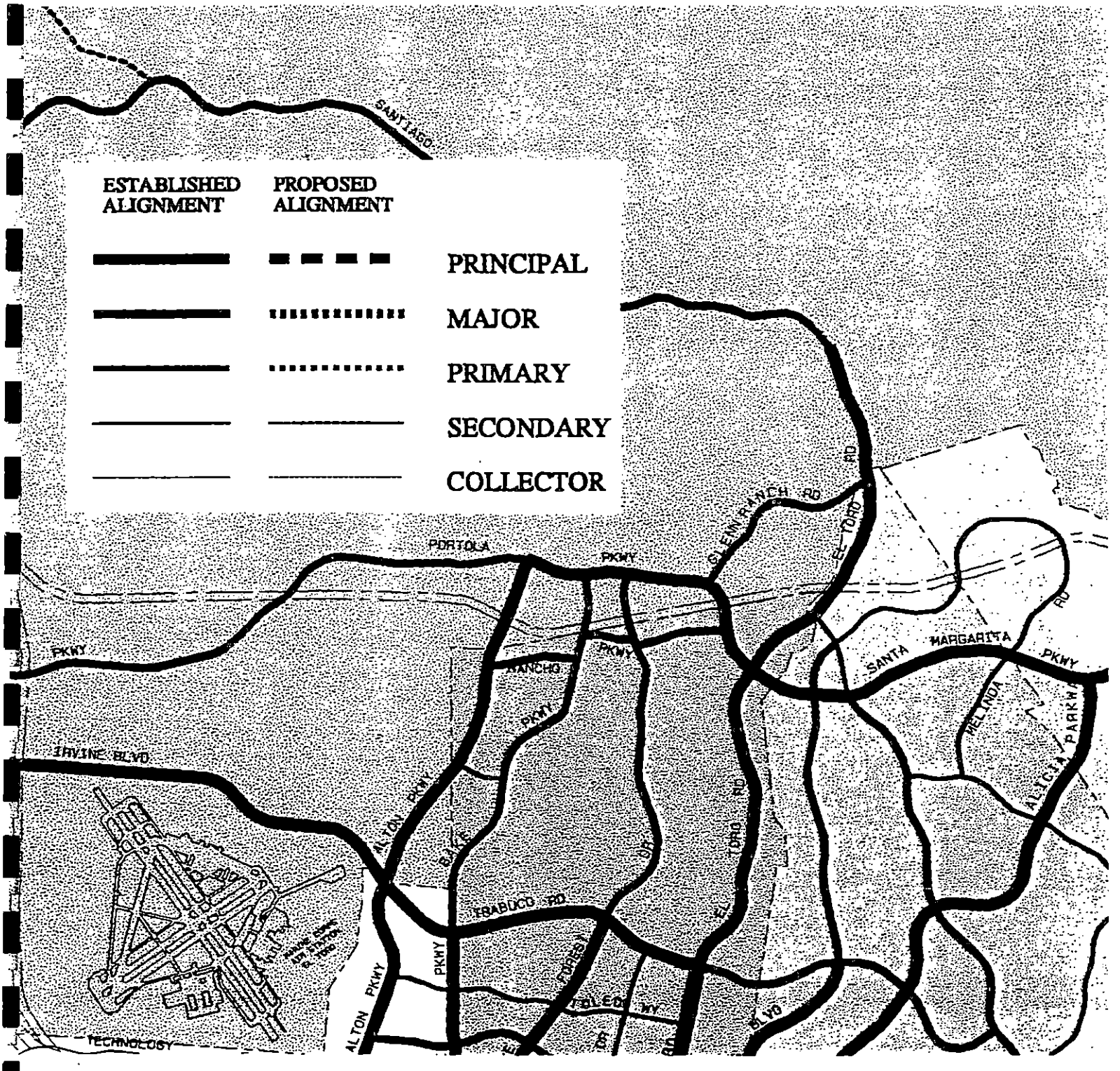
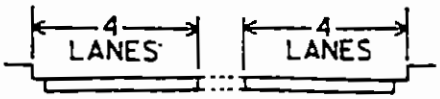


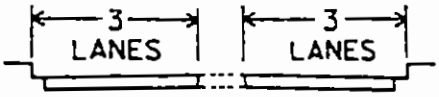
EXHIBIT 2-C

ORANGE COUNTY CROSS-SECTIONS AND LEVEL OF SERVICE "C" ADT VALUES

CLASSIFICATION



PRINCIPAL
8 Lane Divided Roadway
Accommodates 45,000 to 60,000 ADT



MAJOR
6 Lane Divided Roadway
Accommodates 30,000 to 45,000 ADT

PRIMARY
4 Lane Divided Roadway
Accommodates 20,000 to 30,000 ADT

SECONDARY
4 Lane Undivided Roadway
Accommodates 10,000 to 20,000 ADT

COMMUTER
2 Lane Undivided Roadway
Accommodates 7,500 to 10,000 ADT

EXHIBIT 2-D

EXISTING AVERAGE DAILY TRAFFIC (ADT)

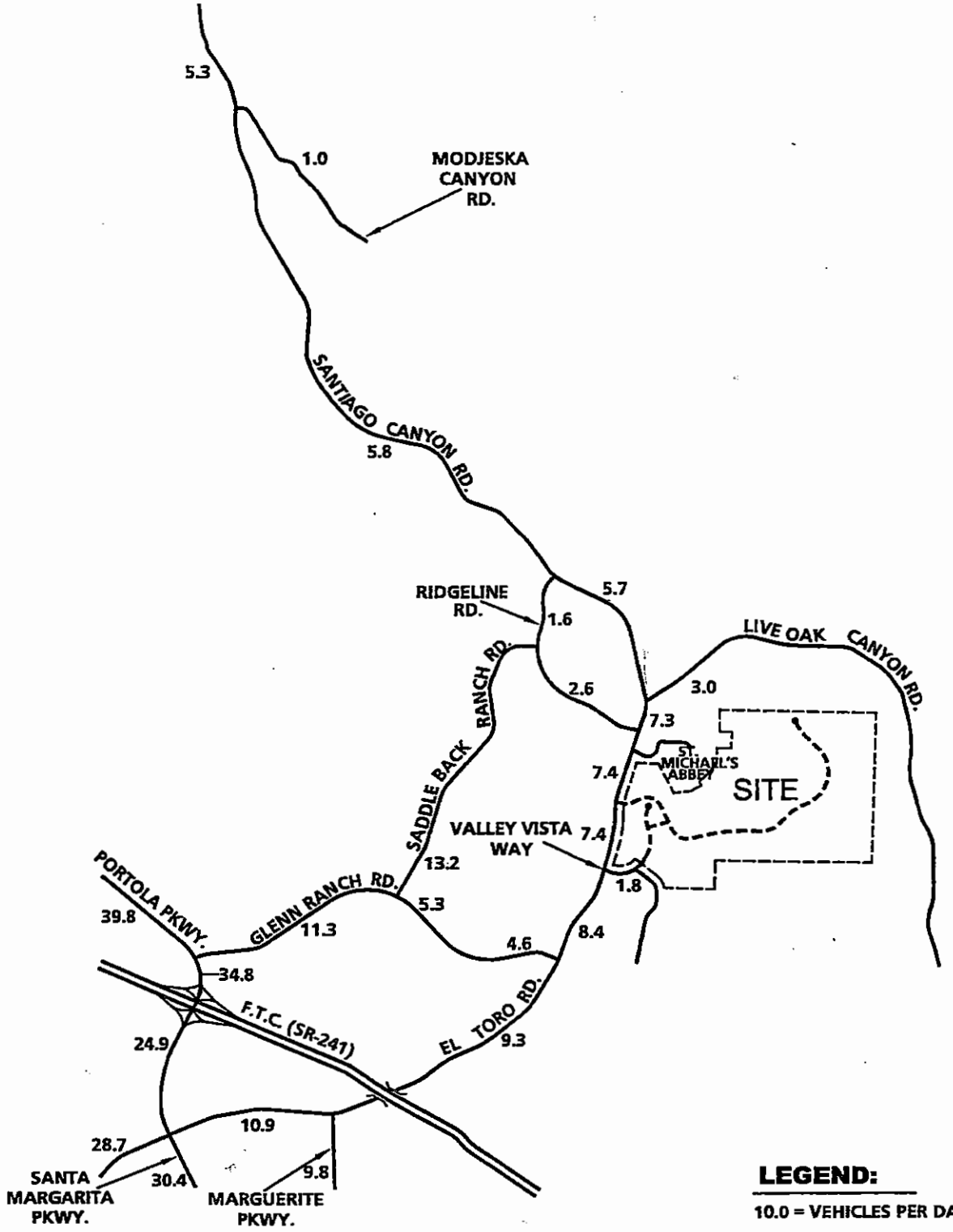


TABLE 2-1

ROADWAY CAPACITY VALUES[1]

FREEWAY SIZES	AT ULTIMATE CAPACITY (LOS "E")
4 lanes	96,000
6 lanes	144,000
8 lanes	192,000
10 lanes	240,000
12 lanes	288,000
14 lanes	336,000

TYPE OF ARTERIAL	LEVEL OF SERVICE				
	A	B	C	D	E
8 lanes divided	45,000	52,500	60,000	67,500	75,000
6 lanes divided	33,900	39,400	45,000	50,600	56,300
4 lanes divided	22,500	26,300	30,000	33,800	37,500
4 lanes undivided	15,000	17,500	20,000	22,500	25,000
2 lanes divided	11,300	13,200	15,000	17,000	18,800
2 lanes undivided	7,500	8,800	10,000	11,300	12,500

1 These roadway capacities are approximate figures only, and are used at the General Plan level. They are affected by such factors as intersections (numbers & configuration), degree of access control, roadway grades, design geometrics (horizontal & vertical alignment standards), sight distance, level of truck and bus traffic, and level of pedestrian and bicycle traffic. Average daily traffic (ADT) is used by the County as long range planning tool to assist in determining arterial highway classification (number of through lanes) needed to meet traffic demand.

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The technique used to assess the operation of an intersection is known as Intersection Capacity Utilization (ICU). To calculate an ICU the volume of traffic using the intersection is compared with the capacity of the intersection. ICU is usually expressed as a percent. The percent represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. An explanation of Level of Service is included in Appendix "A".

Calculation Method:

a. Intersection Capacity Utilization (ICU) for study area intersections;

b. Saturation Flow Rate:

Saturation flow value of 1,700 vehicles per lane per hour for intersections; no adjustments are used for protected movements with dedicated lanes (including both right and left turns).

c. Lost Time:

A lost time factor of 5% (.05) is applied to the ICU calculations.

d. Level of Service Ranges:

The following thresholds are used in assigning a letter value to the resulting LOS:

LOS	CRITICAL VOLUME TO CAPACITY
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90

E	0.91 - 1.00
F	>1.00

e. Peak-Periods:

Weekday peak-hour analysis periods are defined as follows:

7:00 to 9:00 AM
4:00 to 6:00 PM

f. Peak-Hour:

The highest one-hour period in both the AM and PM peak periods, as determined by four consecutive 15-minute count periods are used in the ICU calculations. Both AM and PM peak hours are studied.

g. Peak-Hour Data Consistency:

Variations in peak-hour volumes can affect LOS calculations because they vary from day-to-day. To minimize these variations, no counts are taken on Mondays, Fridays, holidays or weekends.

h. Right Turn Movements:

If the distance from the edge of the outside through lane is at least 19 feet and parking is prohibited during the peak period, right turning vehicles may be assumed to utilize this "unofficial" right turn lane. Otherwise, all right turn traffic is assigned to the through lane. If a right turn lane exists, right turn activity is checked for conflicts with other critical movements. It is assumed that right turn movements are accommodated during non-conflicting left turn phases (e.g., northbound right turns during westbound left turn phase), as well as

non-conflicting through flows (e.g., northbound right turn movements and north/south through flows. Right turn movements become critical when conflicting movements (e.g., northbound right turns, southbound left turns, and eastbound through flows) represent a sum of V/C ratios which are greater than the normal through/left turn critical movements. Right turn volumes have been reduced by 15% to account for right turns on red.

If a free right turn lane exists (right turns do not have to stop for the signal), a flow rate of 1,700 vehicles per hour per lane is assumed. The V/C ratio of the right turn lane is reported but not included in the sum of the critical V/C ratios.

The ICU's for the intersections in the vicinity of the site are shown in Table 2-2. Existing ICU's are based upon manual AM and PM peak hour turning movement counts made for Urban Crossroads, Inc. in February, 2001 (see Exhibits 2-E and 2-F). The existing intersection lanes for the study area intersections are depicted on Exhibit 2-G.

Traffic count worksheets are included in Appendix "B". The intersections in the vicinity of the site are currently operating at Level of Service "D" or better during the peak hours. ICU calculation worksheets are provided in Appendix "C".

Traffic signals appear to presently be warranted at the following intersections (see Appendix "I"):

El Toro Road (NS) at:

- Live Oak Canyon Road (EW)

TABLE 2-2

EXISTING INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.33	0.22	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.29	0.22	A	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.30	0.30	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.38	0.32	A	A
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.36	0.37	A	A
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.37	0.40	A	A
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.41	0.56	A	A
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.27	0.40	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	0	3	1	2	3	0	0	0	0	2	0	1>>	0.62	0.50	A	A
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.54	0.79	A	C
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.75	0.65	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

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EXHIBIT 2-E

EXISTING AM PEAK HOUR INTERSECTION VOLUMES

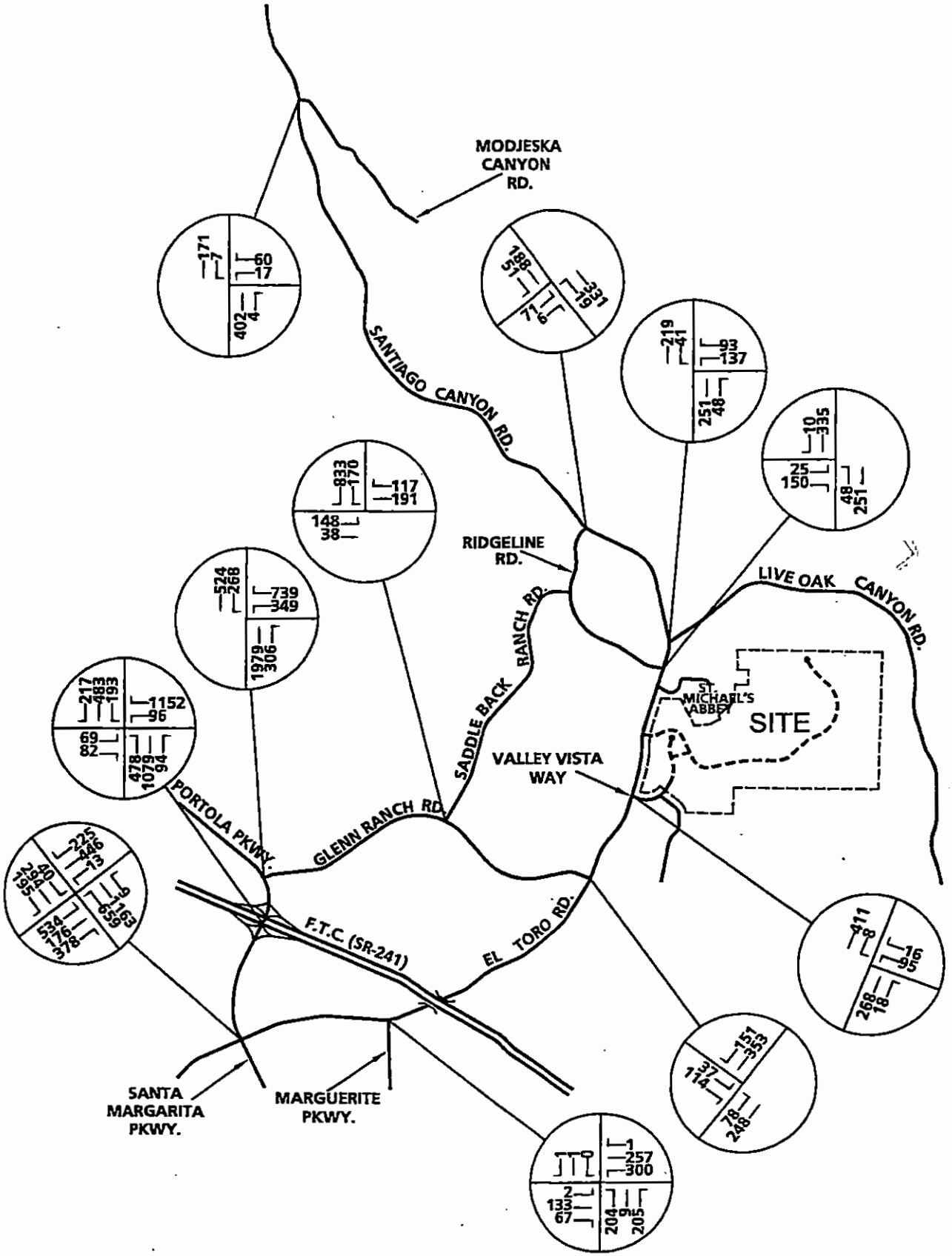


EXHIBIT 2-F

EXISTING PM PEAK HOUR INTERSECTION VOLUMES

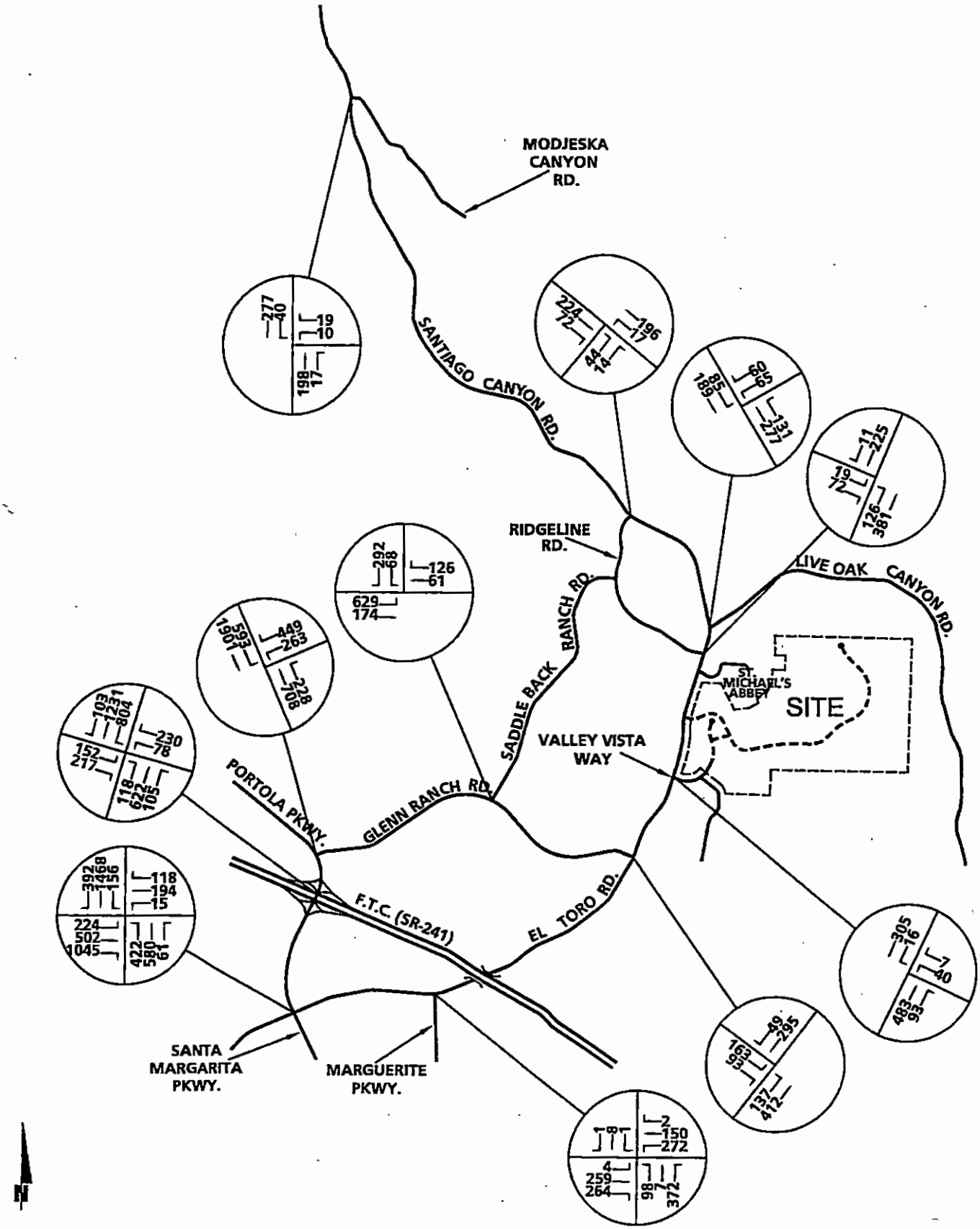
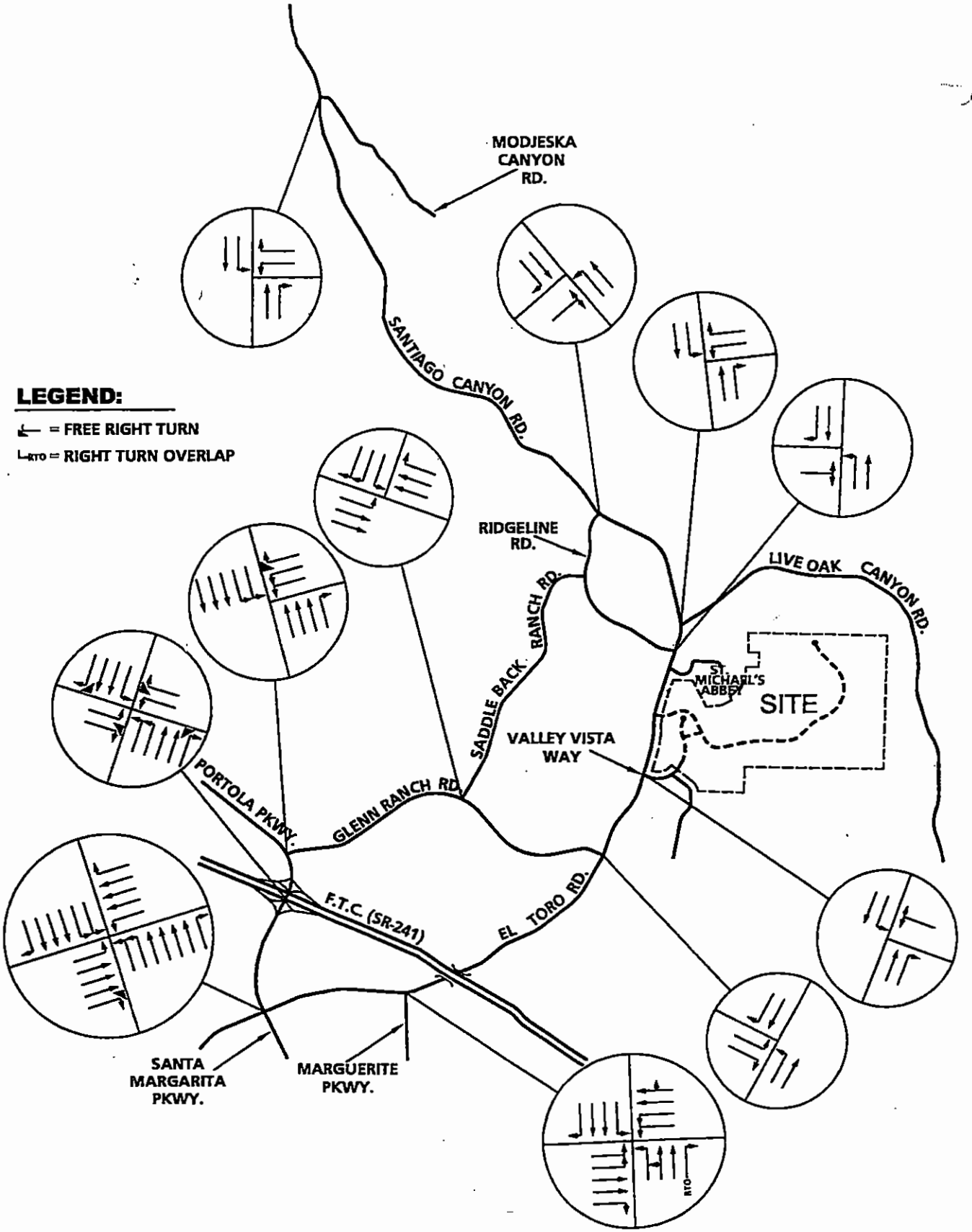


EXHIBIT 2-G

EXISTING INTERSECTION LANES



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3.0 PROJECTED TRAFFIC

A. Site Traffic

1. Trip Generation

Trip generation represents the amount of traffic which is attracted and produced by a development. The proposed project includes 299 single-family detached dwelling units.

Trip generation rates for this project are shown in Table 3-1. The daily trip generation rates used in this analysis were provided by the County of Orange. These rates are consistent with the recently approved Saddle Creek/Saddle Crest traffic study prepared by Austin-Foust Associates, Inc. in March of 2000.

Both daily and peak-hour trip generation for the proposed project are shown in Table 3-2. The Saddleback Meadows development is projected to generate a total of approximately 3,590 trip-ends per day with 265 vehicles per hour during the AM peak hour and 355 vehicles per hour during the PM peak hour.

Compared to the recorded map, this represents a decrease of 275 and 470 vehicles per hour during the AM and PM peak hours, respectively. Table 3-3 presents a comparison of the currently proposed 299 single-family unit project with the previously recorded Tract Map (TT 10692).

TABLE 3-1

TRIP GENERATION RATES

LAND USE	UNITS[2]	PEAK HOUR[1]				DAILY[3]
		AM		PM		
		IN	OUT	IN	OUT	
Single-Family Detached	DU	0.24	0.65	0.76	0.44	12.00

[1] Source: Foothill/Trabuco Specific Plan Traffic Analysis (Austin-Foust Associates, Inc., July 1991.)

[2] DU = Dwelling Units

[3] Source: County of Orange, Daily Vehicle Trip Generation Rates, August, 1982.

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TABLE 3-2

PROJECT TRIP GENERATION

LAND USE	UNITS[2]	PEAK HOUR[1]				DAILY[3]
		AM		PM		
		IN	OUT	IN	OUT	
Single-Family Detached	299	70	195	225	130	3,590

---

1 All peak hour trips rounded to nearest 5.

2 DU = Dwelling Units

3 All daily trips rounded to nearest 10.

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TABLE 3-3

PROPOSED PROJECT TRIP GENERATION COMPARISON

LAND USE	QUANTITY[2]	PEAK HOUR[1]				DAILY[3]
		AM		PM		
		IN	OUT	IN	OUT	
Single-Family Detached Residential	299 DU	70	195	225	130	3,590
TT 10692 Project (Recorded Map)						
• Manufactured Housing	705 DU	120	355	330	255	5,640
• Commercial Retail	20 TSF	40	25	120	120	2,700
Subtotal		160	380	450	375	8,340
Revised Project Reduction		-90	-185	-225	-245	-4750

---

1 All peak hour trips rounded to nearest 5.

2 DU = Dwelling Units
TSF = Thousand Square Feet

3 Daily trips rounded to nearest 10.

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2. Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the proximity to the regional freeway system, existing/future residential development, other commercial and community facilities. The directional orientation of traffic was determined by evaluating existing and proposed land uses within the community and the Master Plan of Arterial Highways (MPAH).

Trip distribution patterns for this study are consistent with previous traffic studies and were reviewed by County staff prior to completion of this traffic analysis. The trip distribution patterns for the project are graphically depicted on Exhibit 3-A.

3. Modal Split

The traffic reducing potential of public transit has not been considered in this report. Essentially the traffic projections are "conservative" in that public transit might be able to reduce the traffic volumes.

4. Trip Assignment

The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distributions, proposed arterial highway and local street systems. Based on the identified project traffic generation and distributions, the project related daily traffic volumes are shown on Exhibit 3-B The project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-C and 3-D, respectively.

EXHIBIT 3-A

PROJECT TRIP DISTRIBUTION

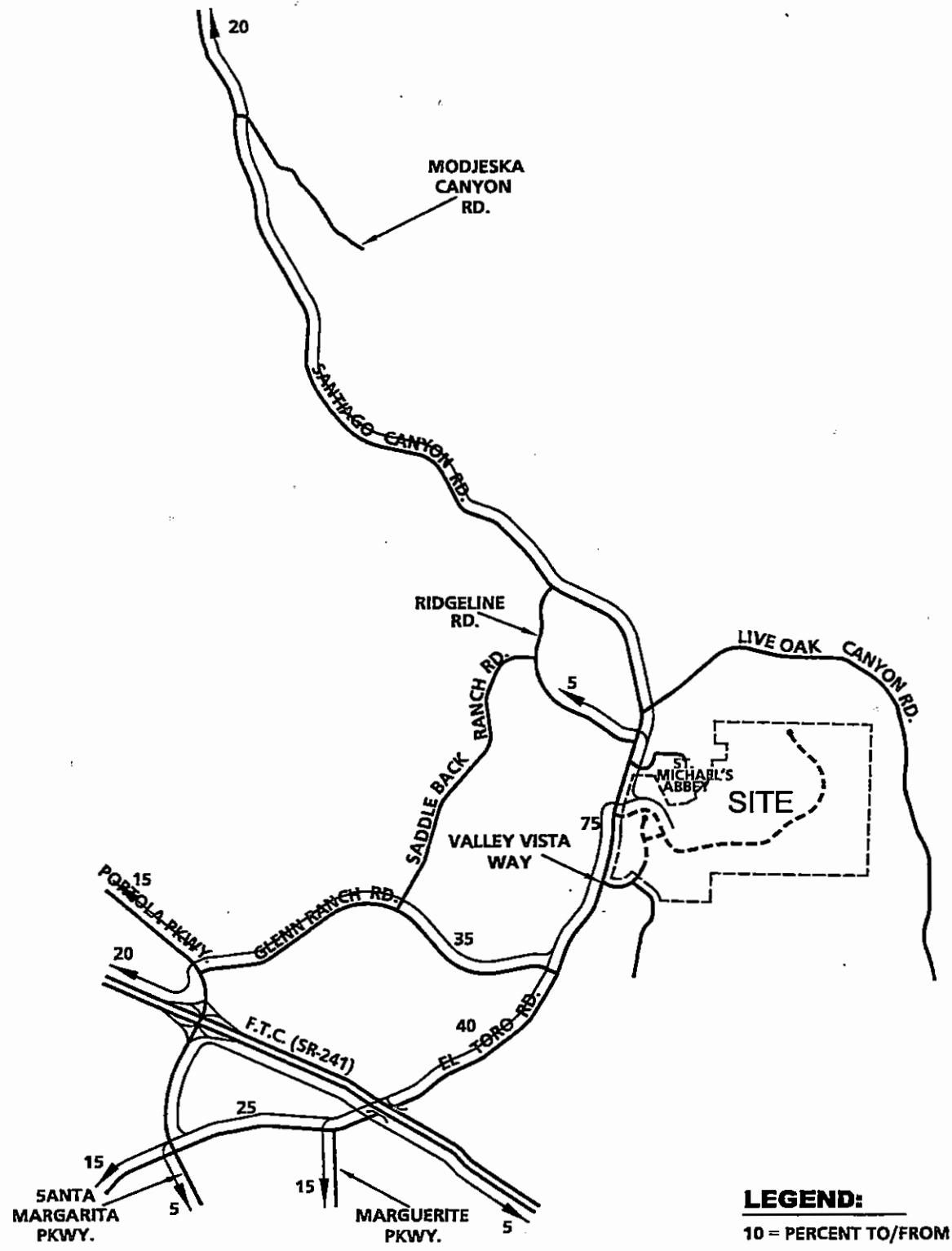


EXHIBIT 3-B

PROJECT AVERAGE DAILY TRAFFIC (ADT)

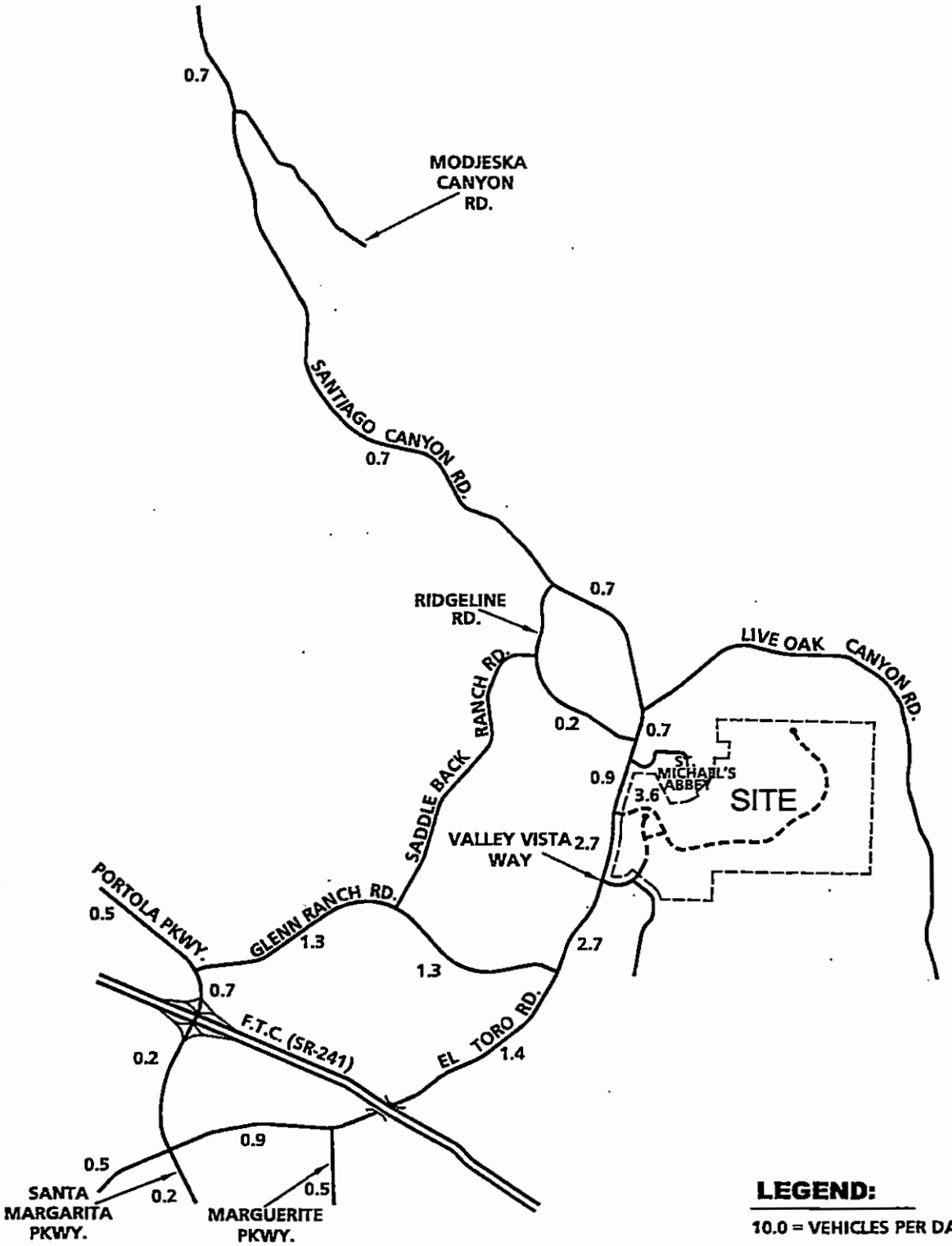


EXHIBIT 3-C

PROJECT AM PEAK HOUR INTERSECTION VOLUMES

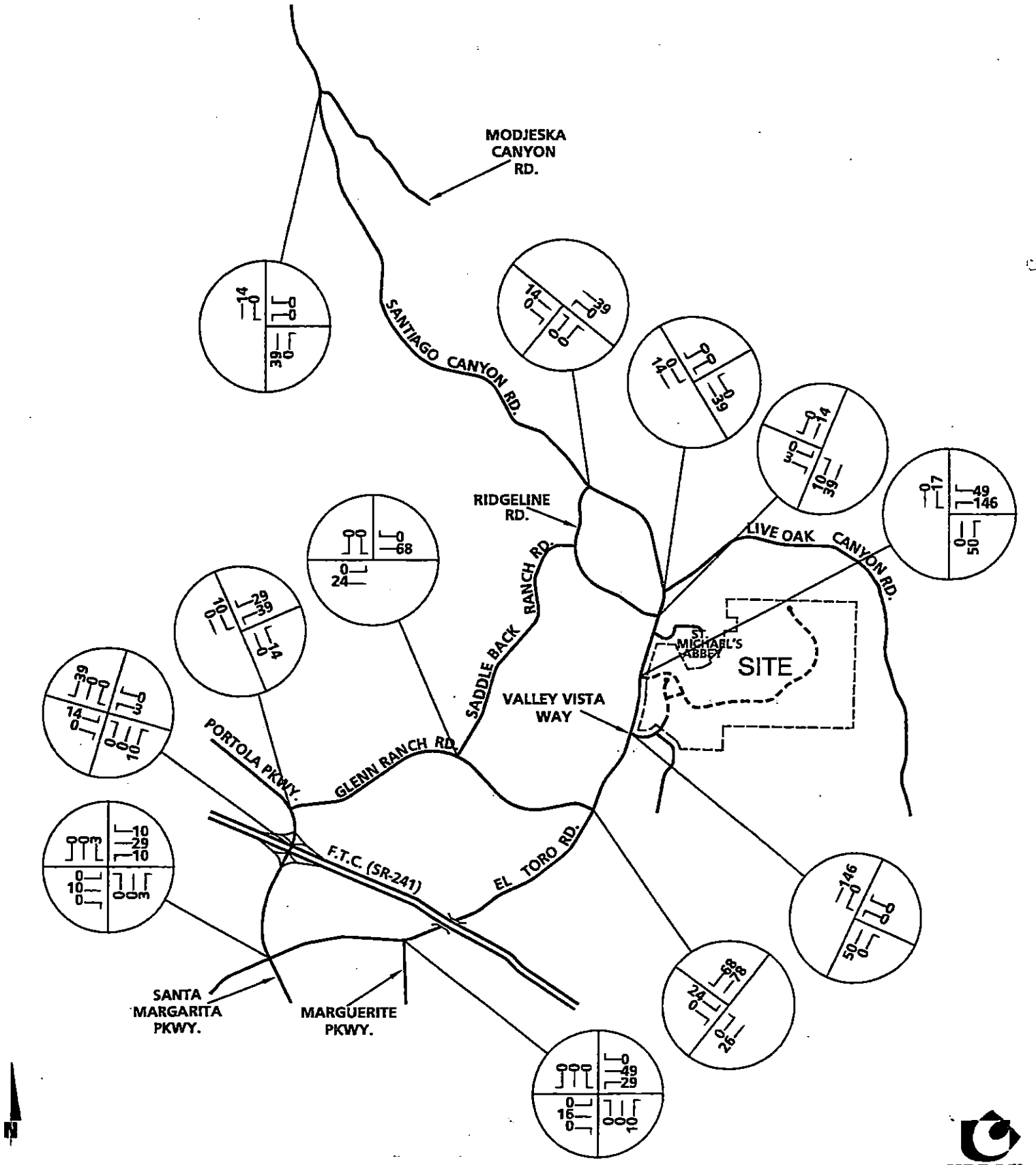
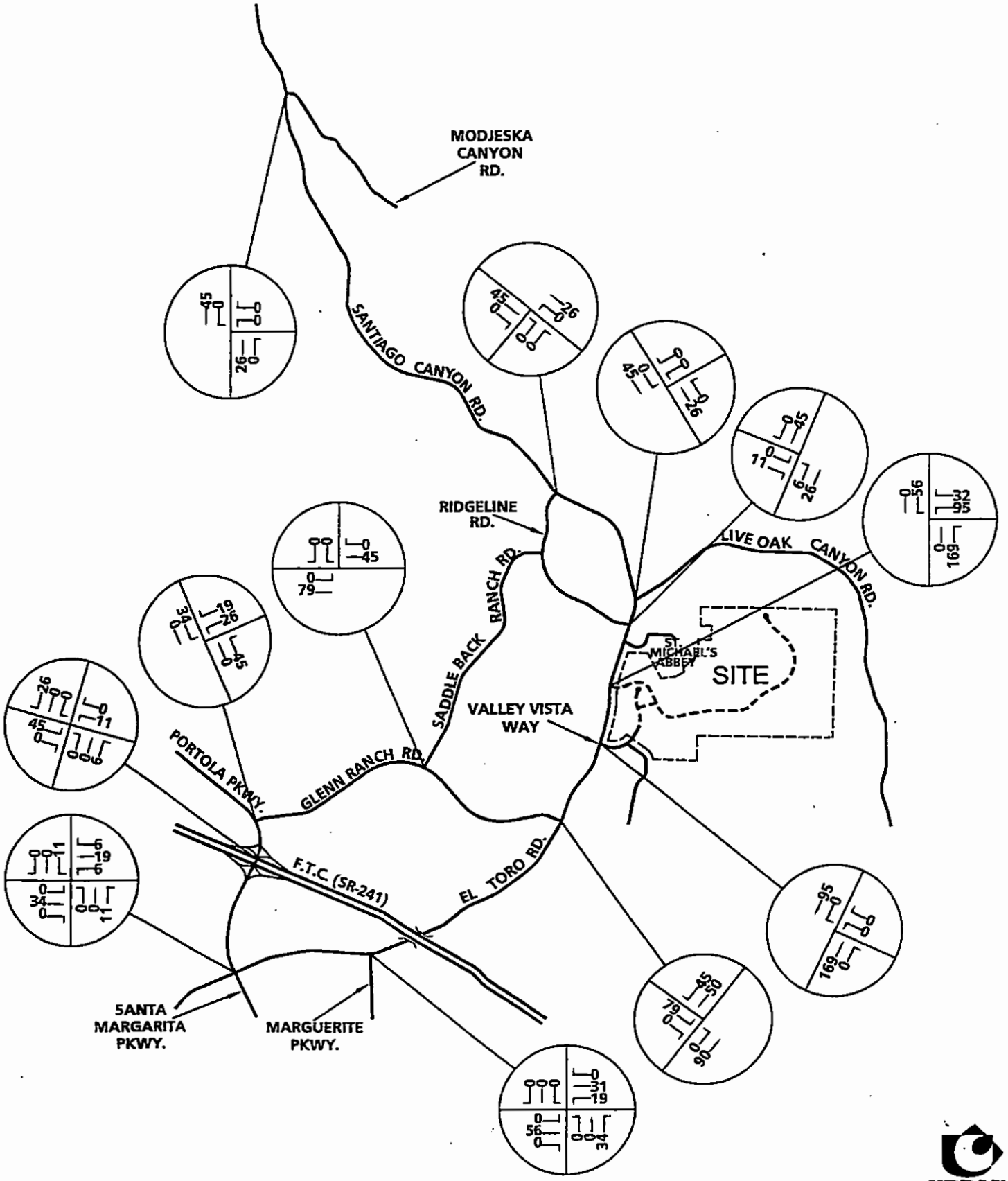


EXHIBIT 3-D

PROJECT PM PEAK HOUR INTERSECTION VOLUMES



B. Other Development Traffic

1. Method of Projection

To develop background traffic projections, Urban Crossroads, Inc. worked with the County of Orange regarding the Year 2005 and Year 2025 traffic projections in the study area. To assess Year 2005 traffic conditions, project traffic, other development and areawide growth were combined. Based on feedback from County staff, an annual growth rate of 3% per year was assumed over a four-year time period (2001 and 2005).

The modeling sources for Year 2025 traffic projections in the study area includes the Orange County Transportation Analysis Model, Version 3.1 (OCTAM 3.1) and the Irvine Transportation Analysis Model ITAM 3.01. The ITAM 3.01 volume forecasts (Run ID 2029) were projected to include the residential portion of the project, therefore, Year 2025 traffic conditions without the project involved subtracting the residential project volumes from the (ITAM 3.01) model. The Year 2025 peak hour forecasts along Santiago Canyon Road were developed using the OCTAM 3.1 daily forecasts, along with peak hour traffic count data collected at each analysis location.

2. Forecast Refinement/Post-Processing

The goal of the future traffic volume forecast refinement or post-processing is to utilize all available data to prepare the best possible estimate of future traffic conditions. The recommended procedure incorporates 2001 traffic count data, 2000 model validation data (Run ID EV42 traffic estimates), and future (raw) model forecasts (Run ID 2029

estimates) as inputs. Development of refined future daily traffic volume forecasts is discussed first. The refined daily traffic volumes are then input to a separate peak hour data refinement and turn movement estimation procedure. Appendix "D" includes the Year 2025 post processing report for the study area intersections.

The future daily volume refinement process is described by the following steps:

1. Determine whether the existing counted volume is greater than the existing modeled volume (Option A) or the existing counted volume is less than the existing modeled volume (Option B).

2A. Use the growth increment (additive) refinement process. Growth is equal to the future model volume minus the existing model volume. The refined future forecast is equal to the existing traffic count plus the growth.

EXAMPLE:

Existing traffic count = 17,000 vehicles per day (vpd)
Existing traffic model estimate = 15,000 vpd
Future traffic model raw forecasts = 24,000 vpd
Calculated growth = 24,000 – 15,000 = 9,000 vpd
Refined future daily traffic volume forecast = 17,000 + 9,000 = 26,000 vpd

2B. Use the growth ratio (multiplicative) refinement process. The forecast refinement ratio is equal to the existing counted traffic volume divided by the existing modeled traffic volume. The forecast refinement ratio is then multiplied by the future model forecast to calculate the refined future daily traffic volume forecast.

EXAMPLE:

Existing traffic count = 25,000 vehicles per day (vpd)
Existing traffic model estimate = 28,000 vpd
Future traffic model raw forecasts = 34,000 vpd
Forecast refinement ratio = 25,000 / 28,000 = 0.893
Ratio refined future forecast = 34,000 * 0.893 = 30,400 vpd
Calculated (refined) growth = 30,400 – 25,000 = 5,400 vpd

There are two minimum growth checks included in the ADT refinement process. The first check is based on a user input segment specific allowable minimum growth percentage. During input, the software provides for a user specified global default that can be modified for each individual segment. For instance, this allows the use to prohibit negative growth throughout the study area, then specify less stringent minimum growth requirements for segments where new parallel capacity is being provided.

The second minimum growth check is only allowed at the global level. It is intended to "smooth" small negative growth (typically less than 10%) that may be caused by the modeling process and is not reasonable (e.g., no new parallel facilities) and no decreases in surrounding development travel activity.

The resulting daily traffic volumes are suitable for reporting, analysis, and input to the future peak hour data refinement process. At new link locations or existing locations where existing counts are very low relative to future projections, raw model assignments are utilized.

The recommended peak hour procedure incorporates existing peak hour intersection counts, existing model validation peak hour link directional data, and future (raw) model peak hour link directional data. The procedure uses model peak hour inbound and outbound traffic flows by intersection leg. Model directional flows are generally considered more reliable than the individual modeled turning movements.

Once the raw model peak period data has been converted to raw model peak hour volumes for each intersection leg approach and departure, the link directional peak hour refinement procedure can be performed. The first two steps of the process are identical to the calculation of refined daily traffic volume forecasts. The result of these first two steps for the peak hour data refinement process is referred to as the initial model derived peak hour growth for purposes of this discussion.

Subsequent steps (3 and on) are:

3. The initial model derived peak hour growth is compared to the daily traffic volume growth at this point in the process. Future peak hour volumes that are less than the existing volume are only allowed if the future daily traffic volume is less than the existing daily traffic volume. Such "negative growth" may be reasonable when a new transportation facility is provided which parallels the route being analyzed. In such instances, negative growth is allowed, consistent with the change in daily volume (e.g., if the future daily traffic volume

is 15% less than the existing daily traffic volume, up to 15% negative growth in the final refined peak hour directional volume is allowed as well). Otherwise, the final refined future peak hour directional volume is adjusted to match the existing peak hour directional volume, eliminating the negative growth that would otherwise occur.

4. The final future refined peak hour directional segment traffic volumes are then used as inputs to the turning movement estimation algorithm. The starting point turn proportion estimates must also be determined. Either existing peak hour intersection turning movement counts (Option A), or weighted exiting (leaving the intersection) volumes on intersection legs (Option B) are used as the basis for determining the starting point turn proportion estimates. Existing traffic counts are used if the counts are representative of future conditions (e.g., no new intersection legs or legs that are underutilized under existing conditions, which render existing turn proportions inappropriate for use under future conditions). Otherwise, starting point turn proportions are determined as described under Step 5B.

If Existing Peak Hour Data Is Available For All Intersection Legs:

5A. Use existing turn movement counts as the starting point for the turning movement algorithm. Apply the NCHRP-255 algorithm. This algorithm was obtained from the report Highway Traffic Data for Urbanized Area Project Planning and Design (National Cooperative Highway Research Program Report 255, Transportation Research Board, 1982, pp. 105-109), commonly referred to as NCHRP-255. The resulting turning movement estimates will sum to the outbound volume which was input for each leg of the intersection.

If Reliable Existing Turning Movement Is Not Available:

5B. Use refined model intersection leg outbound volumes to calculate the starting point turn proportions for the turning movement estimation algorithm. The potential through movement volume is weighted more heavily (Factor of 3.0) to more accurately reflect actual observed traffic volume patterns. Apply the NCHRP-255 algorithm. The resulting turning movement estimates will again sum to the outbound volume which was input for each leg of the intersection.

3. Non-Site Traffic for Study Area

Table 3-4 presents other development planned within the project study area as identified by County of Orange. Other development reviewed in this analysis includes the Live Oak Plaza Traffic Analysis prepared by Kunzman Associates (January 7, 1997) and the Saddle Creek/Saddle Crest Traffic Analysis prepared by Austin-Foust Associates, Inc. in March of 2000.

Table 3-4 presents the daily and peak hour vehicle trips generated by the other development in the study area. Exhibit 3-E illustrates the directional distribution and assignment of Live Oak Plaza. Exhibit 3-F presents the Saddle Creek/Saddle Creek project trip distribution. Based on the identified trip distribution for other development on arterial highways throughout the study area, other development average daily traffic (ADT) are shown on Exhibit 3-G. Other development AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-H and 3-I, respectively.

TABLE 3-4

OTHER DEVELOPMENT TRIP GENERATION

PROJECT	QUANTITY	UNITS	PEAK HOUR AM IN	PEAK HOUR AM OUT	PEAK HOUR PM IN	PEAK HOUR PM OUT	DAILY
Live Oak Plaza[1]							
Shopping Center	41.6	TSF	68	40	205	205	4,476
Gas Station	6	FP	37	36	48	46	1,048
Single Family	3	DU	1	2	2	1	36
TOTAL			106	78	255	252	5,560
Saddle Creek[2]	144	DU	35	94	109	63	1,728
Saddle Crest[2]	56	DU	13	36	43	25	672

[1] Source: Live Oak Plaza Traffic Analysis, Kunzman Associates, January 7, 1997. An additional pass-by percentage of 44% provided within the Kunzman Associates Traffic Analysis has been utilized for the Saddleback Meadows Traffic Analysis.

[2] Source: Saddle Creek & Saddle Crest Residential Project Traffic Analysis, March 2000.

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EXHIBIT 3-E

LIVE OAK PLAZA PROJECT TRIP DISTRIBUTION

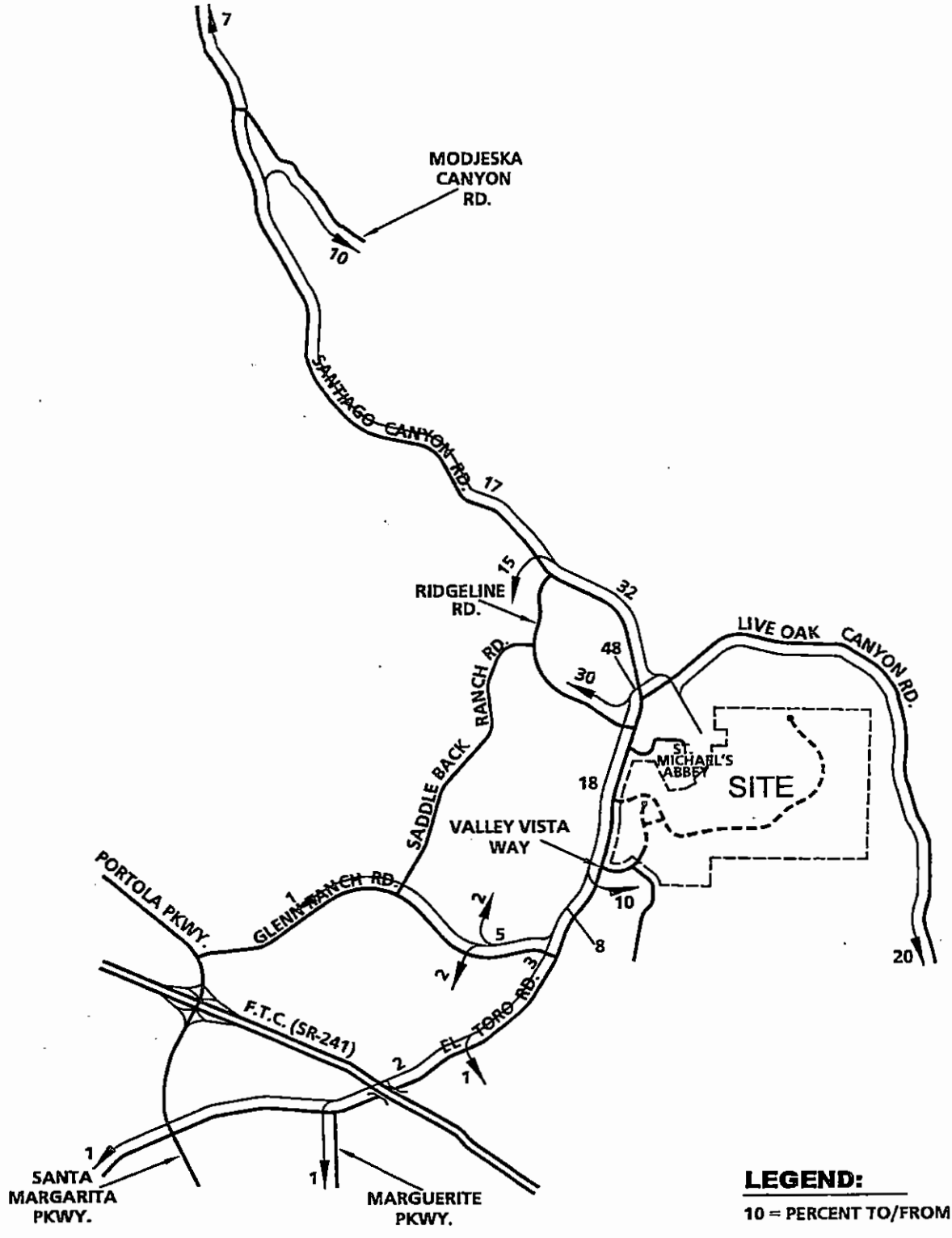


EXHIBIT 3-F

SADDLE CREEK/SADDLE CREST PROJECT TRIP DISTRIBUTION

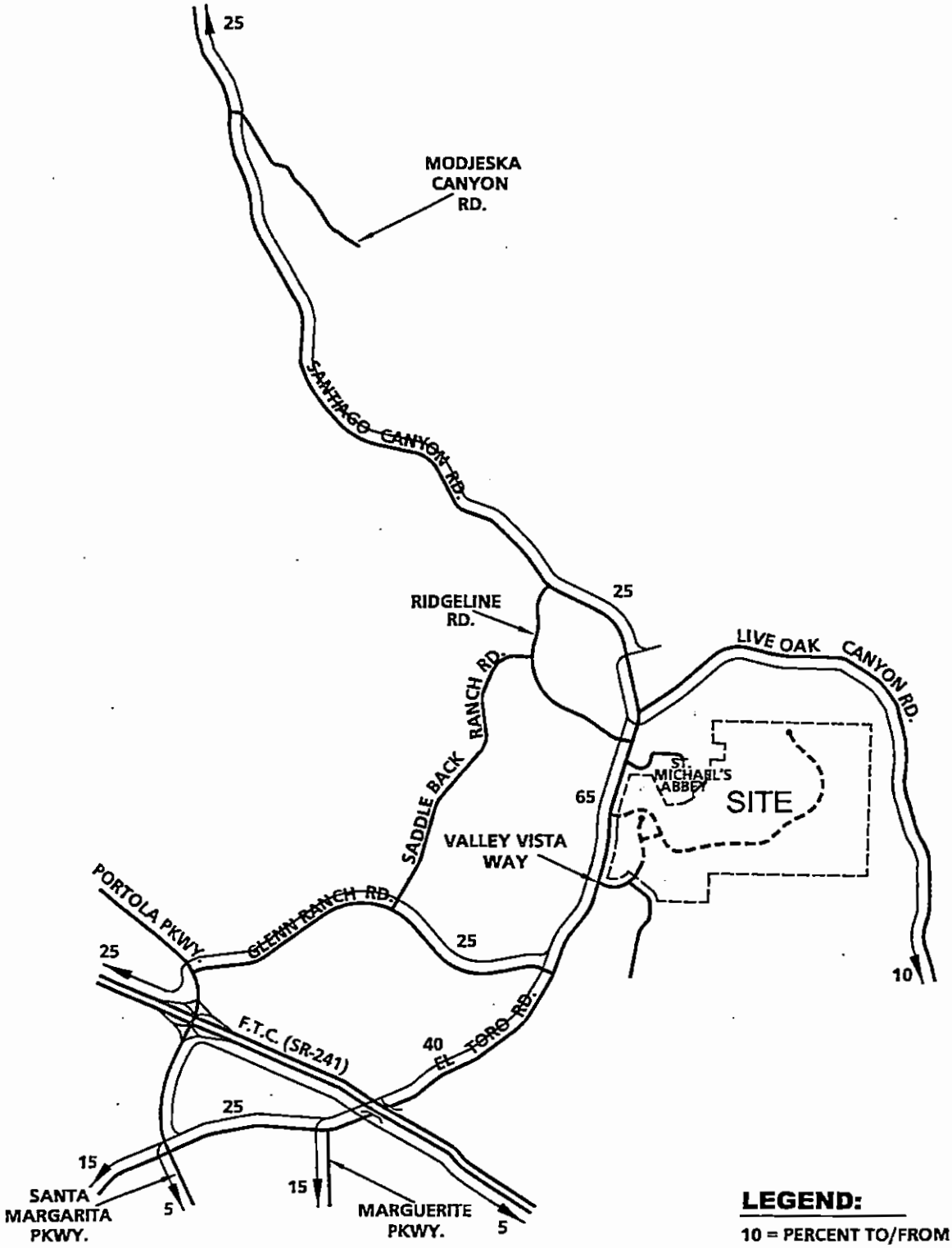


EXHIBIT 3-G

OTHER DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)

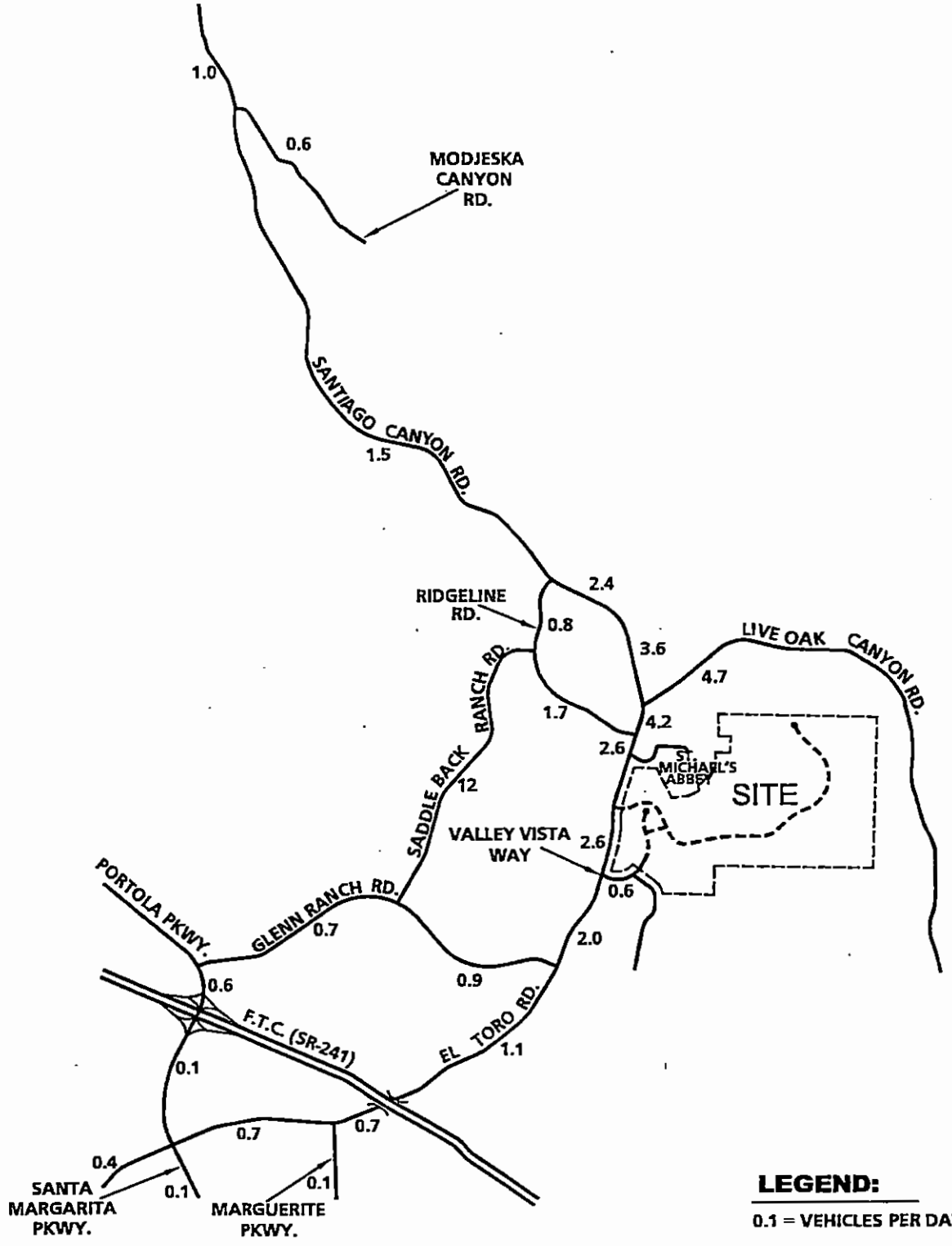
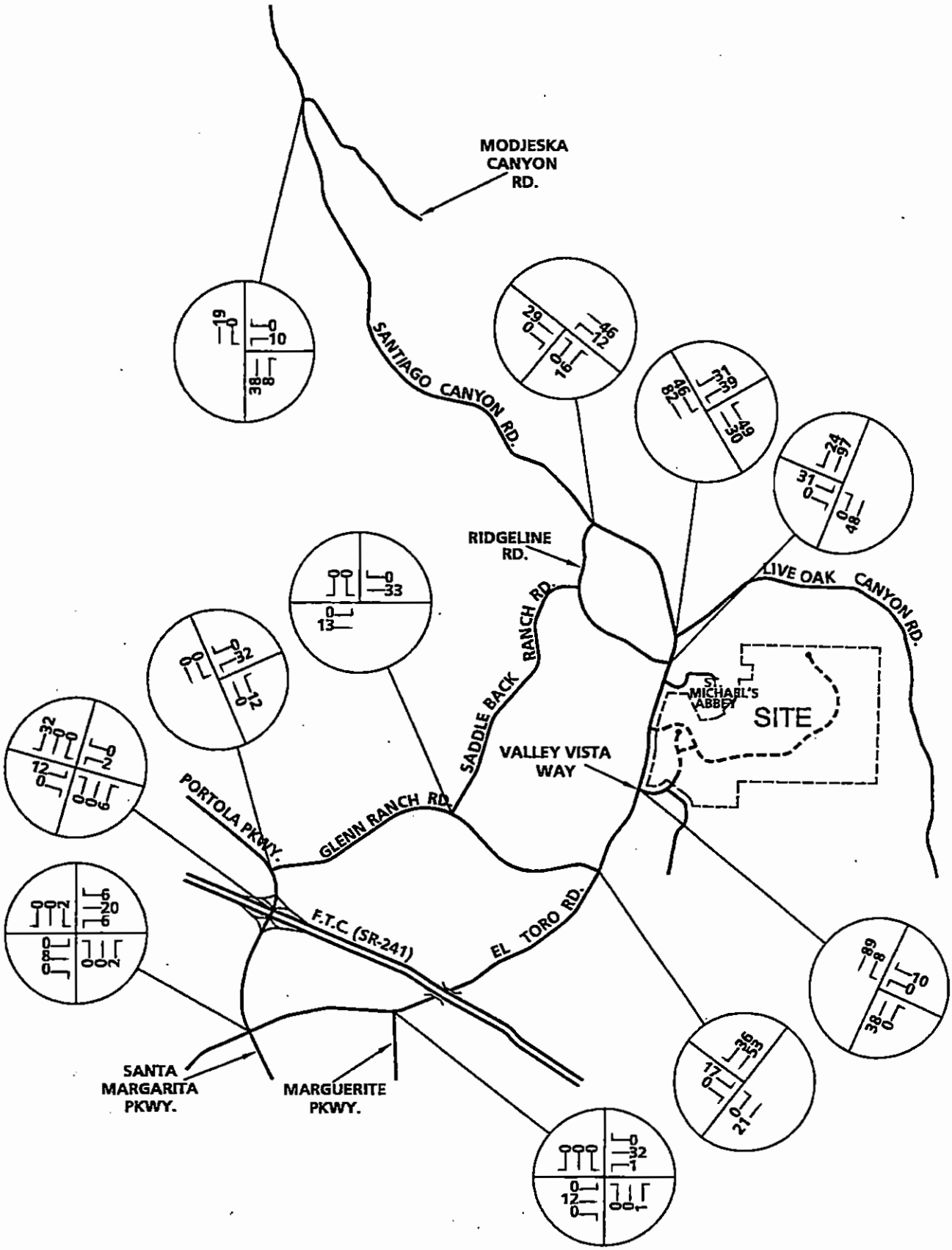


EXHIBIT 3-H

OTHER DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES

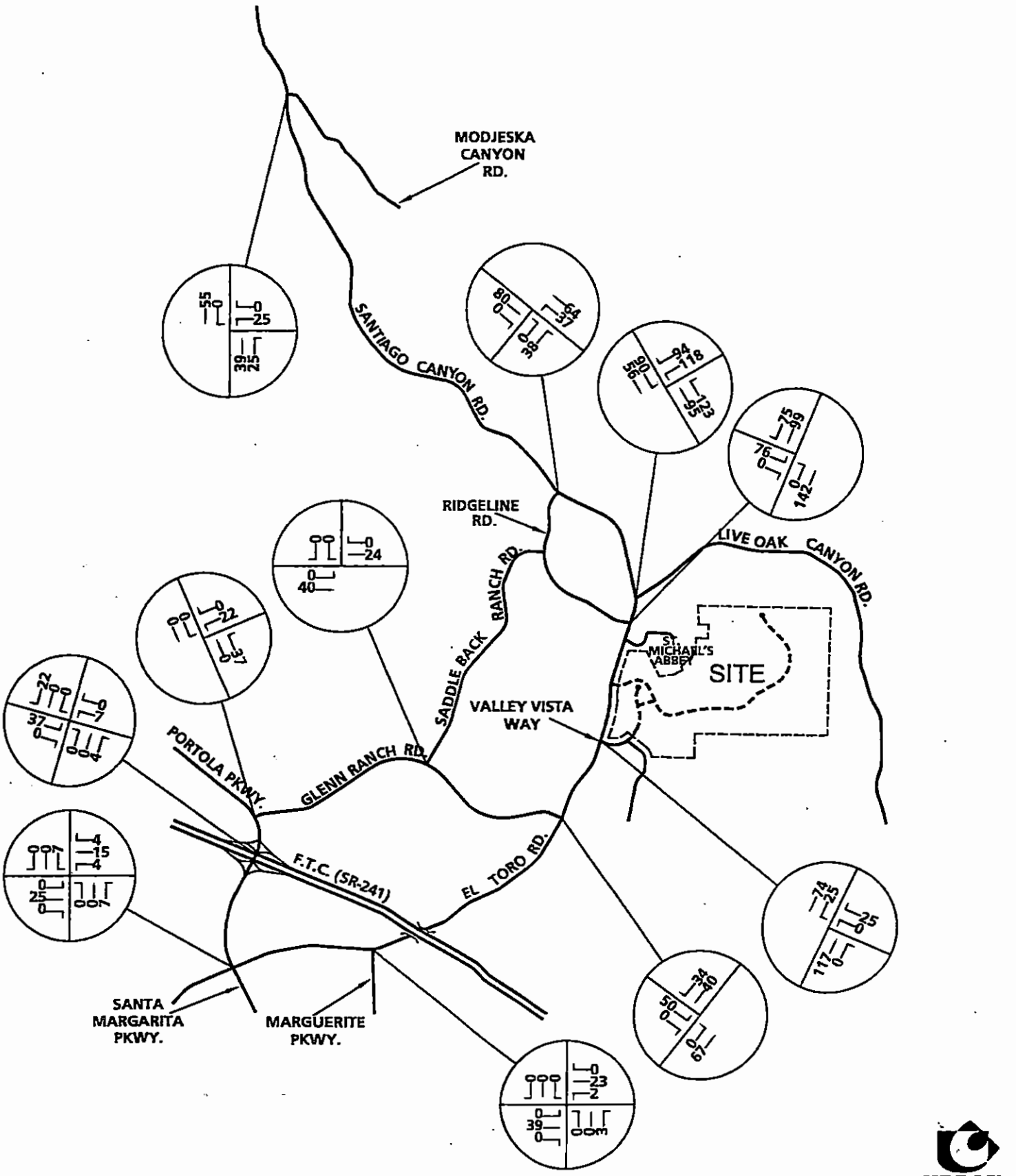


SADDLEBACK MEADOWS, Orange County, California - 00146:35

URBAN CROSSROADS

EXHIBIT 3-I

OTHER DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES



SADDLEBACK MEADOWS, Orange County, California - 00146:36

URBAN CROSSROADS

C. Total Traffic

Once the project related traffic is assigned to the street network (see Exhibit 3-B) and added to existing volumes in the study area, existing plus project ADT volumes can be assessed (see Exhibit 3-J).

Exhibit 3-K shows the ADT volumes which can be expected for Year 2005 traffic conditions without the project. Exhibit 3-L shows the ADT volumes which can be expected for Year 2005 traffic conditions with the project.

Exhibit 3-M shows the ADT volumes which can be expected for Year 2025 traffic conditions without the project. Exhibit 3-N shows the ADT volumes which can be expected for Year 2025 traffic conditions with the project.

Table 3-5 presents a summary of the average daily traffic volumes on Santiago Canyon Road. The revised traffic forecasts for Santiago Canyon Road have been updated to reflect the latest OCTAM 3.1 model forecast volumes. The results of this analysis indicate the future year forecasts for Santiago Canyon Road will range from 16,100 vehicles on El Toro Road between Ridgeline Road and Live Oak Canyon Road to 21,300 vehicles on Santiago Canyon Road between the Eastern Transportation Corridor (ETC) and Modjeska Canyon Road. In light of the recent Irvine company open space dedication, these future traffic volumes may be conservatively high.

EXHIBIT 3-J

EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)

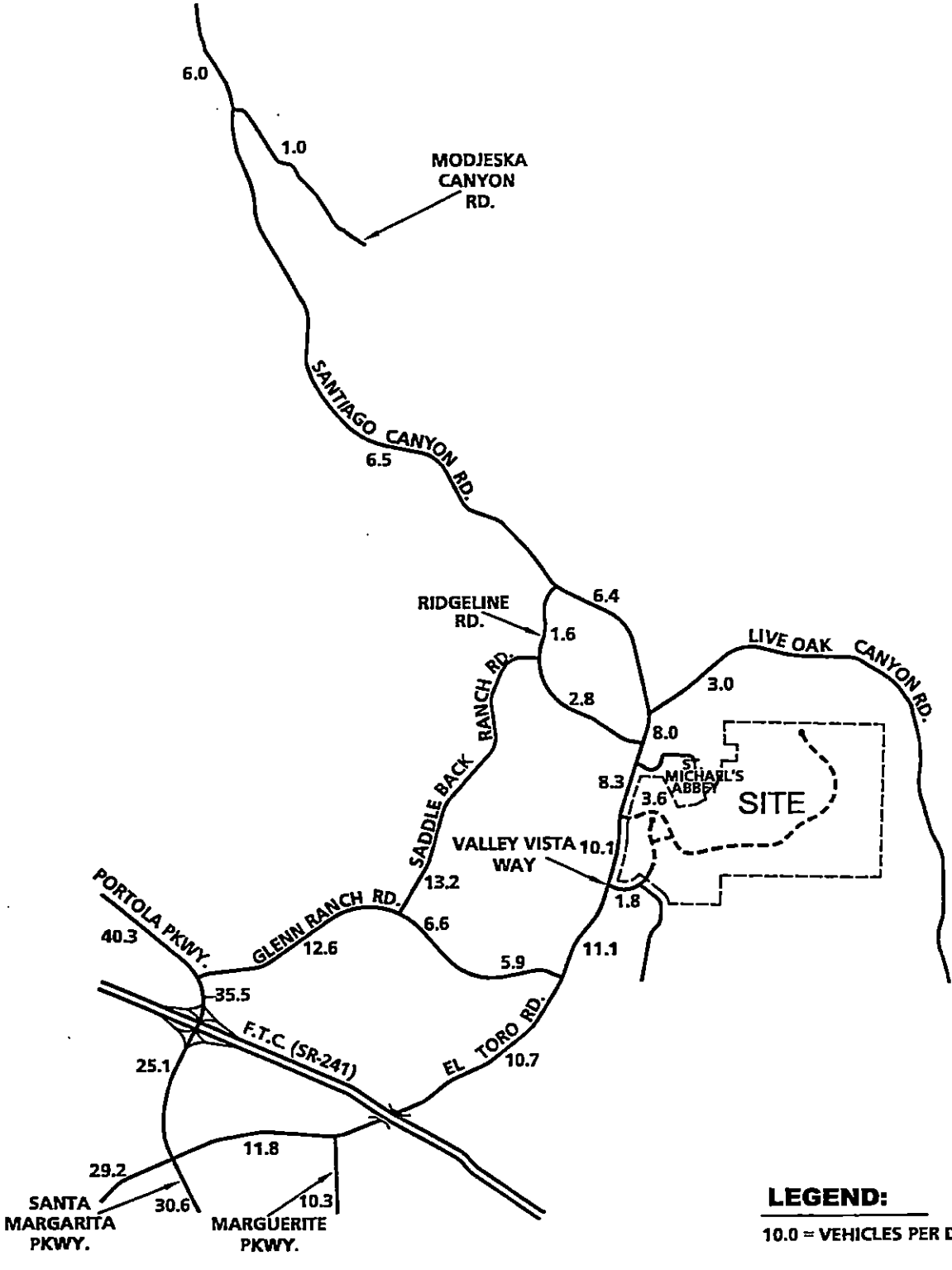
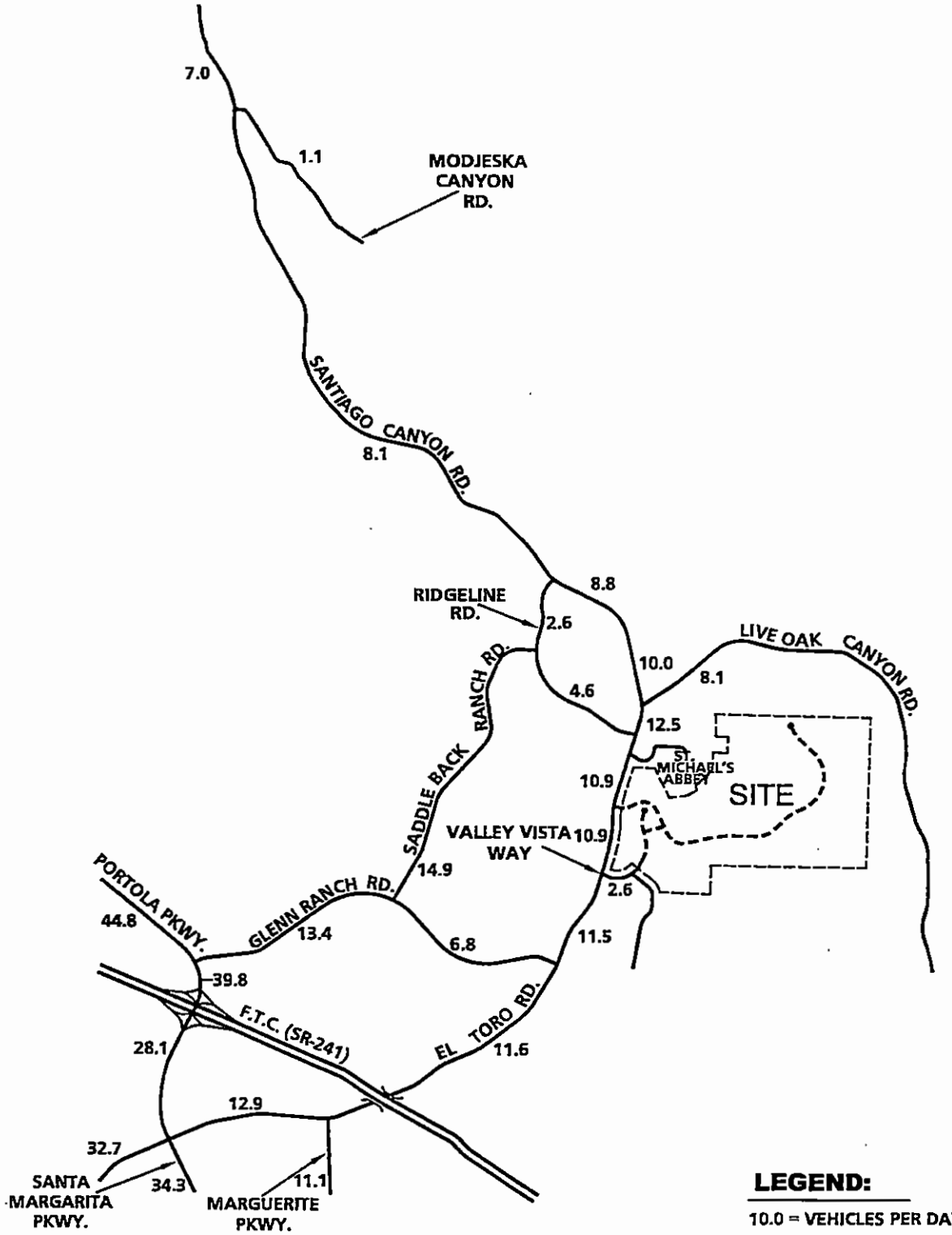


EXHIBIT 3-K

YEAR 2005 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 3-L

YEAR 2005 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)

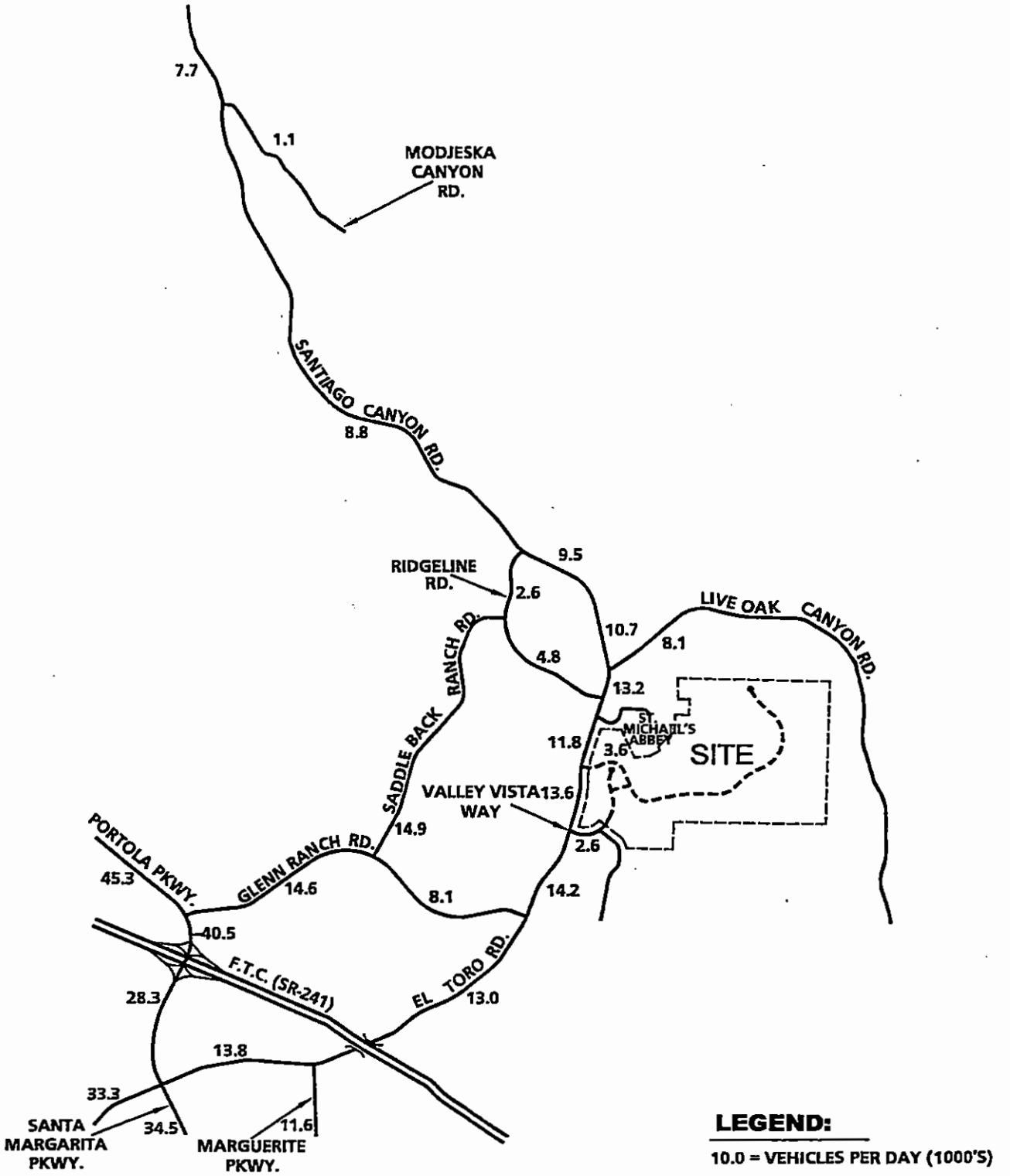


EXHIBIT 3-M

YEAR 2025 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)

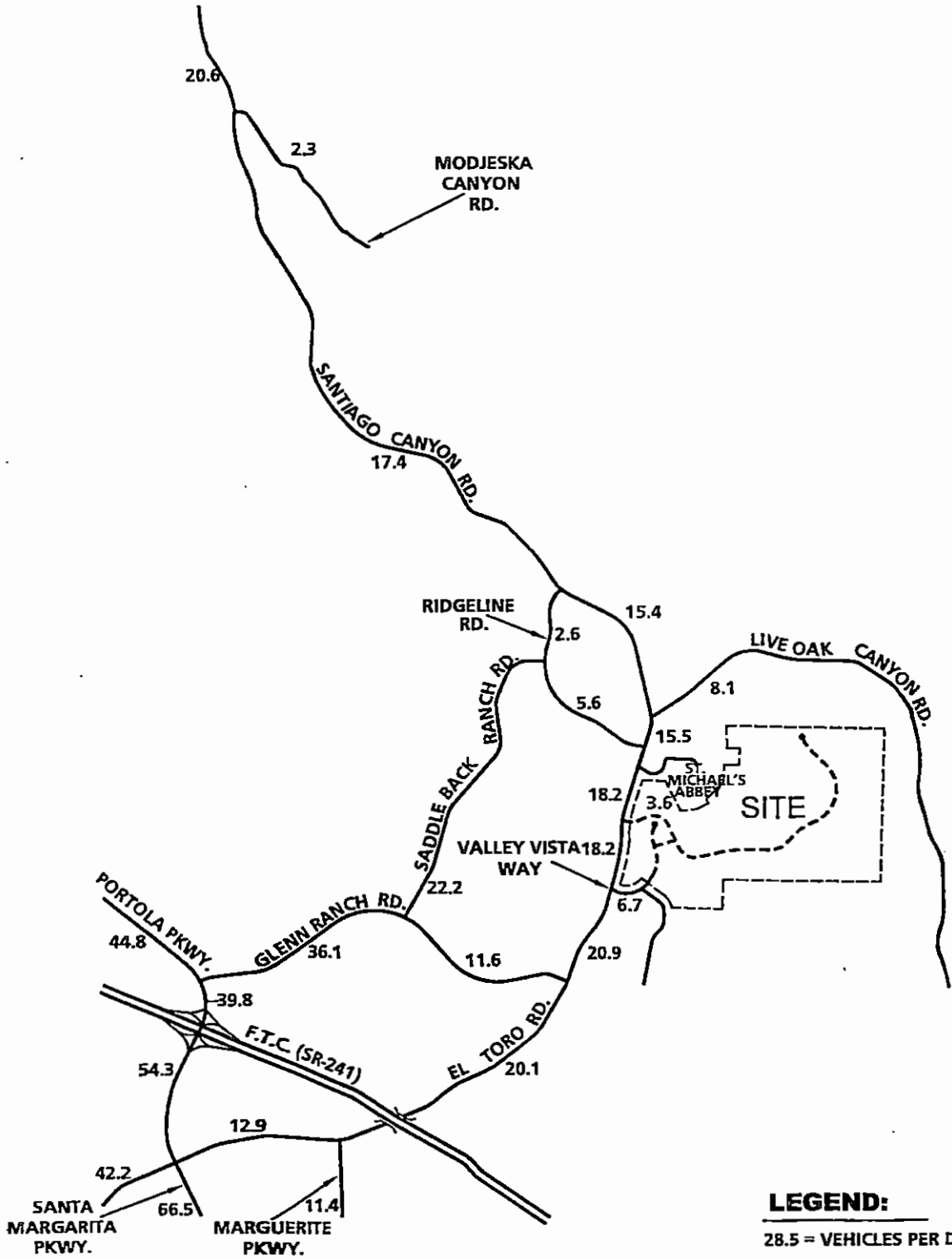


EXHIBIT 3-N

YEAR 2025 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)

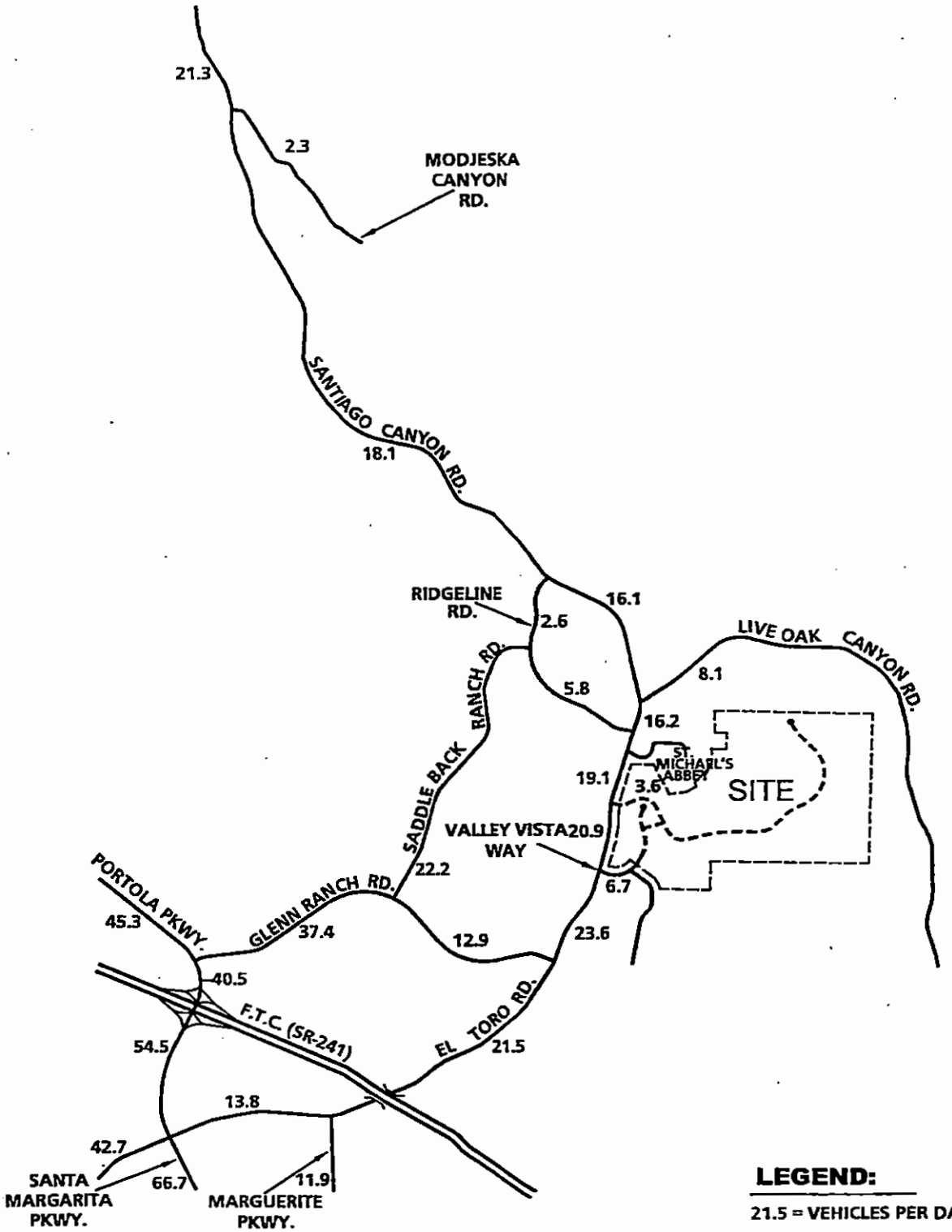


TABLE 3-5

SANTIAGO CANYON ROAD/EL TORO ROAD LINK ANALYSIS

INTERSECTION	ROAD SEGMENT		AVERAGE DAILY TRAFFIC (1000's)					
			EXISTING		YEAR 2005		YEAR 2025	
	FROM	TO	NO PROJECT	WITH PROJECT	NO PROJECT	WITH PROJECT	NO PROJECT	WITH PROJECT
Santiago Cyn. Rd.	ETC (SR-241)	Modjeska Cyn Rd.	5.3	6.0	7.0	7.7	20.6	21.3
	Modjeska Cyn Rd.	Ridgeline Rd.	5.8	6.5	8.1	8.8	17.4	18.1
El Toro Rd.	Ridgeline Rd.	Live Oak Cyn Rd.	5.7	6.4	10.0	10.7	15.4	16.1
	Live Oak Cyn Rd.	Ridgeline Rd.	7.3	8.0	12.5	13.2	15.5	16.2
	Ridgeline Rd.	Valley Vista Way	7.4	10.1	10.9	13.6	18.2	20.9
	Valley Vista Way	Glenn Ranch Rd.	8.4	11.1	11.5	14.2	20.9	23.6

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4.0 TRAFFIC ANALYSIS

A. Capacity and Level of Service and Improvement Analysis, Existing Plus Project

1. Level of Service at Existing Plus Project

Intersection Capacity Utilization (ICU) for existing plus project traffic conditions have been calculated and are shown in Table 4-1. Table 4-1 shows ICU calculations at the study area intersections without improvements. Existing plus project AM and PM peak hour turning movement volumes are shown on Exhibits 4-A and 4-B, respectively.

As shown in Table 4-1, intersections in the vicinity of the site are projected to continue to operate at Level of Service "D" or better during the peak hours. ICU calculation worksheets are included in Appendix "E". A traffic signal is projected to be warranted at the intersection of El Toro Road/Project Entrance for existing plus project traffic conditions (see Appendix "I").

B. Capacity and Level of Service and Improvement Analysis, Year 2005

1. Level of Service at Year 2005 Without Project

Intersection Capacity Utilization (ICU) for Year 2005 traffic conditions without the project have been calculated and are shown in Table 4-2. Table 4-2 shows ICU calculations at the study area intersections without the project, without improvements. Year 2005 AM and PM peak hour turning movement volumes without the project are shown on Exhibits 4-C and 4-D, respectively.

TABLE 4-1

EXISTING PLUS PROJECT
INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.35	0.25	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.32	0.25	A	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.32	0.32	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.39	0.35	A	A
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.43	0.43	A	A
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.45	0.47	A	A
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.41	0.49	A	A
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.43	0.56	A	A
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.28	0.42	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	0	3	1	2	3	0	0	0	0	2	0	1>>	0.63	0.51	B	A
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.54	0.82	A	D
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.76	0.65	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

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EXHIBIT 4-A

EXISTING PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES

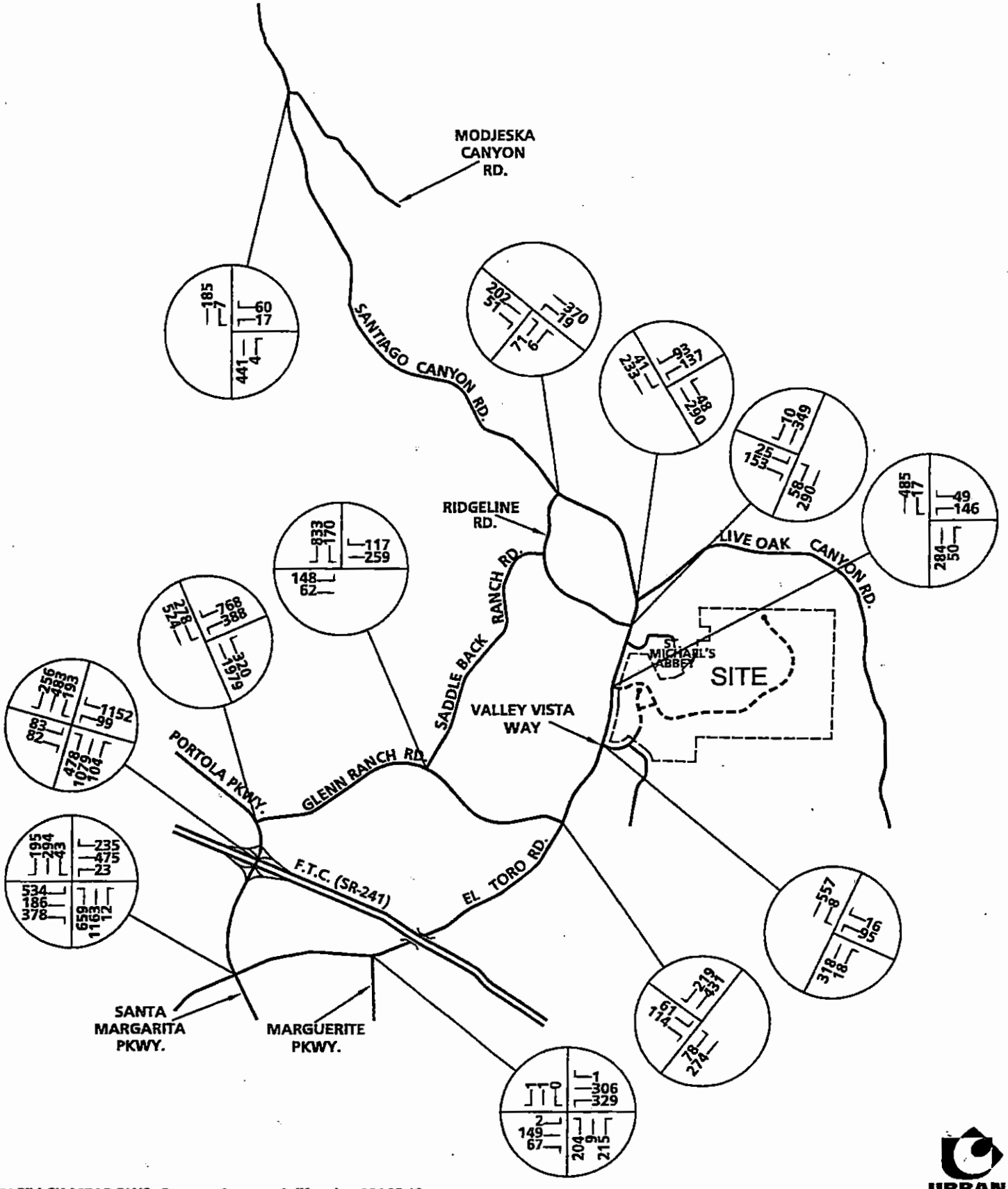

EXHIBIT 4-B

EXISTING PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES

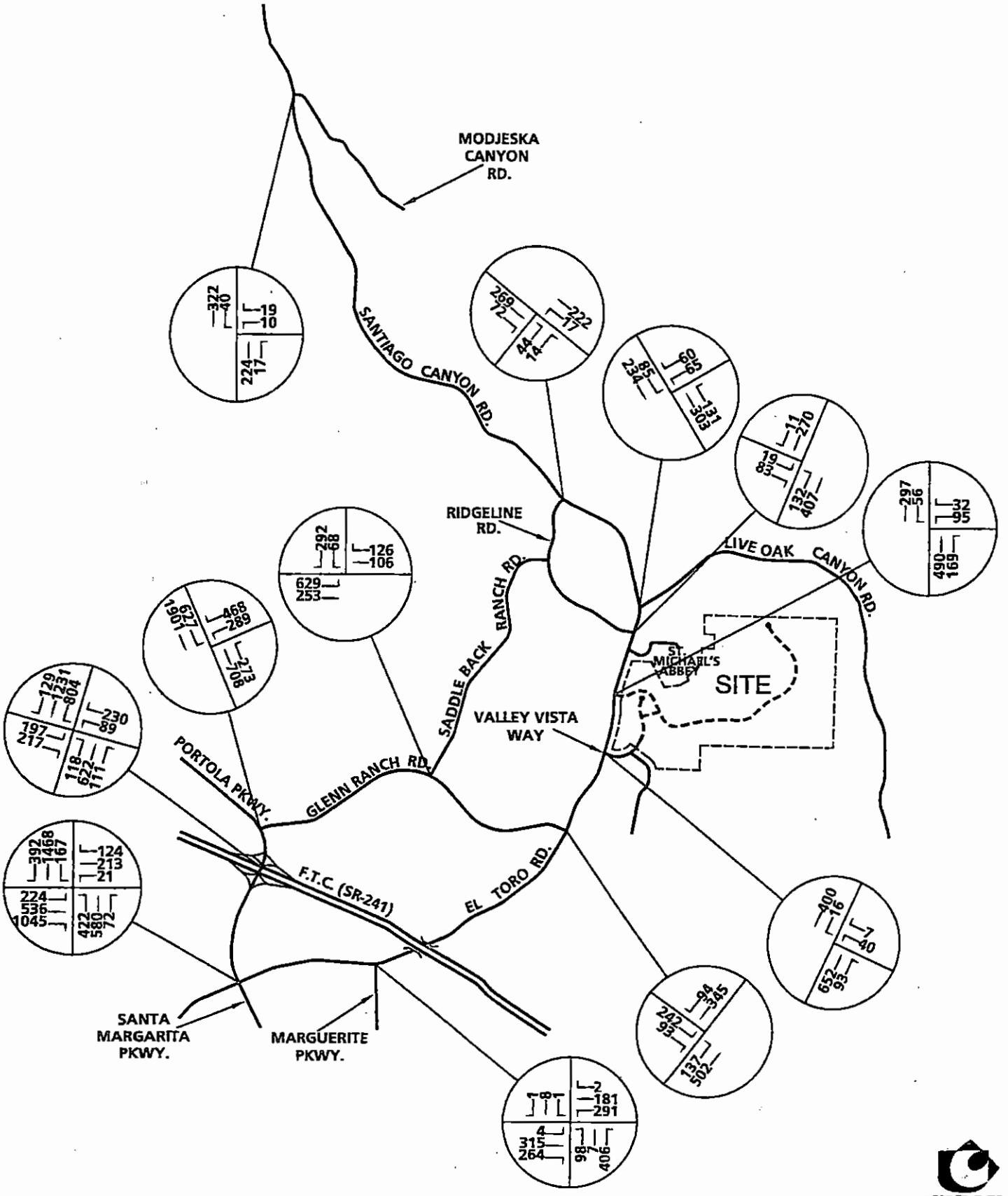

TABLE 4-2

YEAR 2005 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.38	0.29	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.36	0.34	A	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.39	0.51	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.49	0.50	A	A
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.45	0.52	A	A
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.43	0.50	A	A
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.46	0.63	A	B
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.30	0.43	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1>>	0.72	0.61	C	B
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.60	0.91	A	E
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.86	0.73	D	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

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EXHIBIT 4-C

YEAR 2005 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT

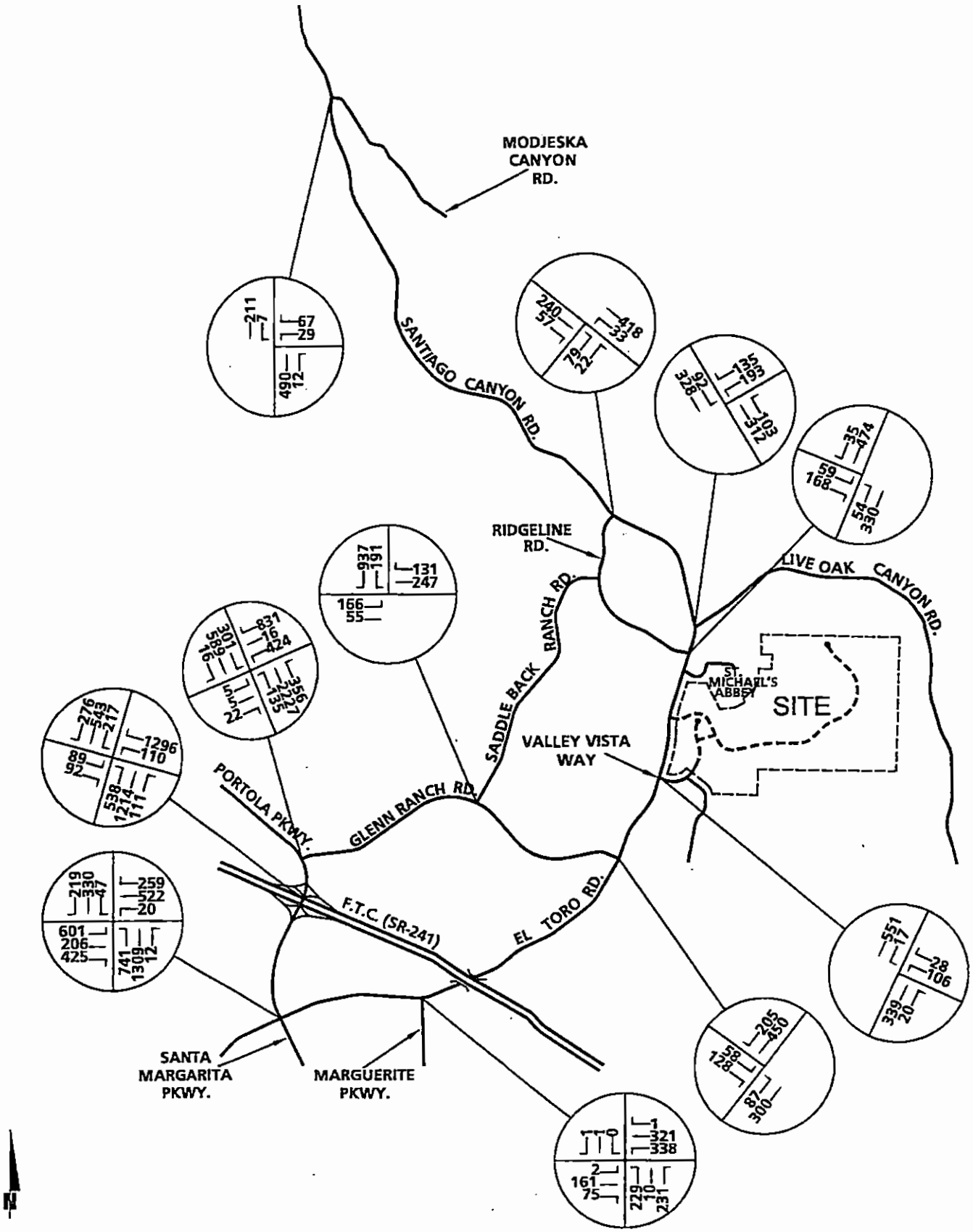
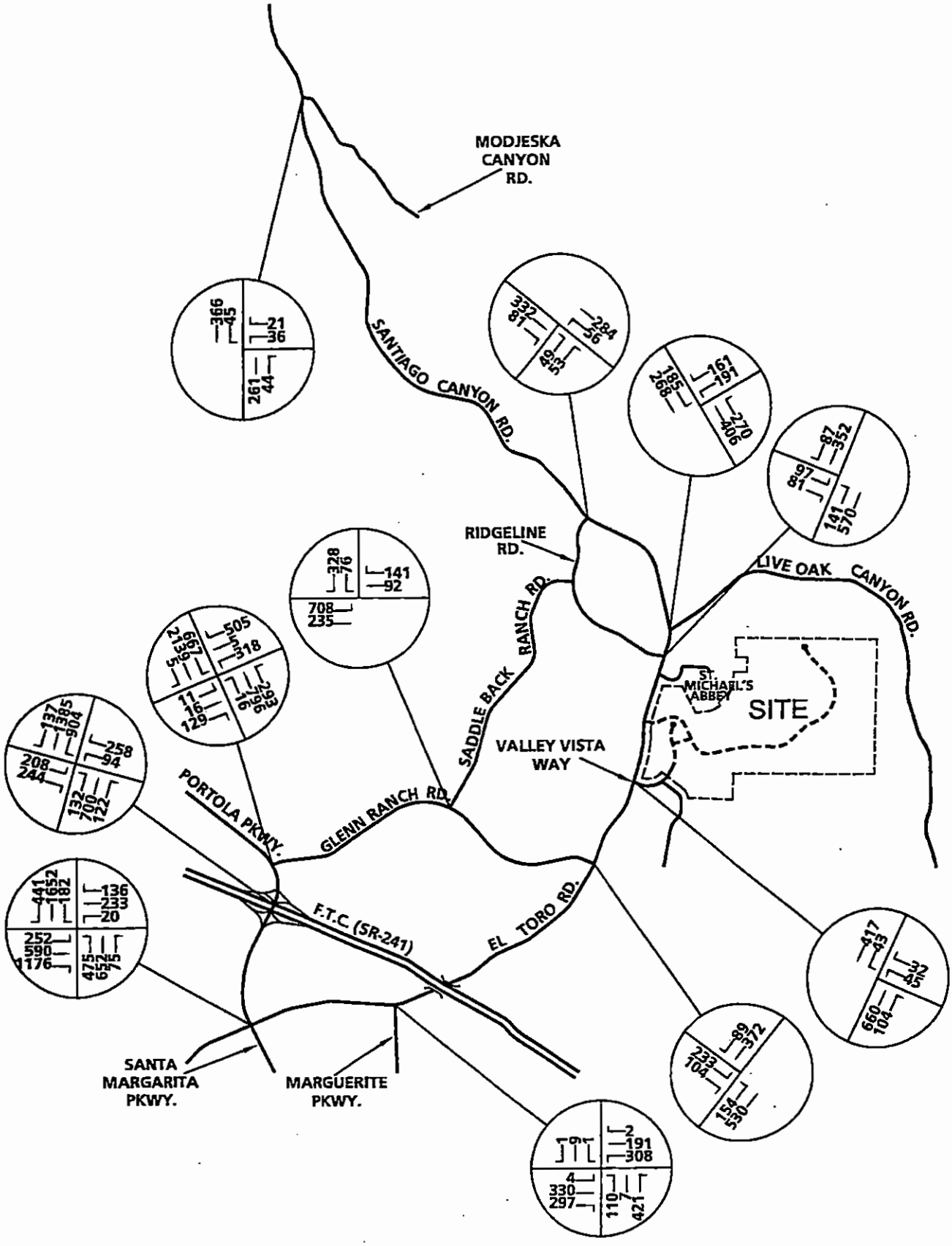


EXHIBIT 4-D

YEAR 2005 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT



As shown in Table 4-2, the intersection of Portola Parkway (NS) at the Foothill Transportation Corridor (EW) is projected to operate at Level of Service "E" or better during the peak hours without the proposed project, without improvements. All other study area intersections are projected to operate at Level of Service "D" or better. ICU calculation worksheets are included in Appendix "F".

2. Level of Service at Year 2005 With Project

Intersection Capacity Utilization (ICU) for Year 2005 traffic conditions with the project have been calculated and are shown in Table 4-3 and 4-4. Table 4-3 shows ICU calculations at the study area intersections with the project, without improvements. ICU calculations with the project and with improvements are shown in Table 4-4. Year 2005 AM and PM peak hour turning movement volumes with the project are shown on Exhibits 4-E and 4-F, respectively.

As shown in Table 4-4, intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with the proposed project, and with improvements. ICU calculation worksheets are included in Appendix "G". The following intersection improvements is required for Year 2005 conditions:

Portola Parkway (NS) at:

- Foothill Transportation Corridor (EW)
  - Add Southbound Left Turn Lane

TABLE 4-3

YEAR 2005 INTERSECTION LEVEL OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITHOUT IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.40	0.31	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.38	0.36	A	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.42	0.52	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.52	0.51	A	A
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.52	0.55	A	A
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.54	0.62	A	B
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.48	0.60	A	A
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.48	0.63	A	B
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.31	0.44	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1>>	0.73	0.62	C	B
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.61	0.94	B	E
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.87	0.73	D	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

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TABLE 4-4

YEAR 2005 INTERSECTION LEVEL OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITH IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.40	0.31	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.38	0.36	A	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.42	0.52	A	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.52	0.51	A	A
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.52	0.55	A	A
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.54	0.62	A	A
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.48	0.60	A	A
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.48	0.63	A	A
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.31	0.44	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1>>	0.73	0.62	C	B
• Foothill Trans. Corridor (EW)	2	2	1>>	2	2	1>>	1	0	1>>	1	0	1>>	0.54	0.68	A	B
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.87	0.73	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

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EXHIBIT 4-E

YEAR 2005 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT

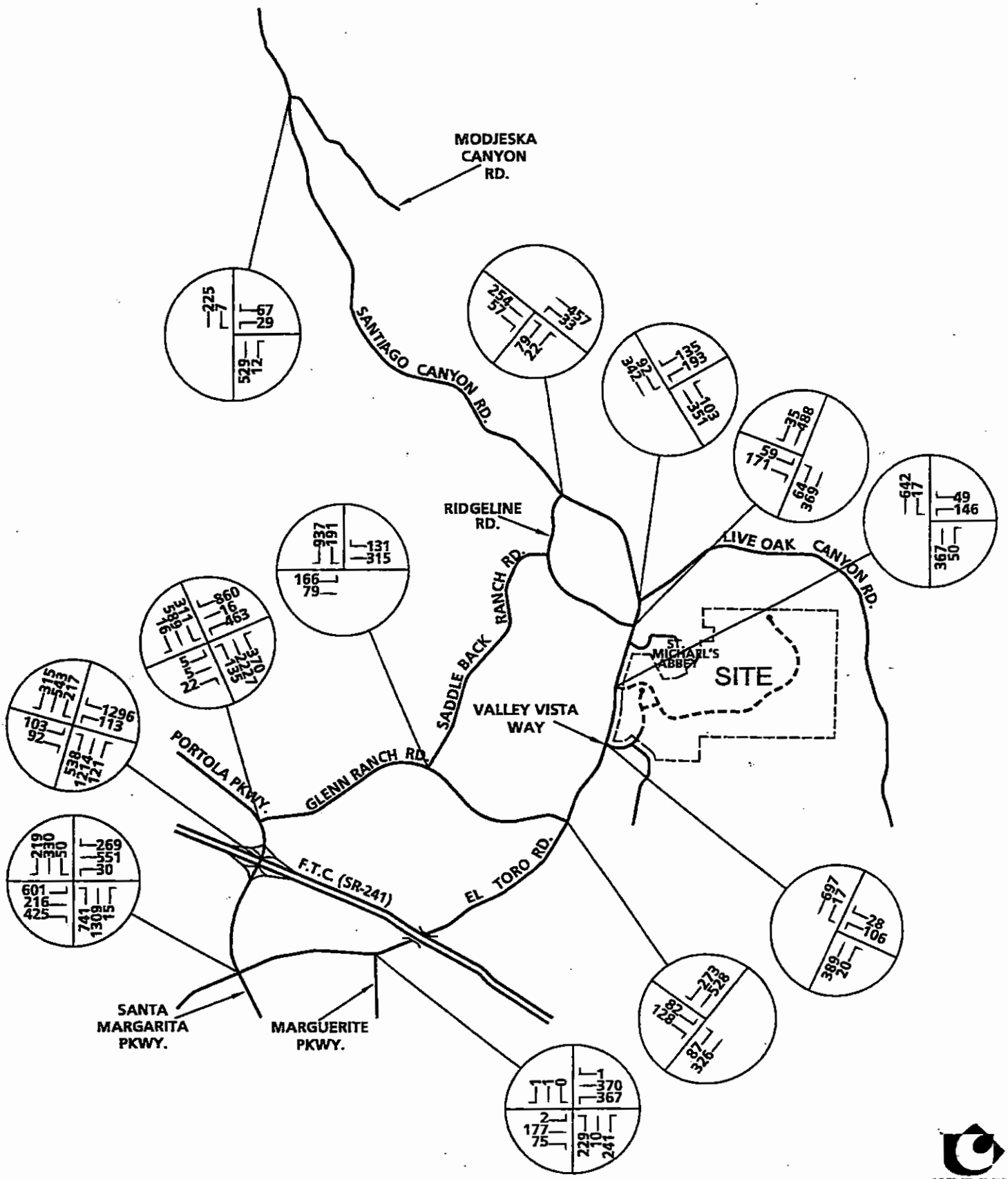
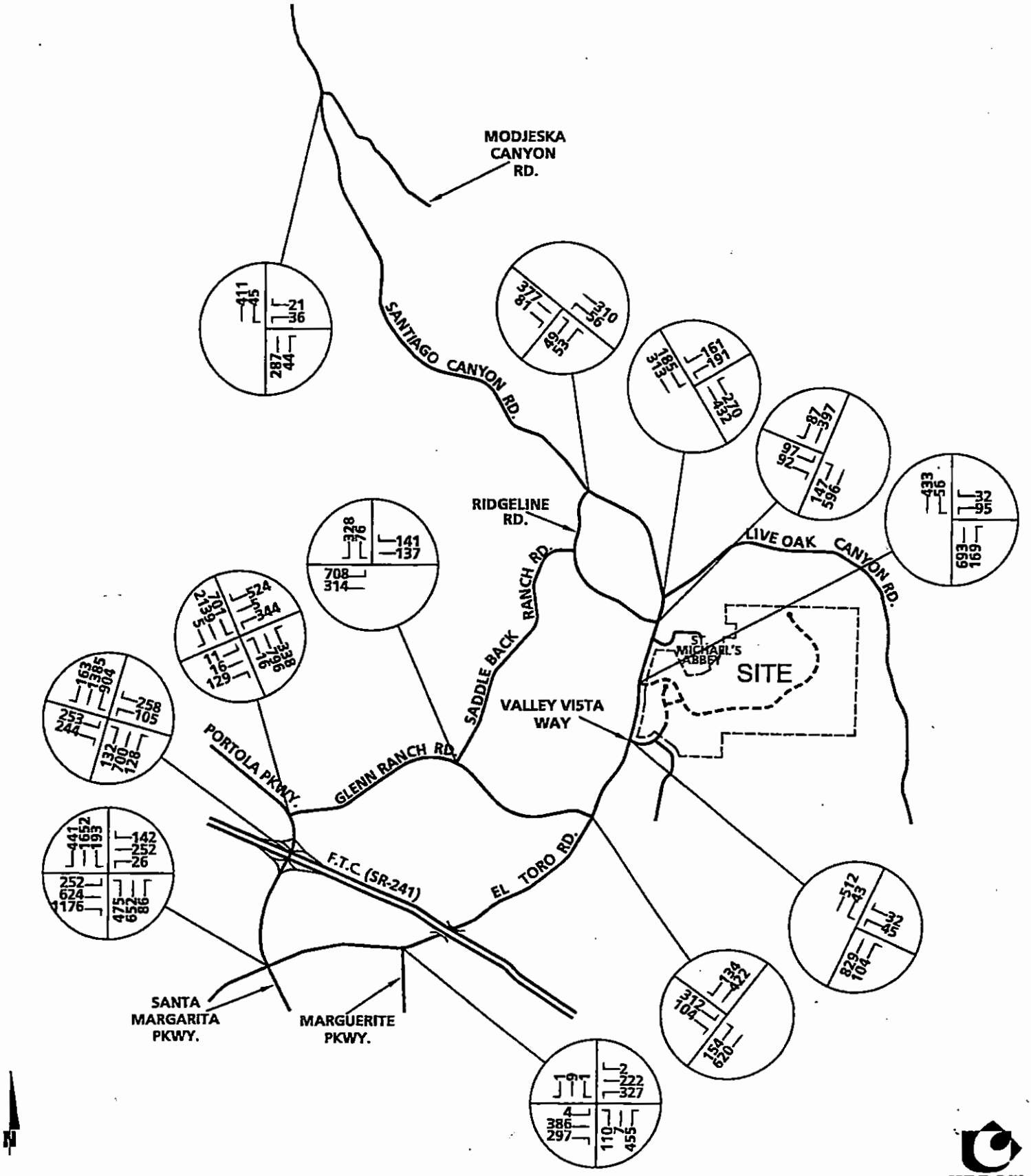


EXHIBIT 4-F

YEAR 2005 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT



C. Capacity and Level of Service and Improvement Analysis, Year 2025

1. Level of Service at Year 2025 Without Project

Intersection Capacity Utilization (ICU) for Year 2025 traffic conditions without the project have been calculated and are shown in Table 4-5. Table 4-5 shows ICU calculations at the study area intersections without the project, without improvements. Year 2025 AM and PM peak hour turning movement volumes without the project are shown on Exhibits 4-G and 4-H, respectively. The following intersections are projected to operate at an LOS of "E" or below:

El Toro Road (NS) at:

- Ridgeline Road (EW)
- Valley Vista Way (EW)
- Glenn Ranch Road (EW)

Portola Parkway (NS) at:

- Glenn Ranch Road (EW)
- Foothill Transportation Corridor (EW)
- El Toro Road (EW)

2. Level of Service at Year 2025 With Project

Intersection Capacity Utilization (ICU) for Year 2025 traffic conditions with the project have been calculated and are shown in Tables 4-6 and 4-7. Table 4-6 shows ICU calculations at the study area intersections with the project, without improvements. ICU calculations with the project and with improvements are shown in Table 4-7. Year 2025 AM and PM peak hour

TABLE 4-5

YEAR 2025 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.69	0.61	B	B
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.63	0.61	B	B
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.73	0.75	C	C
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	1.06	0.79	F	C
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	1.10	0.85	F	D
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.72	0.91	C	E
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.80	0.82	C	D
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.46	0.58	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1>>	0.93	1.03	E	F
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.77	1.05	C	F
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	1.14	0.95	F	E

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

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EXHIBIT 4-G

YEAR 2025 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT

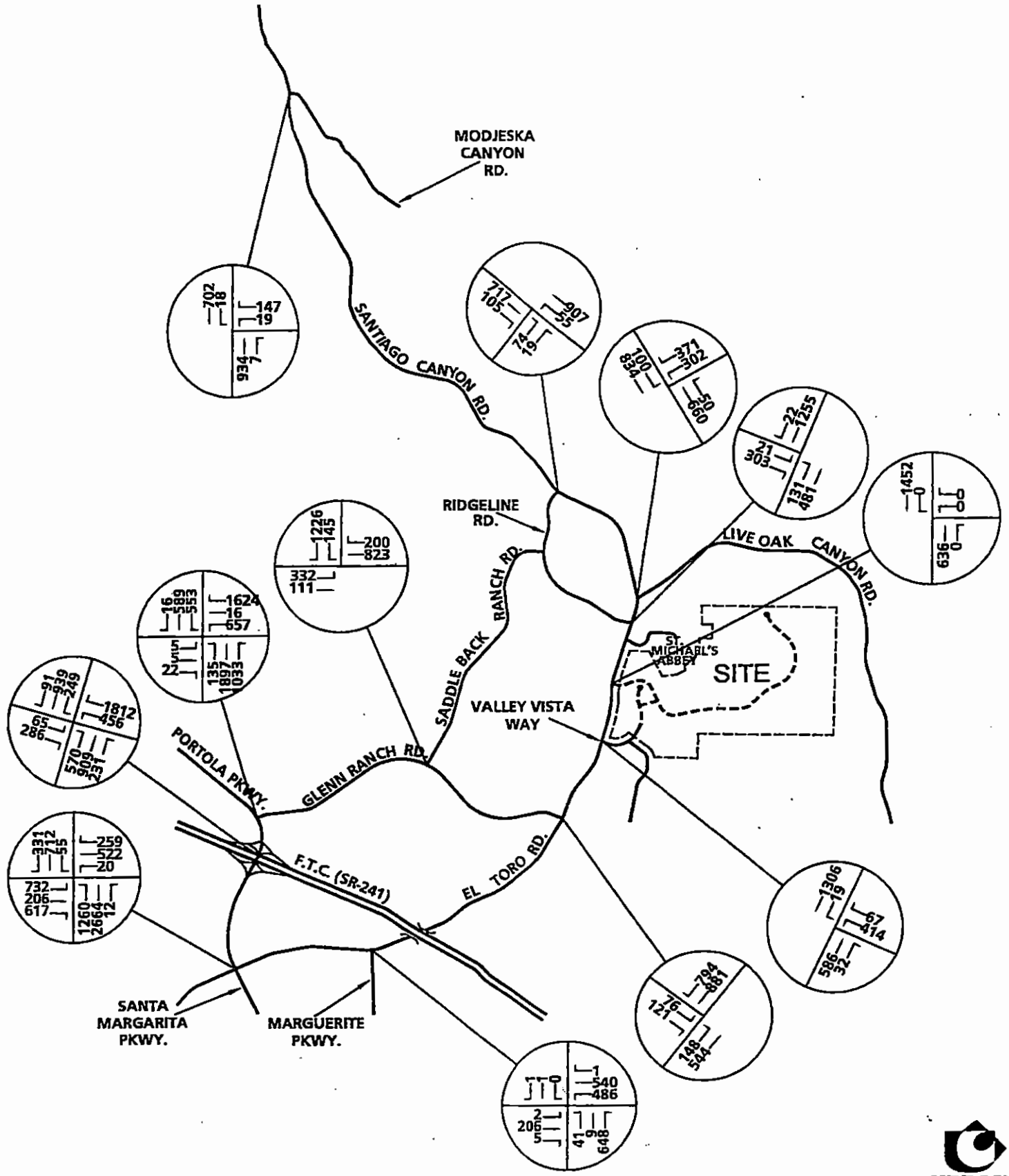

EXHIBIT 4-H

YEAR 2025 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT

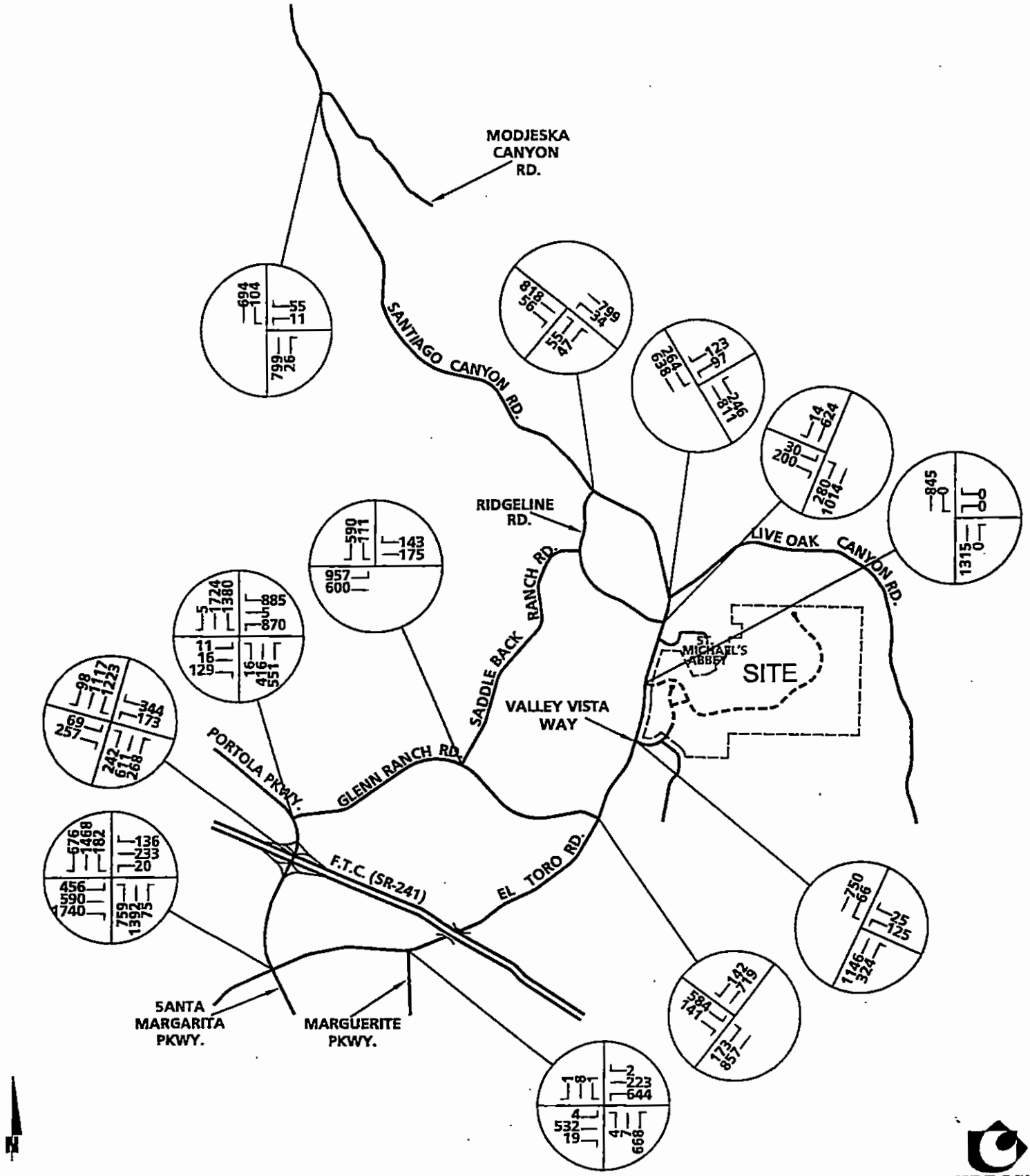

TABLE 4-6

YEAR 2025 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT WITHOUT IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.71	0.63	C	B
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.66	0.64	B	B
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.74	0.76	C	C
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	1.07	0.80	F	C
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.99	0.91	E	E
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	1.18	0.95	F	D
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.76	1.00	C	E
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.82	0.82	D	D
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.48	0.61	A	B
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1>>	0.96	1.07	E	F
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.77	1.06	C	F
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	1.15	0.95	F	E

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

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TABLE 4-7

YEAR 2025 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT WITH IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		LEVEL OF SERVICE	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.71	0.63	C	B
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.66	0.64	B	B
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.74	0.76	C	B
• Ridgeline Rd. (EW)	1	2	0	0	2	1	0	1	0	0	0	0	0.69	0.56	B	A
• Project Entrance (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.57	0.53	A	A
• Valley Vista Way (EW)	0	2	1	1	2	0	0	0	0	0	1	0	0.76	0.57	C	A
• Glenn Ranch Rd. (EW)	1	2	0	0	2	1	1	0	1	0	0	0	0.63	0.77	B	C
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	1	0	2	1	2	0	0	2	1	0.82	0.82	D	D
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1.5	1.5	1>	1	2	1	2	2	1	2	2	0	0.48	0.61	A	B
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1>	2	3	1	1	1.5	1.5	2	1	1>>	0.80	0.85	C	D
• Foothill Trans. Corridor (EW)	2	3	1>>	2	3	1>>	1	0	1>>	1	0	1>>	0.67	0.64	B	B
• El Toro Rd. (EW)	2	4	1	2	4	1>	2	3	1>>	1	3	1	0.88	0.70	D	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; >> = Free Right Turn; > Right Turn Overlap; 2 = Improvement

[2] Intersection Capacity Utilization (ICU)

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turning movement volumes with the project are shown on Exhibits 4-I and 4-J, respectively.

As shown in Table 4-7, intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with the proposed project, with improvements that include the ultimate widening of El Toro Road and Santiago Canyon Road to four through travel lanes (two in each direction) in the vicinity at the project. Improvements are also required at each of the Portola Parkway intersections analyzed. Year 2025 with project ICU calculation worksheets are included in Appendix "I".

D. Santiago Canyon Road Analysis

Pursuant to the County of Orange Growth Management Plan (GMP), segments of Santiago Canyon Road are required to function at a Level of Service "C". Capacity improvements along Santiago Canyon Road will be required in conjunction with future growth to achieve Level of Service "C". The Santiago Canyon Road Major Thoroughfare and Bridge Fee Program has been designed to provide up to $34 million in improvements to Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road. However, the March, 1994 Project Report for improvements to Santiago Canyon Road indicates that the total cost of improvements is approximately $52.3 million for a "limited project" scenario.

The project should be conditioned to pay fees in accordance with the Santiago Canyon Road Major Thoroughfare and Bridge Fee Program. A funding shortfall has been identified for the currently adopted fee program. Any additional funding should be included as part of a revised fee program, and the project should be conditioned to participate in the revised fee program, as appropriate.

EXHIBIT 4-I

YEAR 2025 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT

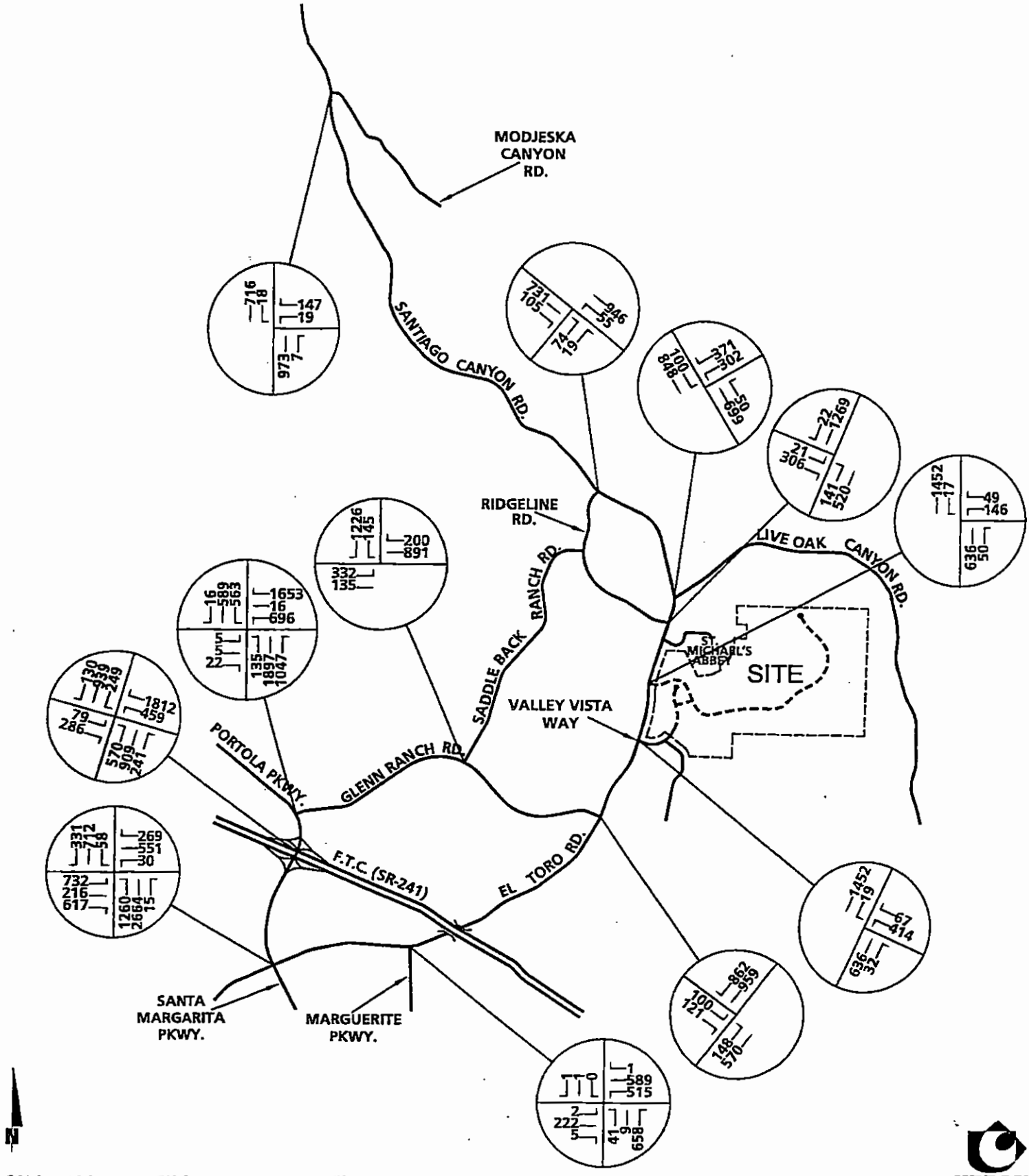
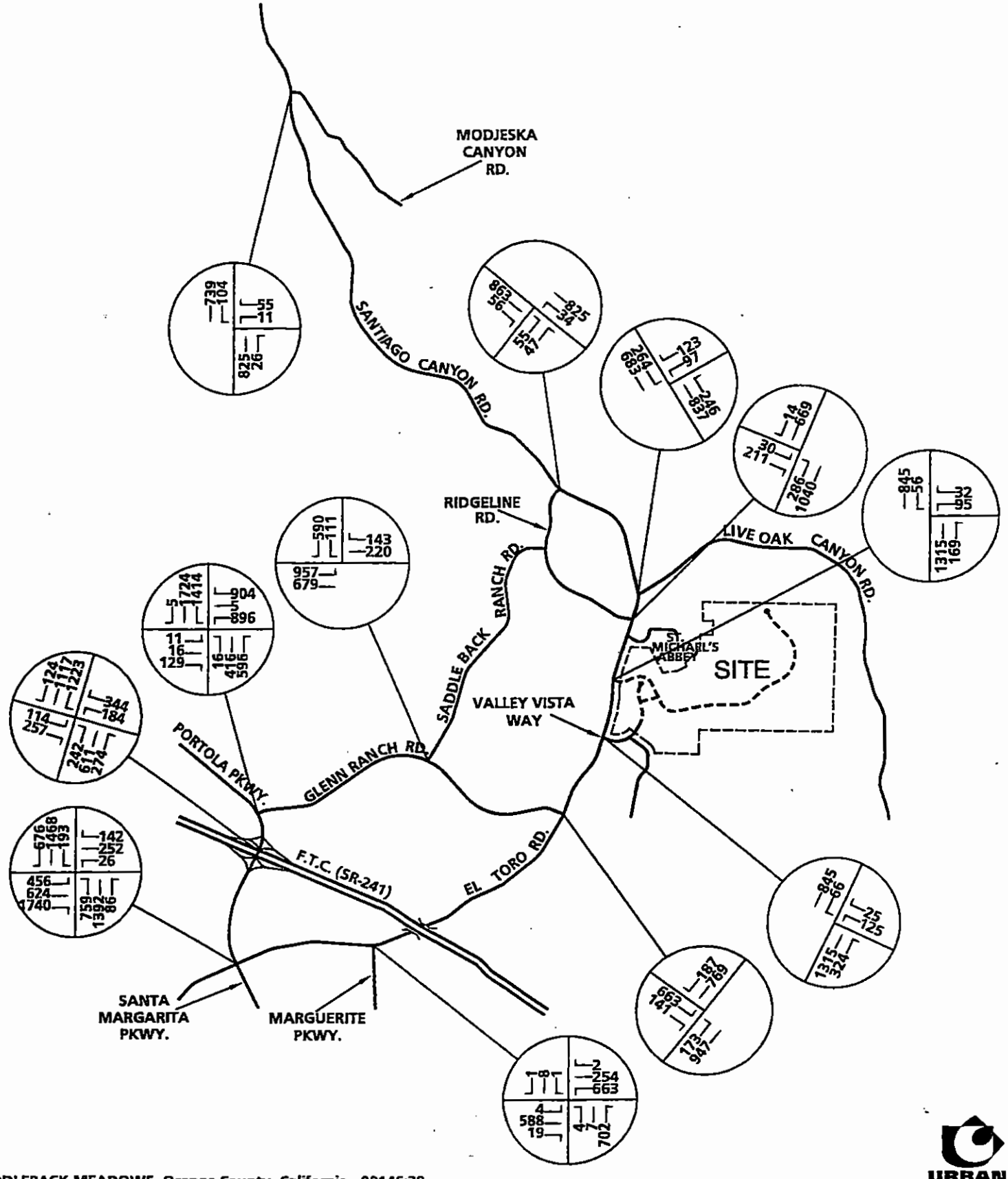


EXHIBIT 4-J

YEAR 2025 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT



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5.0 RECOMMENDATIONS

A. Site Access

The proposed project will have primary access to El Toro Road. The El Toro Road turn-lane improvements needed at the Project Entrance to serve Year 2000 conditions should be completed in conjunction with development. Secondary access will be provided via an access to Valley Vista Way.

It is anticipated that the main project access point to El Toro Road will require a traffic signal. The project should provide this improvement as well as a southbound left turn lane and northbound right turn lane on El Toro Road at the project entry.

Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan.

B. Roadway Improvements

1. Off-Site

The project should participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program. Potential roadway fees for the Saddleback Meadows development are shown in Table 5-1.

TABLE 5-1

POTENTIAL ROADWAY FEES

EXISTING ROAD FEE PROGRAMS	ROADWAYS TO BE CONSTRUCTED	ADOPTION DATE	RATES (EFFECTIVE JULY 1, 2000)	APPROXIMATE PROJECT FEES (299 DU'S)
1. Eastern/Foothill Transportation Corridor Road Fee Program (Zone A)	Portion of the cost of the future Eastern/ Foothill Transportation Corridor from the Southern Orange county line at Interstate Route 5 to the Riverside Freeway (State Route 91).	Oct., 1984	$3,916/DU	$1,170,884.00
2. Santiago Canyon Road Major Thouroughfare and Bridge Fee Program	Improvements of Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road to its Master Plan of Arterial Highways designation as a primary arterial highway.	Aug., 1990	$617/DU	$184,483.00
3. El Toro Road Fee Program	Widen El Toro Road from a two lane to four lane highway from Live Oak Canyon Road to Trabuco Road.	Oct., 1983	$1,240/DU	$370,760.00
4. Foothill Circulation Phasing Program (FCPP), Including Special FTC Fees (Zone 4).	Provides for a Backbone Systems of arterial highways and intersection improvements in the northern El Toro area. Roadways to be constructed include the extension of Portola Pkwy/ Santa Margarita Pkwy. (with the FTC), Bake Pkwy., OSO Pkwy., Alicia Pkwy., Sand Canyon, Jeffrey, Irvine Blvd./ Trabuco Road and various intersection upgrades.	Oct., 1987	$2,300/DU	$687,700.00
TOTAL	--	--	--	$2,413,827.00

5-2

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North of the Foothill Transportation Corridor, El Toro Road can accommodate cumulative Year 2025 traffic volumes with the proposed project on four travel lanes divided by a raised or striped median. Exhibit 5-A illustrates the alternative cross-sections for El Toro Road in the vicinity of the project. Implementation of a full Major arterial cross-section (six lanes divided) is not needed to serve future traffic volumes. Exhibit 5-A depicts an alternative section which would provide four travel lanes along El Toro Road divided by a striped median. This alternative section represents a modification of the typical cross-section for a Primary arterial. Appropriate transitions would be required between this cross-section and other modified cross-sections along El Toro Road south of Glenn Ranch Road.

2. On-Site

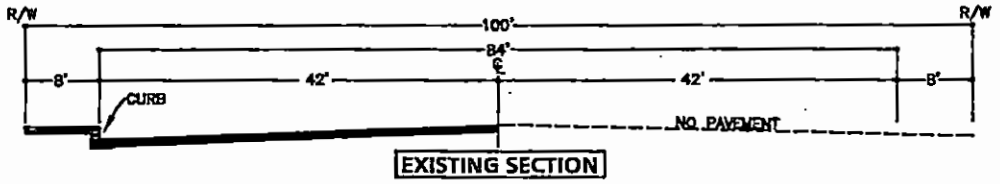
In order to accommodate the anticipated traffic and the potential traffic signal, it is recommended that the entry street to Saddleback Meadows be designed as an augmented Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12 foot exiting lanes and two 12 foot entering lanes with a 10 foot median. The Collector cross-section should be maintained for approximately 160 feet where it could then be transitioned to a standard 40 foot wide curb-to-curb width Collector roadway, as shown on Exhibit 5-B.

Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan.

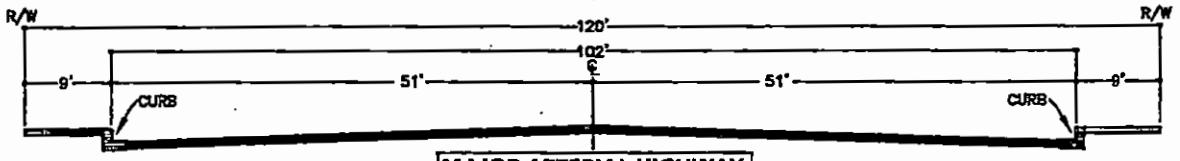
Sight distance at each of the project access intersections should be reviewed with respect to Standard Plan Number 1117 (see Appendix "K") in conjunction with the preparation of precise grading and landscape plans.

EXHIBIT 5-A

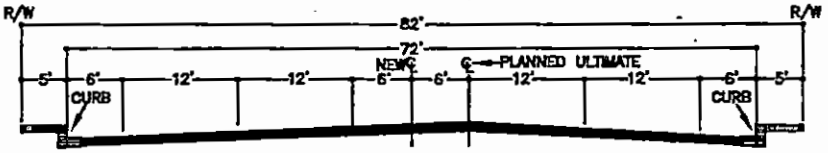
EL TORO ROAD CROSS-SECTIONS



EXISTING SECTION



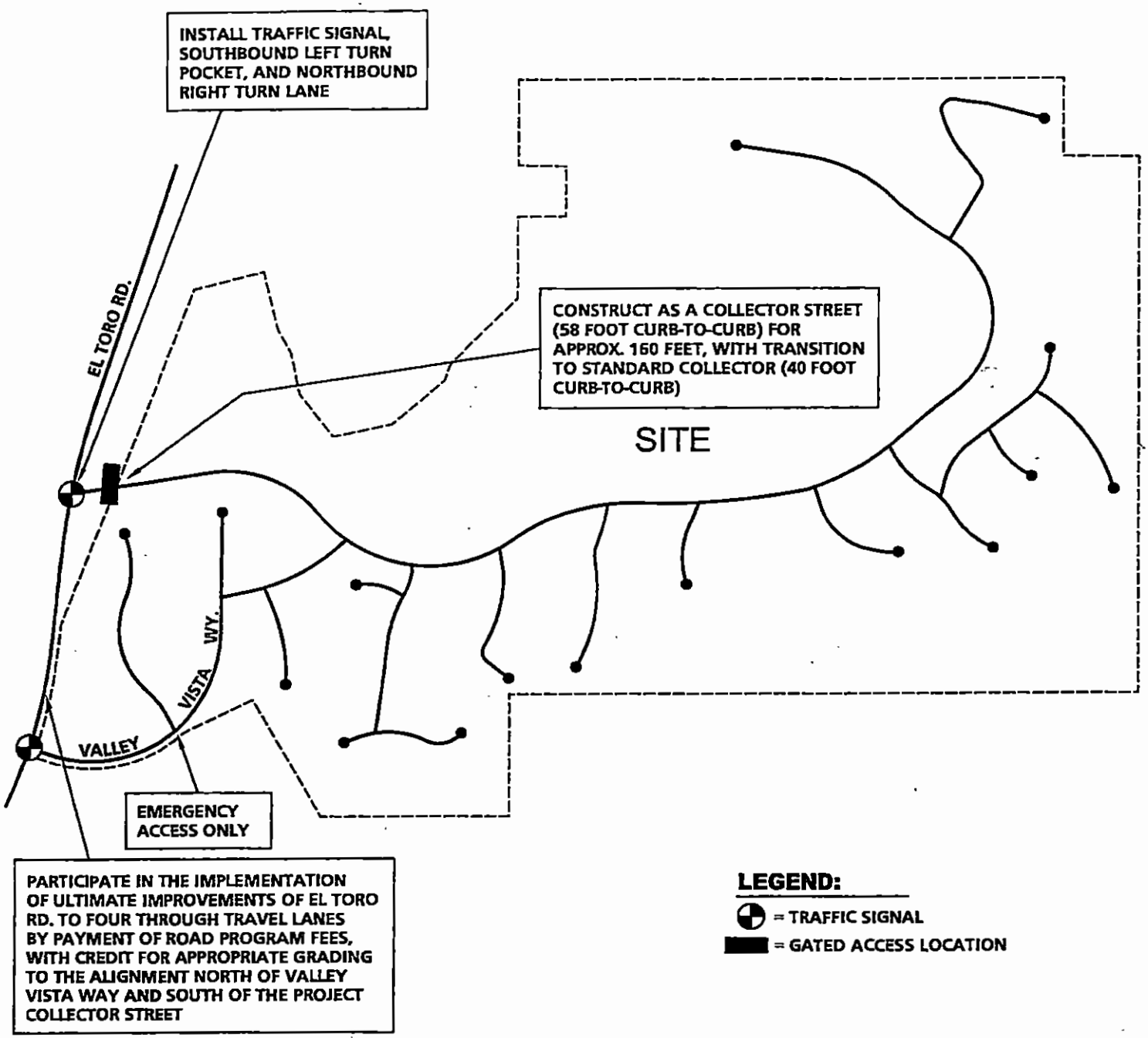
MAJOR ARTERIAL HIGHWAY



ALTERNATIVE SECTION RECOMMENDED

EXHIBIT 5-B

CIRCULATION RECOMMENDATIONS



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APPENDIX A

LEVEL OF SERVICE DESCRIPTION

LEVEL OF SERVICE - DEFINITIONS*

Service Level	General Definition	Freeways Criteria for measurement: Density (cars per lane-mile)	Arterials Criteria for measurement: Average travel speed (mph)
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.	Free flow operations. Average travel speeds near 60 mph generally prevail on 70-mph freeway elements. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The average spacing between vehicles is about 440 ft, or 22 car-lengths, with a maximum density of 12 cars/mi/ln. The effects of minor incidents or breakdowns are easily absorbed at this level. Although they may cause a deterioration in LOS in the vicinity of the incident, standing queues will not form, and traffic quickly returns to LOS A on passing the disruption.	Primarily free flow-operations at average travel speeds usually within 90 percent of the free flow speed. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.	Reasonably free-flow conditions, and speeds of over 57 mph are maintained on 70-mph freeway elements. The average spacing between vehicles is about 260 ft, or 13 car-lengths, with a maximum density of 20 cars/mi/ln. The ability to maneuver within the traffic stream is only slightly restricted. The effects of minor incidents and breakdowns are still easily absorbed, though local deterioration in service would be more severe than for LOS A.	Unimpeded operations at average travel speeds usually within 70 percent of the free flow speed. The ability to maneuver within the traffic stream is slightly restricted and stopped delays are not bothersome.
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.	Stable operations, but flows approach the range in which small increases in flow will cause substantial deterioration in service. Average travel speeds are still over 54 mph. Freedom to maneuver within the traffic stream is noticeably restricted at LOS C, and lane changes require additional care and vigilance by the driver. Average spacings are in the range of 175 ft, or 9 car-lengths, with a maximum density of 30/cars/mi/ln. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage. Additional vigilance by driver required for safe operation.	Stable operations. Ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50 percent of the average free flow speed.

D	High-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.	Borders on unstable flow. In this range, small increases in flow cause substantial deterioration in service. Average travel speeds of 48 mph or more can still be maintained on 70-mph freeway elements. Freedom to maneuver within the traffic stream is severely limited. Even minor incidents can be expected to create substantial queuing, because the traffic stream has little space to absorb disruptions. Average spacings are about 125 ft, or 6 car-lengths, with a maximum density of 42 cars/mi/ln.	Borders on a range on which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free flow speed.
E	Operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.	The boundary between LOS D and LOS E describes operation at capacity. Operations in this level are extremely unstable, because there are virtually no usable gaps in the traffic stream. Vehicles are spaced at approximately 80 ft, or 4 car-lengths, at relatively uniform headways. This, however, represents the minimum spacing at which stable flow can be accommodated. Any disruption to the traffic stream, such as a vehicle entering from a ramp, or a vehicle changing lanes, causes following vehicles to give way to admit the vehicle. At capacity, the traffic stream has no ability to dissipate even the most minor disruptions. Any incident can be expected to produce a serious breakdown with extensive queuing. The range of flows encompassed by LOS E is relatively small compared to other levels, but reflects a substantial deterioration in service. Maneuverability within the traffic stream is extremely limited. Average travel speeds at capacity are approximately 30 mph.	Significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination or adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
F	Level-of-service F. Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Arrival flow exceeds discharge flow.	Level F describes forced or breakdown flow. Such conditions generally exist within queues forming behind breakdown points. Breakdown occurs when the ratio of actual arrival flow rate to actual capacity or the forecasted flow rate to estimated capacity exceeds 1.00. Operations at such a point will generally be at or near capacity, and downstream operations may be better as vehicles pass the bottleneck (assuming that there are no additional downstream problems). The LOS F operations observed within a queue are the result of a breakdown or bottleneck at a downstream point.	Arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse progression is frequently a contributor to this condition.

*Source: "Highway Capacity Manual, Special Report 209" Transportation Research Board, Washington D.C., 1985

APPENDIX B

TRAFFIC COUNT WORKSHEETS

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SANTIAGO CYN
DATE: 2/22/2001
CITY: MISSION VIEJO
E-W STREET: MODJESKA CYN
DAY: THURSDAY
PROJECT# 0221011P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	1	1	1					1		1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM		81	1	2	43					0		14	141
15 AM		118	1	2	35					5		20	181
30 AM		84	2	0	44					3		11	144
45 AM		96	1	1	54					3		11	166
8:00 AM		104	0	4	38					6		18	170
15 AM		78	2	3	35					3		5	126
30 AM		66	2	3	24					1		6	102
45 AM		48	0	1	21					3		7	80
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	675	9	16	294	0	0	0	0	24	0	92	1110

AM Peak Hr Begins at 715 AM

PEAK VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	402	4	7	171	0	0	0	0	17	0	60	661

ADDITIONS:1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SANTIAGO CYN
DATE: 2/22/2001
CITY: MISSION VIEJO
E-W STREET: MODJESKA CYN
DAY: THURSDAY
PROJECT# 0221011P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	1	1	1					1		1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM		41	4	8	49					0		6	108
15 PM		55	6	1	48					4		4	118
30 PM		48	8	5	48					2		5	116
45 PM		63	3	12	68					2		5	153
5:00 PM		43	4	6	61					2		3	119
15 PM		50	5	11	68					2		4	140
30 PM		42	5	11	80					4		7	149
45 PM		46	3	8	48					4		5	114
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	NL 0	NT 388	NR 38	SL 62	ST 470	SR 0	EL 0	ET 0	ER 0	WL 20	WT 0	WR 39	TOTAL 1017

PM Peak Hr Begins at 445 PM

PEAK VOLUMES =	0	198	17	40	277	0	0	0	0	10	0	19	561

ADDITIONS:1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SANTIAGO CYN DATE: 2/22/2001 CITY: MISSION VIEJO
E-W STREET: RIDGELINE DAY: THURSDAY
PROJECT# 0221012A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	2	69	0	0	34	5	32	0	1	0	0	0	143
15 AM	6	92	0	0	40	14	13	0	0	0	0	0	165
30 AM	3	69	0	0	45	13	17	0	1	0	0	0	148
45 AM	7	79	0	0	65	18	20	0	3	0	0	0	192
8:00 AM	3	91	0	0	38	6	21	0	2	0	0	0	161
15 AM	3	70	0	0	34	7	12	0	2	0	0	0	128
30 AM	3	52	0	0	30	9	14	0	0	0	0	0	108
45 AM	2	43	0	0	26	7	4	0	3	0	0	0	85
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	29	565	0	0	312	79	133	0	12	0	0	0	1130
AM Peak Hr Begins at			715 AM										
PEAK VOLUMES =	19	331	0	0	188	51	71	0	6	0	0	0	666

ADDITIONS:

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SANTIAGO CYN
E-W STREET: RIDGELINE
DATE: 2/22/2001
DAY: THURSDAY
CITY: MISSION VIEJO
PROJECT# 0221012P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	1	53	0	0	42	10	10	0	3	0	0	0	119
15 PM	3	44	0	0	40	16	15	0	3	0	0	0	121
30 PM	4	59	0	0	38	15	15	0	6	0	0	0	137
45 PM	4	61	0	0	47	19	15	0	6	0	0	0	152
5:00 PM	3	38	0	0	44	22	11	0	2	0	0	0	120
15 PM	9	50	0	0	69	10	11	0	3	0	0	0	152
30 PM	1	47	0	0	64	21	7	0	3	0	0	0	143
45 PM	5	43	0	0	58	8	14	0	3	0	0	0	131
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	30	395	0	0	402	121	98	0	29	0	0	0	1075
PEAK VOLUMES =	17	196	0	0	224	72	44	0	14	0	0	0	567

PM Peak Hr Begins at 445 PM

ADDITIONS:

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO/ SANTIAGO CYN
DATE: 2/22/2001
CITY: MISSION VIEJO
E-W STREET: LIVE OAK CYN
DAY: THURSDAY
PROJECT# 0221008A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	1	1					1		1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM		59	6	16	35					15		17	148
15 AM		64	7	12	43					29		19	174
30 AM		62	11	8	53					40		25	199
45 AM		68	18	12	65					37		27	227
8:00 AM		57	12	9	58					31		22	189
15 AM		44	13	13	51					24		18	163
30 AM		36	15	10	45					15		11	132
45 AM		32	12	9	38					17		10	118
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	422	94	89	388	0	0	0	0	208	0	149	1350

AM Peak Hr Begins at 715 AM

PEAK VOLUMES =	0	251	48	41	219	0	0	0	0	137	0	93	789

ADDITIONS:1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO/ SANTIAGO CYN
DATE: 2/22/2001
CITY: MISSION VIEJO
E-W STREET: LIVE OAK CYN
DAY: THURSDAY
PROJECT# 0221008P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	0	1	1					1		1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM		70	14	12	53					13		16	178
15 PM		59	18	14	48					15		11	165
30 PM		46	17	10	41					13		14	141
45 PM		61	27	18	49					17		15	187
5:00 PM		70	32	23	38					14		12	189
15 PM		78	39	25	53					19		18	232
30 PM		68	33	19	49					15		15	199
45 PM		61	29	22	43					12		12	179
6:00 PM													
15 PM													
30 PM													
45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	513	209	143	374	0	0	0	0	118	0	113	1470

PM Peak Hr Begins at 445 PM

PEAK													
VOLUMES =	0	277	131	85	189	0	0	0	0	65	0	60	807

ADDITIONS:1-WAY STOP W/B

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO DATE: 2/22/2001 CITY: MISSION VIEJO

E-W STREET: RIDGELINE DAY: THURSDAY PROJECT# 0221010A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1			1	0	1		1				
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	11	65			47	3	2		16				144
15 AM	14	71			72	2	6		31				196
30 AM	10	64			91	0	9		43				217
45 AM	11	59			89	3	6		39				207
8:00 AM	13	57			83	5	4		37				199
15 AM	12	49			70	2	5		31				169
30 AM	16	45			59	1	6		28				155
45 AM	14	37			53	2	4		24				134
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													

TOTAL VOLUMES =	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	101	447	0	0	564	18	42	0	249	0	0	0	1421

AM Peak Hr Begins at 715 AM

PEAK VOLUMES =													
	48	251	0	0	335	10	25	0	150	0	0	0	819

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO DATE: 2/22/2001 CITY: MISSION VIEJO

E-W STREET: RIDGELINE DAY: THURSDAY

PROJECT# 0221010P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1			1	0	1		1				
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	17	78			58	7	5		13				178
15 PM	19	66			63	5	4		22				179
30 PM	16	69			51	3	3		19				161
45 PM	22	78			57	4	6		23				190
5:00 PM	28	97			50	2	4		15				196
15 PM	33	102			58	4	6		22				225
30 PM	31	96			62	2	5		19				215
45 PM	34	86			55	3	4		16				198
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	200	672	0	0	454	30	37	0	149	0	0	0	1542

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	126	381	0	0	225	11	19	0	72	0	0	0	834

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO DATE: 2/21/2001 CITY: MISSION VIEJO

E-W STREET: VALLEY VISTA DAY: WEDNESDAY PROJECT# 0221004A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	1	1	1					0	1	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM		48	5	1	95					26		4	179
15 AM		79	4	2	90					23		6	204
30 AM		60	4	2	113					21		3	203
45 AM		72	2	1	112					27		3	217
8:00 AM		57	8	3	96					24		4	192
15 AM		55	5	4	78					19		1	162
30 AM		49	4	0	66					17		2	138
45 AM		53	7	2	76					18		3	159
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	473	39	15	726	0	0	0	0	175	0	26	1454

AM Peak Hr Begins at 715 AM

PEAK VOLUMES =	0	268	18	8	411	0	0	0	0	95	0	16	816

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO DATE: 2/21/2001 CITY: MISSION VIEJO

E-W STREET: VALLEY VISTA DAY: WEDNESDAY

PROJECT# 0221004P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		1	1	1	1					0	1	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM		88	11	7	79					9		2	196
15 PM		76	18	6	67					6		4	177
30 PM		102	18	8	68					12		3	211
45 PM		97	20	3	51					9		6	186
5:00 PM		127	24	4	72					7		1	235
15 PM		115	23	1	62					13		3	217
30 PM		132	26	6	95					15		2	276
45 PM		109	20	5	76					5		1	216
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	0	846	160	40	570	0	0	0	0	76	0	22	1714

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	0	483	93	16	305	0	0	0	0	40	0	7	944

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO DATE: 2/21/2001 CITY: MISSION VIEJO

E-W STREET: GLEN RANCH RD DAY: WEDNESDAY PROJECT# 0221001A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1			1	1	1		1				
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	13	45			74	33	8		22				195
15 AM	31	74			79	24	8		21				237
30 AM	12	59			89	31	5		28				224
45 AM	21	63			95	58	11		37				285
8:00 AM	14	52			90	38	13		28				235
15 AM	14	54			72	26	6		19				191
30 AM	19	46			61	36	8		20				190
45 AM	12	45			75	18	12		27				189
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	136	438	0	0	635	264	71	0	202	0	0	0	1746

AM Peak Hr Begins at 715 AM

PEAK VOLUMES =	78	248	0	0	353	151	37	0	114	0	0	0	981

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: EL TORO DATE: 2/21/2001 CITY: MISSION VIEJO

E-W STREET: GLEN RANCH RD DAY: WEDNESDAY PROJECT# 0221001P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1			1	1	1		1				
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	23	79			75	13	20		19				229
15 PM	20	72			69	4	21		25				211
30 PM	19	93			71	9	28		26				246
45 PM	26	88			52	8	29		25				228
5:00 PM	30	108			69	9	43		24				283
15 PM	32	97			63	12	41		19				264
30 PM	34	119			91	19	39		18				320
45 PM	41	88			72	9	40		32				282
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	225	744	0	0	562	83	261	0	188	0	0	0	2063

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	137	412	0	0	295	49	163	0	93	0	0	0	1149

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SADDLEBACK RANCH DATE: 2/22/2001 CITY: MISSION VIEJO
E-W STREET: GLENN RANCH DAY: THURSDAY
PROJECT# 0221007A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		2	1	2			2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM				22		64	29	6			40	8	169
15 AM				29		140	30	6			31	18	254
30 AM				43		242	37	10			37	25	394
45 AM				44		268	36	6			53	38	445
8:00 AM				54		185	29	12			59	37	376
15 AM				29		138	46	10			42	17	282
30 AM				13		131	35	12			34	10	235
45 AM				34		97	30	6			23	14	204
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	0	0	268	0	1265	272	68	0	0	319	167	2359
AM Peak Hr Begins at				730 AM									
PEAK VOLUMES =	0	0	0	170	0	833	148	38	0	0	191	117	1497

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SADDLEBACK RANCH DATE: 2/22/2001 CITY: MISSION VIEJO
E-W STREET: GLENN RANCH DAY: THURSDAY PROJECT# 0221007P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		2	1	2			2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM				16		73	113	29			16	24	271
15 PM				17		51	109	34			12	26	249
30 PM				18		60	86	39			10	17	230
45 PM				23		59	143	37			17	22	301
5:00 PM				17		64	129	36			17	15	278
15 PM				13		74	121	42			15	37	302
30 PM				20		75	210	57			17	30	409
45 PM				18		79	169	39			12	44	361
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	0	0	0	142	0	535	1080	313	0	0	116	215	2401

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	0	0	0	68	0	292	629	174	0	0	61	126	1350

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SADDLEBACK CHUR MARGUERITE PKWY DATE: 2/21/2001 CITY: MISSION VIEJO
E-W STREET: EL TORO RD DAY: WEDNESDAY PROJECT# 0221003A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1.5	1	1	2	1	2	2	1	2	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	40	0	40	0	0	1	1	20	17	60	57	0	236
15 AM	42	1	64	0	0	0	0	31	22	68	65	0	293
30 AM	44	1	41	0	0	0	1	41	14	63	72	1	278
45 AM	79	3	60	0	1	0	0	26	19	89	67	0	344
8:00 AM	39	4	40	0	0	1	1	35	12	80	53	0	265
15 AM	23	4	56	0	1	0	0	18	13	70	61	0	246
30 AM	35	4	51	1	2	0	0	33	16	61	52	0	255
45 AM	34	4	31	1	1	2	1	28	14	66	47	3	232
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	336	21	383	2	5	4	4	232	127	557	474	4	2149

AM Peak Hr Begins at 715 AM

PEAK VOLUMES =	204	9	205	0	1	1	2	133	67	300	257	1	1180

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SADDLEBACK CHUR MARGUERITE PKWY DATE: 2/21/2001 CITY: MISSION VIEJO
E-W STREET: EL TORO RD DAY: WEDNESDAY PROJECT# 0221003P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1.5	1	1	2	1	2	2	1	2	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	15	0	76	3	0	1	1	57	34	65	31	0	283
15 PM	24	1	61	1	1	0	0	59	43	71	40	0	301
30 PM	18	1	70	0	0	2	0	48	45	72	32	1	289
45 PM	25	2	78	1	5	0	0	57	55	50	33	0	306
5:00 PM	13	1	85	1	0	0	0	66	63	50	32	0	311
15 PM	25	1	111	0	4	0	0	67	60	78	32	0	378
30 PM	35	3	92	0	2	1	2	69	73	70	46	1	394
45 PM	25	2	84	0	2	0	2	57	68	74	40	1	355
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	180	11	657	6	14	4	5	480	441	530	286	3	2617
PEAK VOLUMES =	98	7	372	1	8	1	4	259	264	272	150	2	1438

PM Peak Hr Begins at 500 PM

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PORTOLA PKWY
E-W STREET: GLEN RANCH
DATE: 2/22/2001
DAY: THURSDAY
CITY: MISSION VIEJO
PROJECT# 0221009A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	2	3					2		1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	1	333	66	74	94					70		147	785
15 AM	0	331	56	62	93					73		135	750
30 AM	0	438	67	71	146					94		182	998
45 AM	1	532	84	83	165					111		205	1181
8:00 AM	1	582	96	62	112					71		202	1126
15 AM	0	427	59	52	101					73		150	862
30 AM	0	327	35	47	121					46		110	686
45 AM	2	280	33	65	142					48		114	684
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	5	3250	496	516	974	0	0	0	0	586	0	1245	7072
AM Peak Hr Begins at			730 AM										
PEAK VOLUMES =	2	1979	306	268	524	0	0	0	0	349	0	739	4167

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PORTOLA PKWY
E-W STREET: GLEN RANCH
DATE: 2/22/2001
DAY: THURSDAY
CITY: MISSION VIEJO
PROJECT# 0221009P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	2	3					2		1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	1	176	24	114	308					79		119	821
15 PM	0	167	33	109	349					61		106	825
30 PM	3	158	39	89	355					48		95	787
45 PM	2	184	48	127	449					59		107	976
5:00 PM	0	178	45	146	519					68		110	1066
15 PM	1	183	63	163	487					77		123	1097
30 PM	0	163	72	157	446					59		109	1006
45 PM	0	149	59	144	388					57		98	895
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	7	1358	383	1049	3301	0	0	0	0	508	0	867	7473

PM Peak Hr Begins at 445 PM

PEAK VOLUMES =	3	708	228	593	1901	0	0	0	0	263	0	449	4145

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PORTOLA DATE: 02/21/2001 CITY: MISSION VIEJO

E-W STREET: SR-241 NB RAMPS DAY: WEDNESDAY PROJECT# 0221005A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2			2	1				2		1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	141	231			81	58				11		189	711
15 AM	151	185			98	67				13		204	718
30 AM	137	318			180	59				19		287	1000
45 AM	122	270			225	53				16		346	1032
8:00 AM	117	307			123	59				28		283	917
15 AM	102	253			131	46				33		236	801
30 AM	98	180			125	41				36		192	672
45 AM	89	165			157	33				32		149	625
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	957	1909	0	0	1120	416	0	0	0	188	0	1886	6476
AM Peak Hr Begins at				730 AM									
PEAK VOLUMES =	478	1148	0	0	659	217	0	0	0	96	0	1152	3750

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PORTOLA DATE: 02/21/2001 CITY: MISSION VIEJO

E-W STREET: SR-241 NB RAMPS DAY: WEDNESDAY PROJECT# 0221005P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2			2	1				2		1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	29	150			377	26				12		47	641
15 PM	31	148			391	24				14		57	665
30 PM	29	136			405	18				13		64	665
45 PM	35	171			421	24				18		67	736
5:00 PM	26	173			551	30				17		55	852
15 PM	32	191			504	27				19		62	835
30 PM	25	184			411	22				24		46	712
45 PM	21	172			438	19				19		38	707
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	228	1325	0	0	3498	190	0	0	0	136	0	436	5813

PM Peak Hr Begins at 445 PM

PEAK VOLUMES =	118	719	0	0	1887	103	0	0	0	78	0	230	3135

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PORTOLA DATE: 02/21/2001 CITY: MISSION VIEJO

E-W STREET: SR-241 SB RAMPS DAY: WEDNESDAY PROJECT# 0221006A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		2	1	1	2		2		1				
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM		375	15	26	67		15		11				509
15 AM		329	19	39	72		16		17				492
30 AM		340	20	47	158		14		19				598
45 AM		375	26	57	189		22		25				694
8:00 AM		491	23	48	110		18		21				711
15 AM		342	25	41	122		15		17				562
30 AM		269	21	30	132		10		13				475
45 AM		244	20	27	162		11		11				475
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	2765	169	315	1012	0	121	0	134	0	0	0	4516

AM Peak Hr Begins at 730 AM

PEAK VOLUMES =	0	1548	94	193	579	0	69	0	82	0	0	0	2565

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PORTOLA DATE: 02/21/2001 CITY: MISSION VIEJO

E-W STREET: SR-241 SB RAMPS DAY: WEDNESDAY PROJECT# 0221006P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:		2	1	1	2		2		1				
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM		181	18	103	291		17		78				688
15 PM		167	19	122	289		19		85				701
30 PM		175	21	132	286		29		96				739
45 PM		188	22	140	357		32		81				820
5:00 PM		167	29	197	365		43		57				858
15 PM		192	26	246	299		36		38				837
30 PM		193	28	221	288		41		41				812
45 PM		162	24	213	245		31		44				719
6:00 PM													
15 PM													
30 PM													
45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	1425	187	1374	2420	0	248	0	520	0	0	0	6174

PM Peak Hr Begins at 445 PM

PEAK													
VOLUMES =	0	740	105	804	1309	0	152	0	217	0	0	0	3327

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SANTA MARGARITA DATE: 2/21/2001 CITY: MISSION VIEJO
E-W STREET: EL TORO RD DAY: WEDNESDAY PROJECT# 0221002A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	4	0	2	3	1	1	3	1	1	3	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	128	220	1	6	50	24	32	25	52	3	89	48	678
15 AM	149	265	1	9	69	41	52	39	94	3	101	47	870
30 AM	169	279	3	9	75	53	368	61	87	4	118	51	1277
45 AM	198	323	3	10	72	55	74	46	106	3	132	76	1098
8:00 AM	143	296	2	12	78	46	40	30	91	3	95	51	887
15 AM	154	241	1	10	58	52	39	21	92	6	70	47	791
30 AM	127	207	8	8	39	49	41	30	78	5	64	40	696
45 AM	185	196	7	11	64	42	33	58	83	6	88	48	821
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	1253	2027	26	75	505	362	679	310	683	33	757	408	7118
AM Peak Hr Begins at			715 AM										
PEAK VOLUMES =	659	1163	9	40	294	195	534	176	378	13	446	225	4132

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SANTA MARGARITA
E-W STREET: EL TORO RD
DATE: 2/21/2001
DAY: WEDNESDAY
CITY: MISSION VIEJO
PROJECT# 0221002P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	4	0	2	3	1	1	3	1	1	3	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	106	130	7	33	265	88	38	83	172	4	43	37	1006
15 PM	100	118	10	44	237	82	51	78	181	4	42	33	980
30 PM	121	138	14	42	220	83	43	85	191	2	34	26	999
45 PM	80	121	12	32	245	85	66	88	188	3	35	33	988
5:00 PM	106	192	19	45	391	110	60	125	235	1	38	23	1345
15 PM	110	146	13	43	373	85	55	121	270	4	44	28	1292
30 PM	101	156	11	30	344	109	67	133	275	7	54	36	1323
45 PM	105	86	18	38	360	88	42	123	265	3	58	31	1217
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	829	1087	104	307	2435	730	422	836	1777	28	348	247	9150

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	422	580	61	156	1468	392	224	502	1045	15	194	118	5177

ADDITIONS: SIGNALIZED

Location:Santiago Cyn. n/o Silverado Cyn.					M.V.	Volumes for Thurs. 2/22/01				02-3003	
AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	6		6			12:00-12:15	35		20		
12:15-12:3	3		11			12:15-12:30	29		36		
12:30-12:4	3		5			12:30-12:45	30		21		
12:45-1:00	2	14	2	24	38	12:45-1:00	33	127	27	104	231
1:00-1:15	3		3			1:00-1:15	38		21		
1:15-1:30	2		1			1:15-1:30	22		29		
1:30-1:45	1		4			1:30-1:45	31		22		
1:45-2:00	2	8	3	11	19	1:45-2:00	38	129	25	97	226
2:00-2:15	3		3			2:00-2:15	28		35		
2:15-2:30	2		5			2:15-2:30	44		37		
2:30-2:45	0		4			2:30-2:45	36		31		
2:45-3:00	1	6	3	15	21	2:45-3:00	57	165	34	137	302
3:00-3:15	2		4			3:00-3:15	56		28		
3:15-3:30	5		1			3:15-3:30	61		51		
3:30-3:45	5		3			3:30-3:45	75		40		
3:45-4:00	4	16	3	11	27	3:45-4:00	75	267	46	165	432
4:00-4:15	0		2			4:00-4:15	72		50		
4:15-4:30	8		4			4:15-4:30	80		60		
4:30-4:45	6		4			4:30-4:45	81		73		
4:45-5:00	4	18	8	18	36	4:45-5:00	59	292	67	250	542
5:00-5:15	3		2			5:00-5:15	68		76		
5:15-5:30	17		4			5:15-5:30	47		95		
5:30-5:45	19		5			5:30-5:45	72		92		
5:45-6:00	23	62	12	23	85	5:45-6:00	61	248	91	354	602
6:00-6:15	26		22			6:00-6:15	54		84		
6:15-6:30	41		10			6:15-6:30	60		68		
6:30-6:45	48		63			6:30-6:45	40		67		
6:45-7:00	82	197	59	154	351	6:45-7:00	46	200	65	284	484
7:00-7:15	76		56			7:00-7:15	31		50		
7:15-7:30	108		27			7:15-7:30	10		45		
7:30-7:45	153		28			7:30-7:45	29		35		
7:45-8:00	141	478	50	161	639	7:45-8:00	15	85	26	156	241
8:00-8:15	104		53			8:00-8:15	20		48		
8:15-8:30	155		27			8:15-8:30	11		27		
8:30-8:45	105		49			8:30-8:45	9		17		
8:45-9:00	86	450	32	161	611	8:45-9:00	11	51	31	123	174
9:00-9:15	75		28			9:00-9:15	10		18		
9:15-9:30	53		23			9:15-9:30	8		29		
9:30-9:45	40		24			9:30-9:45	19		25		
9:45-10:00	39	207	32	107	314	9:45-10:00	14	51	22	94	145
10:00-10:1	47		11			10:00-10:15	12		15		
10:15-10:3	41		15			10:15-10:30	7		14		
10:30-10:4	35		9			10:30-10:45	7		21		
10:45-11:0	31	154	17	52	206	10:45-11:00	9	35	14	64	99
11:00-11:1	25		18			11:00-11:15	12		11		
11:15-11:3	28		21			11:15-11:30	8		14		
11:30-11:4	23		20			11:30-11:45	3		12		
11:45-12:0	23	99	20	79	178	11:45-12:00	1	24	12	49	73
Total Vol	1709		816		2525		1674		1877		3551
Daily Totals							3383		2693		6076

Location:Santiago Cyn. s/o Silverado Cyn.			M.V.			Volumes for Thurs. 2/22/01			02150000		
AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	7		4			12:00-12:15	25		16		
12:15-12:3	0		7			12:15-12:30	24		33		
12:30-12:4	2		2			12:30-12:45	31		22		
12:45-1:00	1	10	3	16	26	12:45-1:00	29	109	24	95	204
1:00-1:15	2		2			1:00-1:15	36		21		
1:15-1:30	0		0			1:15-1:30	14		21		
1:30-1:45	1		2			1:30-1:45	27		37		
1:45-2:00	1	4	0	4	8	1:45-2:00	34	111	22	101	212
2:00-2:15	0		3			2:00-2:15	39		31		
2:15-2:30	0		3			2:15-2:30	48		25		
2:30-2:45	1		3			2:30-2:45	37		28		
2:45-3:00	3	4	0	9	13	2:45-3:00	48	172	36	120	292
3:00-3:15	2		2			3:00-3:15	56		28		
3:15-3:30	5		0			3:15-3:30	44		43		
3:30-3:45	1		1			3:30-3:45	78		45		
3:45-4:00	5	13	2	5	18	3:45-4:00	66	244	46	162	406
4:00-4:15	0		1			4:00-4:15	52		61		
4:15-4:30	5		2			4:15-4:30	55		51		
4:30-4:45	4		2			4:30-4:45	61		61		
4:45-5:00	5	14	8	13	27	4:45-5:00	64	232	60	233	465
5:00-5:15	5		3			5:00-5:15	63		64		
5:15-5:30	11		3			5:15-5:30	47		73		
5:30-5:45	16		8			5:30-5:45	44		79		
5:45-6:00	11	43	11	25	68	5:45-6:00	54	208	81	297	505
6:00-6:15	27		23			6:00-6:15	52		69		
6:15-6:30	31		35			6:15-6:30	56		63		
6:30-6:45	47		55			6:30-6:45	44		63		
6:45-7:00	54	159	66	179	338	6:45-7:00	27	179	43	238	417
7:00-7:15	64		46			7:00-7:15	38		36		
7:15-7:30	86		38			7:15-7:30	15		36		
7:30-7:45	141		44			7:30-7:45	21		27		
7:45-8:00	95	386	44	172	558	7:45-8:00	12	86	14	113	199
8:00-8:15	102		41			8:00-8:15	19		30		
8:15-8:30	127		40			8:15-8:30	16		15		
8:30-8:45	85		39			8:30-8:45	11		19		
8:45-9:00	74	388	29	149	537	8:45-9:00	12	58	21	85	143
9:00-9:15	56		26			9:00-9:15	18		12		
9:15-9:30	44		21			9:15-9:30	11		15		
9:30-9:45	27		20			9:30-9:45	9		12		
9:45-10:00	30	157	34	101	258	9:45-10:00	12	50	27	66	116
10:00-10:1	35		20			10:00-10:15	16		17		
10:15-10:3	31		13			10:15-10:30	13		9		
10:30-10:4	30		22			10:30-10:45	8		14		
10:45-11:0	22	118	20	75	193	10:45-11:00	16	53	6	46	99
11:00-11:1	21		15			11:00-11:15	7		6		
11:15-11:3	25		12			11:15-11:30	4		6		
11:30-11:4	19		18			11:30-11:45	4		8		
11:45-12:0	21	86	25	70	156	11:45-12:00	6	21	9	29	50
Total Vol	1382		818		2200		1523		1585		3108
Daily Totals							2905		2403		5308

Location:Santiago Cyn. n/o Ridgeline Mission Viejo						Volumes for Thurs. 2/22/01					02-150003
AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	7		9			12:00-12:15	28		29		
12:15-12:3	4		8			12:15-12:30	24		30		
12:30-12:4	3		3			12:30-12:45	32		21		
12:45-1:00	1	15	3	23	38	12:45-1:00	31	115	27	107	222
1:00-1:15	4		1			1:00-1:15	36		20		
1:15-1:30	2		2			1:15-1:30	17		28		
1:30-1:45	1		2			1:30-1:45	30		35		
1:45-2:00	2	9	0	5	14	1:45-2:00	42	125	33	116	241
2:00-2:15	0		4			2:00-2:15	39		27		
2:15-2:30	0		3			2:15-2:30	43		46		
2:30-2:45	4		4			2:30-2:45	36		31		
2:45-3:00	3	7	0	11	18	2:45-3:00	66	184	25	129	313
3:00-3:15	2		1			3:00-3:15	56		36		
3:15-3:30	5		0			3:15-3:30	54		36		
3:30-3:45	2		0			3:30-3:45	74		50		
3:45-4:00	4	13	2	3	16	3:45-4:00	80	264	46	168	432
4:00-4:15	0		2			4:00-4:15	74		55		
4:15-4:30	5		1			4:15-4:30	93		52		
4:30-4:45	4		2			4:30-4:45	109		65		
4:45-5:00	5	14	10	15	29	4:45-5:00	75	351	55	227	578
5:00-5:15	4		4			5:00-5:15	80		59		
5:15-5:30	16		3			5:15-5:30	109		69		
5:30-5:45	13		10			5:30-5:45	99		72		
5:45-6:00	17	50	13	30	80	5:45-6:00	62	350	82	282	632
6:00-6:15	23		23			6:00-6:15	66		62		
6:15-6:30	26		38			6:15-6:30	60		67		
6:30-6:45	49		53			6:30-6:45	44		64		
6:45-7:00	47	145	69	183	328	6:45-7:00	44	214	40	233	447
7:00-7:15	56		73			7:00-7:15	44		35		
7:15-7:30	60		78			7:15-7:30	20		39		
7:30-7:45	58		75			7:30-7:45	24		30		
7:45-8:00	72	246	67	293	539	7:45-8:00	28	116	18	122	238
8:00-8:15	66		93			8:00-8:15	20		26		
8:15-8:30	53		67			8:15-8:30	26		15		
8:30-8:45	74		79			8:30-8:45	20		12		
8:45-9:00	70	263	42	281	544	8:45-9:00	17	83	24	77	160
9:00-9:15	50		30			9:00-9:15	14		13		
9:15-9:30	44		20			9:15-9:30	15		14		
9:30-9:45	33		23			9:30-9:45	17		11		
9:45-10:00	18	145	36	109	254	9:45-10:00	16	62	17	55	117
10:00-10:1	34		30			10:00-10:15	17		14		
10:15-10:3	30		16			10:15-10:30	16		11		
10:30-10:4	32		22			10:30-10:45	13		11		
10:45-11:0	23	119	24	92	211	10:45-11:00	15	61	9	45	106
11:00-11:1	23		20			11:00-11:15	10		7		
11:15-11:3	30		18			11:15-11:30	9		4		
11:30-11:4	16		18			11:30-11:45	5		5		
11:45-12:0	19	88	28	84	172	11:45-12:00	6	30	4	20	50
Total Vol	1114		1129		2243		1955		1581		3536
Daily Totals							3069		2710		5779

Location:Santiago Cyn. n/o Olive Mission Viejo Volumes for Thurs. 2/22/01 02150002

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	6		9			12:00-12:15	24		27		
12:15-12:3	4		6			12:15-12:30	27		37		
12:30-12:4	2		2			12:30-12:45	34		17		
12:45-1:00	3	15	2	19	34	12:45-1:00	29	114	30	111	225
1:00-1:15	1		1			1:00-1:15	36		23		
1:15-1:30	3		2			1:15-1:30	21		26		
1:30-1:45	4		2			1:30-1:45	57		35		
1:45-2:00	1	9	0	5	14	1:45-2:00	35	149	38	122	271
2:00-2:15	1		5			2:00-2:15	43		29		
2:15-2:30	2		3			2:15-2:30	38		41		
2:30-2:45	2		3			2:30-2:45	46		37		
2:45-3:00	3	8	0	11	19	2:45-3:00	66	193	34	141	334
3:00-3:15	4		1			3:00-3:15	58		42		
3:15-3:30	2		0			3:15-3:30	56		42		
3:30-3:45	2		1			3:30-3:45	87		50		
3:45-4:00	2	10	3	5	15	3:45-4:00	77	278	43	177	455
4:00-4:15	3		2			4:00-4:15	75		59		
4:15-4:30	3		2			4:15-4:30	78		57		
4:30-4:45	4		1			4:30-4:45	67		59		
4:45-5:00	2	12	8	13	25	4:45-5:00	75	295	49	224	519
5:00-5:15	4		5			5:00-5:15	62		54		
5:15-5:30	7		3			5:15-5:30	57		48		
5:30-5:45	9		11			5:30-5:45	85		67		
5:45-6:00	14	34	15	34	68	5:45-6:00	62	266	72	241	507
6:00-6:15	16		24			6:00-6:15	65		44		
6:15-6:30	24		41			6:15-6:30	54		58		
6:30-6:45	40		44			6:30-6:45	36		54		
6:45-7:00	34	114	63	172	286	6:45-7:00	41	196	34	190	386
7:00-7:15	53		78			7:00-7:15	34		26		
7:15-7:30	74		55			7:15-7:30	27		39		
7:30-7:45	103		82			7:30-7:45	23		27		
7:45-8:00	68	298	82	297	595	7:45-8:00	36	120	19	111	231
8:00-8:15	75		105			8:00-8:15	26		23		
8:15-8:30	89		91			8:15-8:30	34		11		
8:30-8:45	78		79			8:30-8:45	15		12		
8:45-9:00	50	292	56	331	623	8:45-9:00	12	87	15	61	148
9:00-9:15	46		46			9:00-9:15	19		8		
9:15-9:30	38		34			9:15-9:30	14		17		
9:30-9:45	36		34			9:30-9:45	16		12		
9:45-10:00	24	144	31	145	289	9:45-10:00	22	71	15	52	123
10:00-10:1	32		33			10:00-10:15	13		10		
10:15-10:3	33		18			10:15-10:30	19		11		
10:30-10:4	28		29			10:30-10:45	11		7		
10:45-11:0	21	114	32	112	226	10:45-11:00	16	59	8	36	95
11:00-11:1	22		32			11:00-11:15	11		5		
11:15-11:3	27		21			11:15-11:30	8		5		
11:30-11:4	18		19			11:30-11:45	5		4		
11:45-12:0	29	96	25	97	193	11:45-12:00	4	28	6	20	48
Total Vol	1146		1241		2387		1856		1486		3342
Daily Totals							3002		2727		5729

Location:El Toro n/o Valley Vista					M.V.	Volumes for Thurs. 2/22/01				02190611	
AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	4		3			12:00-12:15	48		39		
12:15-12:3	6		0			12:15-12:30	53		36		
12:30-12:4	4		4			12:30-12:45	33		45		
12:45-1:00	3	17	3	10	27	12:45-1:00	53	187	38	158	345
1:00-1:15	3		1			1:00-1:15	36		34		
1:15-1:30	2		1			1:15-1:30	48		42		
1:30-1:45	3		3			1:30-1:45	40		27		
1:45-2:00	3	11	0	5	16	1:45-2:00	35	159	41	144	303
2:00-2:15	2		2			2:00-2:15	55		45		
2:15-2:30	1		1			2:15-2:30	42		52		
2:30-2:45	2		1			2:30-2:45	64		67		
2:45-3:00	1	6	1	5	11	2:45-3:00	65	226	57	221	447
3:00-3:15	2		1			3:00-3:15	55		56		
3:15-3:30	1		1			3:15-3:30	63		68		
3:30-3:45	2		1			3:30-3:45	85		51		
3:45-4:00	0	5	2	5	10	3:45-4:00	107	310	45	220	530
4:00-4:15	2		1			4:00-4:15	84		61		
4:15-4:30	3		1			4:15-4:30	96		55		
4:30-4:45	3		4			4:30-4:45	111		60		
4:45-5:00	1	9	8	14	23	4:45-5:00	74	365	101	277	642
5:00-5:15	2		4			5:00-5:15	115		68		
5:15-5:30	7		6			5:15-5:30	134		105		
5:30-5:45	7		18			5:30-5:45	133		81		
5:45-6:00	13	29	30	58	87	5:45-6:00	118	500	78	332	832
6:00-6:15	13		25			6:00-6:15	100		76		
6:15-6:30	23		29			6:15-6:30	88		56		
6:30-6:45	32		39			6:30-6:45	68		51		
6:45-7:00	51	119	73	166	285	6:45-7:00	76	332	50	233	565
7:00-7:15	59		85			7:00-7:15	80		62		
7:15-7:30	59		64			7:15-7:30	52		27		
7:30-7:45	70		100			7:30-7:45	60		27		
7:45-8:00	72	260	114	363	623	7:45-8:00	39	231	36	152	383
8:00-8:15	67		142			8:00-8:15	46		20		
8:15-8:30	72		116			8:15-8:30	43		21		
8:30-8:45	50		104			8:30-8:45	49		16		
8:45-9:00	55	244	77	439	683	8:45-9:00	40	178	19	76	254
9:00-9:15	50		80			9:00-9:15	27		18		
9:15-9:30	47		31			9:15-9:30	26		22		
9:30-9:45	39		56			9:30-9:45	33		23		
9:45-10:00	34	170	38	205	375	9:45-10:00	38	124	11	74	198
10:00-10:1	27		53			10:00-10:15	28		20		
10:15-10:3	22		38			10:15-10:30	22		12		
10:30-10:4	35		31			10:30-10:45	14		12		
10:45-11:0	29	113	39	161	274	10:45-11:00	12	76	6	50	126
11:00-11:1	32		35			11:00-11:15	12		10		
11:15-11:3	32		42			11:15-11:30	7		11		
11:30-11:4	39		36			11:30-11:45	9		6		
11:45-12:0	31	134	44	157	291	11:45-12:00	10	38	3	30	68
Total Vol	1117		1588		2705		2726		1967		4693
Daily Totals							3843		3555		7398

Location:El Toro s/o Valley Vista			Mission Viejo			Volumes for Thurs. 2/22/01			02190013		
AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	6		4			12:00-12:15	56		46		
12:15-12:3	9		0			12:15-12:30	60		37		
12:30-12:4	4		4			12:30-12:45	42		57		
12:45-1:00	3	22	3	11	33	12:45-1:00	57	215	44	184	399
1:00-1:15	4		1			1:00-1:15	38		41		
1:15-1:30	2		2			1:15-1:30	53		45		
1:30-1:45	4		4			1:30-1:45	47		40		
1:45-2:00	5	15	1	8	23	1:45-2:00	41	179	48	174	353
2:00-2:15	3		2			2:00-2:15	61		53		
2:15-2:30	1		2			2:15-2:30	54		59		
2:30-2:45	2		2			2:30-2:45	76		69		
2:45-3:00	2	8	1	7	15	2:45-3:00	69	260	67	248	508
3:00-3:15	1		1			3:00-3:15	61		58		
3:15-3:30	2		1			3:15-3:30	70		80		
3:30-3:45	2		2			3:30-3:45	94		51		
3:45-4:00	0	5	3	7	12	3:45-4:00	112	337	50	239	576
4:00-4:15	2		3			4:00-4:15	112		59		
4:15-4:30	2		1			4:15-4:30	97		61		
4:30-4:45	4		6			4:30-4:45	121		68		
4:45-5:00	3	11	8	18	29	4:45-5:00	101	431	103	291	722
5:00-5:15	1		6			5:00-5:15	141		73		
5:15-5:30	6		7			5:15-5:30	140		109		
5:30-5:45	7		20			5:30-5:45	146		78		
5:45-6:00	12	26	30	63	89	5:45-6:00	140	567	86	346	913
6:00-6:15	12		36			6:00-6:15	115		82		
6:15-6:30	20		35			6:15-6:30	117		66		
6:30-6:45	30		46			6:30-6:45	88		54		
6:45-7:00	44	106	87	204	310	6:45-7:00	96	416	54	256	672
7:00-7:15	62		104			7:00-7:15	101		68		
7:15-7:30	60		89			7:15-7:30	66		29		
7:30-7:45	75		119			7:30-7:45	76		32		
7:45-8:00	72	269	145	457	726	7:45-8:00	49	292	33	162	454
8:00-8:15	69		102			8:00-8:15	50		24		
8:15-8:30	72		137			8:15-8:30	51		21		
8:30-8:45	53		117			8:30-8:45	53		18		
8:45-9:00	58	252	92	448	700	8:45-9:00	48	202	19	82	284
9:00-9:15	56		95			9:00-9:15	31		18		
9:15-9:30	52		42			9:15-9:30	30		30		
9:30-9:45	39		68			9:30-9:45	44		23		
9:45-10:00	41	188	52	257	445	9:45-10:00	44	149	11	82	231
10:00-10:1	31		59			10:00-10:15	34		22		
10:15-10:3	26		46			10:15-10:30	30		14		
10:30-10:4	35		39			10:30-10:45	19		14		
10:45-11:0	42	134	37	181	315	10:45-11:00	15	98	6	56	154
11:00-11:1	38		39			11:00-11:15	14		13		
11:15-11:3	35		50			11:15-11:30	7		11		
11:30-11:4	45		48			11:30-11:45	10		7		
11:45-12:0	40	158	47	184	342	11:45-12:00	11	42	4	35	77
Total Vol	1194		1845		3039		3188		2155		5343
Daily Totals							4382		4000		8382

Location:El Toro btn. SR-241 & Glen Ranch M.V. Volumes for Thurs. 2/22/01 02130007

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	5		4			12:00-12:15	65		59		
12:15-12:3	6		1			12:15-12:30	65		49		
12:30-12:4	7		4			12:30-12:45	41		68		
12:45-1:00	4	22	3	12	34	12:45-1:00	64	235	44	220	455
1:00-1:15	3		2			1:00-1:15	46		45		
1:15-1:30	3		2			1:15-1:30	57		46		
1:30-1:45	3		3			1:30-1:45	47		45		
1:45-2:00	5	14	1	8	22	1:45-2:00	57	207	49	185	392
2:00-2:15	3		1			2:00-2:15	78		49		
2:15-2:30	0		3			2:15-2:30	64		78		
2:30-2:45	3		2			2:30-2:45	77		81		
2:45-3:00	1	7	3	9	16	2:45-3:00	75	294	72	280	574
3:00-3:15	2		1			3:00-3:15	71		78		
3:15-3:30	3		1			3:15-3:30	70		88		
3:30-3:45	1		2			3:30-3:45	113		74		
3:45-4:00	0	6	0	4	10	3:45-4:00	131	385	70	310	695
4:00-4:15	1		3			4:00-4:15	105		64		
4:15-4:30	3		2			4:15-4:30	129		82		
4:30-4:45	5		5			4:30-4:45	109		74		
4:45-5:00	2	11	3	13	24	4:45-5:00	93	436	120	340	776
5:00-5:15	2		5			5:00-5:15	147		92		
5:15-5:30	6		10			5:15-5:30	107		125		
5:30-5:45	6		21			5:30-5:45	134		84		
5:45-6:00	12	26	31	67	93	5:45-6:00	146	534	105	406	940
6:00-6:15	12		36			6:00-6:15	140		88		
6:15-6:30	18		36			6:15-6:30	115		83		
6:30-6:45	35		38			6:30-6:45	102		67		
6:45-7:00	43	108	90	200	308	6:45-7:00	100	457	72	310	767
7:00-7:15	69		92			7:00-7:15	100		77		
7:15-7:30	65		75			7:15-7:30	80		53		
7:30-7:45	80		87			7:30-7:45	92		40		
7:45-8:00	77	291	143	397	688	7:45-8:00	62	334	40	210	544
8:00-8:15	86		159			8:00-8:15	64		31		
8:15-8:30	84		133			8:15-8:30	63		32		
8:30-8:45	61		105			8:30-8:45	54		33		
8:45-9:00	75	306	68	465	771	8:45-9:00	55	236	28	124	360
9:00-9:15	64		109			9:00-9:15	32		21		
9:15-9:30	67		60			9:15-9:30	48		37		
9:30-9:45	41		75			9:30-9:45	51		32		
9:45-10:00	42	214	60	304	518	9:45-10:00	52	183	15	105	288
10:00-10:1	30		73			10:00-10:15	34		25		
10:15-10:3	26		53			10:15-10:30	33		16		
10:30-10:4	49		39			10:30-10:45	25		13		
10:45-11:0	50	155	40	205	360	10:45-11:00	16	108	10	64	172
11:00-11:1	39		66			11:00-11:15	17		12		
11:15-11:3	51		58			11:15-11:30	10		12		
11:30-11:4	48		48			11:30-11:45	12		7		
11:45-12:0	44	182	68	240	422	11:45-12:00	11	50	5	36	86
Total Vol	1342		1924		3266		3459		2590		6049
Daily Totals							4801		4514		9315

Location:Santa Margarita s/o El Toro M.V. Volumes for Thurs. 2/22/01 02150010

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	22		24			12:00-12:15	179		183		
12:15-12:3	17		27			12:15-12:30	196		192		
12:30-12:4	17		17			12:30-12:45	241		181		
12:45-1:00	14	70	29	97	167	12:45-1:00	224	840	184	740	1580
1:00-1:15	6		13			1:00-1:15	183		203		
1:15-1:30	11		13			1:15-1:30	193		185		
1:30-1:45	3		11			1:30-1:45	204		147		
1:45-2:00	9	29	19	56	85	1:45-2:00	193	773	191	726	1499
2:00-2:15	6		13			2:00-2:15	198		223		
2:15-2:30	5		8			2:15-2:30	204		237		
2:30-2:45	8		5			2:30-2:45	172		244		
2:45-3:00	7	26	3	29	55	2:45-3:00	180	754	228	932	1686
3:00-3:15	11		8			3:00-3:15	171		306		
3:15-3:30	5		5			3:15-3:30	245		347		
3:30-3:45	15		9			3:30-3:45	265		304		
3:45-4:00	16	47	14	36	83	3:45-4:00	207	888	327	1284	2172
4:00-4:15	12		6			4:00-4:15	223		442		
4:15-4:30	23		8			4:15-4:30	244		492		
4:30-4:45	27		4			4:30-4:45	219		449		
4:45-5:00	36	98	13	31	129	4:45-5:00	266	952	472	1855	2807
5:00-5:15	50		14			5:00-5:15	246		512		
5:15-5:30	64		18			5:15-5:30	280		594		
5:30-5:45	92		21			5:30-5:45	233		680		
5:45-6:00	130	336	30	83	419	5:45-6:00	270	1029	592	2378	3407
6:00-6:15	140		36			6:00-6:15	212		502		
6:15-6:30	151		37			6:15-6:30	207		472		
6:30-6:45	175		54			6:30-6:45	194		439		
6:45-7:00	263	729	125	252	981	6:45-7:00	208	821	379	1792	2613
7:00-7:15	419		188			7:00-7:15	204		293		
7:15-7:30	405		116			7:15-7:30	166		301		
7:30-7:45	424		149			7:30-7:45	139		256		
7:45-8:00	461	1709	220	673	2382	7:45-8:00	117	626	237	1087	1713
8:00-8:15	550		181			8:00-8:15	114		159		
8:15-8:30	464		138			8:15-8:30	100		172		
8:30-8:45	424		118			8:30-8:45	97		127		
8:45-9:00	281	1719	126	563	2282	8:45-9:00	79	390	136	594	984
9:00-9:15	234		127			9:00-9:15	87		113		
9:15-9:30	199		119			9:15-9:30	93		139		
9:30-9:45	200		127			9:30-9:45	94		132		
9:45-10:00	190	823	106	479	1302	9:45-10:00	66	340	111	495	835
10:00-10:1	182		115			10:00-10:15	69		105		
10:15-10:3	150		119			10:15-10:30	51		106		
10:30-10:4	161		118			10:30-10:45	43		82		
10:45-11:0	164	657	123	475	1132	10:45-11:00	34	197	67	360	557
11:00-11:1	156		136			11:00-11:15	26		47		
11:15-11:3	166		165			11:15-11:30	29		61		
11:30-11:4	159		148			11:30-11:45	22		37		
11:45-12:0	176	657	146	595	1252	11:45-12:00	28	105	37	182	287
Total Vol	6900		3369		10269		7715		12425		20140
Daily Totals							14615		15794		30409

Location:Portola btn. SR-241 & El Toro			M.V.			Volumes for Thurs. 2/22/01			02150009		
AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	13		14			12:00-12:15	168		139		
12:15-12:3	10		26			12:15-12:30	167		162		
12:30-12:4	16		16			12:30-12:45	216		155		
12:45-1:00	7	46	15	71	117	12:45-1:00	184	735	153	609	1344
1:00-1:15	5		5			1:00-1:15	190		173		
1:15-1:30	5		7			1:15-1:30	169		156		
1:30-1:45	3		4			1:30-1:45	175		143		
1:45-2:00	4	17	7	23	40	1:45-2:00	185	719	150	622	1341
2:00-2:15	4		6			2:00-2:15	151		156		
2:15-2:30	0		3			2:15-2:30	188		168		
2:30-2:45	5		3			2:30-2:45	130		144		
2:45-3:00	7	16	5	17	33	2:45-3:00	145	614	156	624	1238
3:00-3:15	10		1			3:00-3:15	191		264		
3:15-3:30	7		4			3:15-3:30	225		249		
3:30-3:45	10		8			3:30-3:45	209		255		
3:45-4:00	14	41	5	18	59	3:45-4:00	196	821	262	1030	1851
4:00-4:15	11		2			4:00-4:15	188		370		
4:15-4:30	16		6			4:15-4:30	201		388		
4:30-4:45	12		5			4:30-4:45	202		345		
4:45-5:00	35	74	18	31	105	4:45-5:00	208	799	380	1483	2282
5:00-5:15	43		7			5:00-5:15	265		440		
5:15-5:30	57		13			5:15-5:30	231		529		
5:30-5:45	64		20			5:30-5:45	215		515		
5:45-6:00	115	279	20	60	339	5:45-6:00	220	931	494	1978	2909
6:00-6:15	116		34			6:00-6:15	163		410		
6:15-6:30	122		45			6:15-6:30	123		390		
6:30-6:45	161		60			6:30-6:45	125		336		
6:45-7:00	257	656	137	276	932	6:45-7:00	142	553	360	1496	2049
7:00-7:15	405		92			7:00-7:15	142		255		
7:15-7:30	379		79			7:15-7:30	130		197		
7:30-7:45	403		127			7:30-7:45	127		150		
7:45-8:00	438	1625	158	456	2081	7:45-8:00	105	504	160	762	1266
8:00-8:15	373		122			8:00-8:15	90		139		
8:15-8:30	384		119			8:15-8:30	87		122		
8:30-8:45	336		113			8:30-8:45	69		112		
8:45-9:00	260	1353	115	469	1822	8:45-9:00	74	320	104	477	797
9:00-9:15	205		119			9:00-9:15	86		90		
9:15-9:30	177		114			9:15-9:30	102		82		
9:30-9:45	149		120			9:30-9:45	90		65		
9:45-10:00	140	671	93	446	1117	9:45-10:00	63	341	68	305	646
10:00-10:1	157		108			10:00-10:15	38		65		
10:15-10:3	125		98			10:15-10:30	32		68		
10:30-10:4	134		107			10:30-10:45	32		43		
10:45-11:0	126	542	98	411	953	10:45-11:00	28	130	36	212	342
11:00-11:1	126		113			11:00-11:15	22		34		
11:15-11:3	163		116			11:15-11:30	16		31		
11:30-11:4	138		139			11:30-11:45	11		22		
11:45-12:0	149	576	132	500	1076	11:45-12:00	8	57	23	110	167
Total Vol	5896		2778		8674		6524		9708		16232
Daily Totals							12420		12486		24906

Location:Glen Ranch btn. Portola & Saddlebac M.V.						Volumes for Thurs. 2/22/01					02130008
AM Period	EB		WB			PM Period	EB		WB		
12:00-12:1	14		3			12:00-12:15	66		58		
12:15-12:3	9		5			12:15-12:30	74		58		
12:30-12:4	6		5			12:30-12:45	71		70		
12:45-1:00	13	42	1	14	56	12:45-1:00	70	281	64	250	531
1:00-1:15	9		8			1:00-1:15	62		73		
1:15-1:30	6		2			1:15-1:30	79		72		
1:30-1:45	5		3			1:30-1:45	74		48		
1:45-2:00	0	20	2	15	35	1:45-2:00	73	288	60	253	541
2:00-2:15	5		2			2:00-2:15	70		47		
2:15-2:30	6		3			2:15-2:30	73		84		
2:30-2:45	3		0			2:30-2:45	70		81		
2:45-3:00	0	14	1	6	20	2:45-3:00	85	298	57	269	567
3:00-3:15	2		0			3:00-3:15	67		79		
3:15-3:30	1		3			3:15-3:30	91		67		
3:30-3:45	0		4			3:30-3:45	107		55		
3:45-4:00	0	3	6	13	16	3:45-4:00	91	356	64	265	621
4:00-4:15	1		6			4:00-4:15	142		82		
4:15-4:30	2		3			4:15-4:30	146		78		
4:30-4:45	1		13			4:30-4:45	123		70		
4:45-5:00	1	5	19	41	46	4:45-5:00	163	574	74	304	878
5:00-5:15	1		16			5:00-5:15	209		74		
5:15-5:30	2		36			5:15-5:30	226		76		
5:30-5:45	2		39			5:30-5:45	211		96		
5:45-6:00	8	13	71	162	175	5:45-6:00	167	813	81	327	1140
6:00-6:15	6		84			6:00-6:15	229		47		
6:15-6:30	10		91			6:15-6:30	184		70		
6:30-6:45	9		103			6:30-6:45	193		59		
6:45-7:00	21	46	149	427	473	6:45-7:00	196	802	61	237	1039
7:00-7:15	41		177			7:00-7:15	169		56		
7:15-7:30	27		201			7:15-7:30	136		40		
7:30-7:45	42		203			7:30-7:45	133		53		
7:45-8:00	50	160	253	834	994	7:45-8:00	112	550	36	185	735
8:00-8:15	41		280			8:00-8:15	119		28		
8:15-8:30	42		198			8:15-8:30	94		42		
8:30-8:45	37		145			8:30-8:45	66		38		
8:45-9:00	47	167	141	764	931	8:45-9:00	74	353	35	143	496
9:00-9:15	40		113			9:00-9:15	82		21		
9:15-9:30	34		93			9:15-9:30	81		17		
9:30-9:45	33		90			9:30-9:45	70		29		
9:45-10:00	34	141	75	371	512	9:45-10:00	57	290	19	86	376
10:00-10:1	26		56			10:00-10:15	52		14		
10:15-10:3	41		64			10:15-10:30	49		21		
10:30-10:4	30		58			10:30-10:45	44		10		
10:45-11:0	39	136	54	232	368	10:45-11:00	15	160	11	56	216
11:00-11:1	47		54			11:00-11:15	20		6		
11:15-11:3	49		58			11:15-11:30	27		11		
11:30-11:4	53		57			11:30-11:45	25		7		
11:45-12:0	51	200	77	246	446	11:45-12:00	15	87	4	28	115
Total Vol	947		3125		4072		4852		2403		7255
Daily Totals							5799		5528		11327

Location:Live Oak Cyn. e/o El Toro Mission Viejo Volumes for Thurs. 2/22/01 02130001

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:1	3		6			12:00-12:15	16		15		
12:15-12:3	3		2			12:15-12:30	17		20		
12:30-12:4	3		0			12:30-12:45	16		20		
12:45-1:00	0	9	3	11	20	12:45-1:00	21	70	15	70	140
1:00-1:15	1		0			1:00-1:15	19		15		
1:15-1:30	2		0			1:15-1:30	20		36		
1:30-1:45	0		1			1:30-1:45	30		23		
1:45-2:00	0	3	0	1	4	1:45-2:00	18	87	20	94	181
2:00-2:15	2		1			2:00-2:15	41		20		
2:15-2:30	1		0			2:15-2:30	30		36		
2:30-2:45	0		1			2:30-2:45	24		24		
2:45-3:00	1	4	1	3	7	2:45-3:00	13	108	40	120	228
3:00-3:15	1		1			3:00-3:15	20		18		
3:15-3:30	0		1			3:15-3:30	22		21		
3:30-3:45	1		0			3:30-3:45	25		44		
3:45-4:00	3	5	1	3	8	3:45-4:00	31	98	30	113	211
4:00-4:15	1		1			4:00-4:15	31		28		
4:15-4:30	1		0			4:15-4:30	25		35		
4:30-4:45	1		4			4:30-4:45	24		27		
4:45-5:00	2	5	2	7	12	4:45-5:00	69	149	37	127	276
5:00-5:15	0		0			5:00-5:15	52		23		
5:15-5:30	1		4			5:15-5:30	56		28		
5:30-5:45	3		8			5:30-5:45	47		16		
5:45-6:00	2	6	7	19	25	5:45-6:00	39	194	18	85	279
6:00-6:15	5		11			6:00-6:15	32		24		
6:15-6:30	11		13			6:15-6:30	37		19		
6:30-6:45	18		25			6:30-6:45	31		9		
6:45-7:00	21	55	28	77	132	6:45-7:00	22	122	14	66	188
7:00-7:15	17		30			7:00-7:15	16		15		
7:15-7:30	11		55			7:15-7:30	25		11		
7:30-7:45	24		46			7:30-7:45	13		11		
7:45-8:00	28	80	39	170	250	7:45-8:00	14	68	5	42	110
8:00-8:15	28		51			8:00-8:15	19		7		
8:15-8:30	28		50			8:15-8:30	10		14		
8:30-8:45	23		50			8:30-8:45	12		6		
8:45-9:00	22	101	33	184	285	8:45-9:00	13	54	6	33	87
9:00-9:15	21		25			9:00-9:15	9		7		
9:15-9:30	12		28			9:15-9:30	14		4		
9:30-9:45	12		21			9:30-9:45	13		7		
9:45-10:00	10	55	16	90	145	9:45-10:00	17	53	15	33	86
10:00-10:1	12		18			10:00-10:15	6		5		
10:15-10:3	11		26			10:15-10:30	9		1		
10:30-10:4	14		19			10:30-10:45	10		7		
10:45-11:0	18	55	17	80	135	10:45-11:00	5	30	9	22	52
11:00-11:1	15		16			11:00-11:15	6		3		
11:15-11:3	15		13			11:15-11:30	3		5		
11:30-11:4	16		19			11:30-11:45	4		4		
11:45-12:0	20	66	25	73	139	11:45-12:00	3	16	1	13	29
Total Vol	444		718		1162		1049		818		1867
Daily Totals							1493		1536		3029

Location:Valley Vista e/o El Toro Mission Viejo Volumes for Thurs. 2/22/01 02130004

AM Period	EB		WB			PM Period	EB		WB		
12:00-12:1	1		1			12:00-12:15	8		9		
12:15-12:3	2		0			12:15-12:30	11		8		
12:30-12:4	0		0			12:30-12:45	7		8		
12:45-1:00	0	3	0	1	4	12:45-1:00	10	36	15	40	76
1:00-1:15	0		0			1:00-1:15	5		8		
1:15-1:30	1		0			1:15-1:30	9		11		
1:30-1:45	1		1			1:30-1:45	8		10		
1:45-2:00	2	4	1	2	6	1:45-2:00	8	30	10	39	69
2:00-2:15	0		1			2:00-2:15	9		14		
2:15-2:30	0		1			2:15-2:30	22		22		
2:30-2:45	1		0			2:30-2:45	27		16		
2:45-3:00	0	1	0	2	3	2:45-3:00	4	62	12	64	126
3:00-3:15	0		0			3:00-3:15	10		16		
3:15-3:30	0		0			3:15-3:30	14		14		
3:30-3:45	0		2			3:30-3:45	16		11		
3:45-4:00	0	0	1	3	3	3:45-4:00	9	49	8	49	98
4:00-4:15	0		1			4:00-4:15	11		10		
4:15-4:30	0		0			4:15-4:30	35		13		
4:30-4:45	0		2			4:30-4:45	20		8		
4:45-5:00	2	2	2	5	7	4:45-5:00	30	96	13	44	140
5:00-5:15	0		2			5:00-5:15	39		12		
5:15-5:30	1		1			5:15-5:30	22		12		
5:30-5:45	1		7			5:30-5:45	21		19		
5:45-6:00	0	2	5	15	17	5:45-6:00	24	106	17	60	166
6:00-6:15	2		10			6:00-6:15	32		19		
6:15-6:30	0		12			6:15-6:30	26		12		
6:30-6:45	1		11			6:30-6:45	25		14		
6:45-7:00	4	7	27	60	67	6:45-7:00	26	109	11	56	165
7:00-7:15	5		43			7:00-7:15	18		15		
7:15-7:30	3		32			7:15-7:30	20		9		
7:30-7:45	9		31			7:30-7:45	14		10		
7:45-8:00	6	23	43	149	172	7:45-8:00	9	61	6	40	101
8:00-8:15	8		53			8:00-8:15	6		2		
8:15-8:30	14		27			8:15-8:30	6		5		
8:30-8:45	9		25			8:30-8:45	4		3		
8:45-9:00	5	36	35	140	176	8:45-9:00	10	26	3	13	39
9:00-9:15	10		27			9:00-9:15	6		4		
9:15-9:30	9		8			9:15-9:30	6		9		
9:30-9:45	4		19			9:30-9:45	8		7		
9:45-10:00	9	32	15	69	101	9:45-10:00	6	26	1	21	47
10:00-10:1	6		12			10:00-10:15	6		4		
10:15-10:3	7		9			10:15-10:30	8		4		
10:30-10:4	12		12			10:30-10:45	4		3		
10:45-11:0	9	34	13	46	80	10:45-11:00	4	22	0	11	33
11:00-11:1	9		8			11:00-11:15	1		3		
11:15-11:3	5		12			11:15-11:30	0		0		
11:30-11:4	6		23			11:30-11:45	2		3		
11:45-12:0	16	36	10	53	89	11:45-12:00	3	6	2	8	14
Total Vol	180		545		725		629		445		1074
Daily Totals							809		990		1799

Location:Marguerite s/o El Toro Mission Viejo Volumes for Thurs. 2/22/01 02130012

AM Period	NB		SB			PM Period	NB		SB		
12:00-12:1	3		9			12:00-12:15	53		60		
12:15-12:3	5		4			12:15-12:30	58		52		
12:30-12:4	6		9			12:30-12:45	45		60		
12:45-1:00	2	16	3	25	41	12:45-1:00	68	224	47	219	443
1:00-1:15	1		1			1:00-1:15	58		44		
1:15-1:30	1		5			1:15-1:30	60		56		
1:30-1:45	0		1			1:30-1:45	41		42		
1:45-2:00	7	9	2	9	18	1:45-2:00	68	227	48	190	417
2:00-2:15	0		2			2:00-2:15	67		45		
2:15-2:30	0		5			2:15-2:30	53		69		
2:30-2:45	4		1			2:30-2:45	61		83		
2:45-3:00	1	5	2	10	15	2:45-3:00	74	255	68	265	520
3:00-3:15	5		2			3:00-3:15	63		87		
3:15-3:30	2		2			3:15-3:30	70		81		
3:30-3:45	2		1			3:30-3:45	99		76		
3:45-4:00	2	11	1	6	17	3:45-4:00	106	338	70	314	652
4:00-4:15	2		3			4:00-4:15	90		76		
4:15-4:30	7		1			4:15-4:30	117		91		
4:30-4:45	7		2			4:30-4:45	109		125		
4:45-5:00	2	18	4	10	28	4:45-5:00	91	407	117	409	816
5:00-5:15	5		3			5:00-5:15	110		112		
5:15-5:30	10		9			5:15-5:30	110		174		
5:30-5:45	21		7			5:30-5:45	115		130		
5:45-6:00	16	52	19	38	90	5:45-6:00	111	446	142	558	1004
6:00-6:15	28		21			6:00-6:15	95		131		
6:15-6:30	50		38			6:15-6:30	107		114		
6:30-6:45	52		28			6:30-6:45	90		105		
6:45-7:00	60	190	69	156	346	6:45-7:00	76	368	98	448	816
7:00-7:15	134		60			7:00-7:15	84		83		
7:15-7:30	124		79			7:15-7:30	80		79		
7:30-7:45	115		85			7:30-7:45	79		56		
7:45-8:00	114	487	90	314	801	7:45-8:00	60	303	57	275	578
8:00-8:15	151		105			8:00-8:15	62		68		
8:15-8:30	116		96			8:15-8:30	48		53		
8:30-8:45	134		108			8:30-8:45	49		39		
8:45-9:00	129	530	68	377	907	8:45-9:00	57	216	51	211	427
9:00-9:15	73		89			9:00-9:15	35		33		
9:15-9:30	82		63			9:15-9:30	39		48		
9:30-9:45	49		59			9:30-9:45	42		41		
9:45-10:00	49	253	57	268	521	9:45-10:00	46	162	38	160	322
10:00-10:1	50		50			10:00-10:15	31		35		
10:15-10:3	32		39			10:15-10:30	37		25		
10:30-10:4	42		39			10:30-10:45	18		26		
10:45-11:0	48	172	35	163	335	10:45-11:00	17	103	15	101	204
11:00-11:1	47		43			11:00-11:15	10		16		
11:15-11:3	45		51			11:15-11:30	9		23		
11:30-11:4	49		42			11:30-11:45	11		12		
11:45-12:0	40	181	79	215	396	11:45-12:00	9	39	7	58	97
Total Vol	1924		1591		3515		3088		3208		6296
Daily Totals							5012		4799		9811

APPENDIX C

ICU CALCULATIONS - EXISTING

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	402	0.24*
NR	1.0	1700	4	0.01-
SL	1.0	1700	7	0.01*
ST	1.0	1700	171	0.10
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	17	0.01
WT	0.0	0	0	0.00
WR	1.0	1700	60	0.03-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.33 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1.0	1700	198	0.12
NR	1.0	1700	17	0.01-
SL	1.0	1700	40	0.02
ST	1.0	1700	277	0.16*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	10	0.01*
WT	0.0	0	0	0.00
WR	1.0	1700	19	0.01-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.22 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	19	0.01
NT	1.0	1700	331	0.19*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	188	0.11
SR	1.0	1700	51	0.03-
EL	0.0	1700	71	0.04
ET	1.0	1700	0	0.05*
ER	0.0	1700	6	0.01
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.29 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	17	0.01*
NT	1.0	1700	196	0.12
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	224	0.13*
SR	1.0	1700	72	0.03-
EL	0.0	1700	44	0.03*
ET	1.0	1700	0	0.03
ER	0.0	1700	14	0.01
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.22 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	251	0.15*
NR	1.0	1700	48	0.03-
SL	1.0	1700	41	0.02*
ST	1.0	1700	219	0.13
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	137	0.08*
WT	0.0	0	0	0.00
WR	1.0	1700	93	0.04-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.30 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	277	0.16*
NR	1.0	1700	131	0.07-
SL	1.0	1700	85	0.05*
ST	1.0	1700	189	0.11
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	65	0.04*
WT	0.0	0	0	0.00
WR	1.0	1700	60	0.03-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.30 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	48	0.03*
NT	1.0	1700	251	0.15
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	335	0.20*
SR	1.0	1700	10	0.01-
EL	0.0	1700	25	0.01
ET	1.0	1700	0	0.10*
ER	0.0	1700	150	0.09
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.38 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	126	0.07
NT	1.0	1700	381	0.22*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	225	0.13
SR	1.0	1700	11	0.01-
EL	0.0	1700	19	0.01
ET	1.0	1700	0	0.05*
ER	0.0	1700	72	0.04
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.32 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1.0	1700	268	0.16
NR	1.0	1700	18	0.01-
SL	1.0	1700	8	0.01
ST	1.0	1700	411	0.24*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	95	0.06
WT	1.0	1700	0	0.07*
WR	0.0	1700	16	0.01
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.36 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	483	0.28*
NR	1.0	1700	93	0.04-
SL	1.0	1700	16	0.01*
ST	1.0	1700	305	0.18
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	40	0.02
WT	1.0	1700	0	0.03*
WR	0.0	1700	7	0.01
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.37 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	78	0.05*
NT	1.0	1700	248	0.15
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	353	0.21*
SR	1.0	1700	151	0.08-
EL	1.0	1700	37	0.02
ET	0.0	0	0	0.00
ER	1.0	1700	114	0.06-*
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.37 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	137	0.08*
NT	1.0	1700	412	0.24
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	295	0.17*
SR	1.0	1700	49	0.03-
EL	1.0	1700	163	0.10*
ET	0.0	0	0	0.00
ER	1.0	1700	93	0.04-
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.40 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1700	170	0.10
ST	0.0	0	0	0.00
SR	2.0	3400	833	0.21-*
EL	1.0	1700	148	0.09*
ET	2.0	3400	38	0.01
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	2.0	3400	191	0.06*
WR	1.0	1700	117	0.06-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.41 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1700	68	0.04
ST	0.0	0	0	0.00
SR	2.0	3400	292	0.08-*
EL	1.0	1700	629	0.37*
ET	2.0	3400	174	0.05
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	2.0	3400	61	0.02
WR	1.0	1700	126	0.06-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.56 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.5	2550	204	0.08*
NT	1.5	2550	9	0.01
NR >	1.0	1700	205	0.03-
SL	1.0	1700	0	0.00
ST	2.0	3400	1	0.01*
SR	1.0	1700	1	0.01-
EL	2.0	3400	2	0.01
ET	2.0	3400	133	0.04*
ER	1.0	1700	67	0.03-
WL	2.0	3400	300	0.09*
WT	2.0	3400	257	0.08
WR	0.0	1700	1	0.01
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.27 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.5	2550	98	0.04
NT	1.5	2550	7	0.01
NR >	1.0	1700	372	0.12-*
SL	1.0	1700	1	0.01*
ST	2.0	3400	8	0.01
SR	1.0	1700	1	0.01-
EL	2.0	3400	4	0.01
ET	2.0	3400	259	0.08
ER	1.0	1700	264	0.14-*
WL	2.0	3400	272	0.08*
WT	2.0	3400	150	0.04
WR	0.0	1700	2	0.01
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.40 A

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	3.0	5100	1979	0.39*
NR	1.0	1700	306	0.15-
SL	2.0	3400	268	0.08*
ST	3.0	5100	524	0.10
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	2.0	3400	349	0.10*
WT	0.0	0	0	0.00
WR >>	1.0	1700	739	0.43
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.62 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	3.0	5100	708	0.14
NR	1.0	1700	228	0.11-
SL	2.0	3400	593	0.17
ST	3.0	5100	1901	0.37*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	2.0	3400	263	0.08*
WT	0.0	0	0	0.00
WR >>	1.0	1700	449	0.26
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.50 A

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	478	0.14
NT	2.0	3400	1079	0.32*
NR >>	1.0	1700	94	0.06
SL	1.0	1700	193	0.11*
ST	2.0	3400	483	0.14
SR >>	1.0	1700	217	0.13
EL	1.0	1700	69	0.04
ET	0.0	0	0	0.00*
ER >>	1.0	1700	82	0.05
WL	1.0	1700	96	0.06*
WT	0.0	0	0	0.00
WR >>	1.0	1700	1152	0.68
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	118	0.03
NT	2.0	3400	622	0.18*
NR >>	1.0	1700	105	0.06
SL	1.0	1700	804	0.47*
ST	2.0	3400	1231	0.36
SR >>	1.0	1700	103	0.06
EL	1.0	1700	152	0.09*
ET	0.0	0	0	0.00
ER >>	1.0	1700	217	0.13
WL	1.0	1700	78	0.05
WT	0.0	0	0	0.00*
WR >>	1.0	1700	230	0.14
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.79 C

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	659	0.19*
NT	4.0	6800	1163	0.17
NR	1.0	1700	9	0.01-
SL	2.0	3400	40	0.01
ST	3.0	5100	294	0.06
SR	1.0	1700	195	0.09-*
EL	1.0	1700	534	0.31*
ET	3.0	5100	176	0.03
ER >>	1.0	1700	378	0.22
WL	1.0	1700	13	0.01
WT	3.0	5100	446	0.09
WR	1.0	1700	225	0.11-*
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.75 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	422	0.12*
NT	4.0	6800	580	0.09
NR	1.0	1700	61	0.03-
SL	2.0	3400	156	0.05
ST	3.0	5100	1468	0.29*
SR	1.0	1700	392	0.20-
EL	1.0	1700	224	0.13*
ET	3.0	5100	502	0.10
ER >>	1.0	1700	1045	0.61
WL	1.0	1700	15	0.01
WT	3.0	5100	194	0.04
WR	1.0	1700	118	0.06-*
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.65 B

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX D

ITAM 3.01 POST-PROCESSING REPORT

ITAM 3.0.1 Post Processing Report

The goal of the future traffic volume forecast refinement or post-processing is to utilize all available data to prepare the best possible estimate of future traffic conditions. The recommended procedure incorporates 1999/2000 traffic count data, 1999 model validation data (traffic estimates), and future (raw) model forecasts (estimates) as inputs to develop future refined daily traffic volume forecasts.

INTERSECTION LIST (Chosen for Reporting)

402 Santiago Cyn. Rd. (NS) at Modjeska Cyn. Rd. (EW)
403 Santiago Cyn. Rd. (NS) at Ridgeline Rd. (EW)
404 El Toro Rd. (NS) at Live Oak Cyn. Rd. (EW)
405 El Toro Rd. (NS) at Ridgeline Rd. (EW)
407 El Toro Rd. (NS) at Valley Vista Way (EW)
408 El Toro Rd. (NS) at Glenn Ranch Rd. (EW)
409 Saddleback Ranch Rd. (NS) at Glenn Ranch Rd. (EW)
410 Marguerite Pkwy. (NS) at El Toro Rd. (EW)
411 Portola Pkwy. (NS) at Glenn Ranch Rd. (EW)
412 Portola Pkwy. (NS) at FTC (EW)
413 Portola Pkwy. (NS) at El Toro Rd. (EW)

INPUT DATA

Project:	==========>	SaddleBack Meadows	<===	Job #: 00146
Scenario:	==========>	2025	<===	Analyst: BL
Existing Conditions Model Run ID:	==>	EV42	<===	Date: 1/25/02
Future Conditions Model Run ID:	==>	2029	<===	

LOCATION: **Santiago Cyn. Rd. (NS) at Modjeska Cyn. Rd. (EW)**

AM PEAK HOUR	PM PEAK HOUR
EXISTING TURNING MOVEMENT VOLUMES: **2000** **0 171 7** **0 ^ 60** **0 > < 0** **0 v 17** **0 402 4**	EXISTING TURNING MOVEMENT VOLUMES: 2000 **0 277 40** **0 ^ 19** **0 > < 0** **0 v 10** **0 198 17**
EXISTING MODEL YEAR: **2000** **127 575** **0 < IN = 760 < 180** **0 > OUT = 758 > 59** **124 453**	EXISTING MODEL YEAR: 2000 **484 235** **0 < IN = 777 < 92** **0 > OUT = 779 > 157** **387 201**
FUTURE MODEL YEAR: **2025** **831 1393** **0 < IN = 2366 < 397** **0 > OUT = 2192 > 133** **666 1138**	FUTURE MODEL YEAR: 2025 **1274 951** **0 < IN = 2207 < 191** **0 > OUT = 2317 > 354** **1012 742**
EXISTING (COUNTED) ADTs BY LEG: 2000 **5,300 N** **0 W LEG E 1,000** **S 5,800**	EXISTING (COUNTED) ADTs BY LEG: 2000 5,300 N 0 W + E 1,000 S 5,800
REFINED 2020 ADT'S BY LEG: 2025 **21,300 N** **0 W LEG E 2,300** **S 18,100**	REFINED 2020 ADT'S BY LEG: 2025 21,300 N 0 W + E 2,300 S 18,100

U:\UcJobs\00146\Excel\[SantiagoModjeskaTurnEst.XLS]Input (1)

Growth Calculations

Project: SaddleBack Meadows
Scenario: 2025

Job #: 00146
Analyst: BL
Date: 1/25/02

LOCATION: Santiago Cyn. Rd. (NS) at Modjeska Cyn. Rd. (EW)

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM	PM
EXISTING COUNT YEAR: 2000	EXISTING COUNT YEAR: 2000
178 462	317 217
v ^	v ^
0 < IN = 661 < 77	0 < IN = 561 < 29
0 > OUT = 661 > 11	0 > OUT = 561 > 57
v ^	v ^
188 406	287 215
GROWTH CALCULATION DECISION RULE	
MIN = Minimum Count Growth Approach	MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach ADD MUL	ADD = Additive (Growth Increment) Approach MUL MUL
MUL = Multiplicative (Ratio) Approach v ^	MUL = Multiplicative (Ratio) Approach v ^
MUL < < MUL	MUL < < MUL
MUL > > MUL	MUL > > MUL
v ^	v ^
ADD MUL	MUL ADD
MINIMUM GROWTH %s 2000 TO 2025	
0% 0%	0% 0%
v ^	v ^
0% < < 0%	0% < < 0%
0% > > 0%	0% > > 0%
v ^	v ^
0% 0%	0% 0%
REFINED GROWTH: 2000 TO 2025	ADJUSTED GROWTH: 2000 TO 2025
700 658	513 663
v ^	v ^
0 < < 93	0 < < 31
0 > > 9	0 > > 73
v ^	v ^
540 614	463 540
PRORATED GROWTH: 2000 TO 2025	PRORATED GROWTH: 2000 TO 2025
25 YEARS	25 YEARS
700 660	510 660
v ^	v ^
0 < < 90	0 < < 30
0 > > 10	0 > > 70
v ^	v ^
540 610	460 540
NEW PROJECTED VOLUMES: 2025	NEW PROJECTED VOLUMES: 2025
880 1120	830 880
v ^	v ^
0 < IN = 2070 < 170	0 < IN = 1650 < 60
0 > OUT = 2070 > 20	0 > OUT = 1760 > 130
v ^	v ^
730 1020	750 760

U:\UcJobs\00146\Excel\[SantiagoModjeskaTurnEst.XLS] Growth Summary (2)

Project: SaddleBack Meadows
Scenario: 2025

Job #: 00146
Analyst: BL
Date: 1/25/02

LOCATION: Santiago Cyn. Rd. (NS) at Modjeska Cyn. Rd. (EW)
FORECAST YEAR: 2025

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	402	973	571	142%	198	825	627	317%
	Right	4	7	3	75%	17	26	9	53%
SOUTH BOUND	Left	7	18	11	157%	40	104	64	160%
	Through	171	716	545	319%	277	739	462	167%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
WEST BOUND	Left	17	19	2	12%	10	11	1	10%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	60	147	87	145%	19	55	36	189%
TOTAL ENTERING VOLUME			1,880				1,760		

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	734	843			
North Leg	Outbound	1,120	880			
North Leg	**TOTAL**	**1,854**	**1,723**	**9%**	**8%**	**21,300**
South Leg	Inbound	980	851			
South Leg	Outbound	735	750			
South Leg	**TOTAL**	**1,715**	**1,601**	**9%**	**9%**	**18,100**
East Leg	Inbound	166	66			
East Leg	Outbound	25	130			
East Leg	**TOTAL**	**191**	**196**	**8%**	**9%**	**2,300**
West Leg	Inbound	0	0			
West Leg	Outbound	0	0			
West Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
OVERALL TOTAL		***3,760***	***3,520***	**9%**	***8%***	***41,700***

U:\UcJobs\00146\Excel\[SantiagoModjeskaTurnEst.XLS]Output (3)

INPUT DATA

Project: ==========> SaddleBack Meadows <=== Job #: 00146
Scenario: ==========> 2025 <=== Analyst: BL
Existing Conditions Model Run ID: ==> EV42 <=== Date: 1/25/02
Future Conditions Model Run ID: ==> 2029 <===

LOCATION: Santiago Cyn. Rd. (NS) at Ridgeline Rd. (EW)

AM PEAK HOUR	PM PEAK HOUR
EXISTING TURNING MOVEMENT VOLUMES: 2000 51 188 0 < v > ^ 71 ^ 0 0 > < 0 6 v v 0 < ^ > 19 331 0	EXISTING TURNING MOVEMENT VOLUMES: 2000 72 224 0 < v > ^ 44 ^ 0 0 > < 0 14 v v 0 < ^ > 17 196 0
EXISTING MODEL YEAR: 2000 124 453 v ^ 83 < IN = 594 < 0 310 > OUT = 594 > 0 v ^ 58 160	EXISTING MODEL YEAR: 2000 387 201 v ^ 254 < IN = 613 < 0 133 > OUT = 602 > 0 v ^ 147 93
FUTURE MODEL YEAR: 2025 666 1138 v ^ 195 < IN = 1838 < 0 252 > OUT = 1836 > 0 v ^ 503 920	FUTURE MODEL YEAR: 2025 1012 742 v ^ 235 < IN = 1794 < 0 208 > OUT = 1793 > 0 v ^ 816 574
EXISTING (COUNTED) ADTs BY LEG: 2000 5,800 N 1,600 W LEG E 0 S 5,700	EXISTING (COUNTED) ADTs BY LEG: 2000 5,800 N - 1,600 W + E 0 S 5,700
REFINED 2020 ADT'S BY LEG: 2025 18,100 N 2,600 W LEG E 0 S 16,100	REFINED 2020 ADT'S BY LEG: 2025 18,100 N 2,600 W + E 0 S 16,100

U:\UcJobs\00146\Excel\[SantiagoRidgelineTurnEst.XLS]Input (1)

Growth Calculations

Project: SaddleBack Meadows
Scenario: 2025

Job #: 00146
Analyst: BL
Date: 1/25/02

LOCATION: Santiago Cyn. Rd. (NS) at Ridgeline Rd. (EW)

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM	PM
EXISTING COUNT YEAR: 2000	EXISTING COUNT YEAR: 2000
239 402	296 240
v ^	v ^
70 < IN = 666 < 0	89 < IN = 567 < 0
77 > OUT = 666 > 0	58 > OUT = 567 > 0
v ^	v ^
194 350	238 213
GROWTH CALCULATION DECISION RULE	
MIN = Minimum Count Growth Approach	MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach ADD MUL	ADD = Additive (Growth Increment) Approach MUL ADD
MUL = Multiplicative (Ratio) Approach v ^	MUL = Multiplicative (Ratio) Approach v ^
MUL < < MUL	MIN < < MUL
MIN > > MUL	MUL > > MUL
v ^	v ^
ADD ADD	ADD ADD
MINIMUM GROWTH %s 2000 TO 2025	
0% 0%	0% 0%
v ^	v ^
0% < < 0%	0% < < 0%
0% > > 0%	0% > > 0%
v ^	v ^
0% 0%	0% 0%
REFINED GROWTH: 2000 TO 2025	ADJUSTED GROWTH: 2000 TO 2025
540 608	474 540
v ^	v ^
90 < < 0	0 < < 0
0 > > 0	32 > > 0
v ^	v ^
450 760	670 480
PRORATED GROWTH: 2000 TO 2025	PRORATED GROWTH: 2000 TO 2025
25 YEARS	25 YEARS
540 610	470 540
v ^	v ^
90 < < 0	0 < < 0
0 > > 0	30 > > 0
v ^	v ^
450 760	670 480
NEW PROJECTED VOLUMES: 2025	NEW PROJECTED VOLUMES: 2025
780 1010	770 780
v ^	v ^
160 < IN = 1970 < 0	90 < IN = 1550 < 0
80 > OUT = 1970 > 0	90 > OUT = 1780 > 0
v ^	v ^
640 1110	910 690

U:\UcJobs\00146\Excel\[SantiagoRidgelineTurnEst.XLS] Growth Summary (2)

Project: SaddleBack Meadows
Scenario: 2025

Job #: 00146
Analyst: BL
Date: 1/25/02

LOCATION: Santiago Cyn. Rd. (NS) at Ridgeline Rd. (EW)
FORECAST YEAR: 2025

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	19	55	36	189%	17	34	17	100%
	Through	331	946	615	186%	196	825	629	321%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	188	731	543	289%	224	863	639	285%
	Right	51	105	54	106%	72	56	-16	-22%
EAST BOUND	Left	71	74	3	4%	44	55	11	25%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	6	19	13	217%	14	47	33	236%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
TOTAL ENTERING VOLUME			1,930				1,880		

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	836	919			
North Leg	Outbound	1,020	880			
North Leg	**TOTAL**	**1,856**	**1,799**	**10%**	**10%**	**18,100**
South Leg	Inbound	1,001	859			
South Leg	Outbound	750	910			
South Leg	**TOTAL**	**1,751**	**1,769**	**11%**	**11%**	**16,100**
East Leg	Inbound	0	0			
East Leg	Outbound	0	0			
East Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
West Leg	Inbound	93	102			
West Leg	Outbound	160	90			
West Leg	**TOTAL**	**253**	**192**	**10%**	**7%**	**2,600**
OVERALL TOTAL		***3,860***	***3,760***	**10%**	***10%***	***36,800***

U:\UcJobs\00146\Excel\[SantiagoRidgelineTurnEst.XLS]Output (3)

INPUT DATA

Project: ==========> SaddleBack Meadows <===
Scenario: ==========> 2025 <===
Existing Conditions Model Run ID: ==> EV42 <===
Future Conditions Model Run ID: ==> 2029 <===

Job #: 00146
Analyst: BL
Date: 1/25/02

LOCATION: El Toro Rd. (NS) at Live Oak Canyon Rd. (EW)

AM PEAK HOUR	PM PEAK HOUR
EXISTING TURNING MOVEMENT VOLUMES: 2000 0 219 41 < v > 0 ^ ^ 93 0 > < 0 0 v v 137 < ^ > 0 251 48	EXISTING TURNING MOVEMENT VOLUMES: 2000 0 189 85 < v > 0 ^ ^ 60 0 > < 0 0 v v 65 < ^ > 0 277 131
EXISTING MODEL YEAR: 2000 119 138 v ^ 0 < IN = 291 < 61 0 > OUT = 290 > 14 v ^ 138 111	EXISTING MODEL YEAR: 2000 153 133 v ^ 0 < IN = 317 < 23 0 > OUT = 317 > 53 v ^ 131 141
FUTURE MODEL YEAR: 2025 763 871 v ^ 0 < IN = 1822 < 504 0 > OUT = 1823 > 71 v ^ 881 555	FUTURE MODEL YEAR: 2025 831 756 v ^ 0 < IN = 1754 < 111 0 > OUT = 1754 > 340 v ^ 658 812
EXISTING (COUNTED) ADTs BY LEG: 2000 5,700 N 0 W LEG E 3,000 S 7,300	EXISTING (COUNTED) ADTs BY LEG: 2000 5,700 N 0 W + E 3,000 S 7,300
REFINED 2020 ADT'S BY LEG: 2025 16,100 N 0 W LEG E 8,100 S 16,200	REFINED 2020 ADT'S BY LEG: 2025 16,100 N 0 W + E 8,100 S 16,200

U:\UcJobs\00146\Excel\[ElToroOakCynTurnEst.XLS]Input (1)

Growth Calculations

Project: SaddleBack Meadows
Scenario: 2025

Job #: 00146
Analyst: BL
Date: 1/25/02

LOCATION: El Toro Rd. (NS) at Live Oak Canyon Rd. (EW)

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR: 2000

260 344
v ^
0 < IN = 789 < 230
0 > OUT = 789 > 89
v ^
356 299

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

ADD ADD
v ^
MUL < < ADD
MUL > > ADD
v ^
ADD ADD

MINIMUM GROWTH %s 2000 TO 2025

0% 0%
v ^
0% < < 0%
0% > > 0%
v ^
0% 0%

REFINED GROWTH: 2000 TO 2025

640 730
v ^
0 < < 440
0 > > 60
v ^
740 440

PRORATED GROWTH: 2000 TO 2025
25 YEARS

640 730
v ^
0 < < 440
0 > > 60
v ^
740 440

NEW PROJECTED VOLUMES: 2025

900 1070
v ^
0 < IN = 2310 < 670
0 > OUT = 2320 > 150
v ^
1100 740

PM

EXISTING COUNT YEAR: 2000

274 337
v ^
0 < IN = 807 < 125
0 > OUT = 807 > 216
v ^
254 408

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

ADD ADD
v ^
MUL < < ADD
MUL > > ADD
v ^
ADD ADD

0% 0%
v ^
0% < < 0%
0% > > 0%
v ^
0% 0%

ADJUSTED GROWTH: 2000 TO 2025

680 620
v ^
0 < < 90
0 > > 290
v ^
530 670

PRORATED GROWTH: 2000 TO 2025
25 YEARS

680 620
v ^
0 < < 90
0 > > 290
v ^
530 670

NEW PROJECTED VOLUMES: 2025

950 960
v ^
0 < IN = 2250 < 220
0 > OUT = 2250 > 510
v ^
780 1080

U:\UcJobs\00146\Excel\[ElToroOakCynTurnEst.XLS] Growth Summary (2)

Project: SaddleBack Meadows
Scenario: 2025

Job #: 00146
Analyst: BL
Date: 1/25/02

LOCATION: El Toro Rd. (NS) at Live Oak Canyon Rd. (EW)
FORECAST YEAR: 2025

INDIVIDUAL TURN VOLUME GROWTH REVIEW

APPROACH	TURNING MOVEMENT	AM PEAK HOUR INPUT DATA: EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	PM PEAK HOUR INPUT DATA: EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	251	699	448	178%	277	837	560	202%
	Right	48	50	2	4%	131	246	115	88%
SOUTH BOUND	Left	41	100	59	144%	85	264	179	211%
	Through	219	848	629	287%	189	683	494	261%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
WEST BOUND	Left	137	302	165	120%	65	97	32	49%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	93	371	278	299%	60	123	63	105%
TOTAL ENTERING VOLUME			2,370				2,250		

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES AM	VOLUMES PM	PERCENT OF ADT AM	PERCENT OF ADT PM	ADT
North Leg	Inbound	948	947			
North Leg	Outbound	1,070	960			
North Leg	**TOTAL**	**2,018**	**1,907**	**13%**	**12%**	**16,100**
South Leg	Inbound	749	1,083			
South Leg	Outbound	1,150	780			
South Leg	**TOTAL**	**1,899**	**1,863**	**12%**	**12%**	**16,200**
East Leg	Inbound	673	220			
East Leg	Outbound	150	510			
East Leg	**TOTAL**	**823**	**730**	**10%**	**9%**	**8,100**
West Leg	Inbound	0	0			
West Leg	Outbound	0	0			
West Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	-
OVERALL TOTAL		***4,740***	***4,500***	**12%**	***11%***	***40,400***

U:\UcJobs\00146\Excel\[ElToroOakCynTurnEst.XLS]Output (3)

Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

LOCATION: El Toro Rd. (NS) at Ridgeline Rd. (EW) **INTERSECTION NUMBER:** 405

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

			10	335	0			
			<	V	>			
	25	∧				∧	0	
	0	>				<	0	
	150	V	<	∧	>	V	0	
			48	251	0			

EXISTING MODEL YEAR:

2000

IN = 518

OUT = 518

			138	111				
			V	∧				
	98	<				<	0	
	191	>				>	0	
			V	∧				
			309	189				

FUTURE MODEL YEAR:

2020

IN = 2,000

OUT = 1,999

			1,055	363				
			V	∧				
	276	<				<	0	
	353	>				>	0	
			V	∧				
			1,360	592				

EXISTING (COUNTED) ADTs BY LEG:

2000

6,000

N

2,600 W LEG E 0

S

7,400

REFINED FUTURE ADT's BY LEG:

2020

16,200

N

5,800 W LEG E 0

S

20,900

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2000

			11	225	0			
			<	V	>			
	19	∧				∧	0	
	0	>				<	0	
	72	V	<	∧	>	V	0	
			126	381	0			

EXISTING MODEL YEAR:

2000

IN = 532

OUT = 532

			131	141				
			V	∧				
	161	<				<	0	
	124	>				>	0	
			V	∧				
			230	277				

FUTURE MODEL YEAR:

2020

IN = 1,985

OUT = 1,985

			548	815				
			V	∧				
	354	<				<	0	
	314	>				>	0	
			V	∧				
			816	1,123				

EXISTING (COUNTED) ADTs BY LEG:

2000

6,000

N

2,600 W LEG E 0

S

7,400

REFINED FUTURE ADT's BY LEG:

2020

16,200

N

5,800 W LEG E 0

S

20,900

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: El Toro Rd. (NS) at Ridgeline Rd. (EW) **INTERSECTION NUMBER:** 405

GROWTH CALCULATIONS

	AM PEAK HOUR	PM PEAK HOUR
EXISTING COUNT YEAR: 2000	V 345 Λ 276	V 236 Λ 400
IN = 819	58 < < 0	137 < < 0
OUT = 819	175 > > 0	91 > > 0
	V 485 Λ 299	V 297 Λ 507
GROWTH CALCULATION DECISION RULE:	ADD ADD	ADD ADD
MIN = Minimum Count Growth Approach	V Λ	V Λ
ADD = Additive Growth Increment Approach	MUL < <	MUL < <
MUL = Multiplicative (Ratio) Approach	MUL > >	MUL > >
	V Λ ADD ADD	V Λ ADD ADD
MINIMUM GROWTH %'S: 2000 to 2020	0% 0%	0% 0%
	V Λ	V Λ
	0% < <	0% < <
	0% > >	0% > >
	V Λ 0% 0%	V Λ 0% 0%
REFINED GROWTH: 2000 to 2020	917 252	417 674
	V Λ	V Λ
	105 < <	164 < <
	148 > >	139 > >
	V Λ 1,051 403	V Λ 586 846
PRORATED GROWTH: 20 YEARS	917 252	417 674
	V Λ	V Λ
	105 < <	164 < <
	148 > >	139 > >
	V Λ 1,051 403	V Λ 586 846
NEW PROJECTED VOLUMES: 2020	1,260 542	650 1,070
	V Λ	V Λ
IN = 2,280	164 < < 0	300 < < 0
OUT = 2,280	320 > > 0	230 > > 0
	V Λ 1,575 700	V Λ 880 1,350

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: El Toro Rd. (NS) at Ridgeline Rd. (EW) **INTERSECTION NUMBER:** 405

AM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	48	141	93	194%
NT	251	520	269	107%
NR	0	0	0	0%
NB	**299**	**661**	**362**	**121%**
SL	0	0	0	0%
ST	335	1269	934	279%
SR	10	22	12	120%
SB	**345**	**1291**	**946**	**274%**
EL	25	21	-4	-16%
ET	0	0	0	0%
ER	150	306	156	104%
EB	**175**	**327**	**152**	**87%**
WL	0	0	0	0%
WT	0	0	0	0%
WR	0	0	0	0%
WB	**0**	**0**	**0**	**0%**
Total	**819**	**2,279**	**1,460**	**178%**

PM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	126	286	160	127%
NT	381	1040	659	173%
NR	0	0	0	0%
NB	**507**	**1326**	**819**	**162%**
SL	0	0	0	0%
ST	225	669	444	197%
SR	11	14	3	27%
SB	**236**	**683**	**447**	**189%**
EL	19	30	11	58%
ET	0	0	0	0%
ER	72	211	139	193%
EB	**91**	**241**	**150**	**165%**
WL	0	0	0	0%
WT	0	0	0	0%
WR	0	0	0	0%
WB	**0**	**0**	**0**	**0%**
Total	**834**	**2,250**	**1,416**	**170%**

FORECAST PEAK HOUR TO ADT COMPARISON

		Volumes		Percent of ADT		ADT
		AM	PM	AM	PM	
NorthLeg	Inbound	1,291	683			
NorthLeg	Outbound	541	1,070			
	Total	**1,832**	**1,753**	**11%**	**11%**	**16,200**
SouthLeg	Inbound	661	1,326			
SouthLeg	Outbound	1,575	880			
	Total	**2,236**	**2,206**	**11%**	**11%**	**20,900**
EastLeg	Inbound	0	0			
EastLeg	Outbound	0	0			
	Total	**0**	**0**	**0%**	**0%**	**0**
WestLeg	Inbound	327	241			
WestLeg	Outbound	163	300			
	Total	**490**	**541**	**8%**	**9%**	**5,800**
	Overall Total	**4,558**	**4,500**	**11%**	**10%**	**42,900**

Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

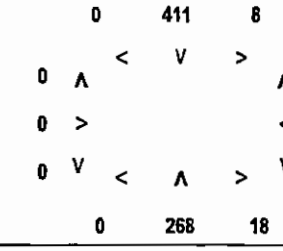
LOCATION: El Toro Rd. (NS) at Valley Vista Way (EW) **INTERSECTION NUMBER:** 407

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

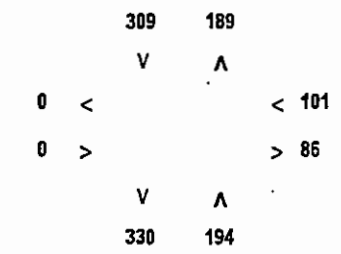


EXISTING MODEL YEAR:

2000

IN = 604

OUT = 605

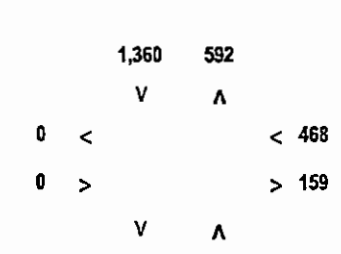


FUTURE MODEL YEAR:

2020

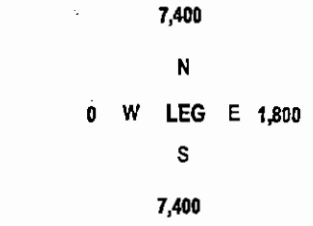
IN = 2,405

OUT = 2,405



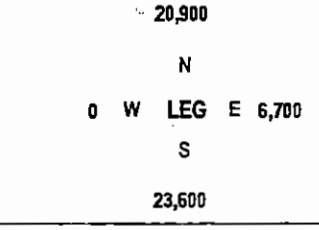
EXISTING (COUNTED) ADTs BY LEG:

2000



REFINED FUTURE ADT's BY LEG:

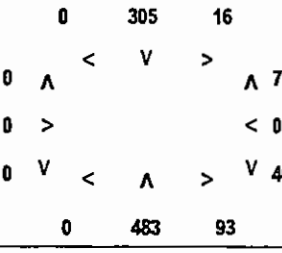
2020



PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2000

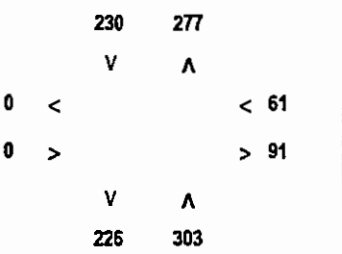


EXISTING MODEL YEAR:

2000

IN = 594

OUT = 594

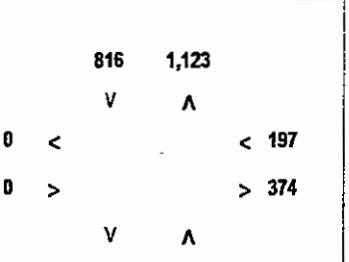


FUTURE MODEL YEAR:

2020

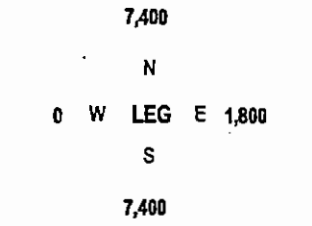
IN = 2,351

OUT = 2,350



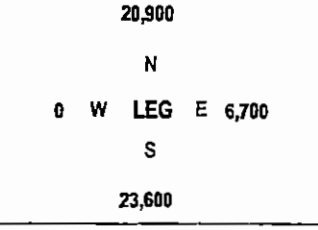
EXISTING (COUNTED) ADTs BY LEG:

2000



REFINED FUTURE ADT's BY LEG:

2020



Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: El Toro Rd. (NS) at Valley Vista Way (EW) **INTERSECTION NUMBER:** 407

GROWTH CALCULATIONS

AM PEAK HOUR

EXISTING COUNT YEAR: 2000

			419	284		
			V	Λ		
IN =	816	0	<		<	111
OUT =	816	0	>		>	26
			V	Λ		
			506	286		

GROWTH CALCULATION DECISION RULE:

MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

			ADD	ADD		
			V	Λ		
			<		<	ADD
			>		>	MUL
			V	Λ		
			ADD	ADD		

MINIMUM GROWTH %'S: 2000 to 2020

			0%	0%		
			V	Λ		
			<		<	0%
			>		>	0%
			V	Λ		
			0%	0%		

REFINED GROWTH: 2000 to 2020

			1,051	403		
			V	Λ		
			<		<	367
			>		>	22
			V	Λ		
			1,324	383		

PRORATED GROWTH: 20 YEARS

			1,051	403		
			V	Λ		
			<		<	367
			>		>	22
			V	Λ		
			1,324	383		

NEW PROJECTED VOLUMES: 2020

			1,470	703		
			V	Λ		
IN =	2,620	0	<		<	480
OUT =	2,620	0	>		>	51
			V	Λ		
			1,866	670		

PM PEAK HOUR

EXISTING COUNT YEAR: 2000

			321	490		
			V	Λ		
IN =	944	0	<		<	47
OUT =	944	0	>		>	109
			V	Λ		
			345	576		

GROWTH CALCULATION DECISION RULE:

MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

			ADD	ADD		
			V	Λ		
			<		<	MUL
			>		>	ADD
			V	Λ		
			ADD	ADD		

MINIMUM GROWTH %'S: 2000 to 2020

			0%	0%		
			V	Λ		
			<		<	0%
			>		>	0%
			V	Λ		
			0%	0%		

REFINED GROWTH: 2000 to 2020

			586	846		
			V	Λ		
			<		<	105
			>		>	283
			V	Λ		
			627	1,035		

PRORATED GROWTH: 20 YEARS

			586	846		
			V	Λ		
			<		<	105
			>		>	283
			V	Λ		
			627	1,035		

NEW PROJECTED VOLUMES: 2020

			910	1,340		
			V	Λ		
IN =	2,670	0	<		<	150
OUT =	2,700	0	>		>	390
			V	Λ		
			970	1,610		

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: El Toro Rd. (NS) at Valley Vista Way (EW) **INTERSECTION NUMBER:** 407

AM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	0	0	0	0%
NT	268	636	368	137%
NR	18	32	14	78%
NB	**286**	**668**	**382**	**134%**
SL	8	19	11	138%
ST	411	1452	1041	253%
SR	0	0	0	0%
SB	**419**	**1471**	**1052**	**251%**
EL	0	0	0	0%
ET	0	0	0	0%
ER	0	0	0	0%
EB	**0**	**0**	**0**	**0%**
WL	95	414	319	336%
WT	0	0	0	0%
WR	16	67	51	319%
WB	**111**	**481**	**370**	**333%**
Total	**816**	**2,620**	**1,804**	**221%**

PM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	0	0	0	0%
NT	483	1315	832	172%
NR	93	324	231	248%
NB	**576**	**1639**	**1063**	**185%**
SL	16	66	50	313%
ST	305	845	540	177%
SR	0	0	0	0%
SB	**321**	**911**	**590**	**184%**
EL	0	0	0	0%
ET	0	0	0	0%
ER	0	0	0	0%
EB	**0**	**0**	**0**	**0%**
WL	40	125	85	213%
WT	0	0	0	0%
WR	7	25	18	257%
WB	**47**	**150**	**103**	**219%**
Total	**944**	**2,700**	**1,756**	**186%**

FORECAST PEAK HOUR TO ADT COMPARISON

		Volumes		Percent of ADT		ADT
		AM	PM	AM	PM	
NorthLeg	Inbound	1,471	911			
NorthLeg	Outbound	703	1,340			
	Total	**2,174**	**2,251**	**10%**	**11%**	**20,900**
SouthLeg	Inbound	668	1,639			
SouthLeg	Outbound	1,866	970			
	Total	**2,534**	**2,609**	**11%**	**11%**	**23,600**
EastLeg	Inbound	481	150			
EastLeg	Outbound	51	390			
	Total	**532**	**540**	**8%**	**8%**	**6,700**
WestLeg	Inbound	0	0			
WestLeg	Outbound	0	0			
	Total	**0**	**0**	**0%**	**0%**	**0**
	Overall Total	**5,240**	**5,400**	**10%**	**11%**	**51,200**

Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

LOCATION: El Toro Rd. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 408

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

			151	353	0			
				<	V	>		
	37	∧					∧	0
	0	>					<	0
	114	V	<	∧	>		V	0
			78	248	0			

EXISTING MODEL YEAR:

2000

IN = 572

OUT = 572

				330	194			
				V	∧			
	176	<					<	0
	62	>					>	0
				V	∧			
				202	180			

FUTURE MODEL YEAR:

2020

IN = 2,348

OUT = 2,347

				1,654	577			
				V	∧			
	956	<					<	0
	134	>					>	0
				V	∧			
				814	560			

EXISTING (COUNTED) ADTs BY LEG:

2000

8,400

N

4,600 W LEG E 0

S

9,300

REFINED FUTURE ADT's BY LEG:

2020

24,600

N

12,200 W LEG E 0

S

19,300

PM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

			49	295	0			
				<	V	>		
	163	∧					∧	0
	0	>					<	0
	93	V	<	∧	>		V	0
			137	412	0			

EXISTING MODEL YEAR:

2000

IN = 591

OUT = 591

				226	303			
				V	∧			
	88	<					<	0
	142	>					>	0
				V	∧			
				200	223			

FUTURE MODEL YEAR:

2020

IN = 2,320

OUT = 2,320

				853	1,338			
				V	∧			
	262	<					<	0
	688	>					>	0
				V	∧			
				720	779			

EXISTING (COUNTED) ADTs BY LEG:

2000

8,400

N

4,600 W LEG E 0

S

9,300

REFINED FUTURE ADT's BY LEG:

2020

24,600

N

12,200 W LEG E 0

S

19,300

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: El Toro Rd. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 408

AM PEAK HOUR

GROWTH CALCULATIONS

EXISTING COUNT YEAR: 2000

IN = 981 OUT = 981

504 V 285 Λ
229 < < 0
151 > > 0
467 V 326 Λ

GROWTH CALCULATION DECISION RULE:
MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

ADD ADD
ADD < <
ADD > >
ADD ADD

MINIMUM GROWTH %'S: 2000 to 2020

0% 0%
0% < <
0% > >
0% 0%

REFINED GROWTH: 2000 to 2020

1,324 383
780 < <
72 > >
612 380

PRORATED GROWTH: 20 YEARS

1,324 383
780 < <
72 > >
612 380

NEW PROJECTED VOLUMES: 2020

IN = 2,760 OUT = 2,760

1,830 670
1,010 < < 0
220 > > 0
1,080 710

PM PEAK HOUR

GROWTH CALCULATIONS

EXISTING COUNT YEAR: 2000

IN = 1,149 OUT = 1,149

344 V 575 Λ
186 < < 0
256 > > 0
388 V 549 Λ

GROWTH CALCULATION DECISION RULE:
MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

ADD ADD
ADD < <
ADD > >
ADD ADD

MINIMUM GROWTH %'S: 2000 to 2020

0% 0%
0% < <
0% > >
0% 0%

REFINED GROWTH: 2000 to 2020

627 1,035
174 < <
546 > >
520 556

PRORATED GROWTH: 20 YEARS

627 1,035
174 < <
546 > >
520 556

NEW PROJECTED VOLUMES: 2020

IN = 2,880 OUT = 2,880

970 1,610
360 < < 0
800 > > 0
910 1,110

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: El Toro Rd. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 408

REFINED PROJECTIONS / REASONABLENESS CHECKS

AM PEAK HOUR					PM PEAK HOUR				
Approach	Existing Count	Future Volume	Difference	% Change	Approach	Existing Count	Future Volume	Difference	% Change
NL	78	148	70	90%	NL	137	173	36	26%
NT	248	570	322	130%	NT	412	947	535	130%
NR	0	0	0	0%	NR	0	0	0	0%
NB	**326**	**718**	**392**	**120%**	**NB**	**549**	**1120**	**571**	**104%**
SL	0	0	0	0%	SL	0	0	0	0%
ST	353	959	606	172%	ST	295	769	474	161%
SR	151	862	711	471%	SR	49	187	138	282%
SB	**504**	**1821**	**1317**	**261%**	**SB**	**344**	**956**	**612**	**178%**
EL	37	100	63	170%	EL	163	663	500	307%
ET	0	0	0	0%	ET	0	0	0	0%
ER	114	121	7	6%	ER	93	141	48	52%
EB	**151**	**221**	**70**	**46%**	**EB**	**256**	**804**	**548**	**214%**
WL	0	0	0	0%	WL	0	0	0	0%
WT	0	0	0	0%	WT	0	0	0	0%
WR	0	0	0	0%	WR	0	0	0	0%
WB	**0**	**0**	**0**	**0%**	**WB**	**0**	**0**	**0**	**0%**
Total	981	2,760	1,779	181%	Total	1,149	2,880	1,731	151%

FORECAST PEAK HOUR TO ADT COMPARISON

		Volumes		Percent of ADT		ADT
		AM	PM	AM	PM	
NorthLeg	Inbound	1,821	956			
NorthLeg	Outbound	670	1,610			
	Total	**2,491**	**2,566**	**10%**	**10%**	**24,600**
SouthLeg	Inbound	718	1,120			
SouthLeg	Outbound	1,080	910			
	Total	**1,798**	**2,030**	**9%**	**11%**	**19,300**
EastLeg	Inbound	0	0			
EastLeg	Outbound	0	0			
	Total	**0**	**0**	**0%**	**0%**	**0**
WestLeg	Inbound	221	804			
WestLeg	Outbound	1,010	360			
	Total	**1,231**	**1,164**	**10%**	**10%**	**12,200**
	Overall Total	**5,520**	**5,760**	**10%**	**10%**	**56,100**

Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

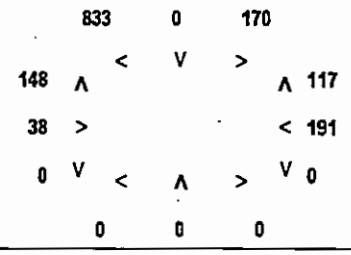
LOCATION: Saddleback Ranch Rd. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 409

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

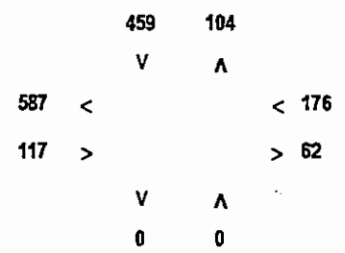


EXISTING MODEL YEAR:

2000

IN = 752

OUT = 753

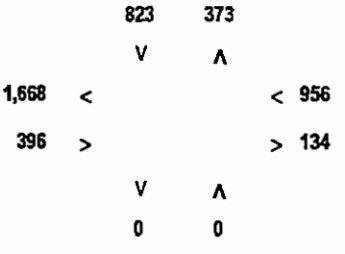


FUTURE MODEL YEAR:

2020

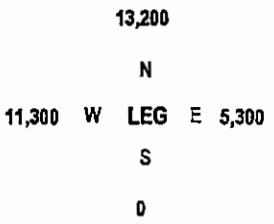
IN = 2,175

OUT = 2,175



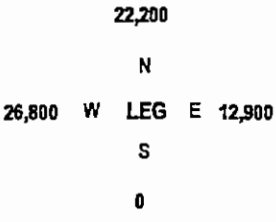
EXISTING (COUNTED) ADTs BY LEG:

2000



REFINED FUTURE ADT's BY LEG:

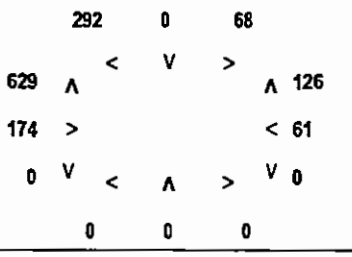
2020



PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2000

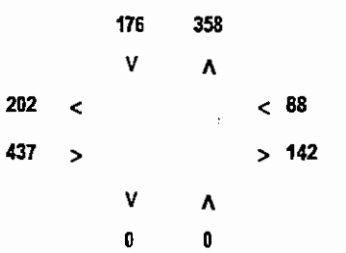


EXISTING MODEL YEAR:

2000

IN = 701

OUT = 702

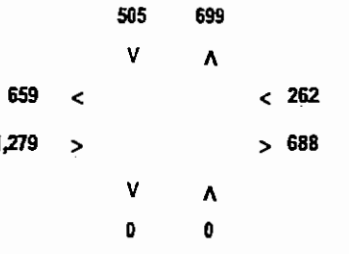


FUTURE MODEL YEAR:

2020

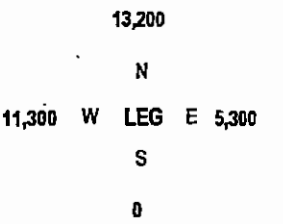
IN = 2,046

OUT = 2,046



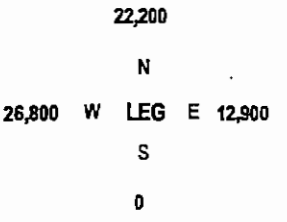
EXISTING (COUNTED) ADTs BY LEG:

2000



REFINED FUTURE ADT's BY LEG:

2020



Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

LOCATION: Saddleback Ranch Rd. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 409

GROWTH CALCULATIONS

AM PEAK HOUR

EXISTING COUNT YEAR: 2000

			1,003	265		
			V	Λ		
IN =	1,497	1,024	<		<	308
OUT =	1,497	186	>		>	208
			V	Λ		
			0	0		

GROWTH CALCULATION DECISION RULE:

			ADD	ADD		
			V	Λ		
MIN = Minimum Count Growth Approach		ADD	<		<	ADD
ADD = Additive Growth Increment Approach		ADD	>		>	ADD
MUL = Multiplicative (Ratio) Approach			V	Λ		

MINIMUM GROWTH %'S: 2000 to 2020

			0%	0%		
			V	Λ		
		0%	<		<	0%
		0%	>		>	0%
			V	Λ		

REFINED GROWTH: 2000 to 2020

			364	269		
			V	Λ		
		1,081	<		<	780
		279	>		>	72
			V	Λ		

PRORATED GROWTH: 20 YEARS

			364	269		
			V	Λ		
		1,081	<		<	780
		279	>		>	72
			V	Λ		

NEW PROJECTED VOLUMES: 2020

			1,370	532		
			V	Λ		
IN =	2,930	2,117	<		<	1,090
OUT =	2,930	470	>		>	281
			V	Λ		
			0	0		

PM PEAK HOUR

EXISTING COUNT YEAR: 2000

			360	755		
			V	Λ		
IN =	1,350	353	<		<	187
OUT =	1,350	803	>		>	242
			V	Λ		
			0	0		

GROWTH CALCULATION DECISION RULE:

			ADD	ADD		
			V	Λ		
MIN = Minimum Count Growth Approach		ADD	<		<	ADD
ADD = Additive Growth Increment Approach		ADD	>		>	ADD
MUL = Multiplicative (Ratio) Approach			V	Λ		

MINIMUM GROWTH %'S: 2000 to 2020

			0%	0%		
			V	Λ		
		0%	<		<	0%
		0%	>		>	0%
			V	Λ		

REFINED GROWTH: 2000 to 2020

			329	341		
			V	Λ		
		457	<		<	174
		842	>		>	546
			V	Λ		

PRORATED GROWTH: 20 YEARS

			329	341		
			V	Λ		
		457	<		<	174
		842	>		>	546
			V	Λ		

NEW PROJECTED VOLUMES: 2020

			690	1,100		
			V	Λ		
IN =	2,700	810	<		<	360
OUT =	2,700	1,650	>		>	790
			V	Λ		
			0	0		

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Saddleback Ranch Rd. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 409

AM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	0	0	0	0%
NT	0	0	0	0%
NR	0	0	0	0%
NB	**0**	**0**	**0**	**0%**
SL	170	145	-25	-15%
ST	0	0	0	0%
SR	833	1226	393	47%
SB	**1,003**	**1371**	**368**	**37%**
EL	148	332	184	124%
ET	38	135	97	255%
ER	0	0	0	0%
EB	**186**	**467**	**281**	**151%**
WL	0	0	0	0%
WT	191	891	700	366%
WR	117	200	83	71%
WB	**308**	**1091**	**783**	**254%**
Total	**1,497**	**2,929**	**1,432**	**96%**

PM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	0	0	0	0%
NT	0	0	0	0%
NR	0	0	0	0%
NB	**0**	**0**	**0**	**0%**
SL	68	111	43	63%
ST	0	0	0	0%
SR	292	590	298	102%
SB	**360**	**701**	**341**	**95%**
EL	629	957	328	52%
ET	174	679	505	290%
ER	0	0	0	0%
EB	**803**	**1636**	**833**	**104%**
WL	0	0	0	0%
WT	61	220	159	261%
WR	126	143	17	13%
WB	**187**	**363**	**176**	**94%**
Total	**1,350**	**2,700**	**1,350**	**100%**

FORECAST PEAK HOUR TO ADT COMPARISON

			Volumes		Percent of ADT		ADT
			AM	PM	AM	PM	
NorthLeg	Inbound		1,371	701			
NorthLeg	Outbound		532	1,100			
		Total	**1,903**	**1,801**	**9%**	**8%**	**22,200**
SouthLeg	Inbound		0	0			
SouthLeg	Outbound		0	0			
		Total	**0**	**0**	**0%**	**0%**	**0**
EastLeg	Inbound		1,091	363			
EastLeg	Outbound		280	790			
		Total	**1,371**	**1,153**	**11%**	**9%**	**12,900**
WestLeg	Inbound		467	1,636			
WestLeg	Outbound		2,117	810			
		Total	**2,584**	**2,446**	**10%**	**9%**	**26,800**
		Overall Total	**5,858**	**5,400**	**9%**	**9%**	**61,900**

Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

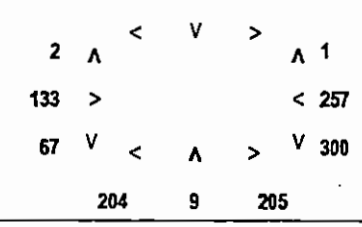
LOCATION: Marguerite Pkwy. (NS) at El Toro Rd. (EW) **INTERSECTION NUMBER:** 410

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

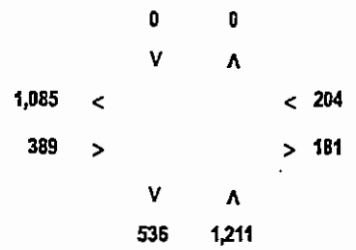


EXISTING MODEL YEAR:

2000

IN = 1,804

OUT = 1,802

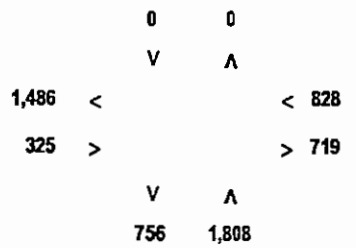


FUTURE MODEL YEAR:

2020

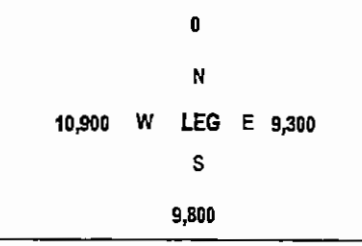
IN = 2,961

OUT = 2,961



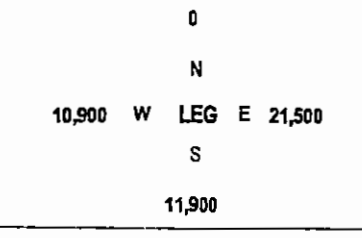
EXISTING (COUNTED) ADTs BY LEG:

2000



REFINED FUTURE ADT's BY LEG:

2020

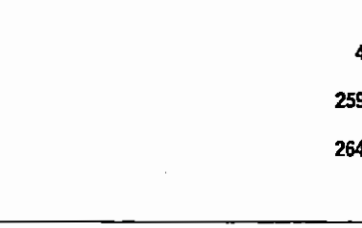


PM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

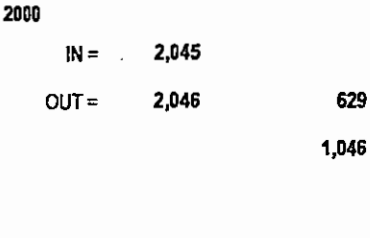


EXISTING MODEL YEAR:

2000

IN = 2,045

OUT = 2,046

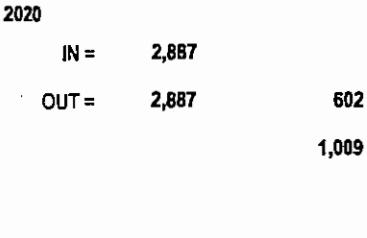


FUTURE MODEL YEAR:

2020

IN = 2,887

OUT = 2,887



EXISTING (COUNTED) ADTs BY LEG:

2000

REFINED FUTURE ADT's BY LEG:

2020

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Marguerite Pkwy. (NS) at El Toro Rd. (EW) **INTERSECTION NUMBER:** 410

AM PEAK HOUR

GROWTH CALCULATIONS

EXISTING COUNT YEAR: 2000

			V	2	12	Λ	
IN =	1,180	462	<				< 558
OUT =	1,180	202	>				> 338
			V	368	418	Λ	

GROWTH CALCULATION DECISION RULE:

MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

			V			Λ	
		MUL	<				< ADD
		MIN	>				> ADD
			V	MUL	MUL	Λ	

MINIMUM GROWTH %'S: 2000 to 2020

			V			Λ	
		0%	<				< 0%
		0%	>				> 0%
			V	0%	0%	Λ	

REFINED GROWTH: 2000 to 2020

			V			Λ	
		171	<				< 624
		0	>				> 538
			V	151	206	Λ	

PRORATED GROWTH: 20 YEARS

			V			Λ	
		171	<				< 624
		0	>				> 538
			V	151	206	Λ	

NEW PROJECTED VOLUMES: 2020

			V	0	0	Λ	
IN =	2,000	630	<				< 1,180
OUT =	2,030	200	>				> 880
			V	520	620	Λ	

PM PEAK HOUR

GROWTH CALCULATIONS

EXISTING COUNT YEAR: 2000

			V	10	13	Λ	
IN =	1,438	249	<				< 424
OUT =	1,438	527	>				> 632
			V	544	477	Λ	

GROWTH CALCULATION DECISION RULE:

MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

			V			Λ	
		MIN	<				< ADD
		MIN	>				> ADD
			V	MUL	MUL	Λ	

MINIMUM GROWTH %'S: 2000 to 2020

			V			Λ	
		0%	<				< 0%
		0%	>				> 0%
			V	0%	0%	Λ	

REFINED GROWTH: 2000 to 2020

			V			Λ	
		0	<				< 663
		0	>				> 620
			V	113	130	Λ	

PRORATED GROWTH: 20 YEARS

			V			Λ	
		0	<				< 663
		0	>				> 620
			V	113	130	Λ	

NEW PROJECTED VOLUMES: 2020

			V	0	0	Λ	
IN =	2,230	258	<				< 1,090
OUT =	2,230	530	>				> 1,291
			V	681	610	Λ	

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario:	2020	*Project:*	Saddleback Meadows
Existing Model RunID:	EV42	*JobNumber:*	00146
Future Model RunID:	2029	*Analyst:*	BL
Existing Validation Year:	2000	*Date:*	3/23/2001
Future Analysis Year:	2020		

LOCATION: Marguerite Pkwy. (NS) at El Toro Rd. (EW) **INTERSECTION NUMBER:** 410

AM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	204	41	-163	-80%
NT	9	9	0	0%
NR	205	658	453	221%
NB	**418**	**708**	**290**	**69%**
SL	0	0	0	0%
ST	0	0	0	0%
SR	0	0	0	0%
SB	**0**	**0**	**0**	**0%**
EL	2	2	0	0%
ET	133	222	89	67%
ER	67	5	-62	-93%
EB	**202**	**229**	**27**	**13%**
WL	300	515	215	72%
WT	257	589	332	129%
WR	1	1	0	0%
WB	**558**	**1105**	**547**	**98%**
Total	**1,178**	**2,042**	**864**	**73%**

PM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	98	4	-94	-96%
NT	7	7	0	0%
NR	372	702	330	89%
NB	**477**	**713**	**236**	**49%**
SL	0	0	0	0%
ST	0	0	0	0%
SR	0	0	0	0%
SB	**0**	**0**	**0**	**0%**
EL	4	4	0	0%
ET	259	588	329	127%
ER	264	19	-245	-93%
EB	**527**	**611**	**84**	**16%**
WL	272	663	391	144%
WT	150	254	104	69%
WR	2	2	0	0%
WB	**424**	**919**	**495**	**117%**
Total	**1,428**	**2,243**	**815**	**57%**

FORECAST PEAK HOUR TO ADT COMPARISON

		Volumes		Percent of ADT		ADT
		AM	PM	AM	PM	
NorthLeg	Inbound	0	0			
NorthLeg	Outbound	12	13			
	Total	**0**	**0**	**0%**	**0%**	**0**
SouthLeg	Inbound	708	713			
SouthLeg	Outbound	520	682			
	Total	**1,228**	**1,395**	**10%**	**12%**	**11,900**
EastLeg	Inbound	1,105	919			
EastLeg	Outbound	880	1,290			
	Total	**1,985**	**2,209**	**9%**	**10%**	**21,500**
WestLeg	Inbound	229	611			
WestLeg	Outbound	630	258			
	Total	**859**	**869**	**8%**	**8%**	**10,900**
	Overall Total	4,084	4,486	9%	10%	44,300

Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

LOCATION: Portola Pkwy. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 411

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

			16	524	268			
			<	V	>			
5	^						^	739
5	>						<	16
22	V	<		^	>		V	349
			135	1979	306			

EXISTING MODEL YEAR:

2000

IN = 3,057

OUT = 2,889

			710	1,856				
			V	^				
0	<						<	587
0	>						>	118
			V	^				
			915	1,760				

FUTURE MODEL YEAR:

2020

IN = 4,813

OUT = 4,813

			734	2,680				
			V	^				
0	<						<	1,816
0	>						>	1,145
			V	^				
			988	2,263				

EXISTING (COUNTED) ADTs BY LEG:

2000

39,800

N

0 W LEG E 11,300

S

34,800

REFINED FUTURE ADT's BY LEG:

2020

41,600

N

0 W LEG E 37,400

S

38,500

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2000

			5	1901	593			
			<	V	>			
11	^						^	449
16	>						<	5
129	V	<		^	>		V	263
			16	708	228			

EXISTING MODEL YEAR:

2000

IN = 3,122

OUT = 3,200

			1,708	1,123				
			V	^				
0	<						<	202
0	>						>	437
			V	^				
			1,640	1,212				

FUTURE MODEL YEAR:

2020

IN = 4,846

OUT = 4,846

			2,311	1,273				
			V	^				
0	<						<	1,264
0	>						>	1,607
			V	^				
			1,966	1,271				

EXISTING (COUNTED) ADTs BY LEG:

2000

39,800

N

0 W LEG E 11,300

S

34,800

REFINED FUTURE ADT's BY LEG:

2020

41,600

N

0 W LEG E 37,400

S

38,500

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Portola Pkwy. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 411

GROWTH CALCULATIONS

	AM PEAK HOUR						PM PEAK HOUR					
EXISTING COUNT YEAR: 2000				808	2,723					2,499	1,168	
				V	∧					V	∧	
IN =	4,364	167	<			< 1,104	4,324	26	<			< 717
OUT =	4,364	32	>			> 579	4,324	156	>			> 837
				V	∧					V	∧	
				895	2,420					2,293	952	
GROWTH CALCULATION DECISION RULE:				ADD	ADD					ADD	ADD	
MIN = Minimum Count Growth Approach				V	∧					V	∧	
			<			< ADD			<			< ADD
ADD = Additive Growth Increment Approach			>			> ADD			>			> ADD
MUL = Multiplicative (Ratio) Approach				V	∧					V	∧	
				MUL	ADD					ADD	MUL	
MINIMUM GROWTH %'S: 2000 to 2020				0%	0%					0%	0%	
				V	∧					V	∧	
			<			< 0%			<			< 0%
			>			> 0%			>			> 0%
				V	∧					V	∧	
				0%	0%					0%	0%	
REFINED GROWTH: 2000 to 2020				24	824					603	150	
				V	∧					V	∧	
			<			< 1,229			<			< 1,062
			>			> 1,027			>			> 1,170
				V	∧					V	∧	
				71	503					326	46	
PRORATED GROWTH: 20 YEARS				24	824					603	150	
				V	∧					V	∧	
			<			< 1,229			<			< 1,062
			>			> 1,027			>			> 1,170
				V	∧					V	∧	
				71	503					326	46	
NEW PROJECTED VOLUMES: 2020				830	3,550					3,100	1,320	
				V	∧					V	∧	
IN =	6,080	0	<			< 2,330	5,880	0	<			< 1,780
OUT =	6,130	0	>			> 1,610	5,950	0	>			> 2,010
				V	∧					V	∧	
				970	2,920					2,620	1,000	

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Portola Pkwy. (NS) at Glenn Ranch Rd. (EW) **INTERSECTION NUMBER:** 411

AM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	135	135	0	0%
NT	1,979	1897	-82	-4%
NR	306	1047	741	242%
NB	**2,420**	**3079**	**659**	**27%**
SL	268	563	295	110%
ST	524	274	-250	-48%
SR	16	16	0	0%
SB	**808**	**853**	**45**	**6%**
EL	0	0	0	0%
ET	0	0	0	0%
ER	0	0	0	0%
EB	**0**	**0**	**0**	**0%**
WL	349	696	347	99%
WT	16	16	0	0%
WR	739	1653	914	124%
WB	**1,104**	**2365**	**1261**	**114%**
Total	**4,332**	**6,297**	**1,965**	**45%**

PM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	16	16	0	0%
NT	708	416	-292	-41%
NR	228	596	368	161%
NB	**952**	**1028**	**76**	**8%**
SL	593	1414	821	138%
ST	1,901	1724	-177	-9%
SR	5	5	0	0%
SB	**2,499**	**3143**	**644**	**26%**
EL	0	0	0	0%
ET	0	0	0	0%
ER	0	0	0	0%
EB	**0**	**0**	**0**	**0%**
WL	263	896	633	241%
WT	5	5	0	0%
WR	449	904	455	101%
WB	**717**	**1805**	**1088**	**152%**
Total	**4,168**	**5,976**	**1,808**	**43%**

FORECAST PEAK HOUR TO ADT COMPARISON

			Volumes		Percent of ADT		ADT
			AM	PM	AM	PM	
NorthLeg	Inbound		853	3,143			
NorthLeg	Outbound		3,550	1,320			
		Total	**4,403**	**4,463**	**11%**	**11%**	**41,600**
SouthLeg	Inbound		3,079	1,028			
SouthLeg	Outbound		970	2,620			
		Total	**4,049**	**3,648**	**11%**	**9%**	**38,500**
EastLeg	Inbound		2,365	1,805			
EastLeg	Outbound		1,610	2,010			
		Total	**3,975**	**3,815**	**11%**	**10%**	**37,400**
WestLeg	Inbound		0	0			
WestLeg	Outbound		167	26			
		Total	**0**	**0**	**0%**	**0%**	**0**
		Overall Total	**12,594**	**11,952**	**11%**	**10%**	**117,500**

Scenario: 2020	*Project:* Saddleback Meadows
Existing Model RunID: EV42	*JobNumber:* 00146
Future Model RunID: 2029	*Analyst:* BL
Existing Validation Year: 2000	*Date:* 3/23/2001
Future Analysis Year: 2020	

LOCATION: Portola Pkwy. (NS) at FTC (EW) **INTERSECTION NUMBER:** 412

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

			217	483	193			
			<	V	>			
		69	∧			∧	1152	
		0	>			<	0	
		82	V	<	∧	>	V	96
			478	1079	94			

EXISTING MODEL YEAR:

2000

IN = 4,020

OUT = 4,020

			915	1,760				
			V	∧				
		1,303	<			<	706	
		183	>			>	341	
			V	∧				
			616	2,216				

FUTURE MODEL YEAR:

2020

IN = 4,617

OUT = 4,617

			988	2,263				
			V	∧				
		453	<			<	1,638	
		426	>			>	577	
			V	∧				
			1,324	1,565				

EXISTING (COUNTED) ADTs BY LEG:

2000

34,800

N

0 W LEG E 0

S

24,900

REFINED FUTURE ADT's BY LEG:

2020

38,500

N

7,500 W LEG E 29,800

S

32,900

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2000

			103	1231	804			
			<	V	>			
		152	∧			∧	230	
		0	>			<	0	
		217	V	<	∧	>	V	78
			118	622	105			

EXISTING MODEL YEAR:

2000

IN = 3,978

OUT = 3,979

			1,640	1,212				
			V	∧				
		292	<			<	430	
		939	>			>	522	
			V	∧				
			1,953	969				

FUTURE MODEL YEAR:

2020

IN = 4,390

OUT = 4,390

			1,966	1,271				
			V	∧				
		477	<			<	746	
		381	>			>	1,085	
			V	∧				
			1,557	1,297				

EXISTING (COUNTED) ADTs BY LEG:

2000

34,800

N

0 W LEG E 0

S

24,900

REFINED FUTURE ADT's BY LEG:

2020

38,500

N

7,500 W LEG E 29,800

S

32,900

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Portola Pkwy. (NS) at FTC (EW) **INTERSECTION NUMBER:** 412

GROWTH CALCULATIONS

AM PEAK HOUR

EXISTING COUNT YEAR: 2000
IN = 3,943 OUT = 3,943

			893	2,300		
			V	^		
	695	<			<	1,248
	151	>			>	287
			V	^		
			661	1,651		

GROWTH CALCULATION DECISION RULE:
MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

			MUL	ADD		
			V	^		
	MIN	<			<	ADD
	MUL	>			>	MUL
			V	^		
			ADD	MIN		

MINIMUM GROWTH %'S: 2000 to 2020

			0%	0%		
			V	^		
	0%	<			<	0%
	0%	>			>	0%
			V	^		
			0%	0%		

REFINED GROWTH: 2000 to 2020

			71	503		
			V	^		
	0	<			<	932
	201	>			>	199
			V	^		
			708	0		

PRORATED GROWTH: 20 YEARS

			71	503		
			V	^		
	0	<			<	932
	201	>			>	199
			V	^		
			708	0		

NEW PROJECTED VOLUMES: 2020
IN = 5,140 OUT = 5,360

			960	2,800		
			V	^		
	700	<			<	2,180
	350	>			>	490
			V	^		
			1,370	1,650		

PM PEAK HOUR

EXISTING COUNT YEAR: 2000
IN = 3,660 OUT = 3,660

			2,138	1,004		
			V	^		
	221	<			<	308
	369	>			>	909
			V	^		
			1,526	845		

GROWTH CALCULATION DECISION RULE:
MIN = Minimum Count Growth Approach
ADD = Additive Growth Increment Approach
MUL = Multiplicative (Ratio) Approach

			ADD	MUL		
			V	^		
	MUL	<			<	MUL
	MIN	>			>	ADD
			V	^		
			MIN	MUL		

MINIMUM GROWTH %'S: 2000 to 2020

			0%	0%		
			V	^		
	0%	<			<	0%
	0%	>			>	0%
			V	^		
			0%	0%		

REFINED GROWTH: 2000 to 2020

			326	49		
			V	^		
	140	<			<	226
	0	>			>	563
			V	^		
			0	286		

PRORATED GROWTH: 20 YEARS

			326	49		
			V	^		
	140	<			<	226
	0	>			>	563
			V	^		
			0	286		

NEW PROJECTED VOLUMES: 2020
IN = 4,490 OUT = 4,490

			2,460	1,069		
			V	^		
	367	<			<	530
	370	>			>	1,497
			V	^		
			1,558	1,130		

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Portola Pkwy. (NS) at FTC (EW) **INTERSECTION NUMBER:** 412

REFINED PROJECTIONS / REASONABLENESS CHECKS

AM PEAK HOUR					PM PEAK HOUR				
Approach	Existing Count	Future Volume	Difference	% Change	Approach	Existing Count	Future Volume	Difference	% Change
NL	478	570	92	19%	NL	118	242	124	105%
NT	1,079	909	-170	-16%	NT	622	611	-11	-2%
NR	94	241	147	156%	NR	105	274	169	161%
NB	**1,651**	**1720**	**69**	**4%**	**NB**	**845**	**1127**	**282**	**33%**
SL	193	249	56	29%	SL	804	1223	419	52%
ST	483	624	141	29%	ST	1,231	1117	-114	-9%
SR	217	130	-87	-40%	SR	103	124	21	20%
SB	**893**	**1003**	**110**	**12%**	**SB**	**2,138**	**2464**	**326**	**15%**
EL	69	79	10	14%	EL	152	114	-38	-25%
ET	0	0	0	0%	ET	0	0	0	0%
ER	82	286	204	249%	ER	217	257	40	18%
EB	**151**	**365**	**214**	**142%**	**EB**	**369**	**371**	**2**	**1%**
WL	96	459	363	378%	WL	78	184	106	136%
WT	0	0	0	0%	WT	0	0	0	0%
WR	1,152	1812	660	57%	WR	230	344	114	50%
WB	**1,248**	**2271**	**1023**	**82%**	**WB**	**308**	**528**	**220**	**71%**
Total	**3,943**	**5,359**	**1,416**	**36%**	**Total**	**3,660**	**4,490**	**830**	**23%**

FORECAST PEAK HOUR TO ADT COMPARISON

		Volumes		Percent of ADT		ADT
		AM	PM	AM	PM	
NorthLeg	Inbound	1,003	2,464			
NorthLeg	Outbound	2,800	1,069			
	Total	**3,803**	**3,533**	**10%**	**9%**	**38,500**
SouthLeg	Inbound	1,720	1,127			
SouthLeg	Outbound	1,369	1,558			
	Total	**3,089**	**2,685**	**9%**	**8%**	**32,900**
EastLeg	Inbound	2,271	528			
EastLeg	Outbound	490	1,497			
	Total	**2,761**	**2,025**	**9%**	**7%**	**29,800**
WestLeg	Inbound	365	371			
WestLeg	Outbound	700	366			
	Total	**1,065**	**737**	**14%**	**10%**	**7,500**
	Overall Total	**10,718**	**8,980**	**10%**	**8%**	**108,700**

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

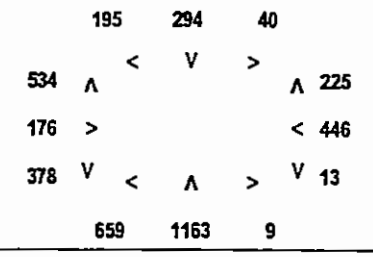
LOCATION: Portola Pkwy. (NS) at El Toro Rd. (EW) **INTERSECTION NUMBER:** 413

AM PEAK HOUR

INTERSECTION INPUT DATA

EXISTING TURNING MOVEMENT VOLUMES:

2000

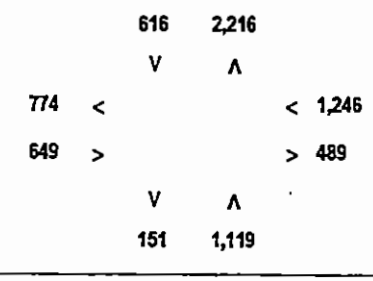


EXISTING MODEL YEAR:

2000

IN = 3,630

OUT = 3,630

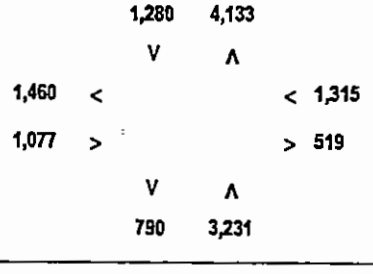


FUTURE MODEL YEAR:

2020

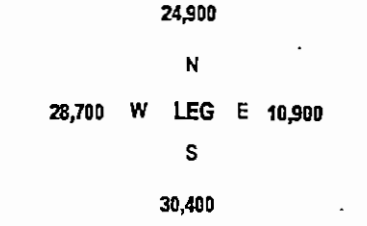
IN = 6,903

OUT = 6,902



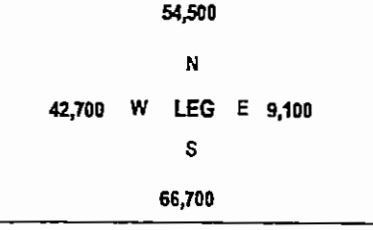
EXISTING (COUNTED) ADTs BY LEG:

2000



REFINED FUTURE ADT's BY LEG:

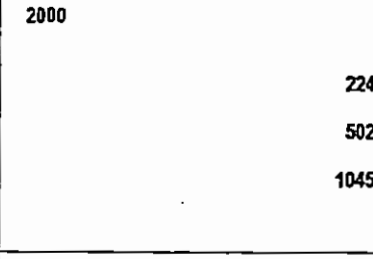
2020



PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2000

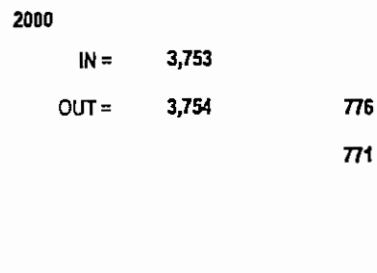


EXISTING MODEL YEAR:

2000

IN = 3,753

OUT = 3,754

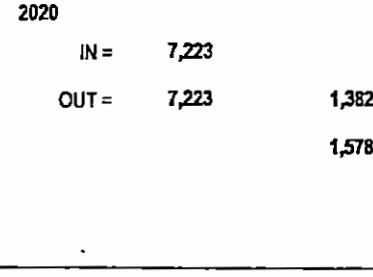


FUTURE MODEL YEAR:

2020

IN = 7,223

OUT = 7,223



EXISTING (COUNTED) ADTs BY LEG:

2000

REFINED FUTURE ADT's BY LEG:

2020

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Portola Pkwy. (NS) at El Toro Rd. (EW) **INTERSECTION NUMBER:** 413

GROWTH CALCULATIONS

	AM PEAK HOUR	PM PEAK HOUR
EXISTING COUNT YEAR: 2000	529 V 1,922 ∧	2,016 V 922 ∧
IN = 4,132	1,300 < < 684	5,177 1,008 < < 327
OUT = 4,132	1,088 > > 225	5,177 1,771 > > 719
	V 685 ∧ 1,831	V 2,528 ∧ 1,063
GROWTH CALCULATION DECISION RULE:	MUL V MUL ∧	ADD V MUL ∧
MIN = Minimum Count Growth Approach	ADD < < MUL	ADD < < MUL
ADD = Additive Growth Increment Approach	ADD > > MUL	ADD > > MIN
MUL = Multiplicative (Ratio) Approach	V ADD ∧ ADD	V ADD ∧ ADD
MINIMUM GROWTH %'S: 2000 to 2020	0% V 0% ∧	0% V 0% ∧
	0% < < -16%	0% < < -16%
	0% > > -16%	0% > > -16%
	V 0% ∧ 0%	V 0% ∧ 0%
REFINED GROWTH: 2000 to 2020	570 V 1,663 ∧	1,544 V 1,067 ∧
	686 < < 38	606 < < -1
	428 > > 14	807 > > -117
	V 639 ∧ 2,112	V 1,987 ∧ 1,122
PRORATED GROWTH: 20 YEARS	570 V 1,663 ∧	1,544 V 1,067 ∧
	686 < < 38	606 < < -1
	428 > > 14	807 > > -117
	V 639 ∧ 2,112	V 1,987 ∧ 1,122
NEW PROJECTED VOLUMES: 2020	1,100 V 3,660 ∧	3,560 V 1,990 ∧
IN = 7,280	2,029 < < 720	8,650 1,610 < < 330
OUT = 7,280	1,520 > > 245	8,720 2,580 > > 600
	V 1,346 ∧ 3,940	V 4,520 ∧ 2,190

Note: Outbound Future Volumes may be factored (increased) to match inbound volumes

Scenario: 2020
Existing Model RunID: EV42
Future Model RunID: 2029
Existing Validation Year: 2000
Future Analysis Year: 2020

Project: Saddleback Meadows
JobNumber: 00146
Analyst: BL
Date: 3/23/2001

LOCATION: Portola Pkwy. (NS) at El Toro Rd. (EW) **INTERSECTION NUMBER:** 413

AM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	659	1260	601	91%
NT	1,163	2664	1501	129%
NR	9	14	5	56%
NB	**1,831**	**3938**	**2107**	**115%**
SL	40	58	18	45%
ST	294	712	418	142%
SR	195	331	136	70%
SB	**529**	**1101**	**572**	**108%**
EL	534	732	198	37%
ET	176	172	-4	-2%
ER	378	617	239	63%
EB	**1,088**	**1521**	**433**	**40%**
WL	13	18	5	38%
WT	446	437	-9	-2%
WR	225	264	39	17%
WB	**684**	**719**	**35**	**5%**
Total	**4,132**	**7,279**	**3,147**	**76%**

PM PEAK HOUR

REFINED PROJECTIONS / REASONABLENESS CHECKS

Approach	Existing Count	Future Volume	Difference	% Change
NL	422	759	337	80%
NT	580	1392	812	140%
NR	61	58	-3	-5%
NB	**1,063**	**2209**	**1146**	**108%**
SL	156	141	-15	-10%
ST	1,468	2765	1297	88%
SR	392	676	284	72%
SB	**2,016**	**3582**	**1566**	**78%**
EL	224	456	232	104%
ET	502	401	-101	-20%
ER	1,045	1740	695	67%
EB	**1,771**	**2597**	**826**	**47%**
WL	15	15	0	0%
WT	194	175	-19	-10%
WR	118	142	24	20%
WB	**327**	**332**	**5**	**2%**
Total	**5,177**	**8,720**	**3,543**	**68%**

FORECAST PEAK HOUR TO ADT COMPARISON

		Volumes		Percent of ADT		ADT
		AM	PM	AM	PM	
NorthLeg	Inbound	1,101	3,582			
NorthLeg	Outbound	3,660	1,990			
	Total	**4,761**	**5,572**	**9%**	**10%**	**54,500**
SouthLeg	Inbound	3,938	2,209			
SouthLeg	Outbound	1,347	4,520			
	Total	**5,285**	**6,729**	**8%**	**10%**	**66,700**
EastLeg	Inbound	719	332			
EastLeg	Outbound	244	600			
	Total	**963**	**932**	**11%**	**10%**	**9,100**
WestLeg	Inbound	1,521	2,597			
WestLeg	Outbound	2,028	1,610			
	Total	**3,549**	**4,207**	**8%**	**10%**	**42,700**
	Overall Total	**14,558**	**17,440**	**8%**	**10%**	**173,000**

APPENDIX E

ICU CALCULATIONS – EXISTING PLUS PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	402	39	441	0.26*
NR	1.0	1700	4	0	4	0.01-
SL	1.0	1700	7	0	7	0.01*
ST	1.0	1700	171	14	185	0.11
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	17	0	17	0.01
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	60	0	60	0.03-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.35 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	198	26	224	0.13
NR	1.0	1700	17	0	17	0.01-
SL	1.0	1700	40	0	40	0.02
ST	1.0	1700	277	45	322	0.19*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	10	0	10	0.01*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	19	0	19	0.01-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.25 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	19	0	19	0.01
NT	1.0	1700	331	39	370	0.22*
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00*
ST	1.0	1700	188	14	202	0.12
SR	1.0	1700	51	0	51	0.03-
EL	0.0	1700	71	0	71	0.04
ET	1.0	1700	0	0	0	0.05*
ER	0.0	1700	6	0	6	0.01
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.32 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	17	0	17	0.01*
NT	1.0	1700	196	26	222	0.13
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	224	45	269	0.16*
SR	1.0	1700	72	0	72	0.03-
EL	0.0	1700	44	0	44	0.03*
ET	1.0	1700	0	0	0	0.03
ER	0.0	1700	14	0	14	0.01
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.25 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	251	39	290	0.17*
NR	1.0	1700	48	0	48	0.03-
SL	1.0	1700	41	0	41	0.02*
ST	1.0	1700	219	14	233	0.14
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	137	0	137	0.08*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	93	0	93	0.04-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.32 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	277	26	303	0.18*
NR	1.0	1700	131	0	131	0.07-
SL	1.0	1700	85	0	85	0.05*
ST	1.0	1700	189	45	234	0.14
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	65	0	65	0.04*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	60	0	60	0.03-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.32 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	48	10	58	0.03*
NT	1.0	1700	251	39	290	0.17
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	335	14	349	0.21*
SR	1.0	1700	10	0	10	0.01-
EL	0.0	1700	25	0	25	0.01
ET	1.0	1700	0	0	0	0.10*
ER	0.0	1700	150	3	153	0.09
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.39 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	126	6	132	0.08*
NT	1.0	1700	381	26	407	0.24
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	225	45	270	0.16*
SR	1.0	1700	11	0	11	0.01-
EL	0.0	1700	19	0	19	0.01
ET	1.0	1700	0	0	0	0.06*
ER	0.0	1700	72	11	83	0.05
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.35 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	284	0	284	0.17
NR	1.0	1700	0	50	50	0.03-
SL	1.0	1700	0	17	17	0.01
ST	1.0	1700	485	0	485	0.29*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	0	146	146	0.09*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	0	49	49	0.03-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.43 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	490	0	490	0.29*
NR	1.0	1700	0	169	169	0.09-
SL	1.0	1700	0	56	56	0.03*
ST	1.0	1700	297	0	297	0.17
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	0	95	95	0.06*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	0	32	32	0.02-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.43 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	268	50	318	0.19
NR	1.0	1700	18	0	18	0.01-
SL	1.0	1700	8	0	8	0.01
ST	1.0	1700	411	146	557	0.33*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	0.0	1700	95	0	95	0.06
WT	1.0	1700	0	0	0	0.07*
WR	0.0	1700	16	0	16	0.01
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.45 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	483	169	652	0.38*
NR	1.0	1700	93	0	93	0.04-
SL	1.0	1700	16	0	16	0.01*
ST	1.0	1700	305	95	400	0.24
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	0.0	1700	40	0	40	0.02
WT	1.0	1700	0	0	0	0.03*
WR	0.0	1700	7	0	7	0.01
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.47 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	1.0	1700	78	0	78	0.05*
NT	1.0	1700	248	26	274	0.16
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	353	78	431	0.25*
SR	1.0	1700	151	68	219	0.11-
EL	1.0	1700	37	24	61	0.04
ET	0.0	0	0	0	0	0.00
ER	1.0	1700	114	0	114	0.06-*
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.41 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	1.0	1700	137	0	137	0.08
NT	1.0	1700	412	90	502	0.30*
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00*
ST	1.0	1700	295	50	345	0.20
SR	1.0	1700	49	45	94	0.05-
EL	1.0	1700	163	79	242	0.14*
ET	0.0	0	0	0	0	0.00
ER	1.0	1700	93	0	93	0.04-
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.49 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0.00
SL	1.0	1700	170	0	170	0.10
ST	0.0	0	0	0	0	0.00
SR	2.0	3400	833	0	833	0.21-*
EL	1.0	1700	148	0	148	0.09*
ET	2.0	3400	38	24	62	0.02
ER	0.0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0.00
WT	2.0	3400	191	68	259	0.08*
WR	1.0	1700	117	0	117	0.06-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.43 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0.00
SL	1.0	1700	68	0	68	0.04
ST	0.0	0	0	0	0	0.00
SR	2.0	3400	292	0	292	0.08-*
EL	1.0	1700	629	0	629	0.37*
ET	2.0	3400	174	79	253	0.07
ER	0.0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0.00
WT	2.0	3400	61	45	106	0.03
WR	1.0	1700	126	0	126	0.06-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.56 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.5	2550	204	0	204	0.08*
NT	1.5	2550	9	0	9	0.01
NR >	1.0	1700	205	10	215	0.03-
SL	1.0	1700	0	0	0	0.00
ST	2.0	3400	1	0	1	0.01*
SR	1.0	1700	1	0	1	0.01-
EL	2.0	3400	2	0	2	0.01
ET	2.0	3400	133	16	149	0.04*
ER	1.0	1700	67	0	67	0.03-
WL	2.0	3400	300	29	329	0.10*
WT	2.0	3400	257	49	306	0.09
WR	0.0	1700	1	0	1	0.01
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.28 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.5	2550	98	0	98	0.04
NT	1.5	2550	7	0	7	0.01
NR >	1.0	1700	372	34	406	0.13-*
SL	1.0	1700	1	0	1	0.01*
ST	2.0	3400	8	0	8	0.01
SR	1.0	1700	1	0	1	0.01-
EL	2.0	3400	4	0	4	0.01
ET	2.0	3400	259	56	315	0.09
ER	1.0	1700	264	0	264	0.14-*
WL	2.0	3400	272	19	291	0.09*
WT	2.0	3400	150	31	181	0.05
WR	0.0	1700	2	0	2	0.01
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.42 A

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	3.0	5100	1979	0	1979	0.39*
NR	1.0	1700	306	14	320	0.16-
SL	2.0	3400	268	10	278	0.08*
ST	3.0	5100	524	0	524	0.10
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	2.0	3400	349	39	388	0.11*
WT	0.0	0	0	0	0	0.00
WR >>	1.0	1700	739	29	768	0.45
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.63 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	3.0	5100	708	0	708	0.14
NR	1.0	1700	228	45	273	0.14-
SL	2.0	3400	593	34	627	0.18
ST	3.0	5100	1901	0	1901	0.37*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	2.0	3400	263	26	289	0.09*
WT	0.0	0	0	0	0	0.00
WR >>	1.0	1700	449	19	468	0.28
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.51 A

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	478	0	478	0.14
NT	2.0	3400	1079	0	1079	0.32*
NR >>	1.0	1700	94	10	104	0.06
SL	1.0	1700	193	0	193	0.11*
ST	2.0	3400	483	0	483	0.14
SR >>	1.0	1700	217	39	256	0.15
EL	1.0	1700	69	14	83	0.05
ET	0.0	0	0	0	0	0.00*
ER >>	1.0	1700	82	0	82	0.05
WL	1.0	1700	96	3	99	0.06*
WT	0.0	0	0	0	0	0.00
WR >>	1.0	1700	1152	0	1152	0.68
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	118	0	118	0.03
NT	2.0	3400	622	0	622	0.18*
NR >>	1.0	1700	105	6	111	0.07
SL	1.0	1700	804	0	804	0.47*
ST	2.0	3400	1231	0	1231	0.36
SR >>	1.0	1700	103	26	129	0.08
EL	1.0	1700	152	45	197	0.12*
ET	0.0	0	0	0	0	0.00
ER >>	1.0	1700	217	0	217	0.13
WL	1.0	1700	78	11	89	0.05
WT	0.0	0	0	0	0	0.00*
WR >>	1.0	1700	230	0	230	0.14
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.82 D

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	659	0	659	0.19*
NT	4.0	6800	1163	0	1163	0.17
NR	1.0	1700	9	3	12	0.01-
SL	2.0	3400	40	3	43	0.01
ST	3.0	5100	294	0	294	0.06
SR	1.0	1700	195	0	195	0.09-*
EL	1.0	1700	534	0	534	0.31*
ET	3.0	5100	176	10	186	0.04
ER >>	1.0	1700	378	0	378	0.22
WL	1.0	1700	13	10	23	0.01
WT	3.0	5100	446	29	475	0.09
WR	1.0	1700	225	10	235	0.12-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.76 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	422	0	422	0.12*
NT	4.0	6800	580	0	580	0.09
NR	1.0	1700	61	11	72	0.03-
SL	2.0	3400	156	11	167	0.05
ST	3.0	5100	1468	0	1468	0.29*
SR	1.0	1700	392	0	392	0.20-
EL	1.0	1700	224	0	224	0.13*
ET	3.0	5100	502	34	536	0.11
ER >>	1.0	1700	1045	0	1045	0.61
WL	1.0	1700	15	6	21	0.01
WT	3.0	5100	194	19	213	0.04
WR	1.0	1700	118	6	124	0.06-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.65 B

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX F

ICU CALCULATIONS - YEAR 2005 WITHOUT PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	452	0	38	490	0.29*
NR	1.0	1700	4	0	8	12	0.01-
SL	1.0	1700	7	0	0	7	0.01*
ST	1.0	1700	192	0	19	211	0.12
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	19	0	10	29	0.02
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	67	0	0	67	0.03-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.38 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	222	0	39	261	0.15
NR	1.0	1700	19	0	25	44	0.03-
SL	1.0	1700	45	0	0	45	0.03
ST	1.0	1700	311	0	55	366	0.22*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	11	0	25	36	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	21	0	0	21	0.01-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.29 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	21	0	12	33	0.02
NT	1.0	1700	372	0	46	418	0.25*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	211	0	29	240	0.14
SR	1.0	1700	57	0	0	57	0.03-
EL	0.0	1700	79	0	0	79	0.05
ET	1.0	1700	0	0	0	0	0.06*
ER	0.0	1700	6	0	16	22	0.01
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.36 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	19	0	37	56	0.03*
NT	1.0	1700	220	0	64	284	0.17
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	252	0	80	332	0.20*
SR	1.0	1700	81	0	0	81	0.04-
EL	0.0	1700	49	0	0	49	0.03
ET	1.0	1700	0	0	0	0	0.06*
ER	0.0	1700	15	0	38	53	0.03
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.34 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	282	0	30	312	0.18*
NR	1.0	1700	54	0	49	103	0.05-
SL	1.0	1700	46	0	46	92	0.05*
ST	1.0	1700	246	0	82	328	0.19
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	154	0	39	193	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	104	0	31	135	0.07-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.39 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	311	0	95	406	0.24*
NR	1.0	1700	147	0	123	270	0.14-
SL	1.0	1700	95	0	90	185	0.11*
ST	1.0	1700	212	0	56	268	0.16
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	73	0	118	191	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	67	0	94	161	0.09-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.51 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	54	0	0	54	0.03*
NT	1.0	1700	282	0	48	330	0.19
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	377	0	97	474	0.28*
SR	1.0	1700	11	0	24	35	0.02-
EL	0.0	1700	28	0	31	59	0.03
ET	1.0	1700	0	0	0	0	0.13*
ER	0.0	1700	168	0	0	168	0.10
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.49 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	141	0	0	141	0.08
NT	1.0	1700	428	0	142	570	0.34*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	253	0	99	352	0.21
SR	1.0	1700	12	0	75	87	0.04-
EL	0.0	1700	21	0	76	97	0.06
ET	1.0	1700	0	0	0	0	0.11*
ER	0.0	1700	81	0	0	81	0.05
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.50 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	319	0	48	367	0.22
NR	1.0	1700	0	0	0	0	0.00-
SL	1.0	1700	0	0	0	0	0.00
ST	1.0	1700	545	0	97	642	0.38*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	0	0	0	0	0.00-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.43 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	551	0	142	693	0.41*
NR	1.0	1700	0	0	0	0	0.00-
SL	1.0	1700	0	0	0	0	0.00*
ST	1.0	1700	334	0	99	433	0.25
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	0	0	0	0	0.00-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.46 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	301	0	38	339	0.20
NR	1.0	1700	20	0	0	20	0.01-
SL	1.0	1700	9	0	8	17	0.01
ST	1.0	1700	462	0	89	551	0.32*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	106	0	0	106	0.06
WT	1.0	1700	0	0	0	0	0.08*
WR	0.0	1700	18	0	10	28	0.02
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.45 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	543	0	117	660	0.39*
NR	1.0	1700	104	0	0	104	0.05-
SL	1.0	1700	18	0	25	43	0.03*
ST	1.0	1700	343	0	74	417	0.25
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	45	0	0	45	0.03
WT	1.0	1700	0	0	0	0	0.05*
WR	0.0	1700	7	0	25	32	0.02
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.52 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	87	0	0	87	0.05*
NT	1.0	1700	279	0	21	300	0.18
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	397	0	53	450	0.26*
SR	1.0	1700	169	0	36	205	0.10-
EL	1.0	1700	41	0	17	58	0.03
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	128	0	0	128	0.07-*
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.43 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	154	0	0	154	0.09*
NT	1.0	1700	463	0	67	530	0.31
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	332	0	40	372	0.22*
SR	1.0	1700	55	0	34	89	0.04-
EL	1.0	1700	183	0	50	233	0.14*
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	104	0	0	104	0.05-
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.50 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1700	191	0	0	191	0.11
ST	0.0	0	0	0	0	0	0.00
SR	2.0	3400	937	0	0	937	0.24-*
EL	1.0	1700	166	0	0	166	0.10*
ET	2.0	3400	42	0	13	55	0.02
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	214	0	33	247	0.07*
WR	1.0	1700	131	0	0	131	0.07-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.46 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1700	76	0	0	76	0.05
ST	0.0	0	0	0	0	0	0.00
SR	2.0	3400	328	0	0	328	0.09-*
EL	1.0	1700	708	0	0	708	0.42*
ET	2.0	3400	195	0	40	235	0.07
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	68	0	24	92	0.03
WR	1.0	1700	141	0	0	141	0.07-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.63 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.5	2550	229	0	0	229	0.09*
NT	1.5	2550	10	0	0	10	0.01
NR >	1.0	1700	230	0	1	231	0.03-
SL	1.0	1700	0	0	0	0	0.00
ST	2.0	3400	1	0	0	1	0.01*
SR	1.0	1700	1	0	0	1	0.01-
EL	2.0	3400	2	0	0	2	0.01
ET	2.0	3400	149	0	12	161	0.05*
ER	1.0	1700	75	0	0	75	0.03-
WL	2.0	3400	337	0	1	338	0.10*
WT	2.0	3400	289	0	32	321	0.09
WR	0.0	1700	1	0	0	1	0.01
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.30 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.5	2550	110	0	0	110	0.04
NT	1.5	2550	7	0	0	7	0.01
NR >	1.0	1700	418	0	3	421	0.14-*
SL	1.0	1700	1	0	0	1	0.01*
ST	2.0	3400	9	0	0	9	0.01
SR	1.0	1700	1	0	0	1	0.01-
EL	2.0	3400	4	0	0	4	0.01
ET	2.0	3400	291	0	39	330	0.10
ER	1.0	1700	297	0	0	297	0.14-*
WL	2.0	3400	306	0	2	308	0.09*
WT	2.0	3400	168	0	23	191	0.06
WR	0.0	1700	2	0	0	2	0.01
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.43 A

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	135	0	0	135	0.04
NT	3.0	5100	2227	0	0	2227	0.44*
NR	1.0	1700	344	0	12	356	0.18-
SL	2.0	3400	301	0	0	301	0.09*
ST	3.0	5100	589	0	0	589	0.12
SR	1.0	1700	16	0	0	16	0.01-
EL	1.0	1700	5	0	0	5	0.01
ET	1.5	2550	5	0	0	5	0.01*
ER	1.5	2550	22	0	0	22	0.01-
WL	2.0	3400	392	0	32	424	0.13*
WT	1.0	1700	16	0	0	16	0.01
WR >>	1.0	1700	831	0	0	831	0.49
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.72 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	16	0	0	16	0.01*
NT	3.0	5100	796	0	0	796	0.16
NR	1.0	1700	256	0	37	293	0.14-
SL	2.0	3400	667	0	0	667	0.20
ST	3.0	5100	2139	0	0	2139	0.42*
SR	1.0	1700	5	0	0	5	0.01-
EL	1.0	1700	11	0	0	11	0.01
ET	1.5	2550	16	0	0	16	0.01
ER	1.5	2550	129	0	0	129	0.04-*
WL	2.0	3400	296	0	22	318	0.09*
WT	1.0	1700	5	0	0	5	0.01
WR >>	1.0	1700	505	0	0	505	0.30
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.61 B

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	538	0	0	538	0.16
NT	2.0	3400	1214	0	0	1214	0.36*
NR >>	1.0	1700	105	0	6	111	0.07
SL	1.0	1700	217	0	0	217	0.13*
ST	2.0	3400	543	0	0	543	0.16
SR >>	1.0	1700	244	0	32	276	0.16
EL	1.0	1700	77	0	12	89	0.05
ET	0.0	0	0	0	0	0	0.00*
ER >>	1.0	1700	92	0	0	92	0.05
WL	1.0	1700	108	0	2	110	0.06*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1700	1296	0	0	1296	0.76
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.60 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	132	0	0	132	0.04
NT	2.0	3400	700	0	0	700	0.21*
NR >>	1.0	1700	118	0	4	122	0.07
SL	1.0	1700	904	0	0	904	0.53*
ST	2.0	3400	1385	0	0	1385	0.41
SR >>	1.0	1700	115	0	22	137	0.08
EL	1.0	1700	171	0	37	208	0.12*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	244	0	0	244	0.14
WL	1.0	1700	87	0	7	94	0.06
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	258	0	0	258	0.15
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.91 E

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	741	0	0	741	0.22*
NT	4.0	6800	1309	0	0	1309	0.19
NR	1.0	1700	10	0	2	12	0.01-
SL	2.0	3400	45	0	2	47	0.01
ST	3.0	5100	330	0	0	330	0.06
SR	1.0	1700	219	0	0	219	0.11-*
EL	1.0	1700	601	0	0	601	0.35*
ET	3.0	5100	198	0	8	206	0.04
ER >>	1.0	1700	425	0	0	425	0.25
WL	1.0	1700	14	0	6	20	0.01
WT	3.0	5100	502	0	20	522	0.10
WR	1.0	1700	253	0	6	259	0.13-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.86 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	475	0	0	475	0.14*
NT	4.0	6800	652	0	0	652	0.10
NR	1.0	1700	68	0	7	75	0.03-
SL	2.0	3400	175	0	7	182	0.05
ST	3.0	5100	1652	0	0	1652	0.32*
SR	1.0	1700	441	0	0	441	0.22-
EL	1.0	1700	252	0	0	252	0.15*
ET	3.0	5100	565	0	25	590	0.12
ER >>	1.0	1700	1176	0	0	1176	0.69
WL	1.0	1700	16	0	4	20	0.01
WT	3.0	5100	218	0	15	233	0.05
WR	1.0	1700	132	0	4	136	0.07-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.73 C

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX G

ICU CALCULATIONS - YEAR 2005 WITH PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	452	39	38	529	0.31*
NR	1.0	1700	4	0	8	12	0.01-
SL	1.0	1700	7	0	0	7	0.01*
ST	1.0	1700	192	14	19	225	0.13
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	19	0	10	29	0.02
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	67	0	0	67	0.03-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.40 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	222	26	39	287	0.17
NR	1.0	1700	19	0	25	44	0.03-
SL	1.0	1700	45	0	0	45	0.03
ST	1.0	1700	311	45	55	411	0.24*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	11	0	25	36	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	21	0	0	21	0.01-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.31 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	21	0	12	33	0.02
NT	1.0	1700	372	39	46	457	0.27*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	211	14	29	254	0.15
SR	1.0	1700	57	0	0	57	0.03-
EL	0.0	1700	79	0	0	79	0.05
ET	1.0	1700	0	0	0	0	0.06*
ER	0.0	1700	6	0	16	22	0.01
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.38 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	19	0	37	56	0.03*
NT	1.0	1700	220	26	64	310	0.18
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	252	45	80	377	0.22*
SR	1.0	1700	81	0	0	81	0.04-
EL	0.0	1700	49	0	0	49	0.03
ET	1.0	1700	0	0	0	0	0.06*
ER	0.0	1700	15	0	38	53	0.03
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.36 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	282	39	30	351	0.21*
NR	1.0	1700	54	0	49	103	0.05-
SL	1.0	1700	46	0	46	92	0.05*
ST	1.0	1700	246	14	82	342	0.20
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	154	0	39	193	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	104	0	31	135	0.07-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.42 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	311	26	95	432	0.25*
NR	1.0	1700	147	0	123	270	0.14-
SL	1.0	1700	95	0	90	185	0.11*
ST	1.0	1700	212	45	56	313	0.18
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	73	0	118	191	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	67	0	94	161	0.09-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.52 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	54	10	0	64	0.04*
NT	1.0	1700	282	39	48	369	0.22
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	377	14	97	488	0.29*
SR	1.0	1700	11	0	24	35	0.02-
EL	0.0	1700	28	0	31	59	0.03
ET	1.0	1700	0	0	0	0	0.14*
ER	0.0	1700	168	3	0	171	0.10
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.52 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	141	6	0	147	0.09
NT	1.0	1700	428	26	142	596	0.35*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	253	45	99	397	0.23
SR	1.0	1700	12	0	75	87	0.04-
EL	0.0	1700	21	0	76	97	0.06
ET	1.0	1700	0	0	0	0	0.11*
ER	0.0	1700	81	11	0	92	0.05
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.51 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

			V O L U M E S				V/C
Move	Lanes	Capacity	Future BG	Project	Other	Total	Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	319	0	48	367	0.22
NR	1.0	1700	0	50	0	50	0.03-
SL	1.0	1700	0	17	0	17	0.01
ST	1.0	1700	545	0	97	642	0.38*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	0	146	0	146	0.09*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	0	49	0	49	0.03-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.52 A

PM Intersection Capacity Analysis

			V O L U M E S				V/C
Move	Lanes	Capacity	Future BG	Project	Other	Total	Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	551	0	142	693	0.41*
NR	1.0	1700	0	169	0	169	0.09-
SL	1.0	1700	0	56	0	56	0.03*
ST	1.0	1700	334	0	99	433	0.25
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	0	95	0	95	0.06*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	0	32	0	32	0.02-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.55 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	301	50	38	389	0.23
NR	1.0	1700	20	0	0	20	0.01-
SL	1.0	1700	9	0	8	17	0.01
ST	1.0	1700	462	146	89	697	0.41*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	106	0	0	106	0.06
WT	1.0	1700	0	0	0	0	0.08*
WR	0.0	1700	18	0	10	28	0.02
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	543	169	117	829	0.49*
NR	1.0	1700	104	0	0	104	0.05-
SL	1.0	1700	18	0	25	43	0.03*
ST	1.0	1700	343	95	74	512	0.30
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	45	0	0	45	0.03
WT	1.0	1700	0	0	0	0	0.05*
WR	0.0	1700	7	0	25	32	0.02
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.62 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

			V O L U M E S				
Move	Lanes	Capacity	Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	87	0	0	87	0.05*
NT	1.0	1700	279	26	21	326	0.19
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	397	78	53	528	0.31*
SR	1.0	1700	169	68	36	273	0.14-
EL	1.0	1700	41	24	17	82	0.05
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	128	0	0	128	0.07-*
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.48 A

PM Intersection Capacity Analysis

			V O L U M E S				
Move	Lanes	Capacity	Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1700	154	0	0	154	0.09
NT	1.0	1700	463	90	67	620	0.37*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	332	50	40	422	0.25
SR	1.0	1700	55	45	34	134	0.07-
EL	1.0	1700	183	79	50	312	0.18*
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	104	0	0	104	0.05-
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.60 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1700	191	0	0	191	0.11
ST	0.0	0	0	0	0	0	0.00
SR	2.0	3400	937	0	0	937	0.24-*
EL	1.0	1700	166	0	0	166	0.10*
ET	2.0	3400	42	24	13	79	0.02
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	214	68	33	315	0.09*
WR	1.0	1700	131	0	0	131	0.07-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.48 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1700	76	0	0	76	0.05
ST	0.0	0	0	0	0	0	0.00
SR	2.0	3400	328	0	0	328	0.09-*
EL	1.0	1700	708	0	0	708	0.42*
ET	2.0	3400	195	79	40	314	0.09
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	68	45	24	137	0.04
WR	1.0	1700	141	0	0	141	0.07-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.63 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.5	2550	229	0	0	229	0.09*
NT	1.5	2550	10	0	0	10	0.01
NR >	1.0	1700	230	10	1	241	0.03-
SL	1.0	1700	0	0	0	0	0.00
ST	2.0	3400	1	0	0	1	0.01*
SR	1.0	1700	1	0	0	1	0.01-
EL	2.0	3400	2	0	0	2	0.01
ET	2.0	3400	149	16	12	177	0.05*
ER	1.0	1700	75	0	0	75	0.03-
WL	2.0	3400	337	29	1	367	0.11*
WT	2.0	3400	289	49	32	370	0.11
WR	0.0	1700	1	0	0	1	0.01
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.31 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.5	2550	110	0	0	110	0.04
NT	1.5	2550	7	0	0	7	0.01
NR >	1.0	1700	418	34	3	455	0.14-*
SL	1.0	1700	1	0	0	1	0.01*
ST	2.0	3400	9	0	0	9	0.01
SR	1.0	1700	1	0	0	1	0.01-
EL	2.0	3400	4	0	0	4	0.01
ET	2.0	3400	291	56	39	386	0.11
ER	1.0	1700	297	0	0	297	0.14-*
WL	2.0	3400	306	19	2	327	0.10*
WT	2.0	3400	168	31	23	222	0.07
WR	0.0	1700	2	0	0	2	0.01
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.44 A

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	135	0	0	135	0.04
NT	3.0	5100	2227	0	0	2227	0.44*
NR	1.0	1700	344	14	12	370	0.19-
SL	2.0	3400	301	10	0	311	0.09*
ST	3.0	5100	589	0	0	589	0.12
SR	1.0	1700	16	0	0	16	0.01-
EL	1.0	1700	5	0	0	5	0.01
ET	1.5	2550	5	0	0	5	0.01*
ER	1.5	2550	22	0	0	22	0.01-
WL	2.0	3400	392	39	32	463	0.14*
WT	1.0	1700	16	0	0	16	0.01
WR >>	1.0	1700	831	29	0	860	0.51
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.73 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	16	0	0	16	0.01*
NT	3.0	5100	796	0	0	796	0.16
NR	1.0	1700	256	45	37	338	0.17-
SL	2.0	3400	667	34	0	701	0.21
ST	3.0	5100	2139	0	0	2139	0.42*
SR	1.0	1700	5	0	0	5	0.01-
EL	1.0	1700	11	0	0	11	0.01
ET	1.5	2550	16	0	0	16	0.01
ER	1.5	2550	129	0	0	129	0.04-*
WL	2.0	3400	296	26	22	344	0.10*
WT	1.0	1700	5	0	0	5	0.01
WR >>	1.0	1700	505	19	0	524	0.31
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.62 B

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	538	0	0	538	0.16
NT	2.0	3400	1214	0	0	1214	0.36*
NR >>	1.0	1700	105	10	6	121	0.07
SL	1.0	1700	217	0	0	217	0.13*
ST	2.0	3400	543	0	0	543	0.16
SR >>	1.0	1700	244	39	32	315	0.19
EL	1.0	1700	77	14	12	103	0.06
ET	0.0	0	0	0	0	0	0.00*
ER >>	1.0	1700	92	0	0	92	0.05
WL	1.0	1700	108	3	2	113	0.07*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1700	1296	0	0	1296	0.76

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.61 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	132	0	0	132	0.04
NT	2.0	3400	700	0	0	700	0.21*
NR >>	1.0	1700	118	6	4	128	0.08
SL	1.0	1700	904	0	0	904	0.53*
ST	2.0	3400	1385	0	0	1385	0.41
SR >>	1.0	1700	115	26	22	163	0.10
EL	1.0	1700	171	45	37	253	0.15*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	244	0	0	244	0.14
WL	1.0	1700	87	11	7	105	0.06
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	258	0	0	258	0.15

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.94 E

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	538	0	0	538	0.16
NT	2.0	3400	1214	0	0	1214	0.36*
NR >>	1.0	1700	105	10	6	121	0.07
SL	2.0	3400	217	0	0	217	0.06*
ST	2.0	3400	543	0	0	543	0.16
SR >>	1.0	1700	244	39	32	315	0.19
EL	1.0	1700	77	14	12	103	0.06
ET	0.0	0	0	0	0	0	0.00*
ER >>	1.0	1700	92	0	0	92	0.05
WL	1.0	1700	108	3	2	113	0.07*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1700	1296	0	0	1296	0.76
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	132	0	0	132	0.04
NT	2.0	3400	700	0	0	700	0.21*
NR >>	1.0	1700	118	6	4	128	0.08
SL	2.0	3400	904	0	0	904	0.27*
ST	2.0	3400	1385	0	0	1385	0.41
SR >>	1.0	1700	115	26	22	163	0.10
EL	1.0	1700	171	45	37	253	0.15*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	244	0	0	244	0.14
WL	1.0	1700	87	11	7	105	0.06
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	258	0	0	258	0.15
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.68 B

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2005 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	741	0	0	741	0.22*
NT	4.0	6800	1309	0	0	1309	0.19
NR	1.0	1700	10	3	2	15	0.01-
SL	2.0	3400	45	3	2	50	0.01
ST	3.0	5100	330	0	0	330	0.06
SR	1.0	1700	219	0	0	219	0.11-*
EL	1.0	1700	601	0	0	601	0.35*
ET	3.0	5100	198	10	8	216	0.04
ER >>	1.0	1700	425	0	0	425	0.25
WL	1.0	1700	14	10	6	30	0.02
WT	3.0	5100	502	29	20	551	0.11
WR	1.0	1700	253	10	6	269	0.14-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3400	475	0	0	475	0.14*
NT	4.0	6800	652	0	0	652	0.10
NR	1.0	1700	68	11	7	86	0.04-
SL	2.0	3400	175	11	7	193	0.06
ST	3.0	5100	1652	0	0	1652	0.32*
SR	1.0	1700	441	0	0	441	0.22-
EL	1.0	1700	252	0	0	252	0.15*
ET	3.0	5100	565	34	25	624	0.12
ER >>	1.0	1700	1176	0	0	1176	0.69
WL	1.0	1700	16	6	4	26	0.02
WT	3.0	5100	218	19	15	252	0.05
WR	1.0	1700	132	6	4	142	0.07-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.73 C

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX H

ICU CALCULATIONS - YEAR 2025 WITHOUT PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	973	-39	934	0.55*
NR	1.0	1700	7	0	7	0.01-
SL	1.0	1700	18	0	18	0.01*
ST	1.0	1700	716	-14	702	0.41
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	19	0	19	0.01
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	147	0	147	0.08-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.69 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	825	-26	799	0.47*
NR	1.0	1700	26	0	26	0.02-
SL	1.0	1700	104	0	104	0.06*
ST	1.0	1700	739	-45	694	0.41
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	11	0	11	0.01
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	55	0	55	0.03-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.61 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	55	0	55	0.03
NT	1.0	1700	946	-39	907	0.53*
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00*
ST	1.0	1700	731	-14	717	0.42
SR	1.0	1700	105	0	105	0.05-
EL	0.0	1700	74	0	74	0.04
ET	1.0	1700	0	0	0	0.05*
ER	0.0	1700	19	0	19	0.01
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.63 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	34	0	34	0.02*
NT	1.0	1700	825	-26	799	0.47
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	863	-45	818	0.48*
SR	1.0	1700	56	0	56	0.03-
EL	0.0	1700	55	0	55	0.03
ET	1.0	1700	0	0	0	0.06*
ER	0.0	1700	47	0	47	0.03
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.61 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	699	-39	660	0.39
NR	1.0	1700	50	0	50	0.03-
SL	1.0	1700	100	0	100	0.06
ST	1.0	1700	848	-14	834	0.49*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	302	0	302	0.18
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	371	0	371	0.19-*

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.73 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	837	-26	811	0.48*
NR	1.0	1700	246	0	246	0.12-
SL	1.0	1700	264	0	264	0.16*
ST	1.0	1700	683	-45	638	0.38
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	97	0	97	0.06*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	123	0	123	0.06-

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.75 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	141	-10	131	0.08*
NT	1.0	1700	520	-39	481	0.28
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	1269	-14	1255	0.74*
SR	1.0	1700	22	0	22	0.01-
EL	0.0	1700	21	0	21	0.01
ET	1.0	1700	0	0	0	0.19*
ER	0.0	1700	306	-3	303	0.18
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 1.06 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	286	-6	280	0.16
NT	1.0	1700	1040	-26	1014	0.60*
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00*
ST	1.0	1700	669	-45	624	0.37
SR	1.0	1700	14	0	14	0.01-
EL	0.0	1700	30	0	30	0.02
ET	1.0	1700	0	0	0	0.14*
ER	0.0	1700	211	-11	200	0.12
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.79 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	636	0	636	0.37
NR	1.0	1700	50	-50	0	0.00-
SL	1.0	1700	17	-17	0	0.00
ST	1.0	1700	1452	0	1452	0.85*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	146	-146	0	0.00*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	49	-49	0	0.00-

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	1315	0	1315	0.77*
NR	1.0	1700	169	-169	0	0.00-
SL	1.0	1700	56	-56	0	0.00*
ST	1.0	1700	845	0	845	0.50
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	95	-95	0	0.00*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	32	-32	0	0.00-

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.82 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	636	-50	586	0.34
NR	1.0	1700	32	0	32	0.02-
SL	1.0	1700	19	0	19	0.01
ST	1.0	1700	1452	-146	1306	0.77*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	0.0	1700	414	0	414	0.24
WT	1.0	1700	0	0	0	0.28*
WR	0.0	1700	67	0	67	0.04
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		1.10 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	1315	-169	1146	0.67*
NR	1.0	1700	324	0	324	0.16-
SL	1.0	1700	66	0	66	0.04*
ST	1.0	1700	845	-95	750	0.44
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	0.0	1700	125	0	125	0.07
WT	1.0	1700	0	0	0	0.09*
WR	0.0	1700	25	0	25	0.01
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.85 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	1.0	1700	148	0	148	0.09*
NT	1.0	1700	570	-26	544	0.32
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	959	-78	881	0.52*
SR	1.0	1700	862	-68	794	0.40-
EL	1.0	1700	100	-24	76	0.04
ET	0.0	0	0	0	0	0.00
ER	1.0	1700	121	0	121	0.06-*
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.72 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	1.0	1700	173	0	173	0.10*
NT	1.0	1700	947	-90	857	0.50
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	769	-50	719	0.42*
SR	1.0	1700	187	-45	142	0.07-
EL	1.0	1700	663	-79	584	0.34*
ET	0.0	0	0	0	0	0.00
ER	1.0	1700	141	0	141	0.07-
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.91 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0.00
SL	1.0	1700	145	0	145	0.09
ST	0.0	0	0	0	0	0.00
SR	2.0	3400	1226	0	1226	0.31-*
EL	1.0	1700	332	0	332	0.20*
ET	2.0	3400	135	-24	111	0.03
ER	0.0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0.00
WT	2.0	3400	891	-68	823	0.24*
WR	1.0	1700	200	0	200	0.10-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.80 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0.00
SL	1.0	1700	111	0	111	0.07
ST	0.0	0	0	0	0	0.00
SR	2.0	3400	590	0	590	0.14-*
EL	1.0	1700	957	0	957	0.56*
ET	2.0	3400	679	-79	600	0.18
ER	0.0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0.00
WT	2.0	3400	220	-45	175	0.05
WR	1.0	1700	143	0	143	0.07-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.82 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.5	2550	41	0	41	0.02
NT	1.5	2550	9	0	9	0.01
NR >	1.0	1700	658	-10	648	0.20-*
SL	1.0	1700	0	0	0	0.00
ST	2.0	3400	1	0	1	0.01*
SR	1.0	1700	1	0	1	0.01-
EL	2.0	3400	2	0	2	0.01
ET	2.0	3400	222	-16	206	0.06*
ER	1.0	1700	5	0	5	0.01-
WL	2.0	3400	515	-29	486	0.14*
WT	2.0	3400	589	-49	540	0.16
WR	0.0	1700	1	0	1	0.01

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.46 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.5	2550	4	0	4	0.01
NT	1.5	2550	7	0	7	0.01
NR >	1.0	1700	702	-34	668	0.17-*
SL	1.0	1700	1	0	1	0.01*
ST	2.0	3400	8	0	8	0.01
SR	1.0	1700	1	0	1	0.01-
EL	2.0	3400	4	0	4	0.01
ET	2.0	3400	588	-56	532	0.16*
ER	1.0	1700	19	0	19	0.01-
WL	2.0	3400	663	-19	644	0.19*
WT	2.0	3400	254	-31	223	0.07
WR	0.0	1700	2	0	2	0.01

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.58 A

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio	
NL	2.0	3400	135	0	135	0.04	
NT	3.0	5100	1897	0	1897	0.37	
NR	1.0	1700	1047	-14	1033	0.52-*	
SL	2.0	3400	563	-10	553	0.16*	
ST	3.0	5100	589	0	589	0.12	
SR	1.0	1700	16	0	16	0.01-	
EL	1.0	1700	5	0	5	0.01	
ET	1.5	2550	5	0	5	0.01*	
ER	1.5	2550	22	0	22	0.01-	
WL	2.0	3400	696	-39	657	0.19*	
WT	1.0	1700	16	0	16	0.01	
WR >>	1.0	1700	1653	-29	1624	0.96	
						=======	
					Clearance Interval Percentage =	0.05	
					Sum of Critical Movements =	0.93	E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio	
NL	2.0	3400	16	0	16	0.01	
NT	3.0	5100	416	0	416	0.08	
NR	1.0	1700	596	-45	551	0.27-*	
SL	2.0	3400	1414	-34	1380	0.41*	
ST	3.0	5100	1724	0	1724	0.34	
SR	1.0	1700	5	0	5	0.01-	
EL	1.0	1700	11	0	11	0.01	
ET	1.5	2550	16	0	16	0.01	
ER	1.5	2550	129	0	129	0.04-*	
WL	2.0	3400	896	-26	870	0.26*	
WT	1.0	1700	5	0	5	0.01	
WR >>	1.0	1700	904	-19	885	0.52	
						=======	
					Clearance Interval Percentage =	0.05	
					Sum of Critical Movements =	1.03	F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	570	0	570	0.17*
NT	2.0	3400	909	0	909	0.27
NR >>	1.0	1700	241	-10	231	0.14
SL	1.0	1700	249	0	249	0.15
ST	2.0	3400	939	0	939	0.28*
SR >>	1.0	1700	130	-39	91	0.05
EL	1.0	1700	79	-14	65	0.04
ET	0.0	0	0	0	0	0.00*
ER >>	1.0	1700	286	0	286	0.17
WL	1.0	1700	459	-3	456	0.27*
WT	0.0	0	0	0	0	0.00
WR >>	1.0	1700	1812	0	1812	1.07
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.77 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	242	0	242	0.07
NT	2.0	3400	611	0	611	0.18*
NR >>	1.0	1700	274	-6	268	0.16
SL	1.0	1700	1223	0	1223	0.72*
ST	2.0	3400	1117	0	1117	0.33
SR >>	1.0	1700	124	-26	98	0.06
EL	1.0	1700	114	-45	69	0.04
ET	0.0	0	0	0	0	0.00*
ER >>	1.0	1700	257	0	257	0.15
WL	1.0	1700	184	-11	173	0.10*
WT	0.0	0	0	0	0	0.00
WR >>	1.0	1700	344	0	344	0.20
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		1.05 F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	1260	0	1260	0.37*
NT	4.0	6800	2664	0	2664	0.39
NR	1.0	1700	15	-3	12	0.01-
SL	2.0	3400	58	-3	55	0.02
ST	3.0	5100	712	0	712	0.14
SR	1.0	1700	331	0	331	0.16-*
EL	1.0	1700	732	0	732	0.43*
ET	3.0	5100	216	-10	206	0.04
ER >>	1.0	1700	617	0	617	0.36
WL	1.0	1700	30	-10	20	0.01
WT	3.0	5100	551	-29	522	0.10
WR	1.0	1700	269	-10	259	0.13-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		1.14 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	759	0	759	0.22*
NT	4.0	6800	1392	0	1392	0.20
NR	1.0	1700	86	-11	75	0.03-
SL	2.0	3400	193	-11	182	0.05
ST	3.0	5100	1468	0	1468	0.29
SR	1.0	1700	676	0	676	0.34-*
EL	1.0	1700	456	0	456	0.27*
ET	3.0	5100	624	-34	590	0.12
ER >>	1.0	1700	1740	0	1740	1.02
WL	1.0	1700	26	-6	20	0.01
WT	3.0	5100	252	-19	233	0.05
WR	1.0	1700	142	-6	136	0.07-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.95 E

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX I

ICU CALCULATIONS - YEAR 2025 WITH PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	973	0.57*
NR	1.0	1700	7	0.01-
SL	1.0	1700	18	0.01*
ST	1.0	1700	716	0.42
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	19	0.01
WT	0.0	0	0	0.00
WR	1.0	1700	147	0.08-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.71 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	825	0.49*
NR	1.0	1700	26	0.02-
SL	1.0	1700	104	0.06*
ST	1.0	1700	739	0.43
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	11	0.01
WT	0.0	0	0	0.00
WR	1.0	1700	55	0.03-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.63 B

* denotes critical movement
- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	55	0.03
NT	1.0	1700	946	0.56*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	731	0.43
SR	1.0	1700	105	0.05-
EL	0.0	1700	74	0.04
ET	1.0	1700	0	0.05*
ER	0.0	1700	19	0.01
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.66 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	34	0.02*
NT	1.0	1700	825	0.49
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	863	0.51*
SR	1.0	1700	56	0.03-
EL	0.0	1700	55	0.03
ET	1.0	1700	0	0.06*
ER	0.0	1700	47	0.03
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.64 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1.0	1700	699	0.41
NR	1.0	1700	50	0.03-
SL	1.0	1700	100	0.06
ST	1.0	1700	848	0.50*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	302	0.18
WT	0.0	0	0	0.00
WR	1.0	1700	371	0.19-*
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	837	0.49*
NR	1.0	1700	246	0.12-
SL	1.0	1700	264	0.16*
ST	1.0	1700	683	0.40
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	97	0.06*
WT	0.0	0	0	0.00
WR	1.0	1700	123	0.06-
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.76 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	141	0.08*
NT	1.0	1700	520	0.31
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	1269	0.75*
SR	1.0	1700	22	0.01-
EL	0.0	1700	21	0.01
ET	1.0	1700	0	0.19*
ER	0.0	1700	306	0.18
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	1.07 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	286	0.17
NT	1.0	1700	1040	0.61*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	669	0.39
SR	1.0	1700	14	0.01-
EL	0.0	1700	30	0.02
ET	1.0	1700	0	0.14*
ER	0.0	1700	211	0.12
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.80 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	141	0.08*
NT	2.0	3400	520	0.15
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	2.0	3400	1269	0.37*
SR	1.0	1700	22	0.01-
EL	0.0	1700	21	0.01
ET	1.0	1700	0	0.19*
ER	0.0	1700	306	0.18
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.69 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	286	0.17*
NT	2.0	3400	1040	0.31
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	2.0	3400	669	0.20*
SR	1.0	1700	14	0.01-
EL	0.0	1700	30	0.02
ET	1.0	1700	0	0.14*
ER	0.0	1700	211	0.12
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.56 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1.0	1700	636	0.37
NR	1.0	1700	50	0.03-
SL	1.0	1700	17	0.01
ST	1.0	1700	1452	0.85*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	146	0.09*
WT	0.0	0	0	0.00
WR	1.0	1700	49	0.03-
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.99 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	1315	0.77*
NR	1.0	1700	169	0.09-
SL	1.0	1700	56	0.03*
ST	1.0	1700	845	0.50
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	95	0.06*
WT	0.0	0	0	0.00
WR	1.0	1700	32	0.02-
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.91 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	2.0	3400	636	0.19
NR	1.0	1700	50	0.03-
SL	1.0	1700	17	0.01
ST	2.0	3400	1452	0.43*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	146	0.09*
WT	0.0	0	0	0.00
WR	1.0	1700	49	0.03-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.57 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	2.0	3400	1315	0.39*
NR	1.0	1700	169	0.09-
SL	1.0	1700	56	0.03*
ST	2.0	3400	845	0.25
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	95	0.06*
WT	0.0	0	0	0.00
WR	1.0	1700	32	0.02-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.53 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1.0	1700	636	0.37
NR	1.0	1700	32	0.02-
SL	1.0	1700	19	0.01
ST	1.0	1700	1452	0.85*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	414	0.24
WT	1.0	1700	0	0.28*
WR	0.0	1700	67	0.04
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	1.18 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	1315	0.77*
NR	1.0	1700	324	0.16-
SL	1.0	1700	66	0.04*
ST	1.0	1700	845	0.50
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	125	0.07
WT	1.0	1700	0	0.09*
WR	0.0	1700	25	0.01
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.95 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	2.0	3400	636	0.19
NR	1.0	1700	32	0.02-
SL	1.0	1700	19	0.01
ST	2.0	3400	1452	0.43*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	414	0.24
WT	1.0	1700	0	0.28*
WR	0.0	1700	67	0.04
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.76 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	2.0	3400	1315	0.39*
NR	1.0	1700	324	0.16-
SL	1.0	1700	66	0.04*
ST	2.0	3400	845	0.25
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	125	0.07
WT	1.0	1700	0	0.09*
WR	0.0	1700	25	0.01
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.57 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	148	0.09*
NT	1.0	1700	570	0.34
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	959	0.56*
SR	1.0	1700	862	0.43-
EL	1.0	1700	100	0.06*
ET	0.0	0	0	0.00
ER	1.0	1700	121	0.06-
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.76 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	173	0.10
NT	1.0	1700	947	0.56*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	769	0.45
SR	1.0	1700	187	0.09-
EL	1.0	1700	663	0.39*
ET	0.0	0	0	0.00
ER	1.0	1700	141	0.07-
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	1.00 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	148	0.09*
NT	2.0	3400	570	0.17
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	2.0	3400	959	0.28
SR	1.0	1700	862	0.43-*
EL	1.0	1700	100	0.06*
ET	0.0	0	0	0.00
ER	1.0	1700	121	0.06-
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.63 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	173	0.10*
NT	2.0	3400	947	0.28
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	2.0	3400	769	0.23*
SR	1.0	1700	187	0.09-
EL	1.0	1700	663	0.39*
ET	0.0	0	0	0.00
ER	1.0	1700	141	0.07-
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.77 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1700	145	0.09
ST	0.0	0	0	0.00
SR	2.0	3400	1226	0.31-*
EL	1.0	1700	332	0.20*
ET	2.0	3400	135	0.04
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	2.0	3400	891	0.26*
WR	1.0	1700	200	0.10-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.82 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1700	111	0.07
ST	0.0	0	0	0.00
SR	2.0	3400	590	0.14-*
EL	1.0	1700	957	0.56*
ET	2.0	3400	679	0.20
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	2.0	3400	220	0.06
WR	1.0	1700	143	0.07-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.82 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.5	2550	41	0.02
NT	1.5	2550	9	0.01
NR >	1.0	1700	658	0.20-*
SL	1.0	1700	0	0.00
ST	2.0	3400	1	0.01*
SR	1.0	1700	1	0.01-
EL	2.0	3400	2	0.01
ET	2.0	3400	222	0.07*
ER	1.0	1700	5	0.01-
WL	2.0	3400	515	0.15*
WT	2.0	3400	589	0.17
WR	0.0	1700	1	0.01
				0.05
Clearance Interval Percentage =				
Sum of Critical Movements =				0.48 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.5	2550	4	0.01
NT	1.5	2550	7	0.01
NR >	1.0	1700	702	0.18-*
SL	1.0	1700	1	0.01*
ST	2.0	3400	8	0.01
SR	1.0	1700	1	0.01-
EL	2.0	3400	4	0.01
ET	2.0	3400	588	0.17*
ER	1.0	1700	19	0.01-
WL	2.0	3400	663	0.20*
WT	2.0	3400	254	0.08
WR	0.0	1700	2	0.01
				0.05
Clearance Interval Percentage =				
Sum of Critical Movements =				0.61 B

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	135	0.04
NT	3.0	5100	1897	0.37
NR	1.0	1700	1047	0.53-*
SL	2.0	3400	563	0.17*
ST	3.0	5100	589	0.12
SR	1.0	1700	16	0.01-
EL	1.0	1700	5	0.01
ET	1.5	2550	5	0.01*
ER	1.5	2550	22	0.01-
WL	2.0	3400	696	0.20*
WT	1.0	1700	16	0.01
WR >>	1.0	1700	1653	0.97
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.96 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	16	0.01
NT	3.0	5100	416	0.08
NR	1.0	1700	596	0.30-*
SL	2.0	3400	1414	0.42*
ST	3.0	5100	1724	0.34
SR	1.0	1700	5	0.01-
EL	1.0	1700	11	0.01
ET	1.5	2550	16	0.01
ER	1.5	2550	129	0.04-*
WL	2.0	3400	896	0.26*
WT	1.0	1700	5	0.01
WR >>	1.0	1700	904	0.53
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		1.07 F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	135	0.04
NT	3.0	5100	1897	0.37*
NR >	1.0	1700	1047	0.36-
SL	2.0	3400	563	0.17*
ST	3.0	5100	589	0.12
SR	1.0	1700	16	0.01-
EL	1.0	1700	5	0.01
ET	1.5	2550	5	0.01*
ER	1.5	2550	22	0.01-
WL	2.0	3400	696	0.20*
WT	1.0	1700	16	0.01
WR >>	1.0	1700	1653	0.97
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.80 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	16	0.01
NT	3.0	5100	416	0.08*
NR >	1.0	1700	596	0.08-
SL	2.0	3400	1414	0.42*
ST	3.0	5100	1724	0.34
SR	1.0	1700	5	0.01-
EL	1.0	1700	11	0.01
ET	1.5	2550	16	0.01
ER	1.5	2550	129	0.04-*
WL	2.0	3400	896	0.26*
WT	1.0	1700	5	0.01
WR >>	1.0	1700	904	0.53
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.85 D

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	570	0.17*
NT	2.0	3400	909	0.27
NR >>	1.0	1700	241	0.14
SL	1.0	1700	249	0.15
ST	2.0	3400	939	0.28*
SR >>	1.0	1700	130	0.08
EL	1.0	1700	79	0.05
ET	0.0	0	0	0.00*
ER >>	1.0	1700	286	0.17
WL	1.0	1700	459	0.27*
WT	0.0	0	0	0.00
WR >>	1.0	1700	1812	1.07
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.77 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	242	0.07
NT	2.0	3400	611	0.18*
NR >>	1.0	1700	274	0.16
SL	1.0	1700	1223	0.72*
ST	2.0	3400	1117	0.33
SR >>	1.0	1700	124	0.07
EL	1.0	1700	114	0.07
ET	0.0	0	0	0.00*
ER >>	1.0	1700	257	0.15
WL	1.0	1700	184	0.11*
WT	0.0	0	0	0.00
WR >>	1.0	1700	344	0.20
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		1.06 F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	570	0.17*
NT	3.0	5100	909	0.18
NR >>	1.0	1700	241	0.14
SL	2.0	3400	249	0.07
ST	3.0	5100	939	0.18*
SR >>	1.0	1700	130	0.08
EL	1.0	1700	79	0.05
ET	0.0	0	0	0.00*
ER >>	1.0	1700	286	0.17
WL	1.0	1700	459	0.27*
WT	0.0	0	0	0.00
WR >>	1.0	1700	1812	1.07
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.67 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	242	0.07
NT	3.0	5100	611	0.12*
NR >>	1.0	1700	274	0.16
SL	2.0	3400	1223	0.36*
ST	3.0	5100	1117	0.22
SR >>	1.0	1700	124	0.07
EL	1.0	1700	114	0.07
ET	0.0	0	0	0.00*
ER >>	1.0	1700	257	0.15
WL	1.0	1700	184	0.11*
WT	0.0	0	0	0.00
WR >>	1.0	1700	344	0.20
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.64 B

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2025 With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	1260	0.37*
NT	4.0	6800	2664	0.39
NR	1.0	1700	15	0.01-
SL	2.0	3400	58	0.02
ST	3.0	5100	712	0.14
SR	1.0	1700	331	0.16-*
EL	1.0	1700	732	0.43*
ET	3.0	5100	216	0.04
ER >>	1.0	1700	617	0.36
WL	1.0	1700	30	0.02
WT	3.0	5100	551	0.11
WR	1.0	1700	269	0.14-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		1.15 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	759	0.22*
NT	4.0	6800	1392	0.20
NR	1.0	1700	86	0.04-
SL	2.0	3400	193	0.06
ST	3.0	5100	1468	0.29
SR	1.0	1700	676	0.34-*
EL	1.0	1700	456	0.27*
ET	3.0	5100	624	0.12
ER >>	1.0	1700	1740	1.02
WL	1.0	1700	26	0.02
WT	3.0	5100	252	0.05
WR	1.0	1700	142	0.07-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.95 E

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 With Project
Lane Configuration: Improved

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	1260	0.37*
NT	4.0	6800	2664	0.39
NR	1.0	1700	15	0.01-
SL	2.0	3400	58	0.02
ST	4.0	6800	712	0.10*
SR >	1.0	1700	331	0.00-
EL	2.0	3400	732	0.22*
ET	3.0	5100	216	0.04
ER >>	1.0	1700	617	0.36
WL	1.0	1700	30	0.02
WT	3.0	5100	551	0.11
WR	1.0	1700	269	0.14-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.88 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	759	0.22*
NT	4.0	6800	1392	0.20
NR	1.0	1700	86	0.04-
SL	2.0	3400	193	0.06
ST	4.0	6800	1468	0.22
SR >	1.0	1700	676	0.23-*
EL	2.0	3400	456	0.13*
ET	3.0	5100	624	0.12
ER >>	1.0	1700	1740	1.02
WL	1.0	1700	26	0.02
WT	3.0	5100	252	0.05
WR	1.0	1700	142	0.07-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.70 B

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX J

TRAFFIC SIGNAL WARRANTS

TRAFFIC SIGNAL WARRANT

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Santiago Cyn. Rd. Minor St: Modjeska Cyn. Rd. Year = Y05 WP
Volume = 7,700 Lanes= 1 Volume = 1,100 Lanes= 1 (one-way)

URBAN	RURAL XX	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied / Not Satisfied XX		Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach. Major Street 7,700 / Minor Street 1,100		Urban / Rural	Urban / Rural
1 / 1		8,000 / 5,600 *	2,400 / 1,680
2 + / 1		9,600 / 6,720	2,400 / 1,680
2 + / 2 +		9,600 / 6,720	3,200 / 2,240
1 / 2 +		8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous traffic Satisfied / Not Satisfied XX		Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach. Major Street 7,700 / Minor Street 1,100		Urban / Rural	Urban / Rural
1 / 1		12,000 / 8,400	1,200 / 850 *
2 + / 1		14,400 / 10,080	1,200 / 850
2 + / 2 +		14,000 / 10,080	1,600 / 1,120
1 / 2 +		12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied / Not Satisfied XX		2 Warrants	2 Warrants
No one warrant satisfied but following warrants fulfilled 80% or more.. 65% / 92% 1 / 2			

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing Plus Project

Major Street Name = **Santiago Cyn. Rd.**

Total of Both Approaches (VPH) = **642**

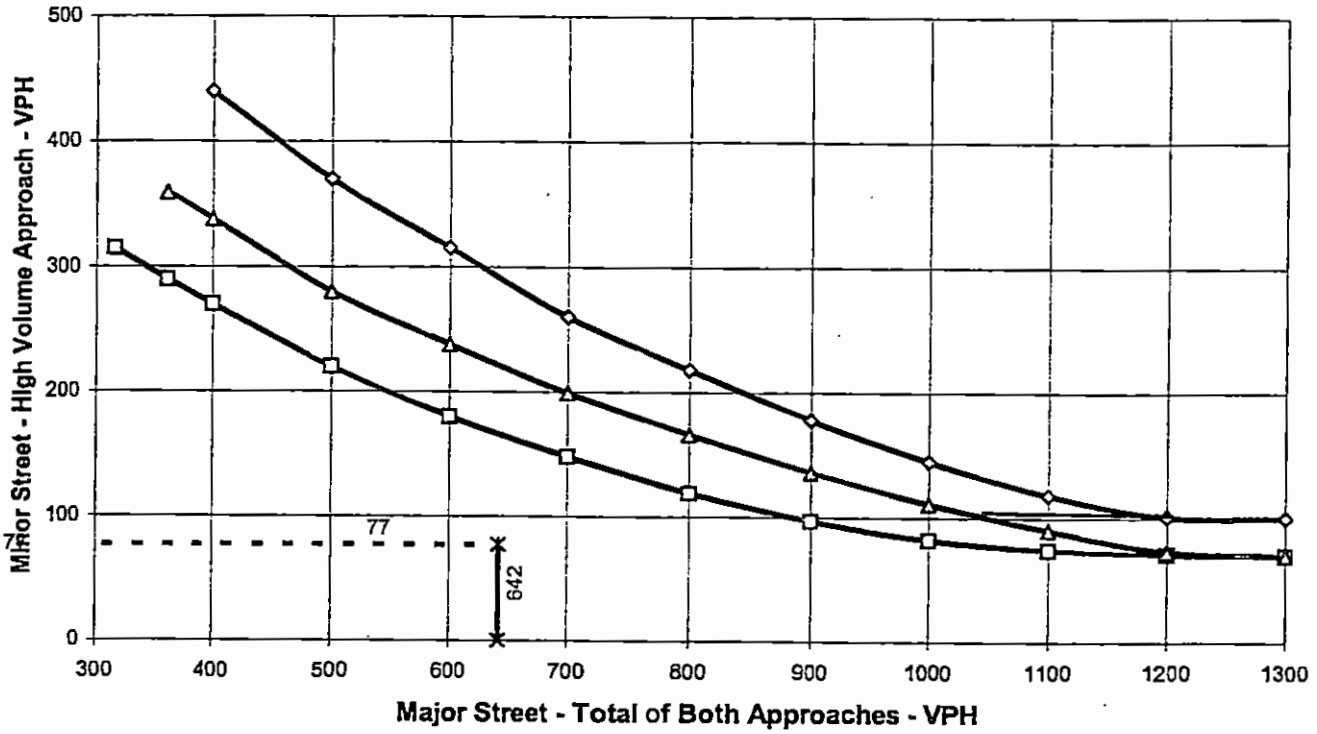
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Ridgeline Rd.**

High Volume Approach (VPH) = **77**

Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing

Major Street Name = **El Toro Rd.**

Total of Both Approaches (VPH) = **559**

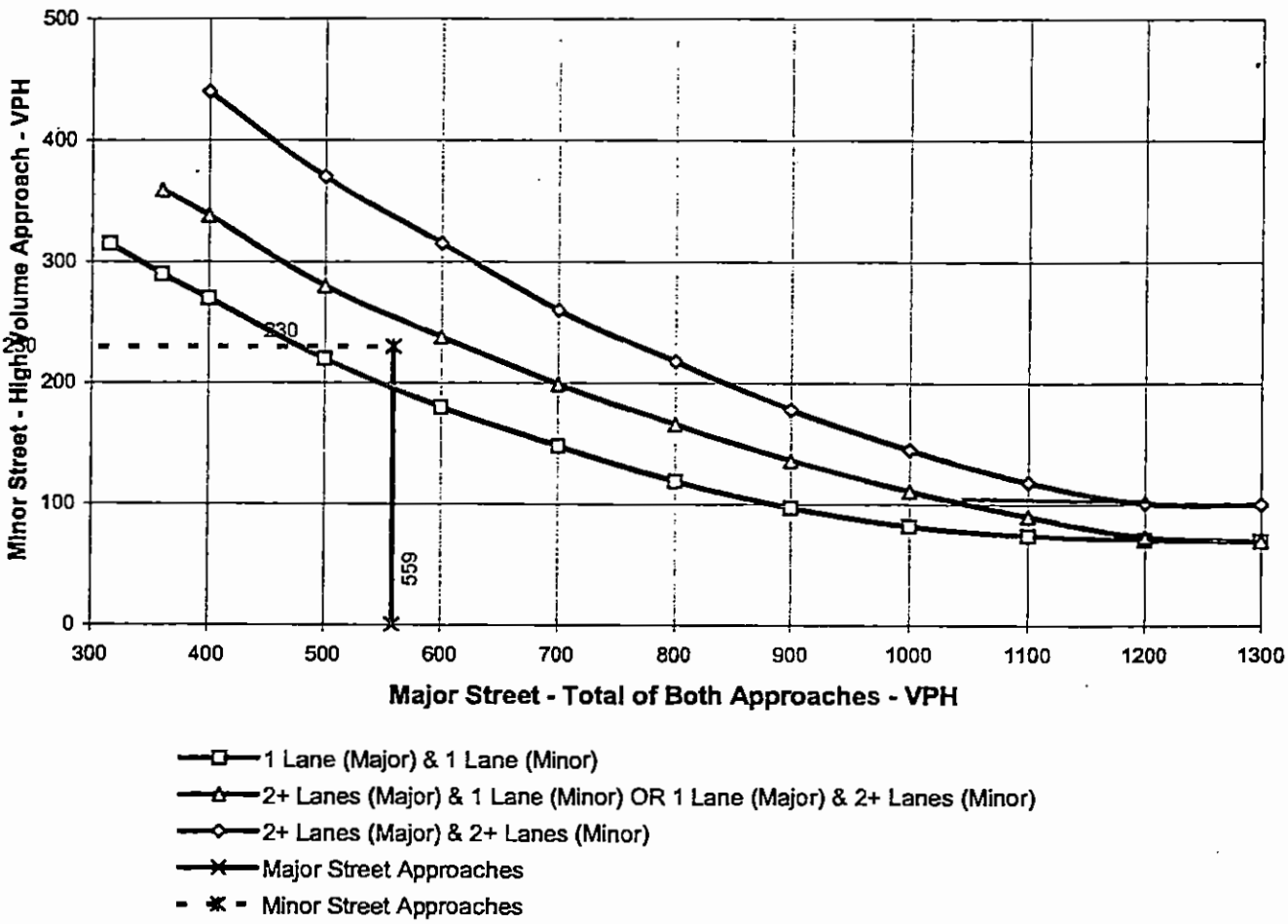
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Live Oak Cyn. Rd.**

High Volume Approach (VPH) = **230**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing Plus Project

Major Street Name = **El Toro Road**

Total of Both Approaches (VPH) = **836**

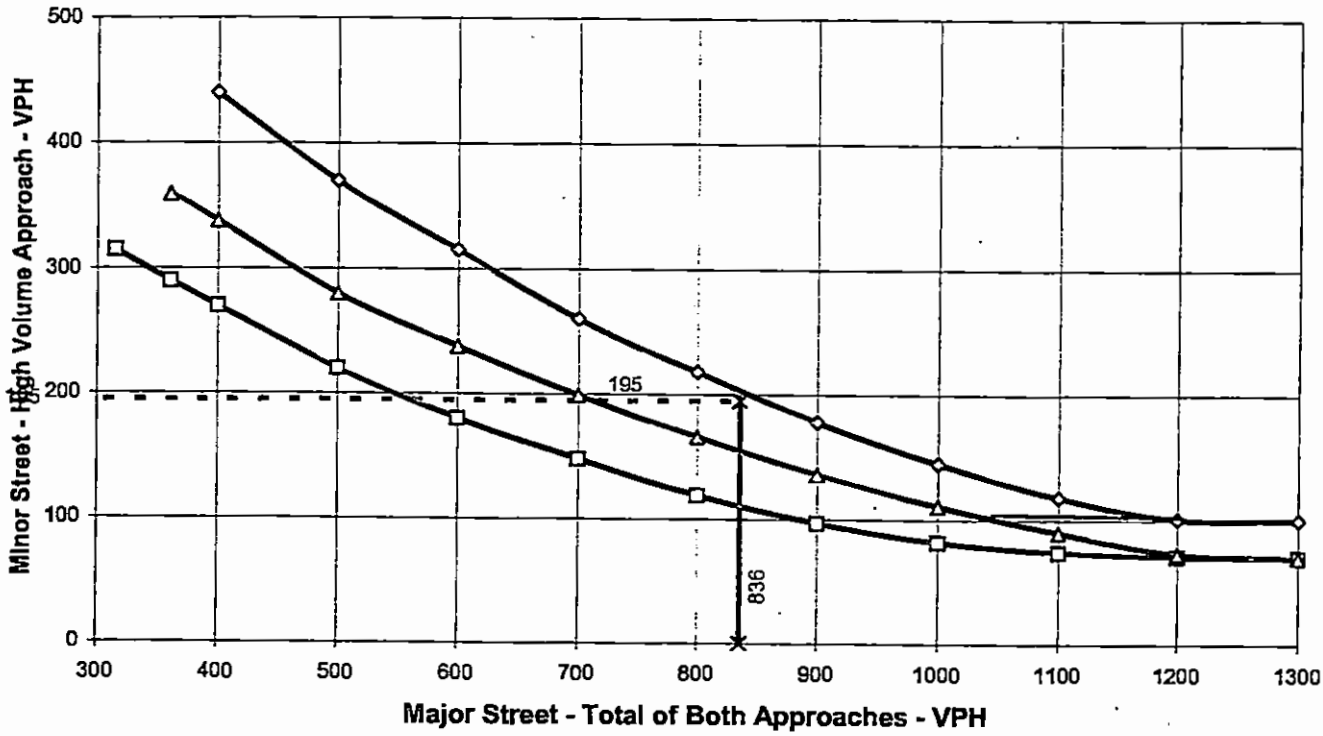
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Project Entrance**

High Volume Approach (VPH) = **195**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL

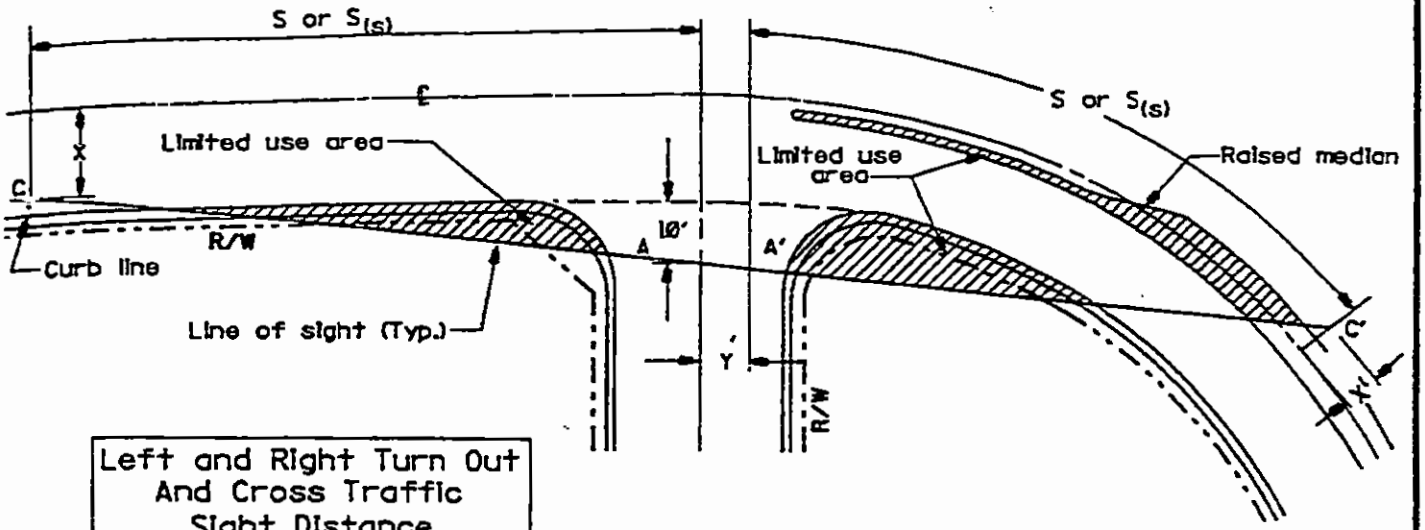


** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

RKJK ElToroEntrance.XLS (RURAL AREA WARRANT) 3/16/2001

APPENDIX K

SIGHT DISTANCE STANDARDS



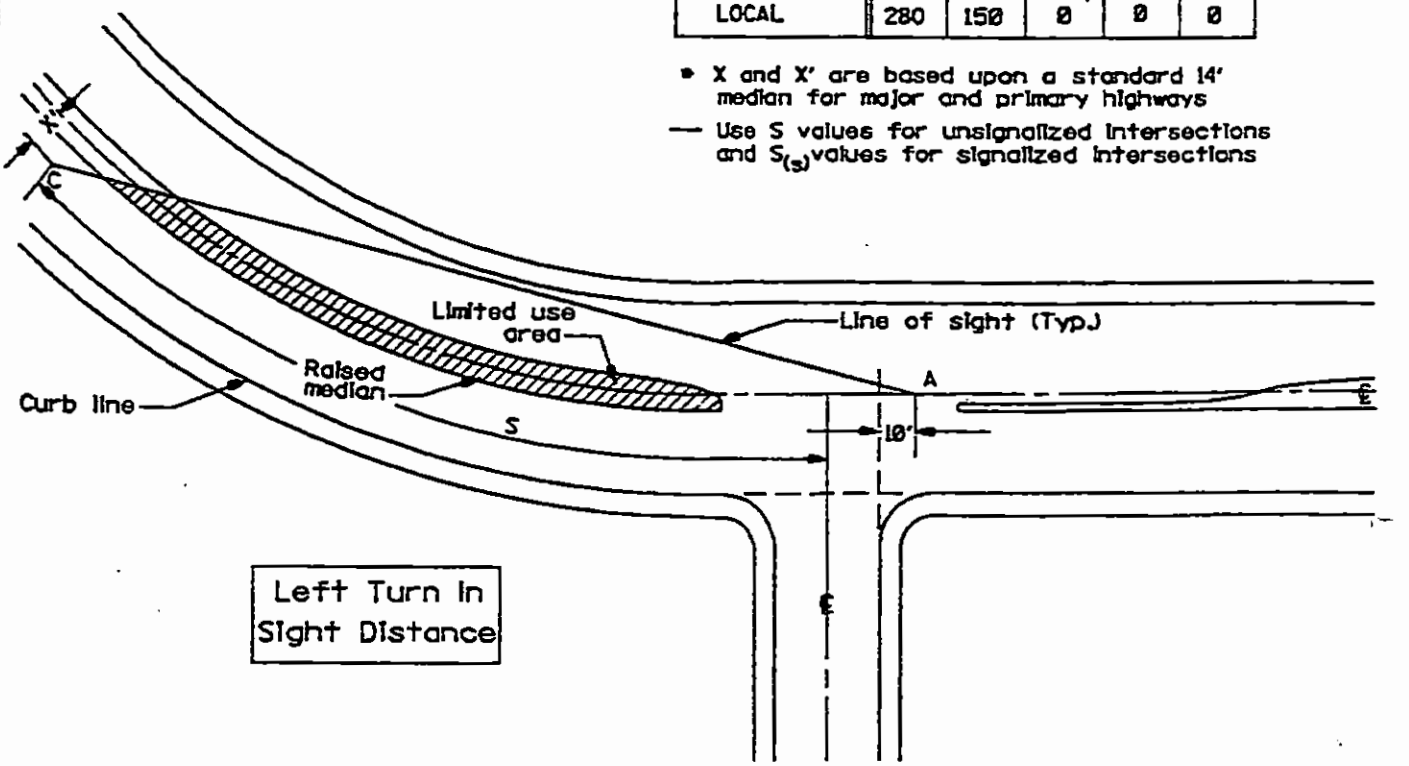
Left and Right Turn Out And Cross Traffic Sight Distance

DISTANCE (FT.)

	S	$S_{(s)}$	Y'	X*	X'*
MAJOR	660	580	37	37	13
PRIMARY	610	500	25	25	13
SECONDARY	550	430	18	18	6
COMMUTER	500	360	0	0	0
COLLECTOR	390	250	0	0	0
LOCAL	280	150	0	0	0

* X and X' are based upon a standard 14' median for major and primary highways

— Use S values for unsignalized intersections and $S_{(s)}$ values for signalized intersections



Left Turn In Sight Distance

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved W.L. Zoon 11-15-91
W.L. Zoon, Director of Public Works

Adopted: Res. 77-92 Revised: Res. 82-718; 86-1141; 88-1341; 91-1481

INTERSECTION SIGHT DISTANCE

STD. PLAN 1117

SHT. 1 OF 3

NOTES:

1. The distance S represents the corner sight distance measured along the centerline of the road. The corner sight distance is the distance required to allow 7 1/2 seconds for the driver on the cross road (or left turn pocket) to safely cross the main roadway or turn left while the approach vehicle travels at the assumed design speed of the main roadway.

2. The distance S should be increased by 20% from the amount shown on the table on sustained downgrades steeper than 3% and longer than one mile.

3. Points A and A' are the locations of a driver's line of sight (3.5 foot eye height) to oncoming vehicles (4.25 foot object height) located at Points C and C' while in a vehicle at an intersection 10 feet back from the projection of the curb line. In no case shall Points A or A' be less than fifteen feet from the edge of the traveled way.

4. The distance Y' is the distance measured from the centerline of the main road to the far right through travel lane. The distance Y' is equal to zero for T-intersections. The distance X is the distance measured from the centerline of the main road to the center of the far right through travel lane. The distance X' is the distance measured from the centerline of the main road to the center of the travel lane nearest the centerline of the road.

5. The Limited Use Area is determined by the graphical method using the appropriate distances given in the above table. It shall be used for the purpose of prohibiting or clearing obstructions in order to maintain adequate sight distance at intersections.

6. The Line of Sight line shall be shown at intersections on all landscaping plans, grading plans and tentative tract plans where safe sight distance is questionable. In cases where an intersection is located on a vertical curve, a profile of the line of sight may be required.

7. Obstructions such as bus shelters, walls or landscaping within the Limited Use Area which could restrict the line of sight shall not be permitted.
   a. Plants and shrubs within the Limited Use Area shall be of the type that will grow no higher than 12 inches above the ground and shall be maintained at a maximum height of 12 inches above the ground. Maintenance at a lower height may be required on crest vertical curves per Note 6 above.
   b. A profile of the line of sight may be required to verify 12" minimum vertical clearance above variable height obstructions such as slope landscaping, plants and shrubs.
   c. The toe of slope may encroach into the Limited Use Area provided that the requirements of (b) above are satisfied.
   d. In lieu of providing a profile of the line of sight, the toe of slope shall not encroach into the Limited Use Area, and the Limited Use Area shall slope at 2% maximum to the roadway.

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved W.L. Zaun 11-15-91
W.L. Zaun, Director of Public Works

Adopted: Res. 77-92 Revised: Res. 82-718; 86-1141; 88-1341; 91-1481

STD. PLAN 1117

INTERSECTION SIGHT DISTANCE

SHT. 2 OF 3

8. Trees shall not be permitted within any portion of the Limited Use Area.

9. Median areas less than six (6) feet in width shall be paved with concrete per Standard Plan 1114.

10. Residential driveways serving four or more units and comercial driveways shall be treated as a local street intersection.

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved W.L. Zoch 11-15-91
W.L. Zoch, Director of Public Works

Adopted: Res. 77-92 Revised: Res. 82-718; 86-1141; 88-1341; 91-1481

STD. PLAN

1117

INTERSECTION SIGHT DISTANCE

SHT. 3 OF 3

URBAN CROSSROADS

41 Corporate Park
Suite 210
Irvine, CA 92606
p: 949.660.1994
f: 949.660.1911

TRANSPORTATION PLANNING

TRAVEL DEMAND MODELING

DATABASE DEVELOPMENT

GIS

TRAFFIC ENGINEERING

ACOUSTICAL STUDIES

PARKING STUDIES

TRAFFIC IMPACT STUDIES

John Kain, AICP

Carleton Waterman

Carl Ballard

Bill Lawson, AICP

Scott Seitz, P.E.

October 17, 2001

C/O Mr. Pike Oliver
CALIFORNIA QUARTET LTD.
777 Campus Commons Road, Suite 200
Sacramento, CA 95825

Subject: Saddleback Meadows Alternative Development Scenarios

Dear Mr. Oliver:

INTRODUCTION

The purpose of this letter is to provide a trip generation comparison of alternative land uses for the proposed Saddleback Meadows Development. This trip generation comparison supplements the Saddleback Meadows Growth Management/CMP Traffic Impact Analysis prepared by Urban Crossroads, Inc. on March 29, 2001. The project site is located south of Live Oak Canyon Road in the County of Orange.

TRIP GENERATION ESTIMATES

Trip generation represents the amount of traffic which is attracted and produced by a development. The traffic generation for the project is based upon the specific land use which has been planned for the development. For the purpose of this trip generation analysis, a total of eight land use alternatives are compared. A detailed summary for each of the land use alternatives is provided in Appendix "A".

Trip generation rates for the alternative uses are shown in Table 1. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) and previously published rates.

Both daily and peak hour trip generation for each of the project alternative uses are shown on Table 2. Table 3 provides a comparison of trip generation for all eight project land use alternatives.

SUMMARY

The results of the trip generation comparison indicate that the previously recorded Tract map 10692 (Alternative No. 2 - No Development) produces the greatest trip generation. Table 2 shows that Alternative No. 2 - No Development will produce approximately 7,530 trip-ends per day with 517 vehicles per hour during the AM peak hour and 750 vehicles per hour during the PM peak hour. The alternative light industrial use is projected to generate 5,500 trip ends per day with 726 during the AM peak hour and 774 during the PM peak hour.

The remaining alternatives will produce daily trips ranging from 0 for Alternatives1 and 7 to 3,384 vehicle trips for the 299 single-family detached residential home planned for Alternative No. 8 – Reduced Alternative. Compared to the recorded map, this represents a decrease of 284 vehicles per hour during the AM peak hour and 482 vehicles per hour during the AM and PM peak hours, respectively.

If you have any questions regarding this comparison, please do not hesitate to call at (949) 660-1994.

Sincerely,

URBAN CROSSROADS, INC.

Bill Lawson, AICP
Associate

00146-06

BL:JK:pr

Attachments

TABLE 1

TRIP GENERATION RATES

LAND USE	UNITS[1]	PEAK HOUR				DAILY
		AM		PM		
		IN	OUT	IN	OUT	
Single-Family Detached Residential[2]	DU	0.24	0.65	0.76	0.44	12.00
Manufactured Housing/Multi-Family[3]	DU	0.17	0.50	0.47	0.36	8.00
Commerical Retail[3]	TSF	1.98	1.16	5.88	5.88	135.00

---

[1] DU = Dwelling Units
TSF = Thousand Square Feet

[2] Based on the rates used for the Saddleback Meadows Growth Management/CMP Traffic Impact Analysis study prepared by Urban Crossroads, Inc. on March 29, 2001.

[3] Based on the rates used for the recorded map, Tract 10692.

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TABLE 2

PROJECT ALTERNATIVE TRIP GENERATION

LAND USE	QUANTITY	UNITS[1]	PEAK HOUR AM IN	PEAK HOUR AM OUT	PEAK HOUR PM IN	PEAK HOUR PM OUT	DAILY
Alternative No. 1 - No Development							
Subtotal			0	0	0	0	0
Alternative No. 2 - No Project							
• Manufactured Housing	705	DU	120	353	331	254	5,640
• Commerical Retail	20	TSF	40	23	118	118	2,700
Subtotal			159	376	449	371	8,340
Alternative No. 3 - F/TSP EIR 531A							
• Single-Family Detached Residential	150	DU	36	98	114	66	1,800
Subtotal			36	98	114	66	1,800
Alternative No. 4 - F/TSP EIR 531B							
• Single-Family Detached Residential	100	DU	24	65	76	44	1,200
Subtotal			24	65	76	44	1,200
Alternative No. 5 - Cluster/Single/Multi							
• Single-Family Detached Residential	140	DU	34	91	106	62	1,680
• Multi-Family Attached Residential	178	DU	30	89	84	64	1,424
Subtotal			64	180	190	126	3,104
Alternative No. 6 - 44/78 Alternative							
• Single-Family Detached Residential	127	DU	30	83	97	56	1,524
Subtotal			30	83	97	56	1,524
Alternative No. 7 - Acquisition							
Subtotal			0	0	0	0	0
Alternative No. 8 - Reduced Alternative							
• Single-Family Detached Residential	282	DU	68	183	214	124	3,384
Subtotal			68	183	214	124	3,384

[1] DU = Dwelling Units
TSF = Thousand Square Feet

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TABLE 3

TRIP GENERATION COMPARISON

ALTERNATIVE	PEAK HOUR				DAILY
	AM		PM		
	IN	OUT	IN	OUT	
Alternative No. 1 - No Development	0	0	0	0	0
Alternative No. 2 - No Project	159	376	449	371	8,340
Alternative No. 3 - F/TSP EIR 531A	36	98	114	66	1,800
Alternative No. 4 - F/TSP EIR 531B	24	65	76	44	1,200
Alternative No. 5 - Cluster/Single/Multi	64	180	190	126	3,104
Alternative No. 6 - 44/78 Alternative	30	83	97	56	1,524
Alternative No. 7 - Acquisition	0	0	0	0	0
Alternative No. 8 - Reduced Alternative	68	183	214	124	3,384

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APPENDIX A

LAND USE ALTERNATIVE DESCRIPTIONS

ALTERNATIVE DESCRIPTIONS

ALTERNATIVE NO. 1 - NO DEVELOPMENT ALTERNATIVE

Under Alternative No. 1, the proposed project would not be developed and the recorded map would not be implemented. There would be no further development within the project site would occur. The project site would remain as undeveloped for the foreseeable future, with cattle grazing operations continuing.

ALTERNATIVE NO. 2 - NO PROJECT ALTERNATIVE

The project site has a recorded final tract map permitting the development of 705 single-family manufactured housing units (Tract 10692 recorded December 16, 1988). Under Alternative No. 2, the project site would not change from the existing entitlement for 705 manufactured units. As shown in Table 1, approximately 86 percent of the project site would be impacted, with approximately 14 percent of the site as natural open space.

Table 1
Alternative No. 2 Land Use Summary

Land Use	Area (acres)	Percent of Site
Residential Lots	69.1	31%
Commercial Lot	1.4	1%
Streets/ROW	23.5	11%
Recreation Areas (park/trails)	4.6	2%
Manufactured Slope	92.1	41%
Natural Open Space	31.3	14%
Total	222.0	100%

Under Alternative No. 2, the minimum lot size would be 2,630 square feet. Site access would be provided via El Toro Road, and secondary access, for emergency purposes, would be via Valley Vista Way. In addition to the residential component, this alternative also includes commercial uses. Grading for this alternative would be approximately 11.5 million cubic yards. Infrastructure improvements would be similar to those described for the proposed project, including the proposed 1.4 million gallon water tank and associated access road located off-site, adjacent to the northeast corner of the project site.

ALTERNATIVE NO. 3 - F/TSP EIR 531 STAFF ALTERNATIVE A

Alternative No. 3 would include the construction of 150 single-family residential lots, with minimum lot sizes of 20,000 square feet. As shown in Table 2, approximately 40 percent (88.5 acres) of the project site would be used for the residential lots, with approximately 38 percent of the site as natural open space.

Table 2
Alternative No. 3 Land Use Summary

Land Use	Area (acres)	Percent of Site
Single-family Lots	88.5	40%
Streets	17.8	8%
Manufactured Slope	31.6	14%
Natural Open Space	84.1	38%
Total	222.0	100%

Site access would be from El Toro Road via a double loaded roadway traversing the main ridgeline looping back through the oak woodland canyon connecting with the access road near the middle of the site. Secondary access, for emergency purposes, would be provided via El Toro Road, through St. Michael's Abbey property. Residential lot access would be provided either directly off the main road or from short cul-de-sac streets spaced throughout the site.

Grading for this alternative would be approximately 12.5 million cubic yards. Infrastructure improvements would be similar to those described for the proposed project.

ALTERNATIVE NO. 4 - F/TSP EIR 531 STAFF ALTERNATIVE B

Implementation of Alternative No. 4 would result in site development occurring only on the western third of the project site. Single-family residential units would be reduced from 299 to 100. Lot sizes would be a minimum of 4,000 square feet. As shown in Table 3 below, approximately five percent (11.3 acres) of the project site would be used for residential lots, with 85 percent (190.5 acres) of the site left as natural open space.

Table 3
Alternative No. 4 Land Use Summary

Land Use	Area (acres)	Percent of Site
Single-family Lots	11.2	5%
Streets	5.6	3%
Manufactured Slope	14.8	7%
Natural Open Space	190.4	85%
Total	222.0	100%

Primary access for Alternative No. 4 from El Toro Road would be provided by a two lane 60-foot roadway, terminating in a traffic circle which surrounds an overview park. Residential lot access would be provided off secondary cul-de-sac streets located on the south side of the primary tract road. Secondary access, for emergency use, would be provided at Valley Vista Way near the southwest corner of the project site. Grading for Alternative No. 4 would be approximately one million cubic yards.

ALTERNATIVE NO. 5 - CLUSTER/SINGLE FAMILY/MULTI FAMILY RESIDENTIAL ALTERNATIVE

Alternative No. 5 would include 318 detached and attached dwelling units, within a reduce development impact area of approximately 110.5 acres. Specifically this alternative would result in the construction of 178 attached condominium units located on the western half of the project site and 140 single-family units located along the eastern ridgeline. As shown in Table 4, approximately eight percent of the site would be used for residential lots, with 50 percent of the site left as natural open space.

Table 4
Alternative No. 5 Land Use Summary

Land Use	Area (acres)	Percent of Site
Single-family Lots	16.9	8%
Multi-family Lots	39.0	18%
Streets	11.1	5%
Manufactured Slope	43.5	19%
Natural Open Space	111.5	50%
Total	222.0	100%

Primary access for this alternative would be provided from El Toro Road via a single main road traversing the project site and ending in a cul-de-sac near the northeast project boundary. Secondary access would be provided from Valley Vista Way through Hidden Ridge near the southwest corner

of the project site. Grading for Alternative No. 5 would include approximately 6.5 million cubic yards.

ALTERNATIVE NO. 6 - 44/178 ALTERNATIVE

Under Alternative No. 6, the project site would be divided into two parcels, a "Development Parcel" and a "Conservation Parcel." The Conservation Parcel would be purchased by an interested party for the purposes of open space conservation. No development would occur in the Conservation Parcel. The Development Parcel would be developed with 127 single-family residential units on approximately 44-acres. The homes would be located in the extreme southwest corner of the property and continue along the southerly ridge easterly to the base of the easterly ridge. Land uses for this alternative are shown on Table 5 below.

Table 5
Alternative No. 6 Land Use Summary

Land Use	Area (acres)	Percent of Site
127 Single-family Lots	22.0	10%
Streets	8.3	4%
Manufactured Slope	51.3	23%
Natural Open Space	140.4	63%
Total	222.0	100%

Primary access for this alternative would be provided from El Toro Road via Valley Vista Way, which would continue along the project sites southerly flank terminating at a cul-de-sac about three-quarters of the way into the property. There would be no secondary access. This alternative would still include the off-site water tank and a 20-foot access road would be built across the Conservation Parcel from the cul-de-sac to the project site's northeast corner. A small amount of remedial grading would be required to stabilize the water tank site. Grading for Alternative No. 6 would include approximately __ million cubic yards.

ALTERNATIVE NO. 7 - ACQUISITION ALTERNATIVE

Under Alternative No. 7, the proposed project site would be acquired by another interested party in order to preserve the project site in its current condition. Under this alternative it is assumed that the proposed project site would not be developed and no further development within the project site would occur. The project site would remain in natural open space for the foreseeable future, without the current cattle grazing operations.

ALTERNATIVE NO. 8 - REDUCED ALTERNATIVE (282 SINGLE-FAMILY UNITS)

Under Alternative No. 8, approximately 282 single-family residential units would be developed on the project site. This alternative was developed to further reduce the biological impacts associated with the proposed project. Under Alternative No. 8, approximately half of the ephemeral ponds on the project site would remain, as compared to the proposed project in which approximately one fourth of the on-site ponds would remain.

As shown in Table 6, approximately 21 percent of the site would be used for residential lots, with the majority of the site left as open space.

Table 6
Alternative No. 8 Land Use Summary

Land Use	Area (acres)	Percent of Site
282 Single-family Lots	46.2	21%
Streets	18.4	8%
Regional Park	88.2	40%
Biological Open Space	9.2	4%
Restricted Scenic Easement	60.0	27%
Total	222.0	100%

This alternative would require essentially the same access and circulation, and infrastructure systems as the prospered project. Access would be provided via a controlled access private street off El Toro Road. Secondary access would be via Valley Vista Way. Open space areas would slightly increase by approximately 2.3 acres. Grading for this alternative would be similar to the proposed project and would include approximately 2.45 million cubic yards for conventional grading and 6.8 million cubic yards for remedial grading.

APPENDIX G

AIR QUALITY TECHNICAL REPORT

Giroux & Associates
Environmental Consultants

AIR QUALITY IMPACT ANALYSIS

SADDLEBACK MEADOWS (TT 10692)

ORANGE COUNTY, CALIFORNIA

Prepared for:

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Date:

February 11, 2002

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METEOROLOGY/CLIMATE

The project site's climate, as with all of Southern California, is dominated by the strength and position of the semi-permanent high pressure center over the Pacific Ocean near Hawaii. It creates cool summers, mild winters, infrequent rainfall, it drives the cool daytime sea breeze, and it maintains comfortable humidities and ample sunshine. Unfortunately, the same atmospheric processes that create the desirable living climate combine to restrict the ability of the atmosphere to disperse the air pollution generated by the large population attracted in part by the comfortable climate. Portions of the Los Angeles Basin therefore experience some of the worst air quality in the nation for certain pollutants.

Temperatures in El Toro average 62°F annually. Daily and seasonal oscillations of temperature are small because of the moderating effects of the nearby oceanic heat reservoir. In contrast to the steady temperature regime, rainfall is highly variable, and confined almost exclusively to the "rainy" period from early November to mid-April. Rainfall in the project area averages around 12 inches annually with January typically the wettest month of the year.

Winds near the project site, based on long-term monitoring from nearby MCAS El Toro, display several characteristic regimes. During the day, especially in summer, winds are from the west at 7-9 miles per hour. At night, especially in winter, the land becomes cooler than the ocean and an offshore wind of 3-5 miles per hour develops. After sunrise, the wind direction rotates through the southeast and south at 5-7 miles per hour until the west wind again becomes dominant in the early afternoon. One other important wind regime occurs when a high pressure center forms over the western United States and creates strong, hot, dry, gusty, Santa Ana winds from the northeast and east across El Toro.

The net effect of the area wind pattern is that any locally generated air pollutant emissions will be carried from east to west at night, and then reverse from west to east by day. Although the daytime windspeeds are generally stronger and therefore better ventilate the project area, the offshore flow, once well-organized late in the evening and during the night, is also strong enough to minimize any significant localized air stagnation. The least ventilated period is typically during the morning and evening directional transition when winds become near calm until the new flow component becomes fully established.

In addition to winds that govern the horizontal rate and trajectory of any air pollutants, Southern California experiences several

characteristic temperature inversions that control the vertical depth through which pollutants can be mixed. The daytime onshore flow of marine air is capped by a massive dome of warm air that acts like a giant lid over the basin. As the clean ocean air moves inland, pollutants are continually added from below without any dilution from above. As this layer slows down in inland valleys of the basin and undergoes photochemical transformations under abundant sunlight, it creates very unhealthful levels of smog (mainly ozone).

A second inversion forms at night as cool air pools in low elevations while the air aloft remains warm. Shallow radiation inversions are formed (especially in winter) that trap pollutants near intensive traffic sources such as freeways, shopping centers, etc., and from localized violations of clean air standards called "hot spots." Although inversions are found during all seasons of the year, the regional capping inversion is far more prevalent in summer while the localized radiation inversions are strongest in winter. The strong seasonal split in inversion intensity thus contributes significantly to the completely different air quality climate found in summer in the project vicinity than in winter. Because traffic concentrations in the project area are low, and because individual cars are becoming progressively "cleaner," air quality concerns in the El Toro area are more centered on the regional, summertime intrusion of photochemical smog (ozone) than on any winter microscale stagnation conditions.

AIR QUALITY SETTING

Ambient Air Quality Standards (AAQS): In order to assess the air quality impact of any proposed new development such as Saddleback Meadows, that impact, together with baseline air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered adequate to protect the public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress or infection, such as asthmatics, the elderly, the very young, people weak from other disease or illness, and persons engaged in heavy work or exercise, called "sensitive receptors". Healthy adults can tolerate periodic exposure to air pollution levels well above these standards before adverse health effects are observed. Recent research has shown, however, that adverse health effects may occur from life-long chronic exposure to ozone concentrations that just meet the hourly standard. Barely meeting clean air standards may, therefore, not be enough to insure public health protection until some additional margin of safety is established to overcome chronic exposure health effects.

The Clean Air Act Amendments of 1970 established national AAQS with states retaining the option to adopt more stringent standards or to include other pollution species. Because California already had standards in existence before federal AAQS were established, and because of unique meteorological problems in California, there is considerable diversity between state and federal standards currently in effect in California as shown in Table 1.

The federal Clean Air Act Amendments (CAAA) of 1990 required that the U.S. Environmental Protection Agency (EPA) review all national AAQS in light of all current health data. EPA was charged with modifying existing standards or promulgating new ones where appropriate. EPA subsequently developed standards for chronic ozone exposure (8+ hours per day) and for very small diameter particulate matter (called "PM-2.5"). New national AAQS were adopted on July 17, 1997. California standards for PM-10, which includes PM-2.5, are more stringent than the federal PM-2.5 standard.

Planning and enforcement of the new federal standards for PM-2.5 and for ozone (8-hour) were put on hold through a decision by the U.S. Court of Appeals. The Appeals Court ruled that EPA did not have discretionary authority to adopt national clean air standards without specific congressional approval. An appeal filed on behalf of EPA by the Department of Justice was heard by the U.S. Supreme Court in early November, 2000. In a unanimous decision published at the end of February 2001, the Court ruled the EPA did have authority to promulgate standards without specific congressional authority, and that a cost:benefit analysis was not required for

TABLE 1

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	0.12 ppm (235 µg/m³)	Same as Primary Standard	Ethylene Chemiluminescence
	8 Hour	—		0.08 ppm (157 µg/m³)		
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 µg/m³	Size Selective Inlet Sampler ARB Method P (8/22/85)	—	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	24 Hour	50 µg/m³		150 µg/m³		
	Annual Arithmetic Mean	—		50 µg/m³		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean			15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m³)		—		
Lead	30 days average	1.5 µg/m³	AIHL Method 54 (12/74) Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Fluorescence	0.030 ppm (80 µg/m³)	—	Pararosoaniline
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		—	—	
Visibility Reducing Particles	8 Hour (10 am to 6 pm, PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer—visibility of ten miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent. Method: ARB Method V (8/18/89).		No Federal Standards		
Sulfates	24 Hour	25 µg/m³	Turbidimetric Barium Sulfate-AIHL Method 61 (2/76)			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Cadmium Hydroxide STRactan			

health-based standards. The Court also ruled, however, that there was an attainment schedule inconsistency between "old" and "new" standards. This inconsistency must be resolved before the new standards are considered fully implemented. Data collection for these standards is on-going, but no additional attainment action can be taken until all legal issues are resolved.

Baseline Air Quality: Existing and probable future levels of air quality in the project area can be best inferred from ambient air quality measurements conducted by the South Coast Air Quality Management District (AQMD) at its El Toro monitoring station. Monitoring at this station include both regional pollutants such as dust and smog, as well as primary vehicular pollution levels such as carbon monoxide. Table 2 summarizes the last seven years of published data from this monitoring station. Although the entire spectrum of air pollutants is not monitored at the El Toro station, the following conclusions can be drawn from this data:

a. Photochemical smog (ozone) levels continue to exceed standards by a small margin. However, the frequency of first-stage smog episodes has dropped by 90% the last 10-15 years. There have been no first-stage smog alerts from 1992 to the present in the El Toro area.

b. Annual maximum ozone levels rose in the early '80s to close to the second stage alert level of 0.35 ppm for 1 hour, but they since dropped sharply to the sub-0.20 ppm level. For several years, El Toro had the worst smog of any station in Orange County. In the last several years, however, El Toro, and by inference all of the South County, had some of the lowest smog readings on record.

c. Measurements of carbon monoxide have shown relatively low baseline levels for a monitoring station located near two busy arterials (El Toro Road and Jeronimo Road). With lower traffic volumes and more complex terrain reducing stagnation potential, CO levels near Saddleback Meadows are probably even lower than the AQMD readings at the El Toro monitoring station.

d. Respirable dust (PM-10) levels periodically exceed the state standard, but the less stringent federal PM-10 standard has never been violated since PM-10 measurements began at El Toro.

e. One violation of the federal ultra-fine particulate (PM-2.5) standard has been recorded since measurements were initiated in 1999.

Despite substantial South County growth in the last two decades, area air quality, as inferred from the El Toro SCAQMD data, continues to improve. The following air pollution "bests" have been recorded in the last three years:

TABLE 2

SADDLEBACK VALLEY
AIR QUALITY MONITORING SUMMARY (1994-2000)
(Number of Days Standards Were Exceeded, and Maximum Levels During Such Violations
Entries shown as ratios = samples exceeding standard/samples taken)

Pollutant/Standard	1994	1995	1996	1997	1998	1999	2000
Ozone:							
1-Hour > 0.09 ppm (a)	16	16	20	8	15	2	25
1-Hour > 0.12 ppm (b)	5	1	2	2	2	0	2
8-Hour ≥ 0.08 ppm (b)	7	3	8	2	3	0	8
Max. 1-Hour Conc. (ppm)	0.18	0.15	0.14	0.16	0.16	0.10	0.15
Carbon Monoxide:							
1-Hour > 20. ppm (a)	0	0	0	0	0	0	0
8-Hour > 9. ppm (a,b)	0	0	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	8	6	6	5	6	4	4
Max. 8-Hour Conc. (ppm)	5.4	4.1	4.0	3.6	3.1	2.5	3.3
Inhalable Particulates: (PM-10)							
24-Hour > 50 $\mu g/m^3$ (a)	7/59	11/60	4/61	4/56	6/59	6/60	2/60
24-Hour > 150 $\mu g/m^3$ (b)	0/59	0/60	0/61	0/56	0/59	0/60	0/60
Max. 24-Hour Conc. ($\mu g/m^3$)	91.	122.	79.	86.	70.	111.	98.
Ultra-fine Particulates: (PM-2.5)							
24-Hour > 65 $\mu g/m^3$ (b)	---	---	---	---	---	0/68	1/119
Max. 24-Hour Conc. ($\mu g/m^3$)	---	---	---	---	---	56.6	94.7

Source: South Coast Air Quality Management District, El Toro Monitoring Station, El Toro Road @ Jeronimo Road (station relocated in 2000).

(a) = California ambient air quality standard
(b) = National ambient air quality standard

Fewest State ozone violations	(2)	-	1999
Fewest federal 1-hour ozone violations	(0)	-	1999
Fewest federal 8-hour ozone violations	(0)	-	1999
Lowest one-hour ozone maximum	(0.10 ppm)	-	1999
Lowest one-hour CO maximum	(4 ppm)	-	1999, 2000
Lowest 8-hour CO maximum	(2.5 ppm)	-	1999
Lowest 24-hour PM-10 maximum	(70 $\mu g/m^3$)	-	1998
Fewest 24-hour State PM-10 violations	(2)	-	2000

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment will occur within the reasonably near future.

Air Quality Management Planning: The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards by December 31, 1987. The South Coast Air Basin (SCAB) could not meet the deadline for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the Governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times subsequently as earlier attainment forecasts were shown to be overly optimistic.

In 1988, because of uncertainty in federal Clean Air Act reauthorization, the California Legislature enacted the California Clean Air Act (CCAA). The CCAA requires that regional emissions be reduced by 5 percent per year, averaged over 3-year periods, until attainment can be demonstrated. Each area that did not meet a national or state ambient air quality standard was required to prepare a plan which demonstrated how the 5 percent reductions were to be achieved. In July 1991, the SCAQMD adopted a revised AQMP which was designed to meet the CCAA requirements. The 1991 AQMP deferred the attainment date to 2010, consistent with the 1990 federal Clean Air Act.

The 1990 federal Clean Air Act Amendments (CAAA) required that all states with airsheds with "serious" or worse ozone problems submit a revision to the State Implementation Plan (SIP). The 1991 AQMP was modified/adapted and submitted as the South Coast Air Basin (SCAB) portion of the SIP. The 1991 SIP submittal estimated that an 85% basinwide reduction in volatile organic compound (VOC) emissions and a 59% reduction in oxides of nitrogen (NO_x) between 1990 to 2010 was needed to meet federal clean air standards. About 40% of these reductions were to come from existing pollution control programs. The rest would come from new rules, technologies, or other reduction programs.

In 1996, EPA approved the 1994 submittal of the SCAB portion of the SIP. The plan was finally approved after considerable debate on the contingency measures that should be implemented if progress is not as rapid as anticipated in the 1994 SIP. The federal Clean Air Act required that an updated plan be submitted by February 8, 1997, which included attainment plans for all pollutants exceeding federal standards. The CCAA requires an update of the State-mandated clean air plan every three years. The last update was completed on December 31, 2000.

An updated 1997 AQMP was locally adopted. The California Air Resources Board (ARB) forwarded this plan on to EPA for its consideration and recommended approval. The 1997 AQMP was designed to meet both federal (EPA) and State (ARB) air quality planning guidelines. Components of the 1997 plan update included:

- Demonstration of attainment for ozone, CO, and PM-10
- Updated emissions inventories (1993 base year) of VOC, NO_x, CO, SO_x and PM-10
- Emissions budgets for future years of the inventoried compounds.
- An updated pollution control strategy
- Contingency measures if the plan as presently proposed fails to meet stated timetables.

Additional research and photochemical computer modeling, as well as improved emissions estimates, now suggest that formerly predicted emissions reductions required to meet standards need not be quite as severe as thought earlier. Table 3 summarizes the currently proposed regional attainment planning for ozone (VOC and NO_x) and for carbon monoxide (CO). Emissions reductions of around 66 percent for VOC, 56 percent for NO_x and 66 percent for CO are

TABLE 3

SOUTH COAST AIR BASIN ATTAINMENT PLAN
(Emissions in tons/day)

	VOC*	NOx*	CO**
Current Inventory[a]			
Stationary + Area Sources	410	144	363
On-Road Mobile	562	761	5,826
Off-Road Mobile	120	303	1,008
TOTAL	1,092	1,208	7,197
2010 Forecast[b]			
Stationary + Area Sources	531	98	337
On-Road Mobile	163	360	1,913
Off-Road Mobile	144	269	1,643
TOTAL	838	727	3,893
Short-term + Intermediate Reductions	< 221>	< 120>	<1,468>
Long-term Reductions	< 204>	< 77>	< 0>
2010 Remaining[c]	413	530	2,425

(a) Year 2000 Estimate

(b) With current emissions reduction programs and adopted growth forecasts.

(c) Levels at which all federal air quality standards will be met.

Source: California Air Resources Board, "2001, California Almanac of Emission & Air Quality," and SCAQMD Draft Final 1997 AQMP (October 1996)

* - summer ozone precursors
** - winter CO "hot spot" precursors

anticipated from the currently proposed AQMP update. Within the plan, some measures considered "long-term reductions" require additional technological development whose development schedule is uncertain. There is therefore no clear scientific consensus that the 1997 AQMP update will be able to achieve its mandatory clean air objectives by the end of 2010.

The Draft 1997 AQMP was challenged by several environmental organizations as not being consistent with the 1990 federal CAAA on rates of progress toward attaining the ozone standard. The Ninth Circuit Court found for these organizations. A 1999 Amendment to the proposed SIP Revisions was developed that accelerates the schedule for a number of new SCAQMD rules and regulations. The 1999 SIP Amendment meets the court-ordered acceleration of the rate of progress. The 1999 Amendments were approved by the California ARB on January 27, 2000. EPA staff has proposed approval of the amendments with additional minor changes. Formal EPA approval of the 1999 SIP Amendment came in April, 2000.

A residential development such as Saddleback Meadows relates to the AQMP through the land use and growth assumptions used to forecast automotive air pollution emissions. The basinwide AQMP is based on the designated land use for the project site contained in the Orange County General Plan. The "approved" land use for the project site, presumably incorporated into the AQMP/SIP, is for a 705-unit manufactured housing subdivision. To the extent that the proposed project represents a lower intensity of development than anticipated in the General Plan, it is, by inference, consistent with the AQMP. Implementation of planned growth will not delay the timely attainment of regional clean air standards. However, SCAQMD's position is that consistency with the AQMP alone is not a sufficient basis for a finding of an insignificant air quality impact. Impact significance is therefore determined by a direct project analysis.

AIR QUALITY IMPACTS

Methodology

The analysis methodology utilized procedures outlined in the SCAQMD 1993 "CEQA Air Quality Handbook" where appropriate. In areas where more site-specific information was available beyond the default values recommended in the handbook, they were used to supplement the AQMD-suggested input parameters. Where more current technical information is available than contained in the 1993 Handbook, such data was used where appropriate.

Vehicular emissions were therefore calculated using the California Air Resources Board (CARB) URBEMIS computer model because the SCAQMD no longer supports use of its "MAAQI" model for environmental impact analysis. Microscale emissions impacts were calculated using one generic run of the CALINE4 computer model which was then adjusted for site-specific traffic volumes, travel speeds and emission data for intersections near Saddleback Meadows potentially affected by project-related traffic.

Standards of Significance

Many air quality impacts from dispersed mobile sources, i.e., the dominant pollution generators in the basin, often occur hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual source is generally immeasurably small. The SCAQMD has therefore developed suggested significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The 1993 SCAQMD Handbook states that any projects in the SCAB with daily emissions that exceed any of the following thresholds should be considered as having an individually and cumulatively significant air quality impact:

55 lbs per day of ROC*
55 lbs per day of NO_x**
550 lbs per day of CO
150 lbs per day of PM-10
150 lbs per day of SO_x

* - 75 lbs/day during construction

** - 100 lbs/day during construction

These thresholds do not take into account several important considerations, namely:

1. Emission levels from one large project may exceed thresholds while those from numerous smaller projects with identical emissions might not, even though the regional impact is the same.

2. Large developments have a greater opportunity to effectively implement TCMs because of a greater potential participant pool in trip/VMT diversion programs.

3. Project-related emissions and their regional impact may already have been incorporated into regional growth projections.

4. Emissions generated in or near El Toro have essentially the same regional air quality impact if they were released in a nearby community. If the anticipated demand for residential use is not met at Saddleback Meadows but in some other community, the no-project alternative will have basically the same regional air quality impact.

These considerations can be used by the Lead Agency as a basis for supporting a finding of a less than significant impact, even if the SCAQMD advisory thresholds are exceeded. Alternately, the Lead Agency may make a finding of a significant impact for projects exceeding the SCAQMD thresholds, but use as many of the above criteria in a statement of overriding considerations as are applicable.

Additional indicators should be used as screening criteria to evaluate the need for further analysis with respect to air quality. Whenever possible, the project should be evaluated in a quantitative analysis; otherwise a qualitative analysis is appropriate. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation;

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP;

- Project could generate vehicle trips that cause a CO hot spot;

- Project might have the potential to create or be subjected to objectionable odors;

- Project could have hazardous materials on site and could result in an accidental release of air toxic emissions;
- Project could emit an air toxic contaminant regulated by District rules or that is on a federal or state air toxic list;
- Project could involve disposal of hazardous waste;
- Project could be occupied by sensitive receptors near a facility that emits air toxics or near CO hot spots;
- Project could emit carcinogenic air contaminants that could pose a cancer risk.

Residential development on former ranch property would usually not have any secondary impacts, particularly any related to hazardous or toxic materials. The project is consistent with the level of development anticipated in the AQMP. The potential for CO "hot spots," and hazardous emissions associated with diesel exhaust from grading equipment, are the only secondary impact issues evaluated in this study.

Project-Related Sources of Potential Impact

Intensification of land uses in Orange County potentially impacts ambient air quality on two scales of motion. As cars drive throughout Southern California, the small incremental contribution to the basin air pollution burden from any single vehicle is added to that from several million other vehicles. The impact from this project, even if it generates a significant number of new vehicle trips, is very small on a regional scale. Basinwide air quality impacts are, therefore, addressed in terms of project compatibility with regional air quality plans. If any given project or plan has been properly incorporated into basinwide growth projections which are the basis for regional air quality/transportation planning, then the basinwide impact of any proposed development is presumed, by definition, to be less than significant.

Locally, changes in the location of any collection of automotive sources, or changes in the number of vehicles or travel speeds may impact the microscale air quality around any given development site. Traffic increases not only contribute air pollutants in direct proportion to their cumulative percentage of traffic volume growth, but they may slow all existing traffic to slower, more inefficient travel speeds. The development traffic/air quality impact is thus potentially compounded.

Temporary construction activity emissions will occur during project buildout. Such emissions include on-site generation of dust and equipment exhaust, and off-site emissions from construction employee commuting and/or trucks delivering building materials. Because of their temporary nature, air quality impacts from construction have often been considered as individually less than significant. Also, construction activity emissions are difficult to quantify, since the exact type and amount of equipment that will be used or the acreage that may be disturbed on any given day in the future is not known with any reasonable certainty. The emphasis in environmental documents relative to construction activity emission impacts has therefore been to minimize the emissions as fully as possible through comprehensive mitigation even if the precise amount of emissions can not be precisely quantified.

Construction Activity Impacts

Dust is normally the primary concern during construction of new buildings and infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Because of such variations, regulatory agencies use one universal factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into mid-range average values.

The PM-10 fraction of fugitive dust emissions are predicted to be around 55 pounds per day per acre disturbed in the absence of any dust control measures being applied (AQMD CEQA Handbook, Table 9-2). Mandatory measures required by South Coast AQMD Rule 403 (Fugitive Dust) are generally assumed to reduce this rate by 50%. Average daily PM-10 emissions during site grading and other disturbance are stated in the SCAQMD Handbook to be 26.4 pounds/acre. Best available control measures (BACMs) such as continual soil wetting, use of supplemental binders, early paving, etc. can achieve a substantially higher PM-10 control efficiency. Use of BACMs in dust control from construction is an important component of the 1997 PM-10 regional attainment plan.

The Saddleback Meadows project site totals 223 acres. Some steep slopes will be left in open space, but a very substantial part of the site would be graded to accommodate 299 single-family homes. Rough grading over a large part of the site would likely occur initially with finish grading completed in response to market demand. The area of simultaneous disturbance on any given day

could be 10-20 acres. Use of the SCAQMD "default" PM-10 emission factor of 26.4 pounds per acre per day would predict daily PM-10 emissions during rough grading of 264-528 pounds per day. Such emissions would exceed the daily PM-10 significance threshold of 150 pounds per day by a wide margin.

Recent studies of dust control with BACMs have demonstrated, however, that emissions rates of 10.2 pounds per acre per day are attainable when such measures are applied. A 10-20 acre disturbance area with use of all BACMs would contribute 102-204 pounds per day of PM-10. Use of BACMs, plus limiting the daily grading area to approximately 14 acres or less, could be used in tandem to keep PM-10 emissions at less than significant levels.

It is possible that impact significance in terms of PM-10 emissions may not be wholly relevant in light of current understanding of health effects from airborne dust exposure. Recent research indicates that only the very tiniest particulates of 2.5 micron in diameter or smaller (called "PM-2.5") dominate health response to particulate inhalation. Mechanical soil abrasion creates very little PM-2.5. Measurements in Orange County have shown that one-third of PM-10 is made up of "crustal material", i.e., dirt. Among the PM-2.5 fraction, less than two percent is soil material. The lack of any substantial PM-2.5 generation from grading activities would further support the finding of a less-than-significant dust impact relative to any potentially adverse health effects.

In addition to the fine particulates that remain suspended in the air semi-indefinitely, soil disturbance during construction may release considerable amounts of larger particles that have short atmospheric residence times. These larger particulates are generally inert silicates that are readily filtered out in the upper respiratory tract. They therefore have no adverse health effects. They may, however, create a soiling nuisance as they settle out on parked cars, landscaping foliage or other horizontal surfaces. Clouds of such dust may also locally impair visibility. Soiling nuisance at St. Michael's Abbey during daytime on-shore flow or in Hidden Hills during early morning drainage winds is therefore a possible concern that further prompts the use of efficient dust control.

It is through these larger particulates that the public is aware of a dust problem in a construction area rather than through PM-10. Under "normal" wind conditions, EPA documents suggest that the zone of large particle dust deposition is very close to the source (<100 feet impact radius). Off-site large particle transport is mainly a strong wind phenomenon. Because such large particles are more readily lofted by turbulence during strong winds, extra dust control or cessation of soil disturbance activities is recommended when wind speeds exceed a heavy particulate lofting threshold of around 25 mph.

Construction also entails use of internal combustion engines to power on-road trucks and off-road mobile, semi-mobile and semi-stationary equipment. Such sources are mainly diesel-powered and are poorly regulated in terms of allowable emission levels. Off-road sources are sometimes not well maintained because there is no regulatory mechanism to enforce efficient combustion as there is for on-road sources. The SCAQMD has calculated the total area under construction that would cause the significance thresholds to be exceeded from construction-related equipment combustion emissions. For single family residences, the threshold is 1.3 million sq. feet of gross floor area (SCAQMD Handbook, Table 6-2). For 299 units of single-family housing, even at 3,000 square feet per unit, total improved footage from simultaneous construction of the entire project will be less than the stated threshold. With the use of a comprehensive dust control program, construction activity air quality impacts in the project vicinity can be maintained at less than significant levels.

Diesel-powered construction equipment releases exhaust particulates (soot) that have been identified as carcinogenic in a number of health effects studies. Health risk is calculated based upon a lifetime (70 year) exposure for 365 days per year, 24 hours per day, outside one's residence or place of employment. These are not conditions that occur around a grading project. The equipment exhaust will be released for a limited time during daytime hours of moderate winds and turbulence by mobile sources that will not expose any individual receptor for any extended period. Receptors will not be outside their residences for the duration of the grading activity. Impacts from grading equipment diesel exhaust will therefore be minimal.

Construction activities are concentrated at the construction site, but they also spill over into the adjacent community. Spill-over may be physical spillage, or it may be from off-site congestion effects. Vehicles may track dirt off-site, lane closures may create congestion on public roadways and construction worker vehicles and supply trucks may compete with the general public for sometimes inadequate roadway capacity. Trucks may be left idling near off-site sensitive receptors while waiting to load or unload. Each of these small impacts nevertheless may be cumulatively significant when spread over several years of project area buildout. As with the on-site impacts, a heightened level of impact mitigation will need to be utilized to maintain an overall tolerable level of impact from site activity construction. Housekeeping and construction activity management procedures are identified in the impact mitigation discussion relative to "spill-over" minimization.

Mobile Source Impacts

The bulk of the proposed project's impact will derive from the approximately 3,588 "new" daily trips that will be generated at full site buildout. At a typical trip length of slightly under 9 miles per trip, project implementation would add around 30,000 vehicle miles traveled (VMT) to the basinwide mobile source emissions burden of around 300,000,000 VMT/day (0.01 percent).

The emissions associated with project buildout can be readily calculated using the California Air Resources Board (ARB) URBEMIS7G computer model. Emissions from project-related travel were calculated for a buildout year of 2003 as the earliest likely project completion year. The results of these calculations are summarized in Table 4. The computer output from the emissions model is attached as an appendix to this report. Mobile source emissions for all vehicular exhaust pollutants will not exceed their respective SCAQMD significance thresholds.

The emissions burden in Table 4 also includes the stationary source contribution from consumer products and on-site natural gas combustion. The inclusion of the stationary source contribution does not change any conclusions about the lack of impact significance.

Relative to a finding of (in)significance for the mobile source emissions, traffic from all future growth will contribute significantly to the sub-regional and regional air pollution burden, and, therefore, creates a cumulatively significant air quality impact, regardless of project size. This is a function of growth and the dependence upon the single occupant fossil-fueled vehicle as the primary means of transportation. All growth delays the ultimate attainment of regional clean air standards. This project, within a loose definition of "cumulative projects", would contribute to that impediment to clean air. Regardless of any finding of individual impact insignificance, the proposed Saddleback Meadows development should be identified as having a cumulatively significant air quality impact.

Because vehicular sources from all combined growth will contribute so substantially to regional emissions total, it correspondingly represents a significant opportunity to reduce that contribution.

A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) will achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end.

TABLE 4

SADDLEBACK MEADOWS DEVELOPMENT
REGIONAL EMISSIONS SUMMARY (pounds/day)*

Source	ROG	CO	NOx	SOx	PM-10
Vehicular Emissions	38.3	278.0	41.0	Negl.	25.7
Stationary/Area Sources	15.5	6.5	3.8	0.2	<0.1
TOTAL	58.3	284.5	44.8	0.2	25.7
AQMD Signif. Threshold	55	550	55	150	150
Potentially Significant	No	No	No	No	No

Source: URBEMIS7G for Windows Computer Model (output in Appendix)

* - Assuming a 2003 buildout.

Orange County has been extensively involved in trip/VMT reduction programs through the trip reduction ordinances (TRO) and various geographically focused transportation management programs. Several countywide programs that monitor city and county response to AQMP TCMs have shown that the county collectively has exceeded its trip reduction targets of the AQMP when the county is allocated its fair share of the basinwide reduction target. While progress toward reducing the dependence on the single occupant vehicle (SOV) is slow, continued progress toward higher average vehicle ridership (AVR) is to be expected during the Saddleback Meadows buildout timeframe.

While regional mobile source emissions do not have a very direct impact on local El Toro air quality, the incremental addition of growth-related traffic over a wide area may change microscale air quality distributions. To determine whether future traffic changes will create an adverse air quality impact, a microscale air quality analysis was performed for the traffic analysis grid around the project site. A screening procedure based on the California line source roadway dispersion model CALINE4 was run for a number of traffic scenarios to evaluate any changes due to changes in patterns of growth anticipated as part of the Saddleback Meadows development.

The model combines the results of the traffic analysis with very restrictive dispersion conditions in order to generate a worst-case impact assessment. Carbon monoxide (CO) was used as an indicator of any "hot spot" potential because CO, unlike regional pollutants such as ozone, is directly related to source activity immediately adjacent to the receptor (a primary, unreacted pollutant impact). Calculations were made for an hourly exposure in the immediate vicinity of 10 roadway intersections where baseline traffic volumes were calculated in the traffic analysis.

The results of the microscale impact analysis are summarized in Table 5. The values in Table 5 must be added to any non-local background CO distribution. If one assumes that the maximum level measured near the El Toro and Jeronimo Roads intersection is the regional background, and that the worst-case, one-hour level of 4 ppm observed in 1999 or 2000 occurs at the exact same hour as any worst-case project impact, then it would take a local contribution of 16 ppm to threaten the one-hour California CO standard of 20 ppm.

TABLE 5

MICROSCALE AIR QUALITY IMPACT ANALYSIS

(Hourly CO concentration [ppm] above non-local background
at edge of each indicated intersection leg).

	<-----2002----->		<-----2005----->		<-----2025----->	
Intersection	Exist	Plus Proj	No Proj	Plus Proj	No Proj	Plus Proj
A.M. PEAK HOURS:						
Santiago Canyon Road:						
@ Modjeska Canyon	0.6	0.6	0.5	0.5	0.4	0.7
@ Ridgeline Road	0.5	0.5	0.5	0.5	0.6	0.6
El Toro Road:						
@ Live Oak Canyon Road	0.6	0.7	0.7	0.7	0.9	0.9
@ Ridgeline Road	0.6	0.6	0.6	0.7	2.0	2.1
@ Project Entrance	N/A	0.8	N/A	0.7	N/A	1.7
@ Valley Vista Way	0.6	0.8	0.6	0.8	2.2	2.4
@ Glenn Ranch Road	0.8	1.0	0.7	0.9	1.2	1.3
Saddleback Ranch Road:						
@ Glenn Ranch Road	1.2	1.3	1.1	1.1	1.0	1.4
Marguerite Parkway:						
@ El Toro Road	1.0	1.1	0.9	0.9	0.6	0.6
Portola Parkway:						
@ Glenn Ranch Road	4.2	4.2	4.8	4.9	4.3	4.4
@ Foothill Transp. Corr.	2.4	2.4	2.1	2.7	1.8	1.8
@ El Toro Road	4.7	4.7	5.2	5.2	6.8	6.8

TABLE 5
Page Two

Intersection	2002 Exist	2002 Plus Proj	2005 No Proj	2005 Plus Proj	2025 No Proj	2025 Plus Proj
P.M. PEAK HOURS						
Santiago Canyon Road:						
@ Modjeska Canyon	0.5	0.5	0.5	0.5	0.5	0.5
@ Ridgeline Road	0.5	0.5	0.5	0.6	0.6	0.6
El Toro Road:						
@ Live Oak Canyon Road	0.6	0.7	0.9	1.0	0.8	0.9
@ Ridgeline Road	0.7	0.8	0.8	0.9	1.0	1.0
@ Project Entrance	N/A	1.0	N/A	1.0	N/A	1.8
@ Valley Vista Way	0.8	1.0	0.8	1.0	1.3	1.5
@ Glenn Ranch Road	0.9	1.1	0.9	1.0	1.5	1.6
Saddleback Ranch Road:						
@ Glenn Ranch Road	1.3	1.4	1.1	1.5	1.6	1.7
Marguerite Parkway:						
@ El Toro Road	1.0	1.0	0.9	0.9	0.7	0.8
Portola Parkway:						
@ Glenn Ranch Road	3.5	3.6	3.9	3.9	5.6	5.7
@ Foothill Transp. Corr.	4.7	6.2	6.8	7.0	4.0	4.0
@ El Toro Road	4.2	4.3	4.7	4.8	4.2	4.2

Source: Screening procedure based upon CALINE4 Model; Caltrans Air Quality Technical Notes (AQTAN), 1988.

Microscale hourly CO levels, both without and with the proposed project are forecast to be well below the 16 ppm threshold. Combined CO concentrations will thus remain below the California 1-hour CO standard of 20 ppm, and far below the federal standard of 35 ppm.

In comparing "plus project" versus "existing" conditions, project-related CO contributions are seen in Table 5 to range from 0.0 to 1.5 ppm. The only increase exceeding 1 ppm would occur within 25 feet of the Portola Parkway/Foothill Transportation Corridor. There are pollution-sensitive receptors this close to the roadways at this location. The maximum CO increase at any location near residential development is much less than one (1) ppm compared to the most stringent standard of 20 ppm (less than 5.0 percent average change). There are not now, nor will there be with the project, any microscale air pollution "hot spots" at any project area intersections.

Increased areawide traffic and associated congestion is offset by continued improvements in vehicular CO emissions per average vehicle. Future (2025) CO levels with the proposed project and with anticipated intersection improvements are generally similar to those in 2002. Maximum localized CO levels would increase from 4.7 ppm in 2002 to 6.8 ppm in 2025. However, hourly background levels of 4 ppm will drop if the trend from the last decade continues. Combined hourly local plus regional background levels will continue to remain well below 20 ppm. The findings of the microscale impact assessment are therefore that CO levels under theoretical worst-case conditions do not exceed clean air standards and the Saddleback Meadows traffic will add an insignificant amount to the total CO exposure. Microscale impacts are less than significant.

MITIGATION

Potentially significant impacts were identified during construction from dust (PM-10) generated by surface disturbance and from construction equipment operations. Operational emissions will not be in excess of thresholds of significance for regionally significant pollutants as identified by the South Coast AQMD. However, vehicular emissions from project-related traffic should be identified as having a cumulatively significant air quality impact. A number of mitigations, as related to the project, are already incorporated into rules, regulations or ordinances. They are included in the following list of mitigation measures in that compliance mitigates a potentially adverse impact. They are not discretionary measures, however, which a developer can implement or the County of Orange can additionally require since compliance is already assumed in the impact analysis.

In particular, dust control during construction requires compliance with SCAQMD Rule 403 (rev. 1997). Rule 403 requires the use of best available control measures, requires that visible dirt track-out at construction access be promptly removed, and prohibits visible dust clouds beyond the property boundary. Any discretionary actions would be those measures that go beyond the already established Rule 403 minimum requirements.

The SCAQMD in its CEQA Handbook (1993) has developed a menu of mitigation options for consideration into project planning where applicable or appropriate. Some measures are not considered feasible for the proposed project. Many transportation control measures (TCMs) are already incorporated into actions required by the County of Orange. Mitigation potential, beyond what is already required, is therefore somewhat limited. The following measures are recommended:

Construction Dust

- Contractors will comply with SCAQMD Rule 403. In addition to meeting minimum compliance requirements, the contractor will utilize any additional reasonable and feasible methods of dust control from the measures shown in the list in the SCAQMD Rule 403 Implementation Handbook.

  Responsible Party: Construction Contractor

  Supervising Agency: County of Orange
  South Coast AQMD

- Contractors will implement a high wind dust control program when wind gusts exceed 25 mph as measured by an on-site wind monitor. High wind dust control will entail:

  - Termination of operation of scrapers, graders or dozers on unpaved surfaces until winds subside.

  - Application of water hourly to any unpaved surface with vehicle or equipment operations.

  - Application of water or other dust control material to any previously graded surface if dust emanation is visible from such surface.

- Contractors will utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and will wash or sweep the construction access points at El Toro Road on a routine basis on a frequency specified by the County of Orange as well as whenever dirt is visible more than 50 feet from the access point independent of the routine clean-up schedule.

  Responsible Party: Construction Contractor

  Supervising Agency: County of Orange

- Trucks hauling dirt on public roads to and from the site will be covered or will maintain a six inch differential between the maximum height of any hauled material and the top of the haul trailer. Haul truck drivers will water the load prior to leaving the site to prevent soil loss during transport.

  Responsible Party: Construction Contractor

  Supervising Agency: California Highway Patrol

- Construction management procedures required by the County of Orange and other jurisdictions shall be implemented. Contractor personnel responsible for supervision and the appropriate actions to be taken for the following measures shall be identified:

  - Cessation of activities during a Stage-2 smog episode. Call 1-800-242-4022 for the daily forecast.

- Truck routes and schedules for receipt of materials shall be coordinated with County of Orange staff.

- Where feasible, on-road vehicles and off-road equipment shall be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes.

Responsible Party: Construction Contractor

Supervising Agency: County of Orange

- Graded surfaces used for off-road parking, materials laydown or awaiting future construction shall be stabilized for dust control as needed. Frequently accessed unpaved areas shall be paved as early as possible to minimize dirt track-out to public rights of way.

Responsible Party: Construction Contractor

Supervising Agency: County of Orange

- Equipment will be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and use low-sulfur fuel as required by SCAQMD regulation.

Responsible Party: Construction Contractor

Supervising Agency: South Coast AQMD

- Lane closures or detour will require coordination with the County of Orange. Flagpersons and appropriate traffic control devices will be used as needed to minimize construction activity interference with off-site traffic.

Responsible Party: Construction Contractor

Supervising Agency: County of Orange EMA
Orange County Sheriff Department

Implementation of the above measures is expected to maintain construction activity air quality impacts at less than significant levels.

Operational Activities:

Impact mitigation is not required because the project-related impact is less than significant. However, cumulative impact significance and the overall non-attainment status of the airshed requires that reasonable mitigation be applied, where feasible. The following measures are recommended:

- Traffic flow at the project access will be maintained at acceptable levels of service through mitigation measures identified in the project traffic study.

  Responsible Party: Project Developer

  Supervising Agency: County of Orange Transportation Planning

- 220 Volt electric power for future use to charge electric-powered vehicles will be made available in homeowner garages.

  Responsible Party: Site Developer

  Supervising Agency: County of Orange EMA

Emissions Reduction Quantification

Emissions calculations and the corresponding ambient air quality impact assessment for project-related construction and Saddleback Meadows operations presumed compliance with SCAQMD rules regarding dust control. The potential for additional emissions reduction beyond the mandatory requirements of existing rules and regulations was evaluated based on Appendix 11 of the SCAQMD Air Quality Handbook which quantifies reduction potential of a variety of project construction and operation emissions control measures.

Table 6 shows the emission reduction estimate for the menu of recommended measures for the proposed project. Dust emissions can be controlled from their 50 percent control assumed for Rule 403 compliance by an additional 50-80 percent of the uncontrolled fraction. The net effective dust control level is therefore 75-90 percent, seen as follows.

$$\text{Control} = 0.50 + (0.50 - 0.80) \times (0.50)$$

$$= \text{Rule 403} + \text{Add'l. Control X Not Contr.}$$

$$= 0.50 + (0.25 - 0.40)$$

$$= 0.75 - 0.90$$

TABLE 6

MITIGATION EFFECTIVENESS ESTIMATE

	Pollutant Control	
Construction Measures	Particulates	Gaseous
Rule 403 Additional Measures	25-40%	---
High Wind Response Plan	NQ	NQ
Off-Site Dirt Deposition Control	5-10%	---
Covered Trucks or Watered Loads	5%	---
Construction Mgmt. Procedures	---	10%
Surface Stabilization	10-20%	---
Equipment Tune-ups	5%	10%
Traffic Interference Minimization	---	5%
Composite:	50-80%	25%
Operational Measures:		
Congestion Management	5%	5%
Electric Vehicle Access	NQ	NQ
Composite:	5%	5%

--- = minimal reduction

NQ = not quantified. Compliance with regulations already presumed in the impact analysis and generates no new reduction.

For purposes of analysis, an 80 percent control was assumed, and the size of the simultaneous grading area was presumed to not exceed 14 acres. Unless the entire project site is under simultaneous massive grading, attaining the optimum level of dust control will maintain dust impacts at less than significant levels.

Alternatives

Lesser intensity alternatives have been considered for the project site. Air quality impacts from the proposed project at 299 dwelling units were not found significant except for construction dust emissions. Adoption of a lesser intensity development would therefore not reduce any significant impacts to less than significant.

Air quality occurs mainly within a regional context. The air quality impact from lesser intensity alternatives may therefore not necessarily be environmentally preferred for the following reasons:

a. The same level of growth is likely to occur at some other Orange County location with similar impacts.

b. Transportation corridor access for goods and services may be less adequate at another location.

c. Development of this site is a natural expansion of already completed developments at Hidden Hills, Portola Hills or Foothill Ranch.

REFERENCES:

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California Dept. of Transportation (Caltrans), 1988: Air Quality Technical Analysis Notes (AQTAN).

South Coast AQMD, 1993: CEQA Air Quality Handbook.

U.S. environmental Protection Agency, 1995: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition.

APPENDIX

URBEMIS7G COMPUTER MODEL OUTPUT

Project Year: 2003

URBEMIS 7G For Windows 5.1.0

ile Name: <Not Saved>
roject Name: Saddleback Meadows
roject Location: South Coast Air Basin (Los Angeles area)

SUMMARY REPORT
(Pounds/Day - Summer)

ONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	PM10	SOX
TOTALS(lbs/day,unmitigated)	1,171.19	2.77	4.74	0.49	0.00
TOTALS (lbs/day, mitigated)	1,171.19	2.77	4.74	0.49	0.00

REA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	PM10	SOX
TOTALS(lbs/day,unmitigated)	15.51	3.80	6.52	0.02	0.15
TOTALS (lbs/day, mitigated)	15.51	3.80	6.52	0.02	0.15

PERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	PM10
TOTALS (ppd, unmitigated)	38.33	41.01	277.97	25.68
TOTALS (ppd, mitigated)	38.33	41.01	277.97	25.68

URBEMIS 7G For Windows 5.1.0

ile Name: <Not Saved>
oject Name: Saddleback Meadows
oject Location: South Coast Air Basin (Los Angeles area)

DETAIL REPORT
(Pounds/Day - Summer)

otal Land Use Area to be Developed (Estimated): 60 acres
etail/Office/Institutional Square Footage: 0
ngle Family Units: 299 Multi-family Units: 0

ONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10	SOX
emolition	-	-	-	0.00	-
te Grading	0.00	0.00	-	0.00	0.00
Const. Worker Trips	1.77	2.50	4.74	0.48	-
Stationary Equip	0.34	0.27	-	0.02	0.00
bile Equip. - Gas	0.00	0.00	-	0.00	0.00
bile Equip. - Diesel	0.00	0.00	-	0.00	0.00
Architectural Coatings	1,168.83	-	-	-	-
Asphalt Offgassing	0.26	-	-	-	-
OTALS(lbs/day,unmitigated)	1,171.19	2.77	4.74	0.49	0.00

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	PM10	SOX
Natural Gas	0.29	3.75	1.59	0.01	-
Wood Stoves - No summer emissions					
Fireplaces - No summer emissions					
Landscaping	0.59	0.05	4.93	0.01	0.15
Consumer Prdcts	14.63	-	-	-	-
TOTALS(lbs/day,unmitigated)	15.51	3.80	6.52	0.02	0.15

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	PM10
Single family housing	38.33	41.01	277.97	25.68
TOTAL EMISSIONS (lbs/day)	38.33	41.01	277.97	25.68

Includes correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2003 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	12.00 trips / dwelling units	299.00	3,588.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	75.00	1.16	98.58	0.26
Light Duty Trucks	20.00	0.13	99.54	0.33
Medium Duty Trucks	2.00	1.44	98.56	-
Lite-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	0.00	19.56	40.00	40.44
Heavy-Heavy Trucks	0.00	-	-	100.00
Urban Buses	1.00	-	-	100.00
Motorcycles	1.00	100.00% all fuels		

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

APPENDIX H

NOISE TECHNICAL REPORT

Giroux & Associates
Environmental Consultants

NOISE IMPACT ANALYSIS

SADDLEBACK MEADOWS (TT 10692)

ORANGE COUNTY, CALIFORNIA

Prepared for:

HDR/Urban Vision
Attn: Deanna Hansen
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Date:

February 11, 2002

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NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally described as unwanted sound. Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Several rating scales have been developed for the analysis of adverse effects of community noise on human beings. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. Upon this premise, a number of noise scales have been developed including the Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL).

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time varying signal over a given sample period. LEQ is the "energy" average noise level. CNEL is similar to LEQ but is based on a 24 hour period, and applies a time-weighting factor that places greater significance on noise events occurring during the evening and night hours (when sleep disturbance is a concern). "Time-weighted" refers to the fact that noise occurring during certain sensitive time periods is penalized for occurring at these times. The evening period (7 p.m. to 10 p.m.) penalizes noises by 5 dB, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dB. The CNEL scale is specified by the County of Orange for community noise analysis.

An interior CNEL of 45 dB(A) has been required by the State noise insulation standards (Title 24 of the California Code of Regulations) for all multiple family dwelling units and hotel/motel rooms since 1974. In 1988, the State Building Standards Commission expanded that standard to include all habitable rooms, including single family or low density residential uses. All development in close proximity to automotive traffic, rail, or industrial noise sources with baseline levels exceeding 60 dB CNEL must undergo an analysis to verify that the 45 dB interior standard is attainable.

Exterior to interior noise attenuation is typically 20 dB for all windows closed. A 65 dB CNEL exterior noise exposure thus generally allows the 45 dB CNEL interior standard to be met as long as windows can normally be closed to shut out the noise. A level of 65 dB is also the threshold where noise begins to intrude

significantly into normal activities such as having a conversation. Although people may express annoyance if traffic noise levels in usable exterior space such as yards, patios, porches, etc. are below 65 dB, the percentage of "highly annoyed" people increases dramatically when noise exceeds 65 dB.

Noise/land use compatibility standards for various classes of land uses are generally expressed in the Noise Element of the General Plan to insure that noise exposure is considered in any development decisions. Local noise suitability criteria are based on State model guidelines shown in Figure 1.

Figure 1 contains four classes of acceptability and has a number of overlapping compatibility noise levels within several criteria. In order to reduce the potential ambiguity of various conditional acceptabilities, Orange County developed a more clear-cut matrix of acceptable noise levels shown in Table 1 and explained in Table 2.

Noise standards for residential projects such as Saddleback Meadows are as follows:

Exterior Level	Requirement
<60 dB CNEL	None
60-65 dB CNEL	Indoor Level <45 dB CNEL
>65 dB CNEL	Outdoor Level Mitigated to <65 dB CNEL Indoor Level <45 dB CNEL

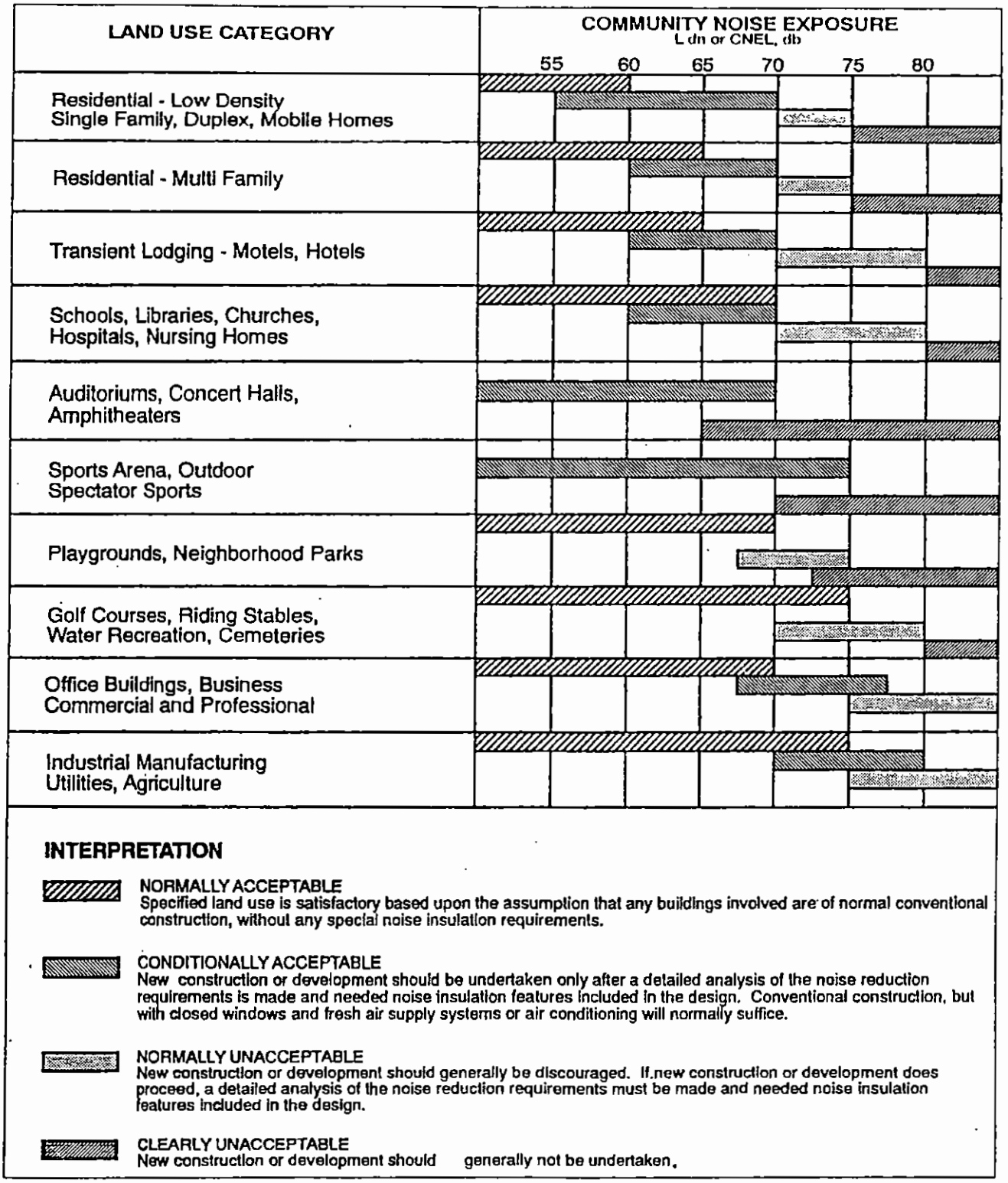
Baseline Noise Levels

Existing noise levels on the project site are normally low except in close proximity to El Toro Road. Prior to the closing of the El Toro Marine Corps Air Station, periods of quiet had been interspersed with occasionally noisy periods of aircraft overflights. Currently, the former air base sits idle, while concerns for its re-use are debated by the public, the politicians, and the courts.

The project site is located near one of the former primary landing/ takeoff routes from El Toro MCAS. Aircraft above the site, however, had flown sufficiently high such that the noise exposure had been only marginally degraded. The site is traversed by the 60 CNEL contour in the El Toro noise footprint shown in the Orange County Noise Element as determined in the 1981 El Toro MCAS Air Installation Compatible Use Zone (AICUZ) study. The 60 dB

FIGURE 1

Land Use Compatibility for Community Noise Environments



SOURCE: State of California, Governor's Office of Planning and Research, *General Plan Guidelines*, 1990

TABLE 1

COMPATIBILITY MATRIX FOR ORANGE COUNTY LAND USES AND COMMUNITY NOISE EQUIVALENT LEVELS (CNEL)

Type of Use	65+ dB CNEL	60-65 dB CNEL
Residential	3a, b, e	2a, e
Commercial	2c	2c
Employment	2c	2c
Open Space		
Local	2c	2c
Community	2c	2c
Regional	2c	2c
Educational Facilities		
School (K through 12)	2c, d, e	2c, d, e
Preschool, college, other	2c, d, e	2c, d, e
Places of Worship	2c, d, e	2c, d, e
Hospitals		
General	2a, c, d, e	2a, c, d, e
Convalescent	2a, c, d, e	2a, c, d, e
Group Quarters	1a, b, c, e	2a, c, e
Hotels/Motels	2a, c	2a, c
Accessory Uses		
Executive Apartments	1a, b, e	2a, e
Caretakers	1a, b, c, e	2a, c, e

TABLE 2

EXPLANATION AND DEFINITIONS ON TABLE 1

Action Required to Ensure Compatibility Between Land Use and Noise from External Sources

1. Allowed if interior and exterior community noise levels can be mitigated.

2. Allowed if interior levels can be mitigated.

3. New residential uses are prohibited in areas within the 65-decibel CNEL contour from any airport or air station; allowed in other areas if interior and exterior community noise levels can be mitigated. The prohibition against new residential development excludes limited "in-fill" development within an established neighborhood.

Standards Required for Compatibility of Land Use and Noise

a. Interior Standard: CNEL of less than 45-decibels (habitable rooms only)

b. Exterior Standard: CNEL of less than 65-decibels in outdoor living areas

c. Interior Standard: LEQ(h) = 45 to 65 decibels interior noise level, depending on interior use

TYPICAL USE	LEQ(h)
Private Office, Church Sanctuary, College, Preschool, Schools (Grade K-12), Board Room, Conference Room, etc.	45
General office, Reception, Clerical, etc.	50
Schools (Grades K-12)	52
Bank Lobby, Retail Store, Restaurant, Typing Pool, etc.	55
Manufacturing, Kitchen, Warehousing, etc.	65

d. Exterior standard: LEQ(h) of less than 65 decibels in outdoor living areas.

e. Interior Standard: As approved by the Board of Supervisors for sound events of short duration such as aircraft fly-overs or individual passing railroad trains.

contour just touches a few lots in the southwestern corner of the project site. Almost all developed lots are outside the 60 dB CNEL contour. However, County policy relative to aircraft noise exposure is to use the highest exposure anywhere on the property as the noise reference level. At the property line adjacent to Valley Vista Way in an area of proposed commercial development, the maximum EL Toro MCAS noise exposure had been 62 dB CNEL. To be consistent with County policy, this level was thus used as an impact evaluation/mitigation criterion with the understanding that its use is overpredictive to varying degrees across the project site. A preliminary noise impact analysis for the proposed conversion of MCAS El Toro to a civilian airport predicted a noise contour pattern across the project site almost identical to the former military aviation pattern.

If it is determined that the former Marine air station eventually be developed as a commercial airport, the constraints imposed by the existing adopted noise footprint would remain unchanged. However, even if there is a commercial airport developed on the base site, there is no guarantee at this time that the previous runways and flight patterns would be used. It is also possible that the base could see development as an educational facility, an urban park, a commercial development, or a multitude of mixed uses. Nothing has been proposed that would exceed the noise level of an airport. Therefore, noise assumptions for a nearby airport could be considered as a worst-case scenario for this site.

In order to characterize existing project site noise levels, a brief noise measurement program was undertaken on February 11, 2002. Noise levels were measured for 30-minute periods near El Toro Road, and again near the caretaker's trailer by the cattle corral.

Noise measurements were somewhat affected by strong winds, but they show that there has been a steady increase in noise levels since previous measurements were made along El Toro Road in 1995 during earlier project environmental analyses. The most current noise levels, compared to those measured in 1995, are as follows:

	50' TO EL TORO RD.		CATTLE CORRAL	
Parameter	1995	2002	1995	2002
LEQ	67.8	70.4	62.4	62.8
Lmax	86.5	87.5	86.5	82.5
Lmin	38.0	42.0	39.0	38.0
L10	71.0	72.5	55.5	56.0
L50	59.5	69.5*	46.0	48.5*
L90	43.5	65.0*	42.5	47.0*

* = probable wind noise contamination.

Whereas the on-site noise has not changed measurably in seven years, the average roadway noise has increased by 2-3 dB. An increase of +1.5 dB is the margin of detectability under laboratory conditions. Increases of +3 dB are considered clearly perceptible even under ambient conditions. Noise levels near El Toro Road have therefore increased by an amount that is detectable/perceptible, but not at a significant amount.

The above data are short-term measurements while the Orange County noise/land use standard is based upon a weighted 24-hour average (CNEL). Measurement experience has shown, however, that mid-afternoon LEQ and 24-hour CNEL are relatively equal. The above data show that existing noise levels close to El Toro Road exceed the 65 dB CNEL level considered acceptable for noise-sensitive land uses unless mitigation is used to protect habitable outdoor space. Noise levels are not so high, however, such that the combination of increased setback and/or perimeter barriers (noise walls) would not achieve an acceptable noise environment with a substantial margin of safety.

NOISE IMPACTS

Three noise concerns are typically identified with land use intensification such as that proposed for the project area. Construction activities, especially heavy equipment, will create short-term noise increases near the project site. Upon completion, project-related traffic will cause an incremental increase in areawide noise levels throughout the El Toro area. Since, however, the number of trips generated by the proposed project is limited, the impact of ambient noise on the project site, rather than project traffic noise impacts on the rest of the community, is likely the important noise environment concern.

Residential activity generally creates minimal noise that is considered unacceptable unless the activity is unlawful (loud late-night parties, music practice or high volume speakers, excessive dog barking, etc.). Off-site religious facility uses are very noise sensitive, but if "normal" residential activity noise does not excessively disturb the next-door neighbor, it will not disturb religious contemplative activities a much farther distance away.

Standards of Significance

CEQA Guidelines identify significant impacts as those that cause standards to be exceeded where they are currently met. An impact is also considered significant if it "substantially" worsens an existing unacceptable noise environment.

"Substantially" is not defined in any guidelines. The accuracy of sound level meters and of sound propagation computer models is no better than ± 1 dB. This is also the human loudness difference discrimination level under ideal laboratory conditions. Most people cannot distinguish a change in the noise environment that differs by less than 3 dB between the pre- and post-project exposure if the change occurs under ambient conditions. For the purposes of this analysis, an increase of 3 dB which creates or worsens an area of noise/land use incompatibility would be considered a significant degradation of noise quality.

Construction Noise Impacts

Temporary construction noise impacts will vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by site clearing and grading, then by foundation construction, and finally for finish construction. The

earth-moving (grading) activities are seen in Figure 2 to be the noisiest sources during construction with equipment noise ranging from 75 to 90 dB(A) at 50 feet from the source. The range of noise levels shown in Figure 2 is meant to indicate that long-term (hourly or more) noise levels are at the lower end of the range, while short-term peaks are at the upper end.

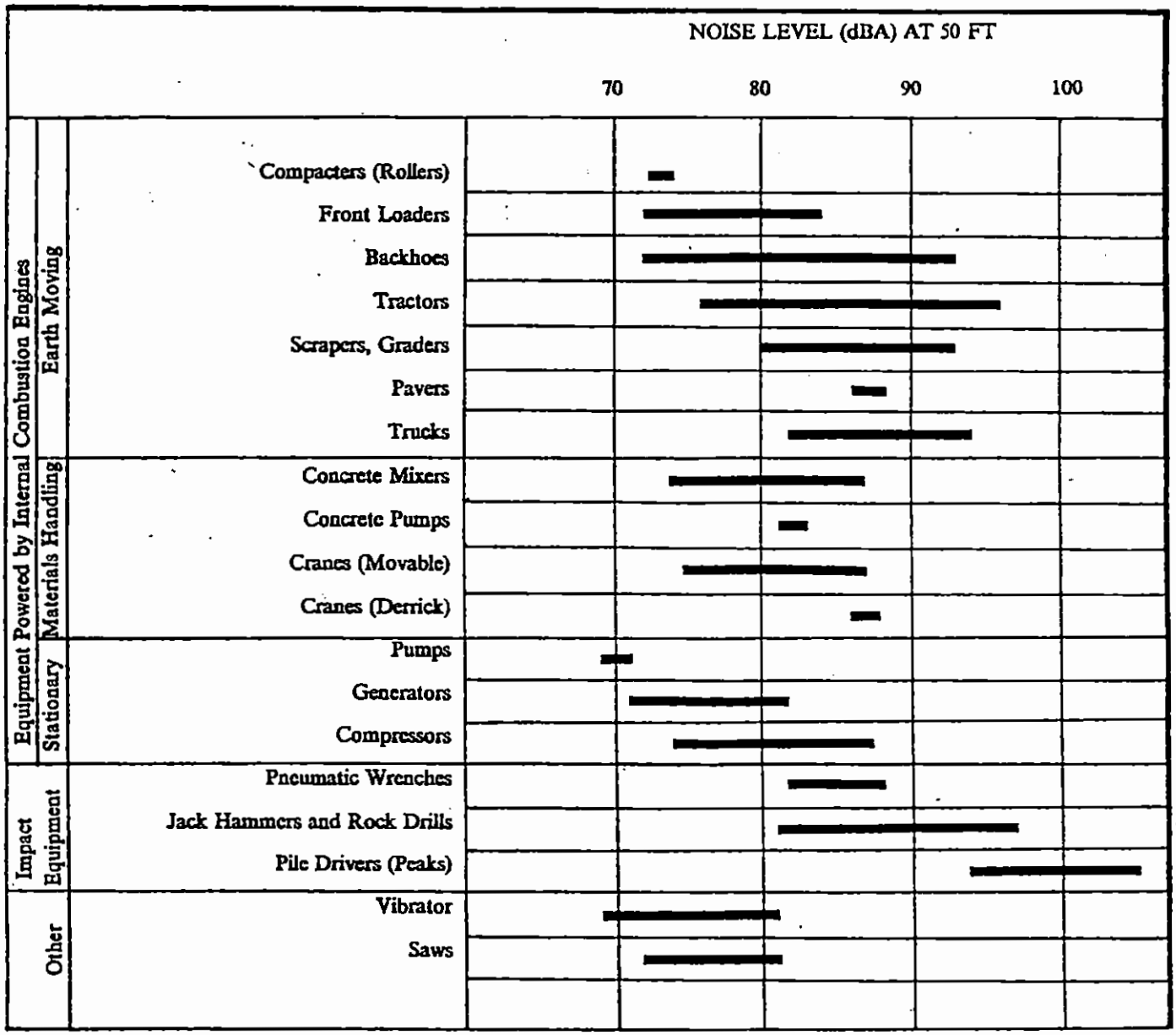
Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. The quieter construction noise sources will, therefore, drop below 60 dB by about 300 feet from the source, while the loudest sources might still be detectable above the local background beyond 1,000' from the construction area. With hilly topography in the project vicinity, the terrain shielding effects will limit the "noise envelope" around each construction site to considerably less than its theoretical maximum.

Construction noise sources are not strictly relatable to a noise standard because they occur only during selected times and the source strength varies sharply with time. The penalty associated with noise disturbance during quiet hours and the nuisance factor accompanying such disturbance usually leads to time limits on grading activities imposed as conditions on grading permits. The weekday (including Saturday) hours from 7 a.m. to 8 p.m. are the times allowed in the Orange County Noise Ordinance for construction or grading. Division 6 (Sec. 4-6-1, et seq.) of the County Code also contains standard requirements related to the distance separation between construction activities and any occupied dwellings. EMA's "Standard Condition for Approval" N10 requires:

1. All powered equipment operating within 1,000 feet of a dwelling must have a properly operating and maintained muffler.

2. Stockpiling and staging activities must be located as far as practicable from dwellings.

Construction activities in areas of noise-sensitive biotic habitats such as coastal sage scrub containing gnatcatchers may affect bird behavior. Little actual evidence of noise effects on gnatcatchers has been documented, but many wildlife management agencies believe such effects exist. In San Diego County, a standard of 60 dB Leq (one hour average) derived from studies on least Bell's vireo has been applied to gnatcatchers. Use of this standard ignores the fact that a large number of successful breeding pairs have been found directly under the take-off end of major airport runways or next to freeways where peak hourly noise levels reach almost 80 dB. Many grading projects have nevertheless been conditioned to avoid the breeding season for possibly noise-sensitive birds, or to erect temporary berms or other buffers to reduce avian noise exposure if



Source: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

TYPICAL CONSTRUCTION EQUIPMENT
NOISE GENERATION LEVELS

FIGURE
2

seasonal avoidance is not practical. Wildlife agencies require construction activity noise monitoring during nesting/breeding seasons to verify the efficacy of noise mitigation to maintain levels at 60 dB Leq or less.

Contemplative off-site religious facilities would similarly be potentially affected by construction equipment noise. However, the maximum single-event equipment noise will be lower in magnitude than the single-event aircraft noise experienced for many years during the operational history of the airbase. Any noise impacts due to construction equipment would thus be considered adverse, but less than significant, to adjacent religious retreat facilities.

Development-Related Vehicular Noise Impacts

Off-Site Noise Levels

Long term noise concerns from the increased urbanization of the project area center primarily on mobile source emissions surrounding the project site. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal highway noise prediction model (FHWA-RD-77-108) in a computerized version of the model developed by Caltrans. The model calculates the Leq noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.

Project-related traffic may incrementally contribute to the noise exposure of off-site receiver locations. Of the 3590 daily project-generated trips, 75% will travel south on El Toro Road, while the other 25% will travel inland. At each subsequent turning opportunity, fractions of each traffic stream will split into different directions and thus dilute any off-site project traffic noise impact. The CNEL at 100 feet from area roadways for various scenarios is shown in Table 3.

In areas of greater concentration of site-related traffic, high non-project traffic levels will substantially mask any small project noise contribution. Any detectable project-related noise increases would only occur in areas of low baseline traffic volumes. The maximum project-related traffic noise impact (difference between existing-with project versus existing-no project) of 1.3 dB will occur along El Toro Road at the Site Entrance. This is not a perceptible noise increase. By the year 2005, the project-related traffic noise increase will be less than one decibel because of the increase of noise generated by predicted growth in the area. This increase of <1 dB will not be perceptible even for sensitive receivers. By 2025, the project contribution to the El Toro Road traffic noise environment will be 0.6 dB or less.

TABLE 3

TRAFFIC NOISE IMPACT ANALYSIS
(CNEL (dB[A]) at 100' to roadway centerline)

	<----- 2002 ----->		< ---- 2005 ---- >		< ----- 2025 ----->	
Roadway/Segment	Exist.	Plus Project	No Proj.	Plus Proj.	No Proj.	Plus Proj.
Modjeska Canyon Road:						
East of Santiago Canyon Road	53.3	53.3	53.7	53.7	56.9	56.9
Live Oak Canyon Road:						
East of El Toro Road	58.1	58.1	62.4	62.4	60.8	60.9
Site Entrance:						
East of El Toro Road	NA	58.9	NA	58.9	NA	58.9
Valley Vista Way:						
East of El Toro Road	55.9	55.9	57.4	57.4	61.6	61.6
Glenn Ranch Road:						
Portola Parkway - Saddleback Ranch Road	63.8	64.3	64.6	64.9	68.9	69.0
Saddleback Ranch Road - El Toro Road	60.3	61.3	61.6	62.4	63.9	64.4
Portola Parkway:						
North of Glenn Ranch Road	69.3	69.4	69.8	69.9	69.8	69.9
Glenn Ranch Road - Foothill Transp. Corr.	67.3	67.3	67.8	67.8	69.3	69.4
Foothill Transp. Corr. - El Toro Road	68.1	68.2	68.7	68.7	70.6	70.7
Santa Margarita Parkway:						
South of El Toro Road	68.1	68.2	68.7	68.7	71.5	71.5
Marguerite Parkway:						
South of El Toro Road	63.2	63.4	63.8	63.9	63.9	64.1
Santiago Canyon Road:						
North of Modjeska Canyon Road	60.5	61.1	61.8	62.2	66.4	66.6
Modjeska Canyon Road - Ridgeline Road	60.9	61.4	62.4	62.7	65.7	65.9
Ridgeline Road - Live Oak Canyon Road	60.9	61.4	62.7	63.1	65.2	65.4

TABLE 3
Page Two

Roadway/Segment	2002 Exist.	2002 Plus Project	2005 No Proj.	2005 Plus Proj.	2025 No Proj.	2025 Plus w/Proj.
Saddleback Ranch Road:						
Ridgeline Road - Glenn Ranch Road	64.5	64.5	65.0	65.0	66.8	66.8
Ridgeline Road:						
Santiago Canyon Rd. - Saddleback Ranch Rd.	55.3	55.3	57.4	57.4	57.4	57.4
Saddleback Ranch Rd. - El Toro Road	57.4	57.8	57.8	60.1	60.8	60.9
El Toro Road:						
Live Oak Canyon Road - Ridgeline Road	61.9	62.3	64.3	64.5	65.2	65.4
Ridgeline Road - Site Entrance	62.0	62.5	63.7	64.0	65.9	66.1
Site Entrance - Valley Vista Way	62.0	63.3	63.7	64.6	66.5	65.9
Valley Vista Way - Glenn Ranch Road	62.5	63.8	63.9	64.8	66.5	67.0
Glenn Ranch Road - Foothill Transp. Corr.	63.0	63.6	63.9	64.4	66.3	66.6
Foothill Transp. Corr. - Portola Parkway	63.7	64.0	64.4	64.7	64.4	64.7
South of Portola Parkway	67.9	68.0	68.4	68.5	69.6	69.6

N/A = no data available Source: FHWA-RD-77-108 (Calveno mod.)

Maximum off-site traffic noise impacts in areas of already elevated non-project traffic noise are 1 dB or less. Noise level differences of less than 1 dB are not distinguishable even in a laboratory setting -- much less in an ambient environment. Maximum expansion of the 65 dB CNEL contour is seen in Table 4 to occur along El Toro Road directly adjacent to the project site. An increase of 15 feet in contour distance occurs for "plus project versus existing" scenarios. Away from the project site with dilution of project-related traffic, the project-related increment drops steadily to 10-foot, then a 5-foot, and quickly to an immeasurably small increase. A maximum +10-foot increment in the 65 dB CNEL contour distance is seen in future years as the project increment is masked by a rising background level. The project is too limited in scope to create a discernible change in off-site traffic noise levels. The noise impact of the project on the ambient acoustic environment is judged to be less than significant.

On-Site Noise Exposure

The roadway that could affect project on-site noise exposure is El Toro Road. At the maximally exposed lot at around 300 feet from El Toro Road, the traffic noise level will be 61.5 dB CNEL at area buildout for an acoustically "hard" underlying surface. The presumed aircraft noise contribution at this location is 60 dB CNEL for a worst-case assumption of a civilian airport. Their combined exposure is 64 dB CNEL. This meets the Orange County exterior noise standard for residential use and requires no exterior noise mitigation. This calculation is a theoretical worst-case condition that assumes:

1. The maximally exposed residence in the year 2025 has a 180 degree field of view of El Toro Road without terrain irregularities or any vegetative noise absorption, and,

2. Possible future aircraft noise in 2025 is characterized by El Toro MCAS aircraft mixes and operational conditions that existed almost twenty (20) years before today.

Both assumptions probably somewhat overstate horizon year noise exposures. There is likely an extra margin of safety relative to meeting the 65 dB CNEL exterior standard without any supplemental noise mitigation.

Mitigation in the form of exterior to interior noise attenuation will be required to meet the 45 dB CNEL interior standard for all units within the development since a maximum 60 dB CNEL aircraft noise contour will cover the project site if a commercial airport is eventually developed at the MCAS site. With open windows, exterior to interior noise reduction is approximately 12 dB. Any

TABLE 4

TRAFFIC NOISE IMPACT ANALYSIS
(Distance from Centerline to 65 dB CNEL Contour in Feet)

	<----- 2002 ----->		< ---- 2005 ---- >		< ----- 2025 ----->	
Roadway/Segment	Exist.	Plus Project	No Proj.	Plus Proj.	No Proj.	Plus w/Proj.
Modjeska Canyon Road:						
East of Santiago Canyon Road	<50	<50	<50	<50	<50	<50
Live Oak Canyon Road:						
East of El Toro Road	<50	<50	65	65	65	65
Site Entrance:						
East of El Toro Road	NA	<50	NA	<50	NA	<50
Valley Vista Way:						
East of El Toro Road	<50	<50	<50	<50	60	60
Glenn Ranch Road:						
Portola Parkway - Saddleback Ranch Road	85	90	95	100	180	185
Saddleback Ranch Road - El Toro Road	50	55	60	65	85	90
Portola Parkway:						
North of Glenn Ranch Road	195	195	210	210	210	210
Glenn Ranch Road - Foothill Transp. Corr.	140	140	155	155	195	195
Foothill Transp. Corr. - El Toro Road	160	160	175	175	240	240
Santa Margarita Parkway:						
South of El Toro Road	160	160	175	175	270	275
Marguerite Parkway:						
South of El Toro Road	75	80	85	85	85	85
Santiago Canyon Road:						
North of Modjeska Canyon Road	50	55	60	65	125	130
Modjeska Canyon Road - Ridgeline Road	55	60	65	70	110	115
Ridgeline Road - Live Oak Canyon Road	55	55	70	75	105	105

TABLE 4
Page Two

Roadway/Segment	2002 Exist.	2002 Plus Project	2005 No Proj.	2005 Plus Proj.	2025 No Proj.	2025 Plus w/Proj.
Saddleback Ranch Road:						
Ridgeline Road - Glenn Ranch Road	95	95	100	100	130	130
Ridgeline Road:						
Santiago Canyon Rd. - Saddleback Ranch Rd.	<50	<50	<50	<50	<50	<50
Saddleback Ranch Rd. - El Toro Road	<50	<50	<50	50	50	55
El Toro Road:						
Live Oak Canyon Road - Ridgeline Road	60	65	90	95	105	105
Ridgeline Road - Site Entrance	65	70	80	85	115	120
Site Entrance - Valley Vista Way	65	80	80	95	115	125
Valley Vista Way - Glenn Ranch Road	70	85	85	95	125	135
Glenn Ranch Road - Foothill Transp. Corr.	75	80	85	90	125	130
Foothill Transp. Corr. - Portola Parkway	80	85	90	95	90	95
South of Portola Parkway	155	155	170	170	200	205

N/A = no data available Source: FHWA-RD-77-108 (Calveno mod.)

project site exposure exceeding 57 dB CNEL can not meet the 45 dB CNEL interior standard. Meeting the interior standard thus requires the option to close the window. Such ability, in turn, requires that there is supplemental mechanical ventilation to replace the natural draft eliminated by such closure. For new homes in inland valleys of Orange County, air conditioning is normally a standard feature meeting this requirement.

Noise reduction of 20 dB is normally attainable with closed single-paned windows. That would reduce any aircraft-related CNEL from 60 to 40 dB. As previously noted, however, CNEL is not the best predictor of noise annoyance due to single event phenomena such as individual overflights. Peak noise levels from aircraft takeoffs would be 85 dB within the project site. A 20 dB attenuation would create a 65+ dB single event level that may be annoying to occupants even with windows closed. Most new developments within the fringes of an aircraft noise impact envelope have been built with acoustically enhanced windows. Such windows reduce single event noise, reduce vibration response (rattle) to aircraft noise often found in single-pane windows and are more energy efficient. Use of windows rated with a sound transmission class (STC) of 25 or better is therefore recommended to reduce noise annoyance potential from single events.

Residential activities may affect adjacent noise-sensitive land uses such as contemplative religious facilities. In the past, these facilities had been exposed to single event aircraft noise that was much louder than a distant barking dog, lawnmower, or auto horn associated with project residential use. The combination of irregular terrain, distance buffering and normally quiet residential activities are not expected to create a significant noise impact on any adjacent abbey or monastery uses.

NOISE IMPACT MITIGATION

The project noise impact study indicates a less than significant noise impact from project-related traffic on project vicinity receptors. Ambient noise levels were also shown to present no development constraint as the project site has more than adequate setback from El Toro Road to meet Orange County standards.

Construction activities may create a temporary adverse impact if new construction occurs adjacent to already completed residences. This potential will be minimized by completion of all mass grading before any homes are constructed. Construction noise could adversely affect any sensitive biotic species such as gnatcatchers if such species are present in the project vicinity. Although monitoring in high noise environments has shown gnatcatchers to be less noise-sensitive than sometimes believed, noise protection during construction has been required in some projects. Construction activity mitigation measures recommended for this project thus only include standard County requirements as follows:

- All construction and general maintenance activities, except in an emergency, shall be limited to the hours of 7 a.m. to 8 p.m. Monday through Saturday and should utilize the quietest equipment available.

- All on-site construction equipment should have properly operating mufflers.

- All construction staging areas should be as far away as possible from any surrounding completed development.

If wildlife management agencies require noise protection for noise-sensitive bird species, the following hierarchy of measures would be implemented:

1. Avoidance of noise generation during noise-sensitive nesting/breeding seasons.

2. If avoidance is not possible, maintain an adequate distance buffer and erect temporary barriers (berms, wall, etc.) between the equipment and the habitat.

3. If distance buffers are not feasible, use the quietest possible equipment, monitor daily noise levels, and provide habitat mitigation for any incidental "takes" due to excessive noise.

Single event noise from aircraft would be intrusive in homes with "standard" construction if a civilian airport is developed at El

Toro. Aircraft noise at this time has subsided with the elimination of military aviation in Orange County. Given, however, that a commercial airport could eventually replace the departed military operations, enhanced acoustical window treatment is recommended as follows:

- All operable windows exceeding 6 square feet of total glazing should be rated STC = 25 or greater.

APPENDIX I

BIOLOGICAL REPORTS

APPENDIX I.1

BIOLOGICAL TECHNICAL REPORT

SADDLEBACK MEADOWS

BIOLOGICAL TECHNICAL REPORT

February 19, 2002

Prepared for:

CALIFORNIA QUARTET
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Sacramento, California 95825

Prepared by:

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8100 La Mesa Boulevard, Suite 150
La Mesa, California 91941-6476

Saddleback Meadows
Biological Technical Report

TABLE OF CONTENTS

Section	Title	Page
ES	EXECUTIVE SUMMARY	ES-1
1.0	INTRODUCTION	1
2.0	PHYSICAL DESCRIPTION AND LAND USE	1
3.0	METHODS	2
4.0	RESULTS	3
	4.1 Vegetation/Habitat Types	3
	4.1.1 Riparian/Wetland/Open Water	3
	4.1.1.1 Southern Sycamore Riparian Woodlands	3
	4.1.1.2 Mule Fat Scrub	4
	4.1.1.3 Ephemeral Ponds	4
	4.1.2 Upland Habitats	4
	4.1.2.1 Venturan-Diegan Transition Coastal Sage Scrub (including disturbed)	4
	4.1.2.2 Coast Live Oak Woodlands	5
	4.1.2.3 Southern Mixed Chaparral	5
	4.1.3 Other Upland Areas	5
	4.1.3.1 Annual Grassland	5
	4.1.3.2 Agricultural	5
	4.1.3.3 Ornamental	5
	4.2 Plant Species Observed On Site	6
	4.3 Animal Species Observed On Site	6
	4.3.1 Invertebrates	6
	4.3.2 Vertebrates	6
	4.3.2.1 Amphibians	6
	4.3.2.2 Reptiles	6
	4.3.2.3 Birds	7
	4.3.2.4 Mammals	7
5.0	SENSITIVE RESOURCES	7
	5.1 Sensitive Vegetation Communities/Habitats	7
	5.2 Sensitive Plant Species Observed On Site	7
	5.3 Sensitive Plant Species with the Potential to Occur On Site	8
	5.4 Sensitive Animal Species Observed On Site	8
	5.5 Sensitive Animal Species with the Potential to Occur On Site	11
6.0	REGIONAL AND REGULATORY CONTEXT	13
	6.1 Habitat Connectivity and Corridor Issues	14
	6.2 Regulatory Issues	14
	6.2.1 U.S. Army Corps of Engineers and California Department of Fish and Game Jurisdictional Areas	14
	6.2.2 Endangered Species Act	15
7.0	IMPACTS	15
	7.1 Direct Impacts	15
	7.1.1 Sensitive Vegetation Communities/Habitats	15
	7.1.1.1 Wetland Habitats	15
	7.1.1.2 Upland Habitats	16
	7.2 Indirect Impacts	17

TABLE OF CONTENTS (cont.)

Section	Title	Page
8.0	MITIGATION	17
	8.1 Mitigation for Direct Impacts	18
	8.1.1 Wetland/Riparian/Streambed/Open Water Habitats	18
	8.1.1.1 Wetland Mitigation	18
	8.1.1.2 Upland Mitigation	19
	8.1.1.3 Sensitive Plants and Animals/Raptor Habitat	20
	8.2 Mitigation for Indirect Impacts	20
9.0	REFERENCES	21

APPENDIX A Plant Species Observed
APPENDIX B Animal Species Observed
APPENDIX C Explanation of Status Codes for Plants and Animals

LIST OF FIGURES

Number	Title	Follows Page
1	Regional Location Map	2
2	Project Vicinity Map	2
3	Vegetation and Sensitive Resources	4
4	Proposed Regional Wildlife Movement Corridors	14
5	Vegetation and Sensitive Resources/Impacts	16
6	Restoration Areas	20
7	Hidden Ranch Vicinity Map	20
8	Hidden Ranch Mitigation Bank Restoration Areas	20
9	Viejo Mitigation Location Map	20

LIST OF TABLES

Number	Title	Page
1	Summary of Vegetation Communities on Saddleback Meadows	3
2	Listed or Sensitive Plant Species with the Potential for Occurrence Within the Saddleback Meadows Site	9
3	Sensitive Animal Species with the Potential for Occurrence Within the Saddleback Meadows Site	11
4	Project Impacts	16
5	Saddleback Meadows Existing Vegetation and Project Impact	17

EXECUTIVE SUMMARY

The 222-acre Saddleback Meadows property is proposed to be developed as a residential community and is located in southeastern Orange County. The project consists of 299 single-family residential lots, access roads, recreational trails, and a 1.4 million gallon water tank on approximately 163.5 acres. This project will include a fire fuel modification zone and the remedial grading needed to correct historic landslides. Development will be concentrated in the north and south sections of the property, avoiding a steep ravine and associated oak woodlands near the center of the property. Following restoration efforts, 94.9 acres will be designated as biological open space. This area will contain coastal sage scrub, coast live oak woodland, mule fat/riparian scrub habitats as well as several ephemeral ponds.

Ten vegetation communities occur on site. Six of the vegetation communities are sensitive: Venturan-Diegan coastal sage scrub (including that which is disturbed), southern mixed chaparral, coast live oak woodland, southern sycamore riparian woodland, mule fat scrub, ephemeral ponds and non-native grassland. The proposed project would significantly impact all of these sensitive vegetation community types.

Three sensitive plant species were observed during the sensitive plant surveys: (1) the intermediate mariposa lily (*Calochortus weedii Hallii*), a Federal Species of Concern (FSOC); (2) Catalina mariposa lily (*Calochortus catalinae*), a California Native Plant Society (CNPS) 4 (watch list) species; and (3) small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*) a CNPS 4 (watch list) species. None of these species is state or federally listed as threatened or endangered.

One federally listed endangered animal species occurs on site: the Riverside fairy shrimp (*Streptocephalus woottoni*). Additionally, four sensitive animal species were observed on site: (1) the western spadefoot toad (*Scaphiopus hammondii*) a FSOC; (2) the orange-throated whiptail (*Cnemidophorus hyperythrus*), a California Species of Concern (CSC); (3) the coastal cactus wren (*Campylorhynchus brunneicapillus couesi*), a CSC; and (4) the Cooper's hawk (*Accipiter cooperii*), a CSC.

A total of 5.28 acres on site fall under the jurisdiction of the U.S. Army Corps of Engineers (ACOE). ACOE jurisdictional areas include approximately 1.67 acres of wetlands 3.61 acres of Waters of the United States. The 1.67 acres of wetlands are composed of 0.48 acre of open water and 1.19 acre of mule fat scrub associated with eight ephemeral ponds and 0.12 acres associated with three drainages (#1-0.01 acre, #14-0.09 acre and #15-0.02 acre) on the property. The 3.61 acres of Other Waters are associated with the ephemeral drainages. California Department of Fish and Game (CDFG) jurisdictional areas total 8.47 acres. Of these areas, approximately 0.34 acres are associated with the ephemeral ponds, 4.32 acres are CDFG wetlands, and 3.58 acres are unvegetated streambeds associated with the drainages. Any alteration to or filling in of ACOE jurisdictional areas would be subject to regulation by the ACOE in the form of a permit pursuant to Section 404 of the Federal Clean Water Act. Section 401 certification from the California Regional Water Quality Control Board is also required. Impacts to CDFG jurisdictional areas would require a Section 1603 Streambed Alteration Agreement.

Impacts to 4.09 acres of CDFG jurisdictional areas (also includes ACOE jurisdictional areas) will be mitigated for by both on and off site mitigation totaling 8.67 acres. This will consist of construction of ephemeral ponds, drainages and mule fat scrub habitat associated with both ponds and drainages. Additionally, the feasibility of on-site mitigation for the ephemeral ponds will be tested prior to project initiation.

Upland habitat mitigation includes both on-site habitat enhancement and restoration and off site habitat acquisition. Impacts to 43.7 acres of coastal sage scrub will be mitigated for by conservation of 23.2 acres onsite, creation and enhancement of 41.7 acres of coastal sage scrub on-site and acquisition of 14.8 acres off-site. Coast live oak woodland will be mitigated for at a ratio of 3:1 for both acreage and trees. A total

of 16.5 acres will be created and 543 coast live oaks (*Quercus agrifolia*) will be planted (13.5 on-site and 3.0 acres off site).

Monitoring during construction adjacent to all habitats that will remain is recommended to avoid indirect impacts. The monitoring would include flagging of sensitive areas, a pre-construction meeting involving the monitor and the construction contractor, and monitoring during construction as necessary to ensure that impacts to sensitive areas are minimized and that corrective measures are taken if necessary.

1.0 INTRODUCTION

This report describes existing biological conditions on the Saddleback Meadows Project (Project) site to provide the project applicant, U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (ACOE), the California Department of Fish and Game (CDFG), County of Orange (County) and the public with current biological data to satisfy the review of the project under the California Environmental Quality Act (CEQA) and other potential regulatory requirements. This report describes the vegetation communities, jurisdictional areas, and wildlife observed, and identifies sensitive and/or significant biological resources on the site and in the off-site grading areas located along the northern and southern boundaries. Project impacts are assessed, and mitigation is proposed to offset the potential significant impacts that would result from the proposed project. Eight project alternatives are also analyzed.

The proposed project consists of 299 single-family residential lots, access roads, recreational trails, and a 1.4 million gallon water tank that will impact approximately 155.5 acres of the 222-acre property on site and an additional 8 acres off site. Development will be concentrated in the north and south sections of the property, avoiding a steep ravine and associated oak woodlands near the center of the property. Following restoration efforts, 94.9 acres will be designated as open space. This area will contain coastal sage scrub, coast live oak woodland, mule fat/riparian scrub habitats as well as several ephemeral ponds. Additionally, open space design will provide for a wildlife corridor through the property that connects off-site open space to the east and west.

The project site is located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains (Figure 1). The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area (Figure 2). The site is located on the U.S. Geological Survey Santiago Peak and El Toro 7.5-minute quadrangles.

2.0 PHYSICAL DESCRIPTION AND LAND USE

The project site is mostly undeveloped and supports native and non-native habitats. The Project site is situated amid the lower, southwestern foothills of the Santa Ana Mountains (Figure 2). The topography on site is hilly with several steep slopes and ravines. Aliso Creek generally follows El Toro Road near the western site boundary. Drainage is to the west into Aliso Creek and to the south into O'Neill Regional Park. The site is currently being used for horse and cattle grazing. Development on site is limited to a small corral in the western portion of the site, remnants of several houses, and a few un-maintained access roads. Surrounding land uses include residential development to the south and west, undeveloped lands to the east and northeast, and Saint Michael's Abbey to the north.

Three large blocks of designated open space occur within the site's vicinity. O'Neill Regional Park abuts the site on the south while the Cleveland National Forest occurs off site to the north and east. Another large block of open space, Whiting Ranch Regional Park, occurs to the west. Part of Whiting Ranch Regional Park lies directly across El Toro Road from the Project site, while the remaining larger block of open space in Whiting Ranch Regional Park is to the west on the opposite side of intervening residential development. Site elevation ranges from 1,000 feet to 1,544 feet above mean sea level.

3.0 METHODS

Biological resource information presented in this report includes results from surveys by Chambers Group in 1998 and 1999 as well as observations from recent field reconnaissance performed by HELIX. Sweetwater Environmental Biologists conducted biological assessments for the property in March 1997 and December 1995, and focused surveys for the coastal California gnatcatcher (*Polioptila californica californica*) in 2001. (Most of the biologists who worked on this project through SEB now work at HELIX.) Additional biological assessments were done in 1989, 1993, and 1994 by Pacific Southwest Biological Surveys (PSBS).

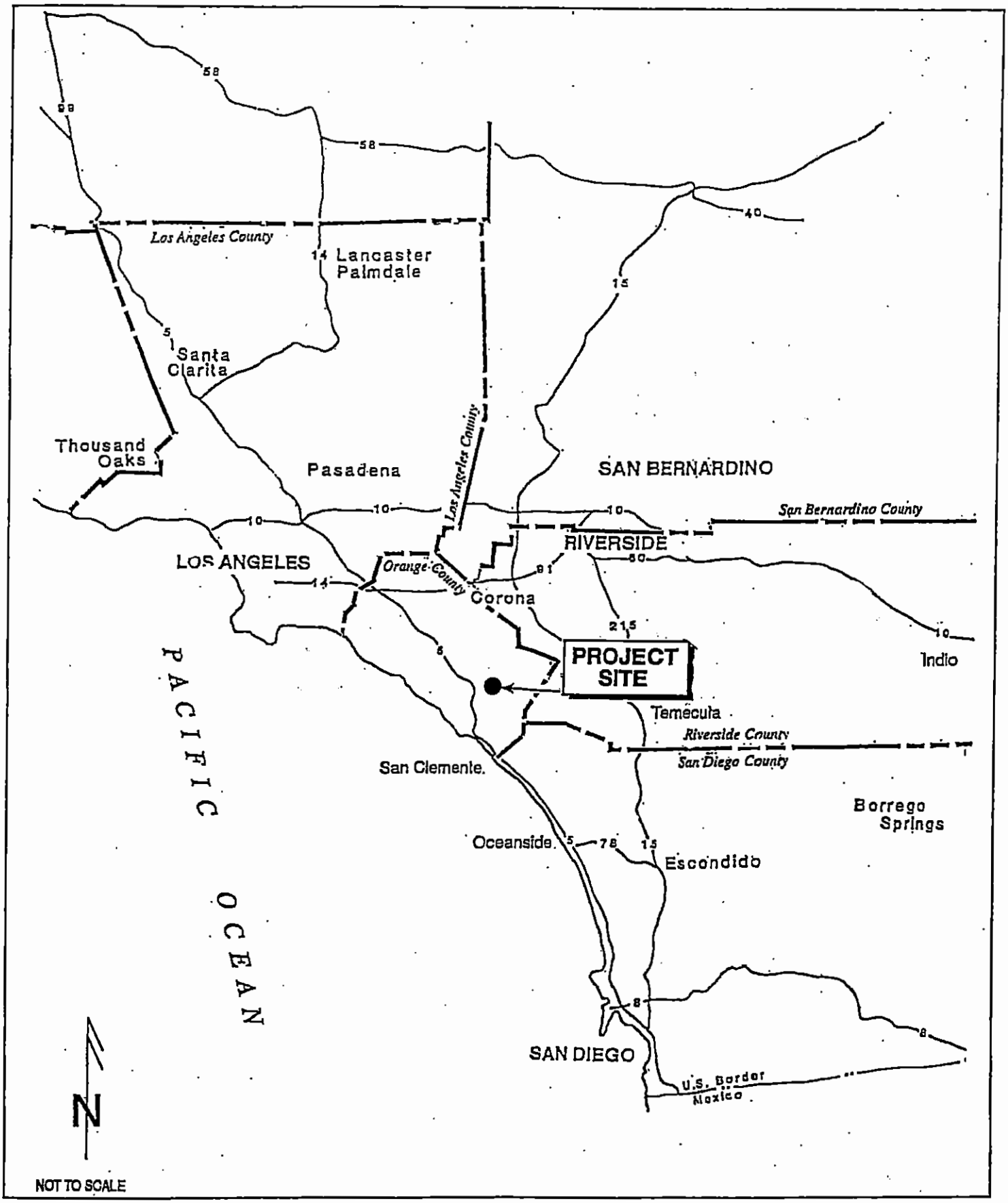
Vegetation mapping and sensitive plant surveys were conducted by Chambers Group in April and June of 1998. Vegetation was mapped on a 1"=100' topographic map. Acreages were calculated using a Geographic Information System (GIS). The list of plants observed by Chambers Group is included as Appendix A. Additionally, an oak inventory was completed in 1994 by PSBS and then updated by SEB in 1995 to assess specific impacts under this revised Project.

Chambers Group conducted wildlife surveys in April and June 1998. Wildlife and wildlife sign, including tracks, fecal material, carcasses, nests, excavations, and vocalizations, were recorded on standardized data sheets. A list of wildlife species detected on the property is included in Appendix B.

Chambers Group conducted focus surveys for the coastal California gnatcatcher and Quino checkerspot butterfly (*Euphydryas editha quino*), and western spadefoot toad (*Scaphiopus hammondii*). Focused surveys for gnatcatchers were conducted on April 15, May 22, 29, June 5, 16, and June 23, 1998 by Mari Schroeder, Christine Mukai, and Michelle Dohrn. These biologists are listed on Chambers Group's Federal Fish and Wildlife Permit (PRT-78127) to conduct coastal California gnatcatcher surveys and USFW survey protocol was followed. Focused surveys for the Quino checkerspot butterfly were conducted in May 1998 and from April through May 1999 by Chrisitne Mukai and assistant Michelle Dohrn of Chambers Group. Both biologists are listed on Chambers Group's Federal Fish and Wildlife Permit (PRT-781217) to conduct Quino checkerspot surveys according to USFWS guidelines (1997). HELIX conducted an additional survey for the coastal California gnatcatcher during June 2001 under their Federal Fish and Wildlife Permit (PRT-TE778195-5). Riverside fairy shrimp (*Streptocephalus woottoni*) were observed in a majority of the ponds by Dr. Marie Simovich. For purposes of this assessment, it is assumed that all of the ponds support Riverside fairy shrimp.

Chambers Group biologists performed a wetland delineation on March 12 and 18, 1999 and October 19, 1999 in accordance with the 1987 U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual (Environmental Laboratory 1987). This delineation took place within the development portion of the site including the remedial grading zone. This delineation was updated in 2001 based on input from the ACOE.

Vegetation community classification follows the County of Orange categories (1994). Latin names of plants follow *The Jepson Manual, Higher Plants of California* (Hickman 1993). Sensitive plant status follows Skinner and Pavlik (1994), CDFG (1994), and USFWS (1990). Animal nomenclature used in this report is taken from Collins (1997) and Stebbins (1985) for reptiles/amphibians; American Ornithologists' Union (1998) for birds; and Jones et. al. (1997) for mammals.

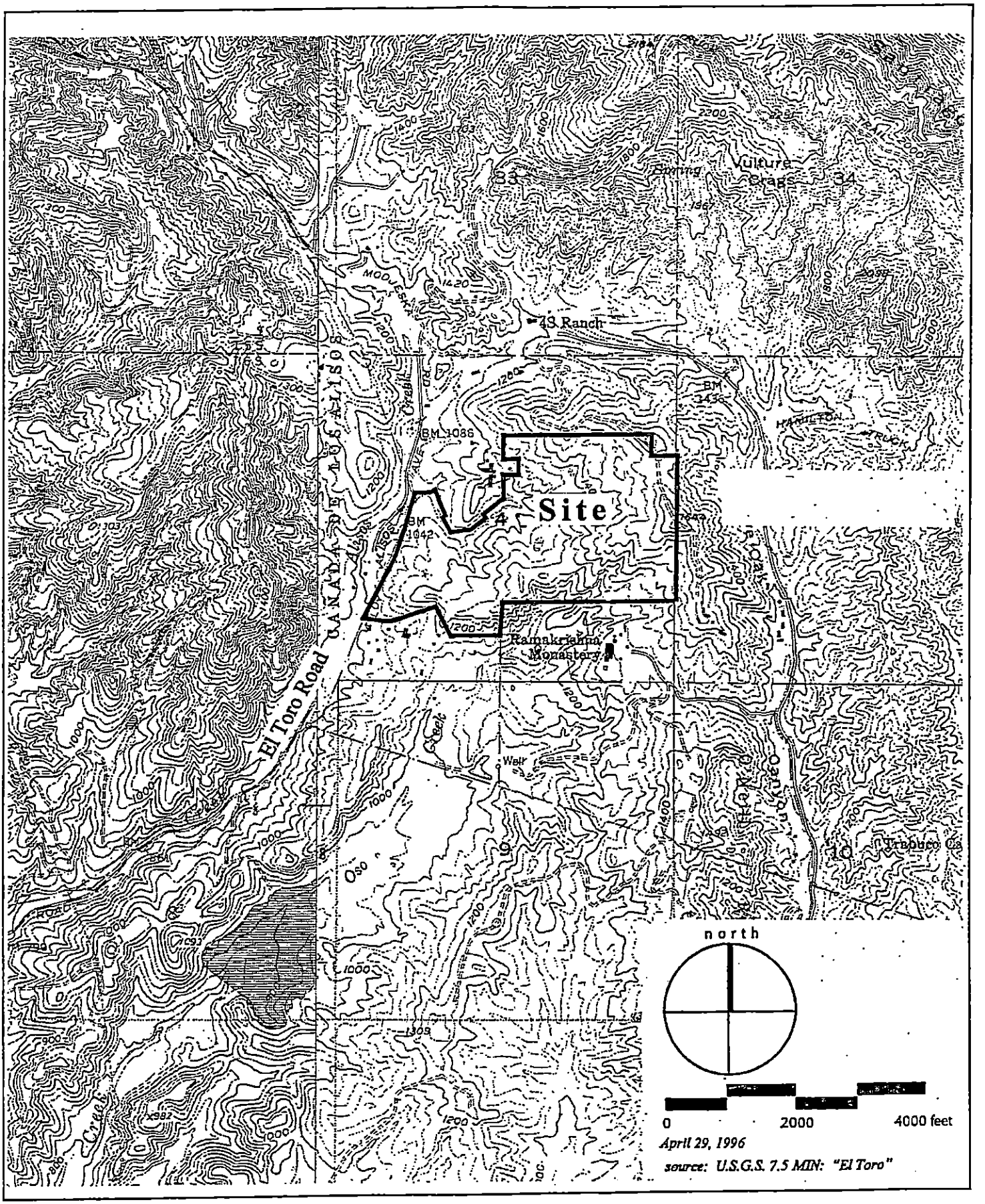


Regional Location Map

SADDLEBACK MEADOWS

Figure 1

HELIX



Project Vicinity Map

SADDLEBACK MEADOWS

Figure 2

4.0 RESULTS

4.1 VEGETATION/HABITAT TYPES

Saddleback Meadows supports a variety of vegetation communities (Figure 3), and portions of the site have been previously grazed, cleared, or disturbed. The intensive grazing combined with the presence of highly erodable soils has resulted in degradation of both upland and wetland habitat over the years. On-site vegetation communities include annual grassland, Venturan-Diegan transitional coastal sage scrub, coast live oak woodland, and southern mixed chaparral (Chambers, 1999). In addition to these upland habitats, several wetland habitats are also present on site. Southern sycamore riparian woodland is located along Aliso Creek at the western site boundary. Nine ephemeral ponds, originally created to hold water for cattle (Urban Vision 1997), are located along several drainages scattered throughout the site. Two of the ponds no longer retain water; however, the remaining seven ponds create open water habitat. Mule fat scrub has established along the perimeters of most of the ponds. The ponds on site are not vernal ponds because of their morphology and plant associates (see following text).

Table 1
SUMMARY OF VEGETATION COMMUNITIES ON SADDLEBACK MEADOWS

VEGETATION COMMUNITY	ACREAGE*
Venturan-Diegan transitional coastal sage scrub	56.3
Disturbed Venturan-Diegan transitional coastal sage scrub	14.4
Coast live oak woodland	13.2
Southern sycamore riparian woodland	0.3
Mule fat scrub	3.0
Southern mixed chaparral	6.4
Annual grassland	122.02
Agriculture	5.4
Ephemeral ponds	0.48
Ornamental	0.5
TOTAL	222.0

*Acreage is approximate.

4.1.1 Riparian/Wetland/Open Water

4.1.1.1 Southern Sycamore Riparian Woodlands

Southern sycamore riparian woodland is composed of tall, open, broad-leaved, winter-deciduous trees that require water near the soil surface. Western sycamore (Platanus racemosa) is the dominant species forming an open, medium height woodland. Associated understory species include mule fat (Baccharis salicifolia), Mexican elderberry (Sambucus mexicana), and poison oak (Toxicodendron diversilobum). This habitat occurs along very rocky streambeds subject to seasonally high-intensity flooding (Holland 1986) and occurs along large intermittent streams in Orange County. An estimated 0.3 acre of this habitat occurs along Aliso Creek near El Toro Road on the western boundary of the site.

4.1.1.2 Mule Fat Scrub

Mule fat scrub is a depauperate, tall, herbaceous, riparian scrub community that often occurs along intermittent stream channels but is also found around ponds or other wet areas. This early seral community thrives in areas that are subject to disturbances (for instance, by flooding); the absence of which could lead to a riparian woodland or forest (Holland 1986). On the site it occurs on fringes of the manmade stock ponds and in areas where there is not enough water to support riparian tree species. Approximately 3.0 acres of mule fat scrub occur on site.

4.1.1.3 Ephemeral Ponds

Seven existing and two former ponds occur on site. The seven existing ponds total 0.48 acre in size. The smaller of the two former ponds lacks significant vegetation in the bottom of the pond, but it is still rimmed with mule fat scrub. The larger pond still supports mule fat scrub. All of the ponds, with the possible exception of Pond E, appear to have been artificially created with earthen dams a number of years ago to provide water for cattle. The earthen dams of two of the ponds have breached, and as a result, no longer retain water. Existing use of the ponds by cattle severely impacts vegetation and water quality.

None of the plant species observed in the ponds are primarily or typically found in vernal ponds in southern California. Several species observed on site can occur in vernal ponds but typically occur elsewhere. These species include salt-grass (*Distichlis spicata*) and curly dock (*Rumex crispus*). Salt-grass is a species typically found in salt marshes, and moist, alkaline areas. Curly dock is a species typically found in disturbed places. The typical habitats of the plant species observed in or near the ponds include fresh or saltwater marsh, riparian, moist places, and disturbed areas.

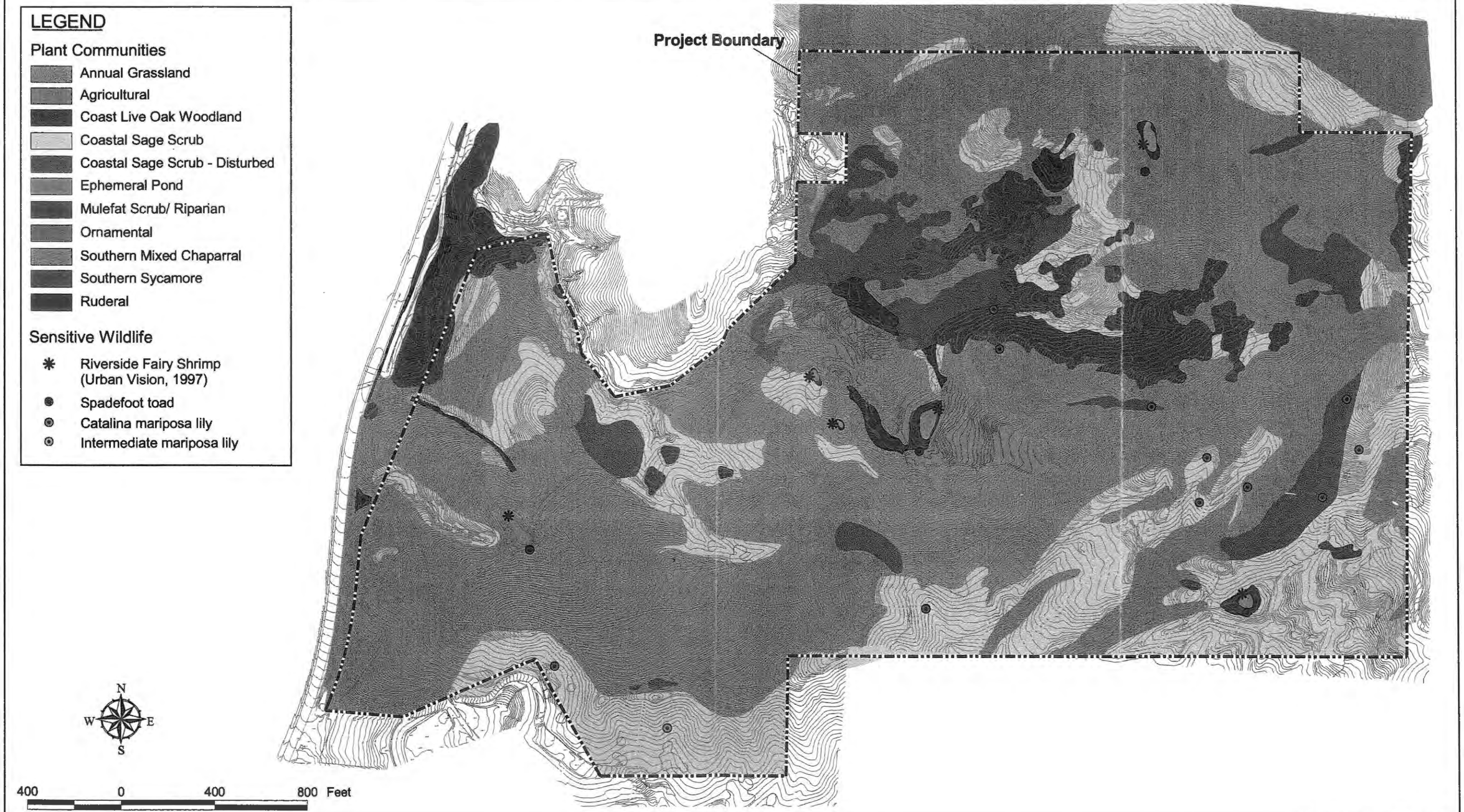
The physical setting of these ponds also differs from most other southern California vernal ponds (Zedler 1987). Vernal ponds typically occur on relatively flat mesas, situated in low lying areas between small mounds. This contrasts sharply with the lay of the land on site where few areas are flat. Furthermore, the ponds do not occur in the few flat areas. They occur primarily in dammed drainages that support a low species diversity and a high percentage of weed species. Based on vegetation, species composition, and physical setting, these ponds are not vernal pools. However, six of the existing ponds and two former ponds contained Riverside fairy shrimp (*Streptocephalus woottoni*). Although recently the USFWS recorded the Riverside fairy shrimp near El Toro, the occurrence of these shrimp on the site may be an anomaly because the ponds appear to have been artificially created.

4.1.2 Upland Habitats

4.1.2.1 Venturan-Diegan Transition Coastal Sage Scrub (including disturbed)

Coastal sage scrub is found in coastal areas of California from the San Francisco Bay Area to the Mexican border, and beyond. The coastal sage scrub plant community is composed of low statured, drought-deciduous shrubs. Four floristic associations are recognized in distinct geographical areas along the California coast with the Diegan association occupying an area from Orange County to northwestern coastal Baja California, Mexico (O'Leary 1990). The Venturan association occupies an area from San Luis Obispo County to Orange County. Venturan-Diegan transitional coastal sage scrub is found throughout Orange County and is a transitional scrub community between two floristic associations of coastal sage scrub: Venturan and Diegan. Approximately 70.7 acres of this plant community occur on site, 14.4 acres of which is disturbed.

Some of the typical plants found within the Venturan-Diegan transitional coastal sage scrub on site include California sage brush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel



Source: Chambers Group Inc. February, 2000

Job No: CQL-02 Date: 2/11/02

Vegetation and Sensitive Resources

SADDLEBACK MEADOWS

HELIX

Figure 3

sumac (Malosma laurina), black sage (Salvia mellifera), and coastal prickly-pear (Opuntia littoralis). Disturbed portions of Venturan-Diegan transitional coastal sage scrub (14.4 acres) have a higher component of annual grasses and noticeably less shrub cover than undisturbed Venturan-Diegan transitional coastal sage scrub areas. Much of the Venturan-Diegan transitional coastal sage scrub on site is unconnected and subject to continued degradation because of previous and continued cattle grazing.

4.1.2.2 Coast Live Oak Woodlands

Coast live oak woodlands occur in the outer portion of the central California coastal mountain ranges and extend south into Baja California, Mexico occurring between 500 and 4,500 feet in elevation. The dominant plant in this oak woodland are coast live oaks (Quercus agrifolia), which typically reach a height of 12 to 70 feet, forming an incompletely closed canopy, with an understory herbaceous layer approaching 80 percent cover.

On Saddleback Meadows, coast live oak woodland is found mainly along moderate, north-facing slopes and in ravines. Areas within small drainages or swales (central portion of the site) have the most dense canopy. The understory is, for the most part, dominated by annual grassland and has been heavily grazed, making the woodland of an overall moderate quality. The ongoing grazing is precluding natural recruitment of new seedlings in the oak woodlands. Approximately 13.2 acres of coast live oak woodland occur on site.

4.1.2.3 Southern Mixed Chaparral

Southern mixed chaparral is composed of deep-rooted shrubs that are usually not deciduous and grow to about 6 to 10 feet tall forming dense, often nearly impenetrable, stands. The plants of this association typically include lemonadeberry (Rhus integrifolia), toyon (Heteromeles arbutifolia), chamise (Adenostoma fasciculatum), and mission manzanita (Xylococcus bicolor). Southern mixed chaparral occurs on canyon slopes in the extreme northeast and southeast quadrants of the site. Approximately 6.4 acres of southern mixed chaparral occur on site.

4.1.3 Other Upland Areas

4.1.3.1 Annual Grassland

Annual grassland is a dense to sparse cover of mostly non-native grasses, often associated with numerous species of showy-flowered, annual forbs. This association occurs on gradual slopes with deep, fine-textured soils. Characteristic species include oats (Avena sp.), red brome (Bromus madritensis ssp. rubens), ripgut (B. diandrus), and mustard (Brassica spp.). Cardoon (Cynara cardunculus) is dominant in some areas on site while virtually lacking in others. In conjunction with agriculture and grazing in California, many of these plants were imported. Annual grassland is in every quadrant of the site, but the most dense coverage is on the less steeply sloped portions of the western half of the site. Approximately 122.02 acres of annual grassland occur throughout the site.

4.1.3.2 Agricultural

Agriculture in the form of olive trees (Olea europaea) is found in the central portion of the site. Approximately 5.4 acres of agriculture occur on site.

4.1.3.3 Ornamental

Ornamental eucalyptus (Eucalyptus sp.) trees are the dominant species in two small areas (totaling 0.5 acre) near the west end of a large ravine in the center of the site. Eucalyptus is an introduced species that

produces a large amount of leaf and bark litter. The chemical and physical characteristics of this litter inhibits the growth of other species in the understory, causing floristic diversity to decrease. In most instances, eucalyptus are planted for a variety of cultural reasons. If sufficient moisture is available, eucalyptus become naturalized and are able to reproduce and expand their range.

4.2 PLANT SPECIES OBSERVED ON SITE

A total of 187 plant species, 130 (69 percent) of which are native, were observed during surveys by PSBS (1993; 1994) and SEB. The presence of 58 non-native plant species on the Project site reiterates the disturbed nature of most of the site. A common plant species over much of the site is the invasive non-native cardoon, an artichoke-like plant that grows in areas where soils, especially clay soils, have been highly disturbed and compacted. This aggressive plant species often dominates areas that have been heavily grazed. Undisturbed native vegetation communities on steeper slopes of the site support a typical diversity of plant species common to central Orange County. Overall the plant diversity on site, however, appears to be somewhat limited. Appendix A provides a complete list of all plant species observed.

4.3 ANIMAL SPECIES OBSERVED ON SITE

A total of 85 animal species were observed during the surveys by PSBS (1993;1994), SEB HELIX. The animal species observed represent a somewhat lower diversity than is usually observed in the western foothill region of the Santa Ana Mountains, probably due to the disturbed nature of the site and the presence of both cattle and humans. For a complete listing of animal species observed see Appendix B.

4.3.1 Invertebrates

Both the native and non-native plant communities on site probably play host to a wide variety of invertebrate species, especially insects. Invertebrates are important features of an ecosystem because of their role in food chains and as decomposers. Specific surveys for invertebrates focused on the presence of Riverside fairy shrimp, which were known to occur on site. Hundreds of additional invertebrates are expected to use the site.

4.3.2 Vertebrates

4.3.2.1 Amphibians

Three amphibians were heard during site surveys: Western spadefoot toad (*Scaphiopus hammondii*), western toad (*Bufo boreas*), and California chorus frog (*Pseudacris cadaverina*). At least two additional species, the black-bellied salamander (*Batrachoseps nigriventris*) and California slender salamander (*Batrachoseps attenuatus*), are expected to occur. The disturbed conditions that exist throughout most of the site have likely restricted these species to the steeper slopes where vegetative coverage is most dense.

4.3.2.2 Reptiles

Five reptiles were observed on-site: the western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), orange throated whiptail (*Cnemidophorus hyperythrus beldingi*), southern alligator lizard (*Gerrhonotus multicarinatus*), and the gopher snake (*Pituophis melanoleucus*). Two additional species were observed in earlier surveys by SEB: the coastal whiptail (*Cnemidophorus tigris multiscutatus*) and the side-blotched lizard (*Uta stansburiana*). Although the site has many disturbed areas, reptile habitat still occurs throughout the site. Additional lizards and snakes would be expected, especially in the undisturbed portions of Venturan-Diegan transitional coastal sage scrub on the steeper slopes.

4.3.2.3 Birds

Birds were most abundant and conspicuous (50 species) during the surveys, and undoubtedly exhibit the highest vertebrate diversity. Most of the birds were observed within the Venturan-Diegan transitional coastal sage scrub, southern mixed chaparral, and coast live oak woodland habitats on site. A few of the resident birds which were most abundant on site include California quail (*Callipepla californica*), Anna's hummingbird (*Calypte anna*), mourning dove (*Zenaida macroura*), California towhee (*Pipilo crissalis*), house finch (*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*). Other bird species were observed foraging on the site but probably reside elsewhere including cliff swallows (*Hirundo pyrrhonota*), northern rough-winged swallows (*Stelgidopteryx serripennis*), red-tailed hawks (*Buteo jamaicensis*), and American kestrels (*Falco sparverius*).

4.3.2.4 Mammals

Nine native mammals were detected on site including the Virginia opossum (*Didelphis virginiana*) California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), Botta's pocket gopher (*Thomomys bottae*), California mouse (*Peromyscous californicus*), woodrat (*Neotoma* spp.), coyote (*Canis latrans*), raccoon (*Procyon lotor*), skunk (*Mephitis* spp.), and mule deer (*Odocoileus hemionus*), and domestic cattle. Additional species that may occur were not observed during the diurnal surveys because they are nocturnal.

5.0 SENSITIVE RESOURCES

The following is a description of sensitive biological resources found on Saddleback Meadows. Where impacts to these resources occur, mitigation may be required as discussed in the Mitigation Section of this report.

5.1 SENSITIVE VEGETATION COMMUNITIES/HABITATS

Sensitive habitats are those that have been depleted, are naturally uncommon, or support sensitive species. Venturan-Diegan coastal sage scrub (including that which is disturbed), coast live oak woodland, southern sycamore riparian woodland, mule fat scrub, ephemeral ponds and non-native grassland are all considered sensitive by resource agencies and groups. Eucalyptus woodland, although not considered sensitive, may potentially support raptor nests, which are protected under the auspices of the federal Migratory Bird Treaty Act (MBTA). In addition, any impacts to wetland habitat or Waters of the U.S. must be reviewed in the context of a ACOE 404 Permit and/or a CDFG Code Section 1603 Streambed Alteration Agreement applications.

5.2 SENSITIVE PLANT SPECIES OBSERVED ON SITE

Sensitive species are those considered unusual or limited in that the species are (1) only found in restricted region; (2) a local representative of a species or association of species not otherwise found in the region; or (3) severely depleted within their ranges or within the region. High-interest plants include those listed by the USFWS (1990), CDFG (1994), and California Native Plant Society (CNPS) (Skinner and Pavlik 1994). Three sensitive plant species were observed on the site: (1) the intermediate mariposa lily; (2) Catalina mariposa lily; and (3) small-flowered microseris. None of these species is state or federally listed as threatened or endangered. See Appendix C for an explanation of sensitivity codes.

Catalina mariposa lily (*Calochortus catalinae*)
Status: USFWS: None; CDFG: None; CNPS List 4; R-E-D 1-2-3
Distribution: This species is distributed in all coastal counties from Santa Cruz County to San Diego County, except Monterey County.
Habitat(s): The Catalina mariposa lily grows on heavy soils, usually in chaparral, coastal sage scrub, and grassland habitats.
Status on site: Eight stands were detected by SEB (435 individuals), six of which (428 individuals) were in Venturan-Diegan transitional coastal sage scrub along the southern boundary of the site. The two additional stands (seven individuals) were in Venturan-Diegan transitional coastal sage scrub patches in the northeastern quadrant of the site.

Intermediate flowered mariposa lily (*Calochortus weedii* **var.** *intermedius*)
Listing: USFWS: Regionally sensitive; CDFG: None; CNPS: List 1B, R-E-D 2-2-3
Distribution: This mariposa lily has only been recorded from Los Angeles, Orange, and Riverside counties.
Habitat(s): Dry, rocky slopes are the habitat of this species.
Status On Site: Three stands were detected by SEB totaling 18 individuals. Two stands are in the southwest quadrant, while the remaining stand is in the southeast quadrant.

Small-flowered microseris (*Microseris douglasii* var. *platycarpha*)
Status: USFWS: None; CDFG: None; CNPS List 4
Distribution: West of the Sierran crest from Southern California to southern Oregon.
Habitat(s): Occurs in coastal grassy areas.
Status on site: Several individuals were found in the annual grasslands in the western portion of the property.

5.3 SENSITIVE PLANT SPECIES WITH THE POTENTIAL TO OCCUR ON SITE

Table 2 provides a list of sensitive plant species that occur or have the potential to occur on the property. This list includes federal and state listed species endangered or threatened species, FSOC, and CSC species, and CNPS listed species.

5.4 SENSITIVE ANIMAL SPECIES OBSERVED ON SITE

Five sensitive animals were observed during the surveys by Chambers Group: Riverside fairy shrimp, western spadefoot toad, orangethroat whiptail, cactus wren, Cooper's hawk. No coastal California gnatcatchers occur on site.

Riverside fairy shrimp (*Streptocephalus woottoni*)
Listing: USFWS Endangered
Distribution: Extremely limited distribution in Riverside, Orange, and San Diego counties; and northern Baja California, Mexico. In Orange County, known from two locations, in Riverside County, known only from five vernal ponds, in San Diego County, known only from two vernal pond complexes.
Habitat(s): Vernal and ephemeral pond habitats that are relatively deep and have low values for alkalinity and chloride presence. The Riverside fairy shrimp is a warm water species of fairy shrimp, and it hatches at water temperatures of 15 to 17 °C.
Status On Site: Six of the ponds and two recently dried ponds (their dams have been breached) have evidence of Riverside fairy shrimp. These locations represent a significant expansion of the shrimp's typical habitat range.

Table 2
LISTED OR SENSITIVE PLANT SPECIES WITH THE POTENTIAL FOR OCCURRENCE WITHIN THE SADDLEBACK MEADOWS SITE

SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR
Catalina mariposa lily (*Calochortus catalinae*)	CNPS: 4	Present; occurs in dry, rocky, open slopes in chaparral, coastal sage scrub, and grassland habitats. A Spring blooming (Feb-May) perennial herb. This species was found scattered throughout the coastal sage scrub along the east and south boundaries of the property.
Intermediate mariposa lily (*Calochortus weedii var. intermedius*)	USFWS: FSOC CNPS: 4 1B	Present; occurs in dry, rocky, open slopes in chaparral, coastal sage scrub, and grassland habitats. A Spring to early Summer blooming (May-July) perennial herb. A population was found in the coastal sage scrub near the south boundary of the property.
Lewis's evening-primrose (*Camissonia lewisii*)	CNPS: 3	Low, occurs in open grassland, sandy places. A spring blooming (April-May) annual. No suitable habitat was present onsite.
Slender-horned Spineflower (*Dodecahema leptoceras*)	USFWS: FE CDFG:CE CNPS: 1B	Low, occurs in alluvial sand in coastal sage scrub and chaparral communities. A Spring blooming (April-June) annual. No suitable habitat is present and this species was not found onsite.
Santa Monica Mountains dudleya (*Dudleya cymosa ssp. ovatifolia*)	USFWS: FE CNPS: 1B	Low, occurs on volcanic cliff faces, rocky outcrops, and rocky slopes in chaparral and coastal sage scrub. . No suitable habitat is present and this species was not found onsite.
Many-stemmed dudleya (*Dudleya multicaulis*)	USFWS: FSOC CNPS: 1B	Moderate; occurs on heavy, clay soil or grassy slopes in a variety of habitats. No suitable habitat is present and this species was not found onsite.
Small-flowered microseris (*Microseris douglasii* var.*platycarpha*)	CNPS: 4	Present; occurs in coastal grassy areas. Species present in annual grasslands onsite.
Hall's monardella (*Monardella macrantha ssp. hallii*)	CNPS: 1B	Moderate; occurs on dry slopes and ridges in openings within chaparral, valley, and foothill grasslands from 2,000 – 6,500 feet elevation. Suitable habitat is present, but this species was not found onsite.
Heart-leaved pitcher sage (*Lepechinia cardiophylla*)	USFWS: FSOC CNPS: 1B	Occurs in dry areas and slopes in chaparral, closed coniferous forest, and cismontane woodland. The elevation range is 2,000-4,000 feet. Suitable habitat is present, but this species was not found onsite.

Table 2 (cont.)		
SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR
Felt-leaved monardella (*Monardella hypolueca ssp. lanata*)	CNPS: 1B	Occurs in sandy soils, chaparral and cismontane woodland. No suitable habitat is present and this species was not found onsite.
Palmer's grapplinghook (*Harpagonella palmeri*)	USFWS: FSOC CNPS 2 R-E-D 1-2-1	Moderate; occurs in clay soils, dry slopes, and mesas with chaparral, coastal sage scrub, and valley and foothill grassland. Suitable habitat is present onsite, but this species was not found onsite.

*See Appendix C for an explanation of sensitivity codes.
**Table taken from Chambers 1999.

Western spadefoot toad (*Scaphiopus hammondii*)
Status: USFWS Regionally sensitive
Distribution: California's Central Valley and San Francisco Bay area south along the coast to northwestern Baja California, Mexico.
Habitat: Mesa tops, valleys, low hills, floodplains, and washes. Southern California habitats include coastal sage scrub, chaparral, and grassland. Important habitat components include temporary ponds (which form during winter and spring rains) for breeding and friable soils for burrowing.
Status On Site: During focused surveys, western spadefoot tadpoles were observed in two of the ephemeral ponds on site.

Orange-throated whiptail (*Cnemidophorous hyperthrus*)
Status: USFWS: Regionally sensitive; CDFG CSC
Distribution: Southern Orange County and southern San Bernardino County (Colton), south to the cape of Baja California, Mexico.
Habitat: Venturan-Diegan transitional coastal sage scrub, chaparral, edges of riparian woodlands, and washes. Also found in weedy, disturbed areas adjacent to these habitats. Important habitat requirements include a mosaic of open, sunny areas and shade for thermoregulation, and an abundant invertebrate prey base, particularly termites.
Status On Site: Two individuals were observed by SEB on a slope in the southeast quadrant adjacent to O'Neill Regional Park.

Cooper's hawk (*Accipiter cooperii*)
Status: Nesting—CDFG CSC
Distribution: Throughout the continental U.S. excluding Alaska, parts of Montana, and parts of the Dakotas. Winters south to Mexico and Honduras.
Habitat: In San Diego County tends to inhabit lowland riparian areas and oak woodlands in proximity to suitable foraging areas such as scrublands or fields.
Status On Site: One individual was observed by PSBS hunting in grassland on the northern half of the site.

Coast Cactus wren (*Campylorhynchus brunneicapillus couesi*)
Status: USFWS Regionally sensitive/CDFG CSC
Distribution: Southern Orange County (San Juan Creek) south through San Diego County into northwestern Baja California, Mexico.
Habitat: Restricted to clumps of prickly-pear (*Opuntia littoralis and O. oricola*) or cholla (*O. prolifera*) growing in Venturan-Diegan transitional coastal sage scrub or along washes.
Status On Site: Ten individuals were observed by PSBS in the southern half of site, with most (seven) occurring on the slopes contiguous with habitat in O'Neill Regional Park.

Several additional animal species may occur on site (see Table 2). The majority of these species have a low to moderate potential for occurring on site. None of the species warrant further surveys because of their low potential for occurrence, they are of a generally low level of sensitivity, and/or adequate mitigation can be accomplished by mitigating for their habitats.

5.5 SENSITIVE ANIMAL SPECIES WITH THE POTENTIAL TO OCCUR ON SITE

In addition to sensitive animal species observed on site, 24 sensitive animal species have the potential to occur on site, including four that are federally-listed as endangered (Table 3). Of those species that have the potential to occur on site, focused surveys for the federally-listed Quino checkerspot butterfly and coastal California gnatcatcher were conducted. Neither species was observed on site. Focused surveys for the other potentially-occurring species are not recommended due to the low probability of each of these species to inhabit the site and the species' low levels of sensitivity.

Table 3
SENSITIVE ANIMAL SPECIES WITH THE POTENTIAL FOR OCCURRENCE WITHIN THE SADDLEBACK MEADOWS SITE

SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR
INVERTEBRATES		
Quino checkerspot butterfly (*Euphydryas editha quino*)	USFWS FE[1]	Low; larval host plants *Plantago erecta and Castilleja sp.* were observed on site; however, the Quino checkerspot butterfly was not detected on site during focused surveys.
Riverside fairy shrimp (*Streptocephalus wootonii*)	USFWS FE	Presence confirmed in 6 of 7 ephemeral ponds on site.
VERTEBRATES		
Fish		
Arroyo chub (Gila orcutti)	USFWS: FE CDFG CSC	Found in shaded pools 1-5m in depth. No suitable habitat is present and this species was not found on site.
Reptiles/Amphibians		
Coastal rosy boa (*Lichanura trivirgata roseofusca*)	CDFG CSC	Low; commonly occurs in and around rocky areas in coastal sage scrub. No suitable habitat is present on site.
Coastal western whiptail (*Cnemidophorus tigris multiscutatus*)	CDFG CSC	High; preferred habitats (grassland, coastal sage scrub, and chaparral) occur on site.

Table 3(cont.)		
SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR
VERTEBRATES		
Reptiles/Amphibians (cont.)		
San Diego horned lizard (*Phrynosoma coronatum blainvillei*)	CDFG CSC[2] MSCP Covered Species	High; chaparral, coastal sage scrub, food source (harvester ants [*Pogonomyrmex* sp.]) not seen but probably present. Focused surveys may be needed for detection but are not warranted. Expected but not seen during surveys.
San Diego ringneck snake *(Diadophus punctatus similes)*	USFWS Regionally sensitive CDFG CSC	Low; Prefers moist habitats including woodlands and forest. No suitable habitat is present and this species was not found onsite.
Orange –throated whiptail (*Cnemidophorus hyperthrus*)	CDFG CSC	Species observed on disturbed hillside with scrub vegetation. Also found in washes and vegetation.
Southwestern pond turtle	USFWS: FSOC	Found in various aquatic sites with good water quality. Suitable habitat is present onsite, but this species was not observed.
Birds		
Coastal California gnatcatcher (*Polioptila californica*)	USFWS: FE CDFG: CSC	Low; Typically found in coastal sage scrub. The habitat onsite is of low quality and in scattered patches. None observed during several focused surveys.
Prairie falcon *(Falco mexicanus)*	CDFG CSC	Low; an uncommon visitor to grasslands and scrublands of Orange County.
Northern harrier *(Circus cyaneus)*	CDFG CSC	Moderate; habitat includes open areas, such as grasslands, and adjacent habitats. Would likely have been observed if it consistently uses the site.
Burrowing owl *(Speotyto cunicularia)*	CDFG CSC	Low; often found in disturbed sites where ground squirrel burrows are present. Suitable habitat is present on site, but this species was not observed.
Cooper's hawk (*Accipiter cooperii*)	CDFG CSC MSCP Covered Species	Species observed in grassland next to riparian area and also observed in flight over site.
Least Bell's vireo (*Vireo bellii pusillus*)	USFWS FE CDFG: SE	Low; occurs in willow-riparian areas. Low potential habitat onsite. Limited area of marginal habitat located offsite. Not observed onsite.
Tricolored blackbird (*Agelaius tricolor*)	USFWS: FT CDFG CSC	Low; found in grasslands and wetlands. No suitable habitat is present and this species was not found on site.
Coastal cactus wren (*Campylorhyncus brunneicapillus couesi*)	CDFG: CSC	Found in coastal sage scrub with cacti. Species observed primarily at eastern portion of site.

Table 3 (cont.)		
SPECIES	LISTING OR SENSITIVITY*	POTENTIAL TO OCCUR
VERTEBRATES (cont.)		
Birds (cont.)		
Loggerhead shrike (*Lanius ludovicianus*)	CDFG: CSC	High; found in various habitats that support adequate prey species. Prey species in abundance throughout site, but no observations were made.
Rufous-crowned sparrow (*Aimophila ruficeps*)	CDFG: CSC	Moderate; occurs around rocky coastal sage scrub and chaparral. Suitable habitat is present onsite, but this species was not observed.
Yellow-breasted chat (*Icteria virens*)	CDFG: CSC	Low; occurs in willow-riparian areas. No suitable habitat is present and this species was not found onsite.
Mammals		
San Diego desert woodrat (*Neotoma lepida intermedia*)	USFWS Regionally sensitive CDFG CSC	Moderate; woodrat sign was found, but it could have been dusky-footed woodrat. Habitat is coastal sage scrub and other dry habitats. Trapping necessary for detection but not warranted.
Dulzura California pocket mouse *Chaetodipus californicus femoralis*	USFWS Regionally sensitive CDFG CSC	Low to moderate; dense chaparral, but occasionally other shrublands. Trapping necessary for detection but not warranted.
Pallid bat (*Antrozous pallidus pacificus*)	CDFG CSC	Moderate; habitat highly variable, could forage throughout the site, but roosting sites are likely elsewhere. Focused surveys needed for detection but not warranted.
Greater western mastiff bat (*Eumops perotis californicus*)	USFWS Regionally sensitive CDFG CSC	Moderate; could forage in any habitat on site, but roosting sites are likely elsewhere. Focused surveys needed for detection but not warranted.

6.0 REGIONAL AND REGULATORY CONTEXT

The Project site is currently undeveloped, and more than half of the acreage is now covered by annual grassland. The Project site is located between several large protected areas: Cleveland National Forest, Aliso Creek Greenbelt, and O'Neill Regional Park. Connectivity of these areas and maintenance of wildlife corridors are a high priority in this region. The project is one of several wildlife corridors identified in the project area, including areas to the east along Live Oak Canyon and to the south across El Toro Road.

The large drainage on site contains substantial acreage of wetland habitats. Additionally, there are ephemeral ponds on site which also contain wetland habitat and the federally endangered Riverside fairy shrimp.

6.1 HABITAT CONNECTIVITY AND CORRIDOR ISSUES

This section discusses on-site corridor design within the broader context of the region. The pace of urbanization in coastal, southern California has resulted in the rapid loss of habitat that supports a unique biota. Consequently the development of ecological reserves that preserve natural communities is an important planning goal.

Connectivity between reserves contributes to maintaining species diversity in a reserve system (Harris and Scheck 1991). Conversely, lack of connectivity creates isolated islands of habitat. These islands often fail to support the level of species diversity that existed prior to the isolation event. The most prominent threats to populations in fragmented and isolated habitats are increased vulnerability to local extinction and genetic isolation (inbreeding). Adequate landscape linkages between native habitat areas tend to mitigate these threats.

Orange County is developing its NCCP preserve system in accordance with CDFG enrollment. The primary goal of this preserve system is to maintain large blocks of habitat that support viable ecosystems, and to link these large blocks via wildlife corridors. The project has been designed to allow for a large corridor along the entire northeast side of the property (Figure 4). This will maintain connectivity of the Aliso Creek Greenway to Cleveland National Forest. The project also provides a large east-west corridor through the main central drainage to provide connectivity from the Aliso Creek Greenbelt to the open space east of the property. Additionally, it will provide coastal sage scrub and coast live oak woodland habitat along a riparian system. There will also be 6 ephemeral ponds located in this portion of the project. A second, smaller corridor will go from east to west across the property and will facilitate wildlife movement through the property.

Corridors typically serve to facilitate wildlife movement through an area, as opposed to habitat linkages that actually provide sufficient habitat to allow for a species to live and reproduce. The proposed corridor on site is of sufficient width to function as a secondary corridor for gnatcatchers, and movement will not be precluded through the property. Habitat immediately west of the site is primarily riparian or non-native vegetation. Venturan-Diegan transitional coastal sage scrub habitat is confined to a slope area on the western portion of the site near El Toro Road, along the slopes adjacent to the main corridor, and in the southern portion of the site. Therefore, although gnatcatchers at least have the potential to use this corridor, this area is most suitable for some birds and most small- to medium-sized mammals. Connectivity for the gnatcatcher is more likely to occur to the west, where existing bird populations occur on either side of El Toro Road and elevations in this area are several hundred feet lower than elevations on site.

Large mammal movement between the Cleveland National Forest and O'Neill Canyon Regional Park will be maintained along the southern portion of the project and offsite through Live Oak Canyon.

6.2 REGULATORY ISSUES

6.2.1 U.S. Army Corp of Engineers and California Department of Fish and Game Jurisdictional Areas

The network of drainages on site and the ephemeral ponds contain both wetland habitat and non-wetland waters of the U.S. and are protected by law and require special permitting through the ACOE, CDFG, and Regional Water Quality Control Board (RWQCB). The ACOE regulates impacts to

Job No: CQL-02 Date: 2/19/02
Source: Eagle Aerial, Hunsaker & Associates, and HDR Inc., 2001

Proposed Regional Wildlife Movement Corridors

SADDLEBACK MEADOWS

HELIX

Figure 4

jurisdictional Waters of the U.S. including wetlands. Jurisdictonal wetlands are defined by areas that meet ACOE standards for hydrology, vegetation, and soils. Impacts to these areas would be subject to regulation by the ACOE in the form of a permit pursuant to section 404 of the federal Clean Water Act. An application has been filed with the ACOE and is currently in process. As part of the 404 permit process, certification by the RWQCB is required through Section 401, An application has been filled with RWQCB and is currently in process. Any impacts to CDFG jurisdictional area would require a Streambed/Lake Alteration Agreement regulated under Fish and Game Code Section 1603. An application has been filed with CDFG and is currently in process.

6.2.2 Endangered Species Act

The USFWS administers the federal Endangered Species Act (ESA) The ESA provides the legal framework for protection of species (and their habitats) which are identified as being in danger of extinction or which are threatened at a regional level. Impacts to protected species (those listed as endangered or threatened) are considered a take under the federal ESA. The Riverside Fairy Shrimp is listed as federally endangered. Therefore, a formal Section 7 consultation has been initiated by the USFWS, in conjunction with the ACOE 404 process, for impacts to the Riverside Fairy Shrimp. Additionally, the site is considered critical habitat for the coastal California gnatcatcher and Riverside fairy shrimp, although no gnatcatchers were observed during project surveys. Potential impacts to critical habitat for both species is being addressed through the Section 7 consultation process.

7.0 IMPACTS

Two types of impacts will be assessed: direct and indirect. All areas to be modified, including remedial slopes and fuel modification zones will be interpreted as direct impacts. Fuel management zones are also considered direct impacts because most native vegetation will be removed. Both on- and off-site impacts are considered in this analysis.

Indirect impacts are impacts to the biological resources that result from adjacent direct impacts. Though these impacts may not initially be evident, over time they may occur due to the relative proximity of development or disturbance. Examples of indirect impacts include habitat fragmentation, habitat insularization, edge effect, exotic species invasion, lighting, domestic pet intrusion/predation, and increased human intrusion.

7.1 DIRECT IMPACTS

Direct impacts are summarized in Table 4 and shown on Figure 5.

7.1.1 Sensitive Vegetation Communities/Habitats

7.1.1.1 Wetland Habitats

Ephemeral Ponds. Approximately 0.40 acre of ephemeral ponds will be directly and significantly impacted by the project.

Mule Fat Scrub. Approximately 1.82 acre of mule fat scrub habitat would be directly and significantly impacted on site and an additional 0.1 acre would be impacted off site by the Project.

Southern Sycamore Riparian Woodland. Approximately 0.1 acre of southern sycamore riparian woodland habitat would be directly and significantly impacted by the Project.

Streambed. Although not a habitat type, areas identified as streambed under CDFG jurisdiction also occur on site. Approximately 1.45 acres of streambed will be impacted by the project.

7.1.1.2 Upland Habitats

Venturan-Diegan Coastal Sage Scrub (including disturbed). Approximately 39.8 acres of Venturan-Diegan coastal sage scrub habitat would be directly and significantly impacted on site and an additional 2.9 acres would be impacted off site by the Project.

Coast Live Oak Woodland. Approximately 5.4 acres of coast live oak woodland habitat and 181 coast live oak trees would be directly and significantly impacted on site and an additional 0.1 acre would be impacted off site by the Project.

Southern Mixed Chaparral. Approximately 3.7 acres of southern mixed chaparral habitat would be directly and significantly impacted on site and an additional 1.5 acres would be impacted off site by the Project.

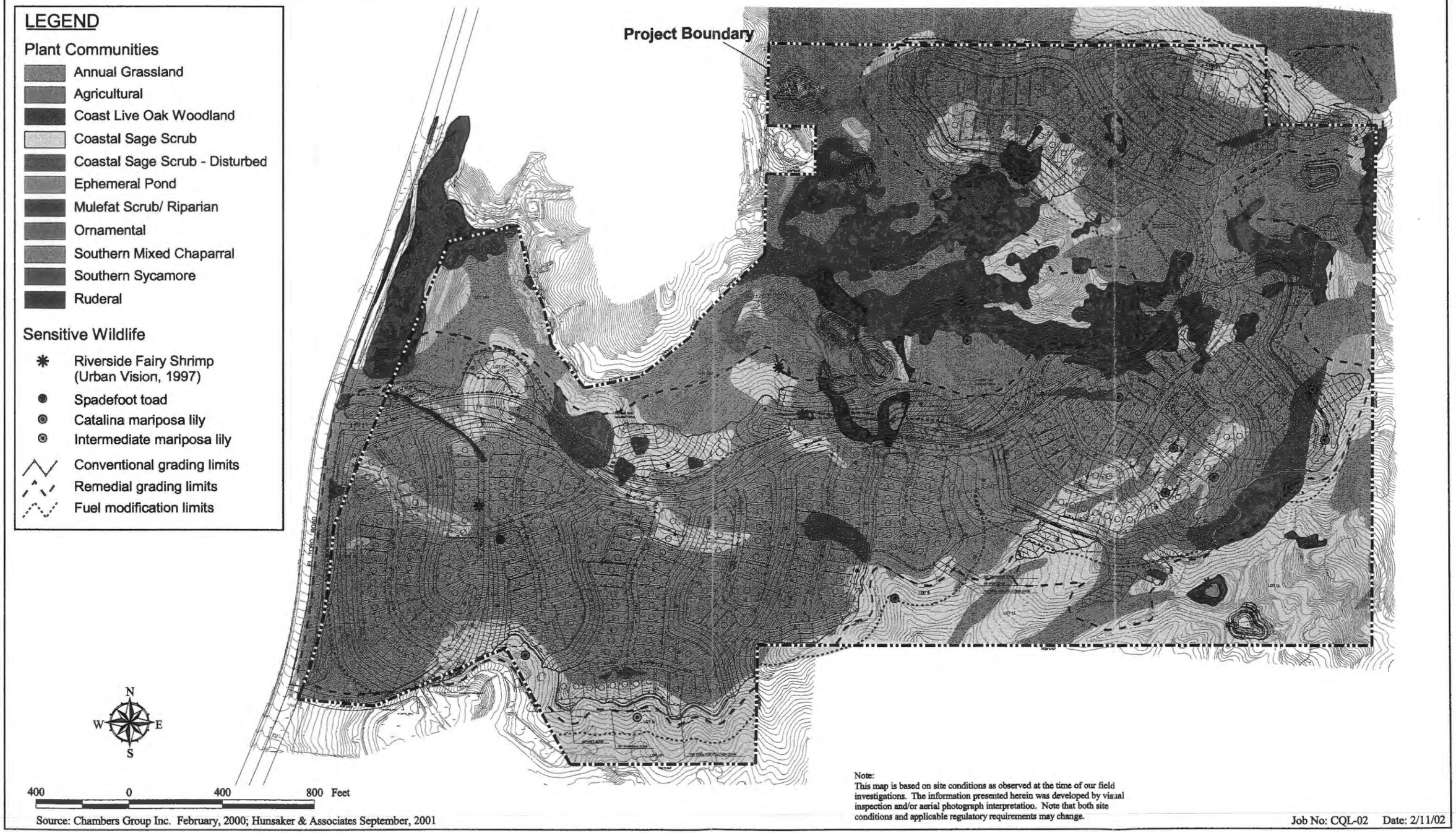
Annual Grassland. Approximately 100.3 acres of non-native grassland would be directly impacted by the Project grading on site and an additional 3.4 acres would be impacted off site. These impacts are not considered significant.

Agriculture. Approximately 3.0 acre of agricultural habitat will be impacted by the Project. These impacts are not considered significant.

Table 4
PROJECT IMPACTS

VEGETATION COMMUNITIES/HABITATS	ACREAGE			
	Existing Habitat	On Site Impacts	Off Site Impacts	Remaining
Wetland/Riparian Habitat				
Ephemeral pond	0.48	0.40	0	0.08 (Pools H & I)
Mule fat scrub	3.0	1.82	0.1	1.18
Southern Sycamore Riparian Woodland	0.3	0.10	0	0.20
Streambed*	3.58*	1.45*	0	2.13*
Sensitive Upland Habitats				
Venturan-Diegan transitional coastal sage scrub (includes undisturbed and disturbed)	70.7 (56.3/14.4)	40.8 (33.1/7.7)	2.9 (2.9/0)	29.9
Coast Live Oak Woodland (acreage/individuals)	13.2/289	5.4/181	0.1	7.8/108
Southern Mixed Chaparral	6.4	3.7	1.5	2.7
Other Uplands				
Annual grassland	122.02	100.3	3.4	21.72
Agriculture	5.4	3.0	0	2.4
Ornamental	0.5	0	0	0.5
Total+	220.0+	155.5	8.0+	66.52+

* Acres included in other vegetation types.
\+ Streambed acreages included in other vegetation types.



Source: Chambers Group Inc. February, 2000; Hunsaker & Associates September, 2001

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 2/11/02

Vegetation and Sensitive Resources/Impacts

SADDLEBACK MEADOWS

HELIX

Figure 5

7.1.2 Sensitive Plant Species Observed On Site

Direct impacts would not occur to any federal- or state-listed endangered or threatened species of plants. Three sensitive plant species will be impacted by the project: the intermediate mariposa lily, the Catalina mariposa lily, and small-flowered microseris. Impacts to these species are not considered significant due to their low sensitivity status.

7.1.3 Sensitive Animal Species Observed On Site

The Riverside fairy shrimp would be directly and significantly impacted by the Project as a result of impacts to 0.40 acre of ephemeral pond. Significant impacts to the western spadefoot toad will also result from impacts to 0.40 acre of ephemeral pond. Impacts to orange-throated whiptail, cactus wren, and Cooper's hawk are not considered significant due to their low sensitivity status.

There is a potential for raptor species to nest in trees in the eucalyptus woodlands on site, the riparian areas, or, in some cases on the ground. These nests, if present and active, require protection under the federal MBTA.

7.2 INDIRECT IMPACTS

Indirect impacts are impacts to the biological resources that result from adjacent direct impacts. Though these impacts may not initially be evident, over time they may occur due to the relative proximity of development or disturbance. Examples of indirect impacts include habitat fragmentation, habitat insularization, edge effect, exotic species invasion, lighting, domestic pet intrusion/predation, and increased human intrusion. The Project has been designed to minimize many of these indirect effects by preserving a significant proportion of sensitive habitats on site in one contiguous area. This will minimize habitat fragmentation and edge effects while providing corridors for wildlife.

8.0 MITIGATION

The following mitigation measures have been formulated to satisfy the requirements of the County of Orange CEQA requirements. Table 5 summarizes proposed project mitigation.

Table 5
SADDLEBACK MEADOWS EXISTING VEGETATION AND PROJECT IMPACT

HABITAT	Existing Habitat	On-Site Impacts	Off-Site Impacts	Preserved On Site	On-site Mitigation	Off-site Mitigation
Wetland/Riparian Habitat						
Ephemeral pond	0.48	0.40		0.08	1.15-C	
Mule fat scrub	3.0	1.82	0.1	1.18	0.74-C	1.24-C 2.6-E Hidden
Southern Sycamore Riparian Woodland	0.3	0.1		0.2	0.3-C	

Table 5 (cont.)						
HABITAT	Existing Habitat	On-Site Impacts	Off-Site Impacts	Preserved On Site	On-Site Mitigation	Off-Site Mitigation
Streambed	3.58	1.45	0	2.13	0.44-C	1.01-P Hidden
Sensitive Upland Habitats						
Venturan-Diegan transitional coastal sage scrub (includes undisturbed and disturbed)	70.7 (56.3/14.4)	40.8	2.9	29.9	41.7–C/E	14.8-P Viejo
Coast Live Oak Woodland (acreage/individuals)	13.2/289	5.4/181	0.1	7.8/103	13.5-C	3.0-C Hidden

C=Creation; R=Restoration; E=Enhancement; P=Preservation
Off-Site Locations: Viejo=Rancho Viejo, Hidden=Hidden Ranch

8.1 MITIGATION FOR DIRECT IMPACTS

8.1.1 Wetland/Riparian/Streambed/Open Water Habitats

8.1.1.1 Wetland Mitigation

Habitat on site affected by ACOE and CDFG jurisdiction include ephemeral ponds, mule fat scrub, southern sycamore riparian woodland. Additionally, impacts to ephemeral drainages (non-vegetated Waters of the U.S.) are covered under ACOE and CDFG jurisdiction and mitigation requirements for the Project have been determined as part of the ACOE 404, California RWQCB 401, and CDFG 1603 permitting processes. Mitigation for impacts to these areas will occur on-site and off-site. Detailed descriptions of mitigations for jurisdictional areas are described in the *Saddleback Meadows Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas* (Helix 2001a).

This plan has been developed with five specific objectives:

1) On-site Wetland Preservation - Within open space on site, maximize the protection, to the extent practicable, of existing jurisdictional areas (i.e., ephemeral ponds and drainages, along with surrounding wetland vegetation);

2) On-site Wetland Creation - Maximize on-site creation of ephemeral ponds and wetlands;

3) On-site Streambed Creation - Stream courses will be reconstructed in their original location as part of the remedial grading (this will occur within areas of remedial grading that are outside of the conventional grading limits);

4) Off-site Wetland Creation, Enhancement, and Preservation – Preserve, create, and enhance as much wetland vegetation in suitable off-site areas as is hydrologically feasible; and

5) Off-site Streambed Preservation – Mitigate remaining impacts to streambeds through acquisition of streambeds at an off-site location.

On site, mitigation for the loss of 0.4 acre of ephemeral ponds will be mitigated at a 2.88:1 ratio, or a total of 1.15 acre. A total of 1.15 acres of ephemeral ponds will be created (Figure 6). Impacts to 2.63 acres of wetland vegetation (1.92 acres of mule fat scrub, 0.61 acre of oak woodland, and 0.1 acre of sycamore woodland) will be mitigated at a 3:1 ratio with the on-site preservation of 1.38 acres of mule fat scrub and sycamore woodland, creation of an additional 2.87 acres of wetlands, the on-site preservation of 1.18 acres of mule fat scrub, the off-site creation of 1.24 acres of riparian habitat at Hidden Ranch (Figures 7 and 8), and the off-site preservation and enhancement of 2.6 acres of riparian habitat.

Creation of ponds and streambeds and the surrounding wetland vegetation on site requires the excavation, grading, and contouring in disturbed upland areas or areas disturbed by remedial grading to form basins or streambeds, and revegetating the margin of these areas with riparian cuttings, plantings and seeds of native understory species. The depth and shape of the constructed basins will be based on the contours of the existing ponds. In addition, soils from the bottom of the existing ponds will be collected prior to impacts and the collected soils will be used to innoculate the created ponds. Approximately 0.86 acre of mule fat scrub will be created around the pond margins. Additional mitigation measures include the installation of fencing to deter vandalism and other disturbance of the mitigation site. The fencing around the ponds will be maintained until mitigation success criteria have been met and will be of a 5-strand rounded wire design. Creation and enhancement of riparian and oak woodland habitat off site is proposed on the Hidden Ranch property and will focus on areas previously disturbed by years of cattle grazing.

Impacts to 1.45 acres of CDFG-jurisdictional streambeds will be mitigated for on site by the creation of streambeds within areas proposed for remedial grading previously supporting streambeds (0.44 acre), and off site by purchase of 1.01 acre of existing streambeds at either the Viejo (Figure 9) or Hidden Ranch Mitigation Banks or other site acceptable to the County. Impacts will be mitigated at a 1:1 ratio for a total of 1.45 acres.

The Plan provides information on the construction, maintenance, and monitoring of the on-site mitigation area as well as a description of the project goals and final success criteria. The on- and off-site mitigation areas will be monitored for five years or until project specific success criteria outlined in this Plan are achieved.

8.1.1.2 Upland Mitigation

Impacts to coastal sage scrub and coast live oak woodland require mitigation. These communities will be mitigated for both on- and off- site. The following describes how mitigation is proposed to occur for each of these habitats.

Project impacts to coastal sage scrub habitats will be mitigated for by preservation of 29.9 acres on site, creation of 33.0 acres of additional habitat on site in areas currently supporting disturbed vegetation or areas proposed for remedial grading outside of brush management zones, enhancement of 6.7 acres of disturbed sage scrub on site (Figure 6), and purchasing 14.8 acres of coastal sage scrub at an off-site location. Details of mitigation for Venturan-Diegan transitional coastal sage scrub are presented in the *Coastal Sage Scrub Restoration Plan for Saddleback Meadows* (HELIX 2001b). The goal of the plan is to outline the procedure for creating sage scrub habitat and for enhancing the value of existing coastal sage scrub habitat within the project site. Together these measures are intended to serve as mitigation for impacts to sage scrub habitat that would result from the construction of the proposed Saddleback Meadows development project. This plan also provides criteria and recommendations for the maintenance and management of created and enhanced sage scrub habitat. The final goal of this plan is to create habitat that, after five years, is on its way to approaching the function and value of surrounding mature sage scrub habitat.

Project impacts to 5.5 acres of coast live oak woodland will be mitigated for by on-site preservation of 7.8 acres of coast live oak woodland, on-site creation of 13.5 acres of habitat, and off-site creation of an additional 3.0 acres (a ratio of 3:1). The impacted trees (*Quercus agrifolia*) will also be replaced at the same ratio and 543 individuals will be planted. Details of mitigation for coast live oak woodlands are presented in the *Coastal Sage Scrub Restoration Plan for Saddleback Meadows* (HELIX 2001b).

8.1.1.3 Sensitive Plants and Animals/Raptor Habitat

Riverside fairy shrimp were observed in the ephemeral ponds. Impacts to fairy shrimp on-site would be mitigated in conjunction with the ephemeral pond mitigation discussed in the restoration plan for wetland impacts (HELIX 2001a). Impacts to the spadefoot toad will also be mitigated through implementation of this restoration plan. Additionally, spadefoot toads, toadlets and tadpoles will relocated to existing and created ponds from impacted ponds prior to initiating grading. Mitigation is not required for the other sensitive plant and animal species impacted by the Project due to their low sensitivity status

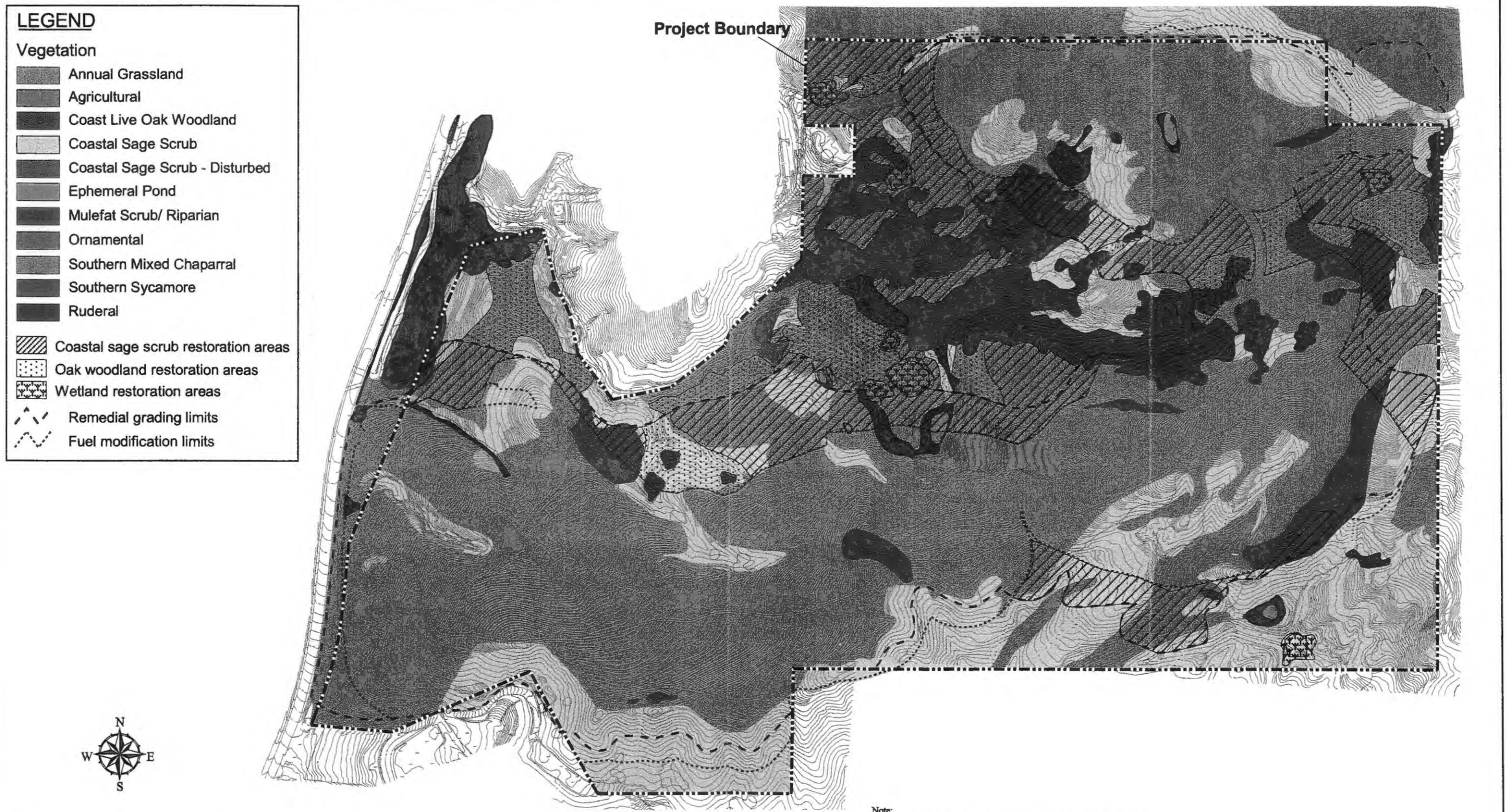
Mitigation for cumulative impacts to raptor foraging habitat (coastal sage scrub and grassland habitats, primarily) will be met in conjunction with the coastal sage scrub habitat mitigation discussed above for each habitat.

A potential exists for raptor species to be nesting on site during the time when most raptors breed (December to June). A pre-construction survey for raptor species will be conducted if construction occurs during the breeding season. If raptors are present then construction crews must provide a noise buffer of 300 feet around active raptor nests or avoid construction in those areas until the nesting process is complete (young birds have left the nest). Potentially, other measures may be possible to attenuate noise and dust effects on the nest. If raptors are not nesting on site, construction may proceed without need for further measures.

8.2 MITIGATION FOR INDIRECT IMPACTS

To reduce edge effect impacts into the open space areas, the following additional measures would be included when applicable:

- Backyard and street lighting will be shielded to prevent light overspill.
- Areas adjacent to the open space would require fencing to limit access to the MHPA. Fencing would not be required where slopes are sufficiently steep enough to preclude access.
- Silt fences will be installed prior to grading around all construction areas on slopes within the watershed area of preserved and constructed ephemeral ponds.



Source: Chambers Group Inc. February, 2000; Hunsaker & Associates September, 2001

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

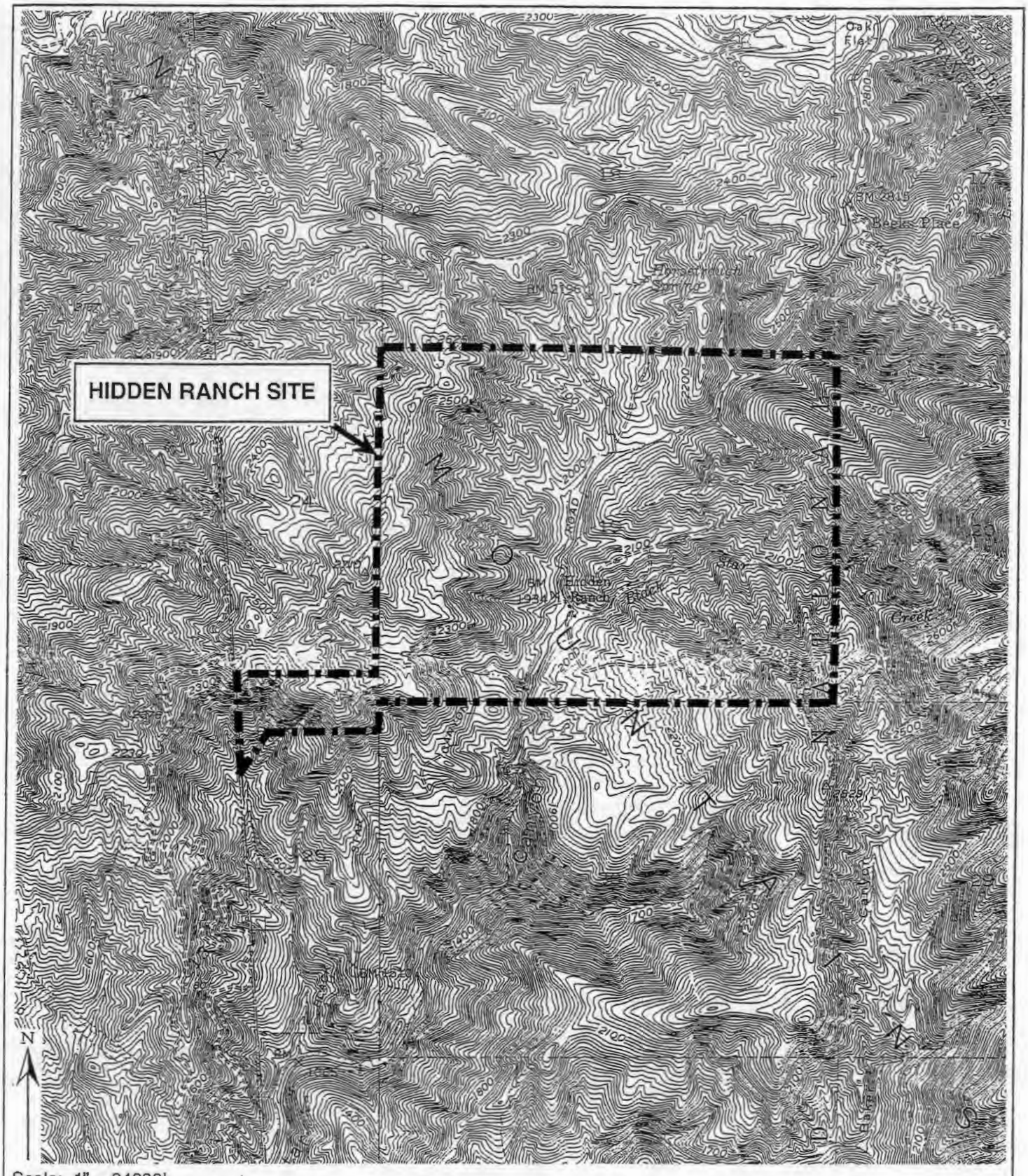
Job No: CQL-02 Date: 2/11/02

Restoration Areas

SADDLEBACK MEADOWS

HELIX

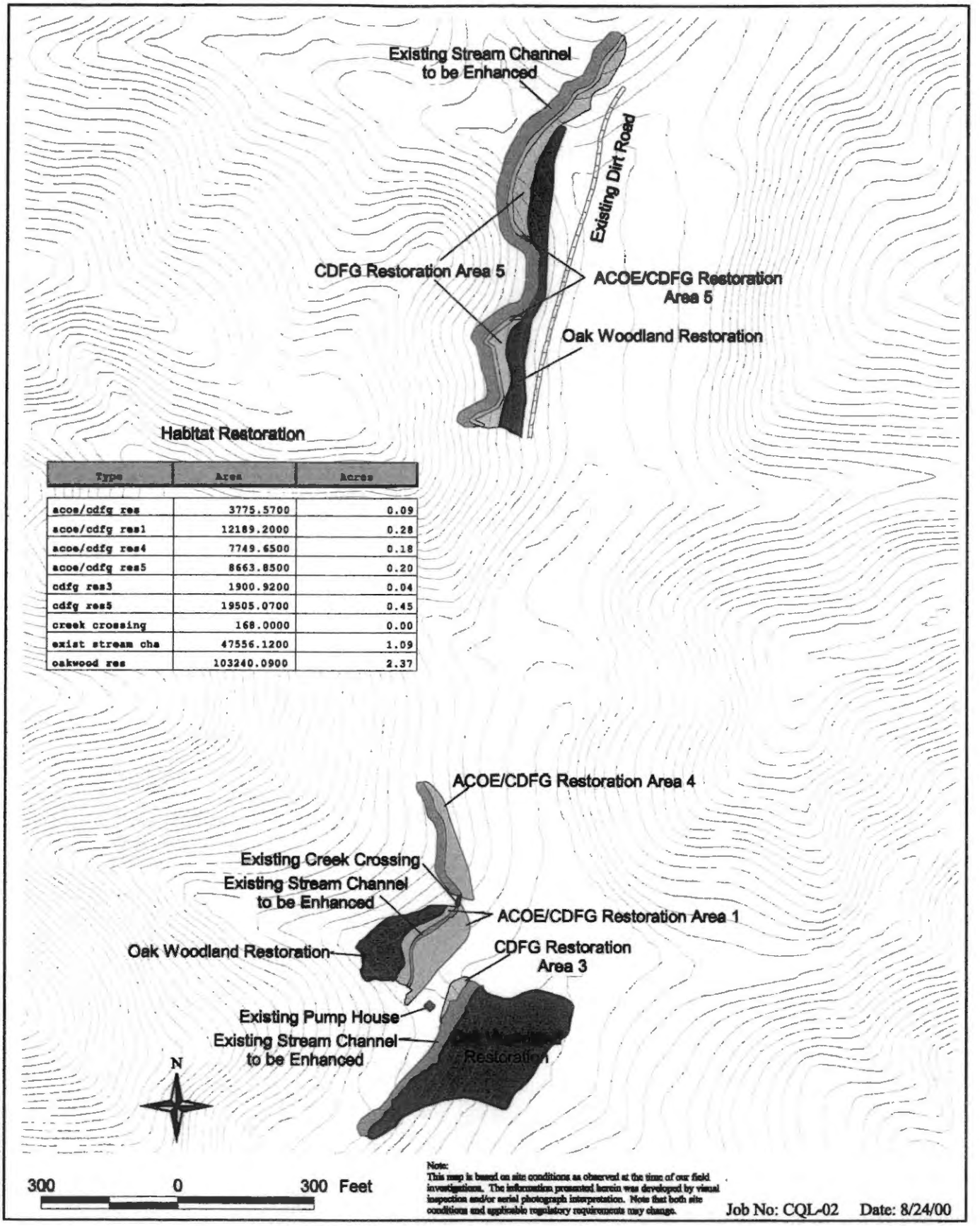
Figure 6



Scale: 1" = 24000'
Source: USGS 7.5 min Quadrangle: Black Star Canyon, CA

Hidden Ranch Vicinity Map
SADDLEBACK MEADOWS
Figure 7

HELIX



Habitat Restoration

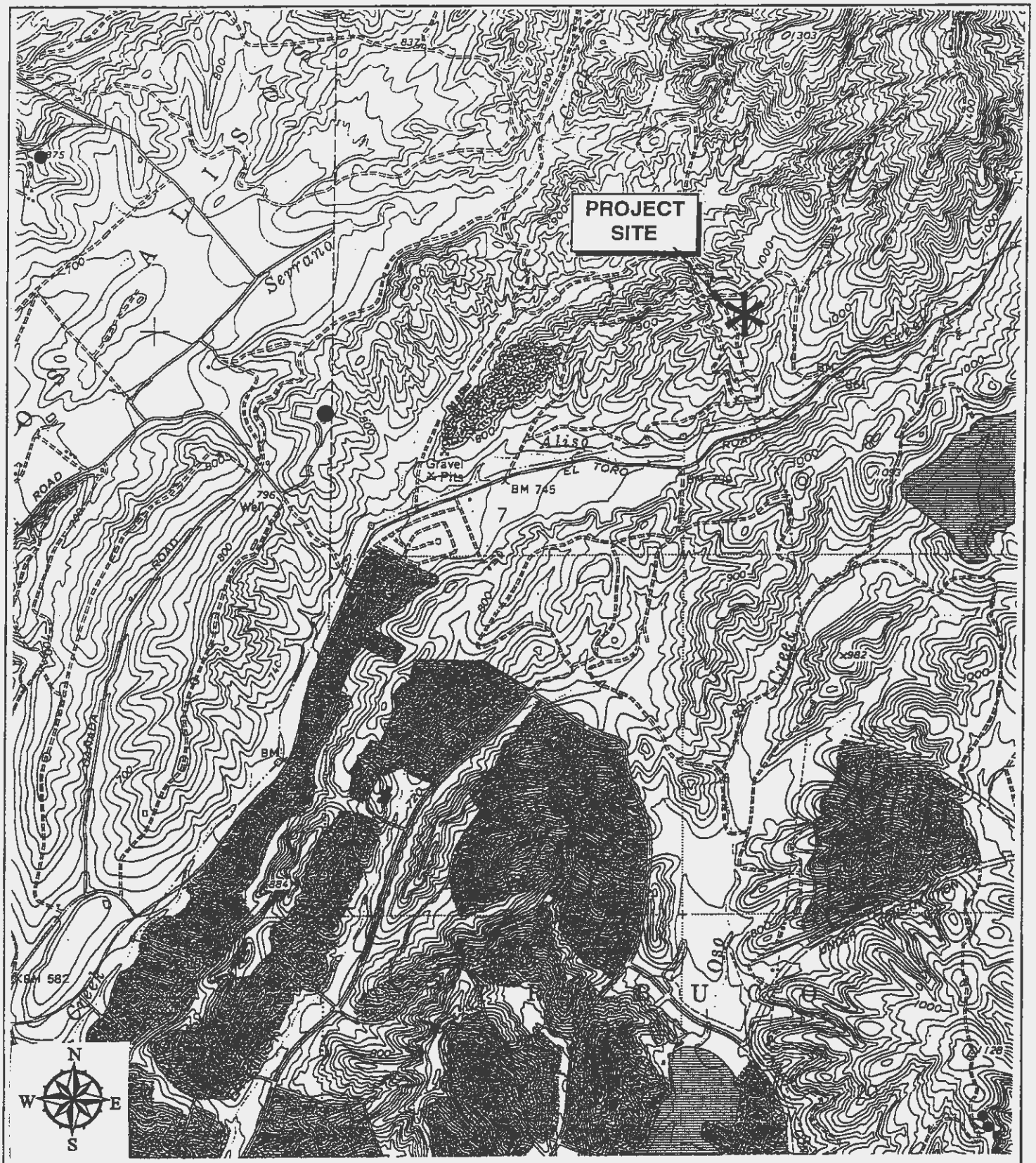
Type	Area	Acres
acoe/cdfg res	3775.5700	0.09
acoe/cdfg res1	12189.2000	0.28
acoe/cdfg res4	7749.6500	0.18
acoe/cdfg res5	8663.8500	0.20
cdfg res3	1900.9200	0.04
cdfg res5	19505.0700	0.45
creek crossing	168.0000	0.00
exist stream cha	47556.1200	1.09
oakwood res	103240.0900	2.37

Hidden Ranch Mitigation Bank Restoration Areas

SADDLEBACK MEADOWS

HELIX

Figure 8



Scale: 1" = 2000'
Source: USGS 7.5 min Quadrangle, El Toro

Viejo Mitigation Location Map
SADDLEBACK MEADOWS
Figure 9

HELIX

9.0 REFERENCES

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APPENDIX A

PLANT SPECIES OBSERVED

Appendix A
PLANT SPECIES OBSERVED AT SADDLEBACK MEADOWS
(†= Sensitive species, * = Non-native species)

FAMILY SCIENTIFIC NAME	COMMON NAME
VASCULAR PLANTS	
FERNS AND FERN ALLIES	
Pteridaceae – Brake Family	
Pentagramma triangularis	Goldenback fern
GYMNOSPERMS	
Pinaceae – Pine Family	
*Pseudotsuga macrocarpa**	Bigcone Douglas-fir
ANGIOSPERMS (DICOTYLEDONS)	
Amaranthaceae – Amaranth Family	
Amaranthus albus	Tumbling pigweed
Anacardiaceae – Sumac or Cashew Family	
Malosma laurina	Laurel sumac
Rhus integrifolia	Lemonadeberry
*Schinus molle**	Peruvian pepper tree
Toxicodendron diversilobum	Poison oak
Apiaceae – Carrot Family	
Bowlesia incana	Bowlesia
*Conium maculatum**	Poison
Daucus pusillus	Rattlesnake weed
*Foeniculum vulgare**	Fennel
Sanicula crassicaulis	Pacific sanicle
Apocynaceae – Dogbane Family	
*Vinca major**	Greater periwinkle
Asteraceae – Sunflower Family	
Ambrosia acanthicarpa	Annual bur-sage
Ambrosia psilostachya	Western ragweed
*Anthemis cotula**	Mayweed
Artemisia californica	California sagebrush
Artemisia douglasiana	Mugwort
Baccharis pilularis	Coyote brush
Baccharis salicifolia	Mulefat
Brickellia californica	California brickellbush
*Carduus pycnocephalus**	Italian thistle

Appendix A
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
*Centaurea melitensis**	Tocalote
*Chamomilla suaveolens**	Pineapple weed
*Cirsium vulgare**	Bull thistle
*Conyza bonariensis**	Flax-leaved horseweed
Conyza canadensis	Horseweed
*Cotula australis**	Australian brass-buttons
*Cynara cardunculus**	cardoon
Encelia californica	California bush sunflower
Eriophyllum confertiflorum	golden yarrow
Filago californica	California fluffweed
Gnaphalium californicum	California everlasting
Grindelia camporum	gum-plant
Hazardia squarrosa	saw-toothed goldenbush
*Heydypnois cretica**	tarweed
Hemizonia sp.	fascicled tarweed
Hemizonia fasciculate	telegraph weed
Heterotheca grandiflora	smooth cat's-ear
Isocoma menziesii	coastal goldenbush
*Lactuca serriola**	prickly lettuce
Layia platyglossa	tidy-tips
Lessingia filaginifolia	cudweed aster
Microseris douglasii ssp. platycarpha	small-flowered microseris
Microseris heterocarpa	microseris
*Senecio vulgaris**	common groundsel
*Silybum marianum**	milk thistle
Solidage californica	California goldenrod
*Sonchus asper ssp. asper**	prickly sow thistle
*Sonchus oleraceus**	common sow thistle
Xanthium strumarium	cocklebur
Boraginaceae – Borage Family	
Amsinckia menziesii	common fiddleneck
Cryptantha sp.	Cryptantha
Brassicaceae – Mustard Family	
*Brassica nigra**	black mustard
*Capsella bursa-pastoris**	shepherd's-purse
Descurainia pinnata	western tansy-mustard
Lepidium nitidum	shining peppergrass
*Raphanus sativus**	radish
*Sisymbrium officinale**	hedge mustard
Cactaceae – Cactus Family	
Opuntia littoralis	coastal prickly pear
Opuntia oricola	pancake prickly pear

Appendix A
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
Caprifoliaceae – Honeysuckle Family	
Lonicera subspicata	southern honeysuckle
Sambucus mexicana	Mexican elderberry
Symphoricarpos mollis	creeping snowberry
Caryophyllaceae – Pink Family	
*Silene gallica**	common catchfly
*Stellaria media**	common chickweed
Chenopodiaceae – Goosefoot Family	
*Atriplex semibaccata**	Australian saltbush
Chenopodium californicum	California goosefoot
*Chenopodium murale**	nettle-leaved goosefoot
*Salsola tragus**	Russian thistle
Convolvulaceae – Morning-Glory Family	
Calystegia macrostegia	western bindweed
Crassulaceae – Stonecrop Family	
Crassula connata	pygmy-weed
Dudleya lanceolata	lance-leaved dudleya
Dudleya pulverulenta	chalk dudleya
Cucurbitaceae – Gourd Family	
Cucurbita foetidissima	calabazilla
Marah macrocarpus	wild cucumber
Cuscutaceae – Dodder Family	
Cuscuta californica	California dodder
Euphorbiaceae – Spurge Family	
Chamaesyce albomarginata	rattlesnake weed
Eremocarpus setigerus	dove weed
*Euphorbia peplus**	petty spurge
*Ricinus communis**	castor-bean
Fabaceae – Legume Family	
Astragalus gambelianus	Gambell's dwarf locoweed
Lotus purshianus	Spanish clover
Lotus salsuginosus	Alkali lotus
Lotus scoparius	deerweed
Lotus strigosus	strigose lotus
Lupinus bicolor	miniature lupine
Lupinus hirsutissimus	stinging lupine
Lupinus sparsiflorus	Coulter's lupine
Lupinus succulentus	arroyo lupine
*Medicago polymorpha**	bur clover
*Melilotus alba**	white sweetclover
*Melilotus indica**	sourclover

Appendix A
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
*Robinia pseudoacacia**	black locust
*Trifolium hirtum**	rose clover
Fagaceae – Oak Family	
Quercus agrifolia	coast live oak
Quercus berberidifolia	scrub oak
Geraniaceae – Geranium Family	
*Erodium brachycarpum**	long-beaked filaree
*Erodium cicutarium**	red-stemmed filaree
Erodium moschatum	white-stemmed filaree
Grossulariaceae – Gooseberry Family	
Ribes aureum	golden currant
Ribes speciosum	fuchsia-flowered gooseberry
Hydrophyllaceae – Waterleaf Family	
Phacelia minor	wild caterbury-bell
Lamiaceae – Mint Family	
*Marrubium vulgare**	horehound
Salvia apiana	white sage
Salvia columbariae	chia
Salvia mellifera	black sage
Stacys ajugoides	hedge-nettle
Malvaceae – Mallow Family	
*Malva parviflora**	cheeseweed
Myrtaceae – Myrtle Family	
Eucalyptus sp.	gum tree
Nyctaginaceae – Four O'Clock Family	
Mirabilis californica	California wishbone bush
Oleaceae – Olive Family	
*Olea europaea**	olive
Onagraceae – Evening Primrose Family	
Epilobium canum	California fuchsia
Oxalidaceae – Oxalis Family	
*Oxalis corniculata**	creeping wood-sorrel
*Oxalis pes-caprae**	Bermuda buttercup

Appendix A
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
Paeoniaceae – Peony Family	
Paeonia californica	California peony
Papaveraceae – Poppy Family	
Eschscholzia californica	California poppy
Plantaginaceae – Plantain Family	
Plantago erecta	western plantain
Platanceae – Sycamore Family	
Platanus racemosa	western sycamore
Polemoniaceae – Phlox Family	
Eriastrum sapphirinum	sapphire eriastrum
Gilia angelensis	angel gilia
Linanthus dianthiflorus	ground-pink
Polygonaceae – Buckwheat Family	
Eriogonum elongatum var. elongatum	long-stemmed buckwheat
Eriogonum fasciculatum	California buckwheat
*Rumex crispus**	curly dock
Portulacaceae – Purslane Family	
Calandrinia ciliata	red maids
Claytonia parviflora	miner's lettuce
Claytonia perfoliata	miner's lettuce
Primulaceae – Primrose Family	
*Anagallis arvensis**	scarlet pimpernel
Ranunculaceae – Buttercup Family	
Ranunculus californicus	California buttercup
Rhamnaceae – Buckthorn Family	
Ceanothus crassfiolius	hoary leaf ceanothus
Rhamnus ilicifolia	holly-leaf redberry
Rhamnus tomentella	hoary redberry
Rosaceae – Rose Family	
Adenostoma fasiciculatum	chamise
Heteromeles arbutifolia	toyon
Rubiaceae – Madder Family	
Galium angustifolium	narrow-leaved bedstraw
Galium aparine	goose grass
Galium nuttallii	San Diego bedstraw
Salicaceae – Willow Family	
Salix gooddingii	black willow

Appendix A
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
Scrophulariaceae – Figwort Family	
Castilleja affinis	coast paintbrush
Castilleja exserta	purple owl's-clover
Collinsia heterophylla	Chinese houses
Cordylanthus rigidus	bird's-beak
Keckiella cordifolia	heart-leaved penstemon
Mimulus aurantiacus	orange bush monkey-flower
Solanaceae – Nightshade Family	
Datura wrightii	jimson weed
*Nicotiana glauca**	tree tabacco
Solanum douglasii	Douglas' nightshade
Tamaricaceae – Tamarisk Family	
*Tamarix sp.**	tamarisk
Urticaceae – Nettle Family	
*Urtica urens**	dwarf nettle
Verbenaceae – Mistletoe Family	
Phoradendron macrophyllum	big leaf mistletoe
Phoradendron villosum	oak mistletoe
ANGIOSPERMS (MONOCOTYLEDONS)	
Arecaceae – Palm Family	
*Washingtonia robusta**	Mexican fan palm
Cyperaceae – Sedge Family	
Eleocharis montevidensis	slender creeping spike-rush
Iridaceae – Iris Family	
Sisyrinchium bellum	blue-eyed-grass
Juncaceae – Rush Family	
Juncus bufonius	toad rush
Juncus mexicanus	Mexican rush
Liliaceae – Lily Family	
Calochortus catalinae†	Catalina mariposa lily
Calochortus splendens	lilac mariposa lily
Calochortus weedii var. intermedius†	intermediate flowered mariposa lily
Dichelostemma capitatum	blue dicks
Yucca whipplei	Our Lord's candle

Appendix A
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
Poaceae – Grass Family	
Achnatherum coronatum	giant needlegrass
*Agrostis viridis**	water bentgrass
*Arundo donax**	giant reed
*Avena barbata**	slender wild oat
*Avena fatua**	wild oat
*Bromus catharticus**	rescue grass
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Bromus sterilis	poverty brome
Distichlis spicata	saltgrass
Hordeum murinum	glaucous foxtail barley
*Lamarckia aurea**	goldentop
Leymus condensatus	giant wild rye
Lolium perenne	perennial ryegrass
Melica imperfecta	coast range melic
Nassella lepida	small-flowered needlegrass
Nassella pulchra	purple needlegrass
Piptatherum miliaceum	smilo grass
*Poa annua**	annual bluegrass
Poa secunda	Malpais bluegrass
*Schismus barbatus**	Mediterranean schismus
*Vulpia myuros**	fescue
Typhaceae – Cattail Family	
Typha domingensis	slender cattail

APPENDIX B

ANIMAL SPECIES OBSERVED

Appendix B
WILDLIFE SPECIES OBSERVED AT SADDLEBACK MEADOWS

FAMILY SCIENTIFIC NAME	COMMON NAME
CLASS AMPHIBIA	AMPHIBIANS
Pelobatidae	Spadefoot Toads
Scaphiopus hammondii	western spadefoot
Bufondidae	True Toads
Bufo boreas	western toad
Hylidae	Treefrogs
Pseudacris cadaverina	California chorus frog
CLASS REPTILIA	REPTILES
Iguanidae	Iguanid Lizards
Sceloporus occidentalis	western fence lizard
Scincidae	Skinks
Eumeces skiltonianus	western skink
Teiidae	Whiptail Lizards
Cnemidophorus hyperythrus	orange-throated whiptail
Anguidae	Alligator Lizards
Gerrhonotus multicarinatus	southern alligator lizard
Columbridae	Columbrid Snakes
Pituophis	gopher snakes
CLASS AVES	BIRDS
Ardeidae	Herons
Bubulcus ibis	cattle egret
Anatidae	Waterfowl
Anas platyrhynchos	mallard
Cathartidae	New World Vultures
Cathartes aura	turkey vulture
Accipitridae	Hawks
Accipiter straitus	sharp-shinned hawk
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
Falconidae	Falcons
Falco sparverius	American kestrel

Appendix B
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
Phasianidae	Pheasants & Quails
Callipepla californica	California quail
Charadriidae	Plovers
Charadrius vociferous	killdeer
Columbidae	Pigeons & Doves
Columbia livia	rock dove
Zenaida macroura	mourning dove
Cuculidae	Cuckoos & Roadrunners
Geococcyx californianus	greater roadrunner
Strigidae	True Owls
Otus kennicottii	western screech-owl
Apodidae	Swifts
Aeronautes saxatails	white-throated swift
Trochilidae	Hummingbirds
Calypte anna	Anna's hummingbird
Archilochus alexandri	black-chinned hummingbird
Calypte costae	Costa's hummingbird
Picidae	Woodpeckers
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
Colaptes auratus	northern flicker
Tyrannidae	Tyrant Flycatchers
Sayomis nigricans	black phoebe
Sayomis saya	Say's phoebe
Myiarchus cinerascens	ash-throated flycatcher
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	western kingbird
Hirundinidae	Swallows
Tachycineta thalassina	violet-green swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Hirundo pyrrhonota	cliff swallow
Hirundo rustica	barn swallow
Corvidae	Jays & Crows
Aphelocoma coerulescens	scrub jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Paridae	Titmice
Parus inornatus	plain titmouse

Appendix B
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
Aegithalidae	Bushtits
Psaltriparus minimus	bushtit
Troglodytidae	Wrens
Campylorhynchus brunneicapillus	cactus wren
Salpinctes obsoletus	rock wren
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
Muscicapidae	Kinglest, Gnatcatchers, Babblers
Regulus calendula	ruby-crowned kinglet
Polioptila caerulea	blue-gray gnatcatcher
Sialia mexicana	western bluebird
Chamaea fasciata	wrentit
Mimidae	Thrashers
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
Ptilogonatidae	Silky-Flycatchers
Phainopepla nitens	phainopepla
Sturnidae	Starlings
Sturnus vulgaris	European starling
Emberizidae	Wood Warblers, Tanagers
Vermivora celata	orange-crowned warbler
Dendroica coronata	yellow-rumped warbler
Dendroica petechia	yellow warbler
Geothlypis trichas	common yellowthroat
Guiraca caerulea	blue grosbeak
Passerina amoena	lazuli bunting
Pipilo erythrophthalmus	spotted towhee
Pipilo crissalis	California towhee
Chondestes grammacus	lark sparrow
Amphispiza belli	sage sparrow
Melospiza melodia	song sparrow
Zonotrichia atricapilla	golden-crowned sparrow
Zonotrichia leucophrys	white-crowned sparrow
Molothrus ater	brown-headed cowbird
Euphagus cyanocephalus	Brewer's blackbird
Icterus galbula	Bullock's oriole
Fringillidae	Finches
Carpodacus mexicanus	house finch
Carduelis psaltria	lesser goldfinch

Appendix B
(cont.)

FAMILY SCIENTIFIC NAME	COMMON NAME
CLASS MAMMALIA	
Didelphidae	New World Opossums
Didelphis virginiana	Virginia opossum
Leporidae	Hares & Rabbits
Sylvilagus audubonii	desert cottontail
Sciuridae	Squirrels
Spermophilus beecheyi	California ground squirrel
Geomyidae	Pocket Gophers
Thomomys bottae	Botta's pocket gopher
Muridae	Mice, Rats, and Voles
Peromyscus californicus	California mouse
Neotoma spp.	Woodrat
Canidae	Wolves & Foxes
Canis latrans	coyote
Procyonidae	Raccoons
Procyon lotor	raccoon
Mustelidae	Weasels, Skunks, & Otters
Mephitis spp. Or Spilogale spp.	skunk
Cervidae	Deer
Odocoileus hemionus	mule deer
Equidae	Horses & Burros
Equus caballus	domestic horse
Bovidae	Bison, Goats & Sheep
Bos bovis	domestic cattle

APPENDIX C

EXPLANATION OF STATUS CODES FOR PLANTS AND ANIMALS

Appendix C
EXPLANATION OF STATUS CODES FOR PLANTS AND ANIMALS

U.S. FISH AND WILDLIFE SERVICE (USFWS)

FE	Federally-listed endangered
FT	Federally-listed threatened
FPE	Federally-proposed endangered
FPT	Federally-proposed threatened
FPD	Federally-proposed for delisting
FC	Federal candidate species (former Category 1 candidates)
FSC	Federal special concern species (a "term of art" for former Category 2 candidates)
MBTA	Migratory Bird Treaty Act

CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG)

SE	State-listed endangered
SR	State-listed rare
ST	State-listed threatened
SCE	State candidate for listing as endangered
SCT	State candidate for listing as threatened
CSC	California special concern species
Fully Protected and Protected	Fully protected and Protected species may not be taken or possessed without a permit from the Fish and Game Commission and/or the Department of Fish and Game

WATCH LIST

The Watch List (compiled by the Audubon Society and partners in Flight) identifies species are those faced with population decline, limited geographic range, and/or threats such as habitat loss on their breeding and wintering grounds serving as an early warning system that focuses attention on at-risk bird species before they become endangered.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

For plants with no current state or federal legal standing, "CEQA" refers to the fact that under the Act, impacts to species may be found significant under certain circumstances (e.g., uniqueness due to size, age, or regional sensitivity).

CALIFORNIA NATIVE PLANT SOCIETY (CNPS)

LISTS

1A = Presumed extinct.

1B = Rare, threatened, or endangered in California and elsewhere. Eligible for state listing.

2 = Rare, threatened, or endangered in California but more common elsewhere. Eligible for state listing.

3 = Distribution, endangerment, and/or taxonomic information needed.

4 = A watch list for species of limited distribution. Needs monitoring for changes in population status.

R-E-D CODE

R (Rarity)

1 = Rare but found in sufficient numbers and distributed widely enough that potential for extinction is low at this time.
2 = Occurrence confined to several populations or to one extended population.
3 = Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

1 = Not endangered
2 = Endangered in a portion of its range
3 = Endangered throughout its range

D (Distribution)

1 = More or less widespread outside California
2 = Rare outside California
3 = Endemic to California

APPENDIX I.2

CONCEPTUAL MITIGATION AND MONITORING PLAN FOR CDFG

Saddleback Meadows

Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas

Prepared by:

HELIX environmental planning, inc.

Saddleback Meadows

CONCEPTUAL MITIGATION AND MONITORING PLAN FOR CDFG JURISDICTIONAL AREAS

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Saddleback Meadows
Conceptual Mitigation and Monitoring Plan
for CDFG Jurisdictional Areas

TABLE OF CONTENTS

Section	Title	Page
ES	EXECUTIVE SUMMARY	ES
I.	INTRODUCTION	1
II.	PROJECT DESCRIPTION	1
	A. Project Location	1
	B. Project Summary	2
	C. Existing Jurisdictional Areas	2
	D. Jurisdictional Areas to be Filled	3
III.	GOALS OF MITIGATION	3
	A. Type(s) of Habitat to be Preserved, Enhanced or Created	4
	1. On-site Wetland Preservation	4
	2. On-site Pond Creation	4
	3. On-site Wetland Creation	6
	4. On-site Streambed Creation	6
	5. Off-site Vernal Pool Enhancement, Creation and Preservation	6
	6. Off-site Wetland Enhancement, Creation, and Preservation	6
	7. Off-site Streambed Preservation	7
	B. Time Frame	7
IV.	FINAL SUCCESS CRITERIA	7
V.	PROPOSED MITIGATION SITE	8
	A. Location and Size of Mitigation Area	8
	1. On-site Habitat Creation	8
	2. Off-site Wetland and Ephemeral Pond Creation, Enhancement, and Preservation; and Streambed Preservation	8
	B. Ownership Status	8
	C. Existing Habitat Values of Mitigation Area	8
	D. Present and Proposed Uses of Mitigation Area	8
	E. Present and Proposed Uses of All Adjacent Areas	8
VI.	IMPLEMENTATION PLAN	9
	A. Rationale for Expecting Implementation Success	9
	B. Responsible Parties	10
	1. Project Proponent	10
	2. Landscape Architect	10
	3. Restoration Specialist	10
	4. Landscape Contractor	10
	C. Schedule	11

TABLE OF CONTENTS (cont.)

Section	Title	Page
VI.	IMPLEMENTATION PLAN (cont.)	
	D. Site Preparation	12
	1. Wetlands and Open Space Remaining On Site	12
	2. Pond Creation Areas	12
	3. Wetland Enhancement Area	13
	E. Planting Plan Materials and Methods	13
	F. Irrigation Plan	16
	G. As-Built Conditions	16
VII.	MAINTENANCE DURING MONITORING PERIOD	16
	A. Maintenance Activities	16
	1. General Maintenance	16
	2. Fencing	17
	3. Weed Control	17
	4. Disease and Pests	17
	5. Pruning	17
	6. Trash Removal	18
	B. Responsible Parties	18
	C. Schedule	18
VIII.	Monitoring Plan	19
	A. Performance Criteria	19
	B. Monitoring Methods	20
	1. Species Diversity	20
	2. Cover by Weeds	20
	3. Cover by Native Species	20
	C. Annual Reports	20
	D. Schedule	21
IX.	COMPLETION OF MITIGATION	21
X.	REFERENCES	22

LIST OF FIGURES

Number	Title	Follows Page
1	Regional Location Map	1
2	Project Vicinity Map	1
3	CDFG Jurisdictional Areas	2
4	CDFG Mitigation Areas	4
5	Viejo Mitigation Location Map	6
6	Viejo Conservation Bank Vernal Pool Mitigation Area	6
7	Hidden Ranch Restoration Location	6
8	Hidden Ranch Mitigation Bank Restoration Areas	6

TABLE OF CONTENTS (cont.)

LIST OF TABLES

Number	Title	On Page
1	Impacts to CDFG Jurisdictional Areas	2
2	Impacts and Mitigation for CDFG Jurisdictional Areas	5
3	California Department of Fish and Game Restoration Areas	7
4	Preliminary Schedule Guidelines for Mitigation Activities	11
5a	Mule Fat Scrub Plant Species Palette	13
5b	Oak Woodland Plant Species Palette	14
5c	Sycamore Woodland Plant Species Palette	14
6	Weed Species List	18
7	Maintenance Schedule	19
8	Maintenance Monitoring Schedule for the Restoration Specialist	19
9	Annual Success Criteria Milestones	20

EXECUTIVE SUMMARY

This Conceptual Mitigation and Monitoring Plan (Plan) provides project information, a conceptual mitigation plan, and a monitoring program for mitigation of impacted California Department of Fish and Game (CDFG) jurisdictional areas on the Saddleback Meadows property, located northeast of the City of Mission Viejo in Orange County. The impacts mitigated in this plan are based on delineations conducted in 1998 and 1999 by Chambers Group, Inc. and in 1995 by Sweetwater Environmental Biologists, Inc.

The 222-acre Saddleback Meadows project site contains approximately 8.24 acres, including 0.34 acre of ephemeral ponds, 4.32 acres of wetland vegetation and 3.58 acres of streambeds, subject to CDFG jurisdiction under Section 1600 et seq. of the California State Code. The proposed project would impact approximately 4.09 acres of CDFG jurisdictional areas, including 0.28 acre of ephemeral ponds, 2.37 acres of wetland vegetation, and 1.44 acres of streambeds. This plan has been developed with five specific objectives:

1) **On-site Wetland Preservation** - Within open space on site, maximize the protection, to the extent practicable, of existing jurisdictional areas (i.e., ephemeral ponds and drainages, along with surrounding wetland vegetation);

2) **On-site Wetland Creation** - Maximize on-site creation of ephemeral ponds and wetlands;

3) **On-site Streambed Creation** - Stream courses will be reconstructed in their original location as part of the remedial grading (this will occur within areas of remedial grading that are outside of the conventional grading limits);

4) **Off-site Wetland Creation, Enhancement, and Preservation** – Preserve, create, and enhance as much wetland vegetation in suitable off-site areas as is hydrologically feasible; and

5) **Off-site Streambed Preservation** – Mitigate remaining impacts to streambeds through acquisition of streambeds at an off-site location.

On site, mitigation for the loss of 0.28 acre of ephemeral ponds will be mitigated at a 3:1 ratio, or a total of 0.84 acre. A total of 1.01 acres of ephemeral ponds will be created. An additional 0.18 acre of vernal pools will be preserved, created, and/or enhanced on the Viejo Mitigation Bank site. The excess ephemeral pond mitigation totaling 0.35 acre (0.17 acre ephemeral pond and 0.18 acre of vernal pool) would be used to mitigate impacts to wetland vegetation. Impacts to 2.37 acres of wetland vegetation (1.54 acres of mule fat scrub, 0.73 acre of oak woodland, and 0.10 acre of sycamore woodland) will be mitigated at a 3:1 ratio with the on-site creation of an additional 2.78 acres of wetlands, the off-site creation of 2.25 acres of riparian habitat, the off-site preservation and enhancement of 1.73 acres of riparian habitat, and the aforementioned credit from the creation, preservation, and enhancement of vernal pools.

Creation of ponds and streambeds and the surrounding wetland vegetation on site requires the excavation, grading, and contouring in disturbed upland areas or areas disturbed by remedial grading to form basins or streambeds, and revegetating the margin of these areas with riparian cuttings, plantings and seeds of native understory species. The depth and shape of the constructed basins will be based on the contours of the existing ponds. In addition, soils from the bottom of the existing ponds will be collected prior to impacts and the collected soils will be used to innoculate the created ponds. Additional mitigation measures include the installation of fencing to deter vandalism and other disturbance of the mitigation site. Creation and enhancement of riparian and oak woodland habitat off site is proposed on the Hidden Ranch property and will focus on areas previously disturbed by years of cattle grazing.

Impacts to 1.44 acres of CDFG-jurisdictional streambeds will be mitigated for on site by the creation of streambeds within areas proposed for remedial grading previously supporting streambeds (0.44 acre), and off site by purchase of 1.0 acre of existing streambeds at either the Viejo or Hidden Ranch Mitigation Banks. Impacts will be mitigated at a 1:1 ratio for a total of 1.44 acres.

The Plan provides information on the construction, maintenance, and monitoring of the on-site mitigation area as well as a description of the project goals and final success criteria. The on- and off-site mitigation areas will be monitored for five years or until project specific success criteria outlined in this Plan are achieved.

I. INTRODUCTION

This Conceptual Mitigation and Monitoring Plan (Plan) provides project information, a conceptual mitigation plan, and a monitoring program for impacted California Department of Fish and Game (CDFG) jurisdictional areas on the Saddleback Meadows property, located northeast of the City of Mission Viejo in Orange County. Mitigation for these impacts is required under section 1600 et seq. of the California State Code. Impacts were determined based on site delineations conducted in 1998 and 1999 by Chambers Group, Inc. and in 1995 by Sweetwater Environmental Biologists, Inc. (SEB). Mitigation for impacts occurring to other sensitive habitats, plants, and wildlife present on the Saddleback Meadows property will be covered in separate documents.

The development of this Plan included the evaluation of several on-site alternatives, including:

1) Using flatter portions of the property with good hydrology for on-site drainage mitigation.

   This proposed alternative gives higher priority to using the flat portions of the site for the creation of ephemeral ponds.

2) Using uplands adjacent to existing drainages for on-site drainage mitigation.

   These uplands are occupied by southern sycamore woodland and coastal live oak woodland habitat. This proposed alternative gives higher priority to preserving these existing vegetation communities.

3) Reworking existing drainages in order to create new, larger drainages.

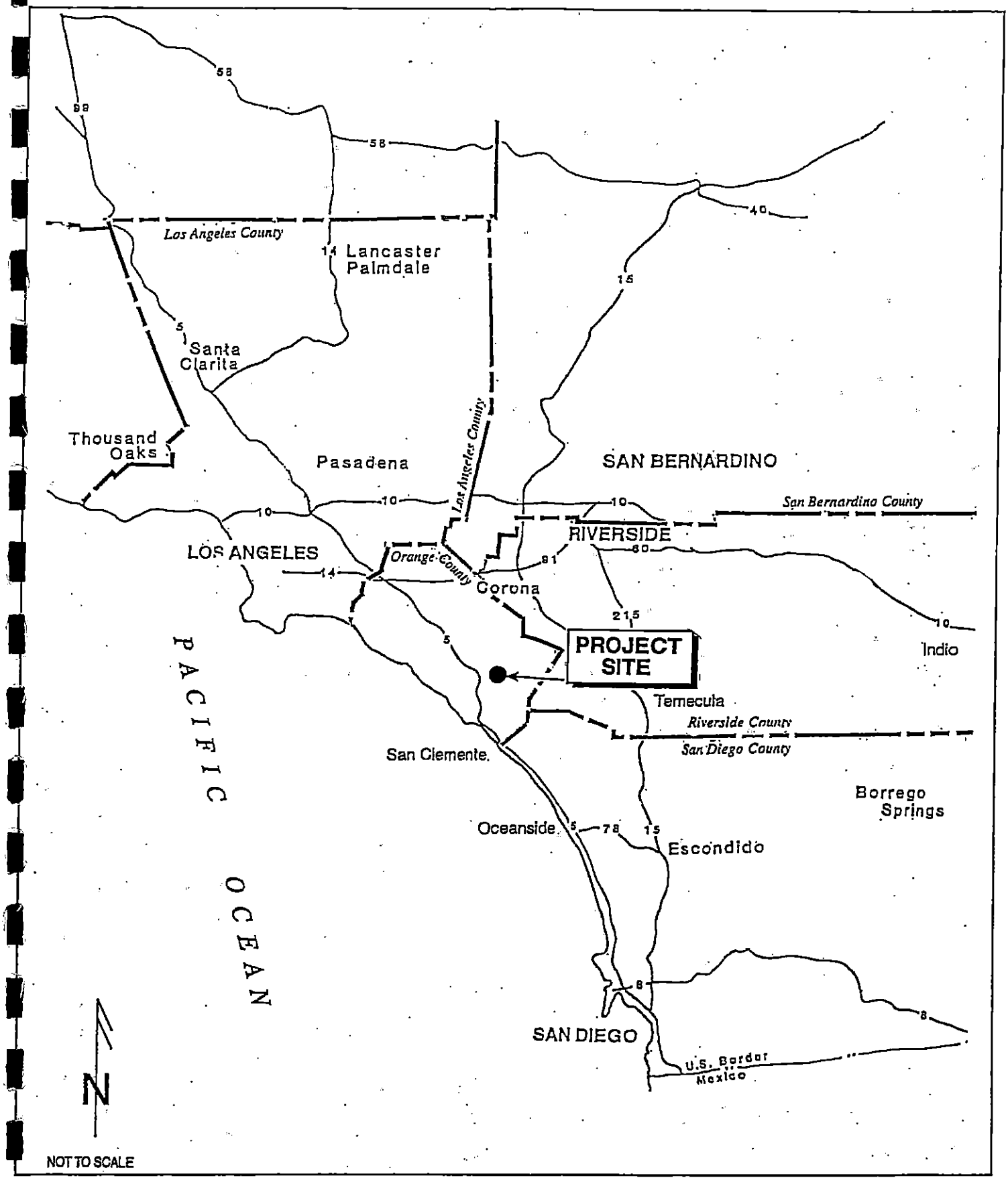
   The drainages not impacted by the project footprint are of the "higher quality" on-site drainages. In addition, due to the steep terrain, the opportunity to achieve a "net gain" would be minimal. This alternative would not provide measurable benefits for the level of disturbance it would require.

II. PROJECT DESCRIPTION

A. PROJECT LOCATION

Saddleback Meadows is a 222-acre site located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains (Figure 1). The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area (Figure 2). The site is located on the U.S. Geological Survey Santiago Peak and El Toro 7.5 minute quadrangles.

An active creek (Aliso Creek) runs north and south along the western boundary of the site. Residential communities are located to the south and west, pasture land is located to the east, and Saint Michael's Abbey is located to the north. The property is actively used for horse and cattle grazing. The intensive grazing combined with the presence of highly erodable soils on site has, over the years, resulted in extensive habitat degradation in both upland and wetland habitats. Significant erosion has also occurred within the drainages on the site. The project site is mostly undeveloped except for a small corral in the central portion of the western half of the site, remnants of houses, and a few unmaintained roads.

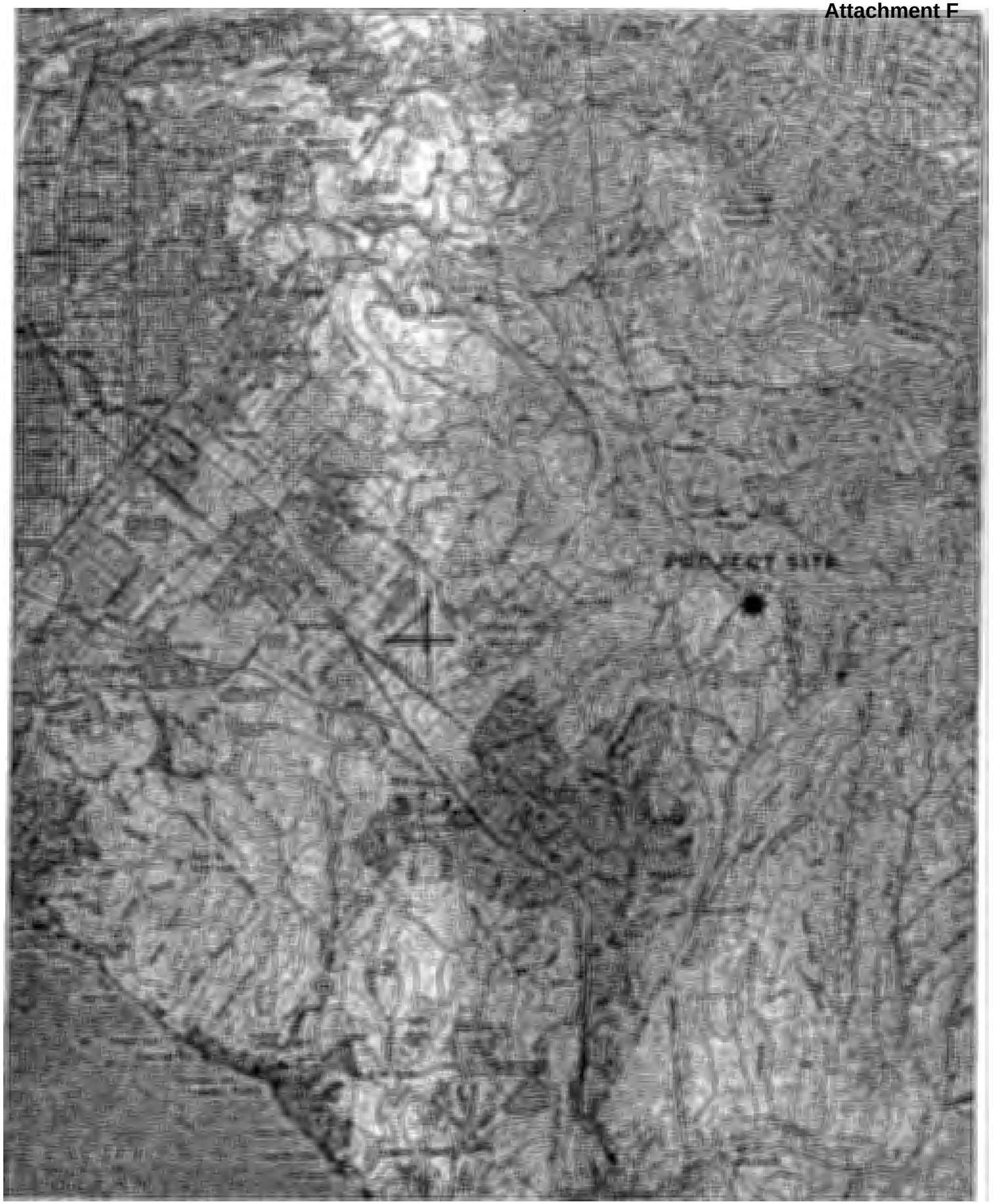


Regional Location Map

SADDLEBACK MEADOWS

Figure 1

HELIX



Project Vicinity Map
SADDLEBACK MEADOWS
Figure 2

HELIX

B. PROJECT SUMMARY

The proposed project entails the development of 299 single-family residential lots, roads, and recreational trails on approximately 63 acres of the property. An additional 102 acres will be impacted by remedial grading. The development is concentrated in the north and south sections of the property, avoiding a steep ravine and its associated oak woodlands near the center of the property. The remedial grading areas will be recontoured to preconstruction elevations, revegetated and preserved as open space. A total of approximately 159 of the property's 222 acres will be dedicated in permanent open space, including 90 acres dedicated to the County of Orange as an extension of O'Neill Regional Park. Manufactured slopes extending outside of the fuel modification zones will be revegetated with native vegetation and dedicated as open space. The current project configuration has been designed to avoid as much of the wetlands on site as possible, and to provide for an east-west wildlife corridor through the property to off-site open space areas located to the east and west. This east-west corridor is a critical component of the County's Natural Community Conservation Program (NCCP).

C. EXISTING JURISDICTIONAL AREAS

Several delineations have been conducted of the Saddleback Meadows property to identify areas subject to CDFG jurisdiction (Figure 3). SEB biologists conducted a jurisdictional delineation of the site in August 1995, and Chambers Group biologists delineated the project site in April and May 1998, and March, August, and October 1999. The delineations covered riparian plant communities and ponds within the project boundaries. In addition, all drainages on the site were inspected for evidence of periodic surface flows. Additional information on the site delineations is available in the Jurisdictional Delineation of the Saddleback Meadows Property in Orange County (Chambers Group 2000).

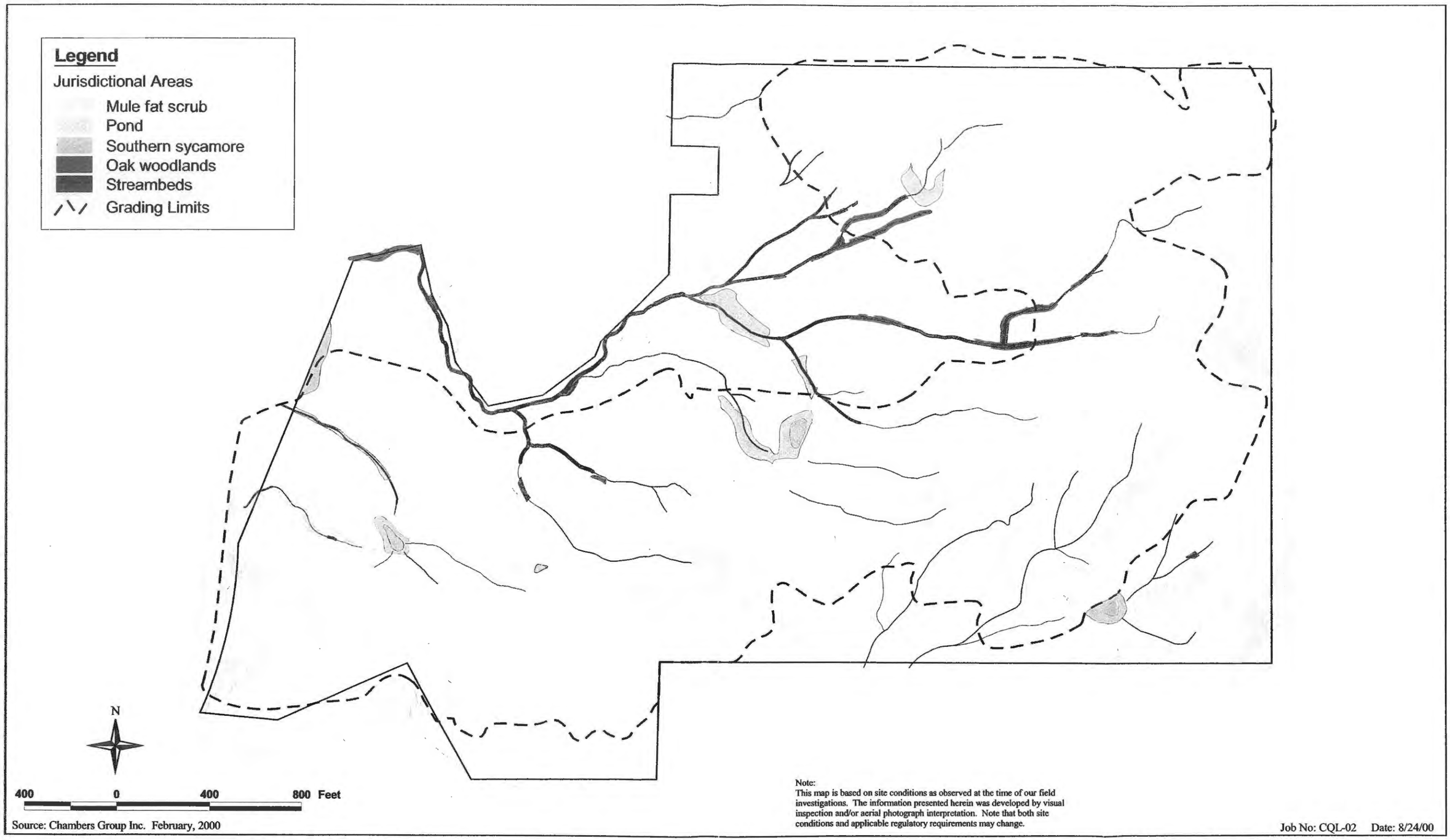
CDFG Jurisdictional Areas

A total of 8.24 acres on the site was determined to fall under CDFG jurisdiction (Figure 3; Table 1). CDFG jurisdiction is comprised of seven ephemeral ponds ringed by mule fat scrub, and patches of oak woodland, sycamore woodland, and mule fat scrub.

Table 1
IMPACTS TO CDFG JURISDICTIONAL AREAS

HABITAT	EXISTING (acres)	IMPACTS (acres)		
		Project Footprint	On-Site Mitigation Area	TOTAL
Ephemeral Ponds	0.34	0.28	--	0.28
Mule Fat Scrub	2.76	1.54	--	1.54
Oak Woodland	1.25	0.73	--	0.73
Sycamore Woodland	0.31	0.10	--	0.10
Streambed	3.58	1.34	0.10	1.44
TOTAL	8.24	3.99	0.10	4.09

Ephemeral Ponds – The site contains a total of nine stock ponds, two of which have breached and no longer retain water. The ponds are not natural, but rather man-made stock ponds created for cattle and other farming and ranching activities that have been present at the site for years. Four of the ponds, which are impoundments in otherwise natural drainages, are considered CDFG jurisdictional. The ponds



Source: Chambers Group Inc. February, 2000

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 8/24/00

CDFG Jurisdictional Areas

SADDLEBACK MEADOWS

HELIX

Figure 3

are heavily degraded by cattle. For purposes of this analysis, it was assumed that the pond surface area extended to the maximum pond size based on the upper elevational limit of the dam that creates the pond. The ponds themselves are devoid of vegetation. Approximately 0.34 acre of ephemeral pond (calculated based on the sizes of the ponded basins) occurs on site.

Mule Fat Scrub - The mule fat scrub communities on site are, for the most part, associated with the ephemeral ponds and are essentially riparian "islands" within the surrounding upland communities. Mule fat (*Baccharis salicifolia*), in conjunction with arroyo willow (*Salix lasiolepis*) and red willow (*Salix laevigata*), also occurs along drainages on the site. Approximately 1.46 acres of mule fat scrub occurs along the edges of the ephemeral ponds; approximately 1.3 acres of mule fat scrub occur along two of the on-site drainages.

Oak Woodland– Approximately 1.25 acres of oak woodland, in association with mule fat, which extend beyond the banks of the drainage in the center of the property are considered CDFG jurisdictional.

Sycamore Woodland – Approximately 0.31 acres of CDFG-jurisdictional sycamore woodland occurs on the upper bench of Aliso Creek on site.

Streambeds – Approximately 3.58 acres of CDFG jurisdictional streambeds, which do not contain jurisdictional vegetation, occur on site.

D. JURISDICTIONAL AREAS TO BE IMPACTED

Implementation of the proposed project will impact a total of 4.09 acres of CDFG jurisdictional areas, including 0.28 acre of ephemeral ponds, 1.54 acres of mule fat scrub, 0.73 acre of oak woodland, 0.10 acre of sycamore woodland, and 1.44 acres of streambed (Table 1).

III. GOALS OF MITIGATION

The development of this Plan involved an iterative process that first focused on on-site preservation. Remaining on-site impact mitigation then focused on use of the flatter portions of the open space for creation of ephemeral ponds, with the surrounding area used for wetland creation. Other areas of on-site open space were also assessed for their potential for use as additional mitigation areas, including existing drainages. Widening existing drainages on site would result in greater impacts to wetland and upland habitats and were, therefore, not selected.

Remaining mitigation requirements are being met off site at two locations: the Viejo Mitigation Bank and the Hidden Ranch Mitigation Bank. The focus of mitigation on the Viejo site was the preservation, enhancement and creation of vernal pools, and the potential preservation of streambed and mule fat scrub. Mitigation on Hidden Ranch includes preservation, enhancement and creation of mule fat scrub, southern willow scrub, and sycamore/oak woodland. On site, two distinct areas were identified for mitigation: the area within the existing ranch compound that has been the most heavily disturbed and an area along the creek immediately upstream of the ranch compound that has been disturbed by long-term cattle grazing.

The Mitigation Plan has been developed with five specific objectives:

1) **On-site Wetland Preservation** – Within open space on site, maximize the protection, to the extent practicable, of existing ephemeral ponds and drainages, along with surrounding wetland vegetation;

2) **On-site Wetland Creation** - Maximize on-site creation of ephemeral ponds and wetlands;

3) **On-site Streambed Creation** - Stream courses will be reconstructed in their original location as part of the remedial grading (This will occur within areas of remedial grading that are outside of the conventional grading limits);

4) **Off-site Wetland Creation, Enhancement, and Preservation** – Preserve, create, and enhance as much wetland vegetation along the fringe of existing ephemeral basins and drainages as is hydrologically feasible; and

5) **Off-site Streambed Preservation** – Mitigate remaining impacts to streambeds through acquisition of streambeds at an off-site location.

The intent of this wetland mitigation is to create and enhance riparian, ephemeral pond, and vernal pool habitats on and off site to ensure no net loss of habitat values. The Plan also provides criteria and recommendations for the protection, enhancement, maintenance, and management of the natural resources located within the mitigation areas.

A. TYPE(S) OF HABITAT TO BE PRESERVED, ENHANCED, OR CREATED

Both on-site and off-site habitat preservation, enhancement, and creation are proposed and are outlined below. Table 2 summarizes the acreage totals for the mitigation program.

1. On-site Preservation

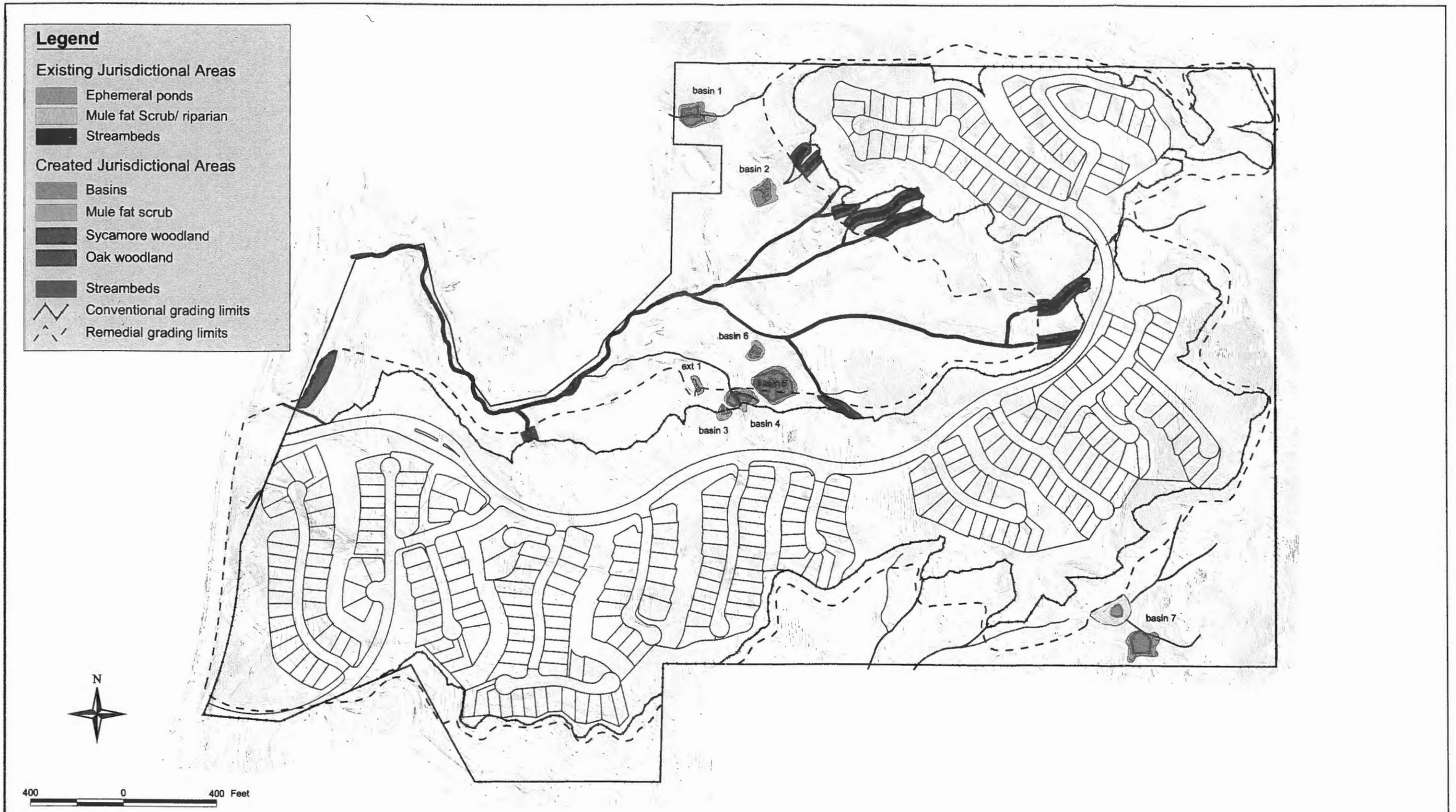
On site, approximately 159 acres of habitat located outside of the fuel modification zone will be preserved as open space, including 90 acres dedicated to the County as an extension of O'Neill Regional Park. This open space will include the preservation of 4.25 acres of the site's 8.24 acres of CDFG jurisdictional areas, and is comprised of 0.06 acre of ephemeral pond, 1.95 acres of wetland habitats, and 2.24 acres of streambeds. Several measures will be taken to minimize impacts related to construction and protect the biological values of this open space. Impacts to remaining open space will be minimized through project scheduling and construction monitoring and the (pre-construction) installation of high visibility orange fencing and silt fencing at the construction limits (where applicable). A delayed start date for the construction will allow for the salvage/collection of native materials such as mule fat cuttings from the development site. Mitigation will be initiated prior to project construction to minimize the temporal loss of wetland habitat functions and values.

The preserved areas will be protected in perpetuity as part of the dedicated open space for the project. These areas will be permanently fenced along the development edge to preserve their functions and values. Signs will be posted labeling the areas as sensitive habitat. These measures are intended to decrease potential impacts from humans and domestic animals. Any future measures required to protect the functions and values of the two remaining ponds will be undertaken as part of the regular open space maintenance.

2. On-site Pond Creation

Mitigation for the loss of ephemeral ponds will include the creation of approximately 1.01 acre of ephemeral ponds on site, a greater than 3:1 mitigation ratio. The on-site mitigation will occur in areas currently containing disturbed upland habitat, including annual grassland, and in a small area of non-jurisdictional mule fat scrub.[1] Mitigation in excess of a 3:1 ratio will be used towards the mitigation requirement for mule fat scrub (Figure 4).

[1] Mule fat scrub will be impacted by the expansion of one pond.



Source: Chambers Group Inc. February, 2000

Job No: CQL-02 Date: 8/24/00

CDFG Jurisdictional Mitigation Areas

SADDLEBACK MEADOWS

HELIX

Figure 4

Table 2
IMPACTS AND MITIGATION FOR CDFG JURISDICTIONAL AREAS

HABITAT	IMPACTS (acres)	MITIGATION (acres)[1]										
		Ratio	Requirement	On Site		Viejo Mitigation Bank			Hidden Ranch			Total
				E	C	P	E	C	P	E	C	
Ephemeral Ponds	0.28	3:1	0.84	--	1.01	0.02[2]	0.04[2]	0.12[2]	--	--	--	1.19[3]
Mule Fat Scrub	1.54[4]	3:1	4.62	--	0.78	--	--	--	--	1.73[5]	1.24	3.75
Oak Woodland	0.73	3:1	2.19	--	1.70	--	--	--	--	--	1.01	2.71[6]
Sycamore Woodland	0.10	3:1	0.30	--	0.30	--	--	--	--	--	--	0.30
Streambed	1.44	1:1	1.44	--	0.44	1.00[7]	--	--	0.00[7]	--	--	1.44
TOTAL	**4.09**		**9.39**	--	**4.23**	**1.02[7]**	**0.04**	**0.12**	**0.00[7]**	**1.73**	**2.25**	**9.39**

1 P = habitat preservation, E = habitat enhancement, C = habitat creation.
2 Mitigation acreages are preliminary estimates.
3 Excess of 0.84 acre used to mitigate mule fat scrub.
4 Impacts occur to approximately 1.16 acre of mule fat scrub around the ephemeral ponds and 0.38 acre along two drainages.
5 Mitigation includes both preservation and enhancement.
6 Excess of 2.19 acres used to mitigate mule fat scrub.
7 Mitigation for 1.0 acre of streambed will occur through preservation of waters/wetlands on the Viejo and/or Hidden Ranch sites.

3. On-site Habitat Creation

Mitigation for the loss of jurisdictional habitats on the site will consist of 2.78 acres of habitat creation. Specifically, habitat creation on site would include 0.78 acre of mule fat scrub, 1.70 acres of oak woodland and 0.30 acre of sycamore woodland. This on-site mitigation will occur in areas currently containing disturbed upland habitat, including annual grassland and non-jurisdictional mule fat scrub.

4. On-site Streambed Creation

Mitigation for loss of CDFG-jurisdictional streambeds will be mitigated on site within areas of remedial grading that are outside of the conventional grading limits. In these areas, stream courses will be reconstructed in their original location as part of the remedial grading. This will result in approximately 0.44 acre of streambed mitigation.

5. Off-site Vernal Pool Enhancement, Creation, and Preservation

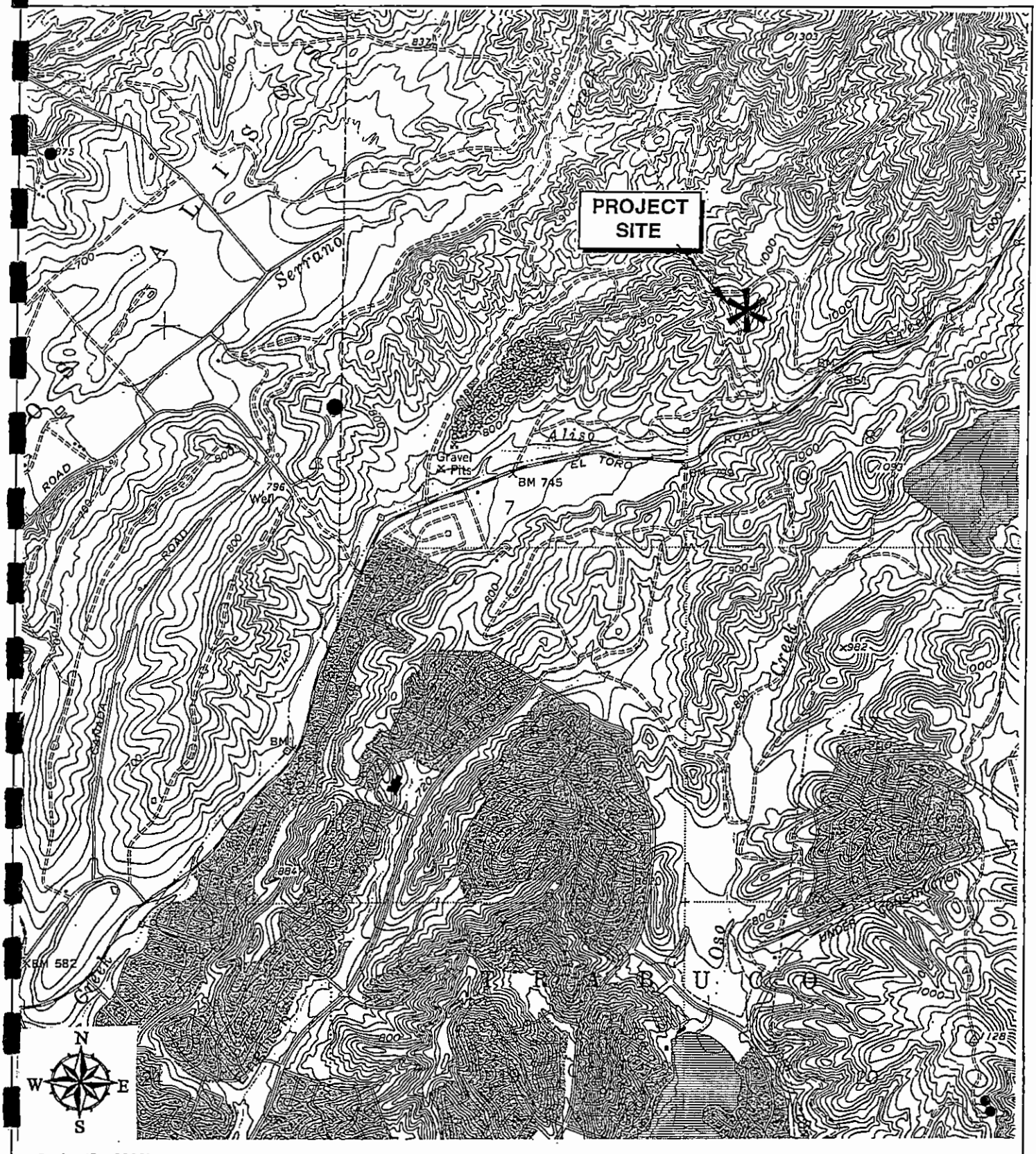
Preservation (0.02 acre), enhancement (0.04 acre), and creation (0.12 acre) of vernal pools (Table 2) is proposed off site within the Viejo Mitigation Bank (Figures 5 and 6). The focus of this portion of the mitigation will be to provide long-term preservation of existing vernal pools and their watersheds on the Viejo site, as well as provide for enhancement and expansion of some of the existing pools, and the creation of new pools where appropriate. At least one of the pools supports the federally listed as endangered Riverside fairy shrimp (*Streptocephalus woottoni*). Some of the created pools may be created deep enough to support this species. A final determination shall be made through the federal Section 7 Consultation process with the U.S. Fish and Wildlife Service (USFWS).

6. Off-site Wetland Enhancement, Creation, and Preservation

Additional mitigation requirements for impacts to wetlands will be met by the off-site creation of 1.24 acres of mule fat scrub, 1.01 acres of oak woodland, and the off-site preservation and enhancement of 1.73 acres of degraded mule fat scrub/riparian habitat within the Hidden Ranch Mitigation Bank (Figure 7). The remaining mitigation requirements for wetland impacts will be met through mitigation of ephemeral ponds in excess of a 3:1 ratio by the creation, enhancement, and preservation of vernal pools in the Viejo Mitigation Bank.

In the main drainage channel, the existing creek crossing will be expanded with additional pipes to allow a wider area of inundation upstream and downstream (Figure 8). Areas of the creek downstream of the existing crossing (Area 1) will be widened to the same grade as the existing channel. These areas will be considered U.S. Army Corps of Engineers (ACOE)/CDFG creation areas. The existing creek channel both downstream and upstream of the crossing (Area 2) will be enhanced and graded to within one foot of the existing creek channel to the east for use as a CDFG creation area. Another area (Area 3) will be graded down and restored along the smaller drainage to the east of the primary drainage. The area upstream of the crossing (Area 4) will be graded down to provide for ACOE and CDFG creation. Additional areas to the north of the compound (Area 5 and to the east), where the existing channel is of better quality but the channel has been degraded by cattle grazing, will also be used for ACOE and CDFG creation.

The existing channels will be enhanced by weeding and planting of mule fat and a limited number of willows. The areas in the ranch compound will need to be planted at similar densities to areas proposed for creation given the highly disturbed nature of the channel. CDFG creation areas will be planted based on Table 3 below. Temporary irrigation will be used for all but the existing stream channel areas.



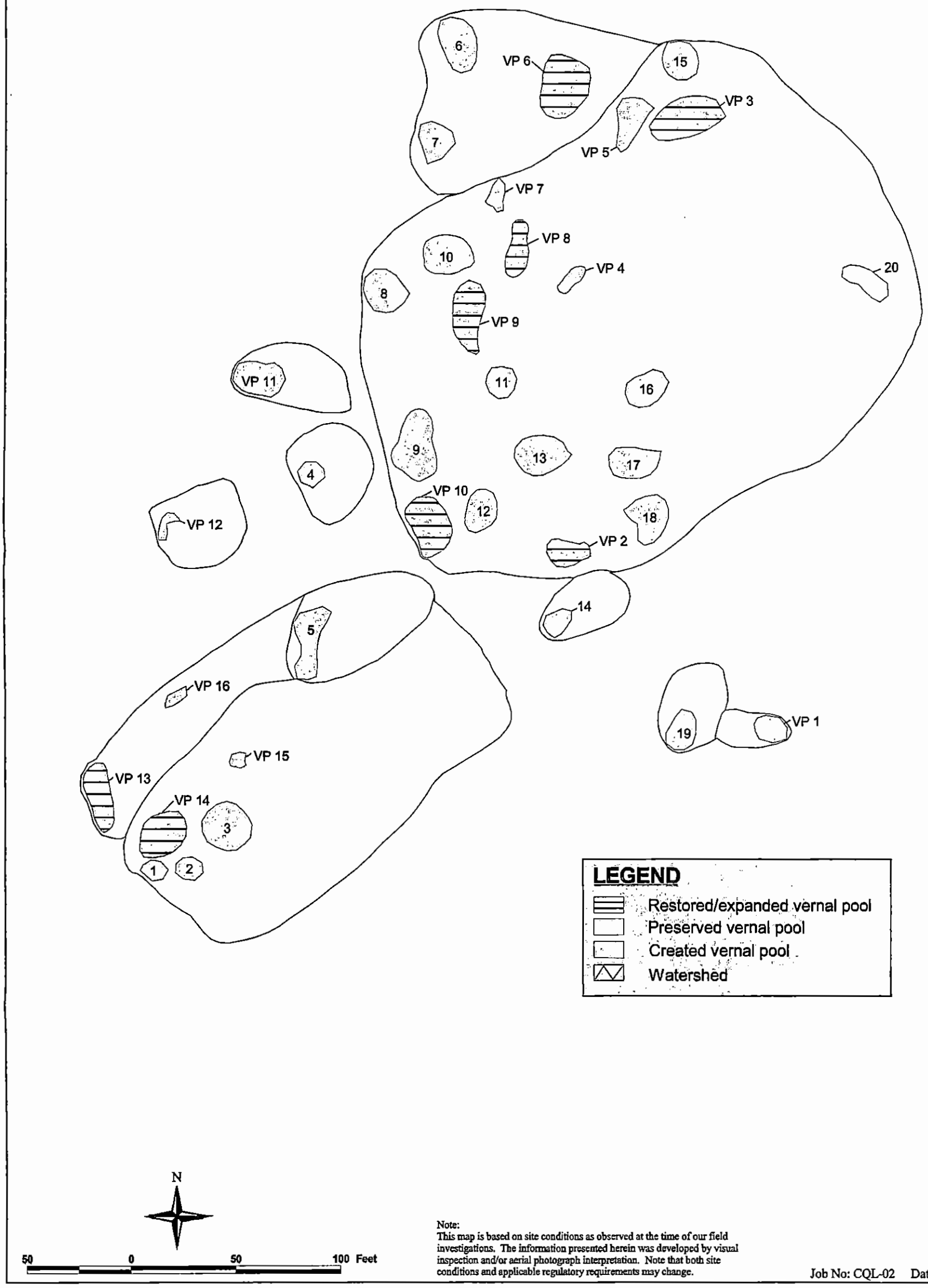
Scale: 1" = 2000'
Source: USGS 7.5 min Quadrangle, El Toro

Viejo Mitigation Location Map

SADDLEBACK MEADOWS

Figure 5

HELIX



Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

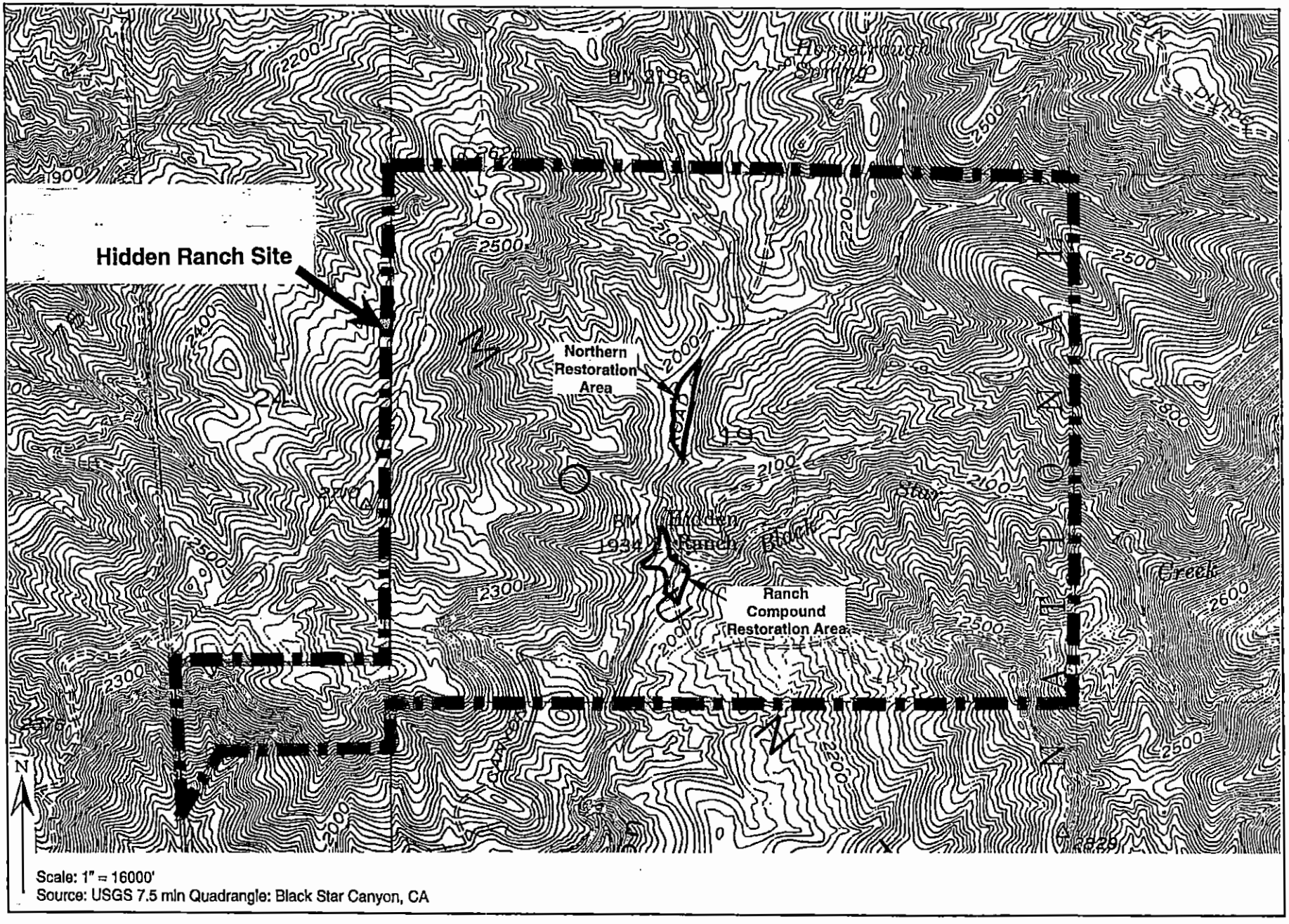
Job No: CQL-02 Date: 8/24/00

Viejo Conservation Bank Vernal Pool Mitigation Area

SADDLEBACK MEADOWS

HELIX

Figure 6

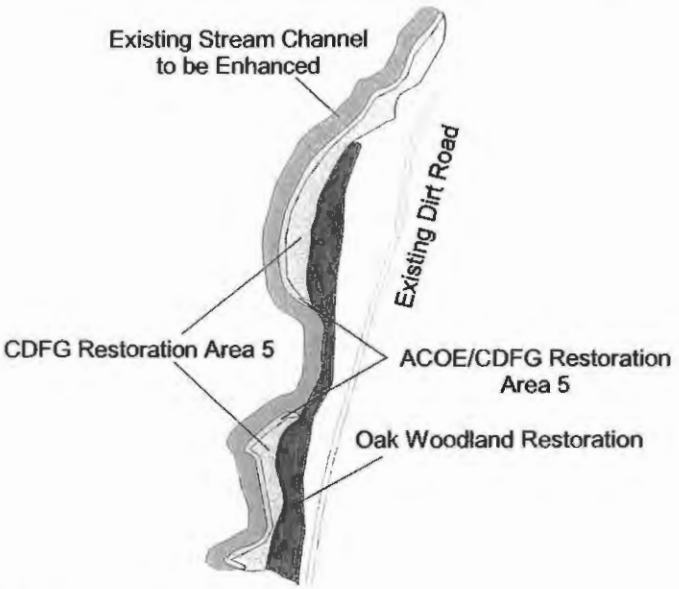


Hidden Ranch Restoration Locations

SADDLEBACK MEADOWS

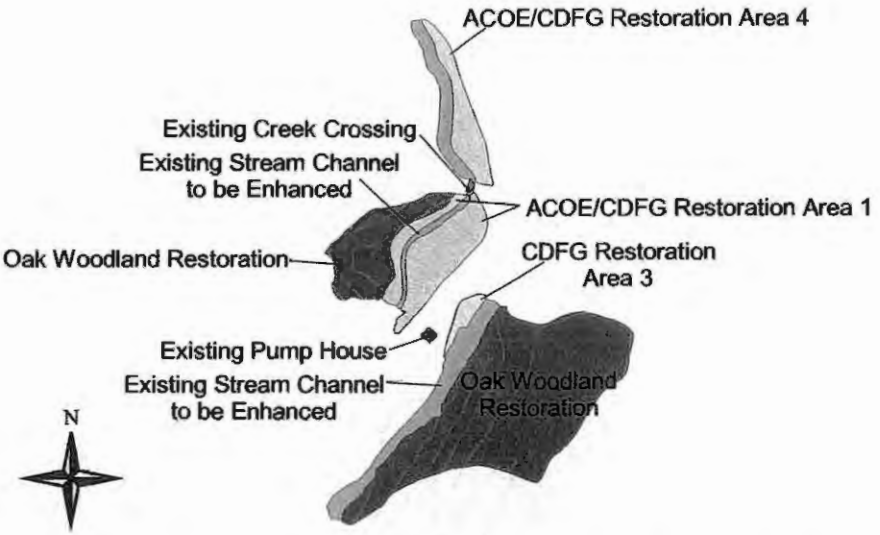
Figure 7

HELIX



Habitat Restoration

Type	Area	Acres
acoe/cdfg res	3775.5700	0.09
acoe/cdfg res1	12189.2000	0.28
acoe/cdfg res4	7749.6500	0.18
acoe/cdfg res5	8663.8500	0.20
cdfg res3	1900.9200	0.04
cdfg res5	19505.0700	0.45
creek crossing	168.0000	0.00
exist stream cha	47556.1200	1.09
oakwood res	103240.0900	2.37



300 0 300 Feet

Note:
This map is based on site conditions as observed at the time of our field investigations. The information presented herein was developed by visual inspection and/or aerial photograph interpretation. Note that both site conditions and applicable regulatory requirements may change.

Job No: CQL-02 Date: 8/24/00

Hidden Ranch Mitigation Bank Restoration Areas

SADDLEBACK MEADOWS

HELIX

Figure 8

Table 3 CALIFORNIA DEPARTMENT OF FISH AND GAME RESTORATION AREAS	
SPECIES	**PLANTS PER ACRE**
Mule fat (*Baccharis salicifolia*)	200
Mexican elderberry (*Sambucus mexicana*)	20
Western sycamore (*Platanus racemosa*)	40
Coast live oak (*Quercus agrifolia*)	20
California rose (*Rosa californica*)	50

It is anticipated that this restoration effort will be successful because the areas proposed for creation/enhancement occur within or adjacent to the existing channel, and the width of the proposed creation/enhancement areas is no wider than the existing vegetation within the channel upstream or downstream where cattle grazing has been eliminated.

7. Off-site Streambed Preservation

Remaining mitigation requirements for streambeds (1.00 acre) will be provided through acquisition of 1.00 acre of streambeds at either the Viejo or Hidden Ranch Mitigation Bank.

A summary of existing conditions, impacts, and mitigation for CDFG jurisdictional areas is provided in Table 3.

B. TIME FRAME

The wetland monitoring program for Saddleback Meadows will take place over a five-year period, after installation of the creation areas is complete. The success criteria described below for this project must be met by the end of this period (Section IV of this document).

IV. FINAL SUCCESS CRITERIA

This section provides standards to determine the successful completion of the habitat creation outlined above. Attainment of these standards indicates that the mitigation area is progressing toward the target functions and values specified for this Plan. The methods to be used to measure these success criteria are described is section VIII A of this document. If at any time functions in these areas do not appear to be meeting the performance standards set forth in this Plan, California Quartet will be responsible for taking timely remedial actions (as determined by the restoration specialists) to ensure compliance with the performance standards.

TARGET JURISDICTIONAL ACREAGE TO BE CREATED/ENHANCED

Implementation of this Plan will result in the creation of 1.01 acres of ephemeral ponds, 2.78 acres of wetland habitats and 0.44 acre of streambed on the project site. A total of 0.18 acre of ephemeral ponds will be preserved, created, and enhanced off-site. Additionally, 2.25 acres of wetland habitat will be created off-site, and 1.73 acres of existing off-site riparian habitat will be preserved and enhanced to improve its wetland function and value. Also, 1.00 acre of off-site streambed will be acquired.

V. PROPOSED MITIGATION SITE

A. LOCATION AND SIZE OF MITIGATION AREA

1. On-site Habitat Creation

The wetland creation area will be located on site in areas that are deemed suitable based on soils (i.e., soil texture, and structure), topography, location within the same watershed, and potential for wildlife use. Suitable on-site creation areas are limited; therefore, the creation of the ephemeral ponds is planned for these areas. Streambeds will be recreated within remedial grading areas previously supporting these channels.

Figure 4 shows the locations of the ponds, wetlands, and streambeds proposed to be created. The ponds will be modeled after those currently existing on the project site. The impoundment will be situated to collect surface flows from the surrounding native habitat to ensure that a self-sustaining, ephemeral pond is created. The sites selected for the proposed ponds are located within the same watershed as the present impoundments and in the open space preserve areas of the project.

2. Off-site Wetland and Ephemeral Pond Creation, Enhancement, and Preservation; and Streambed Preservation

Off-site creation, enhancement, and preservation areas will be located in the Viejo and Hidden Ranch Mitigation Banks within the County of Orange. The final location of wetland enhancement and preservation areas will be determined in consultation with the County of Orange and the CDFG.

B. OWNERSHIP STATUS

The project applicant California Quartet owns the proposed on-site mitigation area. Off-site mitigation areas are owned by Southern California Edison.

C. EXISTING HABITAT VALUES OF MITIGATION AREA

The pond and wetland mitigation areas currently do not have wetland habitat values. They consist primarily of disturbed upland habitats that have been degraded by many years of grazing. The streambed habitat values vary for the streambeds being impacted and restored within the remedial grading areas. A majority of these areas are unvegetated streambeds that have been degraded by the ongoing cattle grazing; a limited area supports vegetated streambeds.

D. PRESENT AND PROPOSED USES OF MITIGATION AREA

Currently, the on-site mitigation areas are undeveloped. All of the on-site mitigation areas are proposed for open space preservation.

E. PRESENT AND PROPOSED USES OF ALL ADJACENT AREAS

On site, areas immediately adjacent to the created wetlands will be preserved as open space, wherever possible. The remainder of the site will be developed into a residential complex.

VI. IMPLEMENTATION PLAN

A. RATIONALE FOR EXPECTING IMPLEMENTATION SUCCESS

Ephemeral ponds have been successfully restored or created at various locations in California. A recent review of vernal pool rehabilitation and creation projects in San Diego County determined that most of the pools created adjacent to existing habitat successfully sustained populations of *Pogogyne abramsii*, an obligate vernal pool plant, over a period of 5 to 10 years (Black and Zedler 1998). A review of the Del Sol Reserve vernal pool project in Santa Barbara County also demonstrated that pools created and restored in 1986 are self-sustaining and support native vernal pool plant species (Ferren et al. 1998). Surveys conducted in 1996 found that the density and composition of macroinvertebrate populations, including several species of fairy shrimp, in vernal pools constructed in Folsom, California in 1994 were similar to that of adjacent reference pools (Rogers 1998). Generally, created pools inoculated with propagules taken from adjacent or nearby vernal pool complexes were more successful in sustaining populations of vernal pool species. The ponds on the project site will be designed using the methods of past successful projects as guidelines.

Measures outlined in guidelines described by the USFWS (De Weese 1998) will be incorporated into the construction, maintenance, and monitoring of the created ponds to ensure their successful creation. These measures include:

- The mitigation site will be located in an area that currently supports ephemeral ponds and has appropriate soil types (same series). An adequate buffer (>100') will be created between the pond habitat and the preserve boundary.
- Excavation of side slopes and pond bottoms will mimic that of the existing ponds to duplicate hydrologic depth, surface area, and inundation periods.
- Two existing on-site ponds will be preserved and managed for use as reference ponds.
- Hydrology staff gauges will be installed within the constructed and preserved ponds to facilitate monitoring of inundation periods. The hydrology will be monitored weekly during the wet season.
- Riverside fairy shrimp and other invertebrate populations will be monitored in the created and reference ponds once a month while the ponds hold water.
- Water quality, including temperature, turbidity, and conductivity, will be monitored in the created and reference ponds.
- Regular maintenance inspections will be performed to monitor for uncontrolled human disturbance, trash, and unexpected conditions (erosion, water run-off pollution, etc.).

Overall, success of the Plan is expected based on the following rationale:

- Plant material (seeds, container plants and cuttings) to be used for the revegetation effort will be derived from on-site material, which is anticipated to be adapted to the site conditions. Cuttings collected from the development site will also preserve the genetic integrity of the willow, mule fat, oak and sycamore populations.
- The mitigation site is located within a system that supports coastal sage scrub, coast live oak woodlands, and riparian habitat. The existence of these habitats provides support for the conclusion that the wetlands can be sustained.

- Exotic species to be removed within the site will reduce competition with existing native species and plantings associated with the revegetation project and enhance the site's ecological value.

- Removal of cattle is also expected to reduce the level of disturbance to the site.

- The revegetation site will be planted with cuttings and container plants at a relatively high density and seeded with a native herbaceous seed mix, which would impede the recolonization of invasive non-native plant species.

B. RESPONSIBLE PARTIES

1. Project Proponent

California Quartet
c/o TPG Management
ATTN: Pike Oliver
777 Campus Commons Road, Suite 200
Sacramento, California 95825

The project proponent and owner will be responsible for financing pre-grading plan hydrological testing, installation, maintenance, and monitoring of the habitat creation. In order to ensure the success of mitigation, the project proponent will enter into a five-year, secured agreement with the CDFG to cover the projected cost to install, monitor, and report on the mitigation. This agreement should be in the form of a 120 percent bond. The bond should be structured so that portions of the bond may be released as interim milestones are met (subject to negotiation between the proponent and the CDFG).

2. Landscape Architect

A licensed landscape architect will be selected for this project. The landscape architect shall prepare the construction drawings to accompany this Plan. The construction drawings shall be reviewed and approved by the restoration specialist.

3. Restoration Specialist

Monitoring of mitigation site preparation and installation, as well as maintenance/technical monitoring after site installation shall be the responsibility of a biologist, landscape architect, horticulturist, or other person knowledgeable in native habitat restoration. After each visit, the restoration specialist shall provide the project proponent and installation/maintenance contractor with a written checklist of maintenance items in need of attention, if any. All requests for work that are in addition to a contractor's scope of work shall first be approved by the project proponent. The restoration specialist shall educate the installation and maintenance contractors with regard to mitigation goals and requirements and will be responsible for tracking and preparing all required reports for submittal to the CDFG.

4. Landscape Contractor

The landscape contractor must be educated as to the installation and maintenance of native plants. This contractor shall be responsible for completion of grading, pre-planting weed control, irrigation system installation, planting, seeding, and final as-built plans.

Once the restoration specialist has verified the completion of the previous list of items, a 120-day installation maintenance period will begin. The landscape contractor shall be required to maintain the entire mitigation area at least once a month during this period. The landscape contractor shall meet the

restoration specialist at the site, when requested, and shall perform all maintenance items in need of attention in a timely manner. Maintenance tasks include, but are not limited to, dead plant replacement, reseeding, irrigation system repair, and weed control. At the end of the installation maintenance period, the restoration specialist will certify completion of the installation contract, provided all installation and maintenance tasks have been completed. The project proponent may change contractors at its discretion.

After the installation contract is certified as complete, site maintenance will be conducted by the landscape contractor for the five-year monitoring period. The contractor is responsible for actual implementation of this Plan's specifications and shall maintain the entire mitigation area according to a specified schedule. Maintenance tasks include, but are not limited to, dead plant replacement, reseeding, irrigation system repair, and weed control. The landscape contractor shall meet the restoration specialist at the site, when requested, and shall perform all maintenance items in need of attention in a timely manner. The project proponent may change contractors at its discretion. The landscape contractor will coordinate closely with the restoration specialist to ensure that the specifications of the mitigation plan are properly implemented.

C. SCHEDULE

Grading is to be completed no later than December 31, 2000. Planting and then seeding shall occur between November 15 and February 15 to take advantage of winter rains. Since irrigation will be provided for the container stock, planting (but not seeding) could occur into spring, but extreme care would need to be taken not to trample the previously spread seed mix.

If for any reason the plant materials (seeds and container plants) are undeliverable or rejected by the restoration specialist, planting will be completed as soon as desirable materials are available and the planting season is appropriate. The preliminary schedule guidelines for mitigation activities are outlined in Table 4.

Table 4
PRELIMINARY SCHEDULE GUIDELINES FOR MITIGATION ACTIVITIES

Mitigation Site Contracts Schedule
• Contract with Restoration Specialist
• Contract for plant materials
• Contract with earthmovers, schedule pond grading
• Restoration specialist and construction contractors attend pre-construction meeting(s)
• Contract with landscape contractor
• Contract with landscape architect (if Restoration Specialist determines irrigation a necessity)
Mitigation Site Preparation (September through November)
• Surveyor identifies restoration areas (verified by Restoration Specialist)
• Grade grasslands and create pond/wetland contours (Restoration Specialist present during grading activities)
• Pretreat site for weeds, if necessary
• Remove non-organic debris and vegetation material under guidance of Restoration Specialist
• Transfer inoculum from impact area ponds to replacement ponds
Planting (November through February)
• Schedule plant materials delivery date and planting crew
• Verify planting scheme for landscape contractor
• Collect/salvage suitable plant material from development site
• Cuttings and container plants installed

Table 4 (cont.)
Planting (November through February) (cont.)
• Seed application
• Coordinate replacement plantings
• Install replacement plantings (monitored by Restoration Specialist)
• Install plant fencing (if herbivory is a problem)
Maintenance and Monitoring
• See guidelines outlined in Sections VII and VIII of this report
Documentation
• Revegetation specialist submits annual reports to the CDFG by January 1 each year following implementation

D. SITE PREPARATION

1. Wetlands and Open Space Remaining On Site

Recommendations are presented to protect biological and aesthetic values of the natural habitats within the project site that are not directly affected by the proposed project. Impacts will be minimized through project scheduling and construction monitoring. A delayed start date for the construction will allow for the salvage/collection of native materials from the development site such as mule fat cuttings. Ponds to be retained in open space will be protected from construction disturbance through construction fencing and silt fencing or other erosion protection devices around the construction limits to prevent the flow of sediment into the ponds. Mitigation will be started before project construction to minimize the temporal loss of wetland habitat function. Specific measures to protect sensitive resources are discussed below.

2. Pond Creation Areas

Fencing – Orange plastic snow fencing (or other similar device) will be used to define limits of grading. Where possible, fencing will be located no closer than 15 feet from the dripline of all trees identified for protection.

Grading – A grading plan will be developed for the new ponds based on their position in the watershed, and the contours of the existing ponds. The new ponds will mimic as closely as possible the depths and areas of the existing ponds. A study of the hydrogeomorphology and dynamics of the existing ponds is currently in process. The yearlong study will provide the detailed information needed to create the exact specifications for the proposed ponds. Variables included in the study are topography and bank contours of the existing ponds, periods of inundation over time, watershed, and water quality analyses. Soils at the proposed sites will also be tested for permeability characteristics. Rough grading contours will be deep enough to allow for the application of a surface soil layer removed from the existing ponds.

Erosion Control – Only non-vegetative erosion control measures may be used in areas with native vegetation. Such erosion control measures may include sandbags, soil binders, waterbars, trenches, or dissipators. These measures preclude the introduction of non-native weedy species into the seed bank of areas with native vegetation. Drainage and sedimentation control devices will be routinely cleaned, maintained, and repaired prior to and during the rainy season. All repairs to these systems will be immediately executed to minimize erosion problems.

Debris – Garbage and debris will be removed from all areas of the mitigation site. Dead or downed wood will not be removed except as required for safety reasons, flood control or fuel modification because they provide important microhabitats for small vertebrates and invertebrates.

Transplanting Inoculum– After finish grading of the relocation ponds, the upper 24 inches of soils from existing ponds will be collected and spread over the bottom of the relocation ponds in two layers. The top layer shall be 1" deeper than the cracks in the soil and the second layer will be the remaining depth to 24". It is essential that the top soil layer salvaged is placed on the surface of the created basins. Initial grading of the mitigation site must include over excavation to allow for placement of the salvaged soil. Relocation ponds must also support a sufficient prey base population. If ponds do not support sufficient algal populations they will be inoculated with resources from the original ponds.

Vegetation Replacement – If any vegetation is removed, it will be replaced through seeding, container plantings, or both.

3. Wetland Enhancement Area

Regular weeding of the preserved habitat at Hidden Ranch shall be conducted according to the Post Installation Schedule presented in Table 7.

E. PLANTING PLAN MATERIALS AND METHODS

The planting palette for mule fat scrub (Table 5a), oak woodland (Table 5b), and sycamore woodland (Table 5c) shall be based on the species composition of corresponding extant habitat. Plants selected for the wetland areas are based mainly on those species currently found around the perimeter of the existing ponds and streambeds. The pond basins are not currently vegetated; therefore, no vegetation will be placed in the basins of the created ponds.

Table 5a
MULE FAT SCRUB PLANT SPECIES PALETTE

COMMON NAME	SCIENTIFIC NAME	PLANTING OR APPLICATION RATE/ACRE	GROUPING SIZE
Upper Canopy-Lower Benches[1]			
Black willow	*Salix goodingii*	30	2-3
Lower Canopy[1]			
Mexican elderberry	*Sambucus mexicana*	40	2-4
Mule fat	*Baccharis salicifolia*	250	15-25
Shrub and Herbaceous Layer (Seed Mix)[2]			
Mugwort	*Artemisia douglasiana*	5 lbs	--
Meadow barley	*Hordeum brachyantherum*	12 lbs	--
Western ragweed	*Ambrosia psilostachya*	6 lbs	--
Beardless wild rye	*Elymus triticoides*	8 lbs	--
Spikerush	*Eleocharis macrostachya*	1 lb	--
Toad rush	*Juncus bufonius*	1 lb	--

[1]1 gallon container stock
[2]Pounds of pure live seed per acre

Table 5b OAK WOODLAND PLANT SPECIES PALETTE			
COMMON NAME	SCIENTIFIC NAME	PLANTING OR APPLICATION RATE/ACRE	GROUPING SIZE
Woodland Canopy[1]			
Coast live oak	*Quercus agrifolia*	75	5-8
Shrub Understory[2]			
Toyon	*Heteromeles arbutifolia*	30	2-3
Laurel sumac	*Malosma laurnia*	30	2-3
California coffeeberry	*Rhamnus californica*	30	2-3
Fuchsia-flowered currant	*Ribes speciosum*	30	2-3
Herbaceous and Shrub Understory (Seed Mix)[3]			
California sagebrush	*Artemisia californica*	0.5-1.0	--
California brome	*Bromus carinatus*	2.0-4.0	--
California buckwheat	*Eriogonum fasciculatum*	3.0-4.0	--
Golden yarrow	*Eriophyllum confertiflorum*	1.0-3.0	--
California everlasting	*Gnaphalium californicum*	0.5-1.0	--
California golden bush	*Isocoma menziesii*	1.0-2.0	--
Goldfields	*Lasthenia chrysostoma*	1.5-2.0	--
Deerweed	*Lotus scoparius*	4.0-6.0	--
Succulent lupine	*Lupinus succulentus*	3.0-4.0	--
Purple needlegrass	*Nassella pulchra*	4.0-5.0	--
Blue-eyed grass	*Sisyrinchium bellum*	3.0-4.0	--

[1] 5 gallon container stock
[2] 1gallon container stock
[3] Pounds of pure live seed per acre

Table 5c SYCAMORE WOODLAND PLANT SPECIES PALETTE			
COMMON NAME	SCIENTIFIC NAME	PLANTING OR APPLICATION RATE/ACRE	GROUPING SIZE
Woodland Canopy			
Western sycamore	*Platanus racemosa*	125[1]	3-7
Black willow	*Salix goodingii*	140[2]	8-15
Shrub/Tree Understory[2]			
Arroyo willow	*Salix lasiolepis*	140	8-15
Mule fat	*Baccharis salicifolia*	250	15-25
Shrub and Herbaceous Understory (Seed Mix)[3]			
Mugwort	*Artemisia douglasiana*	5 lbs/acre	--
Yerba mansa	*Anemopsis californica*	12 lbs/acre	--
Western ragweed	*Ambrosia psilostachya*	6 lbs/acre	--
Nettle	*Urtica holosericea*	8 lbs/acre	--

[1] 5 gallon container stock
[2] 1 gallon container stock
[3] Pounds of pure live seed per acre

To ensure preservation of regional genotypes, cuttings will be collected from mule fat and willows in the existing ponds and drainages for the development of container stock. Optimally, vegetation will be collected during the fall months, when the weather is cooler and the vegetation is generally in a dormant or slow growth phase. After collection of seed and plant materials, planting will begin during the fall to take advantage of the rainy season.

Container stock will be as 1-gallon plants at elevations of approximately 4 to 12 feet above groundwater, and in natural groupings. In addition, the restoration specialist shall approve the final layout of all plant materials in the field prior to planting to ensure their correct ecological positioning (e.g., plants are not installed in rows).

All container stock shall be planted in a hole at least twice the diameter of the container and twice the depth. Backfill shall not be amended. The top of the root ball shall be set one inch above finish grade. A mulched zone shall then be established around each container plant, extending for at least 18 inches from the base of the plant. The mulch shall be two to four inches thick and must not come in contact with the collar of the plant. No fertilizers shall be applied.

Seeding will be done by hand, hydroseeding, or imprinting depending on the size of the area, slope, and surface topography. Mychorrizal inoculum will be applied with the seed mix.

Contract Growing and Plant Material Sources - Arrangements shall be made as soon as possible in advance of the expected planting date, either by the project proponent or the landscape contractor, to acquire container plant materials and seed required for habitat creation. An additional 10 percent of the total number of container plants and seed mix shall be procured in case replanting or reseeding is necessary. A copy of the plant material contract shall be submitted to the restoration specialist as verification of acquisition. Contract growing and seed collection shall be conducted by an experienced native plant nursery or seed company such as, but not limited to, Tree of Life Nursery, San Juan Capistrano, California; Mockingbird Nursery, Riverside, California; and/or S&S Seeds, Carpinteria, California.

It is preferred that the source of all plant material used at the site be from the drainages on site or as close to the site as possible. If necessary, the restoration specialist shall help the grower locate acceptable local sources for plant materials.

Substitutions - No species shall be substituted without approval from the restoration specialist. If the project proponent or installation contractor is unable to obtain the proper species (and sizes) specified by the time of planting, commencement of the 120-day installation maintenance period shall be delayed until all plants specified are in the ground. Substitution of plant material at the time of planting depends solely upon the discretion of the restoration specialist in consultation with the landscape architect. Any substitutions that are approved shall be documented by the installation contractor in the final set of as-built plans.

Plant Material Inspection - All plant materials shall be inspected by the restoration specialist and approved as healthy, disease free, and of proper size prior to planting. Overgrown, root-bound container stock will be rejected.

Container Plant Guarantees - All plants determined to be dead or terminally diseased shall be replaced by the installation contractor as soon as possible but no more than 90 days after installation. Plant replacement by the landscape contractor shall be completed as soon as possible but no more than 90 days following written direction by the restoration specialist. Unless substitutions are approved by the restoration specialist, the replacement plants shall be of the same species and at least the same size as

originally planted. All replacement plants shall be inspected by the restoration specialist and approved as healthy, disease free, and of proper size prior to planting.

Seed Guarantees - The installation contractor shall guarantee a 50 percent germination coverage rate for all seeded areas (based on visual assessment by the restoration specialist) at the end of the 120-day installation maintenance period. If there are particular bare areas, reseeding shall take place in those areas at the direction of the restoration specialist. The restoration specialist shall determine the timing and method for reseeding.

F. IRRIGATION PLAN

An irrigation system will be installed where necessary. The mule fat scrub will receive water from seasonal precipitation and should not need one. The oak and sycamore woodlands will require irrigation for plant establishment. Supplemental hand watering shall be applied if necessary to prevent the mortality of seedlings. Care will be taken to avoid water entering into the pond basins to avoid triggering of fairy shrimp hatching at an inappropriate time of year. Supplemental irrigation is only expected to be used for the first three years, or less, of the five-year monitoring period. During the final two years, the restoration specialist shall determine whether or not irrigation is necessary.

G. AS-BUILT CONDITIONS

At the end of the installation phase of the project, the installation contractor shall prepare as-built plans of the mitigation area. The as-built plans will document the conditions of the site as they exist at the completion of the installation. These plans will include an as-built topographic map and show areas of grading, planting, and seeding. The restoration specialist will review these plans for conformance with this Plan's technical design criteria, CDFG permit conditions, and project objectives. Any differences found between the original design and the as-built conditions will be fully assessed and documented by the restoration specialist through field maps, photographs, and descriptive text. It is expected that modifications of the original plan will have occurred due to post-mapping changes in project design as well as unforeseen changes resulting from site conditions. Any changes in the plan shall be justified to and accepted in writing by the restoration specialist and the California Quartet before the as-built conditions are approved.

A report of the "As-Built Conditions" shall be submitted by the restoration specialist to the CDFG within six weeks of completion of site preparation and planting. If grading, planting and erosion control measures are not completed within six weeks of each other, separate reports for each activity will be submitted.

VII. MAINTENANCE DURING MONITORING PERIOD

A. MAINTENANCE ACTIVITIES

1. General Maintenance

All contractors shall be informed of the specific mitigation goals and maintenance requirements of this project. Maintenance efforts will focus on ensuring that the created ponds retain water consistent with the conditions of the existing ponds.

Only construction equipment necessary to accomplish the mitigation installation shall be allowed on the mitigation site, and each piece of construction equipment shall be removed from the site as soon as its task is complete. No vehicular fluids shall be added or changed on site. Once plant installation and

seeding has begun, no vehicles shall be allowed on the mitigation site. Workers' personal vehicles shall be parked outside the mitigation area. The mitigation site shall be kept free of garbage.

No power tools shall be operated on the mitigation site from March 15 through July 15. Only activities that can be performed with non-power tools shall be allowed during this period. This time period coincides with the breeding season of many sensitive riparian bird species.

Damage to plants on the mitigation site as a result of unusual weather or vandalism shall be repaired as directed by the restoration specialist. Such repairs shall be paid for by the project proponent. Any damage caused by a contractor's inadequate maintenance, as determined by the restoration specialist, shall be repaired by the contractor at its expense.

2. Fencing

California Quartet will be responsible for the maintenance of the perimeter fence. Additional, protective measures such as tree tubes and placement of cages or screens around individual plants will be used in areas subject to trampling, herbivory, or other threats as determined by the restoration specialist. All protective devices shall be maintained through completion of the monitoring period or until removal is authorized by the restoration specialist.

3. Weed Control

Weed control shall be conducted monthly by the installation contractor and per the schedule outlined in this document for the maintenance contractor, or as necessary, to minimize competition that could prevent the establishment and growth of native species. Weeds shall be removed for a minimum of 4 years or until plantings are well established to prevent detrimental competition of invasive species with the mitigation plantings for water, nutrients, light, and space. Maintenance personnel shall be trained to distinguish weed species from desirable native vegetation. All weeds shall be removed mechanically. No herbicides shall be applied in the wetlands adjacent to the ponds.

A mulched area 18 inches from the base of each container plant shall be maintained to minimize competition from weeds, except within basins. This mulch will be maintained during the establishment period (120 days following certification of the installation contract), or until plants reach 2 to 3 feet in height. Table 6 lists examples of weeds that need to be controlled at the mitigation site.

4. Disease and Pests

Damage-causing insects, high levels of herbivory, and diseases shall be monitored by the installation and maintenance contractors during their maintenance periods. Generally speaking, a high threshold of tolerance will be permitted before chemical/lethal control measures are considered. All specific recommendations will only be made by a licensed pest control adviser as required by law. All applicable federal and state laws and regulations will be closely followed. The CDFG and restoration specialist will be consulted on any pest control matters.

5. Pruning

No pruning shall be done unless directed by the restoration specialist.

Table 6 WEED SPECIES LIST*	
SCIENTIFIC NAME	COMMON NAME
Arundo donax	giant reed
Brassica nigra	black mustard
Carpobrotus edulis	hottentot fig
Cortaderia selloana	pampas grass
Cynara cardunculus	artichoke thistle
Cynodon dactylon	Bermuda grass
Eucalyptus spp.	eucalyptus species
Foeniculum vulgare	sweet fennel
Myoporum laetum	myoporum
Rincinus communis	castor bean
Schinus terebenthifolius	Brazilian pepper tree
Silybum marianum	milk thistle
Tamarix spp.	tamarisk species
Washingtonia robusta	Mexican fan palm
Xanthium strumarium	cocklebur

*This species lists some common wetland weed species. Other weed species may occur at this mitigation site.

6. Trash Removal

Following rain events, trash and debris may enter the creek from storm drains. Trash shall be removed during regular maintenance events by the installation and maintenance contractors during their respective maintenance periods.

B. RESPONSIBLE PARTIES

The project proponent (California Quartet) will be responsible for financing the maintenance program. The landscape contractor will conduct maintenance efforts and will submit regular maintenance reports to the project proponent.

The project proponent may choose to legally transfer the property in fee title (subject to agency approval) to a public or private entity specializing in long-term management of open space. If such a transfer occurs, this entity would become the responsible party for implementing the maintenance program.

C. SCHEDULE

During the 120-day installation maintenance period, the installation contractor shall be required to maintain the entire mitigation area at least twice a month. Once the 120-day installation maintenance period is over, the area will be maintained by the maintenance contractor according to the schedule in Table 7. Specific items evaluated during maintenance events will include the presence of weeds, trash, vandalism, irrigation function and scheduling, and plant material condition.

Table 7 MAINTENANCE SCHEDULE	
PHASE	SCHEDULE
120-day Installation Maintenance Period	Bi-weekly
Post-Installation Maintenance Period	
February-May	Bi-weekly
June-January	Monthly

The restoration specialist shall begin monitoring during the grading/site preparation and installation phases and shall then continue monitoring through the post-installation phase according to the schedule outlined in Table 8. The restoration specialist shall file a written monitoring report with the project proponent and landscape contractor after completing each inspection. Each of these reports shall identify maintenance concerns including, but not limited to, plant mortality, vandalism, and weed-related issues, and shall provide recommendations to the maintenance contractor regarding any changes to the maintenance program. These monitoring reports will be included as part of the annual report to the CDFG.

Table 8 MAINTENANCE MONITORING SCHEDULE FOR THE RESTORATION SPECIALIST	
PHASE	SCHEDULE OF INSPECTIONS
Grading/Site Preparation	2 times per week
Installation	Daily
Post Installation	
Year 1	Monthly
Year 2	February, March, April, May, June, September, December
Years 3-5 (or until performance standards have been met)	Quarterly

VIII. MONITORING PLAN

A. PERFORMANCE CRITERIA

Performance criteria are specific standards by which to evaluate the progress and success of the mitigation during the five-year monitoring period. The standards are based on a reference site. Three categories of interim success criteria shall be analyzed: species diversity, cover by weeds, and cover by native species. The annual milestones for these parameters are presented in Table 9.

Table 9 ANNUAL SUCCESS CRITERIA MILESTONES[1]					
CRITERIA	YEAR				
	1	2	3	4	5
Species Diversity	40	50	60	70	80
Cover by Weeds[2]	140	130	120	110	100
Cover by Native Species[2]	60	70	80	90	100

[1]Values are percentages as compared with the reference site.
[2]Percent total cover.

B. MONITORING METHODS

Annual monitoring will be performed by the restoration specialist or by a qualified biologist with appropriate experience in site monitoring and transect measurements. This monitoring will include qualitative observations of overall plant survival, vigor, and recruitment, the status of irrigation, trash, and weeds, and the presence of wildlife species. In addition, monitoring will include quantitative measurements of native and non-native plant growth. Using the same techniques, a designated reference site will also be sampled so that comparisons can be made between the functions and values of the mitigation site and previously existing habitat. The reference site shall be located on site.

Vegetation monitoring will be conducted for the restored habitats created along riparian corridors and the margins of the created ponds. Observations of plant health and vigor will be made and compared to observations of plant health and vigor of the preserved habitats. All species that occur within the habitat, along with percent cover of native shrubs and annuals and non-native species, shall be noted separately for each area. In addition to the observations and measurements described above, several permanent stations for photo-documentation shall be established in each habitat type and annual photographs taken.

1. Species Diversity

Species diversity usually increases with recruitment of new native species from the surrounding native habitats. The effect of recruitment on diversity should allow the mitigation to approach the level of species diversity at the reference site. After five years, the mitigation site should reach 80 percent of the species diversity of the reference site.

2. Cover by Weeds

Many weeds have become naturalized, and therefore, the weed cover should reflect (or be less than) what is present at the reference site. Although weeds are expected, they should not be allowed to get out of control on site. Weeds should be controlled during site maintenance.

3. Cover by Native Species

Cover by native vegetation should increase over time and ultimately approach that of the reference site. With sufficient site maintenance, proper irrigation, and natural rainfall, native vegetation cover should approach 100 percent of the reference site in five years.

C. ANNUAL REPORTS

Annual reports on the status of the project mitigation shall include an assessment of the site's status relative to yearly target criteria as well as overall site progress toward final success criteria. These reports will also include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- a copy of the CDFG permit and any attachments including Special Conditions and subsequent Letters of Modification;
- an analysis of all qualitative and quantitative monitoring data;
- copies of all monitoring photographs; and
- maps identifying monitoring areas, transects, planting zones, and so forth as appropriate.

Remedial recommendations, if necessary, shall be made in the annual reports as well as a summary of whether or not the mitigation is meeting the success criteria for the appropriate year.

D. SCHEDULE

Monitoring and performance criteria will be tied to implementation. The first annual monitoring event will occur in June after the first full growing season. Annual technical monitoring reports shall be submitted to the CDFG by the end of August of each year to ensure that there is adequate time remaining in the dry season to implement any necessary contingency measures.

IX. COMPLETION OF MITIGATION

The project proponent shall notify the CDFG upon completion of the mitigation effort through the submittal of the final annual technical monitoring report. The final report shall include a jurisdictional delineation of the mitigation areas. This delineation must show that the goals of the mitigation (as described in section III of this document) have been met.

Performance standards may be waived by the CDFG in any area if monitoring indicates that good growth and functional habitats are otherwise achieved. If performance standards cannot be met because of adverse soil or other unmanageable site conditions, an alternative or auxiliary mitigation plan may be submitted to the CDFG for approval.

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APPENDIX I.3
COASTAL SAGE SCRUB RESTORATION PLAN

Saddleback Meadows

COASTAL SAGE SCRUB RESTORATION PLAN

February 26, 2001

Prepared for:

CALIFORNIA QUARTET
777 Campus Commons Road, Suite 200
Sacramento, California 95825

Prepared by:

HELIX ENVIRONMENTAL PLANNING, INC.
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La Mesa, California 91941-6476

Saddleback Meadows
Coastal Sage Scrub Restoration Plan

TABLE OF CONTENTS

Section	Title	Page
I.	EXECUTIVE SUMMARY	1
II.	PROJECT SUMMARY	1
	A. Project Location	1
	B. Project Description	1
	C. Responsible Party	1
	D. Existing Resources	2
	E. Project Impacts	3
	F. Agency Jurisdiction and Requirements	3
III.	GOALS OF MITIGATION	3
	A. Types of Habitat to be Created and/or Enhanced	3
	B. Functions and Values of Habitat to be Created and/or Enhanced	3
	C. Long-term Goals	3
IV.	ESSENTIAL PARTICIPANTS	3
	A. Project Proponent	3
	B. Landscape Architect	4
	C. Restoration Specialist	4
	D. Installation Contractor	4
	E. Maintenance Contractor	4
V.	RESTORATION DESIGN	4
VI.	RESTORATION PLAN DETAILS	5
	A. Temporary Protection of Existing Habitat	5
	B. Vegetation and Topsoil Salvage and Reuse	5
	C. Container Stock Specifications	6
	D. Seed Specifications	7
	E. Contract Growing/Plant Sources	8
	F. Substitutions	8
	G. Plant Inspection	8
	H. Soils and Site Preparation	8
	I. Planting/Seeding Timing and Methods	9
	J. Protection From Herbivory	9
	K. Hydrology	9
	L. Soils	10
	M. Protection of Restored Areas	10
	N. "As-built" Plans	10
VII.	MAINTENANCE	10
	A. General Maintenance	10
	B. Maintenance Schedule	11
	C. Weeding	11

TABLE OF CONTENTS (cont.)

Section	Title	Page
VII.	MAINTENANCE (cont.)	
D.	Replacement Planting	11
	E. Trash and Debris Removal	11
	F. Pest Control	11
	G. Fertilization	12
	H. Pruning	12
	I. Irrigation	12
VIII.	MONITORING	12
	A. Schedule	12
	B. Content of Monitoring Reports	13
	C. Success Criteria	13
	D. Potential Remedial Actions	14
IX.	COMPLETION OF MITIGATION	14
	A. Notification of Completion	14
	B. County Confirmation	15
X.	LITERATURE CITED	16

LIST OF FIGURES

Number	Title	Follows Page
1	Regional Location Map	2
2	Project Vicinity Map	2
3	Viejo Mitigation Location Map	2
4	Vegetation and Sensitive Resources	2
5	Coastal Sage Scrub Restoration Areas	4
6	Oak Woodland Restoration Plan Planting Detail	4

LIST OF TABLES

Number	Title	Page
1	Vegetation Communities Within the Saddleback Meadows Property	2
2	Sage Scrub Container Plant Palette	6
3	Coast Live Oak Woodland Seed Mix	7
4	Maintenance Schedule	11
5	Maintenance Monitoring Schedule	13
6	Species Diversity and Cover Criteria Milestones for Saddleback Meadows	14

I. EXECUTIVE SUMMARY

HELIX Environmental Planning, Inc. (HELIX) was retained by TPG Management, Inc. to prepare a revised conceptual management plan for the Saddleback Meadows site located in the City of El Toro in Orange County, California. This plan meets requirements identified in the project's certified Final Environmental Impact Report (County of Orange 1997) as mitigation for impacts to 38.6 acres of Venturan-Diegan transitional coastal sage scrub habitat. This mitigation plan is based on two draft mitigation plans previously prepared for the site (Sweetwater Environmental Biologists, Inc. 1995; Chambers Group, Inc. 1999), and a recent site visit conducted by W. Larry Sward to verify potential mitigation areas.

The purpose of this mitigation plan is to describe the proposed mitigation for impacts to sage scrub habitat located on the Saddleback Meadows project site. The goal of the plan is to outline the procedure for creating sage scrub habitat and for enhancing the value of existing Diegan coastal sage scrub habitat within the project site. Remaining sage scrub mitigation needs will be met through offsite acquisition of sage scrub at the Viejo Mitigation Bank. Together these measures are intended to serve as mitigation for impacts to sage scrub habitat that would result from the construction of the proposed Saddleback Meadows development project. This plan also provides criteria and recommendations for the maintenance and management of created and enhanced sage scrub habitat. The final goal of this plan is to create habitat that, after five years, is on its way to approaching the function and value of surrounding mature sage scrub habitat.

II. PROJECT SUMMARY

A. PROJECT LOCATION

Saddleback Meadows is a 225-acre site located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains (Figure 1). The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area (Figure 2). The site is located on the U.S. Geological Survey Santiago Peak and El Toro 7.5 minute quadrangles. The Viejo Mitigation Bank parcel is located to the northwest of the project on the El Toro quadrangle (Figure 3).

B. PROJECT DESCRIPTION

The proposed project entails the development of 299 single family residential lots, access roads, and recreational trails on approximately 165 acres of the property. The development is concentrated in the north and south sections of the property, avoiding a steep ravine and associated oak woodlands near the center of the property. Approximately 60 acres of the site will be designated as open space. This area will contain coastal sage scrub, coast live oak woodland, and mule fat/riparian scrub habitats as well as several ephemeral ponds. Graded slopes extending outside of the fuel modification zones will be revegetated with native vegetation.

C. RESPONSIBLE PARTY

California Quartet Limited
Contact: H. Pike Oliver
777 Campus Commons Road, Suite 200
Sacramento, California 95825
(916) 482-7200

D. EXISTING RESOURCES

This property consists primarily of undeveloped land. Aliso Creek runs north and south along the western boundary of the site. The site is currently being used for horse and cattle grazing. Development on site is limited to a small corral in the western portion of the site, remnants of several houses, and a few unmaintained access roads. Surrounding land uses include residential development to the south and west, pasture land to the east, and Saint Michael's Abbey to the north.

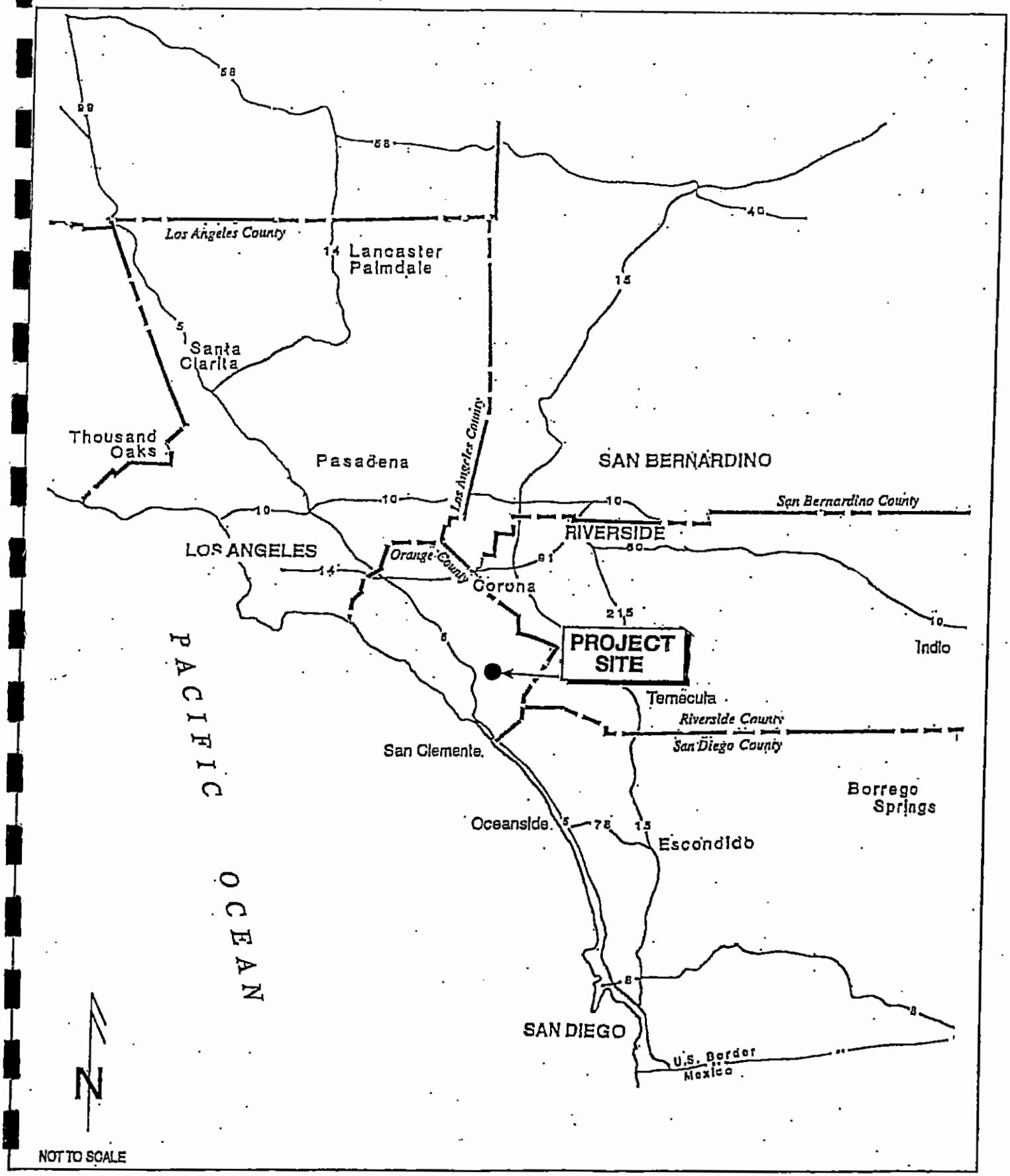
The Saddleback project site supports a variety of vegetation communities, and portions of the site have been previously grazed, cleared, or disturbed (Figure 4). On-site vegetation communities include annual grassland, Venturan-Diegan transitional coastal sage scrub, coast live oak woodland, and southern mixed chaparral (Chambers, 1999). In addition to these upland habitats, several wetland habitats are also present on site. Southern sycamore riparian woodland is located along Aliso Creek at the western site boundary. Nine ephemeral ponds, originally created to hold water for cattle (Urban Vision 1997), are located along several drainages scattered throughout the site. Two of the ponds no loner retain water; however, the remaining seven ponds create open water habitat. Mule fat scrub has established along the perimeters of most of the ponds.

Venturan-Diegan coastal sage scrub vegetation consists primarily of low, drought-deciduous and evergreen shrubs that are adapted to prolonged summer drought conditions. This plant community is common in Orange County and is a transitional association between the Venturan and Diegan coastal sage scrubs. Shrub species which commonly occur on the site include California *buckwheat (Eriogonum fasciculatum)*, black sage (*Salvia mellifera*), California sagebrush (*Artemisia californica*), California encelia (*Encelia californica*), and white sage (*Salvia apiana*). Groundcover is comprised primarily of non-native grasses, although some native grasses such as melic (*Melica imperfecta*) and needlegrass (*Nassella* sp.) are also present. A variety of herbaceous species also occur as ground cover.

Table 1
VEGETATION COMMUNITIES WITHIN THE SADDLEBACK MEADOWS PROPERTY

Vegetation Community*	Acres
Venturan-Diegan Coastal Sage Scrub	57.8
Venturan-Diegan Coastal Sage Scrub - Disturbed	14.4
Southern Mixed Chaparral	7.6
Coast Live Oak Woodland	12.9
Southern Sycamore Woodland	0.3
Mule Fat Scrub	3.2
Ephemeral Pond	0.5
Annual Grassland	122.3
Ornamental	0.5
Agriculture	5.3
TOTAL	224.8

* Plant community classifications according to the County of Orange.

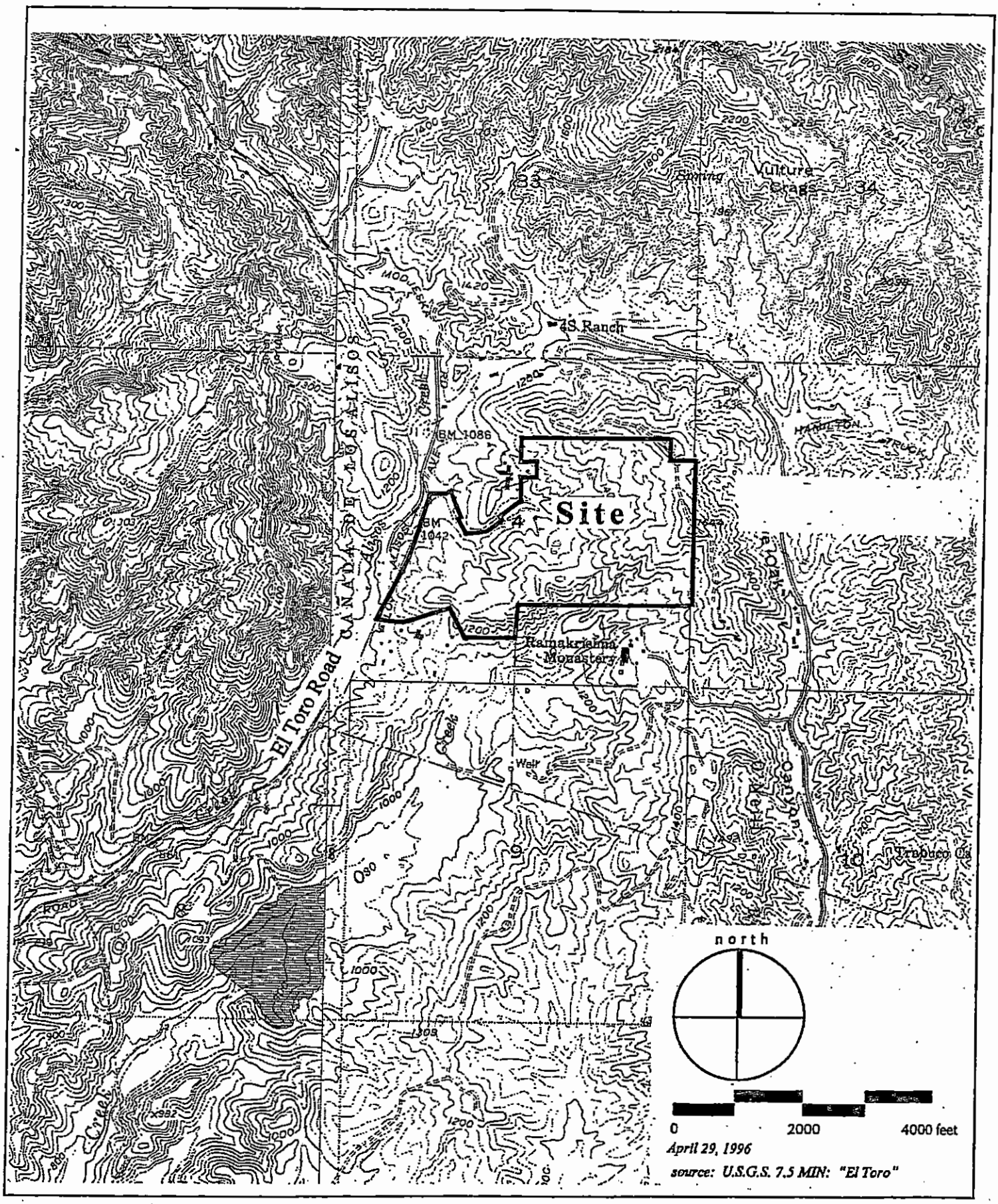


Regional Location Map

SADDLEBACK MEADOWS

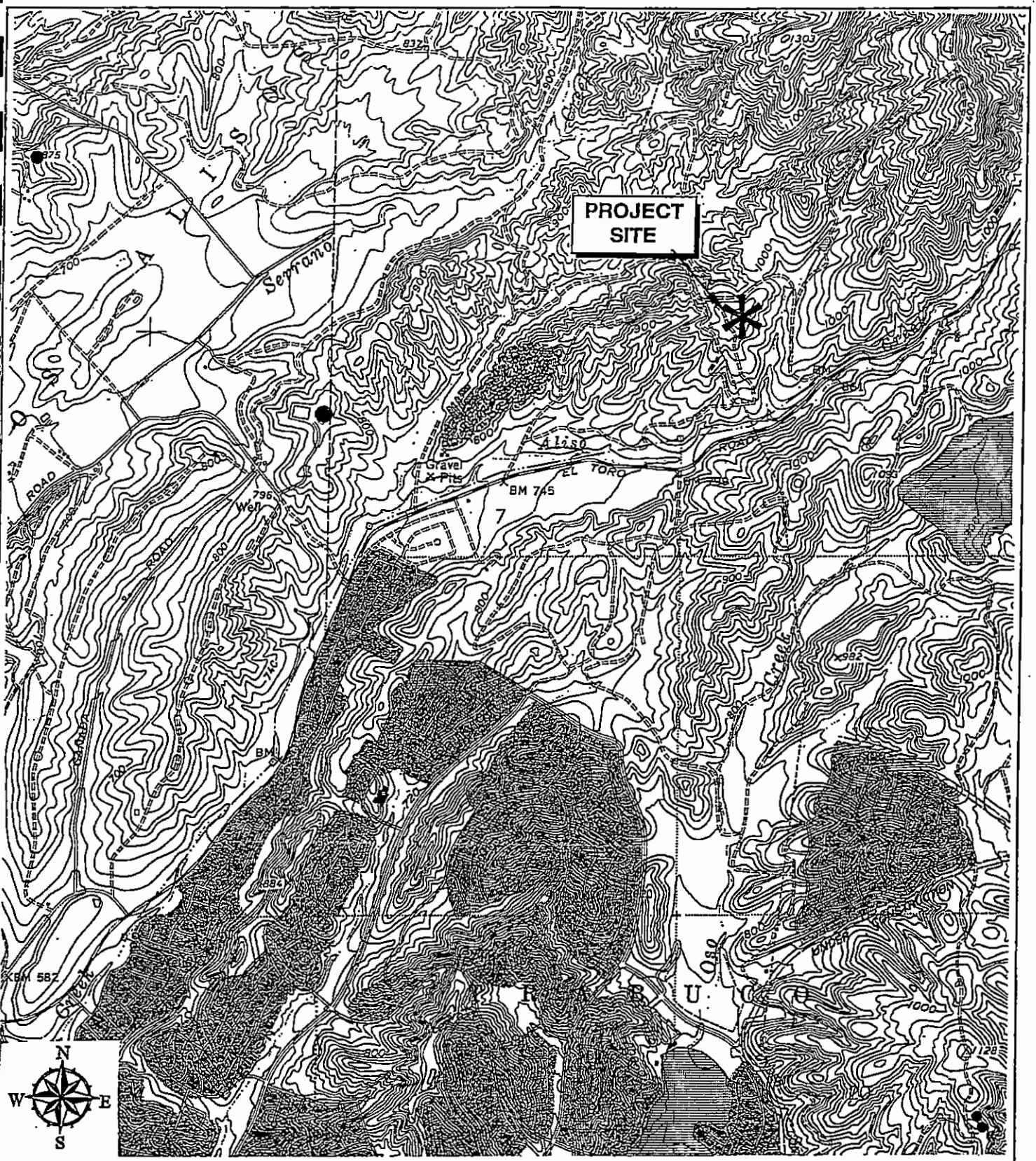
Figure 1

HELIX



Project Vicinity Map
SADDLEBACK MEADOWS
Figure 2

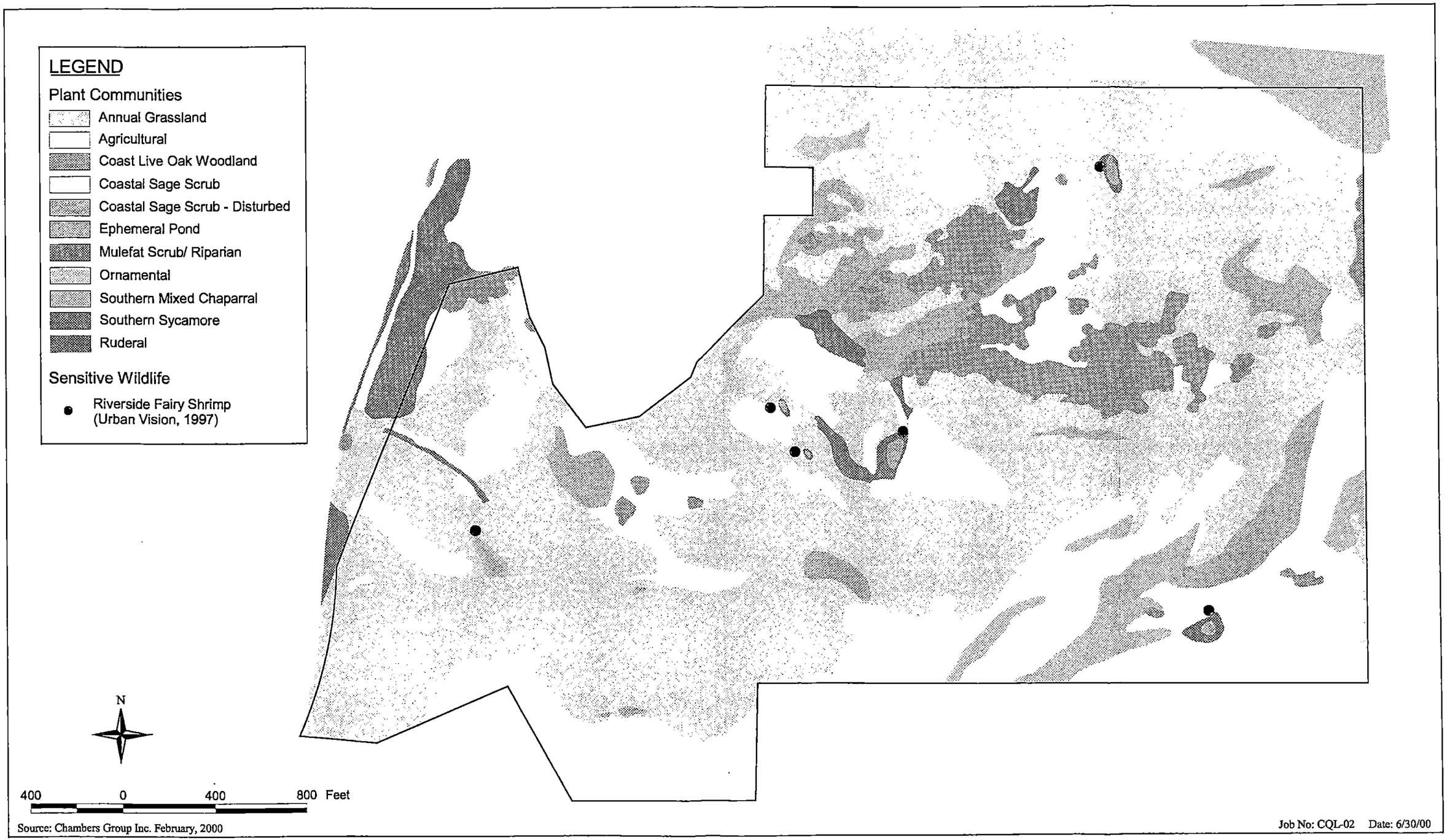
HELIX



Scale: 1" = 2000'
Source: USGS 7.5 min Quadrangle, El Toro

Viejo Mitigation Location Map
SADDLEBACK MEADOWS
Figure 3

HELIX



Vegetation and Sensitive Resources

SADDLEBACK MEADOWS

E. PROJECT IMPACTS

Proposed project development would impact 165 acres of currently undeveloped land (Figure 5). This would include impacts to approximately 38.6 acres (or 53 percent) of the sage scrub habitat present on site. Brush management impacts to 4.6 acres of sage scrub are considered impact neutral (They are not counted as impacted acres but cannot be used for mitigation purposes).

F. AGENCY JURISDICTION AND REQUIREMENTS

The proposed project is located within an unincorporated portion of Orange County in an area designated as critical habitat for the coastal California gnatcatcher (*Polioptila californica californica*). Protocol surveys for this species have not located the gnatcatcher onsite however. The sage scrub mitigation program outlined in this plan will mitigate for any potential critical habitat impacts under the Federal Endangered Species Act, and also fully mitigates for sage scrub impacts under the California Environmental Quality Act (CEQA).

III. GOALS OF MITIGATION

A. TYPES OF HABITAT TO BE CREATED AND/OR ENHANCED

This plan outlines the procedure for creating and purchasing 54.1 acres (1.5:1 mitigation ratio for undisturbed css and 1:1 mitigation ratio for disturbed css) of Venturan-Diegan transitional coastal sage scrub habitat within the project site and at an offsite location. Onsite, a total of 33.4 acres of sage scrub will be created and an additional 7.3 acres of disturbed sage scrub will be enhanced (Figure 6). An additional 13.4 acres will be preserved at the Viejo Conservation Bank site (Figure 3).

B. FUNCTIONS AND VALUES OF HABITAT TO BE CREATED AND/OR ENHANCED

The goal of the mitigation is to create, restore, and enhance Venturan-Diegan transitional coastal sage scrub habitat of similar or higher quality than the adjacent existing Venturan-Diegan transitional coastal sage scrub habitat thereby increasing the habitat functions and values of upland habitats as well as adjacent oak woodland and wetland habitats.

C. LONG-TERM GOALS

The long-term goal of the plan is to create self-sustaining habitat that requires minimal maintenance and is resistant to invasion by non-native plant species. The sage scrub community will provide habitat for a variety of micro- and macro-organisms.

IV. ESSENTIAL PARTICIPANTS

A. PROJECT PROPONENT

The project proponent, California Quartet Limited, will be responsible for financing the installation and monitoring of the mitigation sites. The contact at this company is Mr. H. Pike Oliver. He can be reached by telephone at (916)482-7200, or at the address given in Section II.A. of this document.

B. LANDSCAPE ARCHITECT

A licensed landscape architect will prepare the construction plans necessary to implement this plan. The construction documents will be reviewed and approved by the restoration specialist and the County of Orange. A landscape architect will also be responsible for inspecting certain parts of the installation, and for participating in the final installation inspection.

C. RESTORATION SPECIALIST

Overall supervision of the installation and maintenance contractors and monitoring in the mitigation area will be the responsibility of a restoration specialist or a biologist familiar with native habitat restoration. The restoration specialist will educate all contractors with regard to mitigation goals and requirements. This education will be initiated at a pre-construction meeting. After each monitoring event, the restoration specialist will provide the project proponent and installation contractors with a monitoring memo outlining the items in need of attention. All requests for work which go beyond the contractor's scope of work will first be approved by the project proponent.

D. INSTALLATION CONTRACTOR

The installation contractor is responsible for pre-planting weed control, planting, and seeding. Once the restoration specialist has verified the completion of the landscape installation, a 180-day establishment period will begin. At the end of this period, the restoration specialist will certify completion of the installation contract, provided all installation and maintenance tasks have been finished. These items include, but are not limited to, weed control, dead plant replacement, and reseeding. The installation contractor will be educated as to the installation and maintenance of native plants.

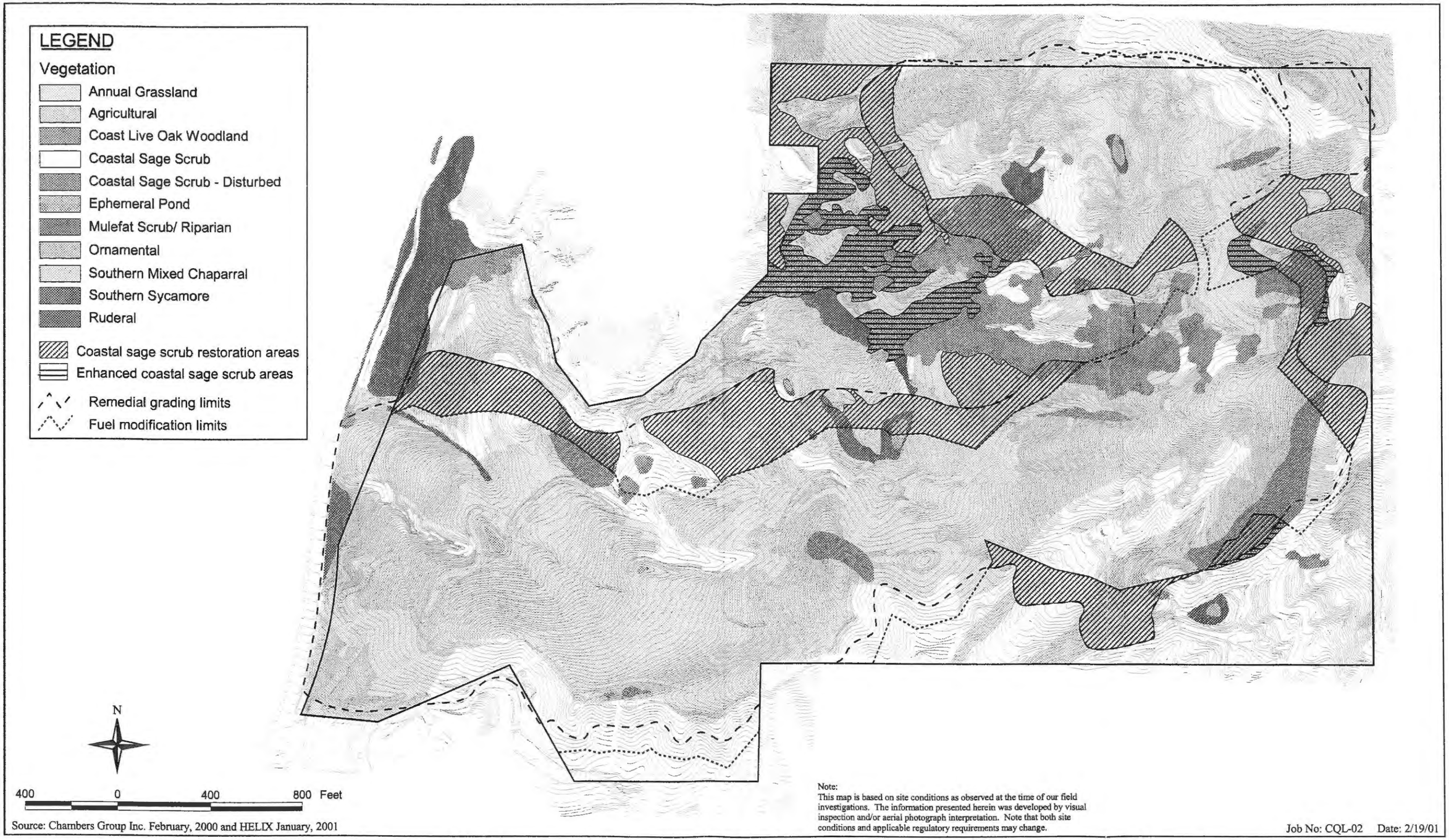
E. MAINTENANCE CONTRACTOR

After the installation contract is completed, a maintenance contractor will be hired by the project proponent for the duration of the five-year monitoring period. The project proponent may change contractors at its discretion. The maintenance contractor will service the entire restoration area at least once a month. The maintenance contractor will meet the restoration specialist at the site when requested, and will perform all checklist items in a timely manner. The maintenance contractor will be experienced in the maintenance of native plant habitats and know the difference between native plants and weeds.

V. RESTORATION DESIGN

Sage scrub mitigation is designed to meet the requirements of the project under the CEQA. Project mitigation requirements call for a 1.5:1 mitigation ratio for Venturan-Diegan transitional coastal sage scrub and a 1:1 mitigation ratio for disturbed Venturan-Diegan transitional coastal sage scrub. The objective will be to provide self-sustaining sage scrub vegetation at the completion of the restoration effort.

Sage scrub mitigation will occur in areas that are best suited for this habitat and where they do not conflict with other landscape needs. The locations selected for sage scrub planting were based on several considerations, including depth of soils, slope aspect, and potential for future native wildlife use. Sage scrub vegetation currently exists on at least portions of the areas proposed for habitat restoration. In some cases, this includes existing agricultural areas and non-native grassland that would not otherwise be impacted by the project. The remaining areas proposed for restoration are remedial grading slope areas, many of which currently support sage scrub vegetation prior to project impacts. Fuel modification zones will not be planted with sage scrub for mitigation credit.

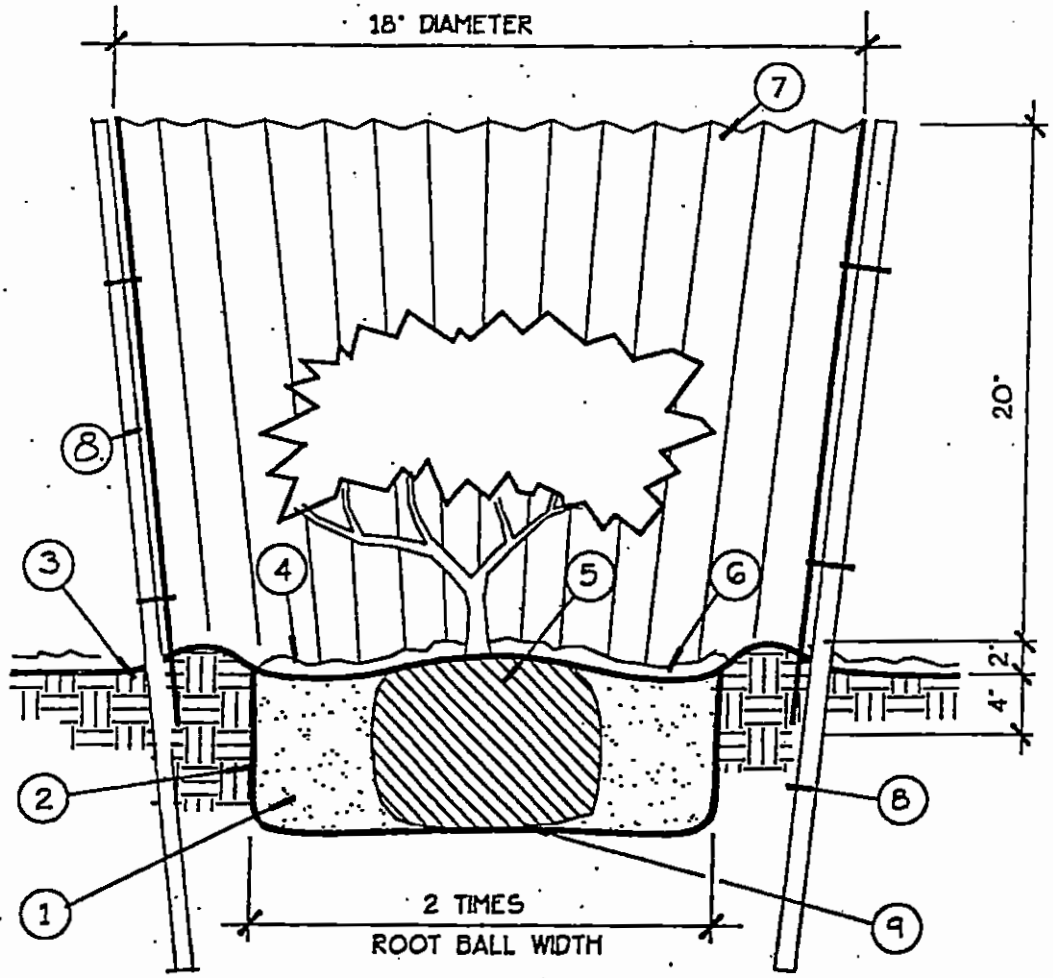


Coastal Sage Scrub Restoration Areas

SADDLEBACK MEADOWS

HELIX

Figure 5



LEGEND

1. BACKFILL WITH NATIVE SOIL.
2. ROUGHEN SIDES AND BOTTOM OF PIT.
3. FINISHED GRADE.
4. (2) INCH MULCH LAYER
5. ROOTBALL SLIGHTLY HIGHER THAN FINISHED GRADE.
6. WATER BASIN.
7. CORRUGATED PLASTIC SHRUB PROTECTOR ATTACHED TO LATH WITH (2) PLASTIC TIES.
8. 36" #3 REBAR.
9. SOIL BALL RESTING ON FIRM SOIL TO AVOID SETTLING.

Oak Woodland Restoration Plan Planting Detail

SADDLEBACK MEADOWS

Figure 6

HELIX

In addition to creating sage scrub habitat, approximately 29.6 acres of sage scrub (including 7.3 acres of disturbed sage scrub habitat to be enhanced), excluding brush management zones, will be preserved on site.

VI. RESTORATION PLAN DETAILS

Individual plan elements are described below.

A. TEMPORARY PROTECTION OF EXISTING HABITAT

Native habitats are sensitive to environmental changes that alter the availability of water and nutrients. Coast live oak (*Quercus agrifolia*) trees, in particular, can easily be damaged during construction by sustaining injuries from soil cuts, fills, compaction, trenching, and excessive branch removal. To protect existing habitats onsite, all areas designated for preservation will be protected with the following measures:

- All remaining habitat will be marked with stakes and flagging by the restoration specialist. Prior to any grading, orange construction fencing will be installed and inspected by the restoration specialist to ensure that the fencing has been properly installed. The contractor will be responsible for repairing all damage to protective fencing within on week of such damage.
- Construction crews will be advised to avoid impacts to preserved habitat.
- Best management practices for erosion control will be implemented to contain sediment within the construction site.
- No heavy equipment will be allowed to operate within the dripline of any oak tree that is designated for preservation.

Unanticipated impacts to preserved habitat must be fully mitigated as recommended by the restoration specialist at the expense of the company or persons responsible.

B. VEGETATION AND TOPSOIL SALVAGE AND REUSE

Salvage of vegetation (track-walked shrubs and surface leaf litter) and topsoil from existing sage scrub areas proposed to be impacted has numerous benefits for the restoration process. Both the vegetation and the topsoil contain a seedbank that is genetically indigenous to the site. Providing a larger and locally native seed source will likely increase the rate of natural recruitment. In addition, collecting both vegetation and topsoil will ensure that plant litter, naturally-occurring understory plant species, mosses, fungi, and nutrients will also be transported to the restoration site. Finally, native topsoil covered with a layer of mulched vegetation will provide a better substrate for restoration, both for the planted and seeded species.

Vegetation and topsoil collection will be conducted in the following manner:

1) All collection areas will be identified and flagged by the restoration specialist. Disturbed/weedy areas will be avoided to decrease the amount of weed seed introduced to the restoration site.

2) Prior to collecting topsoil, the contractor will drive over specified collection sites to crush the vegetation.

3) The sage scrub vegetation will be collected, mulched, and stockpiled.

4) After vegetation has been collected, the top layer of soil (typically 4-6 inches, to be determined by the restoration specialist) will be removed and stockpiled separate from the mulched vegetation. In any collection areas dominated by grasses, vegetation and soil will be collected simultaneously and stored with the topsoil.

Topsoil collection will occur between July and December. Soil organisms are typically dormant at this time of year and are less likely to be damaged by the salvage. Any salvaged material will be stored in areas that will not be disturbed during the storage period. Both the mulch and the topsoil will be applied to the restoration areas, if technically feasible, within six months of initial removal. These materials can be stockpiled at no more than two feet deep for up to six months if they are kept dry. This depth prevents compaction and composting which destroy beneficial soil organisms and the seed bank within the topsoil. Additional measures (e.g. covering) may be necessary to keep the stockpiled materials dry.

Collection, storage and installation of mulch and topsoil will need to be conducted under the direction of the restoration specialist.

C. CONTAINER STOCK SPECIFICATIONS

Container stock (deep liner or one-gallon) will be grown from seeds collected on or in the immediate vicinity of the Saddleback Meadows property to preserve the genetic material for this site. Seedlings should be planted between November and January to maximize the benefit from winter rains. All container grown plants will be inoculated with mycorrhizal fungi before delivery to the site; inoculum will be produced from fungal propagules collected in the existing sage scrub on site. If no viable propagules of mycorrhizal fungi can be found on site, the nearest available source in a similar soil type will be used. Native fungi from several on-site soils may be combined for inoculum production. Proof of inoculation must be provided by the plant nursery. Table 2 provides a list of container stock recommended for sage scrub restoration.

Table 2
SAGE SCRUB CONTAINER PLANT PALETTE

Scientific Name	Common Name	Size	#/Acre*
		1-gallon	75
Heteromeles arbutifolia	toyon	1-gallon	30
Malosma laurina	laurel sumac	1-gallon	30
Rhamnus californica	California coffeeberry	1-gallon	30
Ribes speciosum	fuschia-flowering currant	1-gallon	30
		TOTAL	195

*Number per acre will vary within disturbed sage scrub areas to be enhanced.

All plants determined to be dead or terminally diseased by the restoration specialist should be replaced 90 days after installation or as soon as they die (whichever comes first), and then as required by the maintenance program. Unless substitutions are approved by the restoration specialist, the replacement plants will be of the same species and at least the same size as originally planted.

D. SEED SPECIFICATIONS

It is preferred that all propagules used at the site be from within the site or from wild sources within Orange County and as close to Saddleback Meadows as possible. Seeds should be collected several different areas in the vicinity of the site in the summer and early fall at the direction of the restoration specialist. Using different collection sites will ensure natural genetic variability and protect donor habitats. The seed collector will attempt to obtain equal amounts of seed from each collection site in an environmentally sensitive manner. Donor plants will not be excessively degraded by the collection methods. Collection areas and approximate quantities obtained from each site will be noted and mapped by the seed collector.

Each day's collections will be removed from the site and stored in a cool, dry place protected from rodents. Seed will be cleaned to a grade normally acceptable in the seed trade with all sticks and large plant parts removed. Storage costs and insurance will be included in the price per pound of seeds. Seeds will be tested for percent purity, percent germination, and the number of live seeds per pound. Testing costs will be included in the seed costs per pound and will be the responsibility of the seed supplier. Results of the seed tests should be made available to the restoration specialist prior to seed delivery. Seed collections, handling, and storage techniques may be observed by the restoration specialist.

Table 3 presents the list of species to include in the seed mix, subject to availability. Modifications to the list may be necessary based on availability and specific site conditions and may include substitute species in the mix and/or modification of the pounds per acre of available seed. If adequate seed is not available from local sites, a commercial source may be used to supplement seed supply. The seed material must be approved by the restoration specialist prior to installation at the restoration site.

Table 3
SAGE SCRUB SEED MIX[1]

Scientific Name	Common Name	LBS/Acre
Artemisia californica	California sagebrush	1
Bromus carinatus	California brome	3
Eriogonum fasciculatum	California buckwheat	3
Eriophylum confertiflorum	golden yarrow	2
Gnaphalium californicum	California everlasting	1
Isocoma menziesii	California goldenbush	1
Lasthenia chrysostoma	goldfields	2
Lotus scoparius	deerweed	5
Lupinus succulentus	succulent lupine	3
Nassella pulchra	purple needlegrass	4
Sisyrinchium bellum	blue-eyed grass	3
	TOTAL	28

[1] will vary within disturbed sage scrub areas to be enhanced.

E. CONTRACT GROWING/PLANT SOURCES

Arrangements will be made by the installation contractor or the project proponent, at least nine months prior to construction, to acquire seed required for restoration. An additional 15 percent of the total amount of seed mix will be procured. A copy of this contract will be submitted to the restoration specialist by the owner or installation contractor as verification. Seed collection/acquisition will be conducted by an experienced native plant nursery or seed company such as, but not limited to, S&S Seeds of Carpinteria, California.

The contract grower will provide the restoration specialist with information on the sources of all plant and seed materials grown/collected for the project for final approval. If necessary, the restoration specialist will help the grower locate local sources for plant materials.

F. SUBSTITUTIONS

The installation contractor is expected to secure all plant materials well in advance of the expected planting date. No species should be substituted without approval of the restoration specialist. If the installation contractor is unable to obtain the proper species specified by the time of planting, commencement of the guarantee period will be delayed until all plants specified are planted for a particular project phase. Substitution of seed species at the time of seeding will be at the discretion of the restoration specialist in consultation with the landscape architect. All approved substitutions will be documented by the installation contractor in the final set of "as-built" plans. Lack of planning (i.e., insufficient lead time for seed collection) will not be accepted as justification for substitutions.

G. PLANT INSPECTION

All container stock delivered to the site must be inspected by the restoration specialist prior to installation. No root bound, dead, or diseased material will be accepted from the nursery supplier.

H. SOILS AND SITE PREPARATION

Weed control at the restoration/enhancement sites must be addressed at least six months prior to revegetation. Methods for weed control in these areas will be determined after site inspections by the revegetation specialist but may include the following either individually or in combination:

- Forced germination followed by removal.
- Mechanical removal (e.g. large weedy areas can be tilled or weed-whipped).
- Treatment with herbicide. Spot treatment with herbicide is the best way to control highly invasive perennial weed species. Repeated follow-up treatments, spaced at least three weeks apart, may be required to fully control these species.
- Manual weeding.

Following any required exotic species removal and perennial weed treatment, proposed restoration areas shall be ripped to eight inches whenever feasible. These areas will then be covered with three inches of salvaged topsoil and, if determined necessary and feasible by the restoration specialist, ripped in to a depth of six inches. Lastly, a second three inches of salvaged topsoil will be placed over the top and track-walked.

I. PLANTING/SEEDING TIMING AND METHODS

Container stock will be planted during October through January, prior to seeding. Container stock will be installed at a density of approximately 195 plants per acre. Plantings will be planted in a few dense groupings or "islands" with scattered individuals between the groupings. Planting of container stock shall be conducted as follows (see also Figure 6).

I. The host area should be prepared by clearing weeds. Start by digging a hole twice as deep and twice as wide as the plant container. Break up large dirt clods and try to avoid letting the hole be too smooth sided.

II. Prepare the fill dirt. Native soil should be used as fill dirt and should be free of large rocks and dirt clods.

III. Fill planting hole with water and allow it to drain.

IV. Refill the hole using the following process:

- A. Spill some of the fill dirt into the hole, moisten it, and set the plant root ball on top of the moistened soil so that the plant collar is one inch higher than the finished grade of the planting area.
- B. Replace some backfill material up to 2/3 the height of the root ball while allowing water to slowly flow into the hole. At this point install a protective screen around the plant. The preferred type of screening is corrugated mylar, which is clear and rodent-resistant.
- C. Place the remaining fill dirt in the hole, making sure that the plant collar is still higher than the final grade. Fill dirt should hold the protective screen in place.

V. Create an irrigation basin by mounding dirt considerably outside of the hole dimensions.

VI. Apply at least one inch of organic, disease and weed free mulch in remainder of basin around plant collar and within the entire irrigation basin. Irrigate from the top, filling the basin with water, to settle the fill dirt and mulch. Repeat this at least once.

To take advantage of the rainy season and minimize seed predation, all seeding will occur between November 15 and January 15. After topsoil has been installed, seed can be applied in one of two ways: (1) hand or mechanically distribute seed, then press down the soil with a lightly loaded sheepsfoot, or (2) simultaneous seeding and compacting with an imprinting device. If hydroseed is applied to the site, planted oak trees and other shrubs must be protected during the application process.

J. PROTECTION FROM HERBIVORY

The revegetation will occur in an area potentially used by mule deer (*Odocoileus hemionus*) and brush rabbits (*Sylvilagus audubonii*). Protective fencing or enclosures will be maintained around container stock as long as the container stock remain vulnerable to herbivory. Any protective measures around the plantings will be maintained so that they do not interfere growth. For example, if wire enclosures are used and the plantings begin to send branches through the wire, the enclosure will be replaced with a wire enclosure of larger mesh that provides enough room for plant growth.

K. HYDROLOGY

The sage scrub restoration sites are located in areas that are suitable for sage scrub habitat with respect to local hydrologic conditions such as surface runoff and groundwater levels. Specifically, the proposed restoration sites encompass areas that have been disturbed by previous agricultural or development activities, or that support non-native species (i.e., *Eucalyptus* ssp.), or areas proposed for remedial grading but outside of fuel management limits. A number of site-specific measures related to hydrologic

conditions will also be implemented as part of the restoration effort or adjacent landscaping plans. Specifically, these include the limiting on-site irrigation (i.e., within the upland restoration sites), and directional irrigation techniques in adjacent areas to avoid over-watering the upland restoration sites.

L. SOILS

While the physical and chemical nature of topsoils in the areas proposed for sage scrub restoration have likely been modified by previous agricultural and/or other development activities, soils in these areas are mapped predominantly as Balcom clay loam, 30-50% slopes, Basanko clay, 9-15%, 15-30% and 30-50% slopes, and Calleguas clayloam, 3075% slopes. As described in Section VI.B. of this report, proposed upland restoration will include the application of salvaged topsoil from portions of the site that are proposed for development and currently sage scrub habitats. Specifically, mapped topsoils in the areas proposed for soil collection and salvage include primarily Calleguas clayloam, 30-75% slopes and Basanko clays. Based on the noted soil and habitat data, the described restoration sites and topsoil salvage are considered suitable for the proposed sage scrub restoration program.

M. PROTECTION OF RESTORED AREAS

All restoration areas will be clearly marked with flagging and, if possible, with orange construction fencing during the installation phase, and with a temporary 4-foot chain link or snow fence for the duration of the monitoring period, or until the restoration specialist considers it no longer necessary. Additional fencing may be required at any time if considered necessary by the restoration specialist to protect open space vegetation.

Work will be monitored by the restoration specialist to ensure that construction does not exceed these limits. If unanticipated impacts do occur, the affected areas will be restored as recommended by the restoration specialist and to the satisfaction of the County of Orange.

N. "AS-BUILT" PLANS

The installation contractor will prepare a set of "as-built" plans showing the restoration project as it was actually installed. If the installation exactly reflects the construction plans, then a letter to this effect will be sent to the County of Orange.

VII. MAINTENANCE

A. GENERAL MAINTENANCE

Planted areas will be kept free of debris and will be checked for vandalism, plant material condition, the need for irrigation modifications, scheduling, and weeding.

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired as directed by the restoration specialist. The cost of such repairs will be paid for as extra work, although the contractor should provide the typical replacement costs as part of his/her contract.

Any damage caused by the maintenance contractor's inadequate maintenance, as determined by the restoration specialist, will be repaired by the contractor at his/her expense.

B. MAINTENANCE SCHEDULE

The installation and maintenance contractors will inspect planted areas and perform maintenance activities as needed according to the schedule in Table 4.

Table 4
MAINTENANCE SCHEDULE

PHASE	SCHEDULE
Installation	Daily
Post Installation	
Year 1 (February-May)	Semi-Monthly
Year 1 (June-January)	Monthly
Year 2	Monthly
Years 3-5	Bi-Monthly

C. WEEDING

Weed eradication will be conducted as necessary to minimize competition that could prevent the establishment of native species. As weeds become evident, they should be removed by hand, mechanical means, or controlled with the proper systemic herbicides. No weed whips will be permitted after installation of the container stock and seed mixes. Regular weeding will be the responsibility of the maintenance contractor. The restoration specialist will determine the need for any additional weeding and will notify the project proponent and maintenance contractor of any required work.

Maintenance personnel will be trained to distinguish weed species from desirable native vegetation. Examples of weeds to be controlled include, but are not limited to: artichoke thistle (*Cynara cardunculus*), fennel (*Foeniculum vulgare*), tree tobacco (*Nicotiana glauca*), yellow star thistle (*Centaurea melitensis*), mustard (*Brassica* spp.), filaree (*Erodium* spp.), tumbleweed (*Salsola iberica*), and oats (*Avena* spp.). Artichoke should receive a foliar application and fennel and tree tobacco should be cut and stump treated with herbicide. Multiple herbicide applications may be necessary for perennial species. A minimum gap of three weeks should occur between applications.

D. REPLACEMENT PLANTING

As discussed in Section VIII, remedial measures may be required if any of the restored areas are not successfully approaching the year-five standards.

E. TRASH AND DEBRIS REMOVAL

Planted areas will be kept free of trash and debris and will be checked according to the maintenance schedule (Table 4) by the installation contractor.

F. PEST CONTROL

Insects, vertebrate pests, and diseases will be monitored. Generally speaking, a high threshold of tolerance will be permitted before control measures are considered. All specific recommendations will only be made by a licensed pest control adviser as required by law. All applicable federal and state laws

and regulations will be closely followed. The restoration specialist will be consulted on any pest control matters.

G. FERTILIZATION

Fertilizer will not be applied, except in extraordinary circumstances, and only at the written direction of the restoration specialist.

H. PRUNING

No post-installation pruning will be performed unless directed by the restoration specialist.

I. IRRIGATION

After the initial plant establishment period, water will be applied infrequently and only as needed to prevent the mortality of container stock. Irrigation will not be used in the disturbed sage scrub enhancement areas. The irrigation schedule will attempt to develop deep root structure, by infrequent, deep applications of water. To obtain deep penetration of water, the irrigation system may be activated several times in one 24-hour period. The goal is to obtain germination and growth with the least amount of irrigation. Frequent irrigation encourages weed invasion and leaches nutrients from the soil. Native plantings that are infrequently irrigated may grow more slowly initially, but will ultimately develop better. Once the container stock are established and do not require supplemental irrigation, the system will be removed. The restoration specialist will determine how and when the system will be removed.

VIII. MONITORING

A. SCHEDULE

The restoration specialist will monitor the site preparation, seeding, subsequent establishment, and growth in an effort to detect any problems at an early stage (Table 5). Potential problems could arise from weed competition, erosion, vandalism, and unacceptable levels of disease and predation.

The restoration specialist's maintenance monitoring program will begin with the construction process. Upon completion of the installation phase of the restoration effort, the restoration specialist will prepare a letter report indicating that the installation is finished and that the five-year monitoring period has begun. The report will be sent to the client and to the County representative overseeing the project. Final acceptance of the installation will be verified during a site visit with the restoration specialist, landscape architect and County staff.

During the five year monitoring period, the restoration specialist will conduct regular monitoring of the restoration site (Table 4). After completing each inspection the restoration specialist will file a written report to the project proponent. Each of these reports will identify maintenance concerns including mortality, vandalism, and weed-related issues. Conditions such as disease, stress, loss of leaves, etc., of the planted oak trees will be noted during each assessment. These reports will facilitate communication and coordination with the installation contractor who will be responsible for implementing the maintenance program. Regular monitoring reports will be submitted to the project proponent and the maintenance contractor.

Table 5 MAINTENANCE MONITORING SCHEDULE	
PHASE	SCHEDULE
Grading/Site Preparation/Installation	2 times per week
Post Installation	
Year 1	Monthly
Year 2	Bi-Monthly
Years 3-5	Quarterly

In addition to regular monitoring, annual technical monitoring will be conducted in July, at the end of the growing season. These annual reports will be submitted to the project proponent, maintenance contractor, and the County within six months of the monitoring event. Annual monitoring will continue until the project has met final success criteria and received official County sign-off.

B. CONTENT OF MONITORING REPORTS

Annual technical monitoring is used to evaluate the success of the restoration effort. The annual reports will include quantitative measurements of native and non-native species cover, observations of plant and animal species diversity, and general qualitative observations of site conditions including trash or debris, erosion, irrigation, herbivory, etc. A summary of whether the project is meeting incremental success criteria and whether it appears to be on trajectory to meet final success criteria will be included. The annual reports will also include remedial recommendations for any observed problems.

C. SUCCESS CRITERIA

The purpose of this section is to define specific performance standards by which to evaluate project progress. Success criteria for sage scrub restoration will be determined with quantitative measurements of native species cover and diversity that approach conditions occurring in undisturbed sage scrub habitat remaining on site.

Percent Cover

Cover by Target and Other Native Species. Cover by native vegetation should increase over time and ultimately approach that of the existing habitats on site. Development of cover in newly created sage scrub is often slow at first as the roots become established, but with sufficient rainfall it should approach 80 percent of the existing on-site habitats in five years. Cover should be measured and evaluated separately for shrub and herbaceous life forms as compared to established reference sites (as described above). The annual milestones for these parameters are presented in Table 6.

If the restoration area's criteria are measured to be 100 percent of the reference site, then the two sites are the same. For example, if the native species cover of the reference site is 60 percent and the native species cover of the restoration site is 42 percent, the restoration site has 70 percent of the reference site's native cover. Similarly, if weed cover at the reference site is 10 percent and weed cover at the restoration site is 12 percent, the restoration site has 120 percent of the reference site's weed cover.

Cover by Exotic Species (Weeds). Weeds are typically a problem with habitat restoration, particularly at the outset of the project. As the restoration takes hold, the problems with weeds should decrease. Many local weeds have become naturalized, and therefore the tolerance for weeds should reflect what is present

at the existing habitats on site. The measure for tolerance should be total cover of weed species. Although weeds are expected to be a problem, it doesn't mean they are to be accepted. Weeds should be controlled as specified in the maintenance monitoring section.

Species Diversity and Recruitment

Species diversity and recruitment are closely linked, and diversity increases with recruitment. Species diversity is the number of species in a given area. The higher the number of species, the higher the diversity. Recruitment is the successful, natural reproduction and/or establishment of plants in a given area. Recruitment should increase diversity such that it approaches the number of species in the existing habitat on site (reference site[s]). Ultimately, the restored areas should reach 80 percent of the species diversity of the reference site(s). If natural recruitment is deficient in any area of the project by the third year after planting, then appropriate remedial actions will be taken to remedy the situation.

Table 6
SPECIES DIVERSITY AND COVER CRITERIA MILESTONES FOR SADDLEBACK MEADOWS

CRITERIA	YEAR				
	1	2	3	4	5
Percent Cover by Native Species Relative to the Reference Site	20	35	55	70	100
Percent Cover by Weeds Relative to the Reference Site	50	50	120	110	100
Percent Species Diversity Relative to the Reference Site	40	50	60	70	80

D. POTENTIAL REMEDIAL ACTIONS

The County may terminate monitoring earlier than five years if it is recommended first by the restoration specialist in a year-end report. Likewise, if at the end of five years, any of the restored areas fail to meet the year-five standards, then the monitoring and maintenance period will be extended one full year, and a specific set of remedial measures (approved by the County) will be implemented. Only areas which fail to meet the success standards will require additional work, that is, not all of the areas originally restored. This process will continue until all year-five standards are met, or as otherwise provided in this document, the County determines that other mitigation measures are appropriate.

IX. COMPLETION OF MITIGATION

A. NOTIFICATION OF COMPLETION

The County shall be notified of completion of the mitigation effort through the submittal of the five-year monitoring report.

B. COUNTY CONFIRMATION

If the project meets all success standards at the end of the five-year-monitoring period then the mitigation will be considered a success. If not, the maintenance and monitoring program will be extended one full year at a time and a specific set of remedial measures (approved by the County) will be implemented until the standards are met. This process will continue until all year-five standards are met or until the County determines that other mitigation measures are appropriate. Should the mitigation effort meet all goals prior to the end of the five-year-monitoring period, the County, at their discretion, may terminate the monitoring effort. Alternatively, a subsequent agreement may be negotiated with the County. Only areas that fail to meet the success standards will be subject to any subsequent agreement.

X. LITERATURE CITED

The Chambers Group

1999 Draft Biological Assessment for Saddleback Meadows Orange County, California. Unpublished report prepared for The Presidio Group, Newport Beach, California.

Sweetwater Environmental Biologists, Inc.

1996 Biotechnical Report for Saddleback Meadows. Unpublished report prepared for The Presidio Group, Newport Beach, California.

Urban Vision

1997 Draft Subsequent Environmental Impact Report No. 566: Saddleback Meadows Recorded Tract Map 10692, Grading Application GA 960048. Unpublished report prepared for Orange County Planning & Development Services Department.

U.S. Soil Conservation Service (SCS)

1973 Soil Survey of the San Diego Area, California. December.

APPENDIX I.4

U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION

COPY

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2730 Loker Avenue West
Carlsbad, California 92008

OCT 26 2001

In Reply Refer To:
FWS-OR-1023.8

Colonel Richard G. Thompson
District Engineer
U.S. Army Corps of Engineers, Los Angeles District
P.O. Box 532711
Los Angeles, California 90053-2325

Attn: Jae Chung, Regulatory Branch (File No. 199915117-YJC)

Re: Biological Opinion on the Saddleback Meadows Residential Development Project, Orange County, California (1-6-01-F-1023)

Dear Colonel Thompson:

This document transmits our biological opinion based on our review of the proposed Saddleback Meadows Residential Development Project located in Orange County, California and its effects on the federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*, "fairy shrimp") and its designated critical habitat, and designated critical habitat for the threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher"), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your requests for formal consultation on the fairy shrimp and gnatcatcher critical habitat, and conference on proposed critical habitat for the fairy shrimp, were received on September 8 and December 25, 2000, respectively. On May 30, 2001, the U.S. Fish and Wildlife Service (Service) published a final rule designating critical habitat for the fairy shrimp (66 FR 29384). Therefore, this biological opinion will include a formal consultation on the proposed project's effects on designated critical habitat for the fairy shrimp.

This biological opinion is based on information provided in the: 1) *Draft Biological Resources Technical Report for the Saddleback Meadows Property Orange County, California* (Chambers Group, June 1999); 2) *Saddleback Meadows Conceptual Mitigation and Monitoring Plan* (Helix Environmental Planning, Inc. (Helix), April 13, 2000); 3) *Saddleback Meadows Biological Assessment* (Helix, July 6, 2000); 4) Helix letter and attachments to the U.S. Army Corps of Engineers (Corps) dated October 6, 2000; 5) Helix notice of transmittal and attachments to the Service dated November 10, 2000; 6) *2000 Annual Report U.S. Fish and Wildlife Service Protocol Level Dry Season Survey for San Diego and Riverside fairy shrimp (Branchinecta sandiegonensis and Streptocephalus woottoni)* (Helix, December 19, 2000); 7) Helix

memorandum and attachments to the Service dated December 20, 2000; 8) *Saddleback Meadows Coastal Sage Scrub Restoration Plan* (Helix, February 26, 2001); 9) Corps Pre-Construction Notification for No. 199915117-YJC dated March 12, 2001; 10) Helix notice of transmittal and attachments to the Service dated March 14, 2001; 11) G. A. Nicoll and Associates, Inc. letter to TPG Management Inc. (TPG) dated April 4, 2001; 12) TPG memorandum and attachments to the Service dated April 11, 2001; 13) Helix letter and attachments to the Service dated May 23, 2001; 14) electronic mail from Barry Jones of Helix to the Service dated May 25 and June 27, 2001; 15) TPG letter to the Corps and Service dated July 26, 2001: 16) Helix notice of transmittal and attachments to the Service dated June 28, 2001; 17) McCollum Associates electronic mail and attachment to the Service dated August 15, 2001; 18) Helix memorandum to the Service dated August 23, 2001; 19) electronic mail from Joe LaCava of TPG to the Service dated September 19, 2001; 20) *2001 Gnatcatcher Survey Report for Saddleback Meadows* (Helix, September 26, 2001); 21) Helix notice of transmittal and attachment to the Service dated September 20, 2001; 22) a field investigation conducted on June 15, 2000, with the Corps and the applicant's representatives; 23) meetings and telephone conferences with the Corps and/or applicant's representatives held on October 10 and November 16, 2000, March 14, April 5, May 7, June 5, July 17, August 14, and October 9, 2001; and other sources of information. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

The Service has been working with the Corps and applicant, California Quartet, Ltd., on the proposed Saddleback Meadows Development Project since 1999. The Corps is reviewing a permit application (Corps No. 199915117-YJC) for discharge of fill into jurisdictional waters of the United States (U.S.), including three ephemeral ponds (i.e., Ponds A, B and E) and two breached ponds (i.e., Ponds C and F) occupied by the fairy shrimp and/or their cysts, for a proposed residential development. We participated in a field investigation of the proposed development site and mitigation areas with the Corps and applicant's representatives on June 15, 2000.

On September 8, 2000, we received a request from the Corps dated September 5, 2000, to initiate formal consultation on the effects of the Saddleback Meadows Residential Development Project on the fairy shrimp. Enclosed with the letter was the *Saddleback Meadows Biological Assessment* (Helix, July 6, 2000).

On October 6, 2000, we received a facsimile of a letter of the same date sent to the Corps from Helix that included a series of technical papers. The letter also included information on proposed impact minimization measures and a summary of gnatcatcher survey results for the Saddleback Meadows property. No gnatcatchers were found on the property during Service protocol surveys done in 1998, nor reconnaissance-level surveys done in 1993 and 1994.

On October 11, 2000, we participated in a meeting with the Corps, Regional Water Quality Control Board (RWQCB), California Department of Fish and Game (CDFG), and applicant's representatives to discuss the proposed project. The applicant's representatives stated that the

proposed project would impact all but two of the existing nine fairy shrimp ponds and offset the loss of these ponds by pond creation onsite and offsite acquisition of vernal pools (one occupied by the fairy shrimp) on the Viejo property in Orange County. We then informed the Corps and applicant that the Service had serious concerns about the proposed project and its impacts to the long-term survival of the fairy shrimp and its proposed critical habitat. We asked the applicant if the proposed project could be redesigned to avoid more of the fairy shrimp ponds, and in particular Pond E, or to phase impacts. In response, the applicant's representatives stated that it would not be practicable to avoid more of the fairy shrimp ponds or phase impacts and that they would provide a more detailed evaluation of why this could not be done.

Initiation of formal consultation was acknowledged by the Service in a letter to the Corps dated October 24, 2000, with a completed biological opinion due January 22, 2001. In that letter, we also requested information needed to complete our analysis of the effects of the project on the fairy shrimp, stated that the Corps should determine whether the proposed project will adversely effect critical habitat for the gnatcatcher, and recommended that the Corps conference on the proposed critical habitat for the fairy shrimp.

On November 13, 2000, we received from Helix all of the information requested in our initiation letter, except for a map and table of the watersheds of the existing and proposed ponds.

On November 16, 2000, we participated in a meeting with the Corps, CDFG, and applicant's representatives to discuss the proposed project. At the meeting, exhibits showing potential sites for fairy shrimp pond creation were presented by the applicant's representative. We also discussed further avoidance and/or minimization of impacts to fairy shrimp habitat and phasing of unavoidable impacts until viable fairy shrimp populations are demonstrated to be established in the created ponds based on set criteria (e.g., presence of a viable cyst bank or of fairy shrimp during multiple wet seasons). In addition, the applicant agreed to complete fairy shrimp cyst surveys in breached Ponds C and F and to provide a map and table of the watersheds of the existing and proposed ponds and a plan for delaying/phasing fairy shrimp pond impacts in relation to fairy shrimp pond creation. We also discussed potential impacts to critical habitat for the gnatcatcher, and the applicant agreed to provide information on the amount and location of proposed coastal sage scrub impact, preservation and restoration.

On December 21, 2000, we received confirmation from Helix that surveys found fairy shrimp cysts in both breached ponds. Helix also provided a map and table of watersheds of the existing ponds, a table of the watersheds of the proposed created ponds, and a proposed phasing plan for fairy shrimp pond impacts and creation.

On December 25, 2000, we received a request from the Corps dated December 19, 2000, to initiate formal consultation on designated critical habitat for the gnatcatcher and to conference on proposed critical habitat for the fairy shrimp. Initiation of formal consultation on the effect of the proposed project on designated critical habitat for the gnatcatcher, and conference on proposed critical habitat for the fairy shrimp was acknowledged by the Service in a letter to the Corps dated January 25, 2001. In that letter, we requested a 60-day extension to the consultation period

until March 22, 2001, and again requested information on the amount and location of proposed coastal sage scrub impact, preservation and restoration. On February 27, 2001, we received from Helix a coastal sage scrub restoration plan dated February 26, 2001.

On March 9, 2001, we forwarded by facsimile and electronic mail three project alternatives to the Corps and applicant that addressed our concerns for adequate avoidance, project phasing, and creation to ensure that the existing population of fairy shrimp is sustained onsite.

On March 12, 2001, we received from the Corps a facsimile of a Pre-Construction Notification (PCN) of the same date for the proposed project. The PCN proposed that impacts to 7 seasonal ponds occupied by the fairy shrimp (including breached Ponds C and F) and to 2.35 acres of other waters of the U.S. be authorized under Nationwide Permit 26.

On March 14, 2001, we participated in a conference call with the Corps and the applicant's representatives to discuss the alternatives we had previously submitted. During the call, the applicant's representatives stated that while it would be possible to avoid Pond E and build the rest of the project, development of the northeast portion of the property where Pond E is found is needed to pay for the substantial remedial grading required to stabilize an existing landslide through the property. The applicant's representatives also stated that it would be possible to phase project grading to allow some fairy shrimp pond creation and demonstration of success before impacting all seven ponds within the project footprint. On March 15, 2001, we received a notice of transmittal from Helix dated March 14, 2001, with a map of the extant ponds and their watersheds, the potential avoidance area around Pond E, and the proposed project phasing.

On March 21, 2001, we received a verbal request from the applicant's representative, Mike McCollum, to meet with us and the Corps on April 5, 2001, to allow the applicant's representatives to present additional project information and to further discuss the proposed conservation measures for fairy shrimp. In our letter to the Corps dated March 29, 2001, we concurred that such a meeting would be beneficial and therefore requested an extension of the consultation period until May 5, 2001.

At the April 5, 2001, meeting, the applicant's representatives stated that due to geotechnical issues the previously proposed project phasing and avoidance of Pond E could not be done without losing 72 more housing lots. We reiterated our concerns about the project's impacts to the long-term survival of the fairy shrimp population onsite. The applicant's representatives agreed to our request to extend the consultation period until May 5, 2001, and to provide a letter documenting the changes in the project description.

On April 17, 2001, we received a document from TPG dated April 11, 2001, that summarized the changes in the project description and timing of fairy shrimp pond creation efforts in relation to project impacts. The document also included a map showing the 72 housing lots that would lost if Pond E was avoided.

In our letter to the Corps dated April 18, 2001, we informed the Corps that we were working with the Department of Justice to extend the completion date for publication of the final rule designating critical habitat for the fairy shrimp and thus had agreed not to issue any biological opinions within the boundaries of the proposed critical habitat until the final rule went into effect. We verbally informed the applicant's representatives of this issue on the same day.

On April 27, 2001, we forwarded by facsimile a draft project description for the biological opinion to the Corps and applicant's representatives for their review and comment. On May 7, 2001, we participated in a conference call with the Corps and the applicant's representatives to discuss the draft project description for the biological opinion.

On May 9, 2001, we forwarded by electronic mail a recommendation to the Corps and applicant's representatives that updated gnatcatcher surveys be done because of the three-year time period since the last protocol surveys were done on the Saddleback Meadows property.

On May 24, 2001, we received a letter from Helix dated May 23, 2001, that provided: 1) an updated figure showing the watersheds of the proposed creation ponds; 2) an explanation on how drainage into the basins will be protected from irrigation and urban runoff; 3) an updated vernal pool restoration plan for the Viejo parcel that reduced restoration from approximately 0.16 acres to 0.03 acres; and 4) comments on the draft project description.

On May 31 and June 1, 2001, we forwarded by electronic mail to the Corps and applicant's representatives comments and questions on the proposed conservation measures for impacts to coastal sage scrub.

On June 1, 2001, we received a notice from Helix by electronic mail that the additional gnatcatcher surveys we recommended would be completed by June 22, 2001.

On June 27, 2001, we received from Helix an electronic mail that addressed our comments and questions on the proposed conservation measures for impacts to coastal sage scrub.

In our letter dated July 17, 2001, we informed the Corps that the Service published a final rule designating critical habitat for the fairy shrimp, and that our biological opinion would include a formal consultation on the proposed project's effects on designated critical habitat for the fairy shrimp

We also met with the Corps and applicant's representatives on July 17, 2001, to discuss the contents of our letter. At the meeting, the applicant's representatives proposed to perform a pilot program to demonstrate their ability to create ponds that hold water for sufficient duration for the fairy shrimp prior to initiating impacts to the extant fairy shrimp ponds.

On July 30, 2001, we received a letter from TPG outlining their proposed pilot program which would create 3 ponds and demonstrate their ability to hold water for a minimum of 60 days at

depths appropriate for the fairy shrimp, prior to initiating impacts to the extant fairy shrimp ponds.

On August 14, 2001, we met with the applicant's representatives to discuss further minimization of impacts to the fairy shrimp pools, including the avoidance of Ponds D and G.

On August 15, 2001, we received from McCollum Associates by electronic mail a proposal to avoid direct impacts to Ponds D and G by removing up to 20 lots from the development and to remove Basins 3, 4, 6 and 7 from the proposed pond creation plan, while retaining Basins 4, 6 and 7 as backup locations. Also, the electronic mail stated that the applicant no longer proposed to acquire and preserve the one vernal pool on the Viejo property occupied by the fairy shrimp.

On August 21, 2001, we forwarded by electronic mail to the applicant's representatives comments and questions on the new proposal for minimizing impacts to fairy shrimp ponds.

On August 23, 2001, we received from McCollum Associates by electronic mail a memorandum prepared by Helix that responded to our comments and questions on the new proposal for minimizing impacts to fairy shrimp ponds.

On September 13, 2001, we made a verbal request to McCollum Associates and Helix for: 1) a map showing the new fairy shrimp pond avoidance/creation plan, project grading footprint and watersheds of the avoided and created ponds; and 2) the 2001 gnatcatcher survey results.

On September 19, 2001, we sent an electronic mail to the applicant's representatives asking if the applicant still proposed: 1) the pilot fairy shrimp pond creation as outlined in TPG's July 30, 2001, letter; and 2) to acquire and preserve 13 acres of coastal sage scrub on the Viejo property.

On September 20, 2001, we received: 1) a notice of transmittal from Helix that included a map showing how the project had been reduced from 299 units to 283 units to avoid Ponds D and G. The map also showed all the extant ponds to be avoided (i.e., Ponds D, G, H and I) and their watersheds, the fairy shrimp ponds to be created (i.e., Basins 1, 2, 5 and 8) and their watersheds, and the reduced project grading footprint; 2) an electronic mail from Helix with updated habitat impacts acreages and coastal sage scrub mitigation acreages for the reduced project; and 3) an electronic mail from Joe LaCava of TPG stating that the project no longer includes the pilot fairy shrimp pond creation because of the significant financial burden of the reducing the project to 283 units, but that it still includes acquisition and preservation of coastal sage scrub at the Viejo property, or other location approved by the Service.

On September 27, 2001, we received a report from Helix dated September 26, 2001, which states that no gnatcatchers were found on the property during Service protocol surveys done in 2001.

On October 5, 2001, we forwarded a draft biological opinion to the Corps. On October 9, 2001, we received a letter from McCollum Associates via facsimile that presented the applicant's comments regarding the draft biological opinion, and participated in a telephone conference with

the applicant's representatives to discuss the applicant's comments. On October 22, 2001, we forwarded a revised draft biological opinion to the Corps and applicant that incorporated changes agreed to during our October 9th telephone conference. On October 23 and 25, 2001, we received an electronic mail from McCollum Associates and the Corps, respectively, that concurred with the revised draft biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the issuance of a permit by the Corps under section 404 of the Clean Water Act that would authorize fill into waters of the U.S., including five ephemeral ponds occupied by the fairy shrimp and/or containing its cysts, for construction of the Saddleback Meadows Residential Development Project. The 225-acre Saddleback Meadows site is located east of El Toro Road just south of its intersection with Live Oak Canyon Road in the Foothill Trabuco Specific Plan area of Orange County, California (Figure 1). The site has historically been used for livestock grazing and limited agriculture. The proposed project would construct a 283-unit residential development on approximately 127.6 acres through conventional and remedial grading for houses and associated roads, utilities and a water tank (Figure 2). The remedial and manufacture slopes created for the development will be revegetated and, in some areas permanently irrigated, to provide fire protection. Brush management to provide fire protection will also be done in areas outside of the grading footprint. Approximately 97.4 acres of biological open space will be established by the project, including native habitat restoration on areas of the manufactured slopes outside the limits of fire protection measures.

Habitat types onsite include seven vernal pool-like ephemeral ponds (0.48 acres) occupied by the fairy shrimp; two breached ponds (0.27 acres) that contain fairy shrimp cysts; Venturan-Diegan transitional/disturbed coastal sage scrub (57.8/14.4 acres); coast live oak woodland (12.9 acres), southern mixed chaparral (7.6 acres), agriculture (5.4 acres), mule fat scrub (3.2 acres), ornamental (0.5 acres), southern sycamore woodland (0.3 acres), non-wetland waters of the U.S. (3.72 acres dispersed within the other habitat types), and non-native annual grassland (122.3 acres). The entire project site falls within designated critical habitat for the fairy shrimp and gnatcatcher.

The project proposes to fill three of the seven unbreached fairy shrimp ponds (i.e., Ponds A, B, and E; 0.24 acres) and both breached ponds (i.e., C and F; 0.27 acres). Direct impacts to Pond D, G, H and I will be avoided, but project grading will occur within their watersheds to within approximately 75 to 125 feet of the ponds. The project also proposes to grade approximately 155.4 acres of other vegetation types including: 38.4 acres of coastal sage scrub and clear for fire management an additional 2.3 acres, for a total impact to 40.7 acres of coastal sage scrub; 5.12 acres of coast live oak woodland; 3.9 acres of southern mixed chaparral; 1.63 acres of mule fat scrub; 0.14 acres of southern willow scrub; 0.4 acres of agriculture; and 103.5 acres of annual grassland.

The following conservation measures are proposed to be implemented as part of the proposed action to mitigate impacts to Corps and CDFG jurisdictional areas under section 404 of the Clean Water Act and section 1600 of the California Fish and Game Code and to minimize potential adverse effects of the action on listed species and their designated critical habitats.

1. Onsite avoidance and preservation of Ponds D, G, H and I with a total basin area of 0.24 acres. All grading directly adjacent to Ponds D, G, H and I will be done from May 15 to November 15 outside the rainy season unless erosion control measures approved by the Service and Corps are in place.

2. Onsite creation of four ephemeral ponds with a total basin area of 0.82 acres. Fairy shrimp will be introduced into the created ponds via inoculum (i.e., soil bearing cysts) collected from the impacted ponds.

3. Placing approximately one-fifth of the salvaged soil and cysts in appropriate storage at the San Diego Zoological Society's Center for the Reproduction of Endangered Species (CRES) until either the created ponds have met predetermined success criteria or the Service determines that it is reasonable to assume that they will. This *ex situ* storage will ensure that viable genetic material remains in case the created pools were unsuccessful. Once creation success is determined, the remainder of the salvaged soil and cysts will then be added to the created pools, used for other restoration projects in the region, and/or used for scientific purposes at the discretion of the Service.

4. Implementation of a 10-year fairy shrimp pond creation, maintenance and monitoring plan approved by the Service and Corps that includes: success criteria for establishing viable fairy shrimp populations, and the hydrology necessary to support them, in the created ponds; success criteria for establishing coastal sage scrub or other native habitats within the watersheds of the avoided and created ponds; and contingency measures in the event of creation failure.

5. Onsite avoidance and preservation of 31.5 acres of coastal sage scrub, restoration/preservation of 36.0 acres of coastal sage scrub, and enhancement/preservation of 6.5 acres of disturbed coastal sage scrub. If artificial irrigation is used in coastal sage scrub restoration efforts, appropriate measures will be taken to ensure that irrigation water does not enter the avoided and created fairy shrimp ponds.

6. Offsite acquisition and preservation of 6 acres of coastal sage scrub on the Viejo property, or other site approved by the Service and Corps within Unit 6 of the designated critical habitat for the gnatcatcher.

7. Clearing of coastal sage scrub will not be done during the gnatcatcher breeding season (i.e., February 15 to August 31).

8. Implementation of a 5-year coastal sage scrub restoration/enhancement, maintenance and monitoring plan approved by the Service and Corps that includes: success criteria for establishing coastal sage scrub; and contingency measures in the event of creation failure.

9. Fairy shrimp pond creation and watershed restoration, and coastal sage scrub restoration/enhancement grading, weed control, planting and irrigation outside of the graded development footprint will be initiated prior to or concurrently with fairy shrimp pond and coastal sage scrub impacts and will be completed within 120 days, while that within the graded development footprint will be initiated within 30 days and completed within 120 days of finishing development grading. Any temporal loss of fairy shrimp ponds caused by delays in fairy shrimp pond creation and watershed restoration will be offset as determined by the Service and Corps. Any temporal loss of coastal sage scrub caused by delays in restoration and enhancement will be offset through coastal sage scrub preservation, restoration and/or enhancement at a 0.5:1 ratio for every six months of delay (i.e., 1:1 for 12 months delay, 1.5:1 for 18 months delay, etc...).

10. Fencing (with silt barriers) the limits of construction and implementation of other erosion control measures deemed necessary by the Service and Corps for the duration of project construction to prevent additional fairy shrimp pond and coastal sage scrub impacts and the spread of silt from the construction zone into adjacent fairy shrimp ponds, coastal sage scrub and other habitats. The project proponent will submit to the Service and Corps for approval final construction plans and photographs for each phase showing fenced limits of impact and all fairy shrimp ponds and coastal sage scrub areas to be impacted and preserved at least 7 days prior to the planned date of initiating fairy shrimp pond or coastal sage scrub impacts. If fairy shrimp pond or coastal sage scrub impacts occur outside of these limits, all work will cease until the problem has been remedied to the satisfaction of the Service and Corps. Any fairy shrimp pond or coastal sage scrub impacts that occur outside of the approved fenced limits will be mitigated at a minimum 5:1 ratio.

11. Staffing of a qualified biologist onsite during fairy shrimp pond and coastal sage scrub grading and during work adjacent to fairy shrimp ponds and coastal sage scrub to be preserved to ensure compliance with all conservation measures and to produce reports that document compliance with these measures. The project proponent will submit the biologist's name, address, telephone number, and work schedule on the project to the Service and Corps at least 7 days prior to the planned date of initiating fairy shrimp pond and coastal sage scrub impacts. The biologist will report any violation to the Service and Corps within 24 hours of its occurrence and submit weekly compliance reports (including photographs of impact areas) to the Service and Corps. The biologist will also submit a final report to the Service and Corps within 60 days of project completion that includes: as-built construction drawings with an overlay of fairy shrimp ponds and coastal sage scrub areas that were impacted or preserved, photographs of the preserved fairy shrimp ponds and coastal sage scrub, and other relevant information documenting that authorized fairy shrimp pond and coastal sage scrub impacts were not exceeded.

12. Posting a bond or letter of credit in favor of the Service and the Corps for site preparation, planting, irrigation, and 10 years of maintenance and monitoring of the fairy shrimp pool creation and watershed restoration and 5 years maintenance and monitoring of the coastal sage scrub restoration/enhancement (including a 20 percent contingency to be added to the total costs). This bond or letter of credit is to guarantee the successful implementation of the fairy shrimp pond creation and watershed restoration, coastal sage scrub restoration/enhancement, and the maintenance and monitoring component of the plans. The project proponent will submit a draft bond or letter of credit with an itemized cost list to the Service and Corps for approval at least 60 days prior to the planned date of initiating fairy shrimp pond and coastal sage scrub impacts. The project proponent will submit the final bond or letter of credit for the amount approved by the Service and Corps within 20 days of receiving approval of the draft bond or letter of credit.

13. Executing and recording an irrevocable offer to dedicate or other form of mutually acceptable instrument offering to dedicate 97.4 acres of biological open space, including the avoided and created fairy shrimp ponds and their watersheds and the 64.7-acre coastal sage scrub preservation, restoration and enhancement areas. The irrevocable offer to dedicate, or other form of instrument, will provide for the transfer of fee title to the 97.4-acre area to the County of Orange or other agent approved by the Service and the Corps when final maps for the project are recorded. The irrevocable offer of dedication or other instrument will include a perpetual conservation easement for biological conservation purposes in favor of the County of Orange or other agent approved by the Service and the Corps. The form and content of the easement will be approved by the Service and Corps prior to its execution. The easement will state that no other easements or activities (e.g., fuel modification zones, public trails, drainage facilities, walls, and/or maintenance access roads) which would result in soil disturbance and/or vegetation removal, except as approved by the Service and Corps, will be allowed within the biological conservation easement area. The project proponent will provide evidence of recordation of the irrevocable offer of dedication or other instrument, including the biological conservation easement, to the Service and the Corps at least 60 days prior to the planned date of initiating impacts to any fairy shrimp ponds and their watersheds. The biological conservation easement and fee title will remain in favor of the County of Orange or other agent approved by the Service and Corps until a reserve is established for the Southern NCCP Subregion of Orange County, at which point the conservation easement and fee title will be transferred to the reserve manager as directed by the Service and Corps.

14. Implementing a perpetual maintenance and monitoring plan approved by the Service and Corps for the 97.4 acres of biological open space. A non-wasting endowment will be established to finance the plan. The plan will include construction and maintenance of interceptor ditches to divert water from irrigated fuel management slopes away from the avoided and created ponds and fencing or otherwise protecting the biological conservation area from pet and human disturbance. The project proponent will submit a draft perpetual management, maintenance and monitoring plan with an itemized cost list

for the non-wasting endowment fund to the Service and Corps for approval at least 60 days prior to the planned date of initiating impacts to any fairy shrimp pools or their watersheds. The project proponent will submit to the Service and Corps the final perpetual management, maintenance and monitoring plan and transfer the non-wasting endowment fund to the County of Orange or other approved agent for the amount approved by the Service and Corps within 20 days of receiving approval of the draft plan and fund. The management responsibilities and non-wasting endowment will remain with the County of Orange or other agent approved by the Service and Corps until a reserve is established for the Southern NCCP Subregion of Orange County, at which point the management responsibilities and endowment will be transferred to the reserve manager as directed by the Service and Corps.

15. Developing a resident education program in coordination with the Service. The program will advise residents of the potential impacts to the listed species and the potential penalties for taking such species. The program will include, but not be limited to, information pamphlets and signage of the fencing between the development and the preservation area. Pamphlets will be distributed to all residences. At a minimum, the program will include the following topics: occurrence of the listed and sensitive species in the area, their general ecology, sensitivity of the species to human activities, impacts from free-roaming pets (particularly domestic and feral cats), legal protection afforded these species, penalties for violations of Federal and State laws, reporting requirements, and project features designed to reduce the impacts to these species and promote continued successful occupation of the preserved areas.

16. Ensuring that the residential development landscape will not include exotic or native plant species that may be invasive to native habitats. The Service and Corps will be provided a list, for review and approval, of species to be included in the landscaping, at least 60 days prior to initiating impacts to fairy shrimp ponds and coastal sage scrub.

17. Onsite creation of 0.86 acres of mule fat scrub around the perimeter of the created ponds. If artificial irrigation is used, appropriate measures will be taken to ensure that irrigation water does not enter the created ponds.

18. Onsite creation of 0.44 acres of non-wetland waters of the U.S. consisting of 0.17 acres of vegetated waters and 0.27 acres of non-vegetated waters.

19. Offsite acquisition and creation of 0.9 acres and enhancement of 0.87 acres of riparian habitat on the Hidden Ranch property.

20. Offsite acquisition of 1.05 acres of non-wetland waters of the U.S. on the Viejo, Hidden Ranch property or other site approved by the Service and Corps.

STATUS OF THE SPECIES/CRITICAL HABITAT

Riverside fairy shrimp and its designated critical habitat

The Riverside fairy shrimp is a small freshwater crustacean in the family Streptocephalidae that is restricted to vernal pools and ephemeral basins. Adults are between 13 to 25 mm long. The males and females have red colored cercopods (anterior appendages) on all of the ninth and 30 to 40 percent of the eighth abdominal segments, which helps to distinguish this species from closely related species. The species is relatively long-lived, requiring 48 to 56 days to reach maturity, in contrast to other fairy shrimp that can reach sexual maturity in less than 2 weeks (Hathaway and Simovich 1996). Riverside fairy shrimp cysts can survive for several years until conditions are favorable for successful reproduction. Not all cysts are likely to hatch in a season, thus providing a mechanism for survival if the inundation period is too short in a given year (Simovich and Hathaway 1997).

Because of its long maturation, the fairy shrimp is found in relatively deep (>30 centimeters), cool water vernal pools that are inundated for at least 60 days. They also are found in disturbed vernal pool habitats where basins have been compacted or artificially deepened and, therefore, hold water for longer periods of time. Although basins supporting populations often appear to be artificially created or enhanced, such basins still are located within soils that are capable of seasonal ponding and are often surrounded by naturally occurring vernal pool complexes. These "artificial basins" function in the same manner as naturally occurring vernal pools by filling with late fall, winter and/or spring rains that gradually dry up during the spring and/or summer.

Water within pools supporting fairy shrimp may be clear, but more commonly it is moderately turbid (Eriksen and Belk 1999). Typically, pools supporting this species have low total dissolved solids and alkalinity (means of 77 and 65 parts per million, respectively), corroborated by pH at neutral or just below (7.1-6.4) (Eng *et al.* 1990, Gonzalez *et al.* 1996, Eriksen and Belk 1999).

Fairy shrimp play an important role in the community ecology of vernal pools (Loring *et al.* 1988). They are fed upon by waterfowl (Driver 1981, Krapu 1974, Swanson *et al.* 1974) and other vertebrates, such as western spadefoot toad tadpoles (*Spea hammondi*) (M. Simovich, pers. comm. 1991).

At the time of listing, the fairy shrimp was known from four vernal pools in a 37-square mile (91-square kilometer) area near Temecula in Riverside County, one population in Orange County, one vernal pool on Naval Air Station Miramar, and in numerous vernal pools on Otay Mesa in San Diego County. The species was also known from two locations, Valle de las Palmas and at Baja Mar north of Ensenada, in Baja California, Mexico (Brown *et al.* 1993). Subsequent to its listing, a more northerly population was documented in Moorpark, Ventura County. Fairy shrimp cysts were also found within a series of depressions among flight runways at the Los Angeles International Airport. Other populations of the fairy shrimp documented since the 1993 listing include an ephemeral pond on Marine Corps Air Station (MCAS) El Toro, a vernal pool on the Viejo property in central Orange County, 16 vernal pools/ponds in southern Orange

County (including the 9 ponds on the Saddleback Meadows property), numerous pools on Marine Corps Base Camp Pendleton, a vernal pool complex within Carlsbad in central San Diego County, additional pools on Otay Mesa in southern San Diego County, and several detention basins in Riverside County.

The Service listed the Riverside fairy shrimp as an endangered species on August 3, 1993 (58 FR 41391) because of habitat loss and degradation due to urban and agricultural development, off-road vehicle use, trampling, and other factors. At the time of the listing, the Service concluded that the designation of critical habitat was not prudent. However, on February 15, 2000, the Service entered into a settlement agreement, with the plaintiff in a lawsuit filed in the Federal District Court for the Northern California District, to issue a new decision regarding the prudency of designating critical habitat for the fairy shrimp. The proposal to designate critical habitat for the fairy shrimp was published on September 21, 2000 (65 FR 57136). On May 30, 2001, the Service published a final rule designating critical habitat for the fairy shrimp that encompasses approximately 6,870 acres of land in Los Angeles, Orange, Riverside, San Diego, and Ventura counties, California (66 FR 29384). The proposed development project is located in the foothills of the Santa Ana Mountains within Unit 2: Los Angeles Basin-Orange Management Area (1,080 acres) of this designation (66 FR 29388).

The Orange County portion of Unit 2 includes vernal pools and vernal pool-like ephemeral ponds at the MCAS El Toro, the Viejo property, Saddleback Meadows, Tijeras Creek, and Chiquita Ridge. The Orange County pools represent the vast majority of Riverside fairy shrimp habitat within this critical habitat unit. The Riverside fairy shrimp habitat in Orange County is geographically distinct from other pools within the species range and is essential to the overall long-term conservation of the species. Therefore, the conservation of these vernal pools is necessary to reduce the risk of extinction through random and natural events to fairy shrimp populations in Orange County and throughout its current range.

A total of 20 historic or extant pools/ponds known to be occupied by the fairy shrimp and/or cysts occur within Unit 2 (Table 1), including two that were discovered in southern Orange County after the designation of critical habitat for the fairy shrimp. One of these pools was filled by the Antonio Parkway project, and the pond at Live Oak Canyon has been authorized to be filled by the Corps under section 404 of the Clean Water Act. Another pool was negatively impacted by restoration efforts for the Antonio Parkway project and no longer retains water for sufficient duration for fairy shrimp cysts to hatch. Of the remaining pools, the two on Chiquita Ridge have been preserved to offset the loss of the pool previously authorized to be filled by the Antonio Parkway project; the pool on the Viejo property is to be part of a mitigation bank; and we are not aware of any projects proposed for the MCAS El Toro and Radio Tower Road pond/pools. The 9 ponds at Saddleback Meadows represent 53 percent of the 17 remaining occupied pools/ponds, making it the largest fairy shrimp habitat complex found in Unit 2.

The primary constituent elements for Riverside fairy shrimp are those habitat components that are essential for the primary biological needs of foraging, sheltering, reproduction, and dispersal. These primary constituent elements are found in areas that support vernal pools or other

ephemeral ponds and depressions and their associated watersheds. The primary constituent elements are: small to large pools with moderate to deep depths that hold water for sufficient lengths of time necessary for fairy shrimp incubation and reproduction, but not necessarily every year; the associated watershed(s) and other hydrologic features that support pool basins and their related pool complexes; flat or gently sloping topography; and any soil type with a clay component and/or an impermeable surface or subsurface layer known to support vernal pool habitat.

Vernal pools have a discontinuous occurrence in several regions of California. Although the pools of southern California share some wide-ranging temporary wetland species with pools in other parts of the state, southern California pools support unique species including both the Riverside and San Diego fairy shrimp (*Branchinecta sandiegonensis*), spreading navarretia (*Navarretia fossalis*), and San Diego button-celery (*Eryngium aristulatum* var. *parishii*). These species are among a number of other aquatic invertebrate and indigenous plant species that have evolved to occupy the extreme environmental conditions found in vernal pool habitats (Stone 1990).

Threats to vernal pools can be divided into three major categories: 1) direct destruction of vernal pools such as construction, vehicle traffic, domestic animal grazing, dumping, and deep plowing; 2) indirect threats that degrade or destroy the vernal pool over time such as altered hydrology (e.g., altering a pools watershed), invasion of alien species, habitat fragmentation, and associated deleterious effects resulting from adjoining urban land uses; and 3) potentially catastrophic long-term threats including the effect of isolation on genetic diversity and locally adapted genotypes, air and water pollution, drastic climatic variations, and changes in nutrient availability (Bauder 1986).

Loss of historic vernal pool habitat in San Diego County is estimated at around 95 to 97 percent because of intensive cultivation and urbanization (Bauder and McMillan 1998). Lack of historical data precludes the same depth of analysis for Los Angeles, Riverside, Orange, or San Bernardino counties, but losses are considered nearly 100 percent (58 FR 41384). The vernal pool habitat type has been ranked in the California Department of Fish and Game's Natural Diversity Data Base in priority class G1-S1, which denotes communities that occur in California and over less than 2,000 acres globally.

Designated Critical Habitat for the gnatcatcher

The coastal California gnatcatcher (*Polioptila californica californica*) is a recognized subspecies of the California gnatcatcher (*Polioptila californica* [Brewster]) and is endemic to southern California and northwestern Baja California, Mexico (Atwood 1990). It is a nonmigratory, resident species that is found on the coastal slopes of southern California, ranging from southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties into Baja California, Mexico, to approximately 30 degrees North latitude near El Rosario (Atwood 1980, 1990). Gnatcatchers were considered locally common in the mid-1940's,

but by the 1960's this subspecies had declined substantially in the United States owing to widespread destruction of its habitat (Atwood 1980).

The gnatcatcher occurs in several subassociations of the coastal sage scrub plant community. Coastal sage scrub vegetation is composed of relatively low-growing, dry-season deciduous, and succulent plants. The coastal sage scrub formation is generally characterized by California sagebrush (*Artemisia californica*), several species of sage (*Salvia* spp.), California encelia (*Encelia californica*), and California buckwheat (*Eriogonum fasciculatum*), interspersed with species such as lemonadeberry (*Rhus integrifolia*) and various species of cactus and cholla (*Opuntia* spp.) (O'Leary 1990). Coastal sage scrub often occurs in a patchy or mosaic distribution pattern throughout the range of the gnatcatcher.

Gnatcatchers are typically found in moderately dense stands of vegetation (40-70 percent cover) below 620 meters (Atwood 1980). Density of vegetation, however, does not necessarily predict suitability of habitat but rather influences territory size. Territory size increases as vegetation density decreases, probably due to food resource availability. Gnatcatchers will use sparsely vegetated coastal sage scrub for shelter and foraging as long as perennial shrubs are available.

Gnatcatchers also use chaparral, grassland, and riparian plant communities where they occur adjacent to or intermixed with sage scrub. The use of these habitats appears to be most frequent during late summer, autumn, and winter, with smaller numbers of birds using such areas during the breeding season. However, breeding territories have been documented in non-sage scrub habitats (e.g. chaparral). Potential factors contributing to the gnatcatcher's use of alternative habitats may include more abundant food resources, higher survival rates during dispersal, fire avoidance, and cooler microclimate during heat stress (Campbell *et al.* 1998).

Little is known about dispersal in juvenile gnatcatchers. Due to limited resources, the young disperse, or leave the area occupied by the adults, to find other territories in which to forage and raise young. Fledglings may disperse long distances from their natal territory, up to 5 kilometers (km) (3.1 miles), but data from limited studies indicate that the median dispersal distance is 1 km (0.6 miles) (Braden *et al.* 1997; Braden 1998 pers. com, Bailey and Mock 1998). Some gnatcatcher juveniles will stay much closer to the site where they fledged. Dispersing gnatcatchers are apparently able to traverse highly human-modified landscapes for at least short distances, and spatially isolated occurrences of gnatcatchers suggest juvenile dispersal capability is greater than that shown by studies using banded birds (Bailey and Mock 1998).

Historically, gnatcatchers occurred from southern Ventura County southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties, and into Baja California, Mexico (Atwood 1980, 1990). They were considered locally common in the mid-1940's, but by the 1960's this subspecies had declined substantially in the United States owing to widespread destruction of its habitat (Atwood 1980). Today, approximately 99 percent of the gnatcatchers in the United States are found in Orange, western Riverside, and San Diego counties. Small, isolated populations remain in portions of its former range in Los Angeles, San Bernardino, and

Ventura counties. Most unprotected populations of gnatcatchers in the United States occur on private lands and have undergone declines in recent years.

In 1993, we estimated that approximately 2,562 pairs of gnatcatchers remained in the United States. Of these, 757 pairs occurred in Orange County, 261 pairs occurred in Riverside County, and 1,514 pairs occurred in San Diego County. Within Los Angeles County, from 26 to 56 pairs have been documented on the Palos Verdes peninsula, and 41 pairs are at Montebello.

The Service listed the gnatcatcher as threatened on March 30, 1993 (58 FR 16742). Pursuant to section 4(d) of the Act on December 10, 1993, the Service defined specific conditions associated with certain land use activities under which incidental take of gnatcatchers and their habitat would not be a violation of section 9 of the Act (58 FR 65088).

Based on data collected since the time of its listing, we estimated the total number of gnatcatchers in the United States to be 2,899 pairs, after subtracting the gnatcatcher pairs lost via habitat loss permits, approved natural community conservation/habitat conservation plans, and section 7 consultations (U.S. Fish and Wildlife Service 1996, 1999). The increased number of gnatcatchers since its listing is believed to be a result of surveys occurring within previously unsurveyed areas. These data should not be construed to represent an increase in the gnatcatcher population but merely represent a snapshot in time and do not account for natural fluctuations in a population (Atwood *et al.* 1998). Overall, the area of coastal sage scrub available to gnatcatchers has decreased due to habitat loss. The overall average gnatcatcher population through time will be limited by the decreased area of habitat within which annual population changes can occur.

Though the Service concluded that the designation of critical habitat was not prudent at the time of listing, on May 21, 1997, the U.S. Court of Appeals for the Ninth Circuit Court ordered the Service to issue a new decision regarding the prudency of determining critical habitat for the gnatcatcher. On February 8, 1999, the Service concluded that designation of critical habitat on lands within the United States portion of the range of the gnatcatcher was prudent (64 FR 5957). The proposal to designate critical habitat for the gnatcatcher was published February 7, 2000 (65 FR 5946). On October 24, 2000, the Service published a final rule designating critical habitat for the gnatcatcher that encompasses approximately 513,650 acres of land in Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties, California (65 FR 63680). The proposed development project is located in the foothills of the Santa Ana Mountains within Unit 6 of this designation (65 FR 63686).

Unit 6 encompasses approximately 55,880 acres within the Orange County Southern Subregion Natural Communities Conservation Plan (NCCP) planning area and the San Onofre State Park in northwestern San Diego County. Unit 6 contains significant core populations of gnatcatchers and provides the primary linkage for core populations on Camp Pendleton and in the Southern NCCP Subregion to those further north in Central NCCP Subregion of Orange County.

The primary constituent elements of the critical habitat for the gnatcatcher are those habitat components that are essential for the primary biological needs of foraging, nesting, rearing of young, intra-specific communication, roosting, dispersal, genetic exchange, or sheltering. Primary constituent elements can be provided in undeveloped areas that support various types of sage scrub or chaparral, grassland and in riparian habitat where they may be utilized for biological needs such as breeding and foraging.

ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of State and private actions that are contemporaneous with the consultation in progress.

Riverside fairy shrimp and its designated critical habitat

Riverside fairy shrimp have been found in all seven ponds on Saddleback Meadows that still retain water, and soil samples taken from breached Ponds C and D tested positive for fairy shrimp cysts (Helix 2000). All of the ponds are within designated critical habitat for the fairy shrimp. The origin of ponds and fairy shrimp on Saddleback Meadows is of some debate. The project applicant maintains that all the ponds, except potentially Pond E, are man-made, while our *Recovery Plan for Vernal Pools of Southern California* (U.S. Fish and Wildlife Service 1998) states that the Saddleback Meadows ponds are likely the result of landslide topography. Six of the ponds (i.e., Ponds A, B, C, D, F and I) appear to have been created within existing ephemeral streams by the construction of earthen berms at their downstream extent. These ponds are found in areas with sandy soils typical of natural streams that have likely been made impervious through gradual deposition of fines behind their berms. Although in an area with clay soils, Pond F is also in an existing drainage and was likely man-made. Pond F and C have been breached and no longer retain water, and the other four (i.e., Ponds A, B, D and I) are subject to breaching in the future .

Ponds E, G and H are either natural depressions or were created in upland areas. Ponds E and H are found in clay soils that form an impervious layer typical of vernal pools, while Pond G is found in sandy soils that appear to have been made impervious through gradual deposition of fines eroded from its watershed. Pond E appears to be the most natural of the three and the result of landslide topography. Pond E also has been observed to contain a diverse invertebrate fauna, including one of the few known populations of the California clam shrimp (*Cyzicus californicus*) in the Orange County. Regardless of their origin, all the Saddleback Meadows ponds function as habitat for fairy shrimp and/or contain its cysts.

The Saddleback Meadows property has historically been, and remains, subject to livestock grazing. Because the onsite ponds hold water and are shaded from the sun by willows, mulefat, and other large stature vegetation (e.g., coast live oak), livestock often congregate around the

ponds for water and/or shade. Intensive use of these areas by livestock subjects the ponds to physical and water quality degradation through trampling of soils and inputs of excrement. Trampling by livestock can result in the direct mortality of fairy shrimp, particularly when eggs are wet and vulnerable to damage. Livestock movement in the ponds may degrade their soils or water quality. Sensitivity of this species to alkalinity, salts and dissolved solids (Eriksen and Belk 1999) suggests that inputs of waste by livestock into these ponds may also degrade the quality of these ponds for this species over time.

Designated critical habitat for the gnatcatcher

All of the Saddleback Meadows property is within Unit 6 of designated critical habitat for the gnatcatcher. No gnatcatchers were found on the property during Service protocol surveys done in 1998 and 2001, nor reconnaissance-level surveys done in 1993 and 1994. However, a juvenile and an adult male gnatcatcher were observed in the southeast corner of the site on September 23, 1998 (RBRiggan and Associates 1998). Habitat occupied by gnatcatcher is located in O'Neill Regional Park immediately south of the Saddleback Meadows property. Therefore, it appears that while the Saddleback Meadows site is not now occupied, gnatcatchers can disperse through or otherwise use the site during the non-breeding season. Also, the Saddleback Meadows site represents the only low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP planning areas.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the proposed action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time but are still reasonably certain to occur.

The action area is defined as all those areas subject to direct and indirect effects of the project. Areas subject to direct effects include all those areas within the construction footprint including construction vehicle access routes, staging areas, grading areas, building pads, trails, roadways, and other constructed project features. Indirect effects include degradation of adjoining habitat through edge effects, habitat isolation, and fragmentation.

Riverside fairy shrimp and its designated critical habitat

Implementation of the proposed project will result in the permanent loss, through project grading and discharge of fill, of three ponds (i.e., Ponds A, B and E) occupied by the fairy shrimp totaling 0.24 acres, and two breached ponds (i.e., Ponds C and F) that contain fairy shrimp cysts totaling 0.27 acres. This represents a 56 percent loss of fairy shrimp ponds, and a 68 percent loss of the pond basin area, onsite.

Prior to their filling, soil containing fairy shrimp cysts will be salvaged from Ponds A, B, C, F and E for use as inoculum in the ponds to be created onsite. In addition, approximately one-fifth of the salvaged soil and cysts will be transferred to the CRES for storage for later use as approved by the Service. Cysts not salvaged from the extant ponds will be destroyed. In addition, it is not anticipated that 100 percent of the salvaged cysts will survive the salvage process.

Direct impacts to Pond D, G, H and I will be avoided; however, project grading will create artificial slopes within substantial portions of their watersheds (e.g., 40 percent for Pond D and 20 percent for Pond G) to within approximately 75 to 125 feet of the ponds. Silts and irrigation water from the artificial slopes could enter into the avoided ponds and cause indirect impacts to their fairy shrimp populations.

Conservation Measures

The applicant will implement several conservation measures as outlined above in the "Description of the Proposed Action" to minimize the effects of the project on the fairy shrimp and its designated critical habitat.

The project proposes onsite avoidance and preservation of Ponds D, G, H and I with of total basin area of 0.24 acres, which represent 45 percent of the total ponds, and 32 percent of the total pond basin area, onsite. This constitutes avoidance of a substantial portion of the extant fairy shrimp ponds onsite, which is consistent with avoidance achieved on other projects impacting fairy shrimp habitat. In addition, impacts to Ponds A, B, C, E and F will be offset by creating four ephemeral ponds with a total basin area of 0.82 acres. Therefore, the overall compensation to impact ratio is 2 to 1, which is consistent with compensation ratios achieved on other projects impacting fairy shrimp habitat of similar quality.

Although project grading will create artificial slopes within substantial portions of the avoided and created ponds' watersheds, the remaining watersheds are expected to provide sufficient hydrology to sustain the fairy shrimp populations in these ponds. The applicant will also implement the following measures to minimize indirect impacts to the fairy shrimp populations in the avoided and created ponds: 1) restore coastal sage scrub and other native vegetation on the artificial slopes (other the fuel modification clearing and irrigated zones); 2) place silt fences or other erosion control measures around the ponds to ensure silt from the newly graded slopes does not enter the created ponds; and 3) construct interceptor ditches to divert runoff from the irrigated fuel management and/or coastal sage scrub restoration areas away from the preserved and created ponds' watersheds, and manage these ditches so they remain functional.

Although the project proponent is confident that fairy shrimp ponds can be successfully created onsite, fairy shrimp pond creation is still experimental in nature with many uncertainties. For example, most of the new ponds will be located in areas of sandy soils and require the construction of an artificial impervious layer to retain water for a minimum of 60 days, which has never been done successfully. Because a limited quantity of clay soil is available from the

existing 0.51 acres of ponds to be impacted, the applicant proposes to use native clays found elsewhere onsite to construct an impervious layer in most of the created basins. Also, all but one of the created ponds will be constructed in existing tributaries/erosional channels, which could cause breaching of these ponds, similar to what has occurred in the breached extant Ponds C and D. To address this concern, the applicant proposes to develop and fund the implementation of a management plan that will ensure the long-term viability of the created ponds.

In addition, Basin 5 will be 0.37 acres with a watershed of only approximately 1 acre (i.e., watershed to basin ratio of approximately 3:1), in contrast to the extant ponds which have much higher watershed to basin ratios (e.g., 76:1 for Pond D and 110:1 for Pond G). However, the applicant is confident that Pond 5 will have adequate hydrology because it is being created in an erosional channel that receives significant amounts of water, and nearby Pond D is approximately 14 feet deep when full and retains water longer than any pond onsite.

The applicant will also implement several other conservation measures to minimize impacts to fairy shrimp and its designated critical habitat and to help ensure the success of creation efforts, including: implementing a 10-year fairy shrimp pond creation, maintenance and monitoring plan; posting a bond or letter of to guarantee the successful implementation of the fairy shrimp pond creation; staffing a qualified biologist onsite to ensure compliance with all conservation measures; placing a 97.4-acre area (including the avoided and created fairy shrimp ponds and their watersheds) in a biological conservation easement, and transferring fee title of the area to the County or other agent approved by the Service and Corps; implementing and funding a perpetual maintenance and monitoring plan for the avoided and created fairy shrimp ponds and their watersheds; developing a resident education program that will advise residents of the potential impacts to the listed species and the potential penalties for taking such species; and insuring that the residential development landscape will not include exotic or native plant species that may be invasive to native habitats. Implementation of these and other proposed conservation measures discussed above, along with the substantial avoidance of fairy shrimp ponds impacts, will help ensure that the long-term viability of the fairy shrimp population at the Saddleback Meadows site.

Phasing/delaying impacts until restoration efforts are deemed successful, or at least demonstrating the created ponds can retain water for a minimum of 60-days, would be the optimum way to address the uncertainties inherent in proposed pond creation. However, the applicant has stated that this is not economically feasible, and proposes to place approximately one-fifth of the salvaged soil and cysts in appropriate storage at the CRES for use in the event of pond failure. In addition, the applicant proposes to create additional ponds onsite if the originally created ponds fail.

As with onsite, there is limited opportunity for offsite contingency measures. The only known pool occupied by Riverside fairy shrimp available for purchase in Orange County is on the Viejo property. There are also two occupied pools each on the Tijeras Creek and Radio Tower Road properties that may be available for purchase in the event of onsite pond creation failure. The few remaining unprotected vernal pools and potential restoration areas outside of Orange County

that are occupied by the fairy shrimp are too distant and geographically distinct from the Saddleback Meadow ponds to be considered for offsetting fairy shrimp impacts by this project.

Designated critical habitat for the gnatcatcher

The subject property is located in the foothills of the Santa Ana Mountains within Unit 6 of the designated critical habitat for the gnatcatcher. The proposed project will impact approximately 155.6 acres of various habitat/vegetation types, including 40.7 acres of coastal sage scrub potentially suitable for gnatcatchers. All 155.6 acres would be considered primary constituent elements as they provide essential foraging, nesting, roosting, dispersal, breeding and/or sheltering habitat for the gnatcatcher. As stated above, habitat occupied by gnatcatcher is located in O'Neill Regional Park immediately south of the Saddleback Meadows property, and gnatcatchers apparently dispersing from this nearby habitat have been observed on the Saddleback Meadows site. A canyon rises to the north from O'Neill Regional Park and continues to the east of the undulating ridgeline along the southern border of the Saddleback Meadows property. The proposed development could substantially hinder gnatcatchers from moving across the Saddleback Meadows property and likely force them to move around the edge of this property. Rather than moving through coastal sage scrub and other habitats at the low points of the undulating ridge line at approximately 1,200 feet AMSL for dispersal, gnatcatchers will likely be forced to move through coastal sage scrub and chaparral in the canyon along the eastern border of the property at approximately 1,600 feet AMSL. However, since this effect will extend only approximately 0.8 km (0.5 mile) of the entire 32 km (20 mile) length of this critical habitat unit, the proposed project should not significantly impair movement or increase the mortality rate of dispersing gnatcatchers across this critical habitat corridor.

The project will increase the fragmentation of low elevation coastal sage scrub patches along the Santa Ana Mountain foothills. In Southern California, effects of fragmentation have been shown to decrease the number of resident bird species, decrease the diversity of small rodents, and decrease the diversity and cover of native plant species (Soulé *et al.* 1988; Bolger *et al.* 1991; Alberts *et al.* 1993; Bolger *et al.* 1997). These alterations to the species assemblage, especially the reduction in native plant species diversity and cover, will decrease the quality of the habitat for gnatcatchers over time. This will occur as the arthropod abundance and diversity decline in correlation with the decline in their native plant hosts, decreasing the food supply of the insectivorous gnatcatchers.

The fragmentation of natural habitats in the project area will also negatively affect the quality of remaining habitat by facilitating the invasion of natural communities by exotic plant and animal species. Invasive, alien plants may alter the species composition and structure of the remaining habitat, which may make it less suitable to the gnatcatcher. Invasive ant species such as the Argentine ant (*Linepithema humile*) are known to be abundant in residential areas and invade habitat edges (Suarez *et al.* 1998). This species alters the native arthropod community, significantly reducing their diversity and abundance (Bolger *et al.* 2000). Any reduction in the native arthropod community related to invasion by Argentine ants as a result of the project is likely to reduce food resources for arthropod predators, including the gnatcatcher.

As stated earlier, the Saddleback Meadows site represents the only low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP planning areas. Orange County's Central/Coastal NCCP identifies the Saddleback Meadows site as a key corridor/linkage between the subregions, as do all preliminary reserve designs to date for the Southern NCCP. The proposed development along the eastern and northern portions of the site would substantially eliminate this corridor/linkage, and thereby severely constrain wildlife movement from O'Neill Regional Park in the Southern NCCP to the Central NCCP reserve and Cleveland National Forest. Impacts to this corridor/linkage will be evaluated under State of California's Coastal Sage Scrub NCCP Process Guidelines.

Conservation Measures

The applicant will implement several conservation measures as outlined above in the "Description of the Proposed Action" to minimize the effects of the project on designated critical habitat for the gnatcatcher. These measures include: onsite avoidance/preservation of 31.5 acres, onsite restoration/enhancement/preservation of 42.5 acres, and offsite acquisition/preservation of 6 acres of coastal sage scrub, which is consistent with mitigation required under State of California's Coastal Sage Scrub NCCP Process Guidelines; implementing a 5-year coastal sage scrub restoration/enhancement plan; posting a bond or letter of credit to guarantee the successful implementation of the restoration/enhancement plan; staffing a qualified biologist onsite to ensure compliance with all conservation measures; placing the a 97.4-acre area (including the avoided and restored/enhanced coastal sage scrub areas) in a biological conservation easement, and transferring fee title of the area to the County or other agent approved by the Service and Corps; implementing a perpetual maintenance and monitoring plan for the preserved open space, and establish a non-wasting endowment fund to finance its implementation; developing a resident education program that will advise residents of the potential impacts to the listed species and the potential penalties for taking such species; and ensuring that the residential development landscape will not include exotic or native plant species that may be invasive to native habitats. Implementation of these conservation measures will help this critical habitat unit to continue its function of providing linkage for gnatcatcher movement and dispersal between core populations within the Southern and Central/Coastal NCCP Subregions of Orange County.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Riverside fairy shrimp and its designated critical habitat

We are not aware of any future actions within the action area.

Designated critical habitat for the gnatcatcher

Several other projects are proposed within Unit 6 of the designated critical habitat for the gnatcatcher including the Arroyo Trabuco Golf Course, Rancho Potrero Youth Academy, Saddlecreek/Saddlecrest Residential Development Project, Whispering Hills Development Project, Talega Development Project, and Capistrano Valley Water District Pipeline Project.

Impacts to designated critical habitat for the gnatcatcher by the Arroyo Trabuco Golf Course, Rancho Potrero Youth Academy, and Talega Development Project will be addressed through separate section 7 consultations with the Corps.

At this time, we do not have adequate information to fully evaluate the potential impacts of the Saddlecreek/Saddlecrest Residential Development Project, Whispering Hills Development Project, and Capistrano Valley Water District Pipeline Project on designated critical habitat for the gnatcatcher.

CONCLUSION

Riverside fairy shrimp and its designated critical habitat

After reviewing the current status of fairy shrimp and its designated critical habitat, the environmental baseline for the action area, effects of the proposed action and cumulative effects, it is the Service's biological opinion that the Saddleback Meadows Development Project is not likely to jeopardize the continued existence of the fairy shrimp and is not likely to destroy or adversely modify designated critical habitat for the gnatcatcher. We reached this conclusion because:

1. The proposed project will maintain a viable fairy shrimp population on the Saddleback Meadows site by avoiding 45 percent of the extant ponds (i.e., 38 percent of the pond basin area) and creating 0.82 acres of new ponds. The avoided and created ponds will be protected from direct and indirect impacts associated with project construction.

2. The proposed project will implement a 10-year fairy shrimp pond creation, maintenance and monitoring program that includes success criteria, and post a bond or letter of credit to ensure its success.

3. The proposed project will place a 97.4-acre area (including the avoided and created fairy shrimp ponds and their watersheds) in a biological conservation easement and transfer fee title of the area to the County or other agent approved by the Service and Corps, to ensure its long-term protection. The open space will be of sufficient size and appropriate configuration to minimize edge effects and buffer the fairy shrimp ponds from indirect impacts associated with the developed areas.

4. The proposed project will implement and fund a perpetual maintenance and monitoring plan for the 97.4-acre conservation area, and establish a non-wasting endowment for an amount approved by the Service and Corps to finance the perpetual management, maintenance and monitoring of the 97.4 acres of dedicated biological open space by the County of Orange or other agent approved to the Service and Corps upon transfer of the deed.

5. The proposed project will place approximately one-fifth of the salvaged soil and cysts in appropriate storage at the CRES for use in the event of created pond failure.

Designated critical habitat for the gnatcatcher

Although the proposed Saddleback Meadows Residential Development Project will alter critical habitat, we conclude, on the basis of project-related impact avoidance, minimization, and conservation measures that such alteration will not result in the adverse modification of designated critical habitat for the gnatcatcher. We reached this conclusion because:

1. The proposed project will not significantly impair movement or increase the mortality rates of dispersing gnatcatchers between the Southern and Central NCCP Subregions of Orange County across the foothills of the Santa Ana Mountains.

2. The proposed project will restore and enhance 36 acres and 6.5 acres of coastal sage scrub onsite, respectively, within the critical habitat boundary, which will provide dispersal habitat for the gnatcatcher.

3. The proposed project will preserve 97.4 acres of critical habitat (including 31.5 acres of avoided, 36 acres of restored, and 6.5 acres of enhanced coastal sage scrub) as biological open space.

4. The proposed project will place a 97.4-acre area (including the avoided, restored and enhanced coastal sage scrub) in a biological conservation easement and transfer fee title of the area to the County or other agent approved by the Service and Corps, to ensure its long-term protection. The open space will be of sufficient size and appropriate configuration to minimize edge effects and buffer the coastal sage scrub from indirect impacts associated with the developed areas.

5. The proposed project will implement a perpetual management, maintenance and monitoring plan, and establish of a non-wasting endowment for an amount approved by the Service and Corps to finance the perpetual management, maintenance and monitoring of the 97.4-acres of dedicated biological open space by the County of Orange or other agent approved to the Service and Corps upon transfer of the deed.

6. The proposed project will acquire and preserve 6 acres of coastal sage scrub at the Viejo property, or other location approved by the Service within Unit 6 of the designated critical habitat for gnatcatcher.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by us to include significant habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by us as an action that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2) of the Act, such incidental take is not considered a prohibited taking under the Act, provided that such taking is in compliance with this incidental take statement.

The measures described below are nondiscretionary and must be undertaken by the Corps and/or applicant, California Quartet, Ltd., as appropriately defined in the Corps' scope of analysis, in order for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty, subject to their jurisdictional authority, to regulate the activity situated within their scope of analysis and covered by this incidental take statement. Within their scope of analysis, if the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. Outside the Corps' scope of analysis, if the applicant fails to assume and implement the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. To monitor the impacts of incidental take, the applicant must report the progress of the action and its impact on the species to our agency as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE ANTICIPATED

The Service anticipates that the majority of fairy shrimp and/or cysts within Ponds A, B, C, E and F will be salvaged as inoculum from these ponds and that a small portion of these fairy shrimp and/or cysts will be taken in the form of direct mortality and/or injury through the collection of inoculum and its use in the created ponds onsite, and/or offsite as approved by the Service. In addition, the Service anticipates that the relatively few fairy shrimp and/or cysts remaining within Ponds A, B, C, E and F after the collection of inoculum will be taken in the form of direct mortality through filling of these ponds by the proposed project.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the Riverside fairy shrimp or destruction or adverse modification of its designated critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of Riverside fairy shrimp:

1. The Corps and/or California Quartet, Ltd., will minimize the effects of the project on Riverside fairy shrimp and its habitat during project construction.

2. The Corps and/or California Quartet, Ltd., will minimize the effects of the project on Riverside fairy shrimp during collection of inoculum and its use in the created fairy shrimp ponds, or as approved by the Service.

3. The Corps and/or California Quartet, Ltd., will coordinate with and report to this office on the status of the conservation measures.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Act, the Corps and/or California Quartet, Ltd., must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1.1 The Corps and/or California Quartet, Ltd., will ensure implementation of the project as described in this biological opinion, including all proposed conservation measures.

I.2 Grading activities within the watersheds of the fairy shrimp ponds will be done outside the rainy season (i.e., from May 15 to November 15) to minimize potential impacts (e.g., siltation) to the avoided and created ponds unless erosion control measures approved by the Service and Corps are in place.

1.3 The project proponent will submit final development grading plans to the Service and Corps for approval at least 60 days prior to the planned date of initiating impacts. Approval will be limited to a determination of conformance with Figure 2 and that avoidance areas are clearly delineated on the grading plans. If the Service and Corps have not provided comments within 60 days of receipt, then the grading plans shall be deemed approved.

1.4 Silt fencing will be installed and/or appropriate measures implemented along the footprint of project grading and around the avoided and created fairy shrimp ponds to prevent silt from entering into the ponds during construction.

1.5 Any unauthorized fill into extant vernal pond basin areas will be offset at a 5:1 ratio (3:1 restoration/creation and 2:1 preservation). Any additional restoration/creation will be held to the same standards as the already required creation efforts.

1.6 All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities will occur in designated areas. These designated areas will be located in such a manner as to prevent any run-off from entering the avoided and created fairy shrimp ponds.

1.7 A construction employee education program will be developed and implemented. For the life of the project, each employee (including temporary, contractors, and subcontractors) will receive a training/awareness program within two weeks of working on the proposed project. They will be advised of the potential impacts to the fairy shrimp and the potential penalties for taking this species. At a minimum, the program will include the following topics: occurrence of the fairy shrimp in the area; their general ecology, sensitivity to human activities and Federal protection; penalties for violations of Federal laws; reporting requirements; and project features designed to reduce the impacts to the fairy shrimp and promote continued successful occupation of the preserved areas.

1.8 The project proponent will staff a qualified biologist with a minimum three years of vernal pool experience who will be responsible for overseeing compliance with protective measures for the fairy shrimp. The biologist will approved by the Service and Corps, and have the authority to halt all associated project activities which may be in violation of the terms and conditions of this biological opinion. The biologist will notify the Service and Corps within 24 hours of any observed violation.

1.9 The Service and Corps will be given the right to access and inspect the project site for compliance with the proposed project description and with the terms and conditions of this biological opinion during the all construction phases.

2.1 The project proponent will prepare and implement a final Biological Mitigation and Monitoring Plan (Plan) that has been reviewed and approved by the Service and Corps. The project proponent will submit the Plan to the Service and Corps for approval at least 60 days prior to the planned date of initiating impacts to Ponds A, B, C, E and F. The Plan will contain but is not limited to the following conditions and information:

a. A hydrologic evaluation and map of the preserved and created fairy shrimp pond watersheds. The evaluation must demonstrate that the watersheds will provide the appropriate amount of water for fairy shrimp and will not receive non-point source discharges from the irrigated slopes or developed areas.

b. An evaluation of soil percolation rates within areas proposed for pond creation by a qualified soil scientist and/or hydrologist. If ponds are created in drainages by constructing a berm, this will include an evaluation of the potential for berm erosion. The evaluation must demonstrate that: 1) percolation rates are sufficiently slow to support ponding of water for a minimum of 60 days during an average rainfall year, and at an appropriate depth to support the fairy shrimp; and 2) measures will be taken to prevent berm erosion.

c. The grading for the created ponds will be conducted under the direction of a qualified biologist with a minimum of three years of vernal pool restoration experience approved by the Service.

d. Grading plans for the created ponds with 0.5-foot topographic contours. The grading plans will specify the areas of existing habitat which are to remain unaffected by creation activities. Grading will be done using small tracked dozers with ripping tines and slope boards, rubber-tired loaders, and a sheeps-foot for mound construction.

e. Fairy shrimp pond soil (inoculum) will be collected when it is dry to avoid damaging or destroying fairy shrimp cysts which are fragile when wet. A hand trowel or similar instrument will be used to collect the soil. Whenever possible, soil will be collected in chunks. The trowel will be used to pry up intact chunks of soil, rather than loosening the soil by raking and shoveling which can damage cysts. Soil will not be collected from any onsite ponds until approved by the Service and Corps.

f. The soil from each pond will be stored individually in labeled bags or boxes that are adequately ventilated and kept out of direct sunlight in order to prevent the occurrence of fungus or excessively heating the soil. Approximately one-fifth of the salvaged soil and cysts in appropriate storage will be transferred to the CRES within 2 weeks of collection, and documentation of the soil transfer will be submitted to the Service and Corps within 1 week of its transfer. The soil transferred to the CRES may only be withdrawn upon approval of the Service and Corps.

g. Inoculum will not be introduced into the created ponds until after the created ponds have been demonstrated to retain water for a minimum 60 days, and will be placed in a manner that preserves, to the maximum extent possible, the orientation of the fairy shrimp cysts within the surface layer of soil (e.g., collected inoculum will be shallowly distributed within the pond so that cysts have the potential to be brought into solution upon inundation).

h. Creation of 0.82 acres of fairy shrimp habitat will begin before or concurrent with initiating impacts to Pond A, B, C, E and F and their watersheds. Creation success will be determined by measuring the ponding, and density of viable cysts, hatched fairy shrimp and gravid females, within the created ponds. Water measurements will be taken in the impacted, preserved and created ponds to determine the depth, duration and quality (i.e., pH, temperature, total dissolved solids and salinity) of ponding. Dry samples will be taken in the impacted, preserved and created ponds to determine the density of viable cysts in their soils. Wet samples will also be taken in both the impacted, preserved and created ponds to determine the density of hatched fairy shrimp and gravid females. The created ponds must pond for a minimum 60 days during an average rainfall year and at an appropriate depth and quality to support the fairy shrimp. The created pond's average viable cyst, hatched fairy shrimp and gravid female density must not differ significantly ($p < 0.05$) from the ponds to be impacted or preserved for at least three wet seasons before a determination of success can be made.

i. Contingency measures in the event of creation failure.

j. Native plants and animals will be restored within the avoided and created ponds and their watersheds. This can be accomplished by redistributing topsoil containing seeds, spores, bulbs, eggs, and other propagules from the fairy shrimp ponds and watersheds to be impacted; by the translocation of the propagules of individual species from offsite habitats; and by the use of commercially available native plants for upland habitats. Topsoil and plant materials from the native habitats to be impacted onsite will be applied to the watersheds of the avoided and created ponds to the maximum extent practicable. Exotic weed control will be implemented within the avoided and created ponds and their watersheds to protect and enhance habitat remaining onsite. The Plan will include success criteria for restoration of native plants and animals.

k. A 10-year maintenance and monitoring program for the avoided and created ponds and their watersheds. The monitoring program will consist of quantitative hydrological, viable cyst, hatched fairy shrimp and gravid female measurements as required in 2.1.h., complete floral and fauna inventories, quantitative vegetation transects, and photographic documentation.

l. If a performance criterion as defined in 2.1.h. is not met for any of the created ponds in any year, or if the final success criteria are not met, the project proponent will prepare an analysis of the cause(s) of failure and, if determined necessary by the Service and Corps, propose remedial actions for approval. If any of the created ponds have not met a performance criterion during the initial 10-year period, the project proponent's maintenance and monitoring obligations will continue until the Service and Corps deem the created ponds successful, or that contingency measures must be implemented.

m. A map showing the configuration of the fairy shrimp pond preserve. Buffers between the avoided and created ponds and developed areas shall be in conformance with Figure 2.

n. Plans for fencing and/or other measures for protecting the fairy shrimp pond preserve from human disturbance. Curbs and/or gutters will be constructed along the edge of the roads and homes located adjacent to the pond preserve to direct runoff from the roads and homes away from the pond watersheds.

o. Annual reports will be submitted to the Service and the Corps by August 1. These reports will assess both the attainment of yearly success criteria and progress toward the final success criteria. They will also summarize the project's compliance with the conservation measures, reasonable and prudent measures and the terms and conditions of this biological opinion.

3.1 The project proponent will submit monthly reports during project construction to the Service and Corps on the status of the conservation measures, reasonable and prudent measures, and terms and conditions of this biological opinion.

Disposition of Sick, Injured, or Dead Specimens: The Service's Carlsbad Fish and Wildlife Office is to be notified within three working days should any endangered or threatened species be found dead or injured during this project. Notification must include the date, time, and location of the carcass, and any other pertinent information. Dead animals may be marked in an appropriate manner, photographed, and left on-site. Injured animals should be transported to a qualified veterinarian. Should any treated animals survive, the Service should be contacted regarding the final disposition of the animals. The Service contact person is David Zoutendyk and he may be contacted at (760) 431-9440.

The Service believes that a small portion of the fairy shrimp and/or cysts within Ponds A, B, C, E and F will be incidentally taken through the collection of inoculum and its use in the created ponds onsite, and/or offsite as approved by the Service. In addition, the Service believes that the relatively few fairy shrimp and/or cysts remaining within Ponds A, B, C, E and F after the collection of inoculum will be incidentally taken through filling of these ponds by the proposed project. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or to develop information.

1. Although this biological opinion addresses impacts to the Riverside fairy shrimp and its designated critical habitat and designated critical habitat for the gnatcatcher, we still have concerns regarding the proposed impacts to Pond E, which is the highest functioning pond on the Saddleback Meadows site, and the action's probable significant impacts to wildlife movement between the Southern and Central NCCP Subregions of Orange County. In light of these concerns, we believe that the proposed action warrants a full public interest review and 404(b)(1) alternatives analysis to demonstrate that the proposed action is in the public's interest and is the least environmentally damaging practicable alternative. Therefore, we recommend that the Corps require an individual permit for the proposed action.

2. Given the scarcity of Riverside fairy shrimp habitat in Orange County, we recommend that the Corps carefully examine the cumulative impacts to vernal pools and/or vernal pool-like ephemeral ponds, the availability of acquisition and/or restoration sites, and whether vernal pools and/or vernal pool-like ephemeral ponds within Orange County should be withdrawn as a disposal site under section 404(c) of the Clean Water Act.

3. Lighting adjacent to open space areas will be shielded so as not to illuminate native habitats.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or

extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Sincerely,

Karen A. Evans

Karen A. Evans
Assistant Field Supervisor

cc: County of Orange (Attn: Tim Neely)
California Department of Fish and Game, San Diego Office (Attn: Bill Tippets)
McCollum Associates (Attn: Mike McCollum)
TPG Management (Attn: Joe LaCava)

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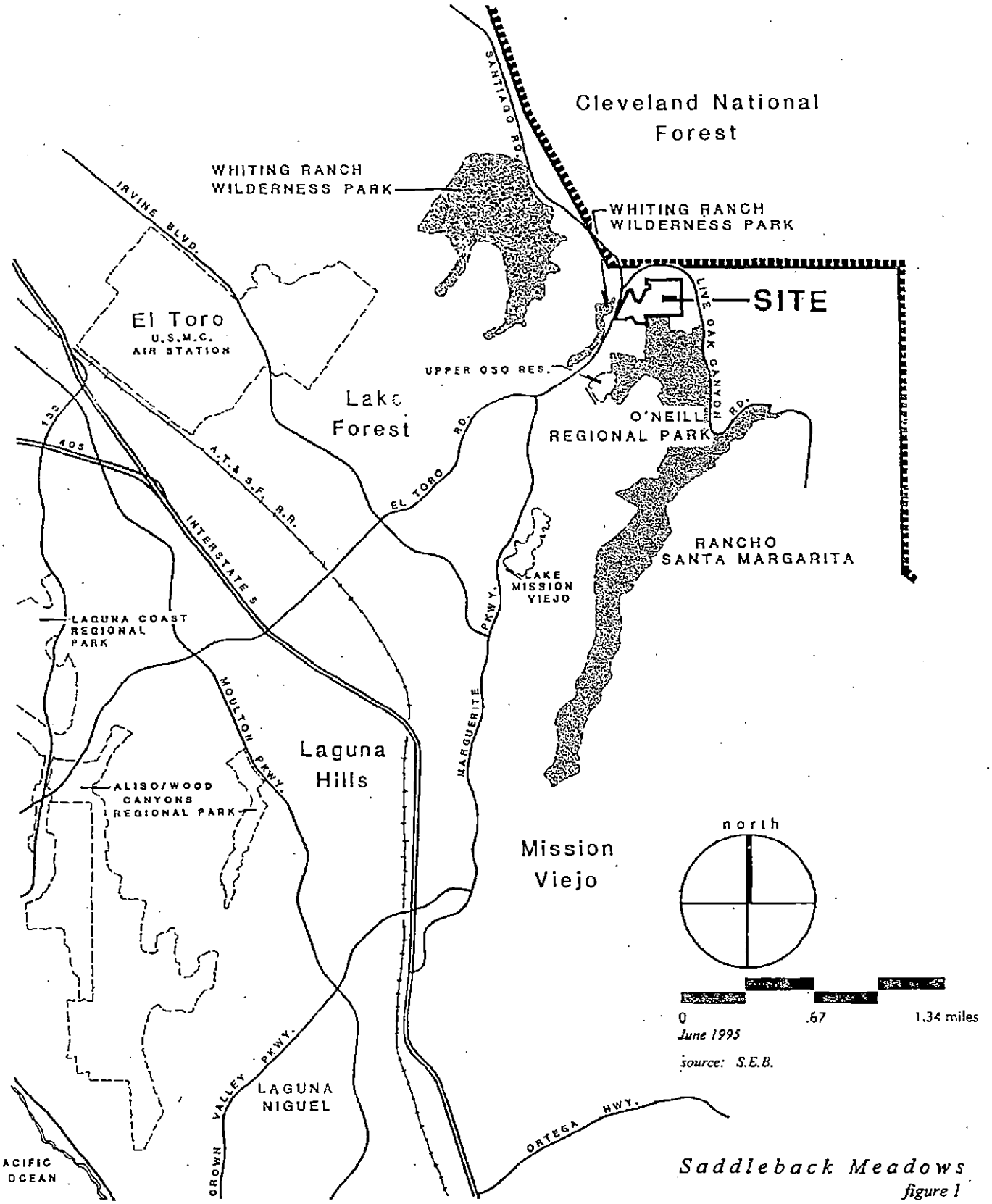

Saddleback Meadows
figure 1

Vicinity Map

prepared by: Sweetwater Environmental Biologists, Inc.

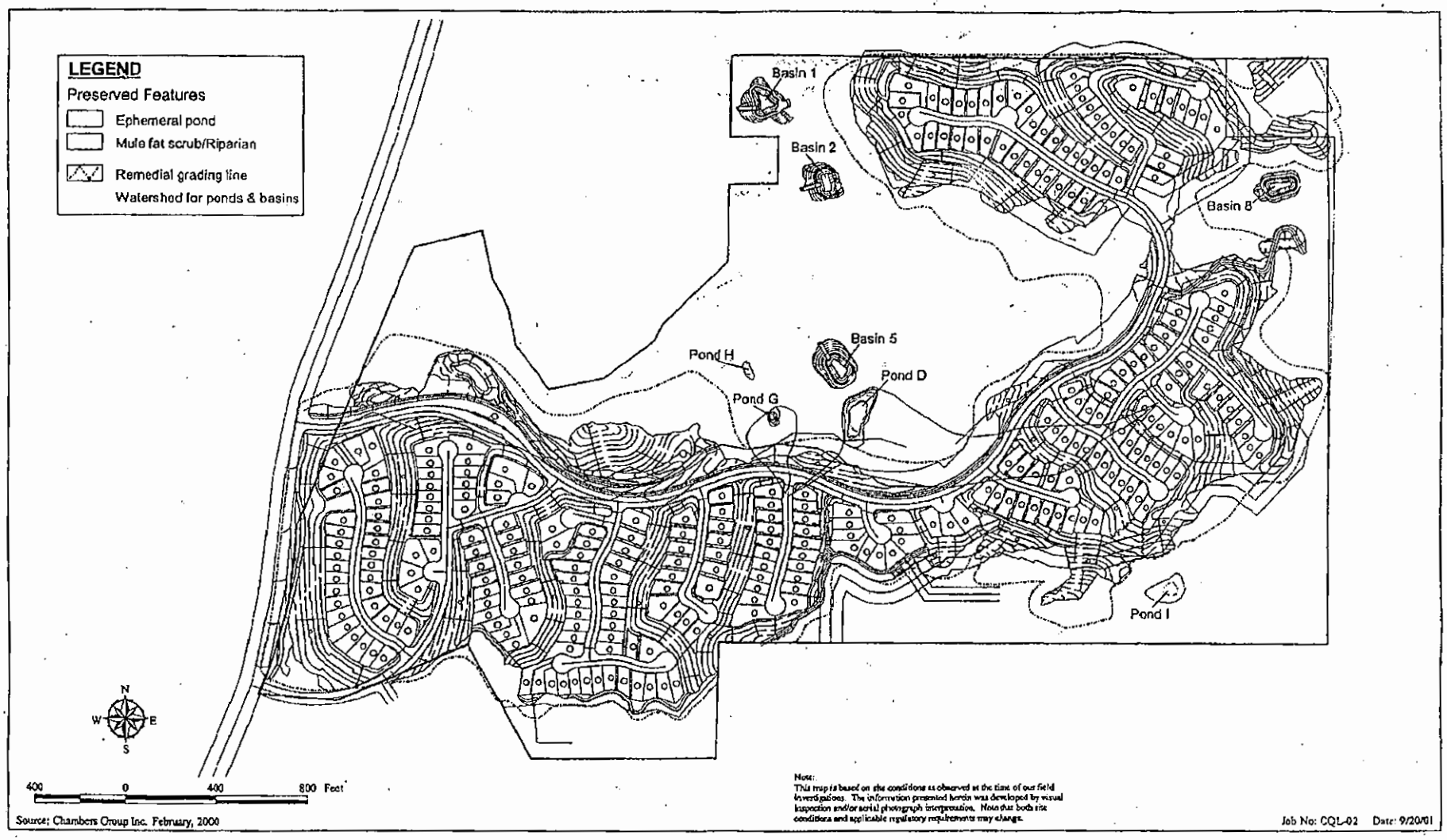

Figure 2. **Existing Stock Pond and Created Basin Watershed Limits for the Saddleback Meadows 283 Lot Plan**

HELIX

SADDLEBACK MEADOWS

Table 1. Known Historic and Extant Vernal/Ephemeral Pools Occupied by the Riverside Fairy Shrimp, in Orange County, California

LOCATION	# POOLS	ACRES	RSFS*	SDFS**	STATUS	YEAR	BO
1. Marine Corps Base El Toro	1	0.07?	x		no current project review		
2. Chiquita Ridge***	1	1.2	x	x	preserved/mitigation	1996	1-6-97-F-2
	1	0.1	x		preserved/mitigation	1996	1-6-97-F-2
	1	0.1			preserved/created/mitigation/not functional	1996	1-6-97-F-2
3. Tijeras Creek	2	0.09	x		possible mitigation for Live Oak Plaza		1-6-99-F-15
4. Viejo property	1	0.0036	x		proposed mitigation bank	2001	
5. Saddleback Meadows	4	0.24	x		proposed preserved	2001	1-6-01-F-1023
	3	0.24	x		proposed fill	2001	1-6-01-F-1023
	2	0.27	x (cysts)		proposed fill-breached pools	2001	1-6-01-F-1023
6. Live Oak Plaza	1	0.34	x		to be filled	1999	1-6-99-F-15
	1	0.34			to be created as mitigation	1999	1-6-99-F-15
7. Antonio Parkway	1	0.5	x		filled	1996	1-6-97-F-2
8. Radio Tower Road***	2	0.29	x	x	no current project review		

*Riverside Fairy Shrimp
**San Diego Fairy Shrimp
***Rancho Mission Viejo

APPENDIX J

PHASE I/PHASE II ARCHAEOLOGICAL SURVEY

RMW
Paleo Associates

23392 Madero, Suite L
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A DIVISION OF SWCA ENVIRONMENTAL CONSULTANTS

PALEONTOLOGY • ARCHAEOLOGY • FAUNAL ANALYSIS • HISTORY

28 November 2001

Ms. Natalie Borchardt
HDR Engineering, Inc.
9444 Farnham St., Suite 300
San Diego, CA 92123

RE: Saddleback Meadows Cultural Resources Update

The following is a brief status report for the Saddleback Meadows cultural resources program. Eight tasks have been identified for the project. Tasks 1 and 2 concern the Hausauer Ranch (CA-ORA-1435H), Task 3 is the determination of eligibility of the sites. Task 4 is the test excavation of CA-ORA-1437. This site is not under Corps of Engineers jurisdiction. Task 5 is the production of a research design/treatment plan for sites deemed eligible for listing on the National Register of Historic Places (NRHP). Task 6 involves the data recovery excavation of eligible sites. Task 7 is the monitoring of grading and Task 8 is the final report for the project.

Task 1: Testing Plan for CA-ORA-1435H

This plan was completed and submitted in May 2001. The Corps and SHPO accepted the document shortly afterward and directed us to proceed with the work.

Task 2: Test Excavation and Archival Research for CA-ORA-1435H

The archival research for this task was completed by Tim Gregory, architectural historian, and submitted to RMW in August 2001. The field work for this task was completed in September 2001. The report has been completed. We are recommending that the site be deemed not eligible for listing on the NRHP. It is recommended that the site be monitored by a qualified archaeologist during grading activities

Task 3: Determination of Eligibility for Saddleback Meadows Sites

A large packet of previous Saddleback Meadows reports, along with a summary of the work, was submitted to the Corps several months ago. A letter to the SHPO from Mark Sudol, Chief of the Regulatory Branch, Corps of Engineers, dated 14 June 2001, determined that only CA-ORA-711 is eligible for listing on the NRHP. I assume CA-ORA-710 would also be eligible, but it will be preserved. The SHPO responded to the letter on 13 July 2001, requesting additional information.

The Corps also directed RMW/SWCA to contact the Native American Heritage Commission for a listing of Native American Groups to be contacted. The list was sent to us on 14 September 2001. Several of the groups were contacted in October 2001 and sent packets with relevant site information. They were each encouraged to comment on the information to the Corps.

Task 4: Test Excavation and Evaluation of CA-ORA-1437

This site is not under Corps jurisdiction and was accomplished under CEQA. A test excavation of the site was undertaken on 8 and 9 November 2001. A surface collection yielded ten artifacts. Subsurface hand excavation produced only four additional artifacts. It is recommended that CA-ORA-1437 be determined not significant. It is further recommended that the site be monitored by a qualified archaeologist during grading activities.

Task 5: Treatment Plan and Research Design

The development of the treatment plan/research design is currently underway. It involves the completion of a literature review at the South Central Coastal Information Center, California State University, Fullerton and the development of the research design/treatment plan document to mitigate the effects of the development on the site.

Task 6: Mitigation of Effects

The data recovery excavation of CA-ORA-711 will proceed when the Corps and SHPO have signed off on the treatment plan.

Task 7: Monitoring of Grading

Obviously, this will not occur until grading of the property commences.

Task 8: Final Report

The final report, after the grading has been completed, will include a summary of work accomplished for the project including test excavations, the excavation of eligible sites, monitoring, etc.

I hope this is sufficient for your needs. Let me know if you need additional information.

Sincerely,

Patrick Maxon, RPA
Project Manager / Cultural Resources

AUTHOR: Patrick O. Maxon, RPA

DATE: October 2001

TITLE	**SUBMITTED BY**	
Test Excavation and Historic Evaluation of Archaeological Site CA-ORA-1435H, Within the Proposed Saddleback Meadows Development Project, Orange County, California.	RMW Paleo Associates *A Division of SWCA Environmental Consultants, Inc.* Archaeology Paleontology History 23392 Madero, Suite L Mission Viejo, California 92691 (949) 770-8042 FAX (949) 458-9058	 Chert Ceremonial Blade, 15 cm Length, Recovered by RMW Paleo, 1993

SUBMITTED TO: California Quartet
c/o TPG Management
777 Campus Commons Road, Suite 200
Sacramento CA 95825

PROJECT NUMBER: RMW/SWCA Project Number 01-1813b/5320-109

USGS QUADRANGLE: Santiago Peak, California, 1954; Photorevised 1982

KEYWORDS: Saddleback Meadows, Orange County, Township 6S, Range 7W, San Bernardino Base and Meridian, CA-ORA-1435H

TABLE OF CONTENTS

Page

Maps iii
Management Summary/Abstract iv
I. Contracting Information/Introduction 1
II. Setting 3
Natural Setting 3
Physiography 3
Geology 3
Climate 3
Flora/Fauna 4
Current 4
Cultural Setting 4
Historic Setting 4
Local History 6
III. Previous Archaeological Research 7
Extant Site Information: CA-LAN-1435H 7
IV. Research Design 8
Research Assumptions 8
Research Problems 8
V. Study Methods 9
Archival Research 9
Field Methods 9
Data Synthesis and Report 10
VI. Findings 10
Archival 10
Field 11
VII. Discussion/Interpretation 15
VIII. Recommendations 15
IX. References Cited 16

Appendix A: Personnel Qualifications
Appendix B: Historic Resources Report

MAPS

Page
Map 1: Project Vicinity 2
Map 2: Site CA-ORA-1435H 5
Map 3: CA-ORA-1435H Trenching 12

MANAGEMENT SUMMARY/ABSTRACT

Purpose and Scope: California Quartet and TPG Management propose development of the 299 unit Saddleback Meadows residential community on a 222 acre parcel in an unincorporated portion of Orange County. The Saddleback Meadows property lies immediately east of El Toro Road, a short distance south of the intersection with Live Oak Canyon and Santiago Canyon Roads. RMW Paleo Associates, Inc. was retained by TPG Management to complete the cultural resources studies related to the project. The study consists of several tasks:

Task 1: Draft Testing Plan (CA-ORA-1435H)
Task 2: Test Excavation/Archival Research (CA-ORA-1435H)
Task 3: Eligibility Determination (all sites)
Task 4: Test Excavation (CA-ORA-1437)
Task 5: Draft Treatment Plan/Research Design (all eligible sites)
Task 6: Data Recovery Excavation (CA-ORA-711, and possibly CA-ORA-710 and CA-ORA-1437)
Task 7: Monitoring
Task 8: Final Report

This report documents the test excavation and archival research accomplished under Task 2, based on the treatment plan (Task 1) developed for the historic Hausauer Ranch - CA-ORA-1435H. The development of Saddleback Meadows will result in the destruction of the resource located immediately east of St. Michaels Priory

Dates of Investigation: Archival research was begun on 25 May 2001 and completed on 13 August 2001. The test excavation was undertaken on 18 and 19 September 2001.

Findings: Archival research findings are summarized below. Backhoe trenching failed to produce any significant historic cultural material.

Significance Determination: Archival research revealed that the Hausauer Ranch (CA-ORA-1435H) is of no appreciable significance in the context of local Orange County history. Architectural historian Tim Gregory (see Appendix B) determined that the site is of no local significance under *National Register of Historic Places* Criterion A (patterns of settlement) and B (significant persons) and was thus assigned **Evaluation Code 6Z** (Found ineligible for listing on the National Register of Historic Places).

Undertaking Effects: The development of Saddleback Meadows will result in the destruction of archaeological site CA-ORA-1435H.

Recommendations: Archival research and subsurface backhoe exploration has mitigated the adverse effects of the proposed development on CA-ORA-1435H. No further cultural resources investigation is necessary for the site.

Disposition of Data: This report will be filed with the South Central Coastal Information Center, California State University, Fullerton (SCCIC), the Los Angeles District, United States Army Corps of Engineers (USACE), with TPG Management and with RMW Paleo Associates/SWCA, Inc., Mission Viejo. All field notes and study related documents are on file at RMW Paleo Associates/SWCA, Inc.

I. CONTRACTING INFORMATION/INTRODUCTION

Contract Data: California Quartet and TPG Management have produced plans to develop the Saddleback Meadows property. RMW Paleo Associates/SWCA, Inc. was retained by TPG Management to complete the cultural resources studies related to the project.

Purpose: The Saddleback Meadows project requires a permit pursuant to Section 404 of the Clean Water Act of 1977, under which adverse impacts to *significant* cultural resources, and their consideration in the planning process, are within purview of the U. S. Army Corps of Engineers and are subject to Section 106 of the *National Historic Preservation Act (NHPA)* (36CFR800). The NHPA authorizes the maintenance of a *National Register of Historic Places (NRHP)* that facilitates the preservation of properties possessing integrity and meeting at least one of four criteria delineated by Section 106 (Advisory Council on Historic Preservation 2000).

The quality of *significance* in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess *integrity* of location, design, setting, materials, workmanship, feeling and association and:

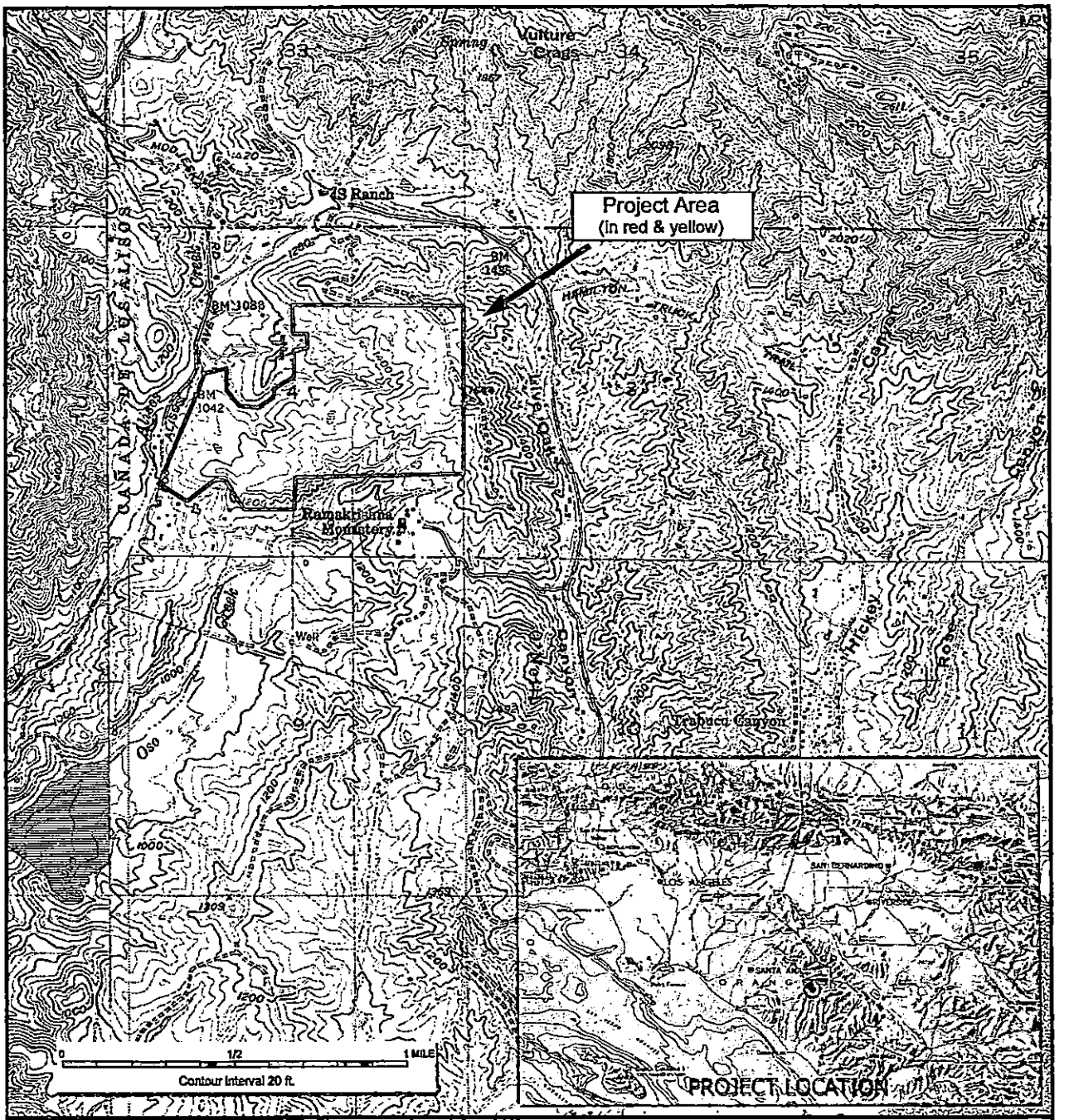
A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
B. that are associated with the lives of persons significant in our past; or
C. that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. that have yielded, or may be likely to yield, information important in prehistory or history.

CA-ORA-1435H was evaluated for significance in accordance with the National Register Criteria for evaluation (36CFR60.4), to determine if it satisfies any of the four significance criteria. The property is potentially eligible for listing on the *National Register of Historic* if any criterion is satisfied.

Undertaking: The proposed Saddleback Meadows development will consist of the construction of 299 single-family homes on the property. The effort will result in the destruction of all but one of the archaeological sites on the property: CA-ORA-710 will remain in open space.

Maps: Map 1 is a portion of the USGS 7.5 Minute Quadrangle, Santiago Peak, California, 1954; Photorevised 1982, depicting the project area. An inset map shows the project area vicinity.

Personnel: Architectural historian, Tim Gregory, also known as The Building Biographer, conducted the archival research for the resource. RMW/SWCA archaeologists Anna Hoover and Steve McCormick conducted the subsurface backhoe trenching work. Principal Investigator was Patrick Maxon, who also authored this report. Resumes for all individuals indicated are located in Appendix A.



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Map 1: Project Locality

Portion of USGS 7.5 Minute Quadrangle, Santiago Peak 1954, Photorevised 1982.

Area shown lies in Orange County, California

Scale 1:24,000

II. SETTING

Natural Setting

Physiography

The Saddleback Meadows project area lies in the foothills of the Santa Ana Mountains in Orange County, California. Aliso Creek flows southward along the property's western margin. The property is in Section 4 of Township 6 South, Range 7 West and is accessible via El Toro Road, which extends parallel to and west of Aliso Creek, adjacent to the property.

The project area consists of narrow, rugged ridges and rounded knolltops separated by steep sided and narrow canyons. A central northeast/southwest trending canyon drains into Aliso Creek. Elevations range from approximately 1,040 feet where the main drainage empties into Aliso Creek to approximately 1,640 feet along portions of the ridges in the northeastern portion of the property. Santiago Peak, the highest in Orange County at over 5,000 feet, is approximately three kilometers northwest of the property.

Geology

Geologic formations exposed in the Saddleback Meadows study area are the Sespe Formation, the undifferentiated Sespe and Vaqueros Formations, and the Topanga Formation (Raschke 1995). The oldest unit is the late Eocene to early Miocene Sespe Formation and is restricted to the northeastern corner of the property. Overlying and interbedded with the Sespe Formation is the early Miocene age, undifferentiated Sespe-Vaqueros Formation. This unit underlies all except the northeast corner of the Saddleback Meadows property where there appears to be a small exposure of the middle Miocene age (15 million years ago) Topanga Formation. Within the study area there are numerous occurrences of vertebrate fossils in boulders that have apparently eroded from the subsurface. These include a variety of large and small fragments of marine mammal bones (Raschke 1995).

Climate

The climate of the Saddleback Meadows vicinity can be described as mild, uniform and semi arid. Temperatures rarely exceed 33 degrees Celsius or drop below five degrees Celsius. Rainfall occurs primarily between November and April and averages between 25 and 40 centimeters per year. The current climatic conditions did not prevail during the entire span of time that man has been present in the area. Heusser (1978) suggests that pine forests may have occupied the coastal regions from roughly 10,000 to 6,000 years B.C. The climate then became warmer and drier, resulting in replacement of the pine forests by oak woodland and grassland communities. Coastal Sage Scrub and Chaparral communities became pronounced during the few centuries preceding the Christian era.

Flora/Fauna

Several of the ecological communities existing in southern California are present at Saddleback Meadows. Those in the immediate vicinity of Saddleback Meadows include the Riparian Woodland Community, the Grassland Herbland Community the Oak Woodland Community, the Coastal Sage Scrub Community and the Chaparral Community (Drover, Koerper & Langenwalter 1983).

Current

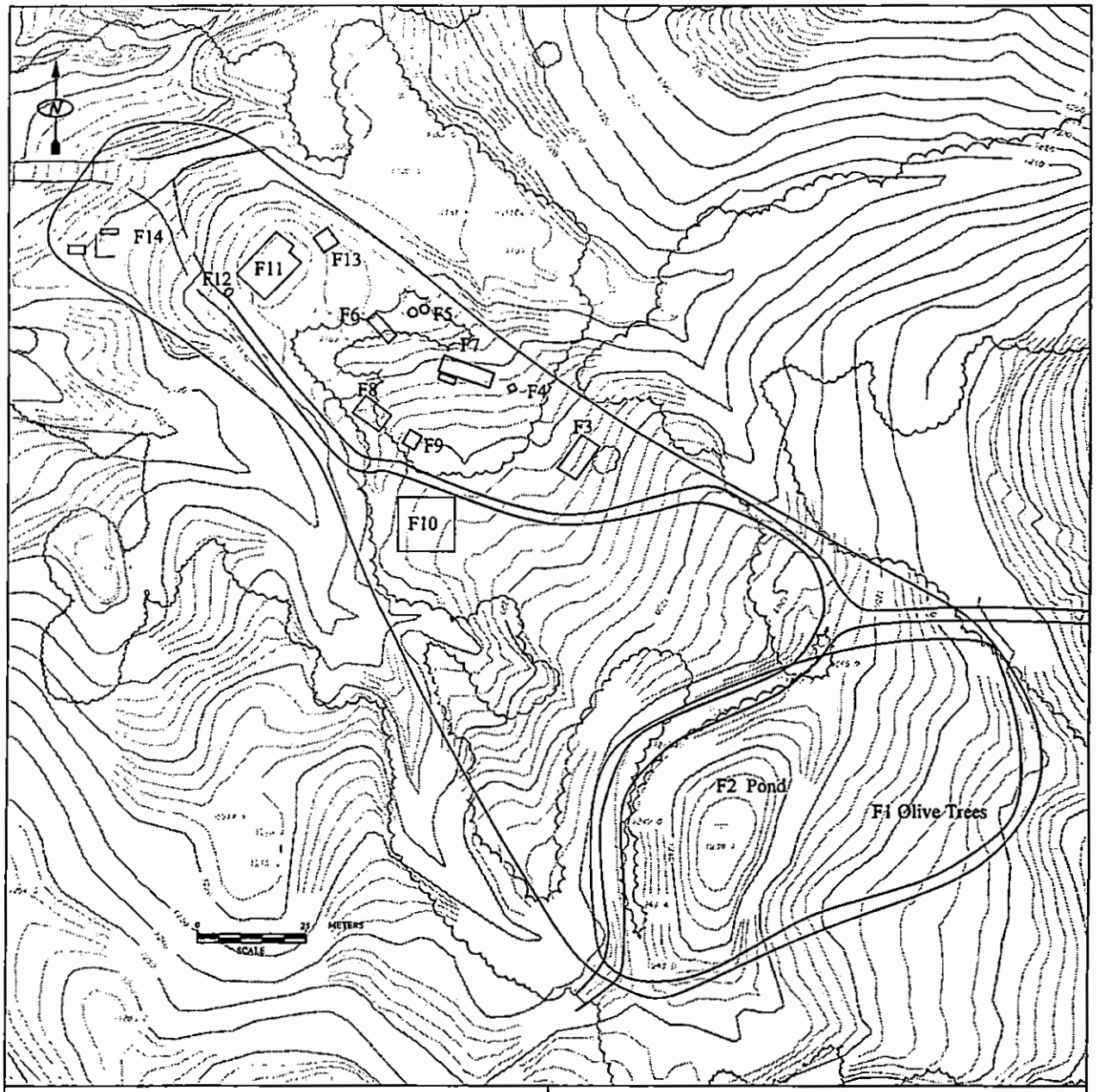
A majority of the property has in recent times been used as a cattle ranch and is presently covered predominantly by grasslands, including introduced grasses, wild mustard and artichoke thistle. The slopes and ridges support remnants of the Coastal Sage Scrub Community, composed of sage, buckwheat, chamise, sumac, prickly pear cactus and other low growing, woody plants. A riparian community exists along the Aliso Creek drainage supporting rushes, tules and willows. Mature oaks and sycamores are found in the valleys, drainages and on some of the ridges and knolltops. CA-ORA-1435H, along the property's main drainage that empties into Aliso Creek, is surrounded by introduced eucalyptus trees as well as a large olive grove containing nearly 100 trees (See Map 2, below).

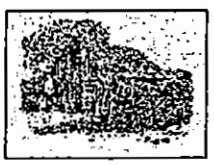
Cultural Setting

Historic Setting

Juan Rodriguez Cabrillo sailed along the California coast in 1542 and, according to available records, stopping only at San Diego and the Channel Islands, was the first European to come into contact with the Gabrielino and Juaneño. The first Europeans to visit Orange County arrived in 1769 when Gaspar de Portola led an overland expedition from San Diego to Monterey. This expedition of 63 persons passed near the study area, using Arroyo Trabuco as a route to the north (Cramer 1988). Mission San Gabriel, in Los Angeles County, was founded in September 1771 and all the Native Americans from the Los Angeles plain were persuaded to settle in its vicinity. The first permanent settlement in Orange County came when San Juan Capistrano was selected as the site for a Mission in the spring of 1775. By the early 1820s, all the native Americans from the coastal plains and foothills of what is now Orange County had been settled on Mission lands or on the growing rancho system.

The missions were charged with administering to the Indians within their areas. Mission life did give the Indians some skills needed to survive in their rapidly changing world, but diseases for which they had no immunity, decimated the population. After 1810, mission population declined faster than it could be replenished. The Mexican Revolution, beginning in 1821, overthrew Spanish control and the new Mexican government had a very different outlook on mission activities. Secularization of the missions, planned under the Spanish, was greatly accelerated by the Mexican government. Plans to provide land, training and living quarters for the Indians never





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Map 2. Site CA-ORA-1435H

Map Source: Hunsaker and Associates

developed and the mission lands were soon under the control of a relatively few influential Mexican families.

The Mexican-American war ended on 2 February 1848 with the signing of the treaty of Guadalupe Hidalgo. The treaty established California as a United States possession and provided for the retention of private lands held by the conquered Mexicans; however, in 1851 the United States required that all Hispanic land grants be approved by the courts. As a result, many of the land grants were not approved and the division of many of the larger ranchos occurred.

The effects of mission influence upon the local native populations were devastating. The reorganization of their culture alienated them from their traditional subsistence patterns and social customs. European diseases, against which the natives had no immunities, reached epidemic proportions and Gabrielino populations were decimated (Johnston 1962:135). Although most Gabrielino submitted to the Spanish and were incorporated into the mission system, some refused to give up their traditional existence and escaped into the interior regions of the state.

Local History

The study area was never a part of a Spanish or Mexican land grant. The foothill area was not good grazing terrain. Instead, the Santa Ana Mountain area was to be ungranted and for the use of all. The Rancho Canada de los Alisos (Canyon of the Sycamores) abuts a portion of the study area.

Present day Lake Forest was part of this grant; the last of Serrano's adobes is still preserved there. The drought of the early 1860s forced Serrano to give up on the rancho. It was broken up into smaller parcels and sold piecemeal; the bulk of the land forming the city of El Toro (now Lake Forest). By the 1880s much of the area had been settled by Anglo-American families.

Closest to the project area, approximately one mile east of the intersection of Santiago Canyon and Live Oak Canyon Roads, the first Anglo resident of Live Oak Canyon settled there in 1873. Within six years, a village had sprung up around what is now Trabuco Oaks. Settlers in the area tended to be miners, beekeepers, homesteaders and stock farmers. The major agricultural products were barley and oat hay (Gregory 2001:8). See Gregory (2001) for more details on local history.

The Hausauer Ranch (CA-ORA-1435H), the subject of this report, dates to the late 1920s and was an active ranch into the 1970s. It was occupied by Arthur Hausauer and his family in 1929. After his death in 1964, Arthur's wife, Edna May, remained at the ranch with her son Arthur Fred until the late 1970s (Gregory 2001:3). The ranch's main reservoir and olive orchard have been in existence since at least 1939 (Dillon 1989:32).

III. PREVIOUS ARCHAEOLOGICAL RESEARCH

Early reconnaissance operations were conducted near the present project area that only partially extended onto the Saddleback Meadows property. The first was a reconnaissance by Howard (1975). Other studies include: Tadlock and Tadlock (1978), Breece and Padon (1982), Dillon (1989), Bissell (1984), Maxon (1995; 1997)

These studies resulted in the recording of twelve archaeological sites and the subsequent testing of ten of them (Maxon 1995). The historic Hausauer Ranch was located and described in some detail by Dillon (1989), although not formally recorded until the Maxon (1995) study. It was then assigned the trinomial CA-ORA-1435H.

Extant Site Information: CA-LAN-1435H

The Arthur Hausauer Ranch lies in the main canyon on the subject property, southeast of St. Michael's Priory and approximately 600 meters east of El Toro Road. It lies on a broad ridge between two drainages, tapering to the northwest, and encompasses an area of some 250 meters in length and 40 to 60 meters in breadth. The heavily vandalized and deteriorating site consists of 14 features including an olive grove of approximately 100 trees, a holding pond still containing water, a main residence, a barn, metal water basins, a cattle chute, several animal pens and other outbuildings. Most of the site's structures have collapsed or have nearly collapsed. The main residence is still standing, but it is completely gutted and the majority of the walls have disappeared. Piles of debris consisting of milled wood, metal fragments, chicken wire, plastic, etc. were noted in several locations. See Gregory (2001) in Appendix B for a detailed description of the site and its components

In 1995, concurrent with test excavations at several of the prehistoric sites on the property, the Hausauer Ranch was formally recorded and assigned the trinomial CA-ORA-1435H (Knell and Maxon 1995). While the site is in an advanced state of decay, RMW researchers completed a fairly detailed site record of the resource. During the current study, this site record was adapted by the project historian to produce an up to date record of the site (see Appendix B).

IV. RESEARCH DESIGN

A research design is a means by which to ensure that the undertaking of an archaeological investigation (in this case archival research and a test excavation at CA-LAN-1435H) is accomplished as a scientific endeavor, with the purpose of linking the material remains recovered from a site with past human behavior (Schiffer 1976 & 1987 in Grenda 1992:33). This applies to prehistoric as well as historic resources.

Research Assumptions

Theoretical Basis

The theoretical background directing the conduct of this research is primarily cultural ecological: the level of a culture's technological innovations and the physical and biological environment in which the culture exists operate together in determining the nature of social organization and the arrangement of resource exploitation and management. These elements are, in turn, a major factor in formulating a particular culture's ideological and political patterning (Steward 1955).

Humans are part of the ecological system in which they exist. Their patterns of behavior are restricted by ecological constraints, originating in their natural and social environment, and expressed through culture. Similarly, human populations have an effect, either intentionally or accidentally, on the natural environment, and precipitate ecological change (Jochim 1981:6). This applies to prehistoric as well as historic times.

Research Problems

The purpose of this study is to determine the significance of historic archaeological site CA-ORA-1435H, per the National Register Criteria for evaluation (36CFR60.4), based on its meeting at least one of four significance criteria. Meeting at least one criterion would potentially make it eligible for listing on the *National Register of Historic Places*.

Because the present study is evaluative in nature, research problems are designed to determine whether the site has integrity and if it is associated with significant aspects of local and/or regional history. The problems to be studied include:

- Is the site associated with significant events or individuals in local or regional history?
- Do site features embody distinctive architectural characteristics?
- Does the site have the potential to yield information important in history?
- What are the vertical and horizontal boundaries of the site?
- Are discrete concentrations of artifacts present at the site?
- Are existing structures present at the site?
- What is the range and variability of artifacts present at the site?

V. STUDY METHODS

Archival Research

Tim Gregory, professional architectural historian, evaluated the structures related to CA-ORA-1435H. The evaluation consisted of an initial field survey to examine, describe and photograph the site features, followed by an examination of the County Assessor records to determine improvements to the site, the Orange County Archives to determine the chain of ownership of the property and local libraries, historical societies and personal interviews as appropriate to document the history of the site and area. A final technical report (see Appendix B) was produced by the historian. It describes the site in detail, provides a developed historic context, evaluates the historic significance of the property per NHPA and CEQA and recommends mitigation measures for the resource. The DPR 523 site recording form(s), including photographs and maps, is appended.

The archival research was accomplished as the first phase in this study. The purpose was to gather data to determine what role, if any, the Hausauer Ranch played in the development of the El Toro area and thus was the primary method used in making a determination of eligibility for listing the site on the *National Register of Historic Places.*

Field Methods

Methods developed for the field study included clearing/grubbing of the site to remove vegetation, collection of all diagnostic artifacts exposed on the ground surface, excavation of backhoe trenches to locate subsurface features and hand excavation if intact cultural deposits were discovered.

Clearing/Grubbing

Initially, the site area was cleared and the vegetation removed to facilitate examination of the ground surface, particularly in areas that were proposed for trenching. This was accomplished by utilizing a dozer blade to remove artichoke thistle, grasses, bushes, small trees, etc.

Surface Collection

The surface collection method was designed to be employed immediately after clearing of the site to recover diagnostic artifacts that may aid in significance determinations. The implementation of this method was not necessary as no significant artifacts were discovered.

Backhoe Trenching

A series of ten trenches excavated by backhoe were placed around the site area for the purpose of locating subsurface piping, privies, trash pits or other features. After excavation was completed,

the trench's stratigraphic profile was recorded, necessary photographs taken, provenience recorded using a hand-held GPS receiver, and the trench backfilled.

Data Synthesis and Report

All field data and historical archival research was used to evaluate the questions contained in the research design. The testing and evaluation report follows the *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Office of Historic Preservation 1990. Copies of all field and laboratory documents and photographs are on file at RMW Paleo Associates/SWCA, Inc.

VI. FINDINGS

Archival Findings

Tim Gregory, an architectural historian, carried out a field visit on 25 May 2001. The purpose was to observe, describe and photograph the buildings, structures and amenities (Gregory 2001:2). The subsequent archival research included: a search of recorded deeds at the Orange County Recorder to investigate the site's chain of ownership, consultation of historical files at the History Room of the Santa Ana Public Library, and the central branch of the Los Angeles Public Library. A search of various on-line historical and biographical databases available on the Internet was also accomplished. No personal interviews were conducted. The history and physical description of the site are contained in Mr. Gregory's report in Appendix B and will not be repeated here.

Using the criteria of the *National Register of Historic Places*, the Hausauer Ranch is of no appreciable significance within the broad context of local Orange County history. Other, more intact cattle ranches can still be found in the area (Gregory 2001:9).

The property was abandoned by 1980 and all improvements have either been vandalized or have decayed as a result of the elements. Therefore, the integrity of the site is poor. An **Evaluation Code of 6Z** (*Found ineligible for listing on the National Register of Historic Places*) was assigned to the resource (Gregory 2001:9).

Field Findings

Ten trenches of varying length and depth were excavated within the ranch complex. All trenches had a width of one meter (see Map 3, below). The following section describes each trench and any relevant observations.

Trench 1

Depth: 3.2 meters
Length: 20.3 meters

This trench was excavated between Feature 3 (possibly a small laundry) and Feature 4 (a cattle chute). The upper 90 centimeters of the subsurface was a dark, organically rich soil, very compact and dry. The next 20 centimeters, to 1.1 meters depth, was grayish-white sand. From 1.1 to 3 meters depth, the soil was reddish, fine-grained, very compact silty-sand. Below three meters the soil changed to medium dark-grey clay.

The upper meter of trench produced only scattered broken glass and metal fragments, none of which was recovered. No other cultural material was observed in the trench.

Trench 2

Depth: 2 meters
Length: 13.4 meters

This trench was also excavated between Features 3 and 4, perpendicular to and approximately two meters north of Trench 1. The stratigraphy of soils in Trench 2 was nearly identical to that in Trench 1. No cultural material was recovered from this trench.

Trench 3

Depth: 1.97 meters
Length: 12.3 meters

This trench was excavated immediately west of Feature 7 (animal pens). Excavation was terminated when the white sand (non-cultural) was reached. No cultural material was recovered.

Trench 4

Depth: 1.4 meters
Length: 12.6 meters

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Map 3. Site CA-ORA-1435H Trenches

Map Source: Hunsaker and Associates

This trench was excavated through the collapsed barn (Feature 10). It was thought that the best chance for discarded ranching material would be found here. However, no cultural material was recovered before reaching the culturally sterile (sand) stratum.

Trench 5

Depth: 2.5 meters
Length: 12.1 meters

This trench was the second excavated through the collapsed barn. No cultural material was recovered before reaching the culturally sterile (sand) stratum

Trench 6

Depth: 1.7 meters: south end;
2.5 meters: north end
Length: 12.6 meters

This trench was excavated immediately southwest of Feature 6 (a two room workshop shed). The 30-40 centimeter level contained one-half inch, plastic PVC pipe. The upper 90 centimeters uncovered a one-half inch diameter iron water pipe that appeared to lead to the main residence.

Trench 7

Depth: 2 meters: south end;
3.76 meters: north end
Length: 14.7 meters

This trench was excavated immediately northwest of Feature 11 (the ranch's main residence). It ran parallel to the structure's northwest wall. Subsurface sediments consist of alluvial, grey sand. There were apparently two or three old erosional channels that had been filled in the past by natural processes. No cultural material was recovered from this trench.

Trench 8

Depth: 2.23 meters
Length: 8.23 meters

This trench was also excavated northwest of Feature 11 and perpendicular to Trench 7. The south end of Trench 8 connected with Trench 7. Subsurface sediments were light grey sand that, like Trench 7, exhibited old erosional channels filled with alluvial material. Gravel seen in the trench is probably the result of the installation of leach lines for an adjacent septic tank.

Trench 9

Depth: 2.1 meters
Length: 16.4 meters

This trench was excavated east of Feature 14 (a collapsed garage and animal hutch) in the extreme northwest end of the site. Light grey sand was noted in the majority of the trench. Some dark alluvium was present in the east end of the trench closest to the residence (Feature 11). No cultural material was recovered from this trench.

Trench 10

Depth: 1.62 meters
Length: 13.14 meters

This trench was excavated south east of Feature 10 (the barn) near what appeared to be an animal pen. The sediments in the upper portion of the trench consisted of dark brown alluvium. At 1.6 meters, grey sand was encountered and the trench abandoned. No cultural material was recovered.

VII. DISCUSSION/INTERPRETATION

In the research design, a set of seven research questions was formulated to determine significance of the site. These are repeated below:

- Is the site associated with significant events or individuals in local or regional history?
- Do site features embody distinctive architectural characteristics?
- Does the site have the potential to yield information important in history?
- What are the vertical and horizontal boundaries of the site?
- Are discrete concentrations of artifacts present at the site?
- Are existing structures present at the site?
- What is the range and variability of artifacts present at the site?

It is clear from the archival research performed by Tim Gregory (Gregory 2001) that the site has no significance relative to significant events, significant individuals or that there is no real potential for the site to yield information important in history. Because the property was abandoned by 1980 and all improvements have either been vandalized or have decayed as a result of the elements, the site holds little integrity.

The subsurface (backhoe) work failed to reveal any subsurface deposits such as privies, trash pits, or any other features. The site boundaries should remain as they were plotted during recording of the site.

In summary, using the criteria of the *National Register of Historic Places*, the Hausauer Ranch is of no appreciable significance within the broad context of local Orange County history.

VIII. RECOMMENDATIONS

All appropriate cultural resources research was accomplished during the current study. Archival research and subsurface backhoe exploration has mitigated the adverse effects of the proposed development on CA-ORA-1435H. No further cultural resources investigation is necessary for the site.

Patrick O. Maxon, RPA
Project Manager / Cultural Resources

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Appendix A
Personnel Qualifications

Patrick O. Maxon, M.A., RPA
RMW Paleo Associates/SWCA, Inc.
Certified Archaeologist

Professional Experience

1994 - present	Project Manager/Field Director of Archaeology, RMW Paleo Associates, Mission Viejo, California. Responsibilities include project management, development of project proposals, client relations, conducting research, accomplishing field work (survey, excavation, monitoring), mapping and production of technical reports.
1990 - 1994	Behavioral Specialist/Job Trainer, Vantage Foundation, Costa Mesa, California.
1989 - 1990	House Manager, Pearlmark Group Home, Anaheim, California.
1988 - 1989	Instructor, United Cerebral Palsy, Santa Ana, California.

Selected Technical Reports

1995 Archaeological Test Excavation of Cultural Resources Located Within the Saddleback Meadows Planned Development, Orange County, California.

1996 Cultural Resources Reconnaissance and Impact Assessment of Proposed Development for the California State University, San Bernardino Master Plan.

1997 Archaeological Test Excavation of a Prehistoric Cultural Deposit at Butterfield Ranch, Tract 14425, Chino Hills, San Bernardino County, California.

1998 Cultural Resources Mapping of the CA-VEN-630 Site Complex for the Long Canyon Development Project on the Old Wood Ranch in Simi Valley, Ventura County, California.

1999 Archaeological Test and Data Recovery Excavations of CA-VEN-477 at Long Canyon, Wood Ranch, Simi Valley, California

2000 Archaeological Investigations for the Long Canyon Development Project on the Old Wood Ranch in Simi Valley, Ventura County, California.

2001 Treatment Plan and Research Design for Archaeological Site CA-LAN-254, Within the Dayton Canyon Estates Development Project, Los Angeles County, California

Degrees

M.A. Anthropology: 1994, California State University, Fullerton. Concentration in Archaeology.
B.A. Sociology/Psychology: 1987, Towson State University, Towson, Maryland.
University of Maryland, Munich Campus, Munich, Germany

Credentials

Certified by the Register of Professional Archaeologists
Certified as an Archaeologist by the County of Orange Environmental Management Agency, and by the Counties of San Diego, Los Angeles, Ventura, Santa Barbara, San Bernardino and Riverside.

Memberships

Pacific Coast Archaeological Society
Society for California Archaeology
Society for American Archaeology

Anna M. Hoover
RMW Paleo Associates/SWCA, Inc.
Staff Archaeologist

Professional Experience

2000 – Present	Archaeologist: RMW Paleo Associates, Inc.
1999 – 2000	Information Officer: Eastern Information Center, University of California, Riverside.
1999	Archaeological Consultant: Joshua Tree National Park, Twentynine Palms.
1999 – Present	Field Associate: Archaeological Research Unit, University of California, Riverside.
1999 – 2000	Field Associate/Field Equipment Manager: Yalahau Regional Human Ecology Project, Field school in Yucatan, Quintana Roo, Mexico.

Degrees

Current	M.S., Archeology, University of California, Riverside; emphasis in agricultural, southwestern and great basin archaeology, lithic studies, and Maya studies.
2000	B.S., Anthropology, University of California, Riverside: Successful completion of a senior thesis relating to Maya agricultural practices. B.A., Linguistics, University of California, Riverside.
1993	A.A., English, Long Beach City College.

Memberships

Anthropological Association of America
Archaeological Survey Association
Society for California Archaeology
Society for American Archaeology

Steven McCormick
RMW Paleo Associates/SWCA, Inc.
Archaeologist

Professional Experience

6/00 – Present	Archaeologist, RMW Paleo Associates, Inc.
8/99 –5/00	Cultural Resource Field Monitor, Michael Brandman Associates
9/98 – 12/88	Teaching Assistant Field Methods in Archaeology, Cypress College
9/97 – Present	Excavation of CA-ORA-423, Aliso and Woods Canyons Regional Park, Saddleback College project.
5/98 – 12/99	Archaeology Assessment of the Salton Trough area, Imperial Valley College Desert Museum and Saddleback College.

Publications

1988	Gary S. Hurd and Steve McCormick, *Deer Bone Accumulations from Mountain Lion Kills* presented at the Society for California Archaeology 32nd annual meeting.
2000	Gary S. Hurd and Steve McCormick, *Development of Lake Cahuilla Fishtrap Technology.* Presented at the Society for California Archaeology 34th annual meeting.

Degrees

Graduate Program in Anthropology, emphasis in Archaeology, California State University Long Beach, California, 2000.
B.A. (Anthropology) 2000. California State University, Long Beach.
A.A. (Arts) 1994. Saddleback College.

Supplemental Course Work

1996 – 1997	Physical Anthropology, Archaeological Field Methods 110A, Archaeological Analysis 110B, Social Science Independent Study (Field work in La Venta and Tabasco, Mexico), Saddleback College, Mission Viejo, CA.
1994 – 1995	Human Bio-Cultural Origin, Principles of Physical Anthropology, San Diego State University.

Appendix B
Historic Resources Report

THE BUILDING BIOGRAPHER
TIM GREGORY
- Building Histories
- Cultural Resource Studies
- Historic Resources Surveys
- Local, State, and National Landmarking
- Historic Preservation and Archival Consulting

HISTORIC RESOURCES TECHNICAL REPORT:

THE HAUSAUER RANCH
(EL TORO ROAD)

MISSION VIEJO VICINITY, CALIFORNIA

Prepared for:

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TABLE OF CONTENTS

I. Project Description....2

II. Identification of the Resources....2

III. The Historic Context....6

IV. Evaluation of the Historic Significance of the Resources.... 9

V. Findings of Effect and Recommended Mitigation Measures....9

VI. Sources....10

Appendix 1 Identification of Existing Resources and Their Historic Context (Background)....13

Appendix 2 Evaluation of Historic Resources (Background)....17

Appendix 3 Findings of Effect and Recommended Mitigation Measures (Background)....20

Appendix 4 Maps....23

Appendix 5 Newsclipping....24

Appendix 6 Photographs....25

DPR 523 Form and Photograph....following Appendix 6

I. Project Description

This is a technical report on the historic resources found in an approximately 5.25-acre parcel currently a part of the Saddleback Meadows project site and historically known as the Hausauer Ranch. It is located about one mile east of El Toro Road in unincorporated Orange County territory, about one mile north of Mission Viejo, and across El Toro Road from an area known as Portola Hills. The client has requested an evaluation of the historic resources discovered there and a summary of any alternatives which may be needed to reduce project impacts on these resources if they are found to be significant.

The purpose of this report is to assist the property owner, RMW Paleo/SWCA, and the U.S. Army Corps of Engineers in their determination of the historical significance of the resources. Also to be determined: if any future changes to the resources will constitute a significant environmental impact and, if so, what mitigation measures may be necessary.

The five steps necessary in such a study are: 1) identification of the resources; 2) identification of the resources' historic context; 3) evaluation of the historic significance of the resources; 4) determination (findings) of the proposed project's effect on any significant resources; and 5) recommendation of project alternatives or mitigation measures to minimize the project's possible negative effects.

In summary, this technical report contains the synopsis of the consultant's cultural resources identification and evaluation investigation. Sections of this report discuss the Identification of the Resources, the Historic Context, Evaluation of Historic Resources, Findings of Effect and Recommended Mitigation Measures, and Sources. A California Historic Resources Inventory (DPR 523) form, prepared as a result of the investigation, is appended.

II. Identification of the Resources

(Please see Appendix 1 for a background discussion on the identification and historic context phase.)

A field visit to the project site was carried out on May 25, 2001. The buildings, structures and amenities were observed, described, and photographed.

Research was undertaken before and after the site visit in order to further identify the history of the resources and their context. The first step was an investigation of the site's chain of ownership through a search of recorded deeds housed at the office of the Orange County Recorder. Historical files were also consulted at the History Room of the Santa Ana Public Library and the central branch of the Los Angeles Public Library (the oldest public library collection in Southern California). A search was also made in various on-line historical and biographical databases available on the Internet. The focus of this research was to determine if the history of the site had any connection to a person or event of national, state-wide or local

significance during its period of habitation. As many documentary resources as possible within realistic time and budget constraints were investigated and are listed under Sources (Section VI).

The research on the site is reported below and is also summarized on a DPR 523 form appended at the end of this report. In completing the forms, the consultant followed the "Instructions For Recording Historical Resources" issued by the California State Office of Historic Preservation (SHPO) in March 1995.

The historical resources on the site consist of a ranch-house and a number of out-buildings and agricultural structures and features. All the resources have long been abandoned and are in bad shape, having lost most of their integrity.

History: This site is known historically as the Arthur Hausauer family cattle ranch, according to the Saddleback Historical Society. Arthur P. Hausauer was born in South Dakota on June 19, 1890. In 1905 he moved to Santa Ana with his parents Fred and Matilda Hausauer and his sister, also named Matilda. Local directories reveal that by 1915 the family was living at 612 East 6th Street and Arthur was employed in a packing house. Fred Hausauer died in 1919. In 1925, Arthur, by then married to his wife Edna May Hausauer, was working as a foreman. Until 1928, they lived at 825 East 1st Street. In 1929 the Hausauers moved to their ranch in El Toro. Their property was eventually given the address 19356 Los Alisos (later changed to El Toro Road), Trabuco Canyon. Arthur Hausauer died on April 2, 1964 at the age of 73. (A copy of his obituary can be found in Appendix 5.) It appears that Mrs. Hausauer stayed on at the ranch with her son Arthur Fred Hausauer until the late 1970s. By the early 1980s, the ranch was owned by the first in a series of investment and development firms.

Physical Description: The site is located approximately .1 mile south of the intersection of El Toro Road and Live Oak Canyon Road and approximately .4 mile east of El Toro Road. It stretches in a southeasterly direction for approximately 1,700 feet and varies between 250 and 800 feet in width. (Note: the codes following the names of the resources listed below refer to the map found in Appendix 4. The resources are listed as they were discovered, moving generally in a northwesterly direction.)

Olive grove (F1)–Located at the southeasterly end of the property, the grove consists of approximately one hundred trees. Extending to the east, south and west of the holding pond (F2), its most dense growth is towards the east.

Holding pond (F2)–Currently overgrown with algae, the pond measures approximately 400 feet north-south by 100 feet east-west.

Laundry (F3)–This is a small wooden one-room structure that measures 12.5 feet east-west by 10 feet north-south. Constructed of horizontal boards nailed with wire nails to vertical supports, this structure has mostly collapsed. The roof is of corrugated metal. Shelving appears around the inside walls of the structure, which has fixed windows on the south and east walls and a door in the west wall. The structure is wired for electricity and a laundry appliance was found inside. A

collapsed wooden structure with metal rain gutters is located about 20 feet to the south. Barbed wire extends along the eastern side of the main structure of F3, and wood posts are evident at two of the corners. It appears this feature was fenced in at one time.

Cattle chute (F4)–This structure, measuring approximately 4 feet wide by 4.5 feet long by 5.5 feet tall, is constructed of four large vertical wooden beams bolted to smaller horizontal beams on the top and sides. Two large doors are evident: one to the northwest which is still on its hinges and has large metal bars, and the other to the southeast which is on the ground. It appears this feature led into a fenced compound based on the presence of fences and a gate.

Deep water basins (F5)–There are two basins, both about 2 feet deep and 6.5 feet in diameter. They are made of corrugated metal reinforced with poured concrete containing small boulders and rocks. A metal water pipe connects F5 to F6 and F7. F5 has almost been swallowed up by a large gully, carved out by rainwater runoff, that has extended in its direction.

Workshop (F6)–This is a rectangular, two-room building that measures 8 feet wide by 30 feet long. It is constructed of milled wood, wire nails and corrugated metal. The westerly room has walls of clapboard siding (painted red) and has a flat roof of corrugated metal. Waist-high shelves are evident along the interior walls. The easterly room appears to have been an addition, and consists of a wood-frame with walls of corrugated metal. A workbench, shelving, and a broken cabinet are located inside this room, as well as electrical outlets. A 3.5-foot diameter by 3.8-foot tall rusted water drum is located near the southeast corner of F6.

Animal pens (F7)–Containing several pens, this wooden structure measures approximately 10 feet north-south by 40 feet east-west. It is constructed of milled wood and wire nails, and has a corrugated metal roof. The main structure has vertical wood beams and a roof that extends to the ground. The southerly facade may have been added and is constructed of milled boards and is covered with chicken-wire. At least four separate pens are evident in this structure: the spaces on the westerly half are completely covered with chicken-wire and may have been chicken coops, while the pens in the easterly half are divided by waist-high barriers and may have housed other types of animals, perhaps pigs. This structure has disintegrated badly.

(According to a 1995 report by RMW Paleo Associates, directly associated with F7 to the south was a small A-frame structure measuring 6 feet north-south by 10.5 feet east-west by 3.5 feet tall. It was constructed of milled wood with chicken-wire walls and a sheet-metal roof. It may have been a chicken coop. This structure had completely disappeared by the time of this consultant's visit.)

Animal pen (F8)–Measuring 23 feet east-west by 12 feet north-south, this structure has an associated A-frame coop located directly to the east. The main pen is constructed with 2-by-4 boards and is covered with chicken-wire. A metal water pipe extends from F8 towards the vicinity of the water drum near F6. Much of F8 has now disappeared.

Hutch (F9)–Located on the west side of a north-south running fence, this structure had a water holding tank adjacent to its east side. The fence is constructed of wood and chicken-wire. The hutch is 10 feet north-south by 8 feet east-west and is constructed of milled wood, wire nails, sheet metal, corrugated metal, and chicken-wire. The structure has collapsed. The water holding tank associated with this structure, mentioned in the earlier RMW Paleo report, was constructed of metal and was lined with cemented cobblestones on the outside. The basin was 6 feet in diameter with a pipe extending northwards to the tank. The tank is now at the bottom of a gully that has extended into the area.

Barn (F10)–This structure, now completely collapsed, measured approximately 40 feet north-south by 45 feet east-west. It was constructed of horizontal wood boards and wire nails and had a corrugated metal roof supported by 1-by-3 wood boards. The barn had a front-facing gable roof. The foundation consisted of poured concrete. A door was positioned in the southwest corner. A fence constructed of milled wood extended around the south and west sides of the barn. Two gates were placed on the south side.

Ranch-house (F11)–The house is basically square, measuring 31 feet north-south by 26.5 feet east-west. The gabled roof is low-pitched and covered with composition shingles. The open eaves contain exposed rafter-tails. Most of the wall covering has been removed, but intact areas indicate its was clapboard siding, painted green. A total of six wood-framed double-hung windows are evident in the house, but all the glass has disappeared. (However, several metal window frames were found on the ground around the house.) A single door is positioned in the center of the south side of the house, set back about 6 feet to create a raised porch. The porch is approached by a poured-concrete and cobblestone stairway. Along the east wall of the house is a cobblestone and cement fireplace. The foundation of the house consists of a thin layer of cement footings surmounted by 1.5 foot tall posts. Pipes running along the outside of the easterly wall indicate the house had running water. In addition, there is a circular cement water-holding cistern on the north side of the house. Several ceramic insulators and knob-and-tube components located on the rafter-tails are evidence that the house was wired for electricity as well. A door on the north side of the house leads to two later additions: a pantry on the westerly end and a bathroom on the easterly end. These additions, located at the northwest corner of the house, both extend 11 feet north-south and about 13 feet east-west. Another door on the easterly end of the north wall leads to a back porch. The pantry in the northwestern portion of the house has shelves and is separated from the main house by another room leading into it. The walls of the bathroom addition are constructed of plaster over chicken-wire, unlike the other walls of the house which are clapboard. Located adjacent to the pantry, it can be accessed only through a door on the north side of the house. It has a window on its east wall. A fence and retaining wall extend around the western and southern sides of the house. The wall is constructed of cement and cobblestone, while the fence consists of steel rods, chicken-wire, and wooden stakes. Eucalyptus and pepper trees shade the house.

Animal pen (F12)–This rectangular structure measures 7 feet north-south by 5.5 feet east-west and is about 10 feet south of the house. It is constructed of 3.5-inch-square wood posts with chicken-wire wrapped around them and has a corrugated metal roof. The entrance is narrow and

is located in the southwest corner. A cracked and faded piece of rubber is located above the entrance and could have served as a name plate, which might mean this enclosure was meant for a pet

Shed (F13)–This structure has totally collapsed, so that its original use can only be speculated. Four cement pillars are evident, spaced 11 feet from each other. The structure was built of horizontal boards with vertical supports and wire nails. The roof was made of wood and corrugated metal. It was built adjacent to an asphalt road, although the angle of the road and the steepness of the slope would have made access difficult.

Garage (F14)–This structure has also collapsed, but its use appears to have been as a garage. U-shaped and constructed of wood, it was about 20 feet square. It was constructed of vertical boarding with two horizontal braces and wire nails. It may have had a corrugated metal roof.

Adjacent to F14 on the north side is an animal hutch. Constructed of wood, it has four pens separated by chicken-wire. The hutch is approximately 12 feet east-west by 3 feet north-south. Some other similarly constructed hutches are scattered around the general vicinity. Approximately 7 feet west of F14 is a set of chicken coops suspended in the air by a steel frame with wood boards extending across the top. A grape arbor runs along the westerly roof. There are 32 individual pens on the south side and 24 pens on the north side.

Photographs of these historic resources can be found in Appendix 6 and on the DPR form following Appendix 6.

III. The Historic Context

As discussed in Appendix 1, in order to assess previously recorded and as yet unevaluated cultural resources, a historic context must be developed, revolving around a theme, place, and time. Then, it is possible to evaluate and study the identified cultural resources within the research framework of the historic context.

Before the arrival of the Europeans, the area around the project site was settled by two prehistoric cultures: the "Juaneno" and the "Gabrielino". The former term is given to those people who would later come under the control of the Mission San Juan Capistrano and the latter term refers to those who were later controlled by the Mission San Gabriel. These names were imposed by later settlers, and we do not know by what names the native tribes identified themselves. Both cultures were eventually wiped out by European settlement and disease.

The first Europeans to enter the area were Gaspar de Portola and an overland expedition he was leading under the Spanish flag from San Diego to Monterey in 1769. He named several local sites, including "Trabuco" which means "blunderbuss"--the place where one of his party's weapons was lost. Mission San Juan Capistrano was established in 1775, becoming operational in 1776. An earlier site further inland in San Juan Canyon was abandoned, but the name "Mission

Viejo" given to the surrounding lands did survive. During the mission period, up to 14,000 cattle and 16,000 sheep grazed on the Mission San Juan Capistrano's lands in the Trabuco and Mission Viejo areas.

After Mexico won its independence from Spain in 1821, mission lands were secularized and huge estates, or ranchos, were granted by the Mexican governor to prominent citizens and soldiers. Among the southern Orange County ranchos closest to the project site were: Rancho Canada de los Alisos (10,668 acres); Rancho Trabuco (22,184 acres); Rancho Mission Viejo (also known as La Paz--47,452 acres); and Rancho Los Potrero los Pinos (1,167 acres). Rancho Canada de los Alisos ("the glen of the alders") was granted to Jose Serrano in 1842. Supplemented by a later grant in 1846, the property eventually became known as the Whiting Ranch in the 1880s. John Forster, an English trader and brother-in-law of governor Pio Pico, eventually gained ownership of the other three ranchos. With the end of the Mexican War and the subsequent "invasion" of the Americans in 1848, Forster also fell heir to Pico's huge rancho to the south of Mission Viejo, called Santa Margarita y Las Flores. (The strip of "independent" land between Rancho Trabuco and Rancho Mission Viejo, which includes the subject property, was made available to homesteaders as early as 1880.)

Forster's family was not able to afford the expense of maintaining over 200,000 acres (all known as Rancho Santa Margarita at that time). Upon his death, his sons sold the huge landholding to Richard O'Neill, an Irish cattleman in partnership with a well-known San Francisco financier, James C. Flood. O'Neill improved the Rancho's cattle and sheep stock (the latter tended by Basque shepherds), covered the Trabuco Mesa with wheat fields, invested in mining activities, and even developed a tourist resort at San Juan Hot Springs. The building of the Santa Fe Railway through the Rancho in 1888 improved the marketability of the Rancho's many products. By the late 1920s, the O'Neill family controlled an agricultural empire of 230,000 acres which included vast tracts of sugar beets and 15,000 head of cattle.

In 1940, the Rancho Santa Margarita was divided at the San Diego County line, the property to the south reverting to the Flood family, and a year later purchased by the U.S. Navy for what is still known as Camp Pendleton. The O'Neill family retained ownership of the Orange County part of the old ranch, which they renamed Mission Viejo. The land remained in agricultural use until the mid-1960s, when the planned 10,000-acre community of Mission Viejo was developed, in response to the growing need for housing in southern Orange County. Since that time, development has been steadily progressing over lands still largely controlled by the O'Neill family. The planned development of 5,000 acres on Trabuco Mesa, or Plano Trabuco, resurrected the old Rancho Santa Margarita name in 1985. Mission Viejo and Rancho Santa Margarita are now the urbanized sectors closest to the project site, the latter having already reached a population of 20,000 by 1993. Areas inland of the Mesa retain their rural appearance, with cattle-raising still a major activity.

Lands of steep terrain, such as those of the project site, were often not included in the original Spanish land-grants, but were kept for common grazing by the nearby ranchos. (The current intersection of Live Oak Canyon Road, Santiago Canyon Road (also known historically as the

"Modjeska Grade"), and El Toro Road is only about 1,000 feet east of the boundary of the Rancho Canada de los Alisos and about a mile north of the boundary of Rancho Trabuco.) The first Anglo resident of Live Oak Canyon (which had been called Black Oak Canyon by the Mexicans, and the Harris Grade by early settlers) was Henry Pankey, a beekeeper who, in 1873, settled about one mile in from Cook's Corner. Within six years, a tiny village had sprung up around what is now Trabuco Oaks. Among these early settlers was A. S. Hamilton for whom a still-extant truck trail is named. He later became a liveryman in the City of Orange. The discovery of a lode of tin in 1877 helped to attract more residents to the Canyon, although the mine was never successful. Trabuco got its first permanent schoolhouse in 1888 which also served as church, social hall and post office. Histories of the area describe most of the first residences as "cabins".

Drawn by the beauty and isolation of the area and the availability of cheap government land, settlers of Live Oak, Santiago, and Trabuco Canyons tended to be an assortment of miners, beekeepers, homesteaders and stock farmers. Almost every ranch, no matter its size, would have a few head of cattle and several horses. The major agricultural products were barley and oat hay. Settlers were also attracted by a plentiful supply of game, including quail, deer, doves, and rabbits. Trout abounded in Trabuco Creek as well. Deer, mountain lions, and grizzly bears (doubtless attracted by the many apiaries in the canyons) were also prevalent. Until the 1920s, Live Oak Canyon served as the main route of grain wagons hauling wheat from Trabuco Mesa to the railroad spur at El Toro. (Later, the Mesa would revert to cattle grazing.) In 1930, the Trabuco Oaks subdivision was created, but was not a financial success, largely due to the Great Depression. In 1938, the canyons got a permanent post office. The O'Neill family donated land for O'Neill Park in 1948, assuring that much of Live Oak Canyon would remain as open space. Cook's Corner has occupied the triangle of land between Live Oak Canyon and Santiago Canyon Roads since the 1930s and became an important social center for the entire rural area around it.

Terry Stephenson described Trabuco Canyon as follows in 1948 (a description that could also apply in some measure to the other nearby canyons, such as Live Oak and Santiago):

> ...beautiful every foot of the way from San Juan Capistrano, where the creek joins the San Juan, along its foothills to the western edge of the Santiago ridge; beautiful as it curves around the ridge, entering the Narrows where the steep broken sides of the canyon are covered with live oaks; beautiful at the old tin mines and public camp grounds at the forks, where Holy Jim canyon reaches upward to the summit of Santiago peak; beautiful as the road grows more difficult, passing over loose rock in the creek bottom; beautiful for its views of the higher brushy mountains, for its clumps of oaks, for its alder-lined stream, for its sycamores, its flowers and its sage, so much a part of landscapes familiar to those who know open places of California. (p. 145)

Theme of the Historic Context: Agriculture, 1920- , Trabuco Canyon

Resource Attribute: Farm/ranch

IV. Evaluation of the Historic Significance of the Resources

(Please see Appendix 2 for a background discussion on the evaluation phase.)

Using the criteria of the National Register of Historic Places, the consultant must determine the significance of identified resources on the project site.

Within the broad historic context of local Orange County history, the Hausauer ranch is of no appreciable significance. Other, more intact, family cattle ranches can still be found in the area.

Summary of Significance:

As a site: of no local significance under criterion A (patterns of settlement) and B (significant persons).

Integrity: Poor. The property was apparently abandoned by 1980 and the improvements have either been vandalized or have fallen victim to the elements. Over the last few years, a large gully has formed which has swallowed up several of the ranch's outbuildings.

Evaluation code: 6Z (Found ineligible for listing in the National Register)

V. Findings of Effect and Recommended Mitigation Measures

(Please see Appendix 3 for a background discussion on this phase of the process.)

If the consultant finds that a proposed project will have an adverse effect on any significant resource situated on the project site, he must assess the extent of the effect and recommend possible mitigation measures which could range from "No Project" to documentation before demolition.

Findings Of Effect: The proposed project will remove all the historic resources now on the site, and so will definitely have an adverse effect on them.

Recommended Mitigation Measures: In view of the site's ineligibility for the National Register, no mitigation measures need be considered.

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Appendix 1

Identification of Existing Resources and Their Historic Context (Background)

Federal guidelines require that the first step in the review process should be the identification of cultural resources (i.e., historic properties). Various levels of preliminary archival research and on-site survey investigations for cultural resources can be applied during this step. This evaluator normally chooses a mid-range level of archival research in order to facilitate the preparation of the "historic context" and eligibility evaluations for the National Register of Historic Places (NRHP), the next steps in the process.

A research methodology is developed to comply with federal mandates and guidelines for identifying cultural resources, be they in the form of buildings, sites, structures, objects, or contributors to historic districts. A thorough field visit, including the preparation of a written and photographic record, is the best foundation for identifying and later evaluating any cultural resources found on the project site.

Historic research based on a sound methodology is crucial at this stage of the investigation. Architectural history and analysis may be necessary for sites with extant buildings and structures. Physical characteristics such as site structure, content, and integrity are crucial variables in later evaluation of the resource's eligibility for the NRHP.

Architectural components of extant or relic buildings, structures, and/or objects within the project area should be sufficiently preserved to contain data for research and interpretation. Ideally, the original design and subsequent alterations should be identifiable as discrete occupational episodes associated with a temporally defined occupation. Architecture should represent identifiable functional association. Archival materials should be available to reconstruct a partial or complete history of the project area.

The National Park Service (NPS) stipulates that the significance of any historic property should be made within the "historic context" developed for that area (Parker 1985; Interagency Resources Division, Bulletin 16A, 1991). "Historic context" is defined as the sum of information pertaining to an area, organized by theme, place, and time.

The NHRP suggests that "a theme is the equivalent of a research problem, and an historic context is developed by placing the problem in an appropriate setting in both time and space" (Interagency Resources Division, Bulletin 16A, 1991). For instance, a broad historic context might be identified as "Western U.S. Expansion, Mid-19th Through 20th Centuries." A more focused historic context might be "Early to Mid 20th Century Agricultural Development of the (locality)."

A "historic context" is associated with identified cultural resources through the concept of "resource attributes" (called "property types" by the NRHP). These attributes allow geographically diverse historic properties that share physical and associative characteristics to be linked together under a set of commonly agreed-upon descriptive terms and compared as to their relative significance within the historic context. As an example, an appropriate resource attribute for the sites associated with the contexts mentioned above, given the agricultural theme, might be "Farm/Ranch."

Major themes have evolved during the past two decades of cultural resources investigations at various 19th and 20th century sites in southern California. Possible research themes and their associated resource attributes, adapted from the "Areas of Significance" and "Functions and Uses" for eligibility evaluations for the NRHP, are listed on the following page:

EXAMPLES OF POTENTIAL RESEARCH (HISTORIC CONTEXT) THEMES

Agriculture
Architecture
Archaeology: Prehistoric
Aboriginal
Non-aboriginal
Art
Chronology
Commerce/Trade
Communications
Community Planning and Development
Conservation
Defense
Demography
Economics
Education
Engineering
Entertainment/Recreation
Environmental Adaptation
Ethnic Heritage: Asian
Afro-American
European
Hispanic
Native-American
Pacific Islander
Exploration
Funerary
Government
Health/Medicine
Industry/Processing/Extraction
Irrigation
Land Use
Landscape Architecture
Law
Literature
Maritime History
Material Culture
Military
Performing Arts
Philosophy
Politics/Government
Religion
Residential
Science
Settlement Patterns
Social History
Subsistence
Technology
Tourism
Transportation
Other (e.g., Invention)

EXAMPLES OF POTENTIAL ASSOCIATED RESOURCE ATTRIBUTES

Amusement Park
Ancillary Building
Bridge
Canal/Aqueduct
Cemetery
Civic Auditorium
Commercial Building, 1-3 stories
Commercial Building, over 3 stories
Community Center
Dam
Educational Building
Engineering Structure
Ethnic Minority Property
Farm/Ranch
Folk Art
Government Building
Highway/Trail
Hospital
Hotel/Motel
Industrial Building
Lake/River/Reservoir
Landscape Architecture
Lighthouse
Military Property
Mine
Monument/Mural/Gravestone
Multiple Family Property
New Deal Public Works Project
Public Utility Building
Railroad Depot
Religious Building
Rural Open Space
Ship
Single Family Property
Stadium/Sports Arena
Street Furniture
Theater
Train
Trees/Vegetation
Urban Open Space
Women's Property

More than one research theme might be applicable. Further research within and adjacent to the project area could build on these themes and develop them into a historic context that characterizes the cultural development of the entire community.

Many of the research themes are inter-related. The analysis of architectural, archival, and oral history data for one theme will simultaneously address several other themes. For instance, the study of historical material culture (i.e., artifacts) provides a wealth of information concerning subsistence patterns, household composition (e.g., gender, adults, children, infants), socioeconomic status, trade networks and commodity flows (local, regional, national, and international), historical site use and activity, spatial inter-relationships of features and buildings, site evolution, and other themes. The documentary record by itself may not contain sufficient data to provide answers for all the research questions arrived at. Other data generated through architectural, archaeological, oral history and specialized analysis may provide complementary information which will provide answers to these and other research questions.

Research questions pertaining to the themes are developed prior to and during the course of fieldwork. Other research questions arise during the subsequent analysis of the field and historic research data.

A multi-disciplinary approach is used during the identification and historic context phase of the cultural resource investigation project. Archival documents and cartographic sources, oral history interviews, as well as field surveys are all used to locate, define, and provide interpretations for the cultural resources within the project area. Furthermore, this data is combined to reconstruct the most accurate picture of the project area. In turn, the research data is useful in the construction of the historic context and in evaluating the significance of the sites identified within and adjacent to the project area.

Appendix 2

Evaluation of Historic Resources (Background)

Evaluation of sites is the second step in the review process. The first step, "Identification", has been accomplished through research, development of an historic context, and a field survey of cultural resources within the project area. In making an evaluation of a resource's significance, the consultant refers to National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation.

A cultural resource's significance must be established before project impacts to the resource can be assessed. All data gained from the field survey, architectural analysis, research, and historic context will be assembled and interpreted with respect to each site. In turn, the multi-disciplinary data will be used to evaluate the individual site's potential eligibility for the NRHP.

In order to accomplish this, evaluative investigations must begin at the sites themselves. Field investigations should document cultural features, site boundaries, and the nature and association of site features within each lot or property of the project area. The integrity of the cultural resource (i.e., its state of intactness and the extent of alteration from its original appearance either deliberately made or the result of deterioration over time) must also be addressed. Such changes will then be documented by historic research and, where applicable, architectural research. (It should be noted that while interior modifications of a historic property may affect its integrity, in most cases exterior integrity is considered the foremost determinant of whether a property still retains enough of its original significance.)

During the evaluation phase of the investigations, the resources are assessed and evaluated for their potential to address and exemplify important historic themes. The intent of the evaluation is to assess the presence/absence of data that is needed to answer research questions. A site that has lost substantial integrity through deterioration or alteration may thereby have lost much of its significance. If similar, more intact, sites have been identified in close proximity to the subject site, the site may be considered of lesser value than if it is the only such site found locally, and therefore unique, even if of poor integrity.

Criteria for Evaluating the Significance of Historical Resources

National Register Bulletin 15 states that the "quality of significance...is present in sites that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, region, or method of construction, or that represent the work of a master, or that possess high artistic

values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history."

Thus, Criterion A is usually associated with "events," Criterion B is associated with "persons," Criterion C is associated with "design/construction," and Criterion D is associated with "information potential." Some historical archaeological sites may be evaluated for eligibility under Criteria A, B, and/or C, but most are evaluated under Criterion D.

Criterion A. Events. Properties are considered important if they are associated with significant events. Association through the historic context has to be demonstrated. Providing evidence of direct association of the events with the historic property is necessary. Properties can also be considered important if they are the best examples of the result of historic settlement patterns ("event," in this case, being rather broadly defined).

Criterion B. Person. "Persons significant in our past" refers to individuals whose activities are demonstrably important within a national, state, or local context. Correlation of an individual within the framework of the historic context is crucial. Also, his/her ties with a specific property and/or an event is important.

Criterion C. Design/Construction. Resources represented by extant architecture are evaluated under this criterion. Elements that are important under Criterion C include distinctive characteristics of a type, period, or method of construction, or the work of a master, possessing high artistic value. Integrity of the property is an especially important factor under this criterion.

Criterion D. In order to qualify for eligibility for the NRHP under this criterion, the archaeological site (i.e., historic property) has to meet two conditions: 1) the site must have yielded or be likely to yield information such as archaeological data or historic data that will have potential to answer research questions; and 2) the yielded information must be important with respect to historical archaeology and other related historic preservation fields.

Related Criteria--Generally, a historic property, to be considered eligible, should be of a certain age, not be a reconstruction, and have never been moved from its original location. Federal guidelines have traditionally prescribed a 50-year age for cultural resources evaluated for eligibility for the NRHP (36 CFR 60.4); however, a 45-year age threshold is becoming increasingly acceptable due to delays in project implementation which can often stretch five years or more beyond the evaluation date. The California State Office of Historic Preservation has stated that, minimally, a site "must be at least 45 years of age" (1989:3). However, the National Park Service and the State Office of Historic Preservation do recognize special sites that have achieved significance even though they may be less than 45 years old, have been reconstructed, or have been relocated (Sherfey and Luce 1979; Interagency Resources Division 1987).

The NRHP has developed a chart of seven numerical evaluation codes for pinpointing the status of a historic resource. These are to be entered onto the DPR 523 forms.

1 Listed in the NRHP
2 Determined eligible for the NRHP in a formal process involving federal or state agencies
3 Appears eligible for listing in the NRHP in the judgment of the professional evaluator
4 Might become eligible for listing in the NRHP when certain conditions are met
5 Not eligible for the NRHP but may be significant at the local level
6 None of the above
7 Undetermined

These numerical codes can be further sub-classified by adding a letter code. Among the most commonly used letter codes are:

S Resource is separately listed in the NRHP
D Resource is included as a contributor to a NHRP-listed district
B Both S and D above
M Resource may become eligible as a contributor to a NRHP-listed district when more documentation is found or restoration work performed

Refinements may be made to these alphanumeric codes by adding still more letters and/or digits to cover all categories of actual or potential National Register eligibility. These finer divisions are not listed here in view of space limitations.

Appendix 3

Findings of Effect and Recommended Mitigation Measures (Background)

Based on the eligibility evaluations for the NRHP, a findings of effect (i.e., "no effect", "no adverse effect", or "adverse effect") will be prepared for any sites eligible for the NRHP within the project area. This is the third step of the review process. Sites that will not be adversely affected by the proposed project will be preserved in place and "no effect" or "no adverse effect" will occur. Sites that cannot be preserved in-situ within the project area will suffer adverse effects by the proposed project and will require treatment or data recovery to mitigate the loss of that site data. Recommendations for treatment and data recovery are to be proposed for each project. A report containing all germane information relevant to the study is to be prepared and submitted to the lead agency. (In a case where a local historic preservation ordinance has not been enacted, the evaluation report is designed to be of sufficient comprehension, in terms of the identification, evaluation, and treatment of cultural resources, to be of value in the context of any future ordinance the locality may enact within its jurisdiction.)

A significant impact is that which eliminates the resource or alters the characteristics that made the property eligible for the NRHP. Impacts can sometimes be mitigated by utilizing the Secretary of the Interior's Standards for Rehabilitation.

A project area represents the Area of Potential Effect (APE). As a result of a proposed project, the APE will undergo direct and/or indirect changes with impact on cultural resources that may have been evaluated as eligible or potentially eligible for the NRHP.

The evaluator must determine whether the demolition or alteration of existing architectural, landscape, and/or archaeological features constitute an effect on any significant cultural resources within the project area. If there is an effect, the evaluator must decide whether the effect is adverse or not adverse.

Federal, state, and local historic preservation procedures for assessing effects and mitigation of adverse effects from a proposed project on cultural resources eligible for the NRHP call for prudent and feasible alternatives. Planned construction, usually an adverse effect, may not always permit in-situ preservation of the historic cultural resources within and directly adjacent to the project area. Therefore, project alternatives or mitigation measures must be proposed to preserve and/or document the significant cultural resources that will be destroyed by a project.

Project Alternatives or Mitigation Measures

Among the alternatives or mitigation measures which can be considered for a significant site are:

1. No Project (no construction of the planned development); or

2. Mitigation of the Project's Effect on the Cultural Resources by:

2a. Adaptive reuse of the historic resource(s) within the project. Such reuse of building facades and architectural features has become an innovative and highly successful means of mitigating impacts on historic buildings in numerous cities with historic buildings. The facades should be restored in conformance with the Secretary of the Interior's Standards. Adaptive reuse may also involve the construction of new buildings, sometimes as in-fill between existing historic structures. Guidelines for the design of new buildings should include such concerns as architectural style, materials, height, setbacks, colors, textures, street-scape patterns, matching of the existing overall rhythm of new development to the surrounding area, structural detailing, signage, and exterior treatments.

Various incentives exist for the adoption of this mitigation measure, such as use of the State Historical Building Code (Health and Safety Section 18950, et seq.) instead of the Uniform Building Code; and financial incentives such as local property tax relief through the Mills Act (Revenue and Taxation Code Sections 439 et seq.), the Marks Historical Rehabilitation Act, and federal investment tax credits for the rehabilitation of income-producing property. Other incentives such as facade easements or low-interest construction loans may also be available through the local jurisdictions.

2b. Relocation of the resource(s). This mitigation is a problematical one. The majority of historic buildings will lose their significance when removed from their original setting or context. Relocation is usually preferable to demolition from the purely historic preservation standpoint, but the National Register will rarely maintain a relocated structure's listing and then only if it meets rigid criteria, such as prior application, re-creation of the original setting at the new site, and the retention of the structure's original compass orientation. Buildings that are significant under Criterion C are the most likely to retain significance after moving.

2c. HABS-level architectural documentation. The Historic American Building Survey is a program of the National Park Service that documents historic resources in great detail. It requires measured drawings, intensive historical research, large format photographs, and prescribed procedures for transmission and archival preservation. Published guides to HABS are available from the National Park Service.

2d. Less thorough architectural documentation. This normally includes complete photographic documentation of the site and a detailed historical report. This permanent record shall include a history of the site, documentation of the building itself, adjacent structures, and street-scapes. The record should be made publicly accessible by placing it in the care of a local historical society, academic institution, or public library.

APPENDIX 4

Maps

RMW Paleo Associates

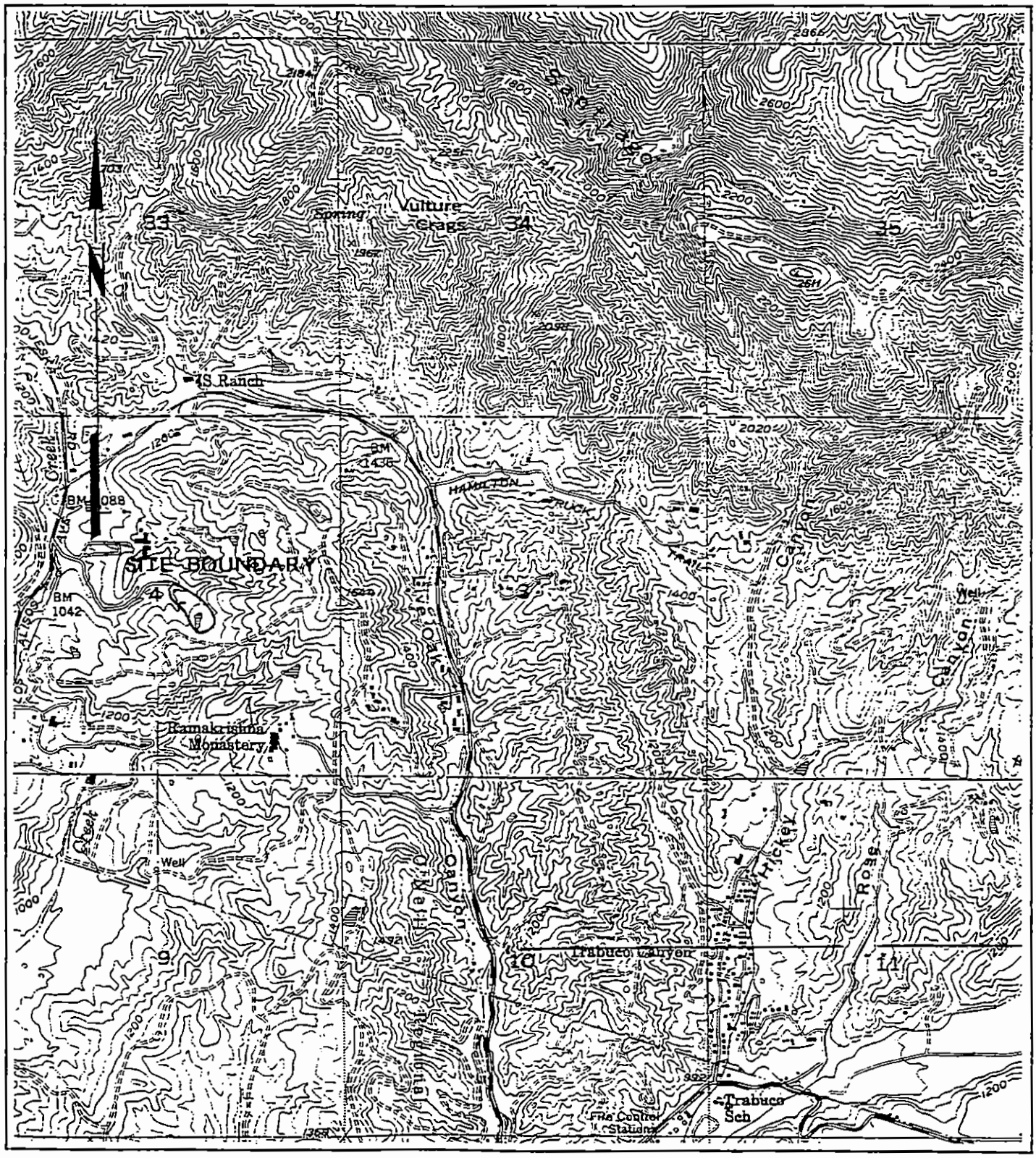
Permanent Trinomial: CA-Ora-1435H **Supplement [ ]**

ARCHAEOLOGICAL SITE LOCATION MAP

Other Designations: SM-2

Page 7 **of** 9

Common Name:



RMW Paleo Associates

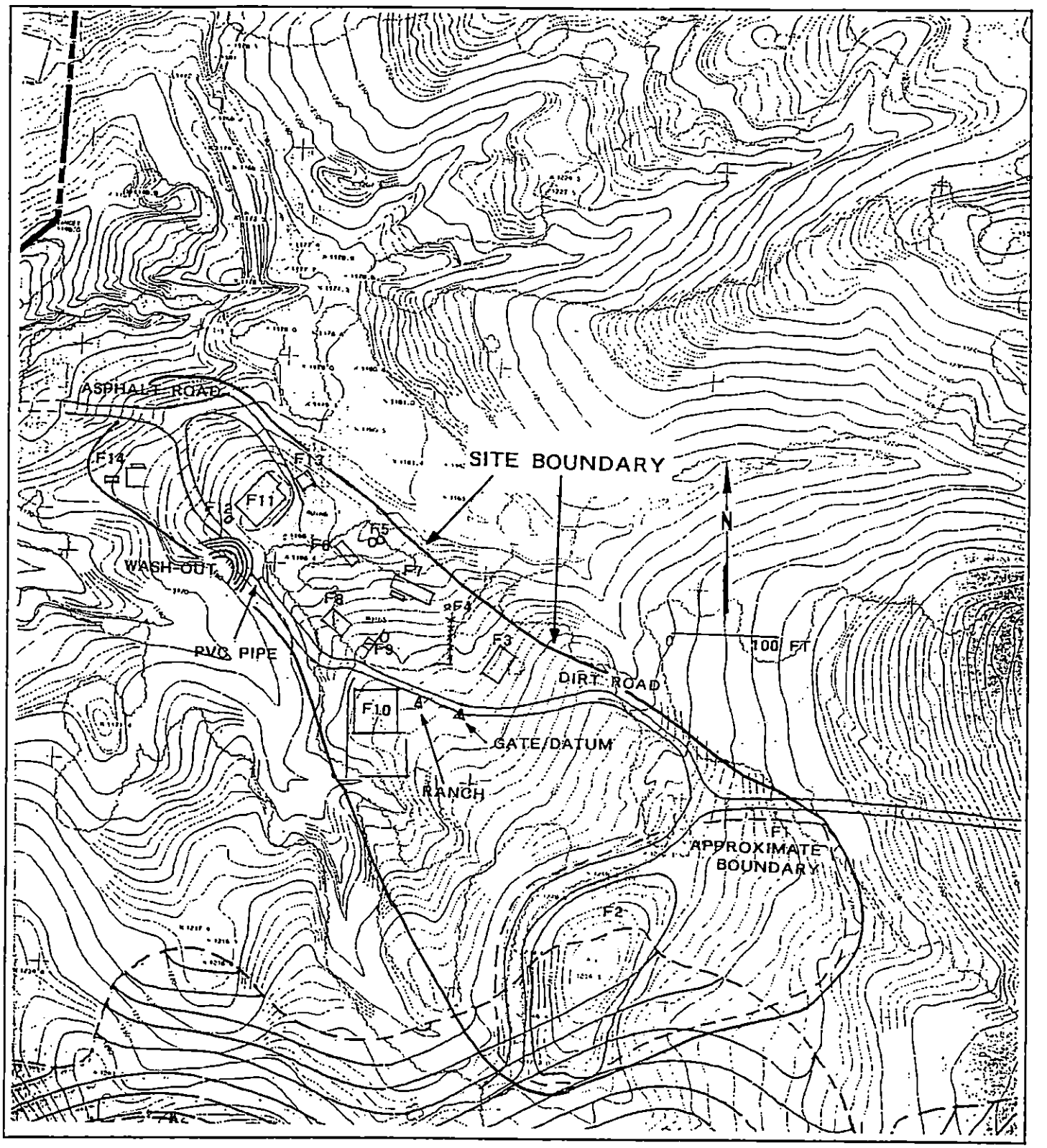
ARCHAEOLOGICAL SITE MAP

Page 6 of 9

Permanent Trinomial: CA-Ora-1435H Supplement [ ]

Other Designations: SM-2

Common Name:



APPENDIX 5

Newsclipping

ARTHUR HAUSAUER

HAUSAUER, ARTHUR, age 71, 19356 El Toro Road, El Toro, California. Passed away April 2, 1964. Survived by his wife, Edna May Hausauer of the home. One son, Arthur Fred Hausauer of El Toro; three steps-sons, Allen Breedlove of Medford, Oregon, Edward Breedlove and LeRoy Breedlove both of Los Angeles. One step-daughter, Lola Ustariz of Riverside and 13 grandchildren also survive Mr. Hausauer come to Santa Ana in 1905 and moved to El Toro 35 years ago. He was a member of Santa Ana Elks Lodge No. 794. Funeral services will be conducted in BROWN COLONIAL CHAPEL at 1:30 p.m. Monday afternoon. Interment will follow in El Toro District Cemetery.

Santa Ana Register
April 3, 1964; p. C18

APPENDIX 6

Photographs

LIST OF PHOTOGRAPHS ON FOLLOWING PAGES:
(Also consult photograph attached to DPR 523 form)

1 Overall view of site, looking east northeast--olive grove (F1) on the right

2 Overall view of site, looking north northeast--ranch-house (F11) hidden in trees

3 Holding pond (F2), southwest corner, looking northeast

4 Holding pond (F2), southeast corner, looking west northwest

5 Holding pond (F2), southeast corner, looking north northwest

6 Olive grove (F1), north end, looking southeast

7 Olive grove (F1), north end, looking south

8 Laundry (F3), looking southwest

9 Cattle chute (F4), looking southeast

10 Barn (F10), looking southwest

11 Barn (F10), looking northwest

12 Hutch (F9), looking southeast

13 Animal pen (F8), looking northwest

14 Animal pens (F7), looking southeast

15 Deep water basins (F5), looking south

16 Water drum southwest of Workshop (F6), looking southeast

17 Workshop (F6), looking southeast

18 Ranch-house (F11), northeast corner, looking south southwest

19 Ranch-house (F11), northeast corner, looking west southwest

20 Ranch-house (F11), northwest corner, looking southeast

21 Ranch-house (F11), interior, looking northeast

22 Ranch-house (F11), interior including fireplace, looking southeast

23 Ranch-house (F11), southwest corner, looking north northeast

24 Ranch-house (F11), southwest corner, looking east northeast

25 Ranch-house (F11), southeast corner, looking north northwest

26 Ranch-house (F11), southeast corner, looking west northwest

27 Shed (F13), looking east

28 Cobblestone retaining wall just northwest of animal pen (F12)

29 Animal pen (F12), looking southeast

30 Garage (F14), looking north

31 Garage (F14), looking west

32 Garage (F14), looking northwest

1

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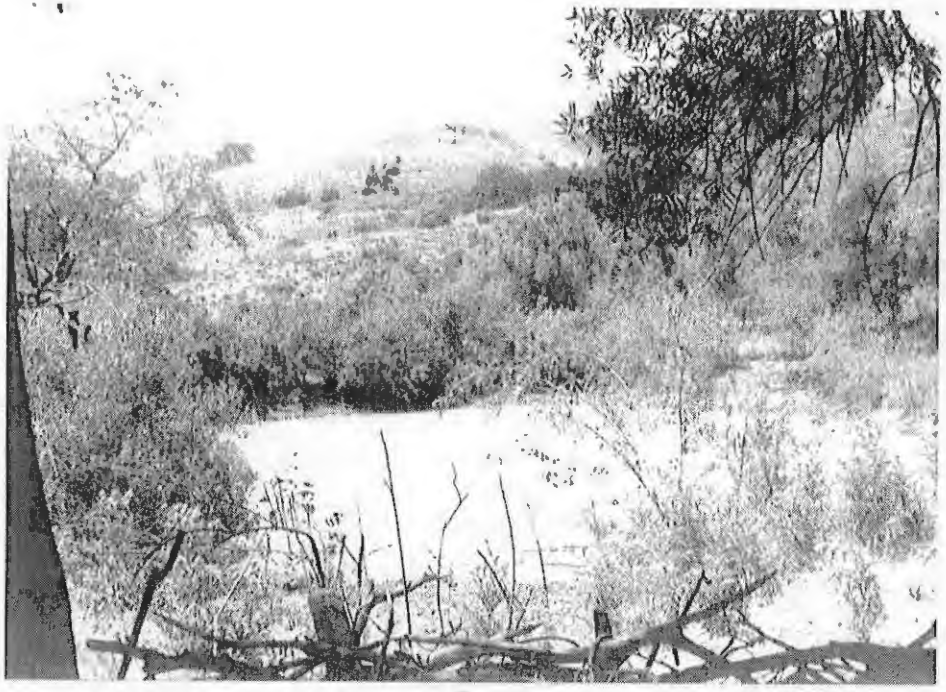

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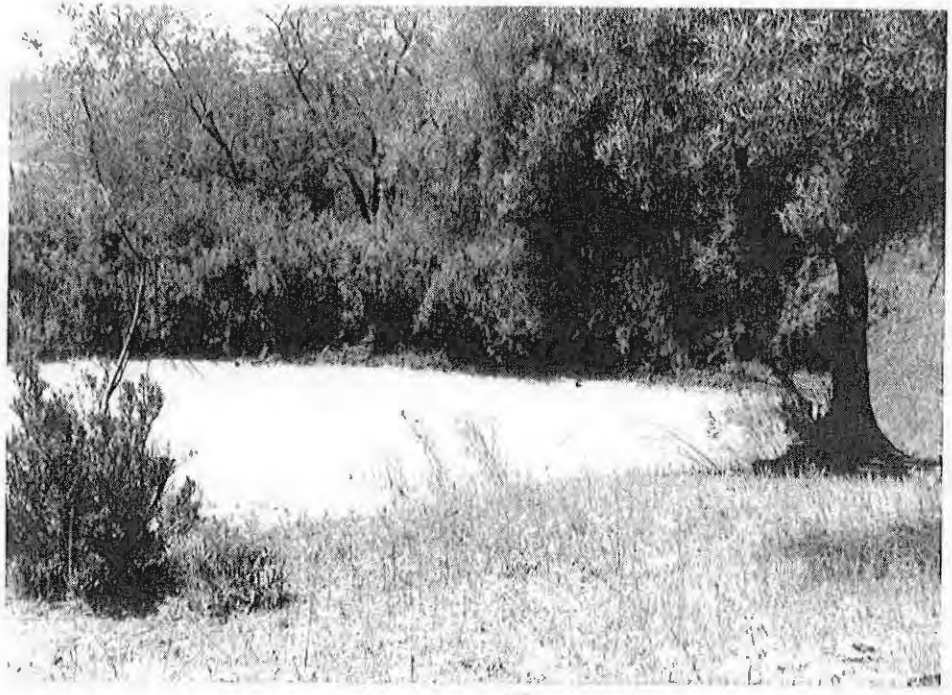

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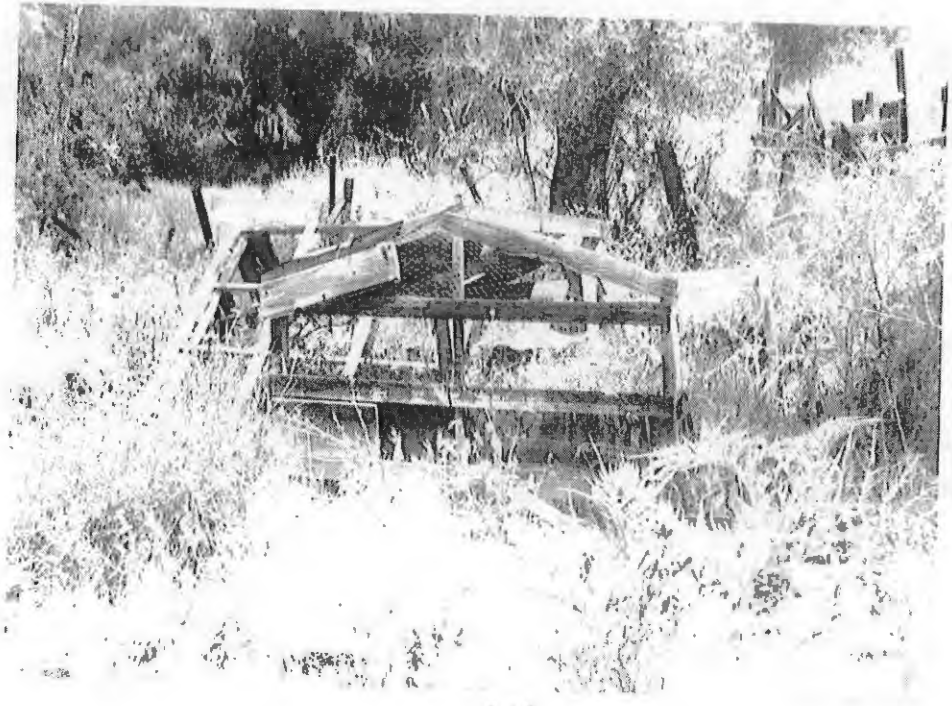

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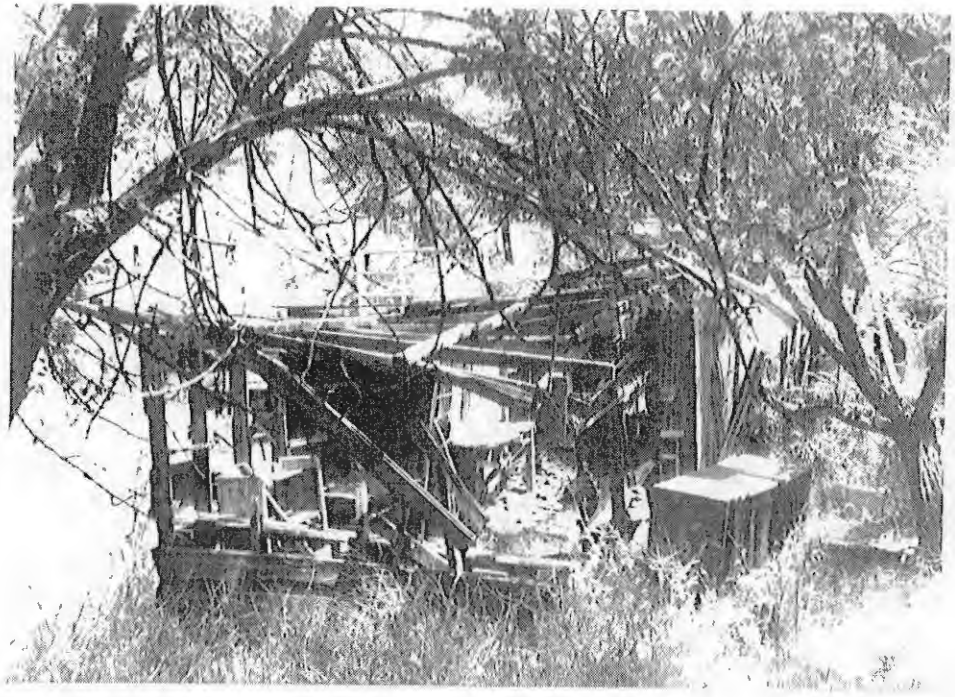

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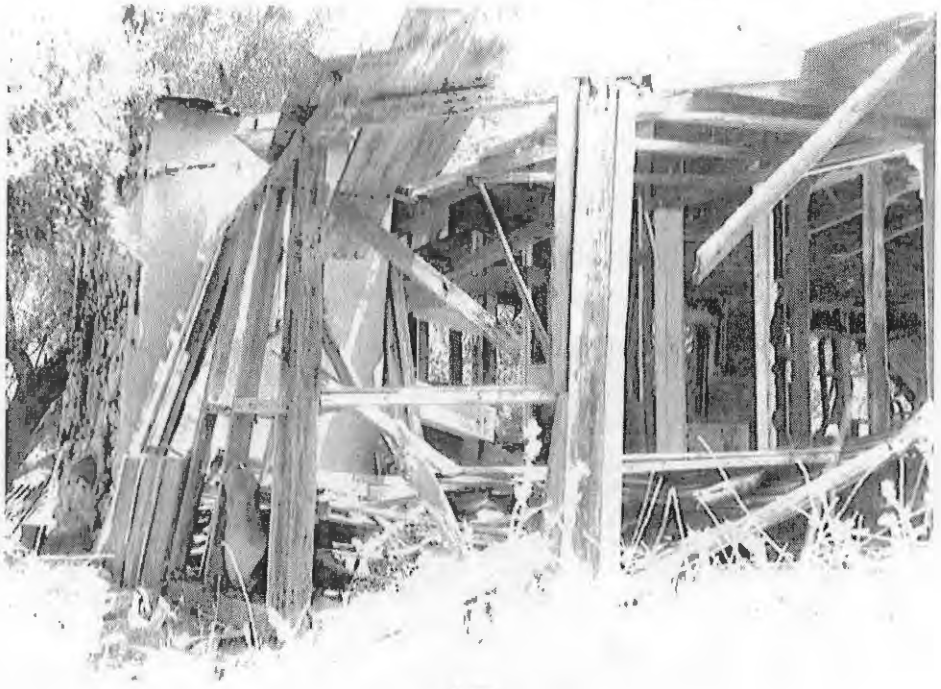

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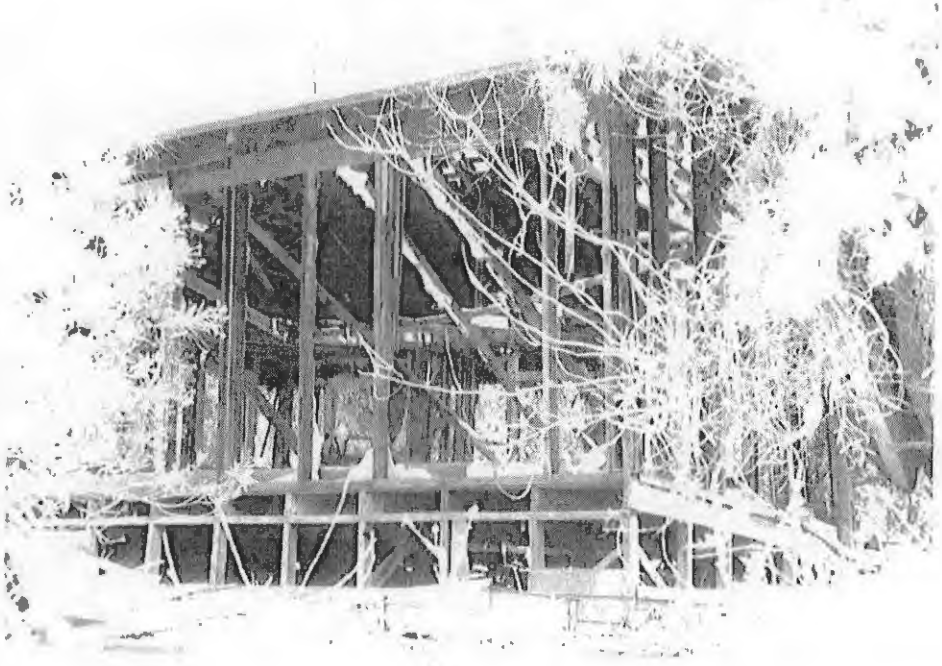

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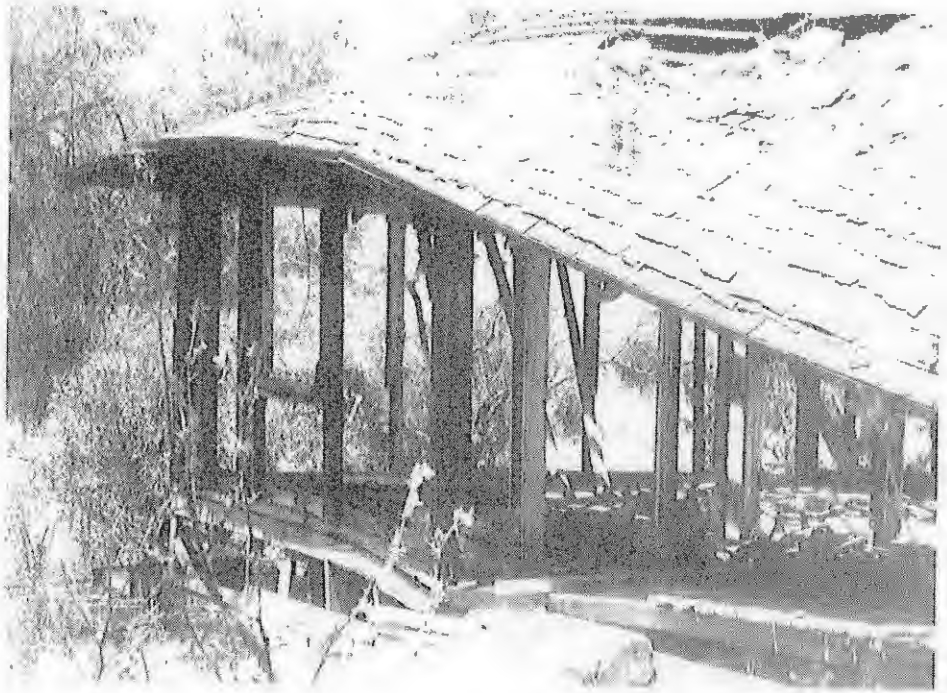

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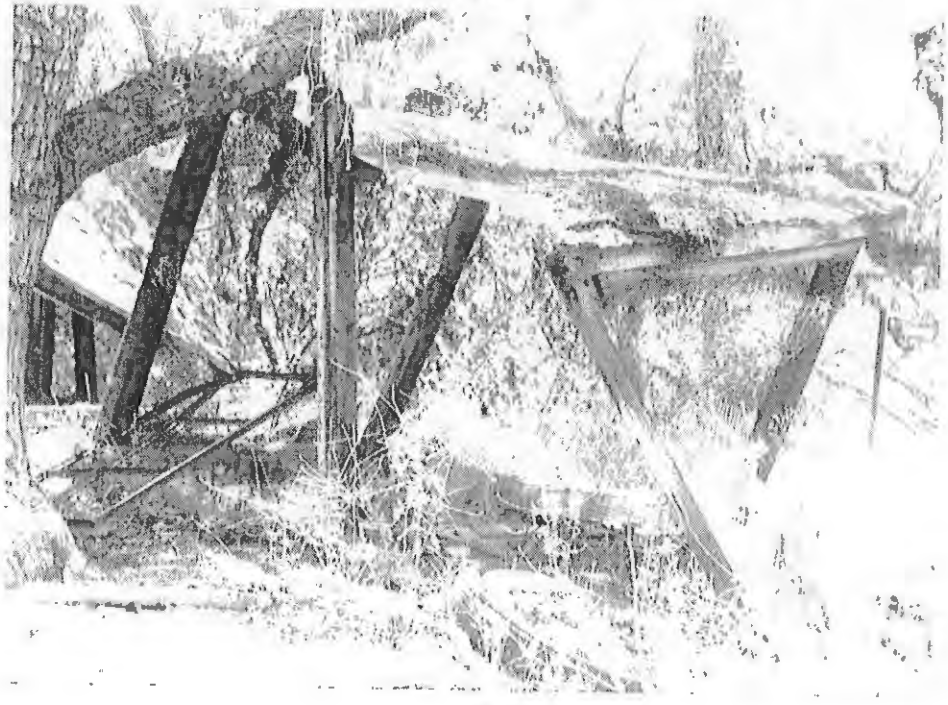

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DPR 523 FORM

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 6Z
Other Listings
Review Code Reviewer Date

Page 1 of 8 **Resource Name or #:** (Assigned by recorder) *Hausauer Ranch*

P1. Other Identifier: *Saddleback Meadows*

P2. Location: ☐ Not for Publication ☒ Unrestricted **a. County** *Orange*

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad *Santiago Peak* **Date** *1954; rev.* **T** *6S* ; **R** *7W* ; *SW* **1/4 of** *SW* **1/4 of Sec** *4* ;

c. Address: *19356* *El Toro Road* City Zip

d. UTM: (Give more than one for large and/linear resources) *11* ; *443090* mE/ *3726480* mN

e. Other Locational Data (Enter Parcel #, legal description, directions to resource, elevation, etc., as appropriate)

Parcel No. *856-091-06*

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The historical resources on the site consist of a ranch-house and a number of out-buildings and agricultural structures and features All the resources have long been abandoned and are in bad shape, having lost most of their integrity.

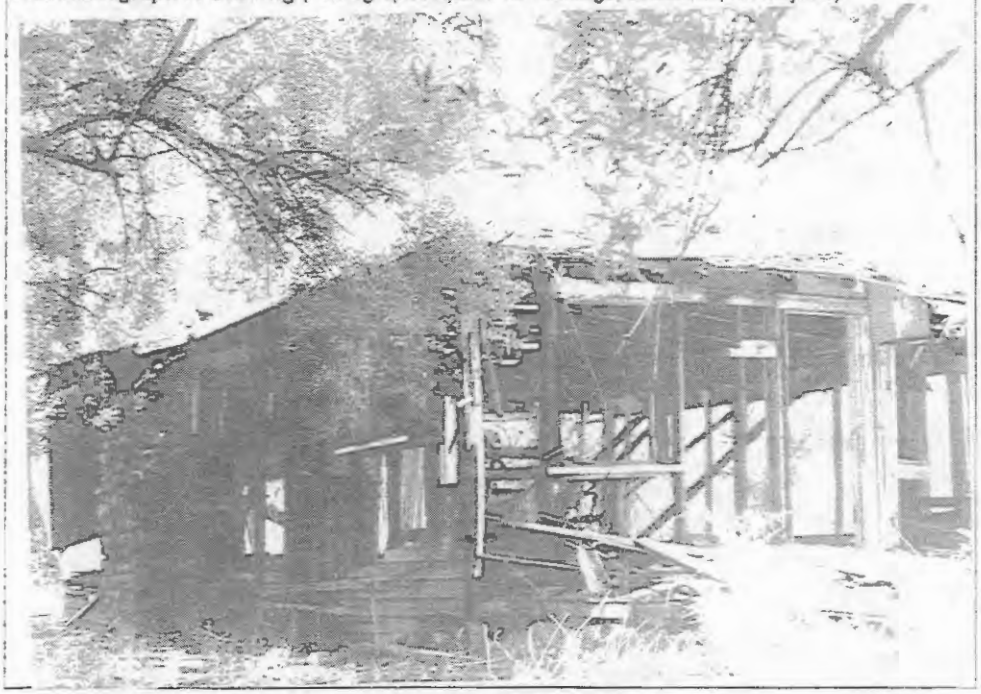
The site is located approximately .1 mile south of the intersection of El Toro Road and Live Oak Canyon Road and approximately .4 mile east of El Toro Road. It stretches in a southeasterly direction for approximately 1,700 feet and varies between 250 and 800 feet in width. (Note: the codes following the names of the resources listed below refer to the appended map. The resources are listed as they were discovered, moving generally in a northwesterly direction.)

Olive grove (F1)–Located at the scutheasterly end of the property, the grove consists of approximately one hundred trees. Extending to the east, south and west of the holding pond (F2), its most dense growth is towards the east. (see continuation sheet)

P3b. Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch*

P4. Resources Present ☒ Building ☒ Structure ☒ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P5b. Description of Photo: (View, date, accession #)
Ranch-house (F11), southeast corner (View towar northwest). Photo No: 800-11, 5/25/1

P6. Date Constructed/Age and Sources:
☐ Prehistoric ☒ Historic ☐ Both
1929--South Orange County directories

P7. Owner and Address
California Quartet
595 Market Street, #2400
San Francisco, CA

P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer, 400 East Califonria Blvd. #3, Pasadena, CA 91106

P9. Date Recorded: *8/13/2001*

P10. Survey Type: (Describe)
Project-oriented

P11. Report Citation: (Cite survey report and other sources, or enter "none")

Attachments ☐ NONE ☒ Continuation Sheet ☐ District Record ☐ Rock Art Record ☐ Other: (List)
☒ Location Map ☒ Building, Structure, and Object Record ☐ Linear Feature Record ☐ Artifact Record
☐ Sketch Map ☐ Archaeological Record ☐ Milling Station Record ☐ Photograph Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary #
HRI #

Page 2 of 8 NRHP Status Code 6Z

Resource Name or #: (Assigned by recorder) *Hausauer Ranch*

B1. Historic Name: *Hausauer Ranch*
B2. Common Name: *Saddleback Meadows*
B3. Original Use: *Farm/ranch* B4. Present Use: *Abandoned*
B5. Architectural Style: *Craftsman/rustic*
B6. Construction History: (Construction date, alterations, and date of alterations)
Built: ca. 1929 (first year of owners' residency at location)

B7. Moved? ☒ No ☐ Yes ☐ Unknown Date: Original Location:
B8. Related Features: *Garage, barn, sheds, fences, animal pens*

B9a. Architect: *Unknown* b. Builder: *Unknown*
B10. Significance: Theme: *Agriculture* Area: *Trabuco Canyon*
Period of Significance: *1920-1980* **Property Type:** *Ranch/farm* **Applicable Criteria:** *A, B*
(Discuss importance in terms of historical or architectural context as defined by theme, period and geographic scope. Also address integrity.)

This site is known historically as the Arthur Hausauer family cattle ranch, according to the Saddleback Historical Society. Arthur P. Hausauer was born in South Dakota on June 19, 1890. In 1905 he moved to Santa Ana with his parents Fred and Matilda Hausauer and his sister, also named Matilda. Local directories reveal that by 1915 the family was living at 612 East 6th Street and Arthur was employed in a packing house. Fred Hausauer died in 1919. In 1925, Arthur, by then married to his wife Edna May Hausauer, was working as a foreman. Until 1928, they lived at 825 East 1st Street. In 1929 the Hausauers moved to their ranch in El Toro. Their property was eventually given the address 19356 Los Alisos (later changed to El Toro Road), Trabuco Canyon. Arthur Hausauer died on April 2, 1964 at the age of 73. It appears that Mrs. Hausauer stayed on at the ranch with her son Arthur Fred Hausauer until the late 1970s. By the early 1980s, the ranch was owned by the first in a series of investment and development firms.

Historic Context: Before the arrival of the Europeans, the area around the project site was settled by two prehistoric cultures: the "Juaneno" and the "Gabrielino". The former term is given to those people who would later come under the control of the Mission San Juan Capistrano and the latter term refers to those who were later controlled by the Mission San Gabriel. These names were imposed by later settlers, and we do not know by what names the native tribes identified themselves. Both cultures were eventually wiped out by European settlement and disease. (see continuation sheet)

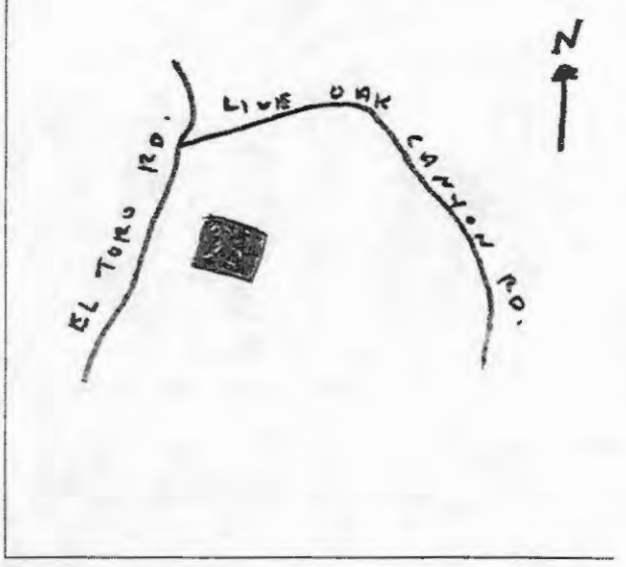
B11. Additional Resource Attributes: (List attributes and codes) *HP33 - Farm/ranch*

B12. References:

Office of the Orange County Recorder
Osterman, Joe. *The Old El Toro Reader: A Guide to the Past*, 1992
RMW Paleo Associates. *Archaeological Site Record*, 1995.
Santa Ana Register, 4/3/1964, p. C18
South Orange County directories, 1908-
Stephenson, Terry E. *The Shadows Of Old Saddleback*, 1948.

B13. Remarks:

(Sketch Map with north arrow required.)



B14. Evaluator: *Tim Gregory*
Date of Evaluation: *8/13/2001*

(This space reserved for official comments.)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 3 of 8 **Resource Name or #:** (Assigned by recorder) Hausauer Ranch
Recorded by: Tim Gregory Date 8/13/2001 ☒ Continuation ☐ Update

P3. Description

Holding pond (F2)–Currently overgrown with algae, the pond measures approximately 400 feet north-south by 100 feet east-west.

Laundry (F3)–This is a small wooden one-room structure that measures 12.5 feet east-west by 10 feet north-south. Constructed of horizontal boards nailed with wire nails to vertical supports, this structure has mostly collapsed. The roof is of corrugated metal. Shelving appears around the inside walls of the structure, which has fixed windows on the south and east walls and a door in the west wall. The structure is wired for electricity and a laundry appliance was found inside. A collapsed wooden structure with metal rain gutters is located about 20 feet to the south. Barbed wire extends along the eastern side of the main structure of F3, and wood posts are evident at two of the corners. It appears this feature was fenced in at one time.

Cattle chute (F4)–This structure, measuring approximately 4 feet wide by 4.5 feet long by 5.5 feet tall, is constructed of four large vertical wooden beams bolted to smaller horizontal beams on the top and sides. Two large doors are evident: one to the northwest which is still on its hinges and has large metal bars, and the other to the southeast which is on the ground. It appears this feature led into a fenced compound based on the presence of fences and a gate.

Deep water basins (F5)–There are two basins, both about 2 feet deep and 6.5 feet in diameter. They are made of corrugated metal reinforced with poured concrete containing small boulders and rocks. A metal water pipe connects F5 to F6 and F7. F5 has almost been swallowed up by a large gully, carved out by rainwater runoff, that has extended in its direction.

Workshop (F6)–This is a rectangular, two-room building that measures 8 feet wide by 30 feet long. It is constructed of milled wood, wire nails and corrugated metal. The westerly room has walls of clapboard siding (painted red) and has a flat roof of corrugated metal. Waist-high shelves are evident along the interior walls. The easterly room appears to have been an addition, and consists of a wood-frame with walls of corrugated metal. A workbench, shelving, and a broken cabinet are located inside this room, as well as electrical outlets. A 3.5-foot diameter by 3.8-foot tall rusted water drum is located near the southeast corner of F6.

Animal pens (F7)–Containing several pens, this wooden structure measures approximately 10 feet north-south by 40 feet east-west. It is constructed of milled wood and wire nails, and has a corrugated metal roof. The main structure has vertical wood beams and a roof that extends to the ground. The southerly facade may have been added and is constructed of milled boards and is covered with chicken-wire. At least four separate pens are evident in this structure: the spaces on the westerly half are completely covered with chicken-wire and may have been chicken coops, while the pens in the easterly half are divided by waist-high barriers and may have housed other types of animals, perhaps pigs. This structure has disintegrated badly.

(According to a 1995 report by RMW Paleo Associates, directly associated with F7 to the south was a small A-frame structure measuring 6 feet north-south by 10.5 feet east-west by 3.5 feet tall. It was constructed of milled wood with chicken-wire walls and a sheet-metal roof. It may have been a chicken coop. This structure had completely disappeared by the time of this consultant's visit.)

Animal pen (F8)–Measuring 23 feet east-west by 12 feet north-south, this structure has an associated A-frame coop located directly to the east. The main pen is constructed with 2-by-4 boards and is covered with chicken-wire. A metal water pipe extends from F8 towards the vicinity of the water drum near F6. Much of F8 has now disappeared.

Hutch (F9)–Located on the west side of a north-south running fence, this structure had a water holding tank adjacent to its east side. The fence is constructed of wood and chicken-wire. The hutch is 10 feet north-south by 8 feet east-west and is constructed of milled wood, wire nails, sheet metal, corrugated metal, and chicken-wire. The structure has collapsed. The water holding tank associated with this structure, mentioned in the earlier RMW Paleo report, was constructed of metal and was lined with cemented cobblestones on the outside. The basin was 6 feet in diameter with a pipe extending northwards to the tank. The tank is now at the bottom of a gully that has extended into the area.

Barn (F10)–This structure, now completely collapsed, measured approximately 40 feet north-south by 45 feet east-west. It was constructed of horizontal wood boards and wire nails and had a corrugated metal roof supported by 1-by-3 wood boards. The barn had a front-facing gable roof. The foundation consisted of poured concrete. A door was positioned in the southwest corner. A fence constructed of milled wood extended around the south and west sides of the barn. Two gates were placed on the south side.
(see continuation sheet)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 4 **of** 8 **Resource Name or #:** (Assigned by recorder) Hausauer Ranch
Recorded by: Tim Gregory **Date** 8/13/2001 ☒ Continuation ☐ Update

P3. Description

Ranch-house (F11)–The house is basically square, measuring 31 feet north-south by 26.5 feet east-west. The gabled roof is low-pitched and covered with composition shingles. The open eaves contain exposed rafter-tails. Most of the wall covering has been removed, but intact areas indicate its was clapboard siding, painted green. A total of six wood-framed double-hung windows are evident in the house, but all the glass has disappeared. (However, several metal window frames were found on the ground around the house.) A single door is positioned in the center of the south side of the house, set back about 6 feet to create a raised porch. The porch is approached by a poured-concrete and cobblestone stairway. Along the east wall of the house is a cobblestone and cement fireplace. The foundation of the house consists of a thin layer of cement footings surmounted by 1.5 foot tall posts. Pipes running along the outside of the easterly wall indicate the house had running water. In addition, there is a circular cement water-holding cistern on the north side of the house. Several ceramic insulators and knob-and-tube components located on the rafter-tails are evidence that the house was wired for electricity as well. A door on the north side of the house leads to two later additions: a pantry on the westerly end and a bathroom on the easterly end. These additions, located at the northwest corner of the house, both extend 11 feet north-south and about 13 feet east-west. Another door on the easterly end of the north wall leads to a back porch. The pantry in the northwestern portion of the house has shelves and is separated from the main house by another room leading into it. The walls of the bathroom addition are constructed of plaster over chicken-wire, unlike the other walls of the house which are clapboard. Located adjacent to the pantry, it can be accessed only through a door on the north side of the house. It has a window on its east wall. A fence and retaining wall extend around the western and southern sides of the house. The wall is constructed of cement and cobblestone, while the fence consists of steel rods, chicken-wire, and wooden stakes. Eucalyptus and pepper trees shade the house.

Animal pen (F12)–This rectangular structure measures 7 feet north-south by 5.5 feet east-west and is about 10 feet south of the house. It is constructed of 3.5-inch-square wood posts with chicken-wire wrapped around them and has a corrugated metal roof. The entrance is narrow and is located in the southwest corner. A cracked and faded piece of rubber is located above the entrance and could have served as a name plate, which might mean this enclosure was meant for a pet

Shed (F13)–This structure has totally collapsed, so that its original use can only be speculated. Four cement pillars are evident, spaced 11 feet from each other. The structure was built of horizontal boards with vertical supports and wire nails. The roof was made of wood and corrugated metal. It was built adjacent to an asphalt road, although the angle of the road and the steepness of the slope would have made access difficult.

Garage (F14)–This structure has also collapsed, but its use appears to have been as a garage. U-shaped and constructed of wood, it was about 20 feet square. It was constructed of vertical boarding with two horizontal braces and wire nails. It may have had a corrugated metal roof.

Adjacent to F14 on the north side is an animal hutch. Constructed of wood, it has four pens separated by chicken-wire. The hutch is approximately 12 feet east-west by 3 feet north-south. Some other similarly constructed hutches are scattered around the general vicinity. Approximately 7 feet west of F14 is a set of chicken coops suspended in the air by a steel frame with wood boards extending across the top. A grape arbor runs along the westerly roof. There are 32 individual pens on the south side and 24 pens on the north side.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 5 of 8 **Resource Name or #:** (Assigned by recorder) Hausauer Ranch
Recorded by: Tim Gregory **Date** 8/13/2001 ☒ Continuation ☐ Update

B10. Significance

The first Europeans to enter the area were Gaspar de Portola and an overland expedition he was leading under the Spanish flag from San Diego to Monterey in 1769. He named several local sites, including "Trabuco" which means "blunderbuss"–the place where one of his party's weapons was lost. Mission San Juan Capistrano was established in 1775, becoming operational in 1776. An earlier site further inland in San Juan Canyon was abandoned, but the name "Mission Viejo" given to the surrounding lands did survive. During the mission period, up to 14,000 cattle and 16,000 sheep grazed on the Mission San Juan Capistrano's lands in the Trabuco and Mission Viejo areas.

After Mexico won its independence from Spain in 1821, mission lands were secularized and huge estates, or ranchos, were granted by the Mexican governor to prominent citizens and soldiers. Among the southern Orange County ranchos closest to the project site were: Rancho Canada de los Alisos (10,668 acres); Rancho Trabuco (22,184 acres); Rancho Mission Viejo (also known as La Paz–47,452 acres); and Rancho Los Potrero los Pinos (1,167 acres). Rancho Canada de los Alisos ("the glen of the alders") was granted to Jose Serrano in 1842. Supplemented by a later grant in 1846, the property eventually became known as the Whiting Ranch in the 1880s. John Forster, an English trader and brother-in-law of governor Pio Pico, eventually gained ownership of the other three ranchos. With the end of the Mexican War and the subsequent "invasion" of the Americans in 1848, Forster also fell heir to Pico's huge rancho to the south of Mission Viejo, called Santa Margarita y Las Flores. (The strip of "independent" land between Rancho Trabuco and Rancho Mission Viejo, which includes the subject property, was made available to homesteaders as early as 1880.)

Forster's family was not able to afford the expense of maintaining over 200,000 acres (all known as Rancho Santa Margarita at that time). Upon his death, his sons sold the huge landholding to Richard O'Neill, an Irish cattleman in partnership with a well-known San Francisco financier, James C. Flood. O'Neill improved the Rancho's cattle and sheep stock (the latter tended by Basque shepherds), covered the Trabuco Mesa with wheat fields, invested in mining activities, and even developed a tourist resort at San Juan Hot Springs. The building of the Santa Fe Railway through the Rancho in 1888 improved the marketability of the Rancho's many products. By the late 1920s, the O'Neill family controlled an agricultural empire of 230,000 acres which included vast tracts of sugar beets and 15,000 head of cattle.

In 1940, the Rancho Santa Margarita was divided at the San Diego County line, the property to the south reverting to the Flood family, and a year later purchased by the U.S. Navy for what is still known as Camp Pendleton. The O'Neill family retained ownership of the Orange County part of the old ranch, which they renamed Mission Viejo. The land remained in agricultural use until the mid-1960s, when the planned 10,000-acre community of Mission Viejo was developed, in response to the growing need for housing in southern Orange County. Since that time, development has been steadily progressing over lands still largely controlled by the O'Neill family. The planned development of 5,000 acres on Trabuco Mesa, or Plano Trabuco, resurrected the old Rancho Santa Margarita name in 1985. Mission Viejo and Rancho Santa Margarita are now the urbanized sectors closest to the project site, the latter having already reached a population of 20,000 by 1993. Areas inland of the Mesa retain their rural appearance, with cattle-raising still a major activity.

Lands of steep terrain, such as those of the project site, were often not included in the original Spanish land-grants, but were kept for common grazing by the nearby ranchos. (The current intersection of Live Oak Canyon Road, Santiago Canyon Road (also known historically as the "Modjeska Grade"), and El Toro Road is only about 1,000 feet east of the boundary of the Rancho Canada de los Alisos and about a mile north of the boundary of Rancho Trabuco.) The first Anglo resident of Live Oak Canyon (which had been called Black Oak Canyon by the Mexicans, and the Harris Grade by early settlers) was Henry Pankey, a beekeeper who, in 1873, settled about one mile in from Cook's Corner. Within six years, a tiny village had sprung up around what is now Trabuco Oaks. Among these early settlers was A. S. Hamilton for whom a still-extant truck trail is named. He later became a liveryman in the City of Orange. The discovery of a lode of tin in 1877 helped to attract more residents to the Canyon, although the mine was never successful. Trabuco got its first permanent schoolhouse in 1888 which also served as church, social hall and post office. Histories of the area describe most of the first residences as "cabins".

Drawn by the beauty and isolation of the area and the availability of cheap government land, settlers of Live Oak, Santiago, and Trabuco Canyons tended to be an assortment of miners, beekeepers, homesteaders and stock farmers. Almost every ranch, no matter its size, would have a few head of cattle and several horses. The major agricultural products were barley and oat hay. Settlers were also attracted by a plentiful supply of game, including quail, deer, doves, and rabbits. Trout abounded in Trabuco Creek as well. Deer, mountain lions, and grizzly bears (doubtless attracted by the many apiaries in the canyons) were also prevalent. (see continuation sheet)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 6 **of** 8 **Resource Name or #:** (Assigned by recorder) Hausauer Ranch
Recorded by: Tim Gregory **Date** 8/13/2001 ☒ Continuation ☐ Update

B10. Significance

Until the 1920s, Live Oak Canyon served as the main route of grain wagons hauling wheat from Trabuco Mesa to the railroad spur at El Toro. (Later, the Mesa would revert to cattle grazing.) In 1930, the Trabuco Oaks subdivision was created, but was not a financial success, largely due to the Great Depression. In 1938, the canyons got a permanent post office. The O'Neill family donated land for O'Neill Park in 1948, assuring that much of Live Oak Canyon would remain as open space. Cook's Corner has occupied the triangle of land between Live Oak Canyon and Santiago Canyon Roads since the 1930s and became an important social center for the entire rural area around it.

Terry Stephenson described Trabuco Canyon as follows in 1948 (a description that could also apply in some measure to the other nearby canyons, such as Live Oak and Santiago):

> ...beautiful every foot of the way from San Juan Capistrano, where the creek joins the San Juan, along its foothills to the western edge of the Santiago ridge; beautiful as it curves around the ridge, entering the Narrows where the steep broken sides of the canyon are covered with live oaks; beautiful at the old tin mines and public camp grounds at the forks, where Holy Jim canyon reaches upward to the summit of Santiago peak; beautiful as the road grows more difficult, passing over loose rock in the creek bottom; beautiful for its views of the higher brushy mountains, for its clumps of oaks, for its alder-lined stream, for its sycamores, its flowers and its sage, so much a part of landscapes familiar to those who know open places of California. (p. 145)

Summary of Significance:

Within the broad historic context of local Orange County history, the Hausauer ranch is of no appreciable significance. Other, more intact, family cattle ranches can still be found in the area.

As a site: of no local significance under criterion A (patterns of settlement) and B (significant persons).

Integrity: Poor. The property was apparently abandoned by 1980 and the improvements have either been vandalized or have fallen victim to the elements. Over the last few years, a large gully has formed which has swallowed up several of the ranch's outbuildings.

Evaluation code: 6Z (Found ineligible for listing in the National Register)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 7 of 8 **Resource Name or #:** (Assigned by recorder) Hausauer Ranch
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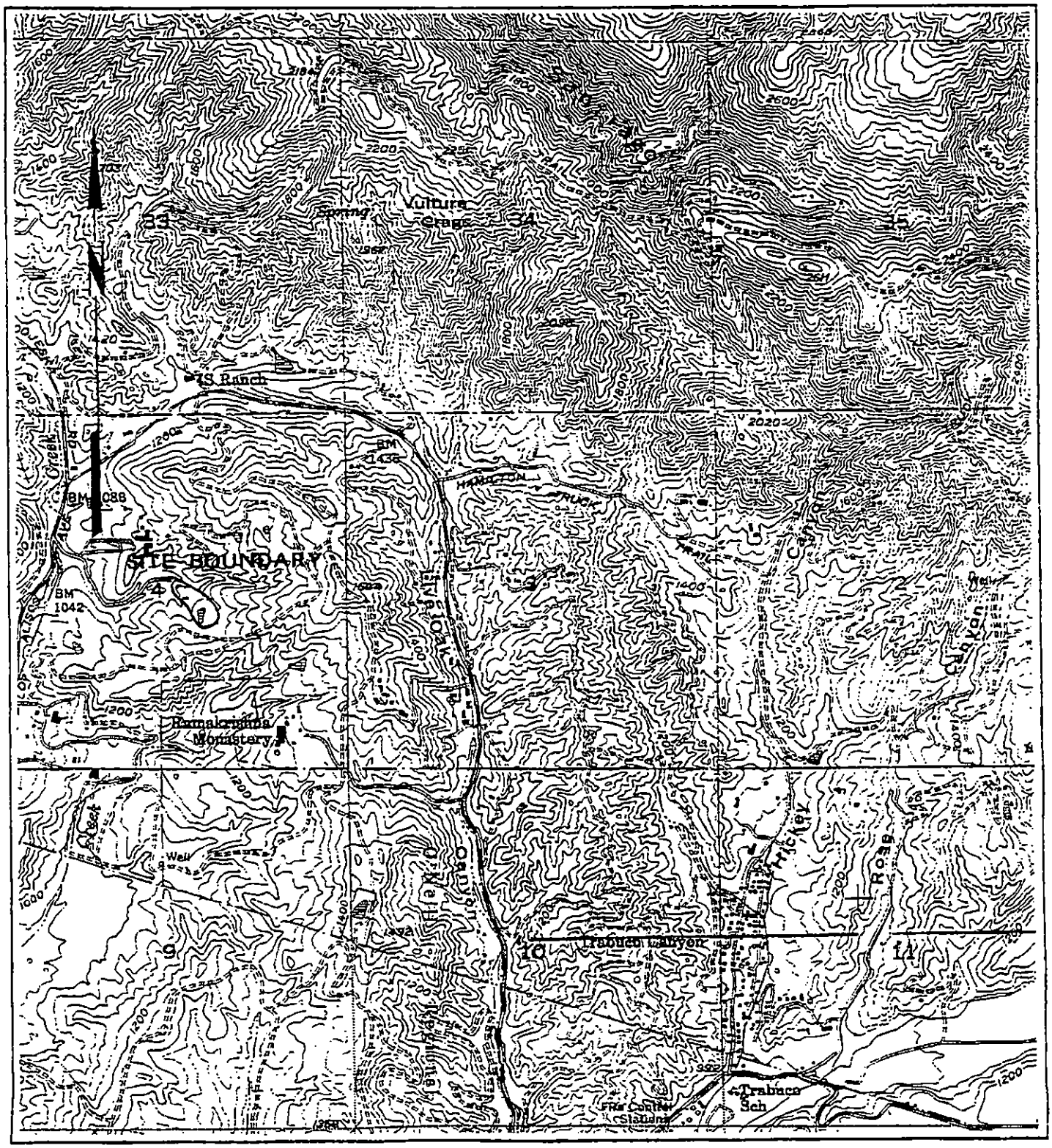
Location maps



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 8 of 8 **Resource Name or #:** (Assigned by recorder) Hausauer Ranch
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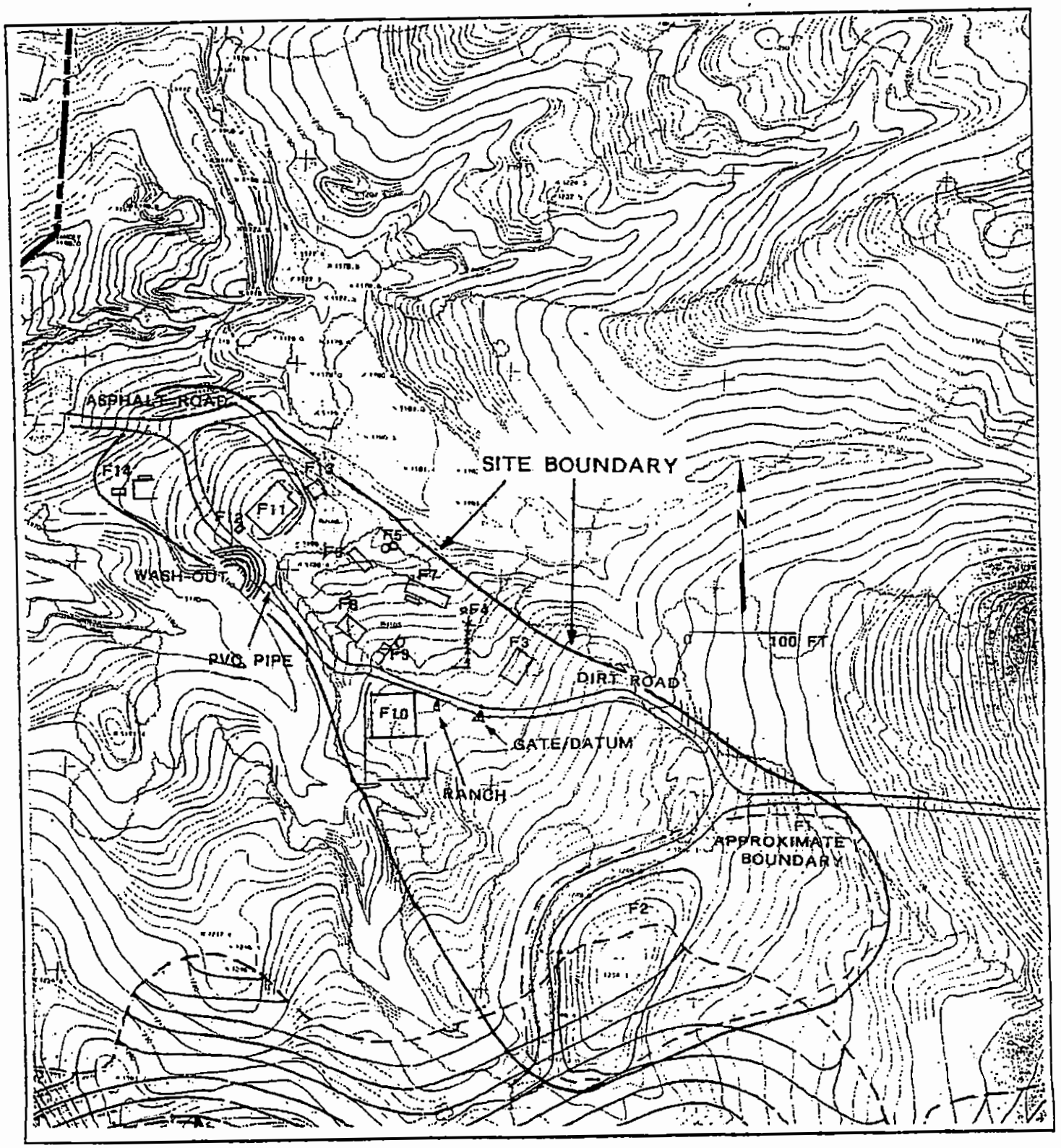
Location maps



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Paleontology • Archaeology • Faunal Analysis • History

6 August 2001

Ms. Deanna Hansen
HDR/Urban Vision
707 Wilshire Blvd
Suite 5320
Los Angeles, CA 90017

RE: Saddleback Meadows Archaeology

Dear Ms. Hansen:

Saddleback Meadows, a proposed residential community in an unincorporated portion of Orange County, is located near the northeastern end of El Toro Road, immediately south and east of its intersection with Live Oak Canyon and Santiago Canyon Roads. The proposed development will result in the destruction of several archaeological sites located on the property.

This document is submitted by RMW Paleo Associates, Inc. (RMW) to HDR Engineering, Inc., and will serve as a summary of previous cultural resources work conducted on the Saddleback Meadows property and provide management recommendations as to the sites' eligibility for listing on the National Register of Historic Places.

The U.S. Army Corps of Engineers has determined that the Saddleback Meadows development project is subject to Corps review because of the project's encroachment on waters of the United States. The Corps extends jurisdiction to upland areas under the "but for" clause and The National Historic Preservation Act's "whole of action principal." Therefore, Section 106 of NHPA (36CFR800) applies to archaeological sites in proximity to such waters.

Archaeological Sites

Six of the 12 archaeological sites on the Saddleback Meadows property fall under Corps jurisdiction and must be evaluated for eligibility. Those sites are:

- CA-ORA-711
- CA-ORA-713
- CA-ORA-715
- CA-ORA-1255
- CA-ORA-1256
- CA-ORA-1435H

CA-ORA-710, located in the western corner of the property, will not be damaged during construction activities and could be preserved in place; however, secondary impacts could be an issue in this case because of the sites' proximity to the development. Possible mitigation measures could be capping the site with sterile fill to protect it from adverse effects or to accomplish data recovery and controlled grading at the site.

The following table lists each site on the property, names the recorder and date, summarizes previous work accomplished at the site and provides a recommended significance designation. Army Corps jurisdiction sites are labelled with an asterisk:

Archaeological Sites at Saddleback Meadows

Site	Recorder	Work Accomplished	Recommendation
CA-ORA-710*	Tadlock & Tadlock 1978	Test Excavation (Maxon 1995)	Significant
CA-ORA-711*	Tadlock & Tadlock 1978	Test Excavation (Maxon 1995)	Significant
CA-ORA-712	Tadlock & Tadlock 1978	Surface Examination; destroyed (Dillon 1989))	Not Significant
CA-ORA-713*	Tadlock & Tadlock 1978	Test Excavation (Maxon 1995)	Not Significant
CA-ORA-714	Tadlock & Tadlock 1978	Surface Collection (Maxon 1995)	Not Significant
CA-ORA-715*	Tadlock & Tadlock 1978	Test Excavation (Maxon 1995)	Not Significant
CA-ORA-716	Tadlock & Tadlock 1978	Surface Examination; destroyed (Dillon 1989)	Not Significant
CA-ORA-1255*	Dillon 1989	Test Excavation (Maxon 1995)	Not Significant
CA-ORA-1256*	Dillon 1989	Surface Examination; destroyed (Maxon 1995)	Not Significant
CA-ORA-1257	Dillon 1989	Surface Examination; noncultural (Maxon 1995)	Not Significant
CA-ORA-1435H*	Knell & Maxon 1995	Testing proposed	Not yet determined
CA-ORA-1437	Maxon 1995	Testing proposed	Not yet determined

The following sites: CA-ORA-713, CA-ORA-715, CA-ORA-1255 and CA-ORA-1256 are recommended to be determined *not significant/eligible* for listing on the NRHP. It is recommended that only CA-ORA-711 (and CA-ORA-710) be deemed *significant/eligible.* CA-ORA-1435H has not yet been evaluated for significance (Maxon 1995). Mitigation measures for these sites include test excavation of CA-ORA-1435H to determine its significance and data recovery excavation at CA-ORA-711 (and CA-ORA-710) to mitigate the effects of their destruction.

Of the remaining archaeological sites on the Saddleback Meadows property (those not under Corps jurisdiction): CA-ORA-712, CA-ORA-714, CA-ORA-716 and CA-ORA-1257 are recommended to be determined *not significant/eligible* for listing on the California Register (per CEQA statutes). CA-ORA-1437 has yet to be evaluated for significance (this will be accomplished under CEQA).

Federal Legal Context

The Saddleback Meadows development project requires a permit pursuant to Section 404 of the Clean Water Act of 1977, under which adverse impacts to *significant* cultural resources fall within purview of the U.S. Army Corps of Engineers and subject to Section 106 of the *National Historic Preservation Act (NHPA)*. The NHPA authorizes the maintenance of a *National Register of Historic Places (NRHP)* which facilitates the preservation of properties that possess integrity and meet at least one of the following four criteria delineated by Section 106 (Advisory Council on Historic Preservation 2000).

The quality of *significance* in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess *integrity* of location, design, setting, materials, workmanship, feeling and association and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
B. that are associated with the lives of persons significant in our past; or
C. that embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. that have yielded, or may be likely to yield, information important in prehistory or history.

State Legal Context

State legal mandates fall under the provisions of the *California Environmental Quality Act* (CEQA). Public Resources Code SS5024.1, Section 15064.5 of the Guidelines and Sections 21083.2 and 21084.1 of the Statutes of CEQA are the basic guidelines used for cultural resources studies (Governor's Office of Planning and Research 1998).

Public Resources Code SS5024.1 requires evaluation of historical resources to determine their eligibility for listing on the *California Register of Historical Resources*. The purposes of the register are to maintain listings of the state's historical resources and to indicate which properties are to be protected from substantial adverse change (Office of Historic Preservation 1995a:1). The criteria for listing resources on the California Register were expressly developed to be in accordance with previously established criteria developed for listing on the *National Register of Historic Places* (NRHP).

According to Section 15064.5(a)(3)(A-D) in the revised CEQA guidelines (Governor's Office of Planning and Research 1998), a resource is considered *historically significant* if it meets at least one of the following criteria:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;
(C) Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important, creative individual, or possesses high artistic values;
(D) Has yielded, or may likely yield, information important in prehistory or history.

If a resource is negatively effected by a project, measures must be implemented to mitigate the project's negative effect on the resources to less than a significant impact [Section 15064.5(b)(3)]. Mitigation measures can include avoidance of sites, deeding of sites to conservation easements, capping of sites with culturally sterile soil, incorporation of sites into open space or excavation of those portions of sites effected by the project [Section 21083.2 (b & d)].

This letter is intended as a summary of cultural resources investigations at Saddleback Meadows and includes information from several sources (Tadlock & Tadlock 1978; Breece and Padon 1982; Dillon 1989; Maxon 1995).

Please contact me at RMW Paleo Associates, Inc. with any questions.

Respectfully,

Patrick O. Maxon, RPA
Archaeological Field Director

cc: Julie Wang, HDR San Diego

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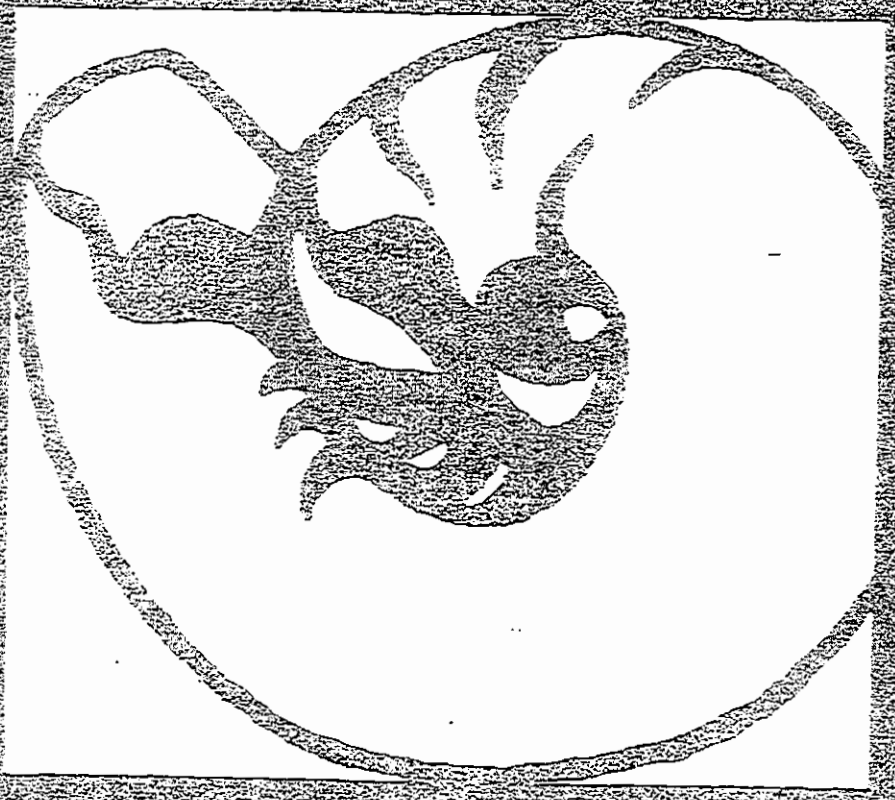

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POOR QUALITY ORIGINAL

AUTHOR: Patrick O. Maxon

PRINCIPAL INVESTIGATOR: Ronald M. Bissell

DATE: March 1997

TITLE: Summary of Cultural Resources Investigation and Recommendations for Further Work Within the Saddleback Meadows Planned Development, Orange County, California

SUBMITTED BY:
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SUBMITTED TO:
TPG Management, Incorporated
1601 Dove Street, Suite 105
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CONTRACT NUMBER: RMW Project Number 97-1006

ACREAGE: 229.2 acres

MAP: USGS Santiago Peak, California 7.5 Minute Quadrangle, 1954, Photorevised 1973

KEYWORDS: Orange County; Saddleback Meadows; Township 6S, Range 7W; San Bernardino Base and Meridian; CA-ORA-710, -711, -712, -713, -714, -715, -716, -1255, -1256, -1257, -1437 & -1435H

TABLE OF CONTENTS

			Page
Figures and Tables			iii
Management Summary/Abstract			iv
Undertaking Information/Introduction			1
Setting:	Natural		7
	Cultural:	Prehistoric	11
		Historic	16
Research Design			17
Previous Research			19
Sites at Saddleback Meadows:			
CA-ORA-710			21
CA-ORA-711			26
CA-ORA-712			29
CA-ORA-713			29
CA-ORA-714			31
CA-ORA-715			33
CA-ORA-716			35
CA-ORA-1255			35
CA-ORA-1256			37
CA-ORA-1257			37
CA-ORA-1435H			38
CA-ORA-1437			38
Response to Comments			41
Summary			46
Recommendations			46
References Cited			48
Appendices A & B			

MANAGEMENT SUMMARY/ABSTRACT

Purpose and Scope: The Presidio Group has produced revised plans to develop Saddleback Meadows in the County of Orange for the purpose of constructing a residential community. The 229.2 acre site will see the construction of 705 manufactured, single-family residential units. EIR 566 will be prepared for the project.

This report has been undertaken for the purpose of inclusion into EIR 566, required for the current project. The report describes all past cultural resource investigation on the Saddleback Meadows property. It further recommends and describes the additional work to be accomplished before implementation of the above mentioned project can occur.

Dates of Investigation: This report was produced between 12 February and 14 March 1997.

Evaluation: Only CA-ORA-710 and CA-ORA-711 have been determined to be important according to Appendix K of the California Environmental Quality Act (Governor's Office of Planning and Research 1995) and significant as defined by the *National Historic Preservation Act* (see below). Although they lie in proposed open space, remedial grading will destroy them and thus data recovery excavation is required. The importance/significance of CA-ORA-713, -715, -1437 and -1435H has yet to be established and further work at these sites is necessary.

Undertaking Effects: The revised plans for construction of 705 manufactured, single-family residential units will require extensive grading in preparation for construction. As a result, every cultural resource previously identified on the property will be destroyed. The impacts to some of the sites must therefore be mitigated prior to development.

Recommendations: CA-ORA-710 and CA-ORA-711 have been determined to be important according to CEQA and significant as defined by the *National Historic Preservation Act* (see below). Although they lie in open space, remedial grading of the proposed open space will destroy the sites. Data recovery excavation of at least 30 one by one meter units at each site must be accomplished. CA-ORA-1437 is the site newly discovered during the previous project (Maxon 1995); no work has been accomplished at the site beyond mapping and recording. A surface examination and surface collection and a test excavation consisting of approximately ten, one by one meter units must be accomplished at the site. Additional work may become necessary after evaluation. CA- ORA-1435H has not yet been evaluated. Initial work will entail archival

UNDERTAKING INFORMATION/INTRODUCTION

The Presidio Group has produced revised plans to develop Saddleback Meadows in the County of Orange for the purpose of constructing a residential community.

In August 1978, the Orange County Board of Supervisors adopted the "Saddleback Meadows Mobile Home Subdivision" and certified Environmental Impact Report (EIR) 059. This authorized the development of a mobile home park of 617 dwelling units. The plan was never put into effect. In July 1996, The Presidio Group submitted a revised 318 unit Site Development Plan to the County of Orange and circulated EIR 561. In October 1996 the Board of Supervisors denied the 318 unit site development plan and did not certify EIR 561. Currently, The Presidio Group is again planning to revert to the August 1978 plans that have previously been approved and to develop the site for the construction of 705 manufactured, single-family residential units on the 229.2 acre site (see Figure 1 below). EIR 566 will be prepared for this project (Environmental Management Agency 1996:5-7).

A summary of this report will be included in EIR 566, required for the current project. The report describes all past cultural resource investigations on the Saddleback Meadows property. It further recommends and describes the additional work to be accomplished before implementation of the above mentioned project can occur and that which can be accomplished after grading is underway.

The Saddleback Meadows project requires a Section 404 permit. Under Section 404, impacts to cultural resources fall under the review of the U.S. Army Corps of Engineers and must be mitigated to be in compliance with Section 106 of the *National Historic Preservation Act* (NHPA). The NHPA authorizes the maintenance of a *National Register of Historic Places* (NRHP) which facilitates the preservation of properties that meet certain criteria delineated by Section 106 of the NHPA (The Advisory Council on Historic Preservation and the GSA Interagency Training Center 1994:II-26). Those criteria are:

> The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) that are associated with the lives of persons significant in our past; or

(c) that embody the distinctive characteristics of a type, period or method of construction...; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history.

Because the project must be in compliance with Section 106 guidelines, the present study automatically also falls under the provisions of the California Environmental Quality Act (CEQA) as well. Appendix K of CEQA requires that if development is unavoidable, significant impacts to important (CEQA definition) archaeological sites must be reduced to a level of insignificance, through avoidance, preservation or excavation. According to Appendix K, Section III of CEQA, "...an important archaeological resource" is one which:

A. Is associated with an event or person of:
   1. Recognized significance in California or American history, or
   2. Recognized scientific importance in prehistory

B. Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions;

C. Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind;

D. Is at least 100 years old and possesses substantial stratigraphic integrity; or

E. Involves important research questions that historical research has shown can be answered only with archaeological methods.

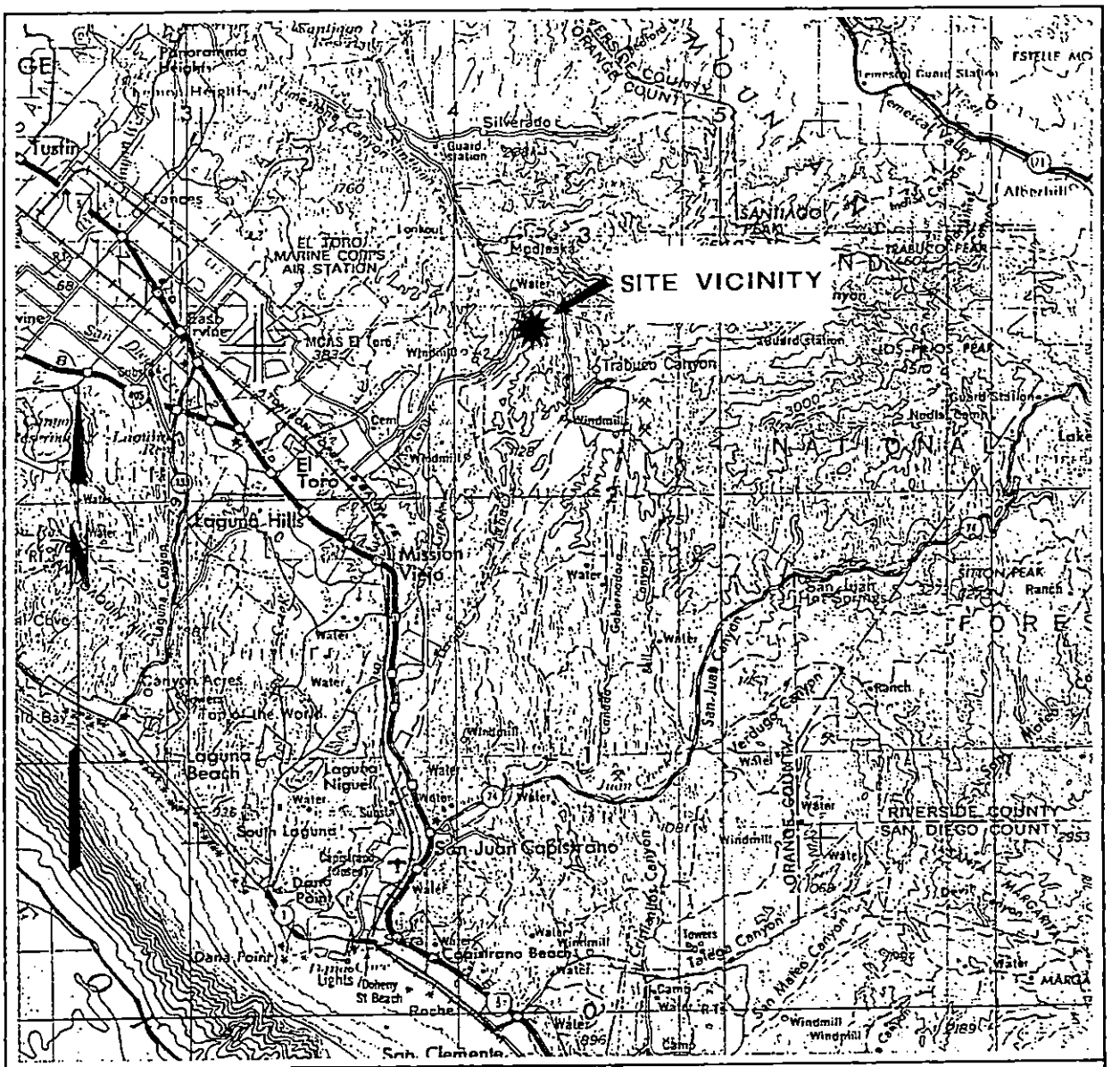
Recently (September 1992) the *California Register of Historical Resources* (California Register) was created. Its purpose is to identify the state's historical resources and to indicate which properties are to be protected (Office of Historic Preservation 1995:1). The criteria for listing resources on the California Register were expressly developed to be in accordance with previously established criteria developed for listing on the *National Register of Historic Places* (NRHP). A property must be significant at the local, state or national level under the same (with minor variations) criteria as those for the NRHP (Office of Historic Preservation 1995:3). Those criteria are listed on pages one and two of this report.

Dillon (1989) has recommended that if subsurface deposits are discovered on any of the present sites, a formal salvage operation must be designed to mitigate any adverse impacts. The project described in this report accomplishes Dillon's recommendations.

The revised plans for construction of 705 manufactured, single family residential units will require extensive grading in preparation of construction. For this reason, every cultural resource previously identified on the property will be destroyed and impacts must therefore be mitigated prior to development. The schedule for completion of the project is unknown.

Figure 2 is a portion of the USGS quadrangle map, Santa Ana, California, depicting the general location of the project area. Figure 3 is a portion of the USGS quadrangle map Santiago Peak, California, depicting the specific location of the project area.

Ron Bissell served as Principal Investigator for the previous project (Maxon 1995), and will continue in that capacity for any further archaeological investigation. Patrick Maxon, the author of this report, served as Field Director for the previous project and will also continue in that capacity.


SITE VICINITY
ORANGE COUNTY
RIVERSIDE COUNTY
SAN DIEGO COUNTY
NATIONAL FOREST
SANTIAGO PEAK
SADDLEBACK MTN
TRABUCO PEAK
SITTON PEAK
LOS PINOS PEAK
EL TORO MARINE CORPS AIR STATION
MCAS El Toro
Trabuco Canyon
El Toro
Laguna Hills
Mission Viejo
Laguna Beach
Laguna Niguel
San Juan Capistrano
Dana Point
Capistrano Beach
Silverado
Modjeska
Tustin
Panorama Heights
Canyon Acres
Top of the World
South Laguna
Doheny St Beach
Lights
Roche
San Clemente
Windmill
Guard Station
Ranch
Camp
Water
Tenaja Canyon
Verdugo Canyon
San Juan Canyon
Gobernadora Canyon
Cañada Chiquita
Cañada Gobernadora
Cañada Verdugo
Cañada Trabuco
Cañada Chiquita Ortega
Cañada Arroyo Trabuco
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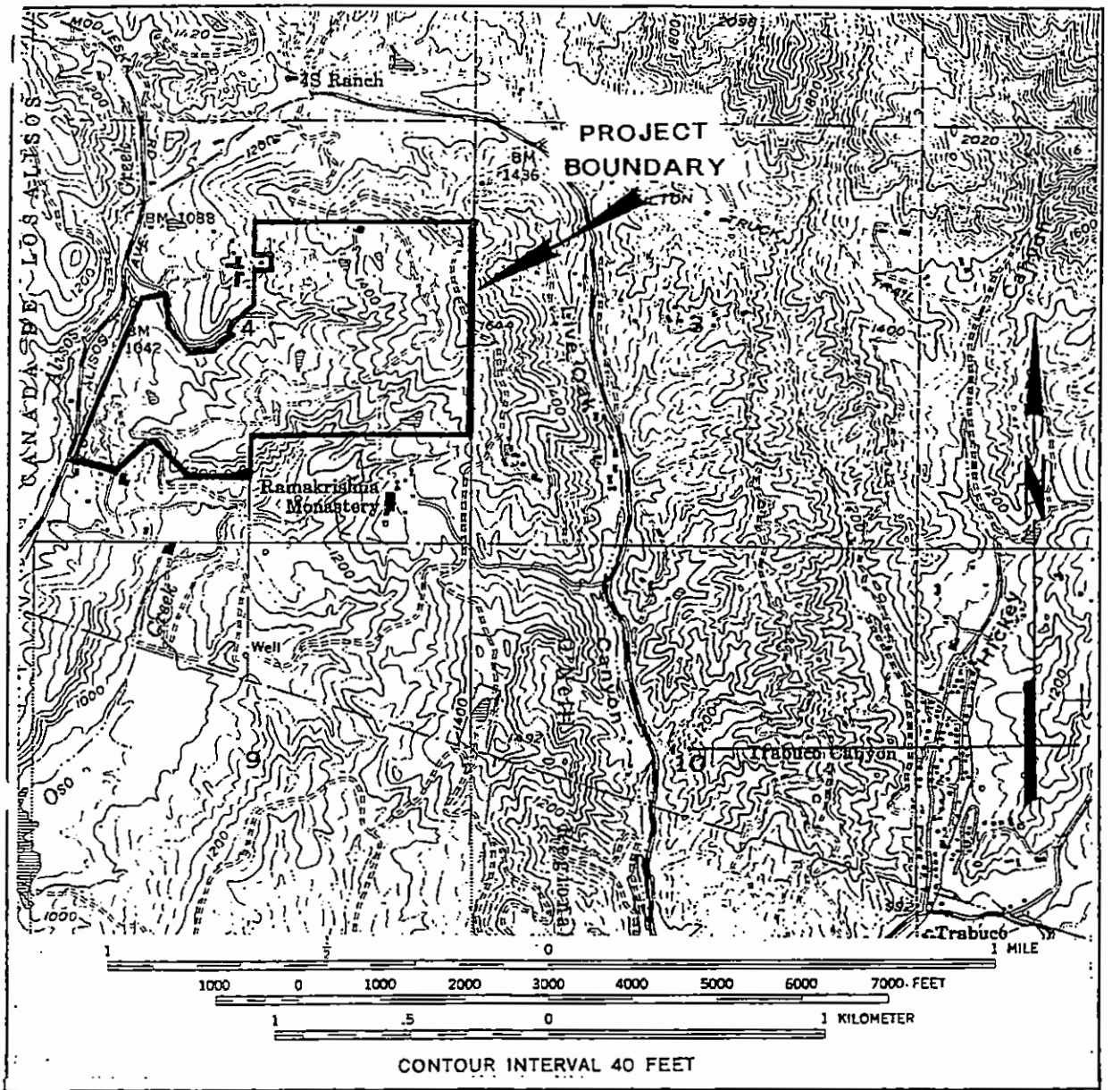


Paleontology Archaeology History 23392 Madero, Suite L Mission Viejo, CA 92691 (714) 770-8042 FAX (714) 458-9058 RMW Paleo Associates	Figure 3: PROJECT AREA MAP Portion of USGS 7.5 Minute, Santiago Peak, California, Quadrangle, 1954, Photorevised, 1982 Area shown lies in Township 6S, Range 7W Scale = 1:24,000

SETTING

Natural: The Saddleback Meadows project area lies in the foothills of the Santa Ana Mountains of Orange County, California. Aliso Creek flows southward along its western margin. The property is in Section 4 of Township 6 South, Range 7 West and can be reached via El Toro Road running adjacent to the property, parallel to and west of Aliso Creek. Santiago Peak, the highest in the county, is approximately three kilometers northwest of the property.

The project area consists of narrow, rugged ridges and rounded knolltops separated by steep sided and narrow canyons. A central east/west canyon drains into Aliso Creek. Elevations range from approximately 1,040 feet where the main drainage empties into Aliso Creek to approximately 1,640 feet along portions of the ridges in the north-western portion of the property.

Geologic formations exposed in the Saddleback Meadows study area are the Sespe Formation, the undifferentiated Sespe and Vaqueros Formations, and the Topanga Formation (Raschke 1995). The oldest unit is the late Eocene to early Miocene Sespe Formation and is restricted to the northeastern corner of the property. Overlying and interbedded with the Sespe Formation is the early Miocene age undifferentiated Sespe-Vaqueros Formation. This unit underlies all except the northeast corner of the Saddleback Meadows property where there appears to be a small exposure of the middle Miocene age (15 million years ago) Topanga Formation. Within the study area there are numerous occurrences of vertebrate fossils in boulders that have apparently eroded from the subsurface. These include a variety of large and small fragments of marine mammal bones (Raschke 1995). It is not known if these outcrops were utilized, to any extent, by prehistoric populations.

The climate of the Saddleback Meadows vicinity can be described as mild, uniform and semi arid. Temperatures rarely exceed 33 degrees Celsius or drop below five degrees Celsius. Rainfall occurs primarily between November and April and averages between 25 and 40 centimeters per year. The current climatic conditions did not prevail during the entire span of time that man has been present in the area. Heusser (1978) suggests that pine forests may have occupied the coastal regions from roughly 10,000 to 6,000 B.C.E. (Before Common Era). The climate then became warmer and drier, resulting in replacement of the pine forests by oak

and and grassland communities. Coastal sage scrub and chaparral communities became ounced during the few centuries preceding the Common Era (C.E.).

A majority of the property has in recent times been used as a cattle ranch and is therefore w covered predominantly by grasslands including introduced grasses, wild mustard and thistle. ne slopes and ridges support remnants of the coastal sage scrub community composed of sage, uckwheat, chamise, sumac, prickly pear cactus and other low growing, woody plants. A riparian community exists along the Aliso Creek drainage supporting rushes, tules and willows. Mature oaks and sycamores are found in the valleys, drainages and on some of the ridges and knolltops. Hausauer Ranch, along the main drainage emptying into Aliso Creek, is surrounded by introduced eucalyptus trees as well as a large olive grove containing nearly 100 trees.

Several of the ecological communities existing in southern California were readily accessible by the local prehistoric inhabitants of the Saddleback Meadows area, while others were reached only with some difficulty. The following discussion of the plant communities available to the local prehistoric inhabitants is based on Drover and Koerper (1983).

Saltwater Estuary Community and Bay: The estuary and bay communities provided shellfish for the prehistoric peoples. Waterfowl would also have been available, but few plants from the communities were known to have been utilized.

Access to the estuary and bay community was relatively easy for persons utilizing the current study area. Coastal regions were probably used during the winter months as part of the annual round and direct exploitation by people residing near the current study area could have been accomplished in a day's journey down the Aliso Creek drainage some 20 kilometers to the coast.

Beach and Coastal Strand Community: This community, including the beach and intertidal areas, provided a large variety of shellfish and areas for line fishing. Naturally occurring asphaltum occasionally washed ashore and was collected for use as an adhesive. Seaweed may have also been collected and used as food.

Access to the beach and coastal strand community was also feasible considering the nearness of Saddleback Meadows to the ocean.

Marine Community: A wide variety of sea mammals, fish and crustaceans were available in the marine community, but data regarding local prehistoric exploitation of this community is very scant. It is known that the Chumash, who lived farther up the California coast, made extensive use of marine community resources during the latter part of archaeological time. Such exploitation in the local area is not well documented. Perhaps this is a reflection of lack of data, rather than an indication that the marine community was not exploited in this area. Access to the marine community required some sophisticated technology in the form of watercraft, such as canoes or rafts, as well as fishing and hunting equipment. It is unknown if the inhabitants of the Saddleback Meadows area exploited this resource.

Riparian Woodland Community: This community exists along streams and around seeps and springs. Oaks, alders, willows, sycamores and cottonwoods are common trees associated with this community. A large variety of herbs, grasses, cattails and berries grow in the riparian woodland community. Animals and birds attracted by the water and the food resources offered by the vegetation provided ample sustenance for prehistoric and historic peoples. The riparian woodland offers a great variety of easily exploited resources.

The riparian woodland community was found along the local streams and existed throughout the current study area.

Freshwater Marsh Community: The major freshwater marshes near the study area would have been located within the Aliso Creek and Oso Creek flood plain. Freshwater marshes resemble the riparian community in terms of the plants and animals they host, but may be surrounded by a greater extent of forest growth. Migratory fowl are attracted to freshwater marshes and would have been an abundant resource during particular seasons of the year.

Access to the freshwater marshes would have been quite easy because they likely existed at various times along Aliso Creek.

Grassland Herbland Community: Located in the lower Aliso Creek valley, around some freshwater marshes and below the steeper foothills of Saddleback Meadows, the grassland herbland community contained a variety of resources. Seeds of many annual grasses would have been the primary resource of interest to the prehistoric peoples, but blossoms, greens, fruits, bulbs, the fleshy parts of prickly pear and occasional walnuts were also available, primarily during

spring. Animals including deer, rabbits, other rodents and quail are associated with this plant ɔmmunity.

Again, access to the grassland herbland community would have required only a short, relatively level walk from the study area.

Oak Woodland: The oak woodland occurs in sheltered valleys where the soil is deep. Oak trees can grow to as much as 20 meters in height in such conditions, and are surrounded by grasses and herbs. Acorns were a primary food resource for the native inhabitants, at least during the latter part of the archaeological sequence. Acorns become available in the fall, thus providing a rich resource during the time of year when other plants are far past their peak availability.

Access to the oak woodland was very simple since oaks grew in the local drainages of Aliso Creek and could have been exploited with little effort.

Coastal Sage Scrub Community: This community consists primarily of shrubs that seldom exceed a height of two meters. Various species of sage, buckwheat, some flowering plants and grasses form the primary vegetation. Seeds are the primary resource of the sage scrub community, but edible stems, stalks, shoots, greens, roots, bulbs and some berries can also be found. Rabbits and rodents abound in the sage scrub community. The sage scrub community covers the hills around and within the study area. The resources of the sage scrub community are primarily available in the spring. During prehistoric times the sage scrub covered a large percentage of the surface, representing a very rich resource.

Access to the sage scrub community required only ascending the hills and canyons of the study area.

Chaparral Community: The chaparral community consists of dense brush normally found on rocky slopes, usually at slightly higher elevations than the oak woodland community. Manzanita, chamise, mountain mahogany, scrub oak and ceanothus are typical constituents. Seeds, berries, bulbs, shoots and roots are the primary resources available in this community. The chaparral is a primary deer habitat (Moratto 1984).

The chaparral community was located on the higher elevated slopes north of the study area and would have required a day's walk to be reached by prehistoric populations.

Cultural: The current study area is inhabited by a Native American group ethnographically known as the Gabrielino. The generally accepted boundary with the Juaneño group to the south is Aliso Creek, flowing directly adjacent to the study area along its western margin (Bean and Smith 1978, Kroeber 1925). It is likely that the study area contains traces of both these cultures.

The names the Native American groups applied to themselves are largely unknown; they are known by the names the Spanish coined as they moved into Native American territories. The name "Gabrielino" identifies those people who were under the control of the Spanish Mission San Gabriel, while the name "Juaneño" denotes those people who were under the administration of the Spanish at Mission San Juan Capistrano.

The Juaneño and Gabrielino language, as well as that of the Luiseño to the south, was derived from the Takic family, part of the Uto-Aztecan linguistic stock, which can be traced to the Great Basin area (Driver 1969). This language group represents an origin quite different from that of the Chumash to the north and the Ipai and Tipai to the south. Their language is derived from the Hokan stock of the Yuman language family originating in the American southwest. Linguistic analysis suggests that at one time (probably before 500 B.C.E.) the entire southern California coastal region was populated by Hokan speakers who were gradually separated and displaced by Takic speaking immigrants from the Great Basin area. The timing and extent of the migrations and their impact on indigenous peoples is not well understood and any data related to it represents a valuable contribution to the understanding of local prehistory.

Prehistoric Era: The archaeological heritage of California is quite rich, probably more so than any other North American region north of Mexico. However, the archaeology of California is not well known. The native Californians were generally quite peaceful and did not often offer warlike resistance to European settlement. Consequently, they did not gain great notoriety during the settlement period. Also, the original Californians were first under the control of the Spanish and then the Mexican governments and only later, after much of their culture had been destroyed by disease and displacement, were they subsumed under the United States government. There was only a minor Native American presence remaining in California when it became a United States possession and massive development began. For this reason, very little interest in the natives and

ır prehistory was initially generated. It was many years later before the size, complexity, and ıtent of archaeological deposits in the state became apparent.

Homo Sapiens has been present in the New World since perhaps 10,000 to 11,000 years B.C.E. There is some evidence that humans were present long before this date, but it is inconclusive and has not yet been accepted by most archaeologists. The earlier sites are all controversial in that they lack definite dateable context and material. Such sites can be interpreted in various ways, particularly in relationship to their age. The few generally accepted remains indicate a very small, mobile population apparently dependant on hunting of large game animals as the primary subsistence strategy. Other sources were exploited, but the bulk of the traces remaining today are related to game hunting. (Chartkoff and Chartkoff 1984, Moratto 1984).

The Chartkoffs identify the earliest portion of the archaeological sequence - to about 9,000 B.C.E. - as the Paleo-Indian Period (Warren's 1968 San Dieguito Tradition). The surviving material culture of this period consists primarily of large, extremely well made projectile points and large but crude tools such as scrapers and choppers. Encampments were never permanent, based in part on the paucity of significant midden areas that would have degraded to ındetectability given the great age, and were probably sited near a major kill. Occupation would have persisted only until the resources of that kill were exhausted. Such an economy, using only a small fraction of the available resources, would not have supported a large population; therefore, it is probable that the Paleo-Indians lived in groups no larger than extended families and that contact with other such groups was infrequent.

A general chronology has been developed for the Southern California coastal region by Wallace (1955) for the ensuing periods.

The Millingstone Horizon (or Encinitas Tradition, as defined by Wallace (1968)) people (ca. 5500-1500 B.C.E.) practiced a mixed hunting and gathering food procurement strategy. Game hunting still played an important role in the economy, but by this time the Native Americans had learned to exploit the hard seed resources of the coastal sage scrub and chaparral ecological communities. The rapid extinction of the large mammals that the Paleo-Indian had previously been exploiting necessitated this shift in resource exploitation. The principle implements used to process the seeds, manos and metates, appear in large numbers for the first time in this horizon,

and are especially numerous near the end of this tradition. Other specialized tools were developed to process the increased resources utilized by Millingstone peoples. Settlement size seems to have increased and an annual round of seasonal migrations may have been practiced as movements coincided with ripening vegetal resources. Some formal burials are also evident.

The Intermediate Horizon, locally known as the Campbell Tradition (ca. 1500 B.C.E. to C.E. 1000), is characterized by a shift away from primarily vegetable food exploitation to a more maritime subsistence strategy. It is during this time that the mortar and pestle were introduced, enabling acorn processing to begin.

In the Late Prehistoric Horizon (or Shoshonean Tradition), groups began to center around trade routes and there was a greater use of food resources with more land and sea mammal hunting to complement collecting. The pattern of life in this Late Horizon was more complex. More classes of artifacts were being produced and they exhibited a more sophisticated degree of workmanship. The recovery of a greater number of small, finely chipped projectile points suggests a greater utilization of the bow and arrow. Other items include steatite containers, shell fishhooks, perforated stones, bone tools, personal ornaments, asphalt adhesive and elaborate mortuary customs. In addition, the population increased and larger villages evolved (Wallace 1955:223). It is during the Late Prehistoric that the emigrants from the Great basin appeared in the Los Angeles and Orange County area. These peoples were very quick to adopt most of the local traits, because it is difficult to separate the archaeological assemblages of the emigrants from those of the indigenous peoples on the basis of artifact typology alone.

The Moratto and Chartkoff chronologies are not the only ones in use and, in fact, are somewhat generalized because they address the entire state of California. The latest chronology to appear which has gained local acceptance is that of Koerper and Drover (1983). This chronology is based on extensive work at CA-ORA-119-A, a large multi-component site near the University of California, Irvine. The site contained archaeological evidence from the Millingstone to the Historic period. The Koerper and Drover chronology is summarized in Table 1 below.

Table 1:

CHRONOLOGY, BASED ON KOERPER AND DROVER (1983)

PERIOD*	TEMPORAL SPAN	MAJOR DIAGNOSTIC TRAITS
Early Man or Paleo-Indian	? to 7,500 B.C.E. +/- ?	1. Lack of grinding implements. 2. Large, well made projectile points.

Characteristics and adaptations:

1. Subsistence through hunting of large Pleistocene game animals.
2. Temporary camps at large kills.
3. Group no larger than extended family.
4. Widespread. Covered most of North American continent, but no sites known locally.
5. Very small total population.

Milling Stone or Encinitas	7,500 B.C.E. +/-? to 1,000 B.C.E. +/- 250	1. Predominance of manos and metates. 2. Ornaments made of stone. 3. Large and often crude projectile points 4. Cogstones and discoidals. 5. Charmstones. 6. Some mortars and pestles near the end of the period.

Characteristics and adaptations:

1. Heavy reliance on hunting in early part of period. Deer, rabbits and other small game associated with chaparral.
2. In middle to late part of period reliance was on hard seeds associated with chaparral.
3. Coastal groups utilized shellfish and near shore resources.
4. Annual round based on ripening vegetable resources rather than animal migrations. This caused increased isolation leading to noticeable differences in culture in much smaller geographic areas.
5. Probably about 50 persons in average group.
6. Very little noticeable change in last two thirds of period.
7. Colonization of Channel Islands near end of period.

*Both the Chartkoff and Koerper and Drover names are given for the various periods, with the Koerper and Drover names appearing first.

Table 1, continued:

CHRONOLOGY, BASED ON KOERPER AND DROVER (1983)

PERIOD	TEMPORAL SPAN	MAJOR DIAGNOSTIC TRAITS
Intermediate or Campbell	1,000 B.C.E. +/- 250 to C.E. 750 +/- 250	1. Bone ornaments. 2. Wide use of mortars and pestles along with manos and metates. 3. Use of steatite begins. 4. Many discoidals. 5. Large projectile points trending to smaller in the last part of the period.
		Characteristics and adaptations: 1. Heavy reliance on acorns as food resource. Hard seeds, small animals and coastal resources continue to be used. 2. Many more deep water ocean resources utilized. 3. First permanently occupied villages. 4. Large increases in local population. 5. Atlatl (spear thrower) in use. Bow and arrow probably introduced near end of period. 6. Some evidence of trade.
Late Prehistoric or Shoshonean	C.E. 750 +/- 250 to Spanish contact	1. Shell ornaments. 2. Mortar, pestle, mano and metate use continues. 3. Small, finely worked projectile points. 4. Wide use of steatite. 5. Some pottery vessels appear near the end of the period.
		Characteristics and adaptations: 1. Increased exploitation of all resources. 2. Large populations, some villages had as many as 1,500 persons. 3. Great increase in art objects. 4. Much evidence of trade.

Historic Era: Juan Rodriguez Cabrillo sailed along the coast of California in 1542 and, according to available records, stopping only at San Diego and the Channel Islands, was the first European to come into contact with the Gabrielino. The first Europeans to visit the Orange County area arrived in 1769 when Gaspar de Portola led an overland expedition from San Diego to Monterey. This expedition of 63 persons passed near the study area, using Arroyo Trabuco as a route to the north (Cramer 1988).

Mission San Gabriel, in Los Angeles County, was founded in September 1771 and all the Native Americans from the Los Angeles plain were persuaded to settle in its vicinity. The first permanent settlement in Orange County came when San Juan Capistrano was selected as the site for a Mission in the spring of 1775. By the early 1820s, all the native Americans from the coastal plains and foothills of what is now Orange County had been settled on Mission lands or on the growing rancho system.

The missions were charged with administering to the Indians within their areas. Mission life did give the Indians some skills needed to survive in their rapidly changing world, but the population was decimated by diseases for which they had no immunity. After 1810, mission population declined faster than it could be replenished. The Mexican Revolution, beginning in 1821, overthrew Spanish control and the new Mexican government had a very different outlook on mission activities. Secularization of the missions, planned under the Spanish was greatly accelerated by the Mexican government. Plans to provide land, training and living quarters for the Indians never developed and the mission lands were soon under the control of a relatively few influential Mexican families. The Mexican-American war ended on 2 February 1848 with the signing of the treaty of Guadalupe Hidalgo. The treaty established California as a United States possession.

The study area was never a part of a Spanish or Mexican land grant. The foothill area was not good grazing terrain. Instead, the Santa Ana Mountain area was to be ungranted and for the use of all. The Rancho Canada de los Alisos (Canyon of the Sycamores) abuts a portion of the study area to the west (Morgan 1973). This rancho was granted to José Serrano in 1842 and later expanded to 10,688 acres by Pio Pico (Smith 1977 in Dillon 1989). Present day Lake Forest was part of this grant; the last of Serrano's adobes is still preserved there. The drought of the early

1860s forced Serrano to give up on the rancho. It was broken up into smaller parcels and sold piecemeal; the bulk of the land forming the city of El Toro (now Lake Forest). By the 1880s much of the area had been settled by Anglo-American families. The Hausauer Ranch, within the property boundary, probably dates to the late 1920s and was an active ranch into the 1970s. The ranch's main reservoir and olive orchard have been in existence since at least 1939 (Dillon 1989:32).

RESEARCH DESIGN

Theoretical Basis: The theoretical approach of this report is primarily cultural ecological in nature. It is assumed that humans are part of the ecological system in which they exist and patterns of behavior are restricted by ecological constraints. Similarly, human populations have an effect on the environment as well and precipitate ecological change, either intentionally or accidentally (Jochim 1981). This approach applies to prehistoric as well as historic sites.

It is thought that Californians from the Middle Archaic Period up to the Pacific Period practiced an annual round adaptation. The major habitation camp would be moved periodically as resources ripened. The habitation camp would be surrounded by specialized work stations where resources were collected and initially processed. In general, it is thought that the major habitation camps were moved to progressively higher elevations as the year advanced, with a return to near-ocean locations for the winter season. The major habitations were occupied only for a few months each year, but the repeated use may have continued for many generations. By Pacific Period times, storage technology and a broadened resource base allowed settlements to be occupied throughout the year.

Pertinent Local Conditions: The Saddleback Meadows area is one of a series of ridges and rounded knolltops bisected by numerous drainages emptying into Aliso Creek. The creek makes its way some 20 kilometers southwest into the Pacific Ocean south of present day Laguna Beach. The area is ideally suited for exploitation of the range of resources available in the region. All could be reached within a day's travel by local inhabitants. Aliso, as well as Oso Creek, provided the inhabitants with a reliable, perennial source of water, an easy route leading to the coast and cobbles for lithic tool production.

ıe little available information indicates that major settlements were located near reliable
:s of water, but in areas that commanded a view of the surroundings. The area surrounding
campment or village was used for hunting, resource collecting and initial processing of those
ırces. Such resources included lithic material for stone tool manufacture, animal resources
vegetable resources (shoots, roots, bulbs, seeds, berries, fibers, nuts, etc.).

Collecting and initial processing of material for chipped lithic tool manufacture leaves
dence in the form of damaged surfaces where material was removed, chipping waste from
tial reduction of that material, hammerstones used in the reduction and cores from which viable
aterial had been removed. A prehistoric chert quarry (CA-ORA-507: The Hoopaugh site) lying
ess than one kilometer south of the project area, was studied and recorded by Van Horn (1986).
Milling tool production probably relied on the collection of suitable cobbles and would leave no trace. Hunting of game animals was an activity pursued in the Saddleback Meadows area. It is a well watered area that in prehistoric time hosted a wide variety of ecological communities. Game animals would have been abundant under these conditions and would certainly have been exploited by the prehistoric inhabitants. Evidence left by hunting activity may include blinds, lost or broken projectile points and animal bones within the habitation areas.

Vegetable resource collecting and initial processing was certainly an activity in the Saddleback Meadows area. Evidence for such is the abundance of grinding implements (manos and metates) found at area sites. These artifacts found by themselves are evidence of vegetable resource collecting and initial processing. Only with a wide range of other artifact varieties do they constitute evidence of substantial habitation.

It is therefore assumed that archaeological sites at Saddleback Meadows will include the possibility of relatively large seasonally occupied village sites located near a reliable water source as well as more numerous specialized use camps. Seed collecting and processing stations will be located in more or less level areas in the vicinity of the desired vegetable resources. Chipped lithic tool manufacturing stations will leave traces of chipping waste products and tools such as hammerstones and cores. They will either occur by themselves or within larger site complexes.

PREVIOUS RESEARCH

Early reconnaissance operations were conducted near the present project area that only partially extended onto the Saddleback Meadows property. A 1975 reconnaissance by Howard, concerned with the proposed realignment of El Toro Road, included the westernmost edge of the current property, just east of Aliso Creek. Howard reported no archaeological sites in the area, even though it is there that CA-ORA-710 and -711 lie.

Tadlock and Tadlock (1978): The first major archaeological investigation on the current project property was undertaken by Tadlock and Tadlock in 1978. The Tadlock's completed a surface examination of the project area - essentially the same boundary as the present project area - and discovered and recorded seven archaeological sites: CA-ORA-710, -711, -712, -713, -714, -715 and -716. The sites follow the more level hills and benches of the property's main ridge running from Aliso Creek, near the western property boundary, eastward to the eastern property boundary. These sites will be discussed in more detail below.

The Tadlock's recommended that a representative sample of artifacts be collected from the surface of each site as well as from the ridgetop between the sites. Test trenches were then to be excavated by backhoe to determine the depth and dimension of the sites (Tadlock and Tadlock 1978:9).

Breece and Padon (1982): In July 1982, William Breece and Beth Padon performed a cultural resource reconnaissance and literature review of the proposed Phase II Foothill Transportation Corridor study. The study encompassed approximately 23 miles of proposed corridor routes from Little San Joaquin Canyon and Irvine Lake to the northwest to Cañada Gobernardo Canyon to the southeast (Breece and Padon 1982:1). The current study area made up only a small portion of this reconnaissance. During the course of the reconnaissance, the authors relocated three of the sites on the current study area: CA-ORA-710, -711, and -713; although CA-ORA-711 was described as containing no artifactual material or midden soil. CA-ORA-710 contained chert flakes, a chert core and a possible chopper. CA-ORA-713 contained chert flakes and a chert core. CA-ORA-712 was also within the reconnaissance area but was not relocated by the researchers (Breece and Padon 1982:31&34).

The authors recommended controlled surface collection and test excavation followed by, if necessary, data recovery excavation at CA-ORA-710 (erroneously identified as -711). CA-ORA-711 was not relocated and was considered destroyed. No further work was deemed necessary (Breece and Padon 1082:33-34). No mention was made as to the recommendations for CA-ORA-713.

Dillon (1989): A cultural resources reconnaissance was undertaken by Brian Dillon in 1989 for Scientific Resource Surveys. Dillon was able to relocate CA-ORA-710, -713, -714, -715 and -716. CA-ORA-711 and -712 were not relocated. Dillon surmised that these two sites had been destroyed since they were originally recorded in 1978 (Dillon 1989:48). Dillon also discovered three new sites, now named CA-ORA-1255, -1256 and -1257. The historic Hausauer Ranch was located and described in detail, although not formally recorded. All sites on the property will be discussed in more detail below.

Dillon recommended that each of the sites on the property undergo a comprehensive surface collection and test excavation. Those sites determined to contain a subsurface deposit were to undergo a data recovery excavation that constituted mitigation of adverse impacts (Dillon 1989:92).

Bissell 1984: In October 1984, Ronald Bissell of RMW Paleo Associates discovered a major archaeological site on the grounds of Saint Michael's Priory. The site lies on a small knoll above Aliso Creek, adjacent to and immediately north of the current study area. The site consisted of a dense scatter of ground and chipped lithic tools, including manos, scrapers, choppers, modified flakes, cores, hammerstones and debitage, in an apparent midden (Bissell 1984:3). The large site is likely to be related to the other sites on the Saddleback Meadows property as it lies only some 200 meters north of CA-ORA-710.

Maxon (1995): The author of the present report performed an archaeological investigation at Saddleback Meadows between September and November 1995. Most previously recorded sites were relocated. Some were not relocated. The historic ranch was recorded and a new site was discovered and recorded. Six of the previously recorded sites underwent a surface collection and five of those underwent a test excavation. All sites at Saddleback Meadows are listed in Table 2 below.

Table 2: Archaeological Sites at Saddleback Meadows

Site	Recorder	Description	Importance/ Significance
CA-ORA-710	Tadlock & Tadlock 1978	Flakes, scrapers, choppers, hammerstones & manos	Important
CA-ORA-711	Tadlock & Tadlock 1978	Sparse flakes, cores & one chopper	Important
CA-ORA-712	Tadlock & Tadlock 1978	Flakes	Not important
CA-ORA-713	Tadlock & Tadlock 1978	Flakes, scrapers, cores, choppers & manos	Not yet determined
CA-ORA-714	Tadlock & Tadlock 1978	Flakes, cores, some quartz material	Not important
CA-ORA-715	Tadlock & Tadlock 1978	Flakes, cores, scrapers, choppers, hammerstones & manos. Sophisticated artifacts exhibiting patination	Not yet determined
CA-ORA-716	Tadlock & Tadlock 1978	Flakes, cores & one chopper	Not important
CA-ORA-1255	Dillon 1989	Metate, core, scraper/spokeshave, blade, flake	Not important
CA-ORA-1256	Dillon 1989	Scraper plane, scraper	Not important
CA-ORA-1257	Dillon 1989	Mano	Not important
CA-ORA-1435H	Knell & Maxon 1995	Ranch complex with olive grove and holding pond	Not yet determined
CA-ORA-1437	Maxon 1995	Groundstone, debitage & thermally modified rock	Not yet determined

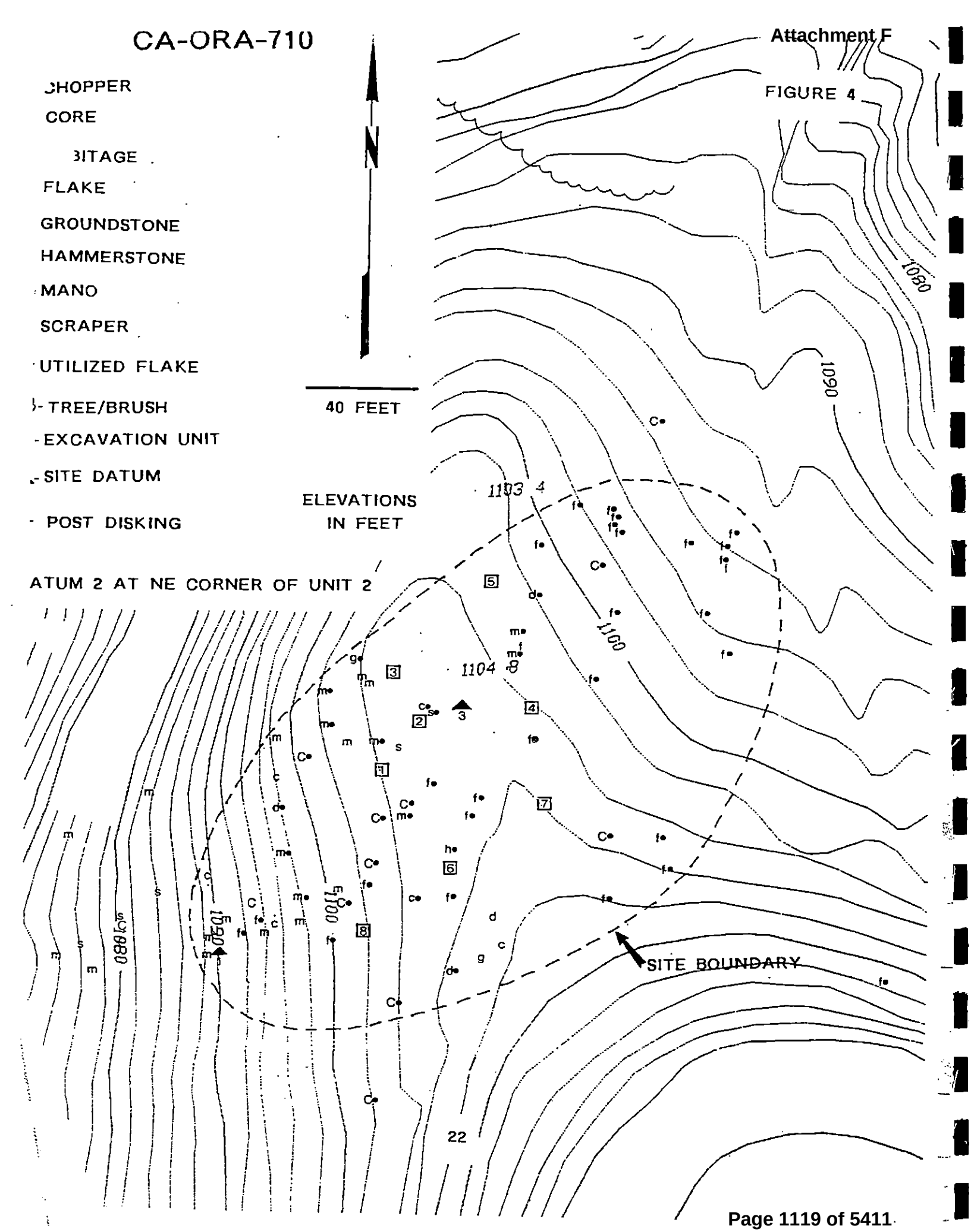
The revised plans for construction of 705 manufactured, single-family residential units will require extensive grading in preparation of construction. For this reason, every cultural resource previously identified on the property will be destroyed and impacts must therefore be mitigated prior to development. Each of the archaeological sites identified on the property will be discussed in detail below. Included will be a summary of work performed and recommendations proposed for each site.

CA-ORA-710

The site is located on a relatively flat knoll or terrace, directly east of, adjacent to and 12 meters above Aliso Creek in the northwestern portion of the property (see Figure 4 below). Boundaries of the core of the site are approximately 43 by 55 meters. Outcrops of fossiliferous bedrock are evident on the site's surface.

CA-ORA-710

FIGURE 4



The original recorders (Tadlock & Tadlock 1978) reported a wide range of artifacts over a rather large area. Subsequent archaeologists were not able to see artifacts to that extent. Dillon (SRS 1989) discovered a chalcedony core, a chert flake and a burned piece of chert shatter as well as three "truncated" manos, which he apparently collected and removed from the site during his reconnaissance investigation. Truncated manos are discussed by Van Horn and Murray (1984). These manos were recovered at CA-ORA-486, along Aliso Creek, just a short distance from site CA-ORA-710. The specimens had been "truncated" or broken off at one end and the rough end pounded smooth. They have been associated with the processing of "cacomites": a Spanish term referring to varieties of edible roots, bulbs and corms (bulb-like stems) that are found in the site vicinity.

Initial work supervised by the author at the site (Maxon 1995) consisted of a surface examination and surface collection. This resulted in the recovery of 26 artifacts including 16 uni- and bifacial manos (one possibly truncated) and mano fragments composed of porphyry, granite and metavolcanics, and chipped stone implements including three choppers, two hammerstones, one core, and four pieces of debitage. Material types include metavolcanics, quartzite and quartz. Subsequently, a disk pulled by a small bulldozer was employed to turn up the soil to a depth of approximately ten centimeters, for the purpose of uncovering near surface artifacts. This method, after a second surface collection, resulted in the recovery of an additional 56 artifacts including 11 groundstone implements: eight manos composed of granite and porphyry, and three metate fragments - two of granite and one quartzite. Chipped stone implements included 12 cores of metavolcanics, chert and quartzite; two hammerstones; two choppers; three scrapers and 25 pieces of debitage made primarily of chert and metavolcanics.

Eight one by one meter units were next excavated to determine the spatial extent of the site and verify the existence of a subsurface deposit. Fifty-four artifacts were recovered and two of the units produced in situ features. Results of the excavation are summarized in Table 3 below. A complete list of artifacts is provided in the artifact catalog in Appendix A.

Table 3: CA-ORA-710

Recovered Item	Depth (in centimeters)						Total Items
	0-10	10-20	20-30	30-40	40-50	50-60	
Charcoal				1			1
Chopper	1			1	1		3
Core	2	2	1		1		6
Debitage	21	2	3	1			27
Mammal Bone					1		1
Hammerstone	2			1		1	4
Mano	1	1	2	3	1		8
Metate			2	1			3
Scraper						1	1
Total Level	27	5	8	8	4	2	54

Even though the scope of the test excavation was limited to a small fraction of the total CA-ORA-710 site area, a relatively wide range of tool and material types was recovered. This indicates that a number of activities were performed on the site. Lithic tool production was evidently accomplished on site, based on the total recovery (surface collection and unit excavation) of 19 cores and a variety of waste flakes and other debitage as well as associated hammerstones. Scrapers and choppers were used for the processing of vegetable and wood fibers, as well as for working hides and bone. The processing of the hard seed resources associated with the coastal sage scrub and chaparral communities is evidenced by the recovery of 33 manos and mano fragments and six metates and metate fragments. The sites inhabitants were utilizing a range of material types to fashion tools: chert (31%), metavolcanics (23%), granite (15%), porphyry (11%), quartzite (9%), metasedimentary (7%) and smaller percentages of jasper, sandstone and quartz. Some of the chert may have been heat treated. Van Horn (1986) indicates that some (ca. 5-6%) of the chert at the nearby Hoopaugh site (CA-ORA-507) was heat treated and Dillon (SRS 1989) recovered a piece of burned white chert shatter at CA-ORA-710. Apparently, chert and other silicious materials are "annealed" or made stronger by being heat

treated. The material is heat treated and then slowly cooled to permit the molecular structure to rearrange itself resulting in material that is easier to flake. It has been shown that heat treatment can be used to produce larger flakes (Crabtree & Butler 1964) and thermally altered cores have been recovered at several sites in northern California (Gould 1976; Van Horn 1976). Bordaz (1970) has suggested that the Upper Paleolithic Solutrean points from France were made using thermal modification.

Thermally altered chert can be detected by luster, color change, crazing, potlidding and bleaching (Odell 1979). Van Horn (1986) described the amber chert from CA-ORA-507 as turning red, white and blue after being heated in a barbecue. Some of the chert at CA-ORA-710 shows evidence of being heat treated by a similar change in color and hairline fracturing.

Based on the characteristics of the artifacts recovered during the course of the test excavation, it is likely that the site is of Millingstone age. The lack of evidence of the mortar and pestle being used at the site further bolsters this hypothesis. The mortar and pestle technology is associated with the later Intermediate period when exploitation of the acorn became widespread.

A large portion of the artifacts were recovered from the western portion of the site in Units one through three. Units one and two produced the three in situ features; therefore, it is established that at a minimum, this portion of the site's subsurface remains intact. A feature consisting of two slab metates and a core was recovered from the 20-30 centimeter level of Unit 1. Two features were recovered from Unit 2: a mano, core and chopper from the 10-20 centimeter level and a slab metate, three manos and a chopper at the 30-40 centimeter level.

It is likely that a substantial subsurface deposit remains relatively undisturbed at the site; therefore, the site is deemed important/significant. Preservation of the site is warranted, but not possible based on the current 705 unit plan. Data recovery is therefore necessary before ground disturbing activities begin. It is recommended that a data recovery excavation of approximately 30, one by one meter units be accomplished at the site. The data recovery excavation should focus on the following research questions:

1. What is the date range of occupation of the site?
2. What activities were accomplished at the site?

3. What was the settlement pattern of the site? Was it used seasonally or occupied year around?
4. Can the chert recovered at the site be associated with the chert quarry (CA-ORA-507) located less than one kilometer from the site?
5. Are truncated manos present on the site that suggest "cacomite" processing (see above)?

CA-ORA-711

The site is located on a low, flat ridge directly east of Aliso Creek and just north of a smaller tributary drainage (see Figure 5 below). The core of the site measures approximately 27 by 30 meters. The original recorders (Tadlock & Tadlock 1978) reported a "sparse distribution of flakes, cores, and one chopper." Dillon (1989) was unable to relocate the site during his reconnaissance.

Initial work performed under the supervision of the author (Maxon 1995) consisted of a surface examination and surface collection. This resulted in the recovery of 30 artifacts including 12 uni- and bifacial manos (one or two possibly truncated) of granite, sandstone, metavolcanics and porphyry. Chipped stone implements recovered include two cores, two hammerstones, one uniface, one biface, one scraper plane and 11 pieces of debitage composed of chert, porphyry, metavolcanics and quartzite. Subsequent surface collection during the course of excavation produced 16 additional artifacts including three manos, one metate, four cores, one hammerstone and seven pieces of debitage. Material types included chert, metavolcanics, granite, porphyry and quartzite.

Ten 1 x 1 meter excavation units and one feature excavation were then placed in an attempt to delineate the site boundary and verify the existence of a subsurface deposit. One hundred-twelve artifacts, excluding historic or modern items, were recovered from the subsurface including four in situ features. Table 4 below summarizes this information.

FIGURE 5

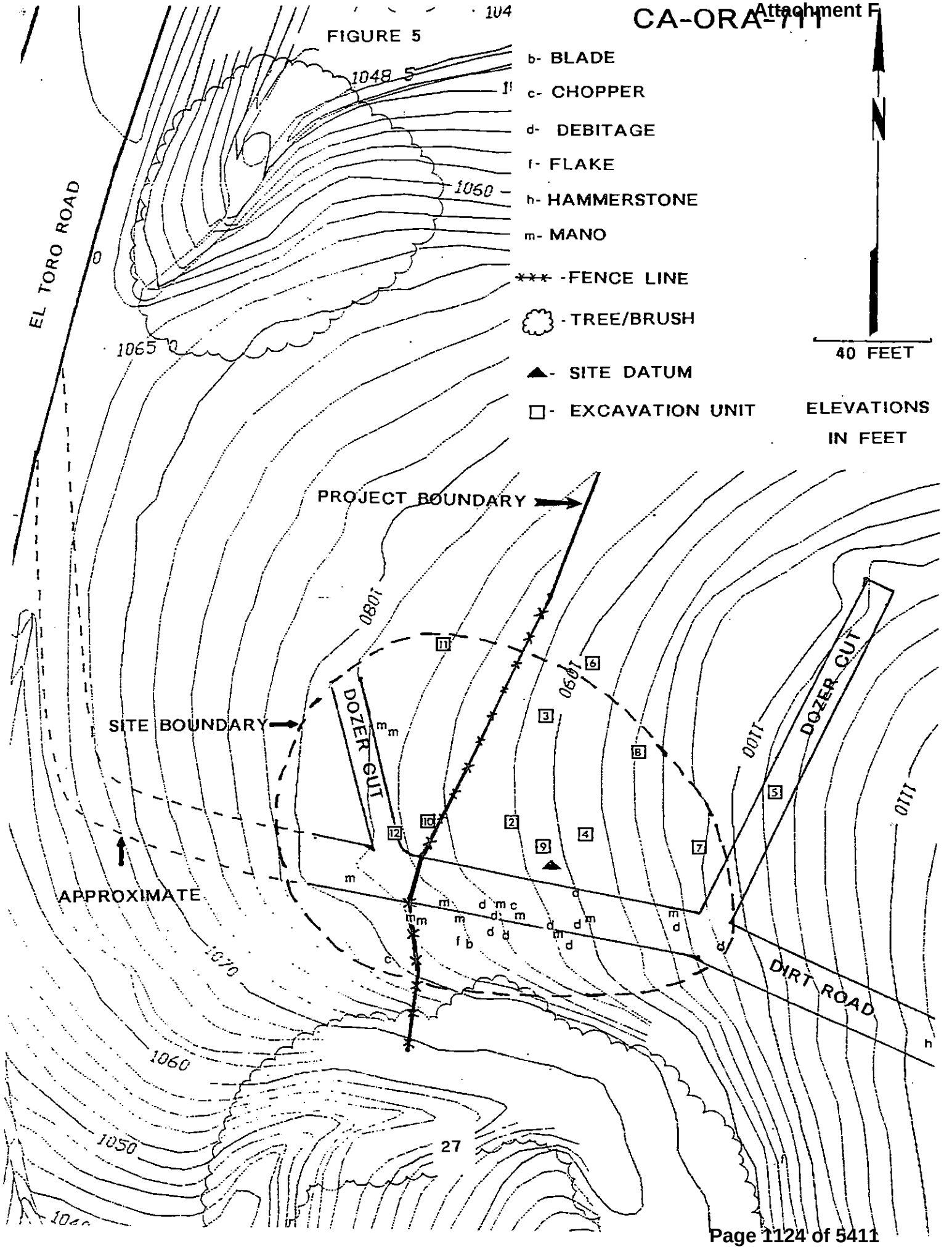

b- BLADE
c- CHOPPER
d- DEBITAGE
f- FLAKE
h- HAMMERSTONE
m- MANO
-FENCE LINE
-TREE/BRUSH
- SITE DATUM
- EXCAVATION UNIT
N
40 FEET
ELEVATIONS IN FEET
EL TORO ROAD
PROJECT BOUNDARY
SITE BOUNDARY
APPROXIMATE
DOZER CUT
DOZER CUT
DIRT ROAD
1048
1050
1060
1065
1070
1080
1090
1100
1110
27

Table 4: CA-ORA-711

Recovered Item	Depth (in centimeters)						Total Items
	0-10	10-20	20-30	30-40	40-50	Feature	
Chopper			2		3		5
Core	1		2		3	1	7
Debitage	25	11	12	4	10	4	66
Hammerstone	1		4		1		6
Mano	2	1	10	1	5	5	24
Metate			1		1	2	4
Total Level	29	12	31	5	23	12	112

As with CA-ORA-710, excavation at CA-ORA-711 was limited to a small fraction of the total site area. And similarly, a relatively wide range of tool and material types was recovered. This, again, indicates that a number of activities were performed on the site. Lithic tool production activities are evidenced by the recovery of 13 cores and a variety of waste flakes and other debitage, as well as associated hammerstones. The recovery of 39 manos and mano fragments and five metates and metate fragments is strong evidence that processing of the hard seed resources associated with the coastal sage scrub and chaparral communities was being accomplished. Scrapers and choppers were being utilized to process vegetable and wood fibers, as well as for working hides and bone. A single porphyry scraper plane was recovered from the surface of the site, suggesting the possible processing of agave/yucca (Kowta 1969) or other vegetal material (Salls 1985). The sites inhabitants were utilizing a wide range of material types for the manufacture of lithic tools: chert 31%, metavolcanics 25%, granite 17%, quartzite 11%, porphyry 9%, sandstone 5%, and schist 1%. Some of the chert recovered may have been heat treated (see discussion of CA-ORA-710 above).

Based on the characteristics of artifacts recovered at CA-ORA-711, as well as the lack of evidence of mortar and pestle technology, it is probable that the site is of Millingstone age.

A majority of artifacts recovered from CA-ORA-711 was located in units two, three, four, nine, ten and twelve on both sides of the property boundary fence on the lower, flatter area of the

knoll. Units five and six produced no prehistoric artifacts. The existence of in situ features in Units two, nine, ten and twelve suggests an intact subsurface deposit. All of the features contain an assortment of *in situ* lithic tools including manos and metates, hammerstones, cores and debitage. CA-ORA-711 is deemed an important/significant site and an intact subsurface deposit remains undisturbed on the site. Preservation of the site is warranted, but not possible based on the current 705 unit plan. Data recovery is therefore necessary before ground disturbing activities begin. It is recommended that a data recovery excavation of approximately 30 one by one meter units be accomplished at the site. The data recovery excavation should focus on the same research questions that were generated for CA-ORA-710.

CA-ORA-712

The site was first recorded by Tadlock and Tadlock (1978) and described as being on a relatively flat hill overlooking CA-ORA-710 and 711 and Aliso Creek. It was described as a chipped lithic scatter, heavily damaged by bulldozing. Cultural material could not be relocated by subsequent researchers. The site is therefore not important/significant, but the area should be monitored by a qualified archaeologist during mass grading operations. If artifacts are discovered, the site can be reevaluated.

CA-ORA-713

The site is located on a ridge between Oso and Aliso Creeks and on the ridge's north facing slopes as well as a relatively flat area at the slopes base (see Figure 6 below). The area measures approximately 150 by 215 meters and could comprise two or more sites. The original recorders of the site (Tadlock and Tadlock 1978) reported finding flakes, scrapers, cores, choppers and manos. Breece and Padon (1982) reported only three flakes. Dillon (SRS 1989) found no "portable artifacts", but discussed a sandstone concretion boulder with a cupule ground into its upper surface.

Initial work on the site (Maxon 1995) consisted of a surface examination and surface collection. This resulted in the recovery of 14 artifacts including two metavolcanic cores, a quartzite flake, a piece of metavolcanic shatter, a granite chopper, eight uni- and bifacial,

CA-ORA-713

FIGURE 6

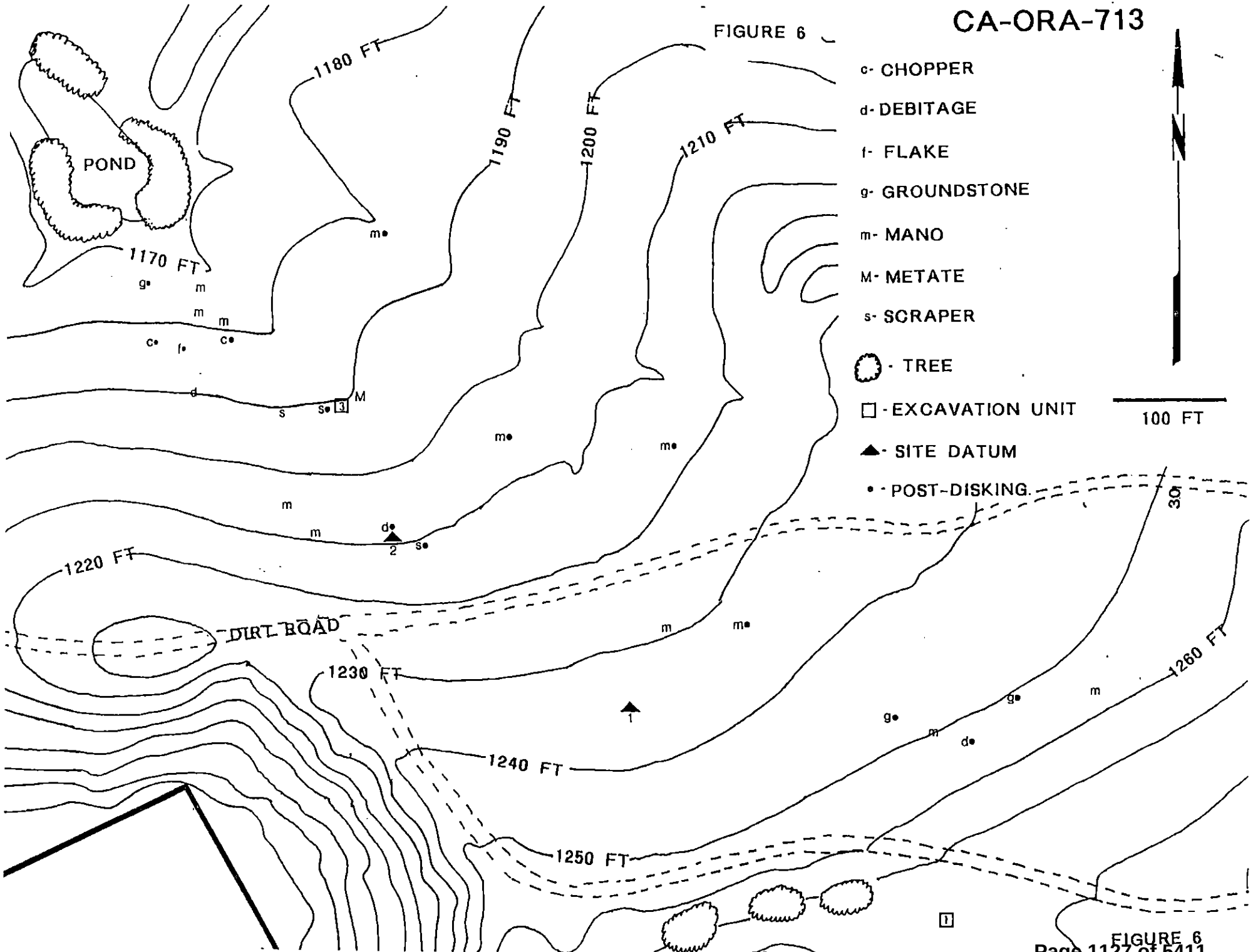


FIGURE 6

porphyry and granite manos and a granite basin metate fragment. The cupule noted by Dillon (SRS 1989) was seen, but the current researchers have serious reservations regarding the cultural nature of the cupule. Subsequently, a disk pulled by a small bulldozer was employed to turn up the soil to a depth of ten centimeters to expose near surface artifacts. This method resulted in the recovery of an additional 14 artifacts including three scrapers of metavolcanics and granite, two quartzite cores, three pieces of metavolcanic and quartzite debitage and six manos, uni- and bifacially ground, composed of granite and porphyry.

Three one by one meter units were excavated in distinct areas of the large site; two on the ridgetop and one at the base of the slope that yielded the majority of the surface artifacts. All three units were sterile - producing no cultural material.

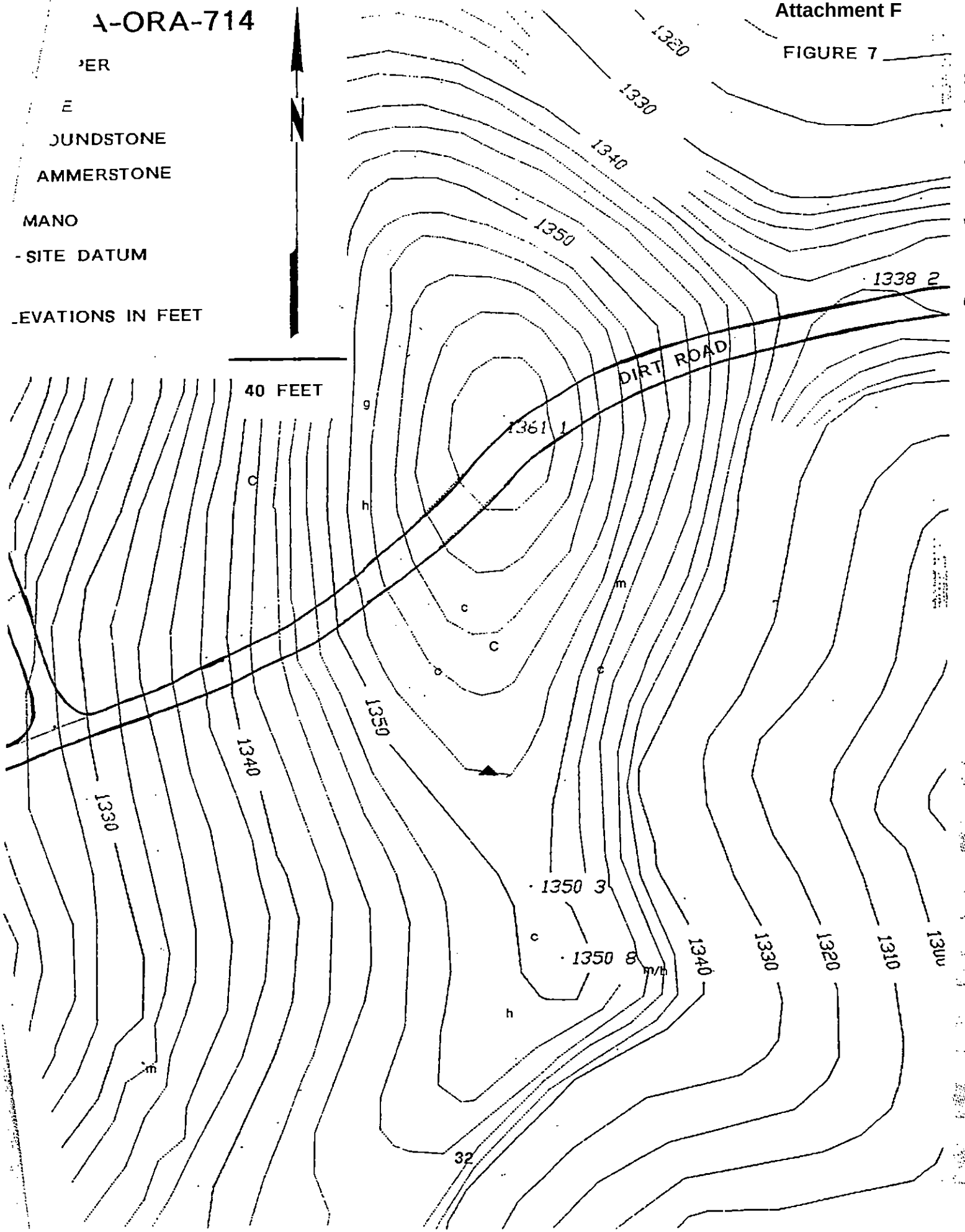
Since artifacts were scattered over a large area, a number of unrelated encampments occupied over a period of time may be represented. The importance/significance of the site is as yet unknown. It is therefore recommended that controlled grading under the guidance of a qualified archaeologist be accomplished before the commencement of mass grading. Should clusters of artifacts be discovered, additional units could be excavated in those specific areas.

CA-ORA-714

The site is located on a domed hill on the ridge between Oso and Aliso Creeks, west of CA-ORA-713 and just to the south of a steep cliff leading down to a large Oso tributary drainage (see Figure 7 below). Tadlock and Tadlock (1978) called the site a probable quarry containing assayed stones, but Dillon (SRS 1989) reported two artifacts. The presence of bedrock near and at the site's surface eliminates the possibility of extensive subsurface deposits. Bleached cow bones litter the ridgeline indicating either a carcass dumping ground or a carnivore feeding area. The site measures some 60 by 30 meters.

Work undertaken at this site (Maxon 1995) was essentially a surface examination and surface collection. Twelve artifacts were recovered as a result of this procedure including three unmodified hammerstones of metavolcanics and porphyry, two cores of quartz and chert, four choppers of porphyry and metavolcanics and three uni- and bifacial manos of porphyry.

FIGURE 7


A-ORA-714
ER
E
OUNDSTONE
AMMERSTONE
MANO
- SITE DATUM
EVATIONS IN FEET
N
40 FEET
DIRT ROAD
1320
1330
1340
1350
1338 2
1361 1
1350 3
1350 8
1310
1300
32

No units were excavated on the site because of the presence of bedrock at the surface, which eliminated the possibility of a significant subsurface deposit.

The site was probably a short term encampment, perhaps the result of a single occurrence and because of the presence of exposed bedrock, a subsurface deposit is not expected. The site is therefore considered not important/significant and it is recommended that the area be monitored by a qualified archaeologist during mass grading operations. If artifacts are discovered, the site can be reevaluated.

CA-ORA-715

The site is located on a relatively flat, rounded hill comprising the ridge above the headwaters of Oso Creek, overlooking Aliso Creek (see Figure 8 below). Site dimensions are approximately 55 by 65 meters. A bulldozer cut in the site area establishes that soils have considerable depth.

Initial work on the site (Maxon 1995) consisted of a surface examination and a surface collection. Thirty two artifacts were recovered including 13 uni- and bifacially ground manos, four of them fragments, composed of porphyry, sandstone, metavolcanics, quartzite and granite, four choppers of quartzite, metavolcanics, porphyry, and quartz, two bidirectional metavolcanic cores, one metavolcanic anvil, one metavolcanic hammerstone and eleven pieces of debitage of metavolcanics, chert, jasper and quartzite.

Subsequently, a disk pulled by a small bulldozer was employed to turn up any subsurface artifacts within ten centimeters of the surface. This procedure resulted in the recovery of nine additional artifacts including two choppers of metavolcanics and quartzite, one quartzite axe, one multidirectional metavolcanic core, two pieces of metavolcanic debitage, one bifacial quartzite mano and two unifacial porphyry mano fragments.

Next, four 1 x 1 meter units were excavated to determine if a subsurface deposit existed on the site . The existence of a subsurface deposit was not substantiated, because the excavation produced negligible artifacts. Those cultural materials recovered could have been deposited via rodent disturbance. Table 5 below, summarizes the excavation at CA-ORA-715.

FIGURE 8

CA-ORA-715

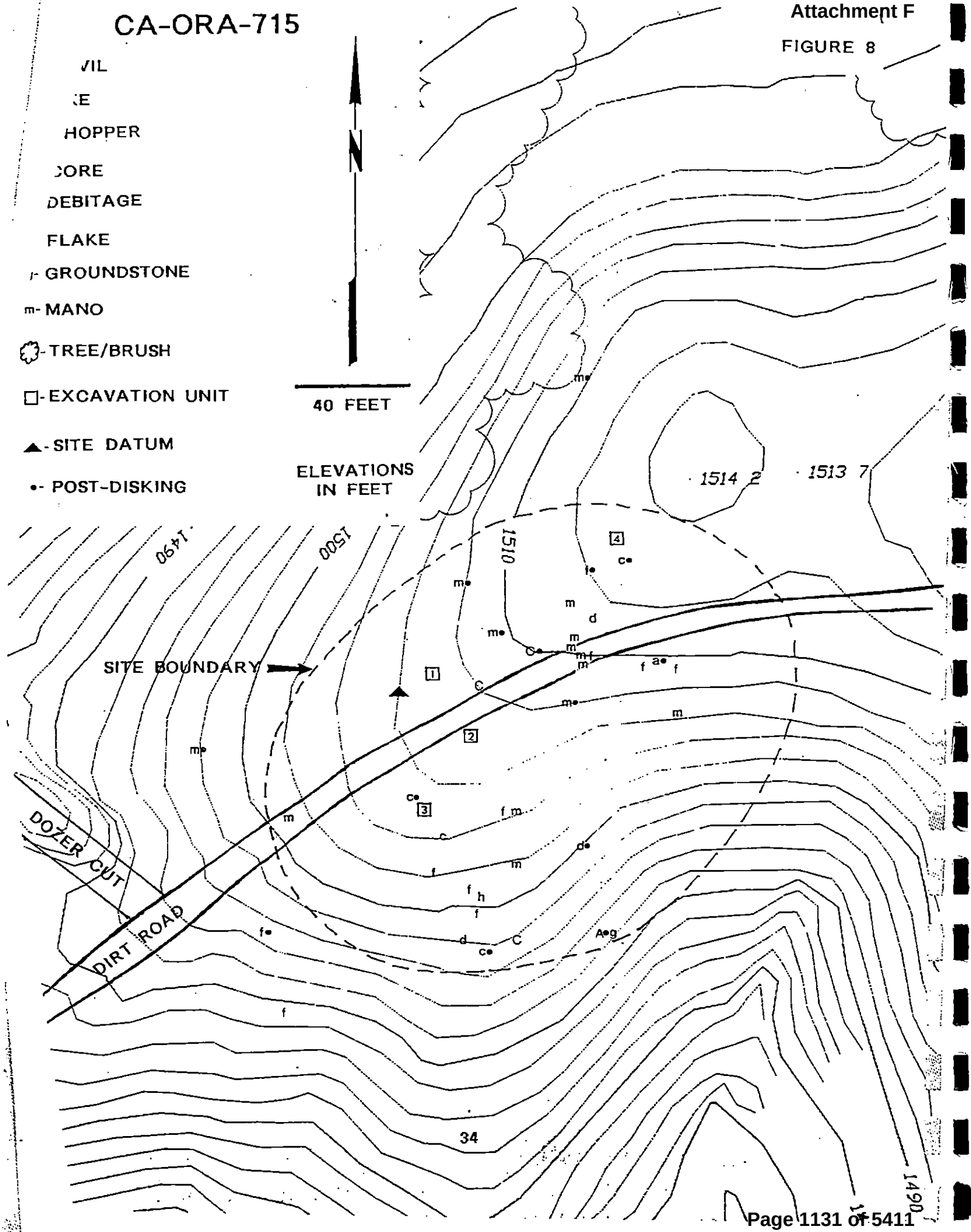


Table 5: CA-ORA-715

Recovered Item	Depth (in centimeters) 0-10	Total Items
Debitage	4	4
Total Level	4	4

The importance/significance of the site is as yet unknown. It is therefore recommended that controlled grading under the guidance of a qualified archaeologist be accomplished at the site before the commencement of mass grading. Should clusters of artifacts be discovered, additional units could be excavated in those specific areas.

CA-ORA-716

The site is located on a high hilltop in the northeastern corner of the project area. Tadlock and Tadlock (1978) reported finding a negligible number of flakes on the westerly portion of the site and flakes, cores and a redeposited chopper on the central and eastern portion. Dillon (SRS 1989), then reports finding just one basalt core at the site area and comments that much of the surface of the site has been graded to and below the surface of bedrock.

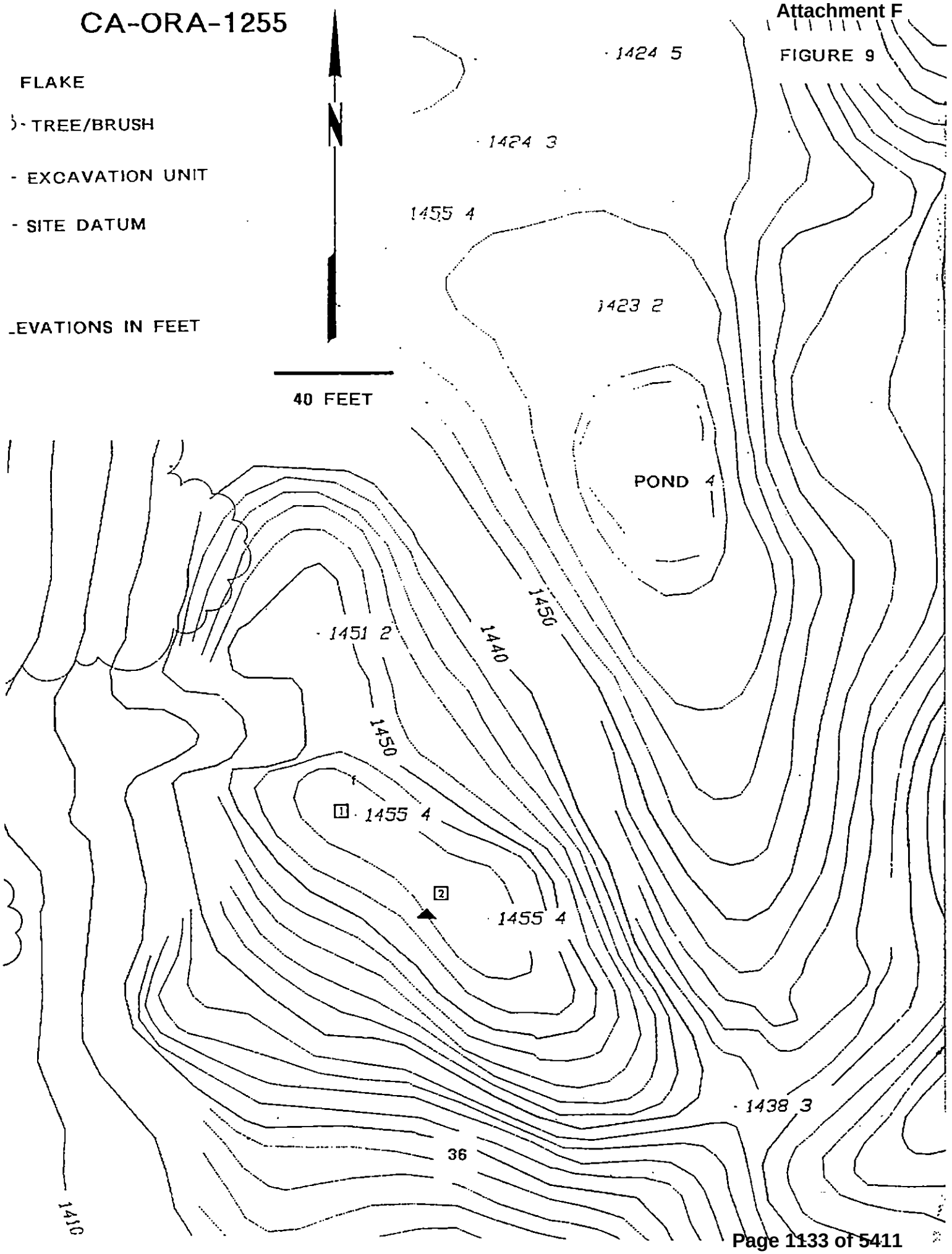
Relative to the current project, the site, or what is left of it, lies off the property to the west; therefore, no further action is required.

CA-ORA-1255

The site lies on the lower drainage of a small knoll creating an upland pond and overlooking a steep-sided drainage (see Figure 9 below). It is approximately 25 by 25 meters in size. Dillon (SRS 1989) described the site as lying approximately 50 meters southwest of the pond in a natural amphitheater formed by a series of low, rounded knolls. The site was apparently on the backslope of the knoll creating the pond. Artifacts recovered by Dillon include one sandstone metate fragment, one core, two flakes and a quartzite prismatic blade.

Initial work on the site (Maxon 1995) consisted of a surface examination and surface collection. One metavolcanic flake was recovered by this method. Subsequently, two .50 by one

FIGURE 9


CA-ORA-1255
FLAKE
TREE/BRUSH
EXCAVATION UNIT
SITE DATUM
ELEVATIONS IN FEET
40 FEET
N
1424 5
1424 3
1455 4
1423 2
POND 4
1451 2
1450
1440
1450
1455 4
1
2
1455 4
1438 3
36
1410

meter units were excavated on the top of the knoll. Unit one was excavated to 20 cm., Unit two to 30 cm. The lone artifact recovered was a piece of metavolcanic shatter in the 10-20 cm. level of Unit 2. The units were very shallow, because a very light colored decomposing bedrock sand was encountered at those levels and the units were abandoned.

Based on the dearth of cultural materials recovered, the site is deemed not important/significance and no further work is necessary. It is recommended, however, that a qualified archaeologist be present to monitor the commencement of clearing/grading. If additional artifacts are recovered, the site can be reevaluated.

CA-ORA-1256

The site lies to the south and downslope from the southwest margin of CA-ORA-715, along a brushy fingerline ridge. Dillon (SRS 1989) first recorded the site and reported finding a large, crude, "early" appearing scraper plane and an andesite core/scraper.

The site was not relocated during the surface examination of the current project and has been likely destroyed. The site is not considered important/significant; however, it is recommended that a qualified archaeologist be present to monitor clearing/grading operations. If additional artifacts are recovered, the site can be reevaluated.

CA-ORA-1257

The site lies to the west and downslope of a low knoll directly west of Aliso Creek, and north of a steep cliff. Dillon (SRS 1989) recorded the site and reported finding a unifacial granite mano and a sandstone bedrock feature containing two cupules or incipient bedrock mortars. He commented that the mano was not truncated like the other three found at CA-ORA-710, but may have been used in conjunction with the bedrock feature for grinding purposes: therefore he called it an incipient bedrock mortar.

During a prior visit to the site the small boulder containing the purported cupules was seen, and during the current project it was again located. The current researchers doubt the cultural nature of the cupules. They are in very soft stone and would have been most ineffective as grinding implements.

The site was carefully examined for cultural materials during the project (Maxon 1995). No artifacts were seen or recovered. Therefore, the site is considered not important/significant; however, it is recommended that a qualified archaeologist be present during clearing/grading operations. If additional artifacts are recovered, the site can be reevaluated.

CA-ORA-1435H (Hausauer Ranch)

The site is located at the bottom of a deep drainage near the center of the property (see Figure 10 below). It is surrounded by dense foliage (oak, eucalyptus and pepper trees). The site is a ranch complex comprised of a residence, barn (collapsed), several out structures and a holding pond surrounded by a large olive grove numbering nearly 100 trees. The ranch buildings are in an advanced state of decay and have additionally been vandalized. The site complex measures approximately 275 by 100 meters.

Work performed on the site (Maxon 1995) included examining the surface of the entire ranch area, mapping and describing all the structures associated with the ranch, and preparing a site recording form.

Because no in depth work has been accomplished on the site, its importance/significance has not yet been determined. It is therefore recommended that a thorough surface collection and excavation of a sufficient number of backhoe trenches (approximately 10-20) be accomplished at the site to provide the data for site evaluation. Subsequent work will depend on the results of test excavation of the site. Data recovery work may become necessary after evaluation.

CA-ORA-1437

This newly discovered site lies on a rounded knolltop at the northern edge of the property overlooking a small drainage leading south-westward into Aliso Creek (see Figure 11 below). The site is approximately 140 meters northwest of CA-ORA-1255 and measures approximately 20 by 20 meters.

The site was discovered serendipitously (Maxon 1995) as the reconnaissance crew was searching for CA-ORA-1255. Work performed on the site (Maxon 1995) included a surface

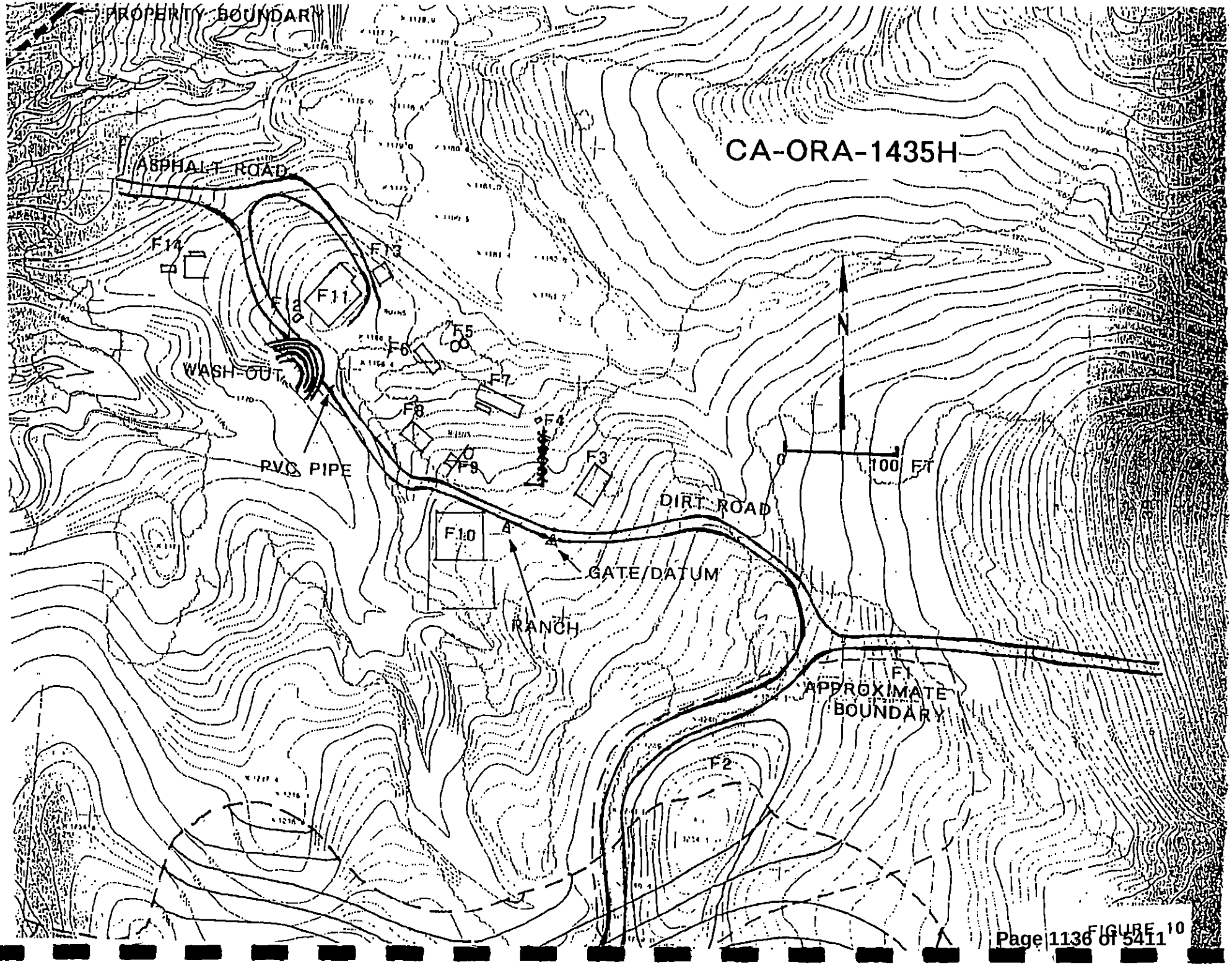
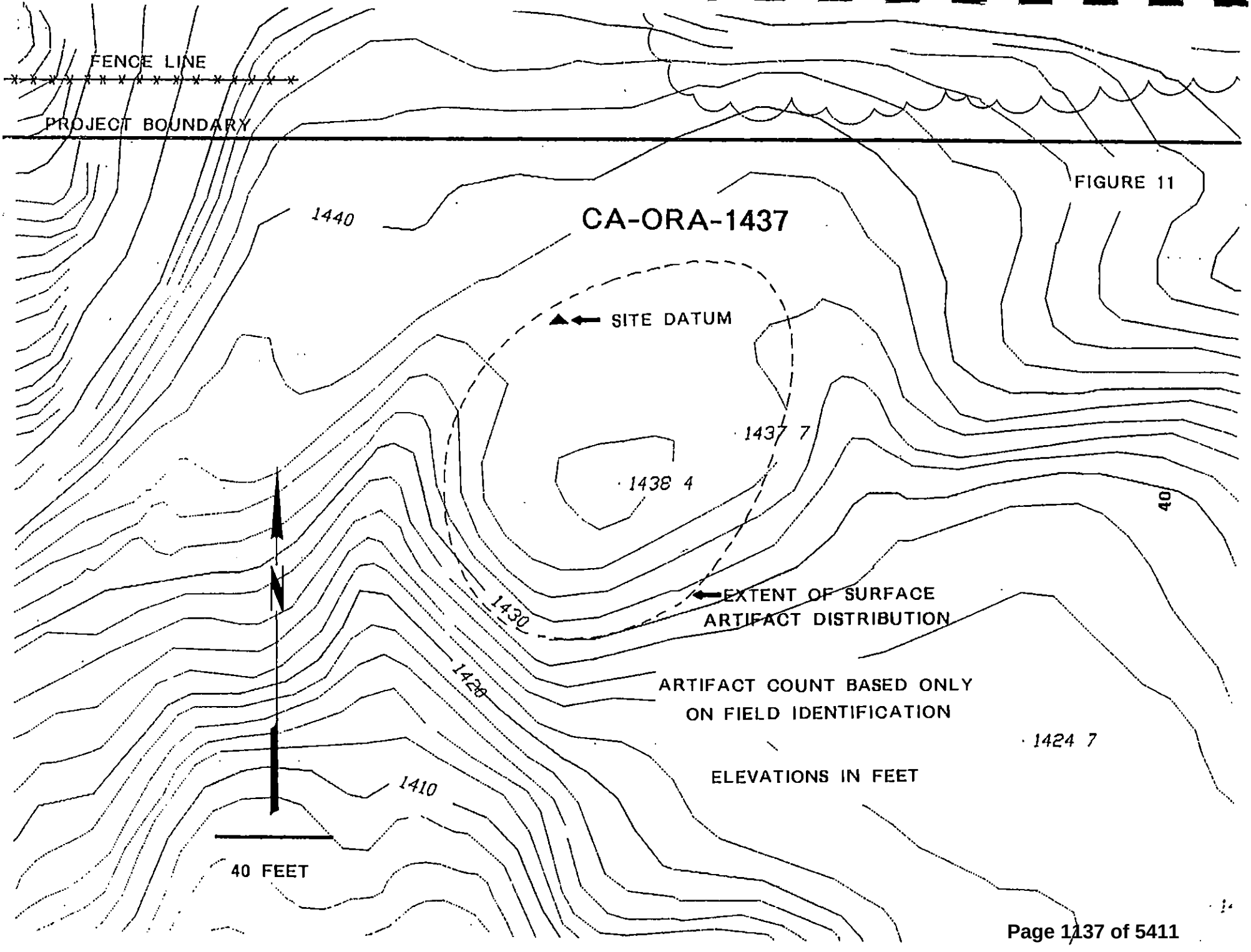

PROPERTY BOUNDARY
CA-ORA-1435H
ASPHALT ROAD
F14
F13
F11
F12
F5
F6
WASH-OUT
F7
F8
F4
F9
F3
RVC PIPE
N
0
100 FT
DIRT ROAD
F10
A
A
GATE/DATUM
RANCH
F1
APPROXIMATE
BOUNDARY
F2

FIGURE 10


FENCE LINE
PROJECT BOUNDARY
FIGURE 11
CA-ORA-1437
1440
SITE DATUM
1437 7
1438 4
40
1430
EXTENT OF SURFACE
ARTIFACT DISTRIBUTION
1420
ARTIFACT COUNT BASED ONLY
ON FIELD IDENTIFICATION
1424 7
ELEVATIONS IN FEET
1410
40 FEET

examination and the subsequent recording of all identified artifacts by surveyor's transit and stadia radiation methods. Twenty-nine items were identified including mano fragments, metate fragments, cores and flakes. The items were not collected, precluding the possibility of further study (material types, measurements, weights) of the artifacts. Finally, an archaeological site recording form was prepared for the site.

Because no in depth work has been accomplished on the site, its importance/significance is not known. It is therefore recommended that a thorough surface collection and unit excavation be accomplished at the site to provide the data for site evaluation. Subsequent work will depend on the results of test excavation of the site.

RESPONSE TO COMMENTS

In March 1996, comments to the Draft Environmental Impact Report No. 561 were submitted to Raymond Brantley, Chief of the County of Orange, Environmental and Project Planning Division, by Steve Conkling, a resident of a neighborhood in the vicinity of Saddleback Meadows. Mr. Conkling commented on the entire EIR document, a portion of which concerned the cultural resources research performed at Saddleback Meadows. A response to the comments was prepared and sent to Duane Morita of Urban Vision. This response is reproduced here. Mr. Conkling made some 69 separate comments concerning the EIR document. Those comments were enumerated and any concerning cultural resources (only #s 24 and 64) were responded to.

Comment (#24): "Table 4 states that cultural resources will require EMA approval. However, this table also indicates that a Section 404 permit will be required for the project. Under the Section 404 permit, cultural resources should be mitigated to be in compliance with Section 106 of the *National Historic Preservation Act*, and fall under the review of the U.S. Army Corps of Engineers. The current document does not provide cultural resource mitigation management to this level."

Response: The applicability of completing the project in compliance with Section 106 is discussed in the response to Comment #64 below. The statement that "cultural resources should

be mitigated to be in compliance with Section 106" is incorrect. Under Section 106, only the effect of the project on sites determined eligible to be listed in the *National Register of Historic Places* need to be taken into account. Sites determined to be ineligible require no additional action.

Comment (#64): "Since the project requires a 404 Permit with the U.S. Army Corps of Engineers (Corps), assessment, testing and data recovery for affected archaeological sites must be conducted in compliance with Section 106 of the *National Historic Preservation Act*. Section 106 requires that the sites be tested for their potential eligibility to the *National Register of Historic Places (National Register)*. None of the testing for the EIR was done to these standards."

Response: Throughout the duration of the Saddleback Meadows archaeological study there was no notification that the project required a 404 permit from the Army Corps of Engineers, or that any other Federal involvement in the project was expected. Completing the cultural resources study in compliance with Section 106 of the *National Historic Preservation Act* was not warranted. Consequently the project was appropriately completed under the *California Environmental Quality Act* (CEQA).

Comment (#64): "The 12 archaeological resources identified in the EIR have not been adequately tested to determine their significance under CEQA."

Response: Eleven prehistoric archaeological sites and one historic site have been recorded within the boundaries of the Saddleback Meadows project area. Three sites (CA-ORA-712, -1256 and -1257) could not be relocated as plotted by previous researchers and no cultural material was found despite a thorough examination of those plotted locations. These sites are clearly not important resources.

One site (CA-ORA-716) actually is located just outside the project boundaries and will not be affected by the current project. This site requires no further action relative to the current study.

One site (CA-ORA-1435H) lies within the current project area in proposed open space and will not be affected by grading or construction (this has changed because of the new proposed project of 705 manufactured, single-family residential unit development). This site requires no further action unless changes are made to the current plans (those changes to plans have occurred and additional work is necessary).

Six sites (CA-ORA- 710, -711, -713, -714, -715 and -1255) will be affected by the current project (Maxon 1995) and were formally test excavated. Test excavation consisted of surface collection and mapping of all visible surface artifacts, and excavation of a sufficient number of one by one meter square excavation units to characterize the nature of any subsurface deposit. These units were excavated using standard archaeological methods. Four of these sites (CA-ORA-713, -714, -715 and -1255) are not important since they are highly disturbed and contain no subsurface component. The remaining two sites (CA-ORA-710 and -711) are important since both contain substantial and relatively undisturbed subsurface components.

One site (CA-ORA-1437) was discovered during the current project (Maxon 1995). Time constraints prevented testing this site prior to completion of Draft Environmental Impact Report 561. This site requires testing and evaluation prior to development.

It is clear from the preceding discussion that eleven of the twelve recorded sites within the project boundaries have been adequately addressed. Three are determined to no longer exist, one is actually located outside the current project boundaries, one is located in proposed open space and will not be affected by the project (this has now changed), and six were tested using standard archaeological methods. One site discovered during field work will be test excavated and evaluated prior to the start of grading. The comment that the sites were not adequately tested under CEQA is unfounded.

Comment (#64): "...the sites are not adequately evaluated under a straight CEQA review. The office of Historic Preservation, in 1995, began the *California Register of Historical Places*, based on guidelines very similar to those for Section 106. The sites within the project area have not been evaluated for either *Register*."

Response: The Office of Historic Preservation (OHP) created the *California Register of Historical Resources* which has been adopted as *guidelines* by the Historical Resource Commission. In addition, current CEQA Statutes (Public Resource Code 21084.1) state that "an historical resource is a resource listed in, or determined eligible to be listed in, the California Register of Historical Resources (Governor's Office of Planning and Research 1996:51)." However, the *California Register* and the criteria for eligibility have not yet passed through the state legislative process and do not have the weight of formal regulations. The legality of requiring evaluation of historical resources for eligibility to be listed in the *California Register*, rather than per the criteria included in Section 21083.2 or Appendix K, is not clear.

Regardless, it is our position that the criteria in Appendix K used for evaluation of the archaeological sites to be affected by the proposed project would be sufficient for evaluating these same sites for their eligibility to be listed in the *California Register*. Criterion d. for eligibility to be listed in the *California Register* states that a historical resource may be listed if "it has yielded or is likely to yield information important in prehistory or history (Office of Historic Preservation 1995:4)." Section III, subsection B of Appendix K of CEQA states that an important archaeological resource is one which "can provide information ... useful in addressing scientifically consequential and reasonable or archaeological research questions (Governor's Office of Planning and Research 1996:275)." It is clear that criterion d. for eligibility to be listed in the *California Register* and criterion III, B of Appendix K are similar, and that the evaluation of archaeological sites using section III, B would be nearly identical to an evaluation using criterion d.

As stated previously, the project did not require compliance with Section 106 of the *National Historic Preservation Act*.

Comment #64: "According to the Office of Historic Preservation (1995), properties are evaluated at 45 years of age, not 100 years."

Response: Citing *Instructions For Recording Historical Resources* (Office of Historic Preservation 1995), Mr. Conkling states that "properties are evaluated at 45 years of age, not 100 years." In reality, the reference cited states that sites to be *recorded* should be at least 45 years

old, but is silent on matters of evaluation. All known cultural resources within the project area that are at least 45 years old have been recorded and assigned trinomial designations by the South Central Coastal Archaeological Information Center at the University of California, Los Angeles. All sites evaluated for the project are prehistoric sites and far exceed the 45 year criterion. The ranch house (CA-ORA-1435H) is not located in an area to be affected by the project (Maxon 1995) as currently planned, and accordingly, was not formally evaluated (this has now changed).

Comment #64: "Yet, no consultation with the Corps has been initiated, and site eligibility assessments have not been completed."

Response: The archaeological investigations were accomplished under CEQA regulations which do not require consultation with the U.S. Army Corps of Engineers.

Comment #64: "AM 9-8 is inaccurate and illegal, the Coroner makes the determination of the nature of the Human Remains. Also, the Heritage Commission contact information is incorrect.

Response: AM 9-8 states that "If human remains of Native American origin are encountered during the project the County Coroner's Office and the Native American Heritage Commission shall be contacted for preservation and protection of the remains." Mr. Conkling is correct. The proper procedure is that the County Coroner's office is notified whenever human remains are encountered. If the Coroner's office determines that the remains are of Native American origin, they have 24 hours in which to notify the Native American Heritage Commission, which in turn will notify the most likely descendant of the deceased Native American.

SUMMARY

Archaeological research accomplished at Saddleback Meadows (Maxon 1995) is as follows: cultural resource reconnaissance relocated CA-ORA-710, -711, -713, -714, -715, -1255 and -1257, previously recorded on the property; CA-ORA-712, -716 and -1256 were not relocated and are considered destroyed; CA-ORA-1435H, the historic ranch house, was formally recorded; CA-ORA-1437 was discovered during the project.

CA-ORA-710, -711, -713, -714, -715 and -1255 were formally test excavated; CA-ORA-1435H did not undergo any testing because it was to be in open space, and was not to be destroyed under the previous 318-unit development; CA-ORA-1437 did not undergo testing because time constraints precluded further work prior to completion of Draft Environmental Impact Report 561. The site was mapped and formally recorded.

RECOMMENDATIONS

CA-ORA-710 and CA-ORA-711 have been determined to be important/significant according to Section 106 of the NHPA and CEQA. Although the sites lie in open space, remedial grading of the proposed open space will destroy them. Data recovery excavation of at least 30 one by one meter units at each site must be accomplished: CA-ORA-1437 is the site discovered during the previous project (Maxon 1995); no work has been done as yet. A surface examination and surface collection and a test excavation consisting of approximately ten, one by one meter units must be accomplished at the site to characterize the nature of any subsurface deposit. Additional work may become necessary after evaluation. CA- ORA-1435H has not yet been evaluated. Initial work will entail research including archival research and a review of historic aerial photographs. A surface examination and surface collection and a test excavation consisting of a sufficient number of backhoe trenches (approximately 10-20) must then be accomplished at the site. Additional investigation may then become necessary after evaluation. All above investigations must be accomplished prior to the commencement of clearing/grading operations.

No determination of importance/significance has been made for CA-ORA-713 and CA-ORA-715. It is recommended that these sites undergo controlled destruction with the aid of a small,

paddlewheel scraper. This work can be accomplished after grading is underway. If artifact clusters are discovered additional excavation may be necessary.

All other archaeological sites on the property have been deemed not important/significant and no further work, beyond monitoring of grading is necessary.

Patrick O. Maxon
Staff Archaeologist

Ronald M. Bissell
Principal Investigator

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APPENDIX A
Artifact Catalog

ARTIFACT CATALOG CODE KEY

All artifacts recovered during the Saddleback Meadows project (Maxon 1995) are listed in the following artifact catalog. Entries appear on two successive pages. The first page includes the site number and a unique catalog number assigned to each artifact. In addition, the first page also depicts the location of the artifact, the subassemblage, class and type of artifact. The second page repeats the catalog number and includes information on the artifacts material, modifications, presence or absence of cortex and thermal alteration, dimensions, weight and any comments. In the interest of space, some column headings have been reduced so that only a partial heading is shown. Those column headings are explained below:

Cat	= Catalog Number
Top 1	= Top depth of level
Bottom 1	= Bottom depth of level
Dup	= Duplicate: Multi-use tools were assigned the same cat number, but recognized as two separate artifacts
No	= Number of modified edges
Cort	= The presence or absence of cortex
Th	= Thermal modification
P	= after each dimension measurement, the P denotes partial measurement if the artifact had been broken

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-1255	1	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-1255	2	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-1255	3	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-1255	4	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-1255	5	UNIT 2	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-1255	6	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-1255	7	UNIT 2	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	1	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	2	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	3	SURFACE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	4	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	5	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	6	SURFACE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	7	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	8	SURFACE	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-710	9	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	10	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	11	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	12	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	13	SURFACE	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-710	14	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	15	SURFACE	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-710	16	SURFACE	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-710	17	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	18	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	19	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	20	SURFACE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	21	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	22	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	23	SURFACE	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	24	SURFACE	0	0	CHIPPED STONE	HAMMERSTONE	MODIFIED
CA-ORA-710	25	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	26	SURFACE	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	27	SURFACE COLLECTION #2	0	0	GROUND STONE	METATE	
CA-ORA-710	28	SURFACE COLLECTION #2	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	29	SURFACE COLLECTION #2	0	0	GROUND STONE	METATE	
CA-ORA-710	30	SURFACE COLLECTION #2	0	0	GROUND STONE	METATE	
CA-ORA-710	31	SURFACE COLLECTION #2	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	32	SURFACE COLLECTION #2	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	33	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	34	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	35	SURFACE COLLECTION #2	0	0	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-710	36	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CHOPPER	

Saddleback Meadows Catalog (2 sheets) 3/10/9

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
1	METAVOLCANIC/A	N	1	NIBBLED	Y	N	3.63	N	3.11	N	0.75	N	9.39	2 PIECES OF 1
2	10 YR 6/2	N	0	-										-
3	10 YR 7/2	N	0	-										-
4	10 YR 6/2	N	0	-										-
5	METAVOLCANIC/P-A	N	0	-	N	N	3.41	N	3.14	N	1.55	N	13.86	-
6	10 YR 6/2	N	0	-										-
7	10 YR 6/2	N	0	-										-
1	PORPHYRY	N	0	-	Y	N	5.49	Y	2.77	Y	2.58	Y	49.69	VERY LIGHT POLISH
2	GRANITIC	N	2	BATTERED	N	N	15		8.04	Y	6.12		1333.9	-
3	METAVOLCANIC/P-A	N	0	-	Y	N	9.68	Y	8.76	Y	4.89		441.7	-
4	METAVOLCANIC/P-A	N	0	-	N	Y	9.06		5.82	Y	4.59		503.1	LIGHT WEAR
5	PORPHYRY	N	0	-	N	N	12.9		9.13		7.94		1447.7	COLOR DIFFERENCE ON ONE FACE
6	METAVOLCANIC/P-A	N	0	-	Y	N	5.66	Y	5.27	Y	3.4	Y	129.12	-
7	PORPHYRY	N	0	-	Y	N	7.23	Y	5.49	Y	1.97	Y	91.09	MODERATE POLISH
8	METAVOLCANIC/P-A	N	2	BATTERED	Y	N	9.17	Y	7.72	Y	6.53	Y	526.6	-
9	GRANITIC	N	1	-	Y	N	9.08		7.27		3.96		386.5	*RED MARKS, ON SURFACE
10	GRANITIC	N	1	BATTERED	N	N	8.79	Y	8.78		5.91		675.3	MODERATE POLISH
11	GRANITIC	N	0	BATTERED	N	N	11.7		9.5		6.42		1048.8	FAIRLY HIGH POLISH
12	PORPHYRY	N	0	-	Y	N	13		8.92		7.07		1415.1	MODERATE POLISH
13	QUARTZITE	N	0	-	Y	N	6.24	Y	5.56	Y	5.93	Y	296.5	-
14	PORPHYRY	N	0	-	N	N	13.08		7.4		4.6		731.3	*RED MARKS - MODERATE POLISH
15	METAVOLCANIC/A	N	0	-	N	N	6.85	N	5.04	N	2.73	N	114.93	-
16	METAVOLCANIC/P-A	N	4	RETOUCHED	Y	N	6.83	N	6.58	N	1.95	N	127.47	-
17	PORPHYRY	N	0	-	Y	Y	9.6	Y	8.81	Y	5.27	Y	592.7	MODERATE POLISH
18	PORPHYRY	N	0	-	Y	N	6.09	Y	3.5	Y	5.46	N	141.76	MODERATE POLISH
19	PORPHYRY	N	0	-	Y	N	11.42	N	9.19	N	5.82	N	874.1	*RED MARKS, MODERATE POLISH
20	QUARTZ	N	0	-	N	N	4.39	N	2.46	N	1.6	N	16.05	-
21	PORPHYRY	N	0	-	Y	Y	150	Y	9.8	Y	6.09	N	1166.8	*RED MARKS, MODERATE POLISH
22	PORPHYRY	N	0	-	Y	Y	9.43	Y	7.33	Y	5.09	N	415.1	LIGHT POLISH
23	QUARTZITE	N	0	-	Y	N	7.83	N	5.09	N	1.48	N	66.65	-
24	METAVOLCANIC/P-A	N	2	RETOUCHED	Y	N	9.91	N	8.31	N	4.05	N	443.6	*RED MARKS
25	GRANITIC	N	0	-	Y	N	10.11	Y	6.9	Y	4.89	N	453.7	MODERATE POLISH
26	QUARTZITE	N	2	-	Y	Y	14.67	Y	11.15	Y	10.55	Y	1971.1	-
27	QUARTZITE	N	0	-	N	N	13.87	Y	10.26	Y	4.64	Y	966.5	TWO SPOTS OF POLISH
28	PORPHYRY	N	0	-	N	N	13.63	N	7.41	N	5.01	N	840.3	-
29	GRANITIC	N	0	-	N	N	11.03	Y	7.25	Y	8.55	Y	1035.3	-
30	GRANITIC	N	0	-	Y	N	11.3	Y	6.51	Y	10.97	Y	1285.4	-
31	PORPHYRY	N	0	-	Y	N	10.1	Y	9.82	Y	4.56	N	479.2	-
32	PORPHYRY	N	0	-	N	N	9.45	N	6.83	N	6.05	N	539.2	-
33	CHERT	N	1	NIBBLED	N	N	3.59	N	1.6	N	1.03	N	7.62	-
34	CHERT	N	0	-	Y	N	4.2	N	3.17	N	2.05	N	28.12	SEVERAL FLAKE SCARS
35	METAVOLCANIC/P-A	N	0	-	N	N	8.33	N	7.5	N	4.44	N	440	-
36	QUARTZITE	N	0	-	N	N	7.89	N	6.69	N	4.07	N	255.3	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	37	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	38	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	39	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-710	40	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	41	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	42	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	43	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	44	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	45	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	46	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	47	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	48	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	49	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-710	50	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	51	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CHOPPER	MULTIDIRECTIONAL
CA-ORA-710	52	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	53	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	54	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	55	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	56	SURFACE COLLECTION #3	0	0	CHIPPED STONE	SCRAPER	MODIFIED
CA-ORA-710	57	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	SPENT
CA-ORA-710	58	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	59	SURFACE COLLECTION #3	0	0	CHIPPED STONE	SCRAPER	UNMODIFIED
CA-ORA-710	60	SURFACE COLLECTION #3	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	61	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-710	62	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	63	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	64	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	64	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	65	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	66	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	67	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	68	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	69	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	70	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	71	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	72	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	74	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	75	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	76	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	77	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	78	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	SPENT
CA-ORA-710	79	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
37	CHERT	N	0	-	Y	N	4.42	N	3.18	N	2.2	N	33.61	-
38	METAVOLCANIC/P-A	N	0	-	N	N	2.19	N	1.71	N	0.41	N	1.74	-
39	QUARTZITE	N	0	-	N	N	6.63	N	7.78	N	3.05	N	241.8	-
40	CHERT	N	0	-	Y	N	3.1	N	1.07	N	8.53	N	3.07	SEVERAL FLAKE SCARS
41	CHERT	N	0	-	Y	N	1.76	N	1.45	N	0.42	N	1.58	-
42	METAVOLCANIC/P-A	N	0	-	N	N	5.97	N	3.8	N	2.01	N	48.68	-
43	CHERT	N	0	-	N	N	2.64	N	1.16	N	0.62	N	2.09	1 LARGE FLAKE SCAR, 2 PIECES OF 1
44	QUARTZITE	N	0	-	N	N	7.68	N	5.67	N	4.98	N	200.82	-
45	CHERT	N	0	-	Y	N	3.88	N	3.43	N	2.68	N	26.04	-
46	CHERT	N	0	-	N	N	2.83	N	2.27	N	1.65	N	9.9	-
47	GRANITIC	N	0	-	N	N	6.69	N	6.78	N	3.67	N	352.5	SHAPED, HIT BY DISCER
48	METAVOLCANIC/P-A	N	0	-	Y	N	7.82	N	3.99	N	2.01	N	60.38	-
49	METASEDIMENTARY	N	0	-	N	N	5.88	N	5.76	N	3.65	N	101.19	-
50	METASEDIMENTARY	N	0	-	Y	N	12.01	N	8.42	N	6.26	N	634.3	-
51	METASEDIMENTARY	N	0	-	Y	N	12.62	N	10.59	N	5.51	N	694.2	-
52	PORPHYRY	N	0	-	Y	N	7.05	Y	8.04	Y	5.48	Y	439.5	-
53	METAVOLCANIC/P-A	N	0	-	Y	N	6.9	N	5.08	N	3.32	N	87.11	-
54	METAVOLCANIC/P-A	N	0	-	Y	N	9.17	N	6.07	N	2.97	N	161.32	-
55	CHERT	N	0	-	Y	N	2.31	N	1.48	N	0.7	N	1.91	-
56	CHERT	N	2	NIBBLED	Y	N	5.53	N	2.94	N	1.3	N	16.82	-
57	CHERT	N	0	-	N	N	4.6	N	3.53	N	2.41	N	27.05	MANY FLAKE SCARS
58	METAVOLCANIC/P-A	N	0	-	N	N	4.41	N	3.79	N	1.34	N	15.86	-
59	METAVOLCANIC/P-A	N	1	WORN	Y	N	9.58	N	6.3	N	3.39	N	239.5	-
60	METASEDIMENTARY	N	0	-	N	N	7.87	N	6.4	N	4.27	N	238.2	-
61	METAVOLCANIC/P-A	N	0	-	Y	N	8.74	N	5.45	N	3.59	N	163.02	-
62	GRANITIC	N	0	-	N	N	10.01	N	9.59	N	6.15	N	835.9	-
63	METAVOLCANIC/P-A	N	0	-	Y	N	5.06	N	3.27	N	1.68	N	22.91	-
64	GRANITIC	N	0	-	N	N	12.36	Y	12.09	N	6.43	Y	989.4	ONE OF 2 PIECES
64	GRANITIC	N	0	-	N	N	12.36	Y	12.09	N	6.43	Y	989.4	ONE OF 2 PIECES
65	CHERT	N	1	NIBBLED	N	N	2.53	N	1.86	N	0.69	N	3.26	-
66	METASEDIMENTARY	N	0	-	N	N	3.75	N	2.52	N	1.14	N	8.3	-
67	CHERT	N	0	-	N	N	4.27	N	3.51	N	1.37	N	16.66	-
68	QUARTZITE	N	0	-	N	N	4.35	N	2.72	N	1.23	N	12.18	-
69	METAVOLCANIC/P-A	N	0	-	N	N	5.05	N	3.36	N	1.25	N	23.93	-
70	CHERT	N	0	-	N	N	2.34	N	2.13	N	0.42	N	2.17	-
71	METAVOLCANIC/P-A	N	0	-	N	N	2.59	N	2.23	N	0.8	N	4.58	-
72	CHERT	N	1	NIBBLED	N	N	1.8	N	1.68	N	0.61	N	1.91	-
74	CHERT	N	0	-	N	N	2.37	N	2.17	N	0.59	N	2.76	-
75	CHERT	N	1	CHIPPED	N	N	2.97	N	2.07	N	1.19	N	6	-
76	CHERT	N	0	-	Y	N	2.78	N	1.69	N	1.36	N	4.68	-
77	METAVOLCANIC/P-A	N	0	-	N	N	2.42	N	1.65	N	0.99	N	3.34	-
78	CHERT	N	0	-	N	N	4.08	N	2.82	N	1.94	N	15.72	HAS LARGE ROUND QUARTZ INCLUSION
79	METAVOLCANIC/P-A	N	0	-	N	N	6.18	N	3.36	N	1.28	N	24.65	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	80	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	81	SURFACE COLLECTION #3	0	0	CHIPPED STONE	SCRAPER	MODIFIED
CA-ORA-710	82	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	83	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	84	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	85	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	86	UNIT 1	0	10	CHIPPED STONE	CORE	SPENT
CA-ORA-710	87	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	88	UNIT 1	10	20	CHIPPED STONE	CORE	SPENT
CA-ORA-710	89	UNIT 1	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	90	UNIT 1	10	20	CHIPPED STONE	CORE	
CA-ORA-710	91	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	92	UNIT 1	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	93	UNIT 1	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	94	UNIT 1	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	95	UNIT 1 - FEATURE 1	20	30	CHIPPED STONE	CORE	
CA-ORA-710	96	UNIT 1 - FEATURE 1	20	30	GROUND STONE	METATE	SLAB
CA-ORA-710	97	UNIT 1 - FEATURE 1	20	30	GROUND STONE	METATE	SLAB
CA-ORA-710	98	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	99	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	100	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	101	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	102	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	103	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	104	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	105	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	106	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	107	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	108	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	109	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	110	UNIT 2 - FEATURE	10	20	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	111	UNIT 2 - FEATURE	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	112	UNIT 2 - FEATURE	10	20	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-710	113	UNIT 2 - FEATURE	10	20	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-710	114	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	115	UNIT 2	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	116	UNIT 2	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	117	UNIT 2 - FEATURE 2	30	40	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	118	UNIT 2 - FEATURE 2	30	40	SAMPLE	SOIL	FROM UNDER CATALOG #117
CA-ORA-710	119	UNIT 2 - FEATURE 2	30	40	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	121	UNIT 2 - FEATURE 2	30	40	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	122	UNIT 2 - FEATURE 2	30	40	GROUND STONE	METATE	SLAB
CA-ORA-710	123	UNIT 2 - FEATURE 2	30	40	SAMPLE	SOIL	FROM UNDER CATALOG #122

Saddleback Meadows Catalog (2 sheets) 3/10/9

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
80	CHERT	N	1	NIBBLED	Y	N	3.18	N	1.88	N	0.73	N	3.82	-
81	METAVOLCANIC/P-A	N	0	-	Y	N	8.64	N	4.65	N	3.05	N	105.69	-
82	METASEDIMENTARY	N	0	-	N	N	4.73	N	3.25	N	1.91	N	30.58	-
83	CHERT	N	0	-	N	N	1.85	N	1.19	N	0.29	N	0.64	-
84	CHERT	N	0	-	N	N	2.22	N	1.71	N	2.13	N	4.55	FITS WITH #86
85	METASEDIMENTARY	N	0	-	N	N	8.1	N	6.32	N	3.52	N	178.66	-
86	CHERT	N	0	-	N	N	3.34	N	2.45	N	1.76	N	16.51	FITS WITH # 84
87	10 YR 4/4	N	0	-	N									-
88	CHERT	N	0	-	Y	N	1.98	N	1.94	N	1.73	N	10.21	-
89	CHERT	N	0	-	Y	N	2.04	N	1.39	N	0.52	N	1.27	-
90	JASPER	N	0	-	N	N	6.53	N	5.26	N	3.79	N	132.65	-
91	10 YR 4/3	N	0	-										-
92	10 YR 4/3	N	0	-										-
93	10 YR 4/6	N	0	-										-
94	10 YR 6/6	N	0	-										-
95	METAVOLCANIC/P-A	N	0	-	N	N	7.12	N	5.62	N	4.26	N	194.6	BOTTOM DEPTH = 31 CM
96	SANDSTONE	N	0	-	N	N	25.5	N	25	N	5.7	N	4000	BOTTOM DEPTH = 33 CM
97	SANDSTONE	N	0	-	N	N	34.5	N	24	N	4.25	N	4700	BOTTOM DEPTH = 33 CM
98	CHERT	N	0	-	N	N	3.55	N	2.19	N	1.04	N	5.96	-
99	CHERT	N	1	NIBBLED	N	N	3.49	N	3.09	N	1.11	N	8.77	-
100	CHERT	N	0	-	N	N	1.78	N	0.97	N	0.41	N	0.75	-
101	CHERT	N	0	-	N	N	1.62	N	0.79	N	0.31	N	0.37	-
102	CHERT	N	0	-	N	N	0.86	N	0.54	N	0.12	N	0.04	-
103	CHERT	N	0	-	N	N	0.83	N	0.43	N	0.94	N	0.03	-
104	JASPER	N	0	-	N	N	1.25	N	1.15	N	0.2	N	0.3	-
105	CHERT	N	0	-	N	N	1.06	N	1.06	N	0.09	N	0.12	-
106	CHERT	N	0	-	N	N	1.19	N	0.8	N	0.16	N	0.13	-
107	METAVOLCANIC/P-A	N	0	-	N	N	0.84	N	0.71	N	0.24	N	0.13	-
108	METAVOLCANIC/P-A	N	0	-	N	N	0.72	N	0.61	N	0.14	N	0.06	-
109	10 YR 4/3	N	0	-										-
110	PORPHYRY	N	0	-	N	Y	6.09	Y	5.32	Y	3.03	Y	99.86	-
111	10 YR 4/3	N	0	-										-
112	METAVOLCANIC/P-A	N	0	-	Y	N	8.96	N	6.51	N	3.69	N	200.11	BOTTOM DEPTH = 19 CM
113	METAVOLCANIC/P-A	N	1	WORN	N	N	8.69	N	5.57	N	3.5	N	146.43	BOTTOM DEPTH = 16 CM
114	CHERT	N	0	-	Y	N	2.1	N	1.83	N	0.75	N	2.28	-
115	10 YR 4/4	N	0	-										-
116	10 YR 4/4	N	0	-										-
117	GRANITIC	N	2	POLISH	Y	N	10.4	Y	9.07	N	5.26	N	627.5	BOTTOM DEPTH = 48 CM
118		N	0	-										-
119	GRANITIC	N	0	-	N	Y	7.2	Y	5.85	N	3.67	N	179.73	BOTTOM DEPTH = 44 CM
121	GRANITIC	N	1	POLISH	Y	Y	6.34	Y	4.69	Y	4.33	Y	91.12	BOTTOM DEPTH = 46 CM
122	GRANITIC	N	1	POLISH	Y	Y	7.99	Y	5.61	Y	4.78	Y	238.1	BOTTOM DEPTH = 41 CM
123		N	0	-										-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	124	UNIT 2 - FEATURE 2	30	40	CHIPPED STONE	CHOPPER	
CA-ORA-710	125	UNIT 2	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	126	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	127	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	128	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	129	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	136	UNIT 3 - FEATURE 1	20	30	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	137	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	138	UNIT 4	0	10	CHIPPED STONE	SOIL	LEVEL
CA-ORA-710	139	UNIT 4	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	140	UNIT 4	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	141	UNIT 4	30	40	SAMPLE	SOIL	
CA-ORA-710	142	UNIT 4	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	143	UNIT 4 - FEATURE 1	40	50	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	144	UNIT 4	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-710	145	UNIT 5	10	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	146	UNIT 5	10	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	147	UNIT 5	10	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	148	UNIT 5	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	149	UNIT 5	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	150	UNIT 5	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	151	UNIT 5	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	152	UNIT 5	30	40	SAMPLE	CARBON	
CA-ORA-710	153	UNIT 5	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	154	UNIT 5	40	50	FAUNAL	MAMMAL, LARGE	
CA-ORA-710	155	UNIT 5	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	156	UNIT 6	0	10	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	157	UNIT 6	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	158	UNIT 6	10	20	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	159	UNIT 6	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	160	UNIT 6	20	30	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	161	UNIT 6	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	162	UNIT 6	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	163	UNIT 7	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	164	UNIT 7	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	165	UNIT 7	0	10	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	166	UNIT 7	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	167	UNIT 7	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	168	UNIT 7	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	169	UNIT 7	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	170	UNIT 7	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	171	UNIT 7	30	40	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	172	UNIT 7	40	50	CHIPPED STONE	CHOPPER	

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
124	QUARTZITE	N	1	BATTERED	N	N	9.72	N	5.04	N	3.56	N	182.7	-
125	10 YR 3/4	N	0	-										-
126	CHERT	N	0	-			2.74		1.39		0.84		3.01	-
127	CHERT	N	0	-			0.96		0.96		0.76		0.85	-
128	METAVOLCANIC/P-A	N	0	-			3.27		2.11		0.52		3.59	-
129	10 YR 4/3	N	0	-										-
136	GRANITIC	N	0	-			14.8		9.37		5.52		1135.3	BOTTOM DEPTH = 30 CM
137	CHERT	N	2	FLAKED	Y		1.98				2.65		3.26	-
138	10 YR 5/3	N	0	-										-
139	10 YR 5/3	N	0	-										-
140	10 YR 3/3	N	0	-										-
141	10 YR 3/3	N	0	-										-
142	10 YR 4/4	N	0	-										-
143	GRANITIC	N	0	-	Y		10.52		4.63		3.58		238.1	-
144	10 YR 4/4	N	0	-										-
145	JASPER	N	0	-			1.35		0.94		0.37		0.44	-
146	QUARTZITE	N	0	-			2.84		2.07		0.99		6.07	-
147	10 YR 4/3	N	0	-										-
148	10 YR 4/3	N	0	-										-
149	CHERT	N	0	-			1.36		1.13		0.45		0.55	-
150	10 YR 4/3	N	0	-										-
151	CHERT	N	0	-			1.26		1.4		0.56		1.17	-
152	CARBON	N	0	-							0.05			-
153	10 YR 3/4	N	0	-										-
154	BONE	N	0	-									19.01	10 PIECES
155	10 YR 5/4	N	0	-										-
156	QUARTZITE	N	0	-			6.43		5.32		4.05		207.4	-
157	10 YR 4/3	N	0	-										-
158	GRANITIC	N	0	-	Y	N	4.76	Y	3.83	Y	3.47	Y	92.6	-
159	10 YR 3/3	N	0	-										-
160	GRANITIC	N	0	-	N	N							136.51	UNABLE TO MEASURE - IN 14 PIECES
161	10 YR 3/3	N	0	-										-
162	10 YR 4/6	N	0	-										-
163	CHERT	N	0	-	N	N	1.98	N	1.27	N	0.9	N	1.56	-
164	10 YR 4/3	N	0	-										-
165	QUARTZITE	N	0	-	N	N	7.98	N	6.33	N	4.44	N	310.7	-
166	METASEDIMENTARY	N	0	-	N	N	5.73	N	4.24	N	1.81	N	34.97	-
167	10 YR 4/4	N	0	-										-
168	CHERT	N	3	WORN NIBBLED			2.64		2.53		0.97		7.45	NUMBER OF MODIFIED EDGES IS "3-4"
169	10 YR 4/4	N	0	-										-
170	10 YR 4/4	N	0	-										-
171	METASEDIMENTARY	N	0	-			7.91		6.51		4.44		268.6	BOTTOM DEPTH = 38 CM
172	METAVOLCANIC/P-A	N	0	-			7.19		6.18		3.46		153.48	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	173	UNIT 7	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	174	UNIT 7	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-710	175	UNIT 7	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-710	176	UNIT 7	50	60	GROUND STONE	HAMMERSTONE	
CA-ORA-710	177	UNIT 7	50	60	CHIPPED STONE	SCRAPER	MODIFIED
CA-ORA-710	178	UNIT 8	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	179	UNIT 8	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	180	UNIT 8	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	181	UNIT 8	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	1	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	2	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	4	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	5	SURFACE COLLECTION	0	0	CHIPPED STONE	UNIFACE	
CA-ORA-711	6	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-711	7	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	8	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	9	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	10	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	11	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	12	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-711	12	SURFACE COLLECTION	0	0	CHIPPED STONE	SCRAPER	PLANE
CA-ORA-711	13	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	14	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	15	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	16	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	17	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	18	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	19	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	20	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	21	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	22	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	23	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-711	24	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	25	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	BIFACE	
CA-ORA-711	26	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	27	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	28	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	29	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	30	NO PROVENIENCE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	36	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	37	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	38	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
173	10 YR 3/4	N	0	-									-	
174	METAVOLCANIC/P-A	N	0	-	Y		8.27		6.35		3.25		206.3	BOTTOM DEPTH = 47 CM
175	10 YR 3/4	N	0	-									-	
176	GRANITIC	N	0	-			8.08		6.05		5.77		315.5	-
177	METAVOLCANIC/P-A	N	1	FLAKED	Y		10.27		6.82		3.69		311.8	-
178	10 YR 4/3	N	0	-									-	
179	10 YR 4/4	N	0	-									-	
180	10 YR 3/4	N	0	-									-	
181	10 YR 3/4	N	0	-									-	
1	GRANITIC	N	1	BATTERED	N	N	12.31	Y	10.05	N	5.26	N	1104.6	-
2	GRANITIC	N	1	BATTERED/GROU	N	Y	13.31	Y	8.87	Y	4.77	N	714.5	-
3	PORPHYRY	N	3	BATTERED	N	N	11.42	N	8.33	N	5.75	N	772.5	-
4	CHERT	N	0	-	N	N	1.84	N	0.86	N	0.38	N	0.69	-
5	METAVOLCANIC/P-A	N	2	EDGEWEAR	N	N	4.89	N	3.32	N	1.03	N	19.89	-
6	METAVOLCANIC/P-A	N	3	BATTERED	N	Y	8.09	N	6.91	N	5.27	N	349.8	-
7	METAVOLCANIC/P-A	N	0	-	N	N	3.27	N	1.75	N	1.11	N	5.56	-
8	CHERT	N	0	-	Y	N	4.59	N	2.93	N	1.99	N	21.44	-
9	CHERT	N	1	EDGEWEAR	N	N	7.61	N	3.44	N	2.09	N	39.5	-
10	METAVOLCANIC/P-A	N	0	-	N	N	9.72	Y	7.41	Y	6.07	Y	520.1	-
11	METAVOLCANIC/P-A	N	2	EDGE WEAR	N	N	6.7	N	4.95	N	1.41	N	42.58	-
12	PORPHYRY	N	0		N	N	9.72	N	9.13	N	5.75	N	489.5	-
12	PORPHYRY	Y	1	EDGE WEAR	N	N	9.72	N	9.13	N	5.75	N	489.5	POSSIBLE BATTERING ON 1 EDGE
13	GRANITIC	N	1	-	N	Y	12.09	N	9.67	Y	5.14	Y	789.4	-
14	QUARTZITE	N	0	-	N	N	3.62	N	2.13	N	1.43	N	7.49	-
15	SANDSTONE	N	0	-	N	Y	9.06	Y	8.46	Y	5.76	Y	410.5	POSSIBLE BATTERING
16	METAVOLCANIC/P-A	N	0	-	N	N	2.23	N	1.49	N	0.71	Y	1.81	-
17	CHERT	N	0	-	N	N	1.78	N	1.28	N	1.31	N	3.02	-
18	GRANITIC	N	1	BATTERED	N	Y	13.57	N	9.6	Y	8.68	Y	1491.5	POSSIBLE BATTERING
19	CHERT	N	0	-	N	N	5.65	N	4.16	N	1.46	N	34.87	-
20	SANDSTONE	N	0	-	N	N	11.83	N	10.81	N	6.89	N	1284.6	-
21	CHERT	N	1	SCRAPING	N	N	3.2	N	2.63	N	0.71	N	4.93	-
22	CHERT	N	0	-	N	N	1.63	N	1.08	N	0.37	N	0.59	-
23	METAVOLCANIC/P-A	N	4	BATTERED	N	N	10.89	N	10.53	N	8.45	N	1264.2	-
24	GRANITIC	N	0	-	N	N	4.37	N	8.56	N	4.97	N	230.3	-
25	CHERT	N	1	EDGE WEAR	N	N	3.45	N	2.11	N	0.75	N	6.94	-
26	GRANITIC	N	0	-	N	N	12.73	Y	9.93	N	5.05	N	859.4	-
27	GRANITIC	N	0	-	N	N	5.59	Y	7.47	Y	5.61	Y	243.4	-
28	GRANITIC	N	1	BATTERED	N	N	9.95	N	8.69	N	6.12	N	727.2	-
29	CHERT	N	2	WORN	N	N	3.99	N	2.72	N	1.22	N	11.39	-
30	CHERT	N	0	-	N	N	3.71	N	2.35	N	1.46	N	14.25	-
36	METAVOLCANIC/P-A	N	0	-	N	N	5.62	N	4.15	N	1.66	N	34.76	
37	METAVOLCANIC/P-A	N	0	-	N	N	3.22	N	2.18	N	0.7	N	3.96	IN 3 PIECES
38	CHERT	N	0	-	N	N	2.24	N	1.63	N	0.8	N	2.59	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	39	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	40	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	41	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	42	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	43	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	44	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	45	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	47	UNIT 2	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	48	UNIT 2	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	49	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	50	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	51	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	52	UNIT 2	20	30	CHIPPED STONE	HAMMERSTONE	MODIFIED
CA-ORA-711	53	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	54	UNIT 2	20	30	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	55	UNIT 2	20	30	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	56	UNIT 2	20	30	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	57	UNIT 2	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	58	UNIT 2	20	30	GROUND STONE		INCOMPLETE
CA-ORA-711	59	UNIT 2	20	30	CHIPPED STONE	HAMMERSTONE	MODIFIED
CA-ORA-711	60	UNIT 2	20	30	GROUND STONE	METATE	
CA-ORA-711	61	UNIT 2	20	30	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	62	UNIT 2	20	30	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	63	UNIT 2	20	30	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	64	UNIT 2	20	30	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	65	UNIT 2	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	66	UNIT 2	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	67	UNIT 2	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	68	UNIT 2	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-711	71	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	72	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	74	UNIT 3	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	75	UNIT 3	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	77	UNIT 3	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	76	UNIT 3	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	79	UNIT 3	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	80	UNIT 3	30	40	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	81	UNIT 3	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	82	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	83	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	84	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	85	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	86	UNIT 3	40	50	GROUND STONE	HAMMERSTONE	UNMODIFIED

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
39	CHERT	N	0	-	N	N	1.81	Y	1.65	N	0.64	N	1.5	IN 2 PIECES
40	CHERT	N	0	-	N	Y	1.97	N	1.31	N	1.14	N	2.37	-
41	CHERT	N	2	WORN	N	N	1.74	Y	1.77	N	0.41	N	1.4	-
42	CHERT	N	0	-	N	N	0.92	N	0.74	N	0.22	N	0.16	-
43	CHERT	N	0	-	N	N	1.65	Y	1.45	Y	0.49	Y	0.82	-
44	CHERT	N	0	-	N	N	1.68	Y	0.64	Y	0.39	Y	0.33	-
45	10 YR 5/3	N	0	-									/	-
47	METAVOLCANIC/P-A	N	0	-	N	N	1.75	Y	2.5	N	0.81	N	2.68	-
48	CHERT	N	2	WORN	Y	N	3.44	N	3.29	N	0.91	N	9.8	-
49	10 YR 4/3	N	0	-										BROWN/DARK BROWN
50	CHERT	N	0	-	N	N	2.54	N	2.33	N	0.97	N	4.92	FEATURE 1 SCREENED MATERIAL
51	QUARTZITE	N	0	-	N	N	2.58	N	2.28	N	1.05	N	4	FEATURE 1 SCREENED MATERIAL
52	METAVOLCANIC/P-A	N	4	BATTERED	N	N	7.97	N	5.79	N	3.07	Y	154.23	FEATURE 1 SCREENED MATERIAL
53	METAVOLCANIC/P-A	N	0	-	N	N	4.8	N	3.91	N	3.52	N	54.72	FEATURE 1 SCREENED MATERIAL
54	GRANITIC	N	0	-	N	Y	6.17	Y	5.26	Y	3.85	Y	130.91	FEATURE 1 SCREENED MATERIAL
55	PORPHYRY	N	0	-	N	Y	8.45	Y	5.54	Y	2.64	Y	140	ITEM TOO FRACTURED TO DETERMINE BIFACIAL
56	SANDSTONE	N	0	-	N	Y	6.62	Y	4.4	Y	4.01	Y	112.72	ITEM TOO FRACTURED TO DETERMINE BIFACIAL
57	10 YR 4/3	N	0	-										BROWN/DARK BROWN
58	GRANITIC	N	0	-	N	N	8.21	Y	5.8	Y	3.28	Y	148.19	ITEM 1
59	QUARTZITE	N	8	BATTERED	Y	N	5.58	N	5.2	N	4.73	N	127.92	ITEM 2
60	GRANITIC	N	2	WORN	Y	Y		Y		Y		Y	465.3	ITEM 3, 8 FRAGMENTS, TOO FRAGMENTED TO ME
61	GRANITIC	N	0	-	Y	Y	9.24	Y	6.83	Y	4.55	Y	337.5	ITEM 4
62	GRANITIC	N	0	-	Y	N	10.7	Y	7.08	N	5.12	N	534.8	ITEM 5
63	GRANITIC	N	0	-	Y	Y	8.69	Y	4.67	Y	4.16	Y	217.1	ITEM 6
64	GRANITIC	N	0	-	Y	Y	8.96	N	7.49	Y	5.99	Y	424.5	ITEM 7
65	QUARTZITE	N	0	-	N	N	1.53	N	0.61	N	0.33	N	0.3	-
66	10 YR 4/3	N	0	-										-
67	10 YR 4/3	N	0	-										-
68	10 YR 4/3	N	0	-										-
71	METAVOLCANIC/P-A	N	1	WORN	Y	N	5.21	N	3.08	N	1.3	N	18.93	-
72	10 YR 4/3	N	0	-										BROWN/DARK BROWN
74	METAVOLCANIC/A	N	0	-	N	N	0.69	N	0.34	N	0.14	N	0.03	-
75	METAVOLCANIC/P-A	N	0	-	N	N	1.29	N	0.77	N	0.41	N	0.39	-
77	METAVOLCANIC/P-A	N	0	-	N	N	1.35	N	0.59	N	0.15	N	0.12	-
78	10 YR 4/3	N	0	-										BROWN/DARK BROWN
79	10 YR 3/3	N	0	-										DARK BROWN
80	CHERT	N	0	-	N	N	0.86	Y	0.47	N	0.18	N	0.07	-
81	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
82	PORPHYRY	N	0	-	Y	N	6.07	N	4.71	Y	1.97	N	46.01	-
83	METAVOLCANIC/P-A	N	0	-	N	N	2.23	N	1.31	N	0.93	N	2.28	-
84	CHERT	N	0	-	Y	N	1.55	N	0.58	N	0.51	N	0.53	-
85	CHERT	N	0	-	N	N	1.03	N	0.47	N	0.23	N	0.1	-
86	QUARTZITE	N	1	BATTERED	N	N	0.54	N	2.93	N	2.13	N	46.92	NO FEATURE NUMBER

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	87	UNIT 3	40	50	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	88	UNIT 3	40	50	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	89	UNIT 3	40	50	SAMPLE	SOIL	ARTIFACT
CA-ORA-711	90	UNIT 3	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	91	UNIT 3	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-711	92	UNIT 3	60	70	SAMPLE	SOIL	LEVEL
CA-ORA-711	93	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	94	UNIT 4	0	10	GROUND STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-711	94	UNIT 4	0	10	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	96	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	97	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	100	UNIT 4	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	101	UNIT 4	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	103	UNIT 4	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	104	UNIT 4	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	105	UNIT 4	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	106	UNIT 4	30	40	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	107	UNIT 4	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	108	UNIT 4	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	108	UNIT 4	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	109	UNIT 4	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	110	UNIT 5	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	111	UNIT 5	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	112	UNIT 5	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	113	UNIT 5	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	114	UNIT 5	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	116	UNIT 6	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	117	UNIT 6	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	118	UNIT 6	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	119	UNIT 6	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	121	UNIT 7	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	122	UNIT 7	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	123	UNIT 7	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	124	UNIT 7	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	125	UNIT 7	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	126	UNIT 7	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	128	UNIT 8	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	129	UNIT 8	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	130	UNIT 8	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	131	UNIT 8	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	132	UNIT 8	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	133	UNIT 9	0	10	CHIPPED STONE	CORE	SPENT
CA-ORA-711	134	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
87	QUARTZITE	N	0	-	N	Y	8.15	Y	6.71	Y	3.06	Y	163.26	TOO FRAGMENTED TO DETERMINE WEAR
88	GRANITIC	N	2	BATTERED	N	N	12.94	N	10.13	N	4.47	N	837.1	NO FEATURE NUMBER
89		N	0	-										SOIL SAMPLE FROM UNDER MANO
90	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
91	10 YR 4/3	N	0	-										BROWN/DARK BROWN
92	10 YR 3/3	N	0	-										DARK BROWN
93	CHERT	N	0	-	Y	N	2.44	N	2.05	N	1.08	N	4.93	-
94	SCHIST	Y	2	BATTERED	Y	N	8.86	N	7.12	N	2.25	N	215.4	-
94	SCHIST	N	1	POLISH	Y	N	8.86	N	7.12	N	2.25	N	215.4	-
96	METAVOLCANIC/P-A	N	0	-	N	N	2.05	N	1.37	N	0.43	N	0.94	2 PIECES
97	CHERT	N	0	-	N	N	1.17	N	1.08	N	0.28	N	0.21	-
100	METAVOLCANIC/P-A	N	0	-	N	N	1.73	N	1.14	N	0.5	N	1.09	-
101	QUARTZITE	N	0	-	N	N	1.06	N	0.81	N	0.3	N	0.25	-
103	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
104	METAVOLCANIC/A	N	0	-	N	N	1.54	N	1.67	N	0.53	N	1.39	-
105	CHERT	N	0	-	N	N	0.78	N	0.41	N	0.31	N	0.14	-
106	SANDSTONE	N	1	BATTERED	Y	N	12.6	N	10.11	N	6.19	N	926.6	-
107	10 YR 3/3	N	0	-										DARK BROWN
108	PORPHYRY	N	1	BATTERED	N	N	6.07	N	5.03	N	3.13	N	104.7	-
108	PORPHYRY	N	1	BATTERED	N	N	6.07	N	5.03	N	3.13	N	104.7	-
109	10 YR 3/3	N	0	-										DARK BROWN
110	10 YR 3/3	N	0	-										DARK BROWN
111	10 YR 3/3	N	0	-										DARK BROWN
112	10 YR 3/3	N	0	-										DARK BROWN
113	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
114	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
116	10 YR 4/3	N	0	-										BROWN/DARK BROWN
117	10 YR 3/3	N	0	-										DARK BROWN
118	10 YR 3/3	N	0	-										DARK BROWN
119	10 YR 5/3	N	0	-										BROWN
121	10 YR 3/3	N	0	-										DARK BROWN
122	PORPHYRY	N	1	WORN	N	N	4	N	1.71	N	0.57	N	3.68	-
123	10 YR 3/2	N	0	-										VERY DARK GRAYISH BROWN
124	CHERT	N	0	-	N	N	2.35	N	1.99	N	0.41	N	1.35	-
125	10 YR 3/3	N	0	-										DARK BROWN
126	10 YR 3/3	N	0	-										DARK BROWN
128	10 YR 3/3	N	0	-										DARK BROWN
129	PORPHYRY	N	0	-	Y		1.68	N	1.55	N	0.46	N	0.75	-
130	10 YR 3/3	N	0	-										DARK BROWN
131	10 YR 3/3	N	0	-										DARK BROWN
132	10 YR 3/3	N	0	-										DARK BROWN
133	CHERT	N	0	-	Y	N	4.88	N	4.38	N	2.73	N	45.31	-
134	CHERT	N	0	-	N	N	1.92	N	1.78	N	1.18	N	4.51	IN 2 PIECES

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	135	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	136	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	137	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	138	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	139	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	140	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	141	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	142	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	143	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	144	UNIT 9	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	145	UNIT 9	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	146	UNIT 9	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	147	UNIT 9	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	148	UNIT 9	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	148	UNIT 9	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	149	UNIT 9	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	149	UNIT 9	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	151	UNIT 9	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	152	UNIT 9	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	153	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	154	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	155	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	156	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	157	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	158	UNIT 9	40	50	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	159	UNIT 9	40	50	GROUND STONE	METATE	UNIFACIAL, INCOMPLETE
CA-ORA-711	160	UNIT 9	40	50	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-711	161	UNIT 9	40	50	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	162	UNIT 9	40	50	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	163	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	164	UNIT 9	40	50	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	165	UNIT 9	40	50	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	165	UNIT 9	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	166	UNIT 9	40	50	CHIPPED STONE	CORE	SPENT
CA-ORA-711	167	UNIT 9	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	168	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	169	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	170	UNIT 10	0	10	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	171	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	172	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	173	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	174	UNIT 10	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	175	UNIT 10	10	20	SAMPLE	SOIL	LEVEL

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
135	CHERT	N	0	-	N	N	1.1	N	0.83	N	0.28	N	0.21	-
136	CHERT	N	0	-	N	N	1.61	N	1.31	N	0.35	N	0.54	-
137	CHERT	N	0	-	N	N	1.58	N	1.02	N	0.59	N	0.84	-
138	METAVOLCANIC/A	N	0	-	N	N	1.14	N	1.03	N	0.65	N	1.07	-
139	METAVOLCANIC/A	N	0	-	N	N	1.81	N	1.42	N	0.59	N	1.47	-
140	METAVOLCANIC/P-A	N	0	-	N	N	1.66	N	1.42	N	0.61	N	1.39	-
141	METAVOLCANIC/A	N	0	-	N	N	0.63	N	0.73	N	0.17	N	0.08	-
142	METAVOLCANIC/A	N	0	-	N	N	0.73	N	0.43	N	0.23	N	0.07	-
143	QUARTZITE	N	0	-	N	N	1.83	N	0.78	N	0.41	N	0.55	-
144	10 YR 3/3	N	0	-										DARK BROWN
145	CHERT	N	0	-	N	N	1.37	Y	0.69	Y	0.46	N	0.37	-
146	PORPHYRY	N	0	-	N	N	2.63	N	2.28	N	0.83	N	4.6	-
147	10 YR 4/3	N	0	-										BROWN/DARK BROWN
148	CHERT	N	0	-	N	N	1.02	N	0.83	N	0.76	N	0.93	-
148	CHERT	N	0	-	N	N	1.02	N	0.83	N	0.76	N	0.93	-
149	10 YR 4/3	N	0	-										-
149	10 YR 4/3	N	0	-										BROWN/DARK BROWN
151	QUARTZITE	N	0	-	N	Y	2.81	Y	2.41	Y	0.67	N	4.01	6 PIECES
152	10 YR 4/3	N	0	-										BROWN/DARK BROWN
153	PORPHYRY	N	1	BATTERED	Y	N	6.1	N	4.38	N	3.35	N	66.3	NOT MAPPED
154	QUARTZITE	N	0	-	N	N	4.54	N	2.55	N	1.49	N	18.61	NOT MAPPED
155	METAVOLCANIC/P-A	N	0	-	N	N	2.38	N	1.63	N	0.85	N	3.36	NOT MAPPED
156	CHERT	N	0	-	N	N	1.54	N	1.33	N	0.85	N	1.41	NOT MAPPED
157	CHERT	N	0	-	N	N	1.39	N	0.75	N	0.26	N	0.24	NOT MAPPED
158	QUARTZITE	N	0	-	N	N	6.66	N	6.14	N	3.63	N	214.9	-
159	PORPHYRY	N	0	-	N	N	6.74	Y	4.23	Y	5.9	Y	210	2 FRAGMENTS
160	QUARTZITE	N	2	BATTERED	Y	N	11.21	N	7.29	N	7.2	N	477.1	-
161	PORPHYRY	N	2	BATTERED	N	N	12.6	N	9.55	N	6.76	N	934.9	-
162	SANDSTONE	N	0	-	Y	N	8.51	N	6.99	N	4.26	N	295.3	-
163	PORPHYRY	N	2	BATTERED	N	N	6.92	N	4.27	N	2.93	N	130.38	-
164	QUARTZITE	N	1	BATTERED	Y	N	5.19	Y	6.75	Y	3.71	Y	194.91	-
165	QUARTZITE	Y	2	BATTERED	Y	N	9.9	N	6.42	N	4.79	N	615.6	-
165	QUARTZITE	N	2	BATTERED	Y	N	9.9	N	6.42	N	4.79	N	615.6	2 PIECES
166	CHERT	N	0	-	Y	N	3.84	Y	3.65	Y	3.1	Y	63.29	-
167	10 YR 4/3	N	0	-										BROWN/DARK BROWN
168	CHERT	N	1	WORN	N	N	1.53	N	0.71	N	0.23	N	0.26	-
169	CHERT	N	1	NIBBLED	N	N	3.13	N	1.78	N	0.71	N	3.69	-
170	GRANITIC	N	0	-	N	N	3.33	Y	2.25	Y	1.84	Y	18.05	2 PIECES
171	CHERT	N	0	-	Y	N	2.01	N	1.39	N	0.84	N	1.65	-
172	METAVOLCANIC/P-A	N	1	RETOUCHED	N	N	2.34	Y	1.64	Y	0.58	Y	2.4	-
173	CHERT	N	0	-	Y	N	3.24	N	2.24	N	1.47	N	9.5	-
174	10 YR 4/3	N	0	-										-
175	10 YR 4/3	N	0	-										-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	176	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	177	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	178	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	179	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	180	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	181	UNIT 10	20	30	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	182	UNIT 10	20	30	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	182	UNIT 10	20	30	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	183	UNIT 10	20	30	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	183	UNIT 10	20	30	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	184	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	185	UNIT 10	20	30	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-711	186	UNIT 10	20	30	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-711	187	UNIT 10	20	30	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-711	188	UNIT 10	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	189	UNIT 11	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	190	UNIT 11	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	191	UNIT 11	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	192	UNIT 11	10	20	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	193	UNIT 11	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	194	UNIT 11	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	195	UNIT 11	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	196	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	197	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	198	UNIT 12 - NO DEPTH CONTROL			GROUND STONE		
CA-ORA-711	199	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	200	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	201	UNIT 12 - NO DEPTH CONTROL			GROUND STONE	METATE	
CA-ORA-711	202	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	203	UNIT 12 - NO DEPTH CONTROL			SAMPLE	SOIL	LEVEL
CA-ORA-711	204	UNIT 12 - FEATURE 1			GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	205	UNIT 12 - FEATURE 1			GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	206	UNIT 12 - FEATURE 1			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	207	UNIT 12 - FEATURE 1			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	208	UNIT 12 - FEATURE 1			GROUND STONE	METATE	SLAB
CA-ORA-711	209	UNIT 12 - FEATURE 1			GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-711	211	OUTSIDE OF FENCE, COLLECTED AFTER PASS			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	212	OUTSIDE OF FENCE, COLLECTED AFTER PASS			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	213	OUTSIDE OF FENCE, COLLECTED AFTER PASS			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	214	OUTSIDE OF FENCE, COLLECTED AFTER PASS			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	215	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	216	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	217	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	DEBITAGE	SHATTER

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
176	CHERT	N	0	-	N	N	2.29	Y	1.54	Y	0.76	Y	1.96	NOT MAPPED
177	METAVOLCANIC/P-A	N	0	-	N	N	4.85	Y	3.93	Y	1.29	Y	19.35	NOT MAPPED, 5 PIECES
178	METAVOLCANIC/P-A	N	0	-	N	N	5.18	N	4.28	N	2.67	N	50.64	NOT MAPPED
179	METAVOLCANIC/P-A	N	0	-	Y	N	5.67	N	3.41	N	1.42	N	31.4	NOT MAPPED
180	CHERT	N	0	-	N	N	1.8	N	1.42	N	0.68	N	1.51	NOT MAPPED
181	PORPHYRY	N	0	-	N	Y	11.16	Y	5.28	Y	1.72	Y	85.03	NOT MAPPED, 2 PIECES
182	METAVOLCANIC/P-A	Y	0	-	N	N	8.72	N	6.18	N	4.89	N	333.8	-
182	METAVOLCANIC/P-A	N	0	-	N	N	8.72	N	6.18	N	4.89	N	333.6	-
183	METAVOLCANIC/P-A	Y	0	-	N	N	8.47	N	7.48	N	4.67	N	328.9	-
183	METAVOLCANIC/P-A	N	0	-	N	N	8.47	N	7.48	N	4.67	N	326.9	-
184	CHERT	N	0	-	Y	N		Y		Y		Y	57.28	IN 3 PIECES
185	METAVOLCANIC/P-A	N	1	BATTERED	Y		9.13	N	7.05	N	5.54	Y	421.4	3 PIECES OF 1 ARTIFACT
186	METAVOLCANIC/A	N	2	BATTERED	N		7.39	N	5.95	N	5.42	N	220.6	-
187	GRANITIC	N	0	-	N		7.61	Y	10.84	Y	7.77	N	1034.6	-
188	10 YR 3/3	N	0	-										-
189	CHERT	N	0	-	Y	N	3.35	N	2.46	N	0.96	N	7.87	2 FRAGMENTS OF 1
190	METAVOLCANIC/P-A	N	0	-	N	N	1.67	N	1.35	N	0.51	N	1.15	-
191	10 YR 4/3	N	0	-										-
192	GRANITIC	N	0	-	N	N	10.64	N	9.56	N	6.8	N	944.6	-
193	10 YR 4/3	N	0	-										-
194	10 YR 4/3	N	0	-										-
195	10 YR 4/3	N	0	-										-
196	CHERT	N	1	RETOUCHED	N	N	2.05	N	1.54	N	0.59	N	1.55	-
197	CHERT	N	0	-	N	N	2.08	N	1.08	N	0.84	N	2	-
198	GRANITIC	N	0	-	N	Y		Y		Y		Y	73.76	11 PIECES, PROBABLY FIT TOGETHER, COULDN'T
199	METAVOLCANIC/P-A	N	1	FLAKED	N	N	2.82	N	1.17	N	0.76	N	1.39	-
200	QUARTZITE	N	0	-	N	N	5.86	N	5.1	N	1.84	N	58.61	-
201	SANDSTONE	N	0	-	N	N	11.89	Y	10.94	Y	7.2	Y	1060.2	-
202	QUARTZITE	N	0	-	N	N	1.81	N	1.27	N	0.83	N	1.4	-
203		N	0	-										*MISSING
204	GRANITIC	N	0	-	N	N	9.27	Y	7.13	Y	3.14	Y	260.5	-
205	SANDSTONE	N	0	-	N	N	13.22	N	9.91	N	5.28	N	980.4	SHAPED
206	GRANITIC	N	0	-	N	N	12.45	N	13.34	N	5.08	N	1071.5	-
207	GRANITIC	N	0	-	N	N	7.51	Y	5.41	Y	5.43	Y	245	-
208	SANDSTONE	N	0	-	N	N	47.6	N	40.1	N	9.7	N	30000	-
209	GRANITIC	N	0	-	N	N	4.53	Y	4.5	Y	2.81	Y	86.87	-
211	GRANITIC	N	0	-	N	N	10.91	N	7.69	N	4.86	N	633.7	-
212	GRANITIC	N	0	-	N	N	9.65	Y	4.51	Y	5.52	Y	340.3	-
213	QUARTZITE	N	1	NIBBLED	N	N	3.69	N	3.81	N	1.81	N	31.46	-
214	METAVOLCANIC/A	N	0	-	N	N	10.19	N	6.86	N	4.96	N	315.2	-
215	CHERT	N	0	-	Y	N	2.82	N	2.69	N	1.33	N	13.5	-
216	CHERT	N	1	FLAKED	Y	N	3.06	N	2.39	N	0.99	N	5.77	-
217	CHERT	N	1	FLAKED	N	N	3.66	N	3.16	N	1.99	N	17.7	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	218	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	219	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	220	COLLECTED IN BORING AREA			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	221	FROM ROAD AFTER BULLDOZER DROVE OVER			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	222	FROM ROAD AFTER BULLDOZER DROVE OVER			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	223	FROM ROAD AFTER BULLDOZER DROVE OVER			GROUND STONE	METATE	
CA-ORA-711	224	FROM ROAD AFTER BULLDOZER DROVE OVER			GROUND STONE	/HAMMERSTONE	MODIFIED
CA-ORA-711	224	FROM ROAD AFTER BULLDOZER DROVE OVER			GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	225	NO PROVENIENCE			HISTORIC	MILL BALL	
CA-ORA-711	226	UNIT 2	0	10	SAMPLE	SOIL	COLUMN
CA-ORA-711	227	UNIT 2	10	20	SAMPLE	SOIL	COLUMN
CA-ORA-711	228	UNIT 2	20	30	SAMPLE	SOIL	COLUMN
CA-ORA-711	229	UNIT 2	30	40	SAMPLE	SOIL	COLUMN
CA-ORA-711	230	UNIT 2	40	50	SAMPLE	SOIL	COLUMN
CA-ORA-711	231	UNIT 2	50	60	SAMPLE	SOIL	COLUMN
CA-ORA-711	232	UNIT 2 - POSTHOLE	100	100	SAMPLE	SOIL	POSTHOLE
CA-ORA-713	1	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	2	SURFACE COLLECTION	0	0	GROUND STONE	CHOPPER	
CA-ORA-713	2	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	4	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	5	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	6	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-713	7	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-713	8	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	9	SURFACE COLLECTION	0	0	GROUND STONE	METATE	BASIN
CA-ORA-713	10	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	11	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	12	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-713	13	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-713	14	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-713	15	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-713	16	UNIT 1	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-713	17	UNIT 1	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-713	18	UNIT 2	1	10	SAMPLE	SOIL	LEVEL
CA-ORA-713	19	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-713	20	UNIT 2 (HALF LEVEL)	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-713	21	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-713	22	UNIT 3	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-713	24	UNIT 3	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-713	25	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-713	26	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-713	27	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
218	METAVOLCANIC/P-A	N	0	-	Y	N	10.4	N	8.99	N	3.3	N	302	-
219	METAVOLCANIC/P-A	N	0	-	Y	N	7.66	N	6.12	N	3.8	N	244.3	-
220	QUARTZITE	N	1	NIBBLED	N	N	6.61	N	4.5	N	2.08	N	66.37	-
221	CHERT	N	0	-	N	N	5.7	N	4.22	N	2.5	N	66.62	-
222	METAVOLCANIC/P-A	N	1	NIBBLED	Y	N	6.04	N	5.15	N	1.89	N	63.49	-
223	PORPHYRY	N	1	POLISH	N	N	12.34	Y	8.06	Y	8.77	N	1444.8	2 PIECES OF 1
224	GRANITIC	Y	2	BATTERED	Y	N	11.3	Y	7.45	Y	8.67	Y	864.1	-
224	GRANITIC	N	0	-	Y	N	11.3	Y	7.45	Y	8.67	Y	864.1	-
225		N	0	-		N	1.9	N	1.9	N	1.9	N	7.65	USED IN CLAY PROCESSING
226		N	0	-										-
227		N	0	-										-
228		N	0	-										-
229		N	0	-										-
230		N	0	-										-
231		N	0	-										-
232	10 YR 5/4	N	0	-										-
1	PORPHYRY	N	1	BATTERING	Y	Y	8.01	Y	9.95	Y	6.16	N	579.8	SURFACE LIGHTLY POLISHED
2	GRANITIC	N	1	CRUSHED	Y	N	10.48	N	7.86	N	5.41	Y	584.2	RE-USED AS CHOPPER
2	GRANITIC	N	1	WORN	Y	N	10.48	N	7.86	N	5.41	Y	584.2	SURFACE LIGHTLY POLISHED
3	GRANITIC	N	1	BATTERING	Y	N	10.36	N	7	N	4.67	N	503.1	POSSIBLE CRUSHING ON EDGE
4	GRANITIC	N	0	-	N	N	11.73	N	9.15	N	6.68	N	953	VERY LIGHT POLISH
5	PORPHYRY	N	0	-	N	Y	7.6	N	4.34	N	2.99	N	125.44	-
6	METAVOLCANIC/P-A	N	0	-	Y	N	12.6	N	5.69	N	2.69	N	186.47	2 SHARP EDGES-NO CLEAR MODIFICATIONS
7	QUARTZITE	N	0	-	Y	N	5.29	N	3.34	N	1.3	N	29.54	-
8	GRANITIC	N	0	-	Y	Y	9.92	N	9.49	N	7.18	N	956.8	POSSIBLE BATTERING
9	GRANITIC	N	0	-	N	N	22.2	Y	19	Y	14.5	N	6000	SURFACE MODERATELY POLISHED
10	GRANITIC	N	0	-	Y	N	7.9	Y	7.65	N	6.13	N	606.7	SURFACE LIGHTLY POLISHED
11	PORPHYRY	N	0	-	Y	N	5.71	Y	5.66	N	3.84	Y	162.64	SURFACE LIGHTLY POLISHED
12	METAVOLCANIC/P-A	N	0	-	Y	N	9.72	N	7.81	N	4.9	N	418.9	CRUDE CORTICAL PLATFORM
13	METAVOLCANIC/P-A	N	0	-	Y	N	7.44	N	6.42	N	4.61	N	222.4	CRUDE CORTICAL PLATFORM
14	10 YR 5/2	N	0	-										GRAYISH
15	10 YR 4/2	N	0	-										DARK GRAYISH BROWN
16	10 YR 4/3	N	0	-										BROWN/DARK BROWN
17	10 YR 4/3	N	0	-										BROWN/DARK BROWN
18	10 YR 5/4	N	0	-										YELLOWISH BROWN
19	10 YR 5/4	N	0	-										YELLOWISH BROWN
20	10 YR 5/4	N	0	-										YELLOWISH BROWN
21	10 YR 4/1	N	0	-										DARK GRAY
22	10 YR 4/1	N	0	-										DARK GRAY
24	10 YR 3/1	N	0	-										VERY DARK GRAY
25	METAVOLCANIC/P-A	N	1	NIBBLED	Y	N	5.16	N	4.45	N	1.77	N	40.26	-
26	PORPHYRY	N	0	-	Y	N	12.4	N	5.6	Y	7.26	Y	691.4	-
27	PORPHYRY	N	0	-	Y	N	13.6	N	8.09	N	5.58	N	853.9	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-713	28	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	29	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	30	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-713	31	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	SCRAPER	
CA-ORA-713	32	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-713	33	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-713	34	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-713	35	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	SCRAPER	
CA-ORA-713	36	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CORE	
CA-ORA-713	37	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	SCRAPER	
CA-ORA-713	38	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-714	1	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-714	2	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-714	3	SURFACE COLLECTION	0	0	GROUND STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-714	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-714	4	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-714	5	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-714	6	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-714	7	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-714	9	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-714	10	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-714	11	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-714	12	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-715	1	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	2	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	4	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	5	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	6	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	7	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	8	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	9	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	10	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	11	SURFACE COLLECTION	0	0	GROUND STONE		
CA-ORA-715	12	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	13	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	14	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	15	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-715	16	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-715	17	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	18	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	19	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	20	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
28	GRANITIC	N	0	-	N	N	7.7	N	7.06	N	3.79	N	292.3	-
29	GRANITIC	N	0	-	N	Y	10.53	Y	10.01	Y	5.38	N	836.4	-
30	GRANITIC	N	0	-	N	Y	5	Y	3.95	Y	4.91	Y	163.26	-
31	METAVOLCANIC/P-A	N	0	-	N	N	5.26	N	3.83	N	1.78	N	35.15	-
32	QUARTZITE	N	0	-	Y	N	6.8	N	2.96	N	1.71	N	42.52	-
33	METAVOLCANIC/P-A	N	1	WORN	Y	N	7.79	N	5.44	N	2.85	N	82.46	-
34	QUARTZITE	N	2	WORN, BATTERE	Y	N	8.85	N	6.12	N	3.94	N	230.8	-
35	GRANITIC	N	0	-	N	N	3.64	N	5.98	N	7.26	N	191.63	-
36	QUARTZITE	N	0	-	Y	N	10.08	N	7.51	N	3.64	N	348.5	-
37	METAVOLCANIC/A	N	1	WORN	N	N	6.92	N	6.36	N	3.47	N	219.5	-
38	GRANITIC	N	0	-	N	N	10.73	Y	8.56	Y	6.1	Y	627.6	-
1	PORPHYRY	N	3	BATTERED	N	N	11.44	N	9.45	N	3.96	N	721	BATTERED ON OUTER EDGES
2	PORPHYRY	N	1	BATTERED	Y	N	10.94	N	7.17	N	5.03	N	493.7	STRONG URINE SMELL ON ROCK
3	PORPHYRY	Y	3	BATTERED	N	N	14.02	N	9.37	N	6.33	N	1163.9	ALSO A MANO
3	PORPHYRY	N	0	-	N	N	14.02	N	9.37	N	6.33	N	1163.9	ALSO A HAMMERSTONE
4	METAVOLCANIC/P-A	N	1	FLAKED, BATTER	Y	N	9.93	N	6.54	N	3.38	N	230.1	FLAKES TAKEN OFF THE EDGE
5	METAVOLCANIC/P-A	N	2	BATTERED	N	N	7.09	N	5.08	N	4.15	N	194.5	-
6	PORPHYRY	N	0	-	N	N	9.15	Y	4.92	Y	2.58	Y	139.97	2 PIECES OF 1 FRAGMENT
7	QUARTZ	N	3	FLAKED, RETOUC	Y	N	6.45	N	5.23	N	3.03	N	102.74	2 FLAKE SCARS, TOOL?, 1 RETOUCHED EDGE
9	METAVOLCANIC/P-A	N	0	-	N	N	7.86	N	6.92	N	4.8	N	317.9	-
10	PORPHYRY	N	1	CRUSHED	N	N	8.74	N	6.74	N	2.95	N	233.4	-
11	PORPHYRY	N	2	NIBBLED	N	N	9.3	N	7.61	N	2.44	N	224.9	-
12	CHERT	N	0	-	Y	N	6.75	N	4.2	N	5.05	N	154.27	-
1	CHERT	N	0	-	Y	N	3.65	N	2.68	N	1.69	N	21.27	-
2	PORPHYRY	N	1	BATTERED	Y	N	9.72	Y	6.31	Y	4.34	Y	400.8	ONE SURFACE HAS A LARGE PIT
3	PORPHYRY	N	3	BATTERED	N	N	10.3	Y	9.52	Y	4.8	Y	700	POLISH EXTENDS ONTO ONE SIDE
4	SANDSTONE	N	4	CRUSHED	N	N	12.37	N	7.43	N	4.18	N	646.2	SHAPED
5	PORPHYRY	N	0	-	N	N	12.23	N	8.1	N	5.94	N	799.6	3 PIECES OF 1
6	METAVOLCANIC/P-A	N	2	NIBBLED	Y	N	4.3	N	3.62	N	1.27	N	17.03	UTILIZED FLAKE
7	CHERT	N	2	RETOUCHED	Y	N	3.24	N	2.13	N	1.23	N	6.01	1 RETOUCHED EDGE, 1 UTILIZED EDGE
8	CHERT	N	1	NIBBLED	N	N	3.62	N	2.91	N	1.34	N	13.96	1 UTILIZED EDGE
9	PORPHYRY	N	0	-	Y	N	6.32	Y	6.12	Y	4.9	N	272.6	-
10	PORPHYRY	N	1	BATTERED	N	N	10.34	N	8.85	N	4.78	N	567.9	-
11	QUARTZITE	N	1	POLISHED	N	N	7.36	N	3.65	Y	2.31	Y	103.97	-
12	METAVOLCANIC/P-A	N	1	BATTERED	N	N	12.45	Y	8.68	Y	6.26	Y	901.7	-
13	JASPER	N	0	-	N	N							2.83	4 FRAGMENTS OF 1 PIECE
14	PORPHYRY	N	0	-	N	N	5.08	Y	5.98	N	3.7	N	170.38	-
15	METAVOLCANIC/P-A	N	0	-	Y	N	8.4	N	7.89	N	4.14	N	298.7	-
16	METAVOLCANIC/P-A	N	1	BATTERED	Y	N	10.13	N	5.73	N	4.69	N	324.6	-
17	CHERT	N	1	RETOUCHED	Y	N	1.9	N	1.23	N	0.53	N	1.2	-
18	QUARTZITE	N	1	NIBBLED	N	N	3.29	N	2.17	N	0.9	N	6.84	-
19	METAVOLCANIC/P-A	N	0	-	N	N	5.27	N	3.5	N	1.46	N	17.64	-
20	QUARTZITE	N	0	-	N	N	8.81	Y	10.02	Y	5.32	N	816.4	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	
CA-ORA-715	21	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	22	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	23	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-715	24	SURFACE COLLECTION	0	0	GROUND STONE		
CA-ORA-715	25	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	26	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-715	27	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	28	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	29	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	30	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	CHOPPER	UNMODIFIED
CA-ORA-715	31	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-715	32	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	33	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	AX	
CA-ORA-715	34	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	35	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	36	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	37	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	38	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	39	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	40	UNIT 1	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-715	41	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	42	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	43	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	44	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	45	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	46	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	47	SURFACE COLLECTION	0	0	CHIPPED STONE	ANVIL	
CA-ORA-715	48	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	49	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-715	50	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	51	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	52	UNIT 3	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	53	UNIT 4	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	54	UNIT 4	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	55	UNIT 4	20	30	SAMPLE	SOIL	LEVEL

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
21	METAVOLCANIC/P-A	N	1	NIBBLED	N	N	1.66	Y	1.5	Y	0.41	N	0.88	-
22	METAVOLCANIC/P-A	N	1	-	N	N	3	N	2.73	N	0.44	N	4.88	UTILIZED FLAKE
23	SANDSTONE	N	0	-	N	N	6.12	Y	7.21	N	3.8	N	270	SHAPED
24	PORPHYRY	N	0	-	Y	Y	12.5	Y	9.68	Y	5.6	Y	647.8	-
25	QUARTZ	N	0	-	N	N	8.58	Y	7.36	Y	5.4	Y	467	-
26	METAVOLCANIC/A	N	0	-	N	N	7.67	N	7.19	N	4.04	N	266.2	-
27	GRANITIC	N	0	-	N	N	12.35	Y	6.99	Y	6.39	N	915	-
28	PORPHYRY	N	1	WORN	N	N	9.85	Y	4.92	Y	61.62	Y	295.4	-
29	PORPHYRY	N	0	-	N	N	7.85	Y	9.67	N	4.96	N	548.4	-
30	METAVOLCANIC/P-A	N	1	WORN	N	N	8.28	N	4.44	N	4.87	N	259.3	-
31	METAVOLCANIC/P-A	N	0	-	Y	N	8.34	N	5.51	N	4.09	N	198.5	-
32	METAVOLCANIC/A	N	0	-	Y	N	3.65	N	2.59	N	2.29	N	27.72	-
33	QUARTZITE	N	1	BATTERED	Y	N	12.54	N	82.82	N	4.94	N	672.2	SHAPED
34	QUARTZITE	N	0	-	Y	N	13.65	N	11.69	N	6.19	N	1150.2	-
35	METAVOLCANIC/A	N	0	-	Y	N	2.59	N	2.46	N	0.75	N	4.17	-
36	QUARTZITE	N	1	PECKED	N	N	10.43	N	8.72	N	5.04	N	724.5	INTERESTING SHAPE
37	CHERT	N	0	-	Y	N	4.25	N	2.83	N	1.99	N	39.38	-
38	10 YR 5/3	N	0	-										-
39	10 YR 4/3	N	0	-										-
40	10 YR 4/3	N	0	-										-
41	CHERT	N	0	-	Y	N	1.92	N	1.13	N	1.13	N	2.82	-
42	CHERT	N	0	-	N	N	0.94	N	0.63	N	0.24	N	0.14	-
43	10 YR 5/4	N	0	-										-
44	10 YR 5/3	N	0	-										-
45	METAVOLCANIC/P-A	N	1	BATTERED	Y	N	71.02	N	58.57	N	2.53	N	119.95	-
46	PORPHYRY	N	0	-	N	N	13.69	N	8.95	N	61.33	N	1113.2	PECKED ON ONE SURFACE
47	METAVOLCANIC/P-A	N	1	BATTERED	N	N	10.51	N	10.96	N	5.61	N	627.1	-
48	METAVOLCANIC/P-A	N	1	NIBBLED	Y	N	8.26	N	6.37	N	2.9	N	158.6	-
49	PORPHYRY	N	0	-	Y	N	11.77	Y	9.63	Y	6.08	N	988.7	-
50	CHERT	N	1	NIBBLED	N	Y	1.09	N	1.01	N	0.56	N	0.6	-
51	10 YR 4/3	N	0	-										-
52	10 YR 4/4	N	0	-										-
53	10 YR 3/3	N	0	-										-
54	10 YR 3/3	N	0	-										-
55	10 YR 4/4	N	0	-										-

APPENDIX B
Personnel Resumes

RESUME

Ronald M. Bissell
24762 Via Del Rio
El Toro, California 92630
(714) 837-9582

EDUCATION

Master of Arts, Anthropology, Archaeological Emphasis.
California State University, Fullerton, California, 1983.

Master of Science, Library Science.
California State University, Fullerton, California, 1977.

Bachelor of Arts, Geology and History,
San Diego State University, San Diego, California, 1972.

Introduction to Federal Projects and Historic Preservation Law.
Sponsored by the Advisory Council on Historic Preservation and the General Services Administration Training Center, 1989.

EMPLOYMENT HISTORY

January 1986, Present. President, RMW Paleontological Associates, Incorporated, 23352 Madero, Suite J, Mission Viejo, California 92691. Duties include Principal Investigator responsibilities for all aspects of Cultural Resources Management projects.

April 1983, January 1986. Independent Consultant performing archaeological assignments for clients in California.

May 1976, April 1983. Information Specialist and Administrative Services Officer, Leighton and Associates, 1151 Duryea Avenue, Irvine, California 92714. Leighton and Associates is a geotechnical consulting firm.

March 1956, April 1976. United States Army. Rank at retirement was Major of Field Artillery.

CREDENTIALS

Certified by the Society of Professional Archaeologist as a Field Archaeologist.

Certified as an Archaeologist by the County of Orange Environmental Management Agency. Also certified by the Counties of Ventura, Los Angeles, Riverside and San Bernardino, Kern, Kings, Fresno, Tulare, Madera and San Diego as well as various municipal agencies.

California Community College credentials as Instructor in Anthropology, Library Science and Business Administration and as Chief Administrative Officer and Librarian.

Certified as Open Water Scuba Diver by the Professional Association of Diving Instructors.

MEMBERSHIPS

Society of Professional Archaeologists
Pacific Coast Archaeological Society
Society for California Archaeology
Southwestern Anthropological Association
California Mission Studies Association
American Library Association
California Library Association
South Coast Geological Society

PUBLICATIONS

Archaeological Site CA-Ora-572, a Two Component Site in Fullerton, California. Master's Thesis on file at the Library, California State University, Fullerton, California.

A Previously Unrecognized Grinding Technology from CA-Ora-572. Paper presented to the Southwestern Anthropological Association, April 1983. Expanded version published in the Quarterly of the Pacific Coast Archaeological Society, Volume 19, Number 3, July 1983.

Orange County's First Fairgrounds, 1890-1900. Proceedings of the Conference of Orange County History, 1989.

Archaeological Site CFA-Ven-630: A Solstice observatory in Simi Valley, Ventura County, California.

Archaeological Site CA-Ora-1058: Six Cairns in Orange County, California. Proceedings of the Society for California Archaeology, Volume 7, 1994.

OTHER INFORMATION

Completed graduate level classes in Land Use Planning, Computer Programming and Statistical Analysis.

Army trained land surveyor. Organized and taught a two semester hour class in land survey for archaeologists at the Anthropology Department, California State University, Fullerton, California.

RESUME

Patrick O. Maxon
27292 Padilla
Mission Viejo, California 92691
Home: (714) 859-4209
Office: (714) 770-8042

EDUCATION

M.A. Anthropology: 1994, California State University, Fullerton. Concentration in Archaeology.
B.A. Sociology/Psychology: 1987, Towson State University, Maryland.
University of Maryland, Munich Campus, Munich, Germany (one semester)

HONORS

Dean's List, National Honor Society for Sociology (1987), Varsity soccer (TSU), Scholar athlete.

EMPLOYMENT HISTORY

8-94 - present	Staff Archaeologist for RMW Paleo Associates. Responsibilities include project management, developing project proposals, conducting research, accomplishing field work (survey, excavation, monitoring) and completing technical reports.
7-90 - 8-94	Behavioral Specialist/Job Trainer Vantage Foundation, Costa Mesa, California. Worked with a group of three developmentally disabled adults teaching daily life and employment skills and managing maladaptive behaviors.
7-89 - 10-89	House Manager Pearlmark group home, Anaheim, California. Oversaw a home of 30-40 mentally ill individuals. Planned daily activities, managed homes employees, and met with residents' social workers, case managers and health professionals.
7-88 - 7-89	Instructor for United Cerebral Palsy, Santa Ana, California. Taught class of 25 developmentally disabled adults basic life skills and community integration.

SELECTED ARCHAEOLOGICAL EXPERIENCE

Bryant Ranch, Yorba Linda, California
Primary Number 30-150052
Duties: survey, excavation, monitoring, report preparation
7/96 - 1/97

Leisure World Self Storage, Laguna Niguel, California
CA-ORA-610
Duties: Project Manager; survey, report preparation
6/96 - 7/96

Rancho Los Cerritos Adobe
CA-LAN-696
Duties: excavation, monitoring
4/96 - 5/96

Cal State San Bernardino Master Plan, California
CA-SBR-6581H
Duties: Project Manager; survey, report preparation
3/96 - 4/96

Camp Pendleton, San Diego County, California
Duties: Project Manager; monitoring, report preparation
1/96 - 3/96

Marblehead Coastal, San Clemente, California
CA-ORA-MH-1H & MH
Duties: Project Manager; survey, report preparation
1/96 - 3/96

Saddleback Meadows, El Toro, California
CA-ORA-710, -711, -713, -714, -715, -1255, 1435H, -1437
Duties: Field Director; excavation, survey, report preparation
9/95 - 12/95

LaHabra, California
Duties: Project Manager; monitoring, report preparation
7/95 - present

Evans Point, Carlsbad, California
CA-SDI-14140 & CA-SDI-14151
Duties: Project Manager; monitoring, report preparation
6/95 - 1/96

Simi Valley, California (Hopetown)
CA-VEN-782
Duties: monitoring, excavation, report preparation
2/95 - 5/95

Rose Canyon, San Diego, California
CA-SDI-12557
Duties: field crew, excavation
9/94 - 2/95

Cal State University, Fullerton, Field School
CA-ORA-35, Los Pinos, California
Duties: field crew, excavation
8/92 - 12/92

SELECTED PALEONTOLOGICAL EXPERIENCE

Paleontological Monitoring:

Home Avenue, T.C. Construction, San Diego, California

Big Canyon, S & S Construction Co., Laguna Niguel, California

Kaufman & Broad, Chino Hills, California

Toll Bros., San Juan Capistrano, California

Home Depot, Laguna Hills, California

Sun Lakes, Banning, California

Paleontological Salvage:

Unocal, West Coyote Hills, California: *Bison latifrons* salvage

Big Canyon, S & S Construction Co.: Baleen whale salvage

SELECTED TECHNICAL REPORTS

Bissell, Ron and Patrick Maxon

1994 Cultural Resources Reconnaissance of Proposed Sewer Lines and Support Facilities, and Test Excavation of Three Sites in Valley Center, San Diego County, California.

Maxon, Patrick

1995 Archaeological Survey and Impact Assessment of the Proposed Upgrade to the Capistrano Beach Water District Waste Water Treatment Facility.

1995 Archaeological Survey and Impact Assessment of the Capistrano Beach Water District Stonehill Road Right of Way Acquisition

1995 Archaeological Test Excavation of Cultural Resources Located Within the Saddleback Meadows Planned Development, Orange County, California.

1996 Archaeological Monitoring of Grading for the Evans Point Planned Development, City of Carlsbad, San Diego County, California.

1996 Archaeological Reconnaissance and Impact Assessment of the Proposed Development of Marblehead Coastal, San Clemente, California.

1996 Archaeological Monitoring of Trenching for the Aircraft Support Equipment Refueling Station, Camp Pendleton, San Diego County, California.

1996 Cultural Resources Reconnaissance and Impact Assessment of Proposed Development for the California State University, San Bernardino Master Plan

1996 Cultural Resources Reconnaissance and Impact Assessment for the Proposed Development of the Leisure World Self Storage Facility in Laguna Niguel, California.

1997 Cultural Resources Investigation at the Bryant Ranch, Yorba Linda, Orange County, California, Tentative Tract 15199.

Maxon, Patrick O. and Edward J. Knell

1996 Archaeological Test Excavation of a Prehistoric Rock Shelter, Excavation and Recovery of Three Historic Deposits, Collection of an Historic Isolate and Monitoring of Grading at Hopetown, Simi Valley, Ventura County, California.

AUTHOR:	Patrick O. Maxon
DATE:	March 1997
TITLE:	Summary of Cultural Resources Investigation and Recommendations for Further Work Within the Saddleback Meadows Planned Development, Orange County, California **(Confidential Appendix)**
SUBMITTED BY:	RMW Paleo Associates, Incorporated 23392 Madero, Suite L Mission Viejo, California 92691 (714) 770-8042 FAX (714) 458-9058
SUBMITTED TO:	TPG Management, Incorporated 1601 Dove Street, Suite 105 Newport Beach, California 92660
CONTRACT NUMBER:	RMW Project Number 97-1006
MAP:	USGS Santiago Peak, California 7.5 Minute Quadrangle, 1954, Photorevised 1973
KEYWORDS:	Orange County; Saddleback Meadows; Township 6S, Range 7W; San Bernardino Base and Meridian; CA-ORA-710, -711, -712, -713, -714, -715, -716, -1255, -1256, -1257, -1437 & -1435H

APPENDIX K

SCHOOL IMPACT MITIGATION AGREEMENT

SCHOOL IMPACT MITIGATION AGREEMENT

by and between

SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT

and

CALIFORNIA QUARTET

a California Limited Partnership

SCHOOL IMPACT MITIGATION AGREEMENT

This SCHOOL IMPACT MITIGATION AGREEMENT (the "Agreement") dated as of September 3, 1996, is entered into by and between the SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT ("District") and CALIFORNIA QUARTET, a California Limited Partnership ("Owner").

RECITALS:

A. Owner is the owner of undeveloped property known as Saddleback Meadows (aka Bridlewood) (the "Property") within the boundaries of the District which is depicted on Exhibit "A" and more particularly described in Exhibit "B" hereto.

B. Development of the Property consistent with existing land use approvals may result in District being required to provide additional school facilities to serve the student population which may be generated as a result of such development.

C. It is acknowledged that the State of California (the "State") has the primary obligation to assist local school districts in the funding of school facilities. It is further acknowledged that the timing and adequacy of State funding is unpredictable and that District and Owner may not be able to rely upon State funding to finance the particular school facilities necessary to serve the student population which may be generated by development of the Property.

D. Given the uncertainties of State funding, District and Owner have determined it is in their mutual best interests to enter into this Agreement for the purpose of financing school facilities necessary to serve the student population which may be generated by development of the Property.

E. Owner's participation and cooperation in implementing this Agreement is intended to mitigate the impact of the development of the Property upon District in lieu of any additional fees, bond assessments, dedications, taxes, or any other requirements (other than indebtedness payable from ad valorem real estate taxes such as general obligation bonds) which the District might otherwise impose or seek to impose on Owner or the Property pursuant to Government Code Sections 53080, 65995, and 65995.3 or any other applicable law.

AGREEMENT

NOW, THEREFORE, in consideration of the above recitals and the terms and conditions herein set forth, District and Owner hereby agree as follows:

ARTICLE I

MITIGATION PURPOSE AND CALCULATION

Section 1.1 Purpose of Agreement. The purpose of this Agreement is to establish a means of fully mitigating the impact upon District of Owner's development of the Property in lieu of payments made to District under Government Code Sections 53080 and 65995.

District and Owner acknowledge that under the provisions of current California law, District is limited in the assessment of School Fees upon Owner to the rate of $1.84 per square foot of assessable space. Owner has, by entering into this Agreement, voluntarily agreed to provide additional financing assistance to District in order to assist in providing School Facilities at the earliest possible date.

Section 1.2 School Impact Mitigation Payments. Owner shall make the school impact mitigation payments to District in cash at the following times:

(a) the amount of $1.84 per square foot of assessable space shall be paid prior to issuance of a building permit for each residential unit to be developed on the Property; and

(b) an additional amount equal to the difference between $8068 per residential unit minus the fees paid in section (a) above, shall be paid at the close of escrow for each such unit sold to the first homebuyer through escrow. Bulk sales or transfers of units shall not be deemed to be a "homebuyer."

In order to protect the District, and in consideration for the District allowing Owner to make part of the school impact mitigation payment at close of escrow, District shall be required to issue Certificates of Compliance only upon receipt of a Ten Thousand Dollar ($10,000.00) security deposit in a form acceptable to District. The security deposit shall be placed in an interest-bearing account, with the interest accruing to Owner. Owner agrees that, should Owner or its successors or assigns (including any merchant builders) not make any school impact mitigation payment at time of close of escrow, District may draw upon the security deposit for the payment then owing without advance notice to Owner or its successors or assigns. Additionally, all future school impact mitigation payments from the time the District first has to take money from the security deposit must be made in full at the time of requesting a Certificate of Compliance for a building permit. When all school

impact mitigation payments have been made, the security deposit and all interest earned shall be returned to Owner within sixty (60) days.

Section 1.3 Option to form Community Facilities District. In lieu of paying the school impact mitigation payments in cash, Owners may elect, with District's consent, to form a community facilities district ("CFD") under the Mello-Roos Act of 1982, Government Code Section 53311 et seq. (the "Act"). District agrees to use its best efforts to form a CFD under the Act provided that (i) the formation of a CFD is economically viable, and (ii) the formation of a CFD will be supported by an adequate lien to value ratio for the Property as determined by the District. The total amount of bonding authorization for the CFD shall be sufficient to provide a construction fund in the amount of the school impact mitigation payments in total as set forth in Section 1.2 above plus the costs of bond issuance and necessary reserves. Should Owners elect, and District consent, to the formation of a CFD, the specific terms and conditions shall be the subject of an additional agreement to be developed by the parties.

Section 1.4 District Waiver of Other Rights and Claims. By entry into this Agreement, and payment of the school impact mitigation payments as provided herein, Owner and its successors and assigns shall be deemed to have fulfilled and mitigated their entire obligation to assist in financing school facilities to serve the student population to be generated by development of the Property. As a result, District hereby covenants that, so long as Owner timely performs its obligations hereunder, District shall not assert or pursue any additional claims for mitigation of the impact of Owner's Property on District or seek to impose or secure any additional fee, tax, exaction, dedication, condition or requirement in respect to the Property. District shall provide Owner when requested with reasonable certification of compliance or approvals required from District by any local agency as a condition to any approval by the local agency or the issuance of any permit, license, or any other entitlement by any other local agency. This Section 1.4 shall not release Owner's Property from indebtedness for any ad valorem real property taxes, such as general obligation bonds, which have been or may be levied on the Property. Except as previously stated, District agrees that the obligations undertaken by Owner pursuant to this Agreement shall be accepted in lieu of any and all fees, taxes, exactions, dedications, condition or other requirement otherwise chargeable or imposeable in respect to development of the Property pursuant to any requirement of state or local law or policy, whether in force at the effective date of this Agreement or adopted subsequent thereto, and that residential development of the Property will to the extent permitted by law be exempted from any moratorium, limitation on development, fee, tax, exaction, dedication, condition or requirement that may be levied, recommended, or concurred in by or for the benefit of the District for purposes of alleviating or mitigating school impactions.

Section 1.5 Waiver of Protest. Payment of the school impact mitigation fees as set forth in Section 1.2 above, whether by direct payment or through a CFD, special tax is made by Owner without protest. Owner voluntarily enters into this Agreement and

knowingly and willingly waives its right of protest as may be afforded by Government Code Sections 66020, 66021 or 66024, or by any other provision of law.

ARTICLE II

REPRESENTATIONS AND WARRANTIES

Section 2.1 Representations and Warranties of the District. District represents, covenants, and warrants to the Owner that it is a public school district duly organized and existing under the laws of the State of California; that it is authorized, through formal action by the Board of Education at a duly noticed public meeting, to enter into this Agreement, and to carry out its obligations under and pursuant to the Agreement; and that this Agreement is not in conflict with any other contract or agreement to which District is a party.

Section 2.2 Representations and Warranties of Owner. Owner represents, covenants, and warrants to District that Owner has the power to enter into this Agreement and has duly authorized the execution and delivery of this Agreement in accordance with the Constitution and laws of the State of California; and that this Agreement is not in conflict with any other contract, document, or agreement executed by Owner.

ARTICLE III

MISCELLANEOUS

Section 3.1 Assignment.

(a) Assignment by District. Without Owner's prior written consent, District shall not assign, encumber, transfer, or in any way convey (collectively, a "transfer") any interest in this Agreement or in District's right or expectation of receiving any portion of the school impact mitigation payments except to the extent required by the State or as may be reasonably determined by District to be necessary to assist in the planning, design, financing, and construction of school facilities. Any attempt by District to so transfer any interest in school impact mitigation payments in violation of this Agreement shall be void and without any force or effect.

(b) Assignment by Owner. Nothing in this Agreement shall in any way limit the right or ability of Owner to transfer, assign, encumber, hypothecate, or in any way convey (collectively, a "transfer") any interest of Owner in the Property without the consent of District. However, Owner covenants for the benefit of the District that after a transfer of Owner's legal title to all or a portion of the Property, Owner shall, with ten (10) days after the transfer, provide District

with a copy of a fully executed agreement between Owner and the transferee showing that the transferee has accepted full responsibility for the payment of any unpaid school impact mitigation payments under Section 1.2 with respect to the Property so transferred. Until such time as the District has received said agreement, Owner shall remain jointly and severally liable for any unpaid school impact mitigation payments on the Property so transferred. District covenants and agrees that it will cooperate with Owner and will promptly execute any documents reasonably required by Owner or Owner's assignee or transferee in connection with the assignment or transfer of Owner's rights and obligations hereunder.

Notwithstanding any other provisions of this Agreement to the contrary, the following future acts shall not be considered a transfer for purposes of this Agreement (provided that Owner shall remain fully responsible for performance hereunder):

(i) a transfer which consists of a conveyance for financing for the purpose of securing loans of funds;

(ii) the conveyance or dedication of any portion of the Property to the County or other appropriate governmental agency or the granting of easements or permits to facilitate the development of the Property; and

(iii) a transfer consisting of a change in the form of ownership or ownership interests (including without limitation a sale of stock or transfer in a general or limited partnership interest).

Section 3.2 Successors. Subject to the restrictions on transfers herein provided, all of the covenants, stipulations, promises, and agreements contained in this Agreement by or on behalf of, or for the benefit of, either of the parties hereto, shall bind or inure to the benefit of, their respective successors or assigns. As used in the foregoing, "successors" shall refer both to Owner's interest in the Property or any portion thereof, and to the successors to all or substantially all of Owner's assets and to their successors by merger or consolidation. This Agreement shall run with the land and be binding upon all successors of Owner, subject to the limitations set forth herein.

Section 3.3 Effect of Void Agreement. If all or any material provision of this Agreement shall be held to be invalid, illegal, or unenforceable, the entire Agreement shall be null and void and have no further effect, except for this Section 3.3. Notwithstanding Section 1.4 of this Agreement, in the event that this Agreement becomes null and void, Owner agrees to pay District the maximum dollar amount per square foot of assessable space authorized by Government Code Sections 53080 or 65995 prior to Owner requesting a building permit for any residential unit within the Property. Should this Agreement become null and void after any school impact mitigation payments have been made for one or more residential units under Section 1.2(a), but prior to the time that

the additional amount as set forth under Section 1.2(b) has been paid, Owner shall pay District the difference between the fees paid under Section 1.2(a) and the maximum dollar amount per square foot assessed by the District under Government Code Sections 53080 or 65995 within thirty (30) days of having received written notice of a demand to pay said fees.

Section 3.4 Consents. Unless otherwise herein provided, whenever approval, consent, acceptance or satisfaction (collectively, a "Consent") is required of a party pursuant to this Agreement, it shall not be unreasonably withheld, conditioned, or delayed. Unless provision is made for a specific time period, consent or disapproval shall be required to be given within 30 days after receipt of the written request for Consent. If a party shall disapprove, the reasons therefore shall be stated in reasonable detail in writing.

Section 3.5 Entire Agreement: Amendments. This Agreement constitutes the entire agreement between District and Owner with respect to the subject matter set forth herein and supersedes all prior discussions, negotiations, and agreements on said subject.

This Agreement cannot be amended except in writing by Owner and District, duly executed by their authorized agents. Owner and District recognize that it may be necessary to make revisions to this Agreement after execution by the parties. Therefore, District delegates to the Superintendent the authority to approve amendments to this Agreement which do not substantially affect the terms contained herein.

Section 3.6 Exhibits. The Exhibits to which reference is made herein, are deemed incorporated into this Agreement in their entirety by reference thereto. The Exhibits are as follows:

A - Map of the Property
B - Legal Description of the Property

Section 3.7 Time. Time is of the essence of this Agreement and of each and every term, provision, and condition hereof.

Section 3.8 Notices. Any notice to either party shall be in writing and given by delivering the same to such party in person or by sending the same by registered mail. return receipt requested, with postage prepaid, to the following addresses:

If to District: Saddleback Valley Unified School District
26931 Discno Drive
Mission Viejo, CA 92691
Attn: Superintendent

If to Owner: California Quartet, Ltd.
c/o TPG Management, Inc.
1601 Dove Street, Suite 105
Newport Beach, CA 92660
Attn: H. Pike Oliver

Either party may change its mailing address at any time by giving written notice of such change to the other party in the manner provided herein. All notices under this Agreement shall be deemed given, received, made or communicated on the date personal delivery is effected or, if mailed, on the delivery date or attempted delivery date shown on the return receipt.

Section 3.9 Collection Costs and Attorney's Fees. In the event either party is required to institute collection proceedings or a legal action for enforcement of any of the terms or conditions set forth herein, the prevailing party shall be entitled to recover its reasonable costs and expenses, including without limitation litigation expenses and attorney's fees. Such expenses shall include reasonable costs of investigation and formal and informal discovery proceedings. All such costs and expenses shall be deemed to have accrued on commencement of such action and shall be enforceable whether or not such action is prosecuted to final judgment.

Section 3.10 Recordation. Owner shall record this Agreement against the Property within ten (10) days after the date this Agreement is approved by District's Board of Education at a duly noticed public meeting. Recording fees shall be paid for by Owner. Immediately after such recordation, Owner shall deliver a conformed copy of the recorded Agreement to District.

In the alternative, District may record the Agreement at Owner's expense.

Upon Owner's written request, and at no expense to District, District agrees to execute an appropriate writing canceling this Agreement and removing the same of record with respect to any lot or parcel that has made all of the school impact mitigation payments required herein.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT

By: _____
President,
Board of Education
Dore J. Gilbert

By: _____
Clerk,
Board of Education
Frank L. Ury

ATTEST:

_____
Superintendent of Schools
Peter A. Hartman

CALIFORNIA QUARTET, LTD.

By: Aradi, Ltd., its general partner

By: Aradi, Inc., its general partner

By: _____
David C. Brainerd
Sr. Vice President

David C. Brainerd
Sr. Vice President

APPENDIX L

SERVICE PROVIDERS REFERENCE DOCUMENTS

ORANGE COUNTY FIRE AUTHORITY

P. O. Box 86, Orange, CA 92856-9086 • 180 South Water St., Orange, CA 92866-2123

Chip Prather, Fire Chief (714) 289-3712 www.ocfa.org

July 13, 2001

Ms. Natalie Borchardt, Environmental Specialist
HDR
9444 Farnham, Suite 300
San Diego, CA 92123

Re: Saddleback Meadows

Dear Ms. Borchardt

Thank you for the opportunity to comment on the Saddleback Meadows draft EIR. The Orange County Fire Authority (OCFA) has considered the potential impacts associated with this proposal and would like to offer some preliminary comment.

The OCFA has identified that the proposed project may present significant impacts to existing fire and rescue services. Currently, the OCFA is responsible for provision of these services to the project area. To mitigate these impacts, the applicant may be required to enter into a secured fire protection agreement with the OCFA as a condition of development.

The project area is within the designated Special Fire Protection Area as a result of significant wildfire risks. These risks will require special mitigation measures an accordance with OCFA standards. All other standard conditions of development including access will also be applicable to the proposed project. Fire flows for the proposed project are determined at the time of plans submittal.

Currently, fire services provided by the OCFA to the project area include;

Fire Station 42 19150 Ridgeline Dr., Lake Forest (Portola Hills)
3 firefighters on duty staffing either a paramedic assessment engine company or a brush engine.

Fire Station 18 O'Neill Park, Trabuco Canyon Road, Trabuco Canyon
3 firefighters on duty staffing either a paramedic assessment engine company or brush engine.

Fire Station 16 28891 Modjeska Canyon Rd., Modjeska Cyn.
25 reserve firefighters staffing an engine company and water tender

Fire Station 45 30131 Adventura, Rancho Santa Margarita
8 firefighters staffing a paramedic assessment engine company, a truck and a Battalion Chief

The response time for the first arriving station, Station 42 is at the OCFA standard of a maximum of 5 minutes. While current staffing levels are sufficient, additional fire apparatus or equipment may be necessary to serve the proposed site.

If you have any additional questions, please contact me at (714)744-0484.

Sincerely,

Michael S. Rohde
Battalion Chief, Advance Planning

SHERIFF-CORONER DEPARTMENT
COUNTY OF ORANGE
CALIFORNIA

MICHAEL S. CARONA
SHERIFF-CORONER

11 JOURNEY
ALSIO VIEJO, CA 92656
(949) 425-1800

ASSISTANT SHERIFFS
JOHN FULLER
DON HAIDL
JOHN HEWITT
GEORGE H. JARAMILLO
TIM SIMON
DOUG STORM

August 7, 2001

Natalie Borchardt, Environmental Specialist
HDR Engineering, Inc.
9444 Farnham Suite 300
San Diego, CA 92123

Dear Ms. Borchardt:

Here are the answers to the questions you are requesting regarding the Environmental Impact report (EIR) for the proposed Saddleback Meadows Project.

1. The Orange County Sheriff's station that would serve the project area is:
   11 Journey
   Aliso Viejo, CA 92656

2. The response times (receipt in dispatch to on scene) for emergency and non-emergency calls in the project area are:
   Emergency = 9.0 minutes
   Non Emergency = 24.56 minutes

3. Because the project area is currently open, non-developed land there are no crime statistics.

4. The current staffing levels are adequate to meet current demands for law enforcement services in the project area.

5. a. The project might require additional law enforcement staffing. With the addition of 299 single-family homes the area population will increase. Based upon our staffing methodology an increase of approximately 750 people will add approximately 300 more calls for service per year. These additional calls for service will require one additional deputy sheriff per shift plus a relief for a total of four additional deputies.

   b. The project based on its size and location should only impact existing response times with additional traffic congestion.

6. The only suggestion to mitigate any law enforcement impacts would be to refrain from installing a gate to the community and speed bump. Both of these would be a hindrance to quicker response times.

7. There currently are no impact fees.

Hopefully these answers are sufficient for your report and again sorry for the delay.

Sincerely,

MICHAEL S. CARONA, Sheriff-Coroner

Tom Davis, Captain
South Operations Division

"Preparing today's students to succeed in tomorrow's world."

July 31, 2001

HDR
Natalie Borchardt
9444 Farnham, Suite 300
San Diego, CA 92123

Dear Ms. Borchardt:

Per your letter dated July 6, 2001, please find attached the responses to your questions relating to the Saddleback Meadows Draft Environmental Impact Report.

If you have any questions, please don't hesitate to call me at 949-580-3335.

Sincerely,

Tom Tullar,
Director, Business Services

H:\data\Facilities\Saddleback Mdws Questions to HDR.doc\kp

SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT
25631 DISEÑO DRIVE
MISSION VIEJO, CALIFORNIA 92691
(949) 586–1234

ACTING SUPERINTENDENT
Dr. William N. Manahan

BOARD OF EDUCATION
Dore J. Gilbert, M.D., President
Nancy W. Kirkpatrick, Vice President
Suzie R. Swartz, Clerk
Ginny Fog Aitkens, Member
Don Sedgwick, Member

1. Identify which District schools serve the project area.

   a. *Trabuco Elementary, 31052 Trabuco Canyon Road, Trabuco Canyon 92678*
   b. *Serrano Intermediate, 24642 Jeronimo, Lake Forest 92630*
   c. *El Toro High, 25255 Toledo Way, Lake forest 92630*

2. Identify current student enrollment and capacity statistics for the schools that serve the project area.

School	Enrollment 2001-2002 (estimate)	Estimated Permanent Capacity	Current Capacity with Portables
Trabuco Elementary	99	0	160
Serrano Intermediate	1469	1296	1463
El Toro High	2569	2016	2524

3. Is existing school capacity within the District adequate to meet current student population?

   No. Students on all sites that would service this development are only able to house students by the addition of portable classrooms.

4. Does Saddleback Valley Unified School District have student generation rates (grades K-12) for commercial/office land uses?

   Yes. Our consultant has developed a rationale that supports charging $ .33 per square foot for commercial construction.

5. Our records indicate that school developer fees are $1.77 per square foot of residential land use. Can you verify if these fee amounts are accurate?

   The current developer fee for the SVUSD is $2.05 per square foot for residential, and $ .33 per square foot for commercial development.

6. Would these fees be adequate to offset potential impacts to the District that may be generated from the proposed project?

   It is difficult to determine revenue from development without knowing the size of the housing and commercial units. It is estimated that the collection of developer fees would offset potential impact to the District that may be generated from the proposed project.

7. Are there any improvements or additions planned for the District schools that serve the project area?

   The District will be forced to provide adequate classrooms as enrollment increases through use of portable classrooms.

8. Is the District utilizing any bussing programs and/or portable classrooms to accommodate overcrowded schools?

   - *Parent Pay Bussing - $365/year per student*
   - *Use of Portables to house enrollment above permanent capacity.*

9. Do you have any recommendations that might help reduce any potential impacts to the SVUSD that would be generated as a result of the proposed project?

   N/A

Orange County Public Library
1501 E. ST. ANDREW PLACE, SANTA ANA, CA 92705 (714) 566-3000

JOHN M. ADAMS
COUNTY LIBRARIAN

August 1, 2001

Natalie Borchardt, Environmental Specialist
HDR Engineering
9444 Farnham, Suite 300
San Diego, CA 92123

Re: Saddleback Meadows Draft EIR - Library Service Information

Dear Ms. Borchardt;

In response to your letter of July 6, we provide the following information relative to the impact of the Saddleback Meadows project on public library services.

1. The project area is currently served by the Rancho Santa Margarita branch library (30902 La Promesa, Rancho Santa Margarita).
2. The current capacity of the Rancho Santa Margarita Library is 16,300 square feet of public service space and a collection of 75,000 volumes.
3. This current capacity is not adequate, per Orange County Public Library standards, to meet the current service population
4. In 2002 we will be opening the 10,000 sq. ft. Foothill Ranch branch library (under construction at the intersection of Rue de Fortuna and Cabriolet, Lake Forest).
5. The opening of the Foothill Ranch library will allow the existing library facilities to meet the standards set by Orange County Public Library for the square footage per capita needed (figured at 0.2 sq. ft. per capita). However, the Rancho Santa Margarita and Foothill Ranch libraries were designed and funded without accommodation for the additional demand that residents of the proposed Saddleback Meadows project will place on the libraries' collections of books. Our standard in this area is 1.5 volumes per capita. Therefore, to reduce the significant impact the Saddleback project will have on public library services in the area, we recommend that the Orange County Public Library be provided with funds sufficient to purchase the necessary additional book volumes to serve this additional population. Determination of the appropriate amount will depend on the projected built-out population of the project and the cost of the average hardback book at the time of payment as identified by the American Book Publishing Record. Currently, this figure is $22/volume.
6. The project is not currently subject to any OCPL impact fees.

Please feel free to contact me if I can provide any additional information.

Sincerely,

John M. Adams
County Librarian

Cc: Tom Matthews, Planning & Development Svcs.Dept.

STAFF MEMBERS

Bruce Boner, General Manager
Carl R. Schoonover, Treasurer

TRABUCO CANYON WATER DISTRICT

BOARD OF DIRECTORS

James Haselton, President
Matthew Disston, Vice President
Don Chadd, Director
Michael Safranski, Director
Corinne Loskot, Director

August 8, 2001

Natalie Borchardt
Environmental Specialist
HDR
9444 Farnham, Suite 300
San Diego, CA 92123

Re: Saddleback Meadows Draft Environmental Impact Report

Dear Natalie,

Answer to your first five questions:

1 Describe the current staff levels and equipment:

The District has a staff of 22.

The District has a population of approximately 10,300 people and is located in the southeastern portion of Orange County. The District provides sewer service to approximately 3,256 connections located within the District, 1,600 connections in the Irvine Ranch Water District (IRWD), and 233 connections in the Santa Margarita Water District (SMWD). The District provides water service to approximately 3,616 residential households located within the District and 532 households in the IRWD service area. The District provides reclaimed water service to five major users: Dove Canyon Country Club, Dove Canyon Master Association (DCMA), and the Robinson Ranch Homeowners Association (HOA), and the Trabuco Highlands Community Association.

The District obtains water from a variety of sources including local groundwater wells, State Project water, and inter-ties with other water purveyors. The level of service provided to customers and the quantity of water provided within the District have increased over the years in conjunction with the District's growth.

The District treats a portion of the collected wastewater at the Robinson Ranch Wastewater

Treatment Plant (RRWWTP) while the remainder is conveyed to SMWD for treatment at their Chiquita Wastewater Reclamation Plant. The central portion of the District remains unsewered. The District reclaims the treated wastewater effluent from the RRWWTP by pumping treated and stored flows to the reclaimed water customers. In addition, recycled flows, which are stormwater runoff flows, can be pumped from the Dove Lake to augment treated effluent flows during periods of high demand.

2 Are current staff levels and equipment adequate to meet existing demand for water and sewer service?

Yes.

3 Can the proposed project be adequately accommodated by existing staff and equipment?

Staff- Yes. Regarding equipment, a Sub-Area Master Plan should be prepared to define needed improvements.

4 What is the requirement for water and sewer services for the project site?

A Sub-Area Master Plan should be prepared and financed by the developer to define needed facility improvements. Facilities include:
Water; pump stations, reservoirs, pressure reducing valves, & pipelines.
Sewer; Local collection lines only. The project has already purchased regional wastewater collection, treatment and disposal capacity.

5 Are there any TCWD impact fees that the project will be subject to?

Regional wastewater collection, treatment and disposal capacity rights were financed prior to recordation of the previous tract map through Assessment District No. 5. Fees related to water have been paid. However, all fees and capacity charges need to be reevaluated following completion of the Sub-Area Master Plan.

Thank you,

Brian Bertsch

O&M Specialist

Integrated Waste Management Department

Janice V. Goss, Interim Director
320 North Flower Street • Suite 400 • Santa Ana California 92703 • (714) 834-4000
www.oc.ca.gov/iwmd

August 6, 2001

Natalie Borchardt
HDR Engineering, Inc.
9444 Farnham, Suite 300
San Diego, CA 92123

Dear Ms. Borchardt:

Subject: Request for Information—Saddleback Meadows Development

The following comments are in response to your fax to IWMD dated August 1, 2001.

The California Integrated Waste Management Board requires that all counties have an approved Countywide Integrated Waste Management Plan (CIWMP). To be approved, the CIWMP must demonstrate sufficient solid waste disposal capacity for at least fifteen years, or identify additional available capacity outside of the county's jurisdiction. Orange County's CIWMP, approved in 1996, contains future solid waste disposal demand based on the County population projections previously adopted by the Board of Supervisors. IWMD's database shows that the Orange County landfill system has capacity in excess of thirty (30) years. This is well above the fifteen-year threshold established by the California Integrated Waste Management Board.

The County of Orange owns and operates three active landfills. The Frank R. Bowerman Landfill is the closest facility to the project, and will likely be the solid waste facility receiving the waste. Notwithstanding, the cities and unincorporated areas in Orange County are under contract to IWMD to commit all of their waste to the County landfill system (not to a particular facility) until the year 2007. At the same time, the landfill system is accepting additional waste from outside Orange County. Under these circumstances, it has been agreed that should the cumulative effect of development cause the daily tonnage ceiling of a particular facility to be exceeded, the waste being imported to that facility will be reduced by a corresponding amount. Consequently, it may be assumed that adequate capacity for the subject project is available for the foreseeable future.

Notwithstanding the availability of landfill capacity in the County system, the State of California has required that by the start of this year, each city and county demonstrate a reduction of at least 50% in the amount of waste from that jurisdiction that had gone into landfills in the year 1990. Also, the State requires that this level of reduction be sustained in perpetuity. Waste haulers are expected to contribute by recycling residential and commercial waste they have collected, and project developers are expected to employ measures to reduce the amount of construction-generated waste. IWMD recommends that the project developer contact the city recycling coordinator to ensure that the proposed project is in compliance with the city's program.

At this time, IWMD does not have information on solid waste generation rates in Orange County. Any questions about solid waste generation rates should be forwarded to the California Integrated Waste Management Board in Sacramento.

Further information about the County of Orange landfills can be accessed at http://www.oc.ca.gov/iwmd. Thank you for the opportunity to incorporate our comments. If you have any questions, Tony Deconinck can be reached by email at tony.deconinck@iwmd.ocgov.com, or by phone at (714) 834-4107.

Sincerely,

Robert Richmond, Planner IV
Regulatory Compliance

cc: Tony Deconinck

SOUTHERN CALIFORNIA EDISON
An *EDISON INTERNATIONAL* Company
14155 Bake Parkway
Irvine, California 92618

Will Serve Letter

Date: **7/17/01**

To: **HDR Engineering, Inc**

From: **Martin Kaczmarek**

Subject: **Saddleback Meadows**

This is to advise that the subject property is located within the service territory of the Southern California Edison Company and that the electric loads of the project are within parameters of the overall projected load growth which we are planning to meet in this area.

Unless the demand for electrical generating capacity exceeds our estimates, and provided that there are no unexpected outages to major sources of electrical supply, we expect to meet our electrical requirements for the next several years.

Edison has developed several programs which may prove extremely helpful to customers in increasing the efficiency of their operations and holding down energy costs. For more information, please call Mr. Jack Melnyk in our Customer Solutions Department at 714-973-5679.

Sincerely

Martin Kaczmarek
Saddleback Planning
Southern California Edison

The Gas Company

A Sempra Energy company

Southern California
Gas Company
Orange Coast Region
PO Box 3334
Anaheim, CA 92803-3334

July 23, 2001

HDR Engineering, Inc.
9444 Farnham, Suite 300
San Diego, CA. 92123

Attention: Natalie Borchardt

Subject: E.I.R. – Saddleback Meadows

This letter is not to be interpreted as a contractual commitment to serve the proposed project, but only as an information service. Its intent is to notify you that the Southern California Gas Company at the present time does not have distribution facilities in the areas where the above named projects are proposed.

When the areas are served by our facilities, the service will be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Estimates of gas usage for non-residential projects are developed on an individual basis and are obtained from the Commercial-Industrial Market Services Staff by calling 1(800) 427-2000.

We have developed several programs, which are available upon request to provide assistance in selecting the most energy efficient appliances or systems for a particular project. If you desire further information on any of our energy conservation programs, please contact this office for assistance.

Sincerely,

Robert S. Warth
Technical Supervisor

lag
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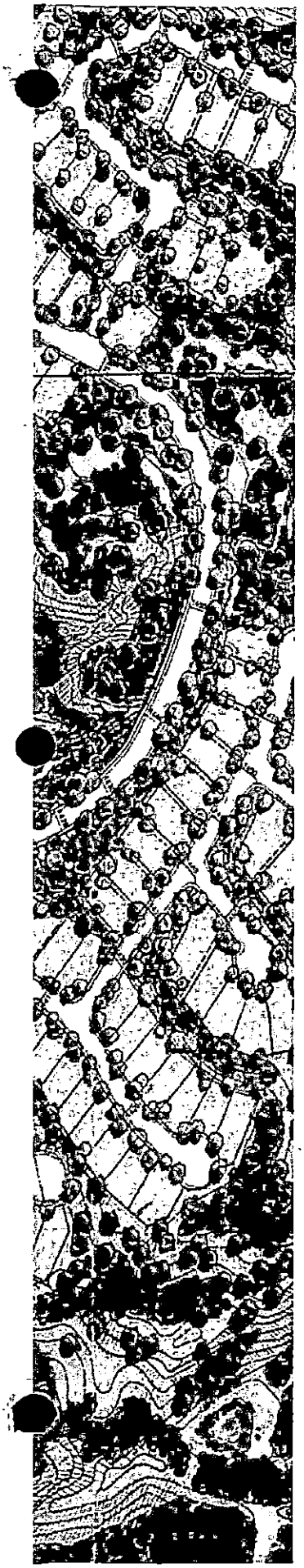

Addendum No. 2

FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
EIR 566
State Clearinghouse No. 96121072

Volume 2

Saddleback Meadows

Planning Application 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

County of Orange
Planning and Development Services Department

HDR
March 2001

Addendum No. 2

Volume 2

Final Subsequent Environmental Impact Report 566

State Clearinghouse No. 96121072

Saddleback Meadows

Planning Application (PA) 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

Lead Agency:

COUNTY OF ORANGE

Planning and Development Services Department
Environmental and Project Planning Services Division
Environmental Planning Section
George Britton, Division Manager
Trish McNally, Chief
William Grieman, Project Manager

Prepared by:

HDR/URBAN VISION
One City Boulevard West, Suite 900
Orange, Ca 92868

March 2001

TABLE OF CONTENTS

VOLUME 1

Section			Page
1	**INTRODUCTION**		1-1
	1.1	Legal History	1-1
	1.2	Board of Supervisors Actions	1-1
	1.3	Addendum No. 2 Organization	1-2
	1.4	CEQA Statutory Requirements	1-2
	1.5	Addendum No.2 Findings	1-4
2	**PROJECT DESCRIPTION**		2-1
	2.1	Location	2-1
	2.2	Background	2-1
	2.3	Project Description	2-1
	2.4	Related Projects	2-5
3	**ENVIRONMENTAL SETTING**		3-1
4	**ANALYSIS OF IMPACTS AND MITIGATION**		4-1
	4.1	Land Use	4-1
	4.2	Soils and Geology	4-2
	4.3	Water and Hydrology	4-2
	4.4	Transportation and Circulation	4-3
	4.5	Air Quality	4-3
	4.6	Noise	4-4
	4.7	Biological Resources	4-4
	4.8	Aesthetics	4-6
	4.9	Cultural and Scientific Resources	4-6
	4.10	Recreation	4-7
	4.11	Hazards	4-7
	4.12	Public Services	4-8
	4.13	Utilities and Service Systems	4-8
5	**FINDINGS AND DETERMINATION**		5-1
6	**REFERENCES**		6-1

EXHIBITS 7-1

1 Regional Location Map
2 Vicinity Map
3 Illustrative Site Plan
4 Related Projects

TABLES

2-1	Land Use Summary	2-3
2-2	Related Projects	2-5
4-1	Land Use and Planning Impacts	4-1
4-2	Soils and Geology Impacts	4-2
4-3	Water and Hydrology Impacts	4-2
4-4	Transportation and Circulation Impacts	4-3
4-5	Air Quality impacts	4-4
4-6	Noise Impacts	4-4
4-7a	Biological Resource Impacts	4-5
4-7b	Biological Mitigation Plan Summary	4-5
4-8	Aesthetic Impacts	4-6
4-9	Cultural and Scientific Resource Impacts	4-6
4-10	Recreation Impacts	4-7
4-11	Hazards Impacts	4-7
4-12	Public Service (Education) Impacts	4-8
4-13	Utility and Service System Impacts	4-9

ADDENDUM NO. 2 APPENDICES

A Project Chronology
B Updated Traffic Analysis
C Updated Biological Mitigation Plan

VOLUME 2

D. Saddleback Meadows Processing Documents - Administrative Record in Support of Petitioner's Motion for Summary Adjudication – October 1997 to December8, 1998

VOLUME 3 (Bound as Individual Documents)

E. Draft Environmental Impact Report 561 (Volumes 1 – 3) - February, 1996
F. Response to Comments – Draft EIR 561 - July, 1996
G. Draft Subsequent Environmental Impact Report 566 (Volumes 1 – 3) – June, 1997
H. Response to Comments – Draft EIR 566 - October 1997

Saddleback Meadows Processing Documents – June to December 1998 and December 1997

The documents listed below were associated with the land use entitlement processing of the so-called 299-lot Contingency Plan for the Saddleback Meadows property between June 22, 1998 and December 8, 1998. These documents are contained within Volume 2 of SEIR Addendum No2.

1. **1998-06-22 – 1874-1874 – OCPDSD - Application Form**

   Application form for the so-called "299-lot Contingency Plan" that was filed with the Orange County Planning and Development Services Department on June 22, 1998. Page 1874 of the Administrative Record[1]

2. **1998-08-07 – 2210-2212 – PC – EIR – Memorandum – Distribution of Addendum**

   Memorandum from the Environmental and Project Planning Services Division of the Department of Planning and Development Services distributing the Addendum PA980103 to Final EIR 566 for the 299-lot plan. The distribution list is contained on the third page of this document. Administrative Record pages 2210 through 2212.

3. **1998-08-25 – 2215-2285 - PC – Comment letter**

   Comment letter from Vedanta Society of Southern California, the Norbertine Fathers of Orange and the Saddleback Meadows Land Conservancy to Members of the Orange County Planning Commission concerning Zone Change 98-3, Area Plan 98-2 and EIR Addendum PA980103 for the 299-lot Contingency Plan for Saddleback Meadows. Administrative Record pages 2215 through 2285.

4. **1998-08-25 – 2215-2215 – PC – Notice of Public Hearing – ZC 98-3 and AP 98-2**

   This is the notice for the August 25, 1998 public hearing held by the Planning Commission to consider Zone Change 98-3 and Area Plan 98-2 for the 299-lot plan for Saddleback Meadows. Administrative Record page 215.

5. **1998-10-13 – 2312-2596 – BoS – Agenda Item Transmittal – ZC 98-3 and AP 98-2 (including attachments)**

   Staff transmittal of materials to Board of Supervisors relating to Zone Change 98-3 and Area Plan 98-2 including the staff report and several attachments:

   a) **Attachment A – Appeal Letter**

   b) **Regional Map**

   c) **Chronology of Events**

[1] The term "Administrative Record" refers to the record prepared for Vedanta Society of Southern California v. County of Orange, et al. al. al., Orange County Superior Court Case Number 804137 and the other lawsuits that were consolidated with that case.

d) **Zone Change 98-3 (Draft Ordinance)**

e) **Area Plan 98-2**

f) **Analysis of Planning Issues**

g) **Existing Bridlewood Residential Draft Regulations**

h) **Manufactured Slopes Exhibit**

i) **Planning Commission Minutes, Resolutions, Staff Reports and Correspondence**

j) **Commissioner Moody's Memo**

k) **Draft Board of Supervisors Resolution re: AP 98-2**

l) **Analysis of Environmental/CEQA Issues**

m) **Draft Board of Supervisors Resolution re: EIR Addendum PA980103**

n) **EIR Addendum PA 980103**

6. **1998-10-21 – 2630-2630 – SC – Notice – TT-15320 – Meeting of 1998-10-21**

Formal notice of the Subdivision Committee meeting of October 21, 1998 to consider Tentative Tract 15320, the Vesting Tentative Tract Map delineating residential lots for the 299-lot plan for the Saddleback Meadows property.

7. **1998-10-21 – 2631-2631 – SC – Notice – TT – 15784 – Meeting of 1998-10-21**

Formal notice of the Subdivision Committee meeting of October 21, 1998 to consider Tentative Tract 15784, a Tentative Tract Map creating seven parcels for conveyance purposes only.

8. **1998-10-21 – 2597-2624 – SC – Tentative Tract Map Report – TT-15320 – VTTM**

This is the report of the Orange County Subdivision Committee on the Vesting Tentative Tract Map for the residential lots for the 299-lot plan for Saddleback Meadows. Administrative Record pages 2597 through 2634.

9. **1998-10-21 – 2625-2629 – SC – Tentative Tract Map Report – TT-15784 – TM**

Report of the Orange County Subdivision Committee on the Tentative Tract map for Saddleback Meadows for conveyance purposes only. Administrative Record pages 2625 through 2629.

10. **1998-10-21 – 2632-2831 – SC – Comment letter**

Comment letter addressed to the Pat Stanton, Chair of the Subdivision committee and written by Ed Connor on behalf of the Norbertine Fathers of Orange, the Saddleback Meadows Land Conservancy and the Vedanta Society of Southern California, opposing the approval of Tentative Tract Maps 15784 and 15320, including attachments. Administrative Record pages 2632 through 2831.

11. **1998-10-27 – 2832-2860 - BoS – Supplemental Transmittal – Appeal of AP 98-2 (with attachments)**

Staff transmittal to the Board of Supervisors of the appeal filed by Edmund Connor of the Planning Commission's approval of Area Plan 98-2 on behalf of the Vedanta Society of Southern California,

the Norbertine Fathers of Orange and the Saddleback Meadows Land Conservancy and notification of the withdrawal of the California Quartet appeal. The attachments are:

a) **Appeal by Edmund Connor**

b) **Staff Response**

c) **Withdrawal of Appeal by California Quartet**

This transmittal and the attachments comprise pages 2832 through 2860 of the Administrative Record.

12. 1998-10-29- 2861-2938 – BoS – Agenda Item Transmittal – Appeal of TTM 15784 and VTTM 15320 (with attachments)

Staff transmittal of materials to Board of Supervisors relating to the appeal of Tentative Tract Map 15874 (conveyance map) and Vesting Tentative Tract Map 15320 (delineating lots for the 299-lot site plan), including the staff report and several attachments:

a) **Appeal Letter**

b) **AIT of November 3, 1998 (Item #55)**

c) **Subdivision Committee Minutes**

d) **Final Subdivision Reports (2)**

e) **Public Comments**

f) **Tentative Tract Map (TTM) 15784**

g) **Vesting Tentative Tract Map 15230**

Pages 2861 through 2938 of the Administrative Record.

13. 1998-10-30 – 2939-2944 - BoS – Supplemental Transmittal – Public comments and corrected exhibit – ZC 98-3 and AP 98-2

Staff transmittal to the Board of Supervisors forwarding public comments since the original agenda item transmittal (of October 13, 1998) was prepared and the correction of an exhibit illustrating the manufactured slope height for the project. Administrative Record pages 2939 through 2944.

14. 1998-11-03 – 2945-2945 – BoS – Notice of Public Hearing on 1998-11-03 – ZC 98-3 and AP 98-2

Formal notice of the Board of Supervisors meeting of November 3, 1998, to consider Zone Change 98-3 and the appeal of Area Plan 98-2. Page 2945 of the Administrative Record.

15. 1998-11-17 – BoS – 2946-2970 – Supplemental Transmittal – Appeal of TTM 15784 and VTTM 15230 (with attachments)

Staff transmittal to the Board of Supervisors forwarding an appeal by Edmund Connor (on behalf of the Vedanta Society of Southern California, the Norbetine Fathers of Orange and the Saddleback Land Conservancy of the Orange County Subdivision Committee's approval of Tentative Tract Map 15784 (for conveyance purposes only) and Vesting Tentative Tract Map 15230 delineating the

residential lots for the 299-lot site plan for Saddleback Meadows and notifying the board of the withdrawal of the appeal previously filed by California Quartet. The attachments are:

a) **Appeal by Edmond Connor**

b) **Staff Response**

c) **Withdrawal of Appeal by California Quartet**

This document comprises pages 2946 through 2970 of the Administrative Record.

16. 1998-11-24 – 2971-3031 – BoS - Supplemental Transmittal – Ordinances and Resolutions for Final Action

Staff transmittal of ordinances and resolutions necessary for the Board of Supervisors to take final action on EIR Addendum PA 980103, Zone Change 98-3, Area Plan 98-2, Tentative Tract Map 15784 and Vesting Tentative Tract Map 15230. The attachments include:

a) **Draft Resolution – EIR Addendum**

b) **Draft Ordinance – Zone Change**

c) **Draft Resolution – Area Plan**

d) **Draft Resolution – TTTM**

e) **Draft Resolution – VTTM**

The documents comprise pages 2971 through 3031 of the Administrative Record.

17. 1998-11-24 – 3033-3039 - BoS – Comment Letter

Comment letter addressed to the Board of Supervisors and written by Edmond Connor on behalf of the Norbertine Fathers of Orange, the Saddleback Meadows Land Conservancy and the Vedanta Society of Southern California, opposing Zone Change 98-3, Area Plan 98-2, Tentative Tract Map15784 and Vesting Tentative Tract Map 15320. Administrative Record pages 2632 through 2831.

18. 1998-11-24 – 3041-3041 – BoS – Notice of Public Hearing on 1998-11-24 – TTM 15784 and VTTM 15320

Formal notice of the Board of Supervisors hearing of November 24, 1998, to consider the appeal of Subdivision Committee's approval of Tentative Tract Map 15784 and Vesting Tentative Tract Map 15230. Page 3041 of the Administrative Record.

19. 1998-12-04 – 3042-3062 – BoS - Supplemental Transmittal – Responses to Public Comments

Transmittal of staff responses to comments made at the Board of Supervisors hearing held on November 24, 1998. Pages 3042 through 3062 of the Administrative Record.

20. 1998-12-08 – 3063-3063 – BoS – Minute Order - Addendum PA 980103 and ZC 98-3

Minute order of the Board of Supervisors relating to actions taken on EIR Addendum PA 980103 and Zone Change 98-3 for the 299-lot plan for Saddleback Meadows. Page 3063 of the Administrative

Record.

21. 1998-12-08 – 3064-3066 – BoS – Ordinance 98-17 – ZC 98-3

Ordinance adopted by the Board of Supervisors on December 8, 1998 implementing Zone Change 98-3. Pages 3064 through 3066 of the Administrative Record.

22. 1998-12-08 – 3067-3071 – BoS – Resolution 98-455 – EIR Addendum PA 980103

Resolution adopted by the Board of Supervisors on December 8, 1998 certifying EIR Addendum PA 980103. Pages 3067 through 3071 of the Administrative Record.

23. 1998-12-08 – 3072-3079 – BoS – Resolution 98-467 – AP 98-2 (with conditions)

Resolution of the Board of Supervisors adopted on December 8, 1998 to approve Area Plan 98-2 with conditions. Pages 3072 through 3079 of the Administrative Record.

24. 1998-12-08 – 3080-3080 – BoS – Minute Order – TTM 15784 and VTTM 15230

Minute order of the Board of Supervisors of actions taken on December 8, 1998 concerning Tentative Tract Map 15784 and Vesting Tentative Tract Map 15230. Page 3080 of the Administrative Record.

25. 1998-12-08 – 3081-3083 – BoS – Resolution – TTM 15784 (with conditions)

Resolution of the Board of Supervisors adopted on December 8, 1998 to approve Tentative Tract Map 15784 with conditions. Pages 3081 through 3083 of the Administrative Record.

26. 1998-12-08 – 3084-3101 – BoS – Resolution – VTTM 15230 (with conditions)

Resolution of the Board of Supervisors adopted on December 8, 1998 to approve Vesting Tentative Tract Map 15230with conditions. Pages 3084 through 3101 of the Administrative Record.

27. 1998-12-09 – 3012-3013 – OCPDSD – Notice of Determination

The Notice of Determination for EIR Addendum PA 980103 and FEIR 566 filed with the Clerk of the County of Orange by the Orange County Planning and Development Services Department on December 9, 1998. Pages 3012 through 3013 of the Administrative Record.

28. December 17, 1997 – Planning Commission Transmittal

Planning Commission transmittal of the 299 unit project to the Board of Supervisors, indicating their EIR certification action that they had taken.

10. Saddleback Meadows Addendum PA980103 to certified Final Subsequent Environmental Impact Report 566, State Clearinghouse No. 96121072, Zone Change 98-3, and Area Plan 98-2, 299-Unit Single-Family-Unit-Project, dated August 1998;

11. August 7, 1998 memorandum from County of Orange P&DS/Environmental & Project Planning Services Division Environmental Planning Section to Distribution re Addendum PA980103 to Final EIR 566;

12. August 7, 1998 memorandum from County of Orange Planning & Development Services Department to Distribution List re Saddleback Meadows Contingency Plan;

13. Notice of August 25, 1998 public hearing by Orange County Planning Commission re Saddleback Meadows Contingency Plan (Zone Change 98-3 and Area Plan 98-2);

14. August 25, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Honorable Members of the Planning Commission, Orange County Planning & Development Services Department (and the exhibits thereto);

County of Orange

PLANNING AND DEVELOPMENT SERVICES

PLANNING APPLICATION

Application #: PA980103 **Date Filed:** 06/22/1998

Application Type: ZC98-3, AP98-2
Application Name: SADDLEBACK MEA. CONTINGENCY PLAN
Parcel(s):
FTHLTPLNG 00/00/00
Address(es):
19658 EL TORO RD TRAB
Location: 1/4 MILE S. OF EL TORO & LIVE OK
Project Area: 222.00 ACRE Public Project: N

Initial Study Required: Y IS Charge #: P53700 IS Summary #: 082
Application Charge #: P79108 Summary #: 094

Owner Information

Name: CALIFORNIA QUARTET, LTD.
Address: 1875 E. CENTURY PARK, #1880
LOS ANGELES, CA
Zip: 90067
Phone: 310 210-0500

Applicant/Agent Information

Name: TPG MANAGEMENT, INC.
Address: H. PIKE OLIVER
1601 DOVE ST. SUITE 105
NEWPORT BEACH, CA
Zip: 92660
Phone: 714 253-9595

Zoning: S / BWR - BRIDLEWOOD APN:
CAA: 59 Census Tract: 320.25 Supv District: 3 Coastl Zone: NO
LUE: 1B Comm Profile: 1.2 PC/SP: FOOTHILL/TRABUCO SPECIFIC PLAN

Previous Apprv: EIR'S 059, 203, 566; GPA 78-1, TR.10692, PA950151, PA970086

Project Proposal:
ZONE CHANGE ZC 98-3/AREA PLAN AP 98-2 TO SECTION III.D.3. BRIDLEWOOD RESIDENTIAL (BWR) DISTRICT OF THE FOOTHILL/TRABUCO SPECIFIC PLAN TO DEVELOP 299 SINGLE FAMILY DWELLING UNITS.
PROJECT WILL INCLUDE THE FILING OF A NEW TENTATIVE TRACT.

DEPOSIT SUMMARY

Total Deposit:	4,418.00
Payments:	4,418.00
Balance Due:	.00

1874

County of Orange

MEMO

DATE: August 7, 1998

TO: Distribution

FROM: P&DS/ Environmental & Project Planning Services Division
Environmental Planning Section

SUBJECT: Addendum PA980103 to Final EIR 566

PROJECT DESCRIPTION: Attached for your information is subject Addendum PA980103 prepared for Zone Change ZC98-3 and Area Plan AP98-2 to establish 299 single-family dwelling units, as proposed by the applicant for the 222 acre Saddleback Meadows project site. The Addendum is based on certified Subsequent EIR 566, which was prepared to evaluate the impacts associated with 705 manufactured homes, and evaluates the currently proposed 299 unit project in comparison with the 705 unit project. The proposed project includes strategically designed landform grading and landscaping to screen and filter views of the development area from surrounding land uses.

PROJECT LOCATION: The project site is situated on 222.2 acres of vacant land located on the easterly side of El Toro Road, approximately one-half mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County.

CEQA DETERMINATION: The CEQA review of the subject project has been completed by the Environmental & Project Planning Services Division. Based upon its review, E&PPSD has determined that the proper CEQA documentation for the proposed project is Addendum PA 980103 to Certified Subsequent EIR 566.

2210

If clarification is needed regarding this Memo or if there are questions regarding the Addendum, the contact person is as follows:

E&PPSD Project Manager: **Bill Grieman**

Telephone Number: **(714) 834-5175.**

George Britton, Manager

P&DS/Environmental & Project Planning Services Division

BY: _____

DATE: 8.7.98

Attachments:

1. **Distribution List**
2. **Addendum PA980103**

WG

Edmond M. Conner, Esq.
2600 Michelson Dr., #1450
Irvine, CA 92612

Canyon View HOA
18931 Canyon Hills Drive
Trabuco Canyon, CA 92679

Bruce Conn
19471 Live Oak Canyon
Trabuco Canyon, CA 92679

Portola Hills HOA II
c/o Elizabeth Wallace
19241 Jasper Hill Road
Trabuco Canyon, CA 92679

Portola Hills HOA I
c/o David Niese
18856 Vista Portola Rd.
Trabuco Canyon, CA 92679

Ray Chandos
P. O. Box 556
Trabuco Canyon, CA 92678

Hidden Ridge HOA
c/o Marie Walsh
11 Mulberry Lane
Trabuco Canyon, CA 92679

St. Michaels Abbey
c/o Fr. Hugh Barbour
19292 El Toro Road
Silverado, CA 92676

Ramakrishna Monastery
c/o Richard Jennings
P. O. Box 408
Trabuco Canyon, CA 92678

Gary A. Kovacic, Esq.
Sullivan, Workman & Dee
800 S. Figueroa
Los Angeles, CA 90017

Sherry Lee Meddick
P. O. Box 771
Silverado, CA 92676

NOTICE OF PUBLIC HEARING

BY THE ORANGE COUNTY PLANNING COMMISSION

SUBJECT: Saddleback Meadows Contingency Plan (Zone Change 98-3 and Area Plan 98-2)

LOCATION: East side of El Toro Road and north of Valley Vista Way in the Foothill/Trabuco area

PROPOSAL: 299 single-family detached homes with 155 acres of dedicated open space area

Environmental Documentation: EIR Addendum PA980103
Applicant: California Quartet, Ltd.
Hearing Date: August 25, 1998
Hearing Time: 1:30 P.M.
Hearing Location:

Hall of Administration
10 Civic Center Plaza
Santa Ana, CA

The applicant and all persons either favoring or opposing this proposal and supporting documents are invited to present their views at the hearing. It is requested that any written response be submitted to the Planning & Development Services Department prior to the hearing date. If you challenge the action taken on this proposal in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the Planning & Development Services Department prior to the public hearing.

For further information please call Frank McGill at (714) 834-2099 or come to the Development Processing Center at the address indicated below.

Planning & Development Services Department
P.O. Box 4048
300 North Flower Street
Santa Ana, CA 92702-4048

2215

CONNOR, CULVER, BLAKE & GRIFFIN LLP
ATTORNEYS AT LAW

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MARILYN MARTIN CULVER
LAURA LEE BLAKE
CRAIG L. GRIFFIN
DAVID J. HESSELTINE
ROSALEE L. RODDA

2600 MICHELSON DRIVE
SUITE 1450
IRVINE, CALIFORNIA 92612
TELEPHONE (949) 622-2600
TELEFACSIMILE (949) 622-2626
E-MAIL: ccbg@ocba.net

August 25, 1998

Orange County Planning & Development
Services Department
300 North Flower Street, Room 321
Post Office Box 4048
Santa Ana, CA 92702-4048

Re: *Zone Change 98-3/Area Plan 98-2/EIR Addendum PA980103*
299-Unit Contingency Plan
Public Hearing of August 25, 1998

Honorable Members of the Planning Commission:

On behalf of (1) the Vedanta Society of Southern California ("Vedanta"); (2) the Norbertine Fathers of Orange (the "Norbertines"); and the Saddleback Meadows Land Conservancy LLC (the "Conservancy"), we respectfully submit this letter in opposition to California Quartet's application for approval of Zone Change 98-3 ("ZC 98-3" or the "Zone Change") and Area Plan 98-2 ("AP 98-2" or the "Area Plan") relating to a proposed 299-unit single family detached housing project (the "299-Unit Project"), which has been dubbed a "Contingency Plan."

Based on the list of objections attached hereto, and based also on all oral and written comments which are presented in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing, including, but not limited to, all expert opinions expressed by Royce Riggan, John Byerly, Warren Singleton, or Saundra Jacobs either orally or in writing in connection with the hearing, Vedanta, the Norbertines, and the Conservancy respectfully submit that the CEQA review process relating to, and the environmental documentation which has been prepared in support of, ZC 98-3 and AP 98-2 is woefully inadequate from both a procedural and substantive standpoint.

By (1) purporting to rely on a previously certified EIR for an *entirely different* project which is, itself, grossly deficient and is now being challenged in court, (2) failing to provide the public and responsible agencies (such as the state and federal wildlife agencies) with the 45-days' notice required by law, and (3) refusing to prepare, and circulate for public review

and comment, a new EIR to properly address important new information and substantial project changes involving new environmental impacts and additional project alternatives and mitigation measures which have not been addressed in any earlier EIR, the County is poised to violate CEQA and the Guidelines in numerous different respects in connection with the proposed Zone Change and Area Plan for the 299-Unit Project.

As a result of these CEQA violations, my office has not been afforded adequate time to prepare and submit comments on ZC 98-3 and AP 98-2 and the environmental documentation relating thereto. Regrettably, history seems to be repeating itself in this case.

Indeed, one year ago last week, I submitted a lengthy letter to County staff objecting to the many procedural improprieties and substantive deficiencies relating to Draft Subsequent Environmental Impact Report No. 566 ("SEIR 566") which had been prepared to evaluate the environmental impacts associated with the issuance of a grading permit for the construction of 705 units of manufactured housing at the Saddleback Meadows site. Because of the failure of the Draft SEIR to include the grading plans and soils reports upon which the grading permit application was based, and given the County's refusal to make these materials available for public review during the comment period on the Draft SEIR, I was compelled to submit my August 1997 letter under protest.

How ironic it is that, one year later, I must also submit this letter under protest because of the County's clear-cut violation of those provisions of the CEQA Guidelines which require a local agency to provide 45 days' written notice to interested persons of its intention to use an EIR, which was prepared in connection with an earlier project, as the environmental documentation for a separate, later project. Instead of the 45-day public notice required to be given under CEQA Guidelines sections 15087, 15105, and 15153, the County has inexplicably decided to provide only 18 days' written notice of its intention to use Final SEIR 566 for the 705-unit manufactured housing project (the "705-Unit Project") as the EIR for the 299-Unit Project.

At first blush, one might wonder how it is possible to use an EIR initially prepared to analyze the impacts of developing 705 units of manufactured housing as the EIR for an *entirely different* project -- namely, a 299-unit single-family detached housing project which, among other things (1) involves building houses on land which was proposed to be left undeveloped by the 705-Unit Project; (2) proposes to develop a wildlife corridor through the middle of the project where none had been previously provided under the 705-Unit Project; and (3) purports to fully exempt the 299-Unit Project from compliance with the Foothill/Trabuco Specific Plan, despite express language in the Specific Plan requiring any new projects for the Saddleback Meadows property to be made "consistent" with the Plan.

Admittedly, CEQA Guidelines section 15153(b) does allow a previously prepared EIR to be used as the environmental documentation for a "separate, later project" *provided* that

the EIR for the earlier project meets certain criteria and *provided also* that the public is properly notified of the local agency's intention to rely on the previous EIR instead of preparing a *new* EIR for the *new* project. Unfortunately, the County has chosen to ignore the adequacy and public notice requirements set forth in CEQA Guidelines section 15153(b) and is trying, instead, to process an addendum (the "Addendum") to Final SEIR 566 in an apparent attempt to avoid these requirements. Of course, the County's attempt to use the Addendum as the environmental documentation for the 299-Unit Project is illegal and improper for two very basic reasons.

First, section 15164 of the CEQA Guidelines, which authorizes the preparation of "an addendum to a previously certified EIR if some changes or additions are necessary," only applies when the *same* project addressed in the previous EIR is being considered for a subsequent government approval at a more detailed level of planning. Obviously, when an entirely *different* project is being considered – such as a full-scale revision and redesign of the project which was analyzed in the previous EIR – an addendum is *not* the appropriate document by which to describe and analyze substantial project changes involving new impacts, alternatives, and mitigation measures not discussed in the earlier EIR. Indeed, an addendum is only to be used to address minor technical changes or additions to a previously certified EIR, not to report on substantial project changes or significant new information about a *completely different* project.

The second reason that the County is not allowed to adopt the Addendum in this case is that, assuming for the sake of argument that the Zone Change and the Area Plan actually involved the *same* 705-Unit Project addressed in Final SEIR 566 (which, of course, they do not), the provisions of section 15162 of the CEQA Guidelines would require the preparation of a subsequent or supplemental EIR. Specifically, new information and project changes relating to environmental impacts, project alternatives, mitigation measures not previously discussed in Final SEIR 566 would require the County to prepare another EIR and circulate it for public review and comment.

County staff has determined that none of the conditions described in CEQA Guidelines section 15162 would require the preparation of a subsequent or supplemental EIR to address the environmental impacts associated with the proposed Zone Change and Area Plan for the 299-Unit Project. Vedanta, the Norbertines, and the Conservancy certainly disagree with this determination and wish to underscore what several California courts have already held, i.e., that Guidelines section 15162 and its companion section 21166 of CEQA only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project. When the proposed new activity constitutes a *separate* project, the "fair argument" test applies to the local agency's decision regarding whether to require a new EIR for the later project.

Indisputably, the oral and written comments which will be submitted in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing will constitute substantial evidence supporting a "fair argument" that the 299-Unit Project may cause significant

environmental effects, and may involve important new project alternatives and mitigation measures, which were not previously addressed in Final SEIR 566 -- thereby necessitating the preparation of a new EIR to be circulated for public review and comment.

By submitting this letter, and by incorporating the oral and written comments made at the August 25 public hearing in opposition to the proposed Zone Change and the Area Plan, my clients do not intend to waive their objections to the County's failure to provide the appropriate notice of its intention to rely on Final SEIR 566 as the EIR for the 299-Unit Project. However, within the little time afforded by the inadequate notice provided by the County, my office has attempted to formulate the attached objections and hereby submits them to the Planning Commission with the sincere hope that the County will review them in good faith and will correct the many defects and deficiencies which pervade the CEQA review process for the proposed Zone Change and the Area Plan.

Very truly yours,

Edmond M. Connor

bc: William Fray
Richard Jennings
Charles Mitchell
Wayne Peterson
Saundra Jacobs

OBJECTIONS TO ADDENDUM PA980103 TO FSEIR 566, ZONE CHANGE 98-3, AND AREA PLAN 98-2

1. The County of Orange (the "County") has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined that FSEIR 566 adequately describes the significant environmental impacts of the 299-unit single family detached housing project referred to as the Saddleback Meadows Contingency Plan (the "299-Unit Project"), which impacts are more particularly described in the oral and written comments (the "Comments") submitted to the Orange County Planning Commission prior to or at its August 25, 1998 public hearing, including, but not limited to, the expert opinions of Royce B. Riggan, Jr., John R. Byerly, Warren W. Singleton, and Saundra F. Jacobs. (The comments of John R. Byerly regarding the geotechnical aspects of the 299-Unit Project are set forth in an August 21, 1998 letter to counsel which is attached hereto as Exhibit "A" and is incorporated herein by reference.)

2. The County has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined that FSEIR 566 adequately describes the alternatives and mitigation measures related to the significant environmental impacts of the 299-Unit Project, as more particularly described in the Comments.

3. The County has violated section 15153(b), 15087, and 15105 of the CEQA Guidelines in that it has failed to provide (a) public notice of its plans to use FSEIR 566 as the environmental documentation for the 299-Unit Project and (b) a 45-day public review and comment period on such key issues as "whether [FSEIR 566] should be used for [the 299-Unit Project] and whether there are any additional, reasonable, alternatives or mitigation measures that should be considered as ways of avoiding or reducing the significant effects of [the 299-Unit Project]."

4. The County has violated section 15063(g) of the CEQA Guidelines in that, at the time it determined that an initial study was required for the 299-Unit Project, it failed to consult with the United States Fish and Wildlife Service, the California Department of Fish and Game, the Army Corp. of Engineers, and all other responsible and trustee agencies responsible for the resources affected by the 299-Unit Project, to obtain the recommendation of those agencies as to the appropriate environmental documentation for the 299-Unit Project.

5. The County has violated CEQA and the CEQA Guidelines, to the extent that it has sought to invoke the provisions of section 15164 of the CEQA Guidelines, in that section 15164 only allows the preparation of an addendum when the same "project" is involved. In this case, there are two separate and distinct projects, i.e., a grading application for a 705-unit mobilehome/manufactured housing project (the "705-Unit Project") and an application for a zone change and area plan for the 299-Unit Project.

6. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," which they clearly are not, the County has violated section 15162(a)(1) and (2) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the effects of the 299-Unit Project, which proposes substantial changes in the "project" and is based upon substantial changes in the circumstances surrounding the "project," in that, among other things, (a) the 299-Unit Project will involve mass grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project; (b) the 299-Unit Project will involve a proposed wildlife corridor for which there is no analysis in FSEIR 566 and about which the public has not had an opportunity to comment with respect to its viability, and (c) the U.S. Fish and Wildlife Service and the California Department of Fish and Game have indicated in an August 11, 1998 correspondence to the Orange County Board of Supervisors that the adoption of the 299-Unit Project may jeopardize the approval of the Southern Region of the NCCP program in that (i) "Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion" and (ii) the proposed wildlife corridor may not prove to be viable. (A true and correct copy of the August 11, 1998 correspondence from U.S. Fish and Wildlife Service and the California Department of Fish and Game to the Orange County Board of Supervisors is attached hereto as Exhibit "B" and is incorporated herein by reference.)

7. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(A) and (B) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance described in the Comments which shows that the 299-Unit Project will have significant effects on the environment that are not discussed in FSEIR 566 and/or are substantially more severe than the impacts discussed in FSEIR 566, including, but not limited to, (a) the grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project, (b) the categorical exemption of the Saddleback Meadows property from the provisions of the Foothill/Trabuco Specific Plan, and (c) the additional reduction and/or destruction of valuable biological resources.

8. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(C) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance which shows that the mitigation measures that were proposed during the public review period for Draft SEIR 566 (but which FSEIR 566 failed to consider and deemed infeasible because of its erroneous assumption that the County was precluded from even considering any mitigation measures that would cause the "project" to deviate from Recorded Tract Map 10692) are now feasible because the Recorded Tract Map is to be superseded *in toto*.

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9. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(D) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance that has come to light since FSEIR 566 was certified regarding new project alternatives which are considerably different from those analyzed in FSEIR 566 and would reduce one or more of the significant impacts identified in the Comments, but that California Quartet, Ltd., has, to date, declined to adopt, including but not limited to, (a) the Mathews' alternative for the development of a 65-unit single family detached housing project on 35 acres of the Saddleback Meadows property and (b) the modified Mathews' alternative for the development of a 130-unit single family detached housing project on 44 acres of the property.

10. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15153(d) of the CEQA Guidelines in that it has improperly determined that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

11. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(a) of the CEQA Guidelines in that it has improperly determined that the processing of an addendum would be appropriate and that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

12. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(e) of the CEQA Guidelines in that it has failed to provide a brief explanation, supported by substantial evidence, of its determination that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

13. Zone Change 98-3 and Area Plan 98-2 violate the provisions of the Foothill Trabuco Specific Plan (the "FTSP") in that they are part of a development proposal for the 299-Unit Project which deviates from Recorded Tract Map 10692 without providing for an amendment to the FTSP that (a) is adopted pursuant to the amendment procedures established by the FTSP and (b) is consistent with all of the provisions of the FTSP, including, but not limited to, (i) the development and design guidelines established by the FTSP, (ii) the goals and objectives of the FTSP, and (iii) all other provisions of the FTSP identified in the Comments.

14. The County has violated CEQA and the CEQA Guidelines in that it has improperly relied upon FSEIR 566, which is a legally inadequate CEQA document that was improperly certified for the reasons set forth in that certain "Complaint for Declaratory Relief and Petition for Writ of Mandate," which is attached hereto as Exhibit "C" and is incorporated herein by reference, including, but not limited to:

(a) In certifying FSEIR 566, the County did not comply with the special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566;

(b) The special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566 violated CEQA in that, *inter alia*, it unlawfully separated the decision whether to certify FSEIR 566 without taking action on the project for which the FSEIR was prepared;

(c) It improperly limits the mitigation measures its considers to only those that would not cause the project to deviate from Recorded Tract Map 10692;

(d) The analysis and information set forth in FSEIR 566 is legally inadequate under CEQA and the CEQA Guidelines in that, *inter alia*:

(i) It fails to properly describe the discretionary approval which it was prepared to analyze;

(ii) It fails to provide the required level of specificity;

(iii) It fails to provide the required level of technical detail;

(iv) It was not amended and recirculated after significant new information regarding the discretionary approval it was prepared to analyze was released;

(v) Its certification was separated from the discretionary approval it was prepared to analyze;

(vi) It fails to adequately address all environmental impacts of the discretionary approval it was prepare to analyze, including, but not limited to:

a. Soils and Geology;
b. Water/Hydrology;
c. Transportation/Circulation;
d. Air Quality;
e. Biological Resources;
f. Archeological/Cultural Resources; and
g. Public Services;

(vii) It fails to provide legally adequate mitigation measures and an adequate mitigation monitoring program was not adopted;

(viii) It fails to address the cumulative impacts of the project associated with the discretionary approval it was prepared to analyze;

(ix) It fails to consider project alternatives; and

(x) It fails to adequately respond to comments;

(e) Adequate and proper findings, supported by substantial evidence in the record, were not made in support of the certification of FSEIR 566; and

(f) The Statement of Overriding Considerations was improperly adopted in connection with the certification of FSEIR 566.

15. The County has violated CEQA and the CEQA Guidelines, to the extent that the "Draft Area Plan Conditions of Approval" attempt in any way to eliminate or modify any of the "Standard Conditions of Approval" that are set forth in FSEIR 566 and Addendum PA980103 as mitigation measures which must be completed

prior to the issuance of any grading permit, including, but not limited to, (a) SC 7-2 requiring a 1603 Streambed Alteration Agreement from the California Department of Fish and Game, (b) SC 7-3 requiring the necessary individual or nationwide permit from the Army Corp. of Engineers pursuant to section 404 of the Federal Clean Water Act, and (c) SC 7-5 and 7-7 requiring from the U.S. Fish and Wildlife Service (i) appropriate federal approvals required for impacts to Coastal Sage Scrub and (ii) written proof that the removal of any native vegetation from the project site complies with the Federal Endangered Species Act, in that it has attempted to reduce or eliminate feasible mitigation measures that are set forth in FSEIR 566 and Addendum PA980103 to reduce significant environmental impacts.

16. The County has violated CEQA and the CEQA Guidelines in that Addendum PA980103 to FSEIR 566 is inadequate and incomplete due to, *inter alia*, the omission of volume two of Appendix "G," the "Supplemental Geotechnical Assessment for Contingency Pan – 299 Lots," which purportedly contains the computer output documents for the slope stability analysis performed by G.A. Nicoll and Associates, Inc.

EXHIBIT "A"

2226

John R. Byerly
INCORPORATED

August 24, 1998

David J. Hesseltine
Connor, Culver, Blake and Griffin
2600 Michelson Drive, Suite 1450
Irvine, California 92612

Rpt. No.: 5833
File No.: S-8753

Subject: Saddleback Meadows, El Toro Road, Orange County, California; Geotechnical Review of Addendum to Environmental Impact Report 566

Reference: Addendum PA980103 to Certified Final Subsequent Environmental Impact Report 566, Urban Vision, August 19, 1998

Dear Mr. Hesseltine:

Within the little time afforded by the County's expedited processing of the 299-unit "Contingency Plan" for the Saddleback Meadows property, I have attempted to review the geotechnical aspects of the referenced addendum to the earlier environmental impact report. This addendum anticipates the construction of 299 single-family dwelling units on the 222.2-acre site. Extensive grading (2.1 million cubic yards of cut and fill) is proposed to construct the building pads, associated streets, and open areas. Even more extensive grading (6.8 million cubic yards) is anticipated to remediate demonstrated unstable geologic conditions, including existing landslides, adverse bedding orientation, and loose and compressible alluvium and colluvium.

The problematic geotechnical issues associated with the 299-unit proposal remain unchanged from those that have been discussed in great detail with reference to the 705-unit manufactured housing project, and presented to the Planning Commission and the Board of Supervisors with no meaningful response. The issues of primary concern to this reviewer which mandate further analysis in an appropriate environmental impact report would include the following:

GEOTECHNICAL ENGINEERS • TESTING AND INSPECTION
2257 South Lilac Ave., Bloomington, CA 92316-2903
Bloomington (909) 877-1324 Riverside (909) 783-1910 Fax (909) 877-5210

GRADING (Page 20)

The addendum continues to assume an average daily grading of 30,000 cubic yards per day, projecting a total time of grading of 10 months. At 30,000 cubic yards per day for 8.9 million cubic yards of fill, grading needs to be performed 7 days a week–no allowance for off-days for weekends or for inclement weather is provided in this estimate. It seems to this reviewer that it might be possible to achieve the average 30,000 cubic yards per day goal for the conventional grading. It seems highly unlikely that the grading to accomplish the alluvium/colluvium removals, construction of buttress fills, and other remedial grading that will be required can approach the projected rate of fill movement. If, as seems likely, the remedial grading would be performed at an average rate of 10,000 cubic yards per day, and grading is performed on a 5-day per week basis, the remedial grading would require 31 months. With down-time for inclement weather, it is more realistic to project a total period of grading of 3 years. Even this projection is optimistic, and the site could easily experience 4 rain seasons during grading.

EXCAVATION CONDITIONS (Page 29)

The addendum correctly anticipates heavy ground water seepage into excavations at the site. Not addressed is the impact of discharge of collected ground water seepage, the impact of the interruption in subsurface ground water flow on downstream wells, nor the impact of the presence of the deep shear keys for buttress fills on the final ground water conditions. Is there a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill?

LONG-TERM SETTLEMENT (Page 31)

Fill depths exceeding 50 feet are suggested, with settlements associated with those fills of 4 to 6 inches. Construction of shear keys for buttress fills, however, will result in fills as deep as 130 feet. Fills of such great depths require additional evaluation that may necessitate compaction criteria well in excess of code minimums, special moisture conditioning of fill during compaction, and long-term settlement monitoring prior to building construction. These considerations are not addressed in the addendum.

PHASING OF EARTHWORK (Page 31)

The addendum continues to project a buttress backcut failure rate of 10 percent. Considering the subsurface conditions typified by landslides within landslides, this failure rate is surely unrealistically optimistic. Further, the effect of backcut failures on upstream and adjacent properties is not addressed.

These are the comments that I have been able to prepare during the time allotted by the County's short notice to your firm regarding the public hearing to be held on August 25, 1998. I hope my comments have been helpful under the circumstances. Should there be questions, please feel free to call.

Sincerely,

JOHN R. BYERLY, INC.

John R. Byerly, Geotechnical Engineer

JRB:mh

Copies: (3) Client

2229

EXHIBIT "B"

US Fish & Wildlife Service
Carlsbad Field Office
2730 Loker Avenue, West
Carlsbad, CA 92008
(760) 431-9440
FAX (760) 431-9624

CA Dept. of Fish & Game
1416 Ninth Street
PO Box 944209
Sacramento, CA 94244-2090
(916) 653-9767
FAX (916) 653-2588

August 11, 1998

Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92703

Saddleback Meadows Project
Orange County, California

Dear Board of Supervisors:

The California Department of Fish and Game and the U. S. Fish and Wildlife Service (collectively the Wildlife Agencies) recently learned about a Planning Application Hearing for the Saddleback Meadows project scheduled for the County Board of Supervisors on August 11, 1998. The applicant is proposing a 299 single-family dwelling unit project at Saddleback Meadows. The Wildlife Agencies and County have a lengthy history of communication concerning the project site and a variety of development proposal alternatives have been reviewed. The project site provides a critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans. In this letter we reiterate our position on the proposed Saddleback Meadows project and provide comments on a recent proposal that could affect the project.

The Wildlife Agencies, other Federal and State agencies, County of Orange, and local jurisdictions are participating in the Natural Community Conservation Planning (NCCP) program to conserve wildlife and habitat resources while accommodating economic growth and development. Our previous comments on Saddleback Meadows Project - Draft Environmental Impact Report (DEIR) No. 561 (February 1996) and in our August 8, 1997, letter concerning the Saddleback Meadows Draft Subsequent Environmental Report No. 566 (DSEIR) (June 1997) identified significant biological issues related to the project site. These biological issues include habitat connectivity, wildlife corridors, sensitive habitats, and occupied wetlands with a federally listed animal. These sensitive habitats include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about 4 acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified as "ephemeral ponds") spread throughout the site. Our letter

2231

evaluating the DSEIR identified Alternative '3' which proposed a clustered, lower density development, presented the least environmental impact, but would nonetheless substantially impact the wildlife corridor integrity. The 299-unit development posed a significant impact to the existing habitat connection from O'Neill Regional Park (Southern Subregion) to the Cleveland National Forest and other open space habitat in the central portion of the Central/Coastal Subregion. The Wildlife Agencies are willing to work with the project applicant to redesign a cluster development in order to preserve the wildlife corridor.

Other animal species considered sensitive by the Wildlife Agencies occur on or adjacent to the project site. The Wildlife Agencies documented rare and sensitive Cactus wren (*Camphylorhynchus brunneicapillus*) on site. The coastal California gnatcatcher (*Polioptila californica californica*)(gnatcatcher), a federally threatened species, could utilize the site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. Both of these animals, as well as other wildlife, would utilize Saddleback Meadows as a wildlife corridor. County maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion.

We have been informed by two interested parties, Saint Michael's Abbey and Vedanta Society of Southern California, that a new clustered development alternative proposal and purchase of significant open space on the site have been offered to the current property owner. The Wildlife Agencies are willing to work with the current landowners and all interested parties in reaching a workable development solution.

The Wildlife Agencies believe a workable solution exists to permit development, while maintaining an essential biological connection between the NCCP Central/Coastal and Southern Subregions. We request that the Board consider this alternative approach that may provide a solution acceptable to all parties. If you have any questions or comments, we are available to discuss this matter further. Please feel free to contact us at your earliest convenience.

Sincerely,

Jim A. Bartel
Assistant Field Supervisor
U. S. Fish and Wildlife Service

for Gail Presley
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (G.Presley, B.Tippets)

U. S. Fish and Wildlife Service (J.Bradley)

d:ssdback.mcp

2232

EXHIBIT "C"

EDMOND M. CONNOR, State Bar No. 65515
CRAIG L. GRIFFIN, State Bar No. 145777
DAVID J. HESSELTINE, State Bar No. 186904
CONNOR, CULVER, BLAKE & GRIFFIN LLP
2600 Michelson Drive, Suite 1450
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Attorneys For Plaintiff and Petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA

FILED
ORANGE COUNTY SUPERIOR COURT
MAR 0 5 1998
ALAN SLATER, Executive Officer/Clerk
BY K. WOLFE

SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF ORANGE

VEDANTA SOCIETY OF SOUTHERN CALIFORNIA, a California non-profit religious corporation,

Plaintiff and Petitioner,

v.

COUNTY OF ORANGE, a political subdivision of the State of California; BOARD OF SUPERVISORS OF COUNTY OF ORANGE, the duly elected legislative body of the County; PLANNING COMMISSION OF COUNTY OF ORANGE, the duly appointed subagency of the Board; LARRY NEES, the duly appointed Building Official of the County; and DOES 1 through 25, inclusive,

Defendants and Respondents.

CALIFORNIA QUARTET, LTD., a California limited partnership; ARADI, LTD., a Nevada limited partnership; ARADI, INC., a Nevada corporation; and DOES 26 through 50, inclusive,

Defendants and Real Parties in Interest.

Case No. 791309

COMPLAINT FOR DECLARATORY RELIEF AND PETITION FOR WRIT OF MANDATE

JUDGE TULLY H. SEYMOUR
DEPT. 30

As a verified Complaint for Declaratory Relief and Petition for Writ of Mandate (the "Complaint and Petition") against (a) defendants and respondents COUNTY OF ORANGE (the "County"), BOARD OF SUPERVISORS OF COUNTY OF ORANGE (the "Board"), PLANNING COMMISSION OF COUNTY OF ORANGE (the "Planning Commission"), LARRY NEES ("Nees"), and DOES 1 through 25, inclusive (hereinafter, the County, the Board, the Planning Commission, NEES, and DOES 1 through 25, inclusive, are sometimes collectively referred to as the "Respondents"), and (b) defendants and real parties in interest CALIFORNIA QUARTET, LTD. ("California Quartet"), ARADI, LTD. ("Aradi, Ltd."), ARADI, INC. ("Aradi, Inc.") [hereinafter, California Quartet, Aradi, Ltd., and Aradi, Inc., are sometimes collectively referred to as "Aradi"], and DOES 26 through 50, inclusive (hereinafter, Aradi and DOES 26 through 50, inclusive, are sometimes collectively referred to as "Real Parties" and the Respondents and the Real Parties are sometimes collectively referred to herein as the "Defendants"), plaintiff and petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA (the "Society") alleges as follows:

I. SUMMARY OF COMPLAINT AND PETITION

1. Neither the public, nor the environment, has been well served by the County's unfortunate and ill-advised actions in (a) purporting to certify that Final Subsequent Environmental Impact Report No. 566 ("FSEIR 566" or the "FSEIR") properly complied with the dictates of the California Environmental Quality Act ("CEQA") and (b) attempting to adopt findings and a statement of overriding considerations as if the County were issuing some form of "project approval" -- even though no project approval was ever agendized for consideration by the Planning Commission or the Board at public hearings relating to FSEIR 566.

2. As an informational document, FSEIR 566 is grossly deficient and fails to comply with CEQA in numerous respects. More importantly, however, aside from its many

shortcomings as an environmental compliance document, FSEIR 566 is a legal nullity because it has never been officially certified by the County.

3. Indeed, the County has taken the position that, at the public hearing held on February 24, 1998, the 2-2 vote taken by the Board in connection with Supervisor William Steiner's motion to deny the Society's appeal of the Planning Commission's certification of FSEIR 566 somehow caused the appeal to fail and the certification to be upheld. However, there is no County ordinance which would support such an outcome because the "tie vote" rule set forth in section 7-9-157 of the Orange County Zoning Code only applies if "action on a discretionary permit" is involved, and neither the Planning Commission, nor the Board, took any action in approving or disapproving any such permit.

4. Moreover, the County's position that the Board's tie vote caused the Planning Commission's certification of FSEIR 566 to be upheld is completely at odds with numerous California appellate court decisions holding that a tie vote in this type of situation constitutes *no action* on the part of the Board and does *not* result in the Planning Commission's action being upheld or ratified by the Board.

5. The anomalous situation which has arisen, therefore, is that, contrary to California law, the County is proceeding as if FSEIR 566 has been properly certified under CEQA -- when, in fact, it has not. The tie vote taken by the Board at the February 24 public hearing on the Society's appeal did not result in any type of "determination" being made by the Board with respect to the appeal, even though the Board was expressly required to make such a "determination" in accordance with step no. 3 of the "Approval & Appeal Process for FSEIR 566," which was unlawfully adopted by the Board on November 25, 1997.

6. Regrettably, this litigation has been necessitated because County Counsel erroneously opined at the February 24 hearing -- and the County continues to believe and maintain -- that the Board's tie vote on Supervisor Steiner's motion to deny the Society's appeal caused the Planning Commission's certification of FSEIR 566 to be upheld *by default*. To challenge this unfounded position, the Society is seeking a declaration from the Court that, at the February 24 hearing, the Board did *not* make any determination on the Society's appeal

and certainly did *not* uphold or ratify the Planning Commission's action, either directly or indirectly.

7. Of course, without the Board's affirmative "ratification" of the Planning Commission's approval of FSEIR 566 --which the Board was expressly required to give under step no. 4 of the "Approval & Appeal Process for FSEIR 566" -- the Building Official of the County is not allowed -- according to the County's own rules -- to issue a grading permit to the Real Parties to commence grading operations on the 705-unit manufactured housing/mobile home project (the "Project") to be developed at the Saddleback Meadows property (the "Property"). Unfortunately, however, the County believes that the Board's tie vote amounted to Board ratification of the Planning Commission's action, and thus the Society is seeking injunctive relief herein to ensure that no grading permit is issued to the Real Parties, pending a hearing on the merits of this Complaint and Petition.

8. The Society is also seeking a declaration from the Court that the special CEQA review procedures adopted by the Board on November 25, 1997, were invalid because they unlawfully attempted to separate the certification of FSEIR 566 from the approval of the very project which the FSEIR was designed to evaluate, i.e., Grading Application No. GA960048 (the "Grading Application") which was submitted by Real Parties in December 1996. Moreover, the Society is asking the Court to declare that any future action taken by the County in considering whether to certify FSEIR 566 and approve the Grading Application be conducted jointly by the Planning Commission and the Building Official, with their joint determination being appealable to the Board under CEQA section 21151(c).

9. In addition to the declaratory relief sought in this action, the Society is also seeking a writ of mandate to direct the County to set aside and vacate its purported certification of FSEIR 566 and its purported adoption of the December 1997 "Findings, Facts, & Overriding Considerations" (hereinafter collectively referred to as the "Findings/Considerations") on the grounds that such actions by the County were:

(a) *Entirely unprecedented,* because never before in its history has the County approved an EIR without also taking action on the discretionary

project approval which triggered the preparation of the EIR in the first place, such as a tract map, a site plan, a grading permit, etc.;

(b) *Procedurally defective*, because it was a clear violation of CEQA for the Planning Commission to attempt to certify FSEIR 566 and to adopt the Findings/Considerations as if the Commission were actually approving a "project" when, in fact, no project approval was ever presented to, or considered by, the Planning Commission or the Board relating to Final Tract Map No. 10692 (the "Tract Map") or to Grading Application No. GA960048 (the "Grading Application") -- which, by the County's own admission, was the "initiating activity" which caused FSEIR 566 to be prepared;

(c) *Substantively inadequate*, because (i) the discussion of impacts, project alternatives, and feasible mitigation measures in FSEIR 566 was woefully deficient, (ii) the County's responses to the written comments submitted by members of the public were unbelievably evasive and non-responsive, and (iii) the entire FSEIR was premised on the false and misleading assumption that the Tract Map had somehow acquired a "vesting status" which prevented the County from adopting mitigation measures which might necessitate alterations to the physical design of the Project authorized by the Tract Map; and

(d) *Totally unnecessary*, because both the Planning Commission and the Board made it perfectly clear at the respective public hearings they held on December 3, 1997, and February 24, 1998, that they were opposed to allowing a 705-unit manufactured housing/mobilehome project to be developed at the Property and preferred, instead, to consider various project alternatives which would necessarily cause FSEIR 566 to be rendered useless and obsolete.

A. **Major Error No. 1: Scope of FSEIR Was Unfairly Curtailed Due to Incorrect Legal Assumption Regarding Vesting Status of Tract Map.**

10. Probably the single most egregious error committed by the County which tainted the entire CEQA review process for FSEIR 566 and doomed it to failure was the decision which County staff made sometime after the process got underway to arbitrarily *limit* the scope of the Draft SEIR so as to unfairly *exclude* from consideration any mitigation measures which might result in a change being made to the physical design of the Project as approved by the Tract Map -- such as, for example, mitigation measures which would call for oak tree groves or environmentally-sensitive riparian areas to be preserved, or certain 100-foot-deep excavations to be entirely eliminated, with the result that one or more areas of previously-approved manufactured housing sites could not be developed.

11. A cursory review of FSEIR and the Findings/Considerations will suffice to demonstrate that, throughout these documents, statements were made to the effect that "mitigation measures which would alter features of the final recorded tract map *cannot* be implemented to reduce all project impacts to a level of insignificance [because of the County's] *inability to deviate from the final recorded tract map*." (FSEIR 566, § 2.8, p. 2-10; § 3.2, p. 3-8, emphasis added.)

12. In fact, as one of the six Overriding Considerations adopted by the Planning Commission as part of its Resolution certifying FSEIR 566, the Planning Commission concluded that "Recorded Tract Map 10692 *limits the ability* of the applicant/lead agency to *deviate* from the physical design characteristics of the project to mitigate identified unavoidable adverse effects." (Findings/Considerations, § 5.2.6, p. 83, emphasis added.)

13. By taking the position that its "hands were tied" and that it could not "deviate" from the Tract Map, the County unjustifiably curtailed the scope of the environmental analysis set forth in FSEIR 566 by electing not to consider any feasible mitigation measures which would cause the Tract Map to be changed or altered in any way.

14. What is troublesome, however, is that at the time the "Notice of Preparation" relating to FSEIR 566 was sent out to the public in February 1997, no mention was made by the County of any plan to arbitrarily limit the scope of the Draft SEIR so as to exclude consideration of feasible mitigation measures which might warrant changes being made to the design or intensity of the development authorized by the Tract Map. Indeed, it was not until some four months later when the Draft SEIR was circulated for public review that the public was informed of the County's position regarding the "inviolable" status which the Tract Map had supposedly acquired in the eyes of the County.

15. The unfair manner in which the Draft SEIR was restricted in scope was certainly compounded when the Planning Commission was instructed by County Counsel at the public hearing held on December 3, 1997, that it was *not* allowed to consider any changes or alterations to the Tract Map in contemplating how to lessen or avoid the adverse environmental effects of the Project. This instruction directly contravened the provisions of sections 15002(h) and 15041 of the CEQA Guidelines which clearly authorize the lead agency for a project to "require changes in any or all activities involved in the project in order to lessen or avoid significant effects on the environment."

16. The apparent reason that the County adopted the legally incorrect position that it was not allowed to change or deviate from the Tract Map was that it purportedly believed that the Tract Map had acquired some sort of "vesting status," i.e., that Aradi had supposedly acquired "vested rights" to develop the Project free from any changes or alterations to the Tract Map which might otherwise be called for by the County in seeking to mitigate the adverse impacts of the Project.

17. However, (a) since the Tract Map was not approved as a vesting tentative map and is not otherwise protected by a development agreement, and (b) since the County has never issued any development permits to Aradi or its successors with respect to the Project, it is exceedingly clear under California law that Aradi has *no* vested rights to develop the Property, regardless of whether Aradi has incurred substantial pre-development expenses to date.

B. **Major Error No. 2: Overly-General Project Description in FSEIR Resulted in Failure to Address Construction-Level Impacts Associated with Grading Application.**

18. In addition to incorrectly viewing the Tract Map as if it had risen to the level of a "vested right," the other major error committed by the County which unfairly skewed the CEQA review process for FSEIR 566 was the County's failure and refusal to recognize that, from the outset, the Draft SEIR should have addressed the construction-level impacts associated with the approval of the Grading Application. When the Grading Application was submitted by Aradi in December 1996, the County expressly determined that a "Subsequent EIR is required to evaluate the effects of the *grading application*." (FSEIR 566, § 2.4, pp. 2-8 and 2-9, emphasis added.) Indeed, during the public review proceedings for FSEIR 566, the County expressly conceded that the "Grading Permit Application was the *initiating action* which resulted in the determination that DEIR 566 be prepared . . . ." (Response to Comments, p. 1-1, emphasis added.)

19. Ironically, however, after determining in December 1996 that a Subsequent EIR was needed to study the effects of the Grading Application, the County spent the next 12 months "running away" from this decision by steadfastly refusing -- despite repeated objections by the Society and other members of the public -- to have the Draft SEIR address the specific, construction-level impacts which would flow from the County's approval of the Grading Application.

20. Without any justification or explanation of any kind, the County decided that the Draft SEIR would only have to address the broad impacts of the overall Project, instead of the specific effects of the rough grading, and that a "planning level of detail," as opposed to a construction level of detail, was all that was required for the environmental analysis that was to be set forth in the Draft SEIR.

21. At no time during the public comment period for Draft SEIR 566 did the County make available for public review the 40-scale grading plans submitted in connection

with the Grading Application, nor did it allow the public to gain access to the soils reports which contained the "*more detailed evaluation* of the slope stability . . . [to] be conducted during the 40-scale grading plan review to accompany the grading permit application." (FSEIR 566, Appendix D, ¶ 4, p.4, emphasis added.)

22. By failing to provide the public with critically-important information regarding the 8.9 million cubic yards of remedial grading to be undertaken as part of the Project, such as, for example, the design of the shear keys to be constructed at the site, the County effectively prevented the Society's geotechnical consultants from being able to, *inter alia*, (a) evaluate the adequacy of the proposed remedial grading plan for the Project, (b) determine how the 100-foot-deep shear key excavations could possibly be accomplished without activating massive landsliding on the Property which, in turn, would threaten the stability of the slopes surrounding the Monastery, and (c) develop an accurate estimate of the duration of the proposed rough grading for the Project in order to determine how many *years* the landowners surrounding the Property would be subjected to the impacts of extensive mass grading operations.

23. Despite several letters of protest submitted by the Society, it was not until late October 1997 -- when the members of the Planning Commission balked at considering the adequacy of FSEIR 566 unless they were first allowed to review the 40-scale grading plans and the accompanying soils reports for the Project -- that the County finally made certain grading plans and reports available for public review.

24. Unfortunately, however, this was a case of "too little too late" because, not only did these materials still leave a great many questions unanswered, but, by the time these grading plans and reports were made available in November 1997, the 45-day public comment period for Draft SEIR 566 had been closed for over two months. Despite this fact, the County refused to (a) revise the Draft SEIR in order to analyze and incorporate the new grading plans and reports which the County had belatedly decided to make available for review at only one location and (b) recirculate the revised Draft for public review and comment.

C. **Major Error No. 3: Certification of FSEIR and Adoption of Findings/Considerations Were Impermissibly Separated from Approval of the Grading Application.**

25. The third major error committed by the County in processing FSEIR 566 was its unprecedented decision (a) to have the Planning Commission and the Board consider the adequacy of FSEIR 566 without simultaneously considering whether to approve the discretionary project, i.e., the Grading Application, which triggered preparation of the FSEIR in the first place and (b) to have the Planning Commission adopt 83 pages of detailed findings and overriding considerations as if it were, in fact, issuing some sort of "project approval." Of course, without any project approval having been agendized for its consideration, the Planning Commission was not authorized under CEQA to make any "findings" which might later be adopted by the County's Building Official in deciding whether to approve Aradi's Grading Application.

26. The administrative record will amply demonstrate that the County was clearly troubled by what procedures it should follow in considering whether to certify FSEIR 566 and to approve the Grading Application. At least four different sets of procedures were separately proposed and then withdrawn by County Counsel in trying to decide how the County should conduct the CEQA review process for FSEIR 566. In the end, however, a five-step procedure was proposed by County Counsel which was neither practical, nor legal, because it divorced (a) the certification of FSEIR 566 and the adoption of the Findings/Considerations from (b) the approval of the Grading Application.

27. Incredibly, after spending so much time formulating this five-step CEQA review process -- which was ultimately amended by the Board to include a sixth step -- the County did not even comply with the special procedures which the Board adopted (referred to collectively as the "Approval & Appeal Process for FSEIR 566") because the Board failed to meet the requirements in step nos. 3 and 4 of the process with respect to making a "determination" on the Society's appeal and issuing a "ratification" of the Planning

Commission's certification of FSEIR 566 The County's insistence, however, that FSEIR 566 has been officially certified, despite the County's failure to comply with the multi-step process it prescribed for itself, has left the Society with no choice but to file this lawsuit to obtain declaratory relief, a writ of mandate, and ancillary injunctive relief.

28. A more detailed statement of the Society's claims against the Defendants, including a summary of the many instances in which the County violated the provisions of CEQA and CEQA Guidelines in attempting to certify FSEIR 566 and to adopt the Findings/Considerations, is set forth below.

II. GENERAL ALLEGATIONS

A. The Parties.

29. The Society is now, and at all time herein mentioned was, a non-profit religious corporation formed, existing, and in good standing under the laws of the State of California and conducting operations in the County.

30. For nearly 50 years, the Society has owned and maintained the Ramakrishna Monastery (the "Monastery") on approximately 40 acres of real property located immediately adjacent to the southeast portion of the Property. The Society's operation and maintenance of the Monastery will be directly and materially affected by the development of the Project.

31. The County is now, and at all times herein mentioned was, a political subdivision of the State of California, created and existing under and by virtue of the laws of the State of California.

32. The Board is now, and at all times herein mentioned was, the duly elected legislative body of the County, organized and existing under the laws of the State of California.

33. The Planning Commission is now, and at all times herein mentioned was, the duly appointed planning subagency of the Board, organized and existing under the laws of the State of California.

34. Nees is now, and at all times herein mentioned was, the Manager of Building Inspection for the County, and the duly-appointed Building Official of the County as defined in the County's Grading and Excavation Code.

35. The true names and capacities, whether individual, corporate, or otherwise, of the Respondents sued herein as DOES 1 through 25, inclusive, are presently unknown to the Society, which therefore sues such Respondents by such fictitious names. The Society will seek leave of Court to amend this Complaint and Petition to show the true names and capacities of such Respondents when such information is ascertained.

36. Each of the Respondents sued herein as DOES 1 through 25, inclusive, performed, participated in, or abetted in some manner, the acts and omissions alleged herein, is responsible for the violations of law described hereinbelow, and is subject to the relief sought herein.

37. In performing the acts and omissions alleged herein, and at all time relevant hereto, each of the Respondents was the agent and employee of each of the other Respondents and was at all times acting within the course and scope of such agency and employment, and within the knowledge and approval of each of the other Respondents.

38. California Quartet is now, and at all times herein mentioned was, a limited partnership organized and existing under the laws of the State of California and doing business in the County. Since in or about 1993, California Quartet has been the record title owner of the Property.

39. Aradi, Ltd., is now, and at all times herein mentioned was, a limited partnership organized and existing under the laws of the State of Nevada and qualified to do business in California. Aradi, Ltd., is currently the general partner of California Quartet.

40. Aradi, Inc., is now, and at all times herein mentioned was, a corporation organized and existing under the laws of the State of Nevada and qualified to do business in California. Aradi, Inc., is currently the general partner of Aradi, Ltd.

41. The true names and capacities, whether individual, corporate, or otherwise, of the Real Parties sued herein as DOES 26 through 50, inclusive, are presently

unknown to the Society, which therefore sues such Real Parties by such fictitious names. The Society will seek leave of Court to amend this Complaint and Petition to show the true names and capacities of such Real Parties when such information is ascertained.

42. Each of the Real Parties has a direct, beneficial interest in the actions of Respondents to attempt to certify FSEIR 566 and each of these Parties will be directly affected by the relief sought herein.

B. Factual Background.

43. The Property, commonly known as "Saddleback Meadows," is comprised of approximately 222 acres of mostly hilly terrain located on the east side of El Toro Road approximately one-half mile south of the intersection of El Toro Road, Live Oak Canyon Road, and Santiago Canyon Road in Trabuco Canyon.

44. Since 1949, the Society has owned and maintained the Monastery on 40 acres immediately adjacent to the southeast portion of the Property. The other surrounding land uses include, but are not limited to, St. Michael's Abbey immediately to the northwest, and O'Neill Regional Park immediately to the south. The Cleveland National Forest is approximately one-half mile north of the Property.

45. In 1979, the County, at the request of one of the previous owners of the Property, approved Tentative Tract Map 10692 which allowed for the construction of more than 700 manufactured housing/mobilehome units on the Property. However, some nine years passed before Final Tract Map 10692 (referred to herein as the "Tract Map") was recorded in 1988.

46. On January 9, 1980, the Property was placed in the PC "Planned Community" District when the Planned Community District Regulations for Saddleback Meadows (the "District Regulations") were adopted by the Board to provide the zoning for the Property and to specify the development conditions and criteria which would apply to the Property. The District Regulations were amended by the Board on July 13, 1983, and again on June 13, 1984, pursuant to Ordinance No. 3468 (ZC84-3P) [hereinafter referred to as the "1984 Zoning Ordinance"].

47. The Property is located within the unincorporated area of the County which is covered by Foothill/Trabuco Specific Plan (the "Specific Plan"). The Specific Plan was adopted by the Board in December 1991 for the express purpose of preserving the rural character of the Trabuco Canyon area to serve as a buffer between urban development and the Cleveland National Forest, and to preserve the significant landform, biological, and scenic resources of the area. The Specific Plan, which refers to the Property as the "Bridlewood Residential District" and incorporates the 1984 Zoning Ordinance, exempts the Property from the regulations and guidelines of the Specific Plan and allows the Property to be developed in accordance with the Tract Map, notwithstanding the Board's express finding that development of the Property pursuant to the Tract Map is not consistent with the goals and objectives of the Specific Plan.

48. The Specific Plan states, in relevant part, that the exemption was provided because the then-current owner of the Property was in bankruptcy and the automatic stay arising from the bankruptcy prevented the Board from taking any action that would affect the value of the Property. However, in providing for this exemption, the Specific Plan specified two instances in which the exemption would not apply: (a) if any development proposal for the Property deviated from the Tract Map, then the Specific Plan would have to be amended to (i) determine an appropriate density cap for the Property, (ii) establish new development regulations for the Property, and (iii) require the development of the Property to be consistent with all provisions of the Specific Plan; and (b) if the landowner applied for a grading permit for the Property, all environmental analysis required by CEQA would have to be conducted.

49. In or about 1993, California Quartet purchased the Property at a public auction of the assets of a failed savings and loan association. Thereafter, in April 1994, California Quartet applied to the County for a grading permit to rough grade approximately 98.3 acres of the Property, which it referred to as Phase I of the Project. In August 1994, the County determined that a Subsequent EIR would have to be prepared before the requested grading permit could be issued.

50. California Quartet appealed this determination on August 11, 1994. However, on January 31, 1995, California Quartet withdrew its appeal and, pursuant to the request of the Planning Commission, began to develop a project to address the numerous environmental and other concerns that had been expressed by the public, the County staff, and the Planning Commission regarding the development of the Property.

51. As a result of this effort, a Zone Change and an Area Plan for a 318-unit single-family residential housing project (the "318-Unit Project") were submitted to the County by California Quartet on July 27, 1995. Environmental Impact Report No. 561 ("EIR 561") was then prepared to address the significant environmental impacts that would be caused by the construction of 318 single-family homes on the Property.

52. On July 30, 1996, the Planning Commission conducted a public hearing on the 318-Unit Project. At the conclusion of the hearing, the Planning Commission recommended that EIR 561 be certified by the Board, but also recommended that Zone Change 95-5 and Area Plan 95-7 for the 318-Unit Project be denied. On October 22, 1996, the Board conducted a public hearing regarding the 318-Unit Project and likewise voted to deny Zone Change 95-5 and Area Plan 95-7.

53. Following the Board's rejection of the 318-Unit Project, California Quartet renewed its efforts to develop the Property pursuant to the Tract Map.

54. On December 3, 1996, California Quartet submitted Grading Application No. GA960048 (referred to herein as the "Grading Application") to the County. The Grading Application requested (a) the approval of the Phase 1 grading plans for the Project and (b) the issuance of a grading permit to commence rough grading operations at the Property.

55. On December 16, 1996, the County's Environmental Management Agency, now known as the Planning & Development Services Department, determined that a Subsequent EIR needed to be prepared in order "to evaluate the effects of the grading application." (FSEIR 566 at pp.2-8 and 2-9.) By making this determination that a Subsequent EIR would have to be prepared and certified before the Grading Application could be approved, County EMA implicitly found that the Grading Application was a "discretionary

approval" under CEQA. If county EMA had found the Grading Application to be purely ministerial, CEQA would not have applied and no Subsequent EIR could have been required to be prepared.

56. On December 24, 1996, the County issued the Notice of Preparation for Draft Subsequent Environmental Impact Report No. 566 ("DSEIR 566" or the "DSEIR"), which solicited comments from all interested parties regarding the proposed content and scope of the DSEIR. The Notice of Preparation was re-issued by the County on February 6, 1997, to include a description of the commercial center California Quartet was proposing to construct as part of the Project.

57. The 45-day public review period for DSEIR 566 began on June 27, 1997, when the County distributed the DSEIR to various governmental agencies, surrounding property owners, and other interested parties for their review and comment. All comments on DSEIR 566 were to be submitted to the County no later than August 12, 1997.

58. The ability of the Society, as well as all other interested parties, to review and comment on the adequacy of the DSEIR was substantially impaired by the County's failure to make available for public review all documents and materials that were necessary to fully assess the adequacy of the DSEIR. In particular, the Phase 1 grading plans (the "Grading Plans"), which were the ***sine qua non*** of the Grading Application were not available for public review because the County had returned them to California Quartet to be revised. On August 1, 1997, the County informed the Society that, if it wished to review a copy of the Grading Plans it would have to arrange to purchase a copy from California Quartet. When the Society did finally receive a copy of the Grading Plans from California Quartet on or about August 6, 1997, the Society discovered that Grading Plans were preliminary in nature and only covered a small portion of the Project.

59. In addition, the in-depth review of the Grading Plans by the soils engineer of record (the "Grading Plan Review") had not yet been completed, and was therefore unavailable. Without access to the Grading Plan Review, it was not possible to fully understand or interpret the Grading Plans.

60. Because these critically important documents were unavailable to the public, the Society wrote to the County on August 6, 1997, to request that the County grant a 30-day extension of time for the Society to submit its comments on DSEIR 566, or, in the alternative, that the County re-notice the 45-day public review period once the Grading Plans and the Grading Plan Review were made available for public review. An extension of time was also requested in writing by Saundra F. Jacobs, by letter of August 5, 1997, and by St. Michael's Abbey, by letter of August 11, 1997, due to the unavailability of these important documents.

61. In its August 12, 1997 response to the Society, the County denied that access to the Grading Plans and the Grading Plan Review was necessary to comment on the adequacy of DSEIR 566 because, although the Grading Application was the "initiating activity" which triggered the preparation of the DSEIR, the County had prepared DSEIR 566 to analyze the general impacts of the entire Project. The County went on to state that the amount of detail provided by the Grading Plans and the Grading Plan Review was "premature" and was not required to be set forth in DSEIR 566 because the County had decided that the information to be incorporated in the DSEIR only needed to be specific enough for some undefined "planning decision."

62. Not only did the County fail to explain what "planning decision" it was referring to in its letter, but it also failed to explain why the scope of the environmental analysis set forth in DSEIR 566 was being arbitrarily limited to a "planning level of detail" when it was supposed to be analyzing the environmental effects of the Grading Application. At any rate, the County refused to re-notice the 45-day public review period, but, "in the spirit of cooperation," provided the Society and other interested parties with a 10-day extension of time within which to submit their comments on the DSEIR.

63. During the public review period, the County received numerous written comments on DSEIR 566 from various governmental agencies, municipalities, groups, and individuals. Included among the written comments on DSEIR 566 were letters from the Society, St. Michael's Abbey, the U.S. Fish & Wildlife Service and the California Department

of Fish & Game, Saundra F. Jacobs, the Southern California Association of Governments, and numerous other interested parties. (Copies of all letters commenting on DSEIR 566, which were received by the County between June 29, 1997, and August 22, 1997, are set forth in DSEIR 566 and are incorporated herein by reference.)

64. On October 10, 1997, the County (a) issued the "Response to Comments" for DSEIR 566 (the "Response to Comments") to address the numerous comments that were submitted regarding the DSEIR, and (b) announced that the Planning Commission would hold a public hearing on October 22, 1997, to consider the certification FSEIR 566.

65. On October 15 and 16, 1997, the Society submitted written objections to the County, taking issue with the Planning Commission's proposed review of FSEIR 566 on October 22, 1997. The principal objection lodged by the Society was that the Planning Commission was being asked to do something unlawful by certifying FSEIR 566 without simultaneously considering whether to approve the Grading Application, i.e., the discretionary project which the FSEIR was originally prepared to evaluate.

66. The Society's objections spawned a series of proposed procedures as to how the County should go about reviewing FSEIR 566 and the Grading Application. The County's first proposal, made on October 20, 1997, acknowledged that the County Building Official (the "Building Official") was the "decision-making body" which must ultimately approve or deny the Grading Application, and that the County's "Environmental Analysis Procedures" allowed the Planning Commission to make only a "recommendation" regarding the adequacy of an EIR when it was not the decision-making body, as that term is defined by CEQA. Accordingly, the County proposed the following procedure: (a) the Planning Commission would review the FSEIR and make a recommendation regarding its adequacy to the Building Official, (b) the Building Official would determine whether FSEIR 566 should be certified, and (c) if the Building Official certified the FSEIR, his determination could be appealed to the Board.

67. A second proposal was made by the County during the Planning Commission's October 22, 1997 public hearing. This proposal was very similar to the first,

except that it expressly provided for, *inter alia*, the Building Official to conduct a public hearing on the adequacy of FSEIR 566. However, the second proposal was unclear as to whether an appeal of the Building Official's determination regarding the FSEIR would be heard by the Board.

68. At the October 22, 1997 public hearing, the Planning Commission refused to render a decision on the FSEIR, principally because the Grading Plans had not been made available for the members of the Planning Commission to review. Instead, the Planning Commission scheduled another hearing for December 3, 1997, and requested that the Planning & Development Services Department make the Grading Plans and related soils reports available for public review. Although County staff complied with this request, the County neither re-noticed the 45-day public review period to solicit comments on this significant new information, nor did it incorporate these materials into the FSEIR and recirculate it to the public.

69. On October 24, 1997, the County made a third proposal regarding the process by which FSEIR 566 and the Grading Application would be reviewed. This third proposal simply clarified the details of the process that the County had suggested in its first two proposals. Written comments and objections to this proposal were submitted to the County by California Quartet and the Society, dated October 31, 1997, and November 3, 1997, respectively.

70. In response to these comments and objections, the County made a fourth, followed by a fifth, proposal -- the latter of which was ultimately submitted to the Board for its approval. This fifth proposal eliminated some of the features that the earlier proposals had incorporated, such as the Building Official determining the adequacy of the FSEIR and the right to appeal the Building Official's decision on the Grading Application. As finally submitted to the Board, the fifth proposal consisted to a five-step process which provided for (a) the Planning Commission to certify the adequacy of FSEIR 566, (b) the right to appeal that determination within fifteen days of the time it was made, (c) the Board to hear any such appeals, (d) the Building Official to render its decision on the Grading Application following

the expiration of the appeal period, or the denial of any appeal and the ratification of the Planning Commission's certification by the Board, and (e) a Notice of Determination to be filed when the grading permit was issued.

71. On November 25, 1997, in response to the Society's continued objections to the legality of the procedures being proposed by the County, the Board amended the five-step proposal by adding a sixth step to allow the issuance of any grading permit for the Project to be "appealed to be Board of Supervisors from the Planning Commission." The Board directed County staff to draft whatever ordinance was necessary to allow such an appeal to take place.

72. However, the ordinance which was drafted by the County staff was inconsistent with the Board's amendment because, instead of allowing for an appeal of the grading permit from the Planning Commission to the Board, it allowed the decision of the Building Official to be appealed to the Board. As drafted, therefore, the proposed ordinance drew strong opposition from the Building Industry Association and failed to receive the approval of a majority of the Board. In rejecting the proposed ordinance on December 16, 1997, the Board did not revisit or reconsider the six-step process it had adopted on November 25, 1997. Indeed, no action was taken at the December 16 hearing to repeal or modify the motion which was passed at the November 25 hearing.

73. By administrative fiat, however, County staff decided to ignore the desire so clearly expressed and voted on by the Board at the November 25 hearing to allow the grading permit for the Project to be "appealed to the Board from the Planning Commission." Without any formal action by the Board, County staff chose to override the Board's expressed intent and did not allow the Grading Application to be considered by the Planning Commission so that it might be appealed to the Board if approved.

74. As noted above, the Society submitted numerous letters to the County objecting to (a) the process by which the FSEIR and the Grading Application were to be reviewed and decided upon by the County, and (b) the sufficiency of the Response to Comments released by the County. These objections were set forth in the Society's letters,

dated October 15 and 16, 1997, November 3, 5, and 26, 1997, and December 1 and 2, 1997, each of which are incorporated herein by reference. Saundra F. Jacobs also submitted objections to the County's Response to Comments on December 2, 1997, which is also incorporated herein by reference.

75. Representatives of the Society, as well as other interested parties, appeared at the public hearings which were held regarding the certification of FSEIR 566 by the Planning Commission on October 22, 1997 and December 3, 1997, and the public hearing which was held regarding the adoption of the special CEQA review process for the FSEIR by the Board on November 25, 1997. During these public hearings representatives of the Society and the other interested parties presented numerous oral comments regarding FSEIR 566 and the process by which it was being reviewed.

76. The written and oral comments submitted to the County and the Planning Commission prior to its approval and certification of FSEIR 566 specifically informed the County and the Planning Commission about the serious deficiencies in the environmental compliance process relating to FSEIR 566 including, but not limited to, the following:

(a) the failure of FSEIR 566 to properly describe the discretionary "project" which it was prepared to evaluate;

(b) the failure of FSEIR 566 to contain the required level of specificity;

(c) the failure of FSEIR 566 to provide the required technical data;

(d) the County's failure to recirculate DSEIR 566 following the release of significant new information prior to certification, including, but not limited to, the Grading Plans and the Grading Plan Review;

(e) the purported approval and certification of FSEIR 566 pursuant to a specially-adopted CEQA review process which, ***inter alia***, unlawfully separated the certification of the FSEIR and the decision on the discretionary approval, i.e., the Grading Application, for which the FSEIR was originally prepared;

(f) the failure of FSEIR 566 to adequately address all significant environmental impacts associated with the Project, including, but not limited to, soils and geology, water/hydrology, transportation/circulation, air quality, biological resources, cultural resources, and public services;

(g) the failure of FSEIR 566 to specify all feasible mitigation measures available to lessen the effects of the significant environmental impacts;

(h) the failure of FSEIR 566 to adequately address the cumulative impacts of the Project;

(i) the failure of FSEIR 566 to consider reasonable alternatives to the Project, including, but not limited to, alternative sites;

(j) the failure of FSEIR 566 to adequately address and respond to comments received on the DSEIR;

(k) the County's failure to adopt an adequate Mitigation Monitoring Program;

(l) the failure of the County to adopt adequate and proper findings; and

(m) the failure of the County to adopt an adequate and proper statement of overriding considerations.

77. Despite the numerous comments outlining the deficiencies in FSEIR 566, and the process by which it was brought to the Planning Commission for certification, the Planning Commission took action to approve and certify FSEIR 566 on December 3, 1997, without ever considering whether the Grading Application should be approved, denied, or modified to lessen the environmental impacts associated with the rough grading for the Project.

78. Nonetheless, pursuant to its Resolution of December 3, 1997, the Planning Commission purported (a) to make findings in support of the approval of the entire Project and (b) to adopt a statement of overriding considerations which stated that the benefits of the Project supposedly outweighed its unavoidable impacts.

79. On December 18, 1997, the Society timely appealed the Planning Commission's purported certification of FSEIR 566 by submitting a notice of appeal that outlined the grounds therefor. On February 24, 1998, the Board heard the Society's appeal and after public testimony had been received, Supervisor Steiner moved to deny the appeal. However this motion failed for lack of majority when the Board split 2-2 with Supervisor Silva having recused himself prior to the hearing. Following the Board's vote, County Counsel declared, without any legal or factual support, that the Society's appeal had failed and the Planning Commission's certification of the FSEIR had been upheld.

80. The Society has exhausted all of its administrative remedies, and has no plain, speedy, or adequate remedy in the ordinary course of law, other than the relief sought in this Complaint and Petition.

FIRST CAUSE OF ACTION

(Against All Defendants For Declaratory And Injunctive Relief Re Invalid And Ineffective Certification Of FSEIR 566)

81. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, as set forth above.

82. To the extent that the Defendants maintain that FSEIR 566 has been validly and officially certified by Respondents, an actual controversy has arisen and now exists between the Society and the Defendants regarding the validity of Respondents' purported certification of FSEIR 566 pursuant to the special CEQA review process which the Board purportedly adopted on November 25, 1997, in that the Society contends, and Defendants deny, ***inter alia***, that:

(a) The November 25 CEQA review process (i) requires that the Board "***make a determination*** whether to uphold [any] appeal [of the certification of the FSEIR] in whole or in part or to deny the appeal" and (ii) prohibits the Building Official from approving the Grading Application, or issuing a grading permit, until the "***denial*** of any appeal and ***ratification*** of the Planning Commission's certification" by the Board (emphasis added); and

(b) The Board's 2-to-2 vote on the Society's appeal did not result in a denial of the Society's appeal, nor did it constitute any Board action upholding or ratifying the Planning Commission's December 3 certification of the FSEIR.

83. Government Code section 25005 provides that no act of a county board of supervisors, such as the Board, is valid unless a majority of all members concur therein. As a five-member panel, the Board needs three votes in order to take any valid action. Unless the Board has three votes in favor of an action, the Board is held to have taken no action.

84. The Society contends, therefore, that the Board took no action on the Society's appeal because three votes were not cast in favor of granting or denying the appeal. The minutes of the public hearing held on February 24, 1998 support this contention and state that the motion to deny the Society's appeal failed for lack of a majority.

85. A further, actual controversy has arisen and now exists between the Society and the Defendants, in that the Society contends, and the Defendants deny, *inter alia*, that:

(a) When a Subsequent EIR is required to be prepared to evaluate the effects of a grading application, there is a conflict between (1) the County's Environmental Analysis Procedures, adopted by the Board on June 25, 1995, and (2) the Orange County Grading and Excavation Code, in that (i) the County's Environmental Analysis Procedures do *not* authorize any decision-making body other than the Board, the Planning Commission, or the Subdivision Committee to approve and certify an EIR and certainly do *not* contemplate that the Building Official under the Grading Code would ever certify an EIR and (ii) the County's Grading Code assumes that all grading permits will be issued by the Building Official, as opposed to the Planning Commission;

(b) In light of the above-described conflict between the County's Environmental Analysis Procedures and the Grading Code, there is no clear rule or procedure set forth in the County's ordinances which indicates how

the County is to proceed in reviewing a Subsequent EIR and the Grading Application for which the Subsequent EIR was prepared to evaluate.

(c) Under CEQA and the CEQA Guidelines, the Planning Commission was not, and is not, authorized by law to certify FSEIR 566 and to adopt findings and overriding considerations without simultaneously approving the Grading Application;

(d) Likewise, under CEQA and the CEQA Guidelines, the Building Official was not, and is not, authorized to approve the Grading Application or issue any grading permits to Real Parties relating to the Project without simultaneously certifying FSEIR 566 and adopting findings and overriding considerations; and

(e) The November 25 CEQA review process unlawfully separated the (i) the decision whether to certify FSEIR 566 and to adopt findings and overriding considerations from (ii) the decision whether to approve the Grading Application.

86. In light of the foregoing, a judicial declaration is necessary and appropriate under the circumstances to resolve the above-described disputes and controversies between the Society and the Defendants with respect to the purported certification of FSEIR 566 by Respondents and the proper procedures for taking action on the FSEIR and the Grading Application in the future. Specifically, the Society seeks a declaration from the Court that:

(a) No final or official certification of FSEIR 566 has occurred under the terms of the CEQA review process adopted by the County on November 25, 1997;

(b) The CEQA review process adopted by the Board on November 25, 1997, was unlawful and invalid and any action take pursuant thereto, or in accordance therewith, is a legal nullity;

(c) The proper process under CEQA, and the County's ordinances and regulations, for considering whether to certify FSEIR 566 and approve the Grading Application is for the Planning Commission and the Building Official to hold a joint public hearing and to take joint, simultaneous action to review the adequacy of FSEIR 566 and to take action on the merits of the Grading Application;

(d) If and when any joint determination is made by the Planning Commission and the Building Official regarding FSEIR 566 and the Grading Application, such action shall be appealable to the Board pursuant to the provisions of CEQA section 21151(c); and

(e) Pursuant to section 21168.9 of CEQA, Respondents must suspend any and all Project activities which are based upon or are undertaken pursuant to the purported certification of FSEIR 566 or the purported adoption of the Findings/Considerations, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to whether to certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

87. In addition, the Society is entitled to ancillary injunctive relief in the form of a temporary restraining order, preliminary injunction, and permanent injunction, enjoining and prohibiting:

(a) Respondents, their agents, employees and representatives, and all persons acting under, or in concert or participation with them, from taking any action to grant or approve the Grading Application or to issue any grading permits relating to the Project, to Real Parties, or their agents, successors or assigns, pending a hearing on the merits of this Complaint and Petition; and

(b) Real Parties, their agents, employees and representatives, and all persons acting under, or in concert or participation with them, from engaging in (i) any grading, clearing, brushing or grubbing on the natural or existing grade

of the Property or (ii) any other activities which could result in any adverse change or alteration to the physical environment of the Property, pending a hearing on the merits of this Complaint and Petition.

SECOND CAUSE OF ACTION

(Against All Defendants For Declaratory Relief Re Non-Existence of Vested Rights To Develop The Property)

88. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and 82 through 85, inclusive, as set forth above.

89. An actual controversy has arisen and now exists between and among the Society and the Defendants regarding the respective rights, duties, and obligations of the Defendants with respect to the development of the Property and ensuring that such development fully complies with CEQA and the Guidelines in that the Society contends, and the Defendants deny, *inter alia*, that:

(a) Real Parties possess *no vested rights* with respect to developing all or any portion of the Property, including, but not limited to, (i) any vested rights to maintain the benefits afforded under the exemption of the Property from the requirements of the Specific Plan, (ii) any vested rights to maintain the entitlements afforded under the 1984 Zoning Ordinance, or (iii) any vested rights to maintain the entitlements afforded under the Tract Map; and

(b) In considering whether to certify FSEIR 566, Respondents were free to, and were actually required to, consider all feasible mitigation measures, project alternatives, and other design features that would have lessened or avoided the environmental impacts associated with the Project, regardless of whether such measures, alternatives, or features would cause the design or intensity of the development authorized by the Tract Map.

90. A judicial declaration is necessary and appropriate under the circumstances to resolve the current between the Society and the Defendants. Specifically, the Society seeks a declaration from the Court that:

(a) Real Parties have *not* acquired any vested rights in, *inter alia*, (i) the exemption of the Property from the requirements of the Specific Plan, (ii) the current zoning for the Property as set forth in the 1984 Zoning Ordinance, or (iii) the current entitlements allowed under the Tract Map;

(b) Respondents have *not* issued any development permits to Real Parties upon which they have relied in good faith, and have performed substantial work and incurred substantial liabilities, so as to acquire any vested rights to develop the Property in accordance with such permits; and

(c) the mitigation measures, project alternatives, and other design features that Respondents were allowed to, and were actually required to, consider in deciding whether to certify FSEIR 566 and to adopt the Findings/Considerations *were not limited* to those measures, alternatives or design features which would not change or alter the physical design of the development authorized by the Tract Map.

THIRD CAUSE OF ACTION

(Against All Defendants For A Writ Of Mandate And Injunctive Relief Based On Violations Of CEQA And The CEQA Guidelines In Purporting To Certify FSEIR 566)

91. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, paragraphs 82 through 85, inclusive, and paragraph 90 as set forth above.

92. To the extent that the Board's purported action on February 24, 1998 resulted in any determination upholding the Planning Commission's certification of FSEIR 566, which the Society denies, the Society seeks a preemptory writ of mandate pursuant to Code of Civil Procedure section 1094.5, directing Respondents to vacate and set aside, *inter*

alia, the unlawful actions which they have taken, or may hereafter take, in (a) approving and certifying FSEIR 566, or (b) authorizing any other actions in reliance on such approval and certification, including, but not limited to, the approval of the Grading Application or the issuance of any grading permit(s) to Real Parties with respect to the Project. Such mandamus relief is being sought herein based on the numerous violations of CEQA and the CEQA Guidelines which are alleged hereinbelow.

A. **Failure To Properly Describe The Discretionary Project To Be Addressed By FSEIR 566.**

93. Respondents failed to proceed in the manner required by law and abused their discretion to the extent that they violated, *inter alia*, section 15124 of the Guidelines by failing to properly identify and describe the discretionary project approval which initiated and necessitated the preparation of FSEIR 566, i.e., the Grading Application.

94. As stated above, the Project consists of the development of 705 manufactured housing units and a commercial site, as authorized by the Tract Map. The Project was originally approved approximately 19 years ago when the County granted approval for Tentative Tract Map 10692. At the time that approval was issued, an EIR was prepared and certified by the County to address certain of the environmental impacts associated with the development of the Project.

95. In December 1996, Real Parties submitted the Grading Application to the County seeking the issuance of a grading permit to undertake a portion of the rough grading for the Project. As FSEIR 566 acknowledges, at pages 2-8 and 2-9, County EMA determined that the EIR certified in 1979 was no longer sufficient and that, before the County could approve the Grading Application, a Subsequent EIR needed to be prepared to "*evaluate the [environmental] effects of the grading application.*"

96. This determination by County EMA constituted an implicit finding that the Grading Application was the "next discretionary approval for the project," within the meaning of section 15162(c) of the CEQA Guidelines, which would provide the County with the occasion to require a Subsequent EIR to be prepared.

97. Consistent with this finding, FSEIR 566, at pages 3-15, identifies all County discretionary approvals for which it is to provide environmental analysis, as required by Guidelines section 15124(d)(1)(B). The only County approvals which FSEIR 566 identifies are the approval of a grading plan and the issuance of a grading permit, pursuant to the Grading Application. FSEIR 566 does not list the approval of the overall Project (i.e., the construction of 705 units of manufactured housing) as a discretionary approval for which it is to provide environmental analysis.

98. There can be no question, therefore, that the discretionary project approval which precipitated the preparation of FSEIR 566, and which was to be addressed and analyzed in the FSEIR, was the Grading Application. But for the Grading Application being submitted, there would have been no legal basis for the County to have directed that a Subsequent EIR be prepared because there would have been no new project approval which would have required CEQA compliance.

99. However, in calling for a Subsequent EIR to be prepared to update the environmental analysis set forth in the original EIR for the Project, the County inexplicably determined that the Subsequent EIR would only have to be specific enough to provide a "planning level of detail" for the Project in general, and would not have to address the construction-level impacts associated with the approval of the Grading Application.

100. In implementing this improper decision to address only the general "planning level" impacts of the entire Project, and to exclude an analysis of the specific impacts associated with the Grading Application, the County wrongfully described the "project" to be evaluated in the Draft SEIR in overly-broad terms as if it consisted of the overall development of the Project authorized by the Tract Map, but did not include the construction-level activities that would be unleashed by the approval of the Grading Application. The incomplete and overly-broad project description which was incorporated in the Draft SEIR necessarily skewed and improperly limited the environmental analysis set forth in FSEIR 566 in violation of CEQA and the CEQA Guidelines.

B. Failure To Provide The Required Level Of Specificity.

101. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to provide the level of specificity that CEQA and the Guidelines required of FSEIR 566.

102. Specifically, Guidelines section 15146 provides that:

"The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.

(a) an EIR on a construction level project will necessarily be *more detailed* in the *specific effects* of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the *effects of the construction* can be predicted with greater accuracy." (Emphasis added.)

103. Contrary to any previous statements by Respondents, FSEIR 566 is undeniably a construction-level EIR because, by Respondents' own admission, the document was prepared to analyze the environmental impacts of the Grading Application, which is the last discretionary approval Respondents will issue before the topography of the Property is permanently altered and the biological resources located at the site are forever destroyed.

104. FSEIR 566 does not comply with section 15146 because it postpones for future analysis the specific details of the very activity that it was supposedly prepared to address, i.e., the rough grading of the Property for the construction of 705 units of manufactured housing. As a Subsequent EIR prepared to analyze the effects of the rough grading of the Property, the FSEIR was required by section 15146 to possess a degree of specificity that corresponded to the level of technical detail that must necessarily be provided to the Building Official in order for him to approve the Grading Application.

105. In order to provide this degree of specificity, all technical materials to be reviewed by the Building Official before he approved the Grading Application -- which included, at a minimum, the Grading Plans and the Grading Plan Review -- should have been

made a part of FSEIR 566 so that all the detailed information that was available to the County when it considered the Grading Application was likewise made available to the public through the CEQA review process.

106. However, the level of specificity in FSEIR 566 fell far short of what would be required for properly evaluating the Grading Application because, *inter alia*, FSEIR 566 provided only a vague "conceptual plan" regarding how the rough grading of the Property was to be performed. By failing to include, *inter alia*, the Grading Plans and the Grading Plan Review, the FSEIR lacked the specificity required for a construction-level EIR, and clearly violated section 15146 of the CEQA Guidelines.

107. Respondents' failure to comply with the specificity provisions set forth in the CEQA Guidelines has, *inter alia*, unlawfully deprived the public and other interested public agencies of the right and opportunity to properly assess and comment on the impacts associated with the Grading Application as well as the mitigation measures proposed to reduce those impacts.

C. Failure To Provide The Requisite Technical Detail.

108. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to comply with the mandatory provisions of Guidelines section 15147, which requires that all technical data, maps, plans, diagrams, and similar information that are necessary to make a "full assessment" of the environmental impacts of the project being evaluated must be contained in the environmental impact report or in the appendices thereto. Section 15147 goes on to require that these materials be made "readily available for public examination" during the noticed public review period.

109. Because FSEIR 566 was prepared to evaluate the environmental effects of the Grading Application, section 15147 required that the Grading Plans and the Grading Plan Review, as well as any other materials required for the Grading Application, be made part of the DSEIR before it was circulated for public review. However, the Grading Plans and the Grading Plan Review were never made a part of DSEIR 566, nor were they made available for inspection or copying during the 45-day public review period.

110. The geotechnical reports and maps which were made a part of DSEIR 566 were entirely inadequate in that they either (a) discussed the rough grading for the 318 Unit Project that was earlier rejected by the Planning Commission and the Board, or (b) deferred any detailed analysis of the 705-unit Project until after FSEIR 566 had been certified.

111. This failure by Respondents to comply with the technical detail provisions of the CEQA Guidelines has, *inter alia*, unlawfully deprived the public and other interested public agencies of the right and opportunity to properly assess and comment on the impacts associated with the Grading Application as well as the mitigation measures proposed to reduce those impacts.

D. Failure To Amend And Recirculate DSEIR 566 After Releasing Significant New Information Regarding The Grading Application.

112. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to amend and recirculate DSEIR 566 following the release of significant new information regarding the rough grading of the Property.

113. Public review and comment is one of the most fundamental and important aspects of the CEQA review process. Both CEQA and the case law interpreting it have recognized that public review and comment is the strongest assurance of the adequacy of an EIR. For that very reason, CEQA section 21092.1 and CEQA Guidelines section 15088.5 require that if significant new information becomes available before an EIR has been certified, the EIR must be recirculated to allow the public sufficient time to review and comment on that new information. If significant new information becomes available after certification, CEQA and the Guidelines require the preparation of a new, subsequent EIR so that the public will have the opportunity to review and comment on that information.

114. In this case, following the close of the 45-day public review period and the Respondents' release of the Response to Comments for DSEIR 566, Respondents made the Grading Plans, Grading Plan Review, and various other reports and information relating to the rough grading of the Property available for public review. Although these materials still failed to provide important design details regarding the rough grading of the Project, they clearly

constituted significant new information because they supplied substantial additional data which was sorely lacking from the DSEIR when it was circulated for public review. However, in clear violation of, *inter alia*, sections 21092.1 and 15088.5, Respondents refused to (a) amend the DSEIR to incorporate and analyze this new data and (b) recirculate the DSEIR for public review and comment on this significant new information.

115. Respondents have run afoul of CEQA's policies and requirements regarding public participation in the review process. By releasing the Grading Plans and the Grading Plan Review -- each of which clearly contained significant new information -- at the eleventh hour before certifying FSEIR 566, Respondents deprived the public of their right to review and comment on such materials, and shirked their responsibility to provide a reasoned analysis in response to any public comments concerning them.

E. Failure To Certify FSEIR 566 And Adopt The Findings/Considerations In Conjunction With Deciding Whether To Approve The Grading Application.

116. Respondents further failed to proceed in the manner required by law and abused their discretion by allegedly certifying FSEIR 566 pursuant to a special CEQA review process which, *inter alia*, unlawfully separated the certification of FSEIR 566 from the approval, modification, or disapproval of the discretionary project, i.e., the Grading Application, for which the FSEIR was originally prepared.

117. CEQA and the CEQA Guidelines do not apply, and do not require the preparation of an EIR, unless there is some form of discretionary project approval which is being considered by a public agency. (*See, e.g.*, CEQA Guidelines §§15002(i), 15357.) The certification of an EIR, by itself, is not a "project" under CEQA; rather, an EIR is merely an informational document that is to be considered by the public agency at the time that it approves, modifies, or disapproves whatever discretionary project is before it.

118. In this case, since FSEIR 566 was expressly prepared to evaluate the environmental impacts of the Grading Application, Respondents could not legally certify the FSEIR without simultaneously reviewing the Grading Application for approval, disapproval, or modification under section 15002(h) of the CEQA Guidelines. Because Respondents

purported to certify FSEIR 566 without considering, or taking any action on, the Grading Application, they failed to proceed in the manner required by law and abused their discretion.

F. Failure To Adequately Address All Environmental Impacts Of The Project.

119. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to adequately identify and address all significant environmental impacts associated with the rough grading of the Property as required by, *inter alia*, section 15126 of the CEQA Guidelines.

120. Specifically, before approving and certifying FSEIR 566, Respondents were required, *inter alia*, to clearly identify and describe all direct and indirect significant effects of the Project on the environment, giving due consideration to both the short-term and long-term effects. Respondents failed to meet their obligations in this regard with respect to, *inter alia*, the following matters:

(1) Soils and Geology

121. FSEIR 566 fails to identify and discuss each of the numerous geotechnical impacts that will occur as a result of the rough grading of the Property's hilly terrain. The discussion of the geotechnical impacts that is set forth in the FSEIR is woefully inadequate because it provides nothing more than a cursory overview of the Property's unstable soils conditions which may lead to massive landsliding and slope failures when deep excavations are made as part of the rough grading operations to take place at the site. Rather than fully identifying and discussing the critical issues relating to the Property's soils and geology, FSEIR 566 simply promises that a detailed analysis of these issues will be conducted at some undetermined time in the future.

122. FSEIR 566 also fails to contain a discussion regarding the impact of the rough grading on the area's groundwater. The rough grading of the Property will be greatly complicated by the perched groundwater which is present on the Property, as well as the numerous groundwater tables that will be exposed during the vast amount of remedial grading to be performed in an effort to stabilize the Property's unstable slopes. These conditions will require extensive dewatering activities both during and after the rough grading is completed.

123. FSEIR 566 fails to adequately discuss the impact these dewatering activity will have on the numerous water wells that are located on adjacent properties and which rely on the groundwater tables for their very existence. Although there is a substantial likelihood that the dewatering activities will cause these wells to permanently dry up, FSEIR 566 contains no discussion of any such impacts. Moreover, there is no discussion of the effect the rough grading will have on the quality or composition of the groundwater throughout the area or the impact on the streams and waterways into which the dewatering activities will redirect the groundwater.

124. Finally, FSEIR 566 fails to adequately discuss the impact that the rough grading process will have on the stability of the surrounding properties. Many of the slopes on the Property support the slopes on the surrounding properties, and vice versa. FSEIR 566 simply states in a conclusory fashion that there will be no impact on the stability of the surrounding slopes once rough grading is *completed*. FSEIR 566 completely avoids, however, any discussion of how the slope stability of neighboring properties will be impacted *during* the extensive rough grading process.

(2) Water/Hydrology

125. FSEIR 566 also fails to adequately and accurately assess the impacts the rough grading will have upon the hydrology and drainage for the Property and surrounding area.

126. As described above, FSEIR 566 is almost completely devoid of any discussion regarding the impacts the rough grading will have on the area's groundwater. In actuality, these impacts are significant and numerous and should have been addressed in detail.

127. Additionally, FSEIR 566 fails to analyze the Property's drainage after the rough grading has been completed and 705 units of manufactured housing have been constructed thereon. There is no discussion regarding whether the improvements to the County storm drain system that have been proposed will be sufficient to handle the run-off from the Project and there is an inadequate discussion regarding the impact of such run-off in general.

128. Finally, the hydrology report which is included in FSEIR 566 appears to be for the much smaller 318 Unit Project that was previously proposed and rejected for the Property, rather than the 705 unit Project which is the subject of FSEIR 566.

(3) Transportation/Circulation

129. The analysis in FSEIR 566 of the Project's traffic impacts is inadequate because it is limited in its geographic scope and fails to address the adequacy of the parking for the Project.

130. The traffic section of FSEIR 566 unfairly limits its review of the Project's impact on the area's intersections to those intersections which are north of the intersection of El Toro Road and Santa Margarita Parkway. No explanation is given for this limitation and no discussion is provided regarding the Project's impact on the intersections along El Toro Road between Interstate 5 and Santa Margarita Parkway, or the impacts on the heavily used Interstate 5.

131. Moreover, FSEIR 566 fails to address the sufficiency of the parking which is provided for the 705 units of manufactured housing to be constructed on the Property and the adequacy of the access to the Project.

(4) Air Quality

132. FSEIR 566 also fails to contain an adequate discussion of the impacts of the rough grading as well as the Project itself on the air quality for the area. Apparently, in considering the impact of the traffic and vehicle trips from the Project on the area's air quality, FSEIR 566 utilizes the calculations that were performed as part of the previously proposed, and rejected, 318 Unit Project rather than the much larger 705-unit Project. Additionally, FSEIR 566 does not adequately address the impacts that the actual process of grading the Property and constructing the 705 units will have on the area's air quality.

(5) Biological Resources

133. FSEIR 566 is also deficient because it does not adequately describe the biological resources of the Property and surrounding area, and describes and analyzes the impacts of the Project in only a superficial manner. Moreover, FSEIR 566 completely or

partially ignores at least eight requested information items that the U.S. Fish & Wildlife Service and the California Department of Fish and Game requested in their response to the Notice of Preparation for DSEIR 566.

134. Many of the wildlife species that exist on the Property are not adequately identified and considered in FSEIR 566. The wildlife species for which analysis is lacking include, but are not limited to, the following: (1) Riverside fairy shrimp, a federally endangered species, (2) California gnatcatcher, a federally threatened species, (3) Quino checkerspot butterfly, a federally endangered species, (4) western spadefoot toad, a California species of concern, (5) cactus wren, a federal and California sensitive species, (6) cladocerans, (7) copepods, (8) seed shrimp, (9) clam shrimp, and (10) pacific treefrog.

135. Moreover, Respondents improperly certified FSEIR 566 without surveys having been conducted pursuant to the U.S. Fish & Wildlife Service protocol to determine the size of the California gnatcatcher and Quino checkerspot butterfly populations which exist on the Property. As with many of the previously discussed impacts of the rough grading, the FSEIR improperly defers these studies until some indeterminate future date.

136. The FSEIR's discussion regarding the Property's biological resources is also deficient because it fails to adequately identify and discuss the many habitats and plant species which exist on the Property, such as the ephemeral ponds, wetlands, coastal sage scrub, mulefat scrub, coast live oak, southern sycamore riparian woodlands, Catalina mariposa lily, and intermediate mariposa lily. For example, FSEIR 566 does not adequately discuss the origins and importance of the ephemeral ponds which exist on the Property, and there is no discussion of the Project's impacts on the surrounding ephemeral ponds which are not within the Project's footprint. FSEIR 566 also lacks a sufficient discussion of the invertebrates and other species that may be found in these ponds or wetlands.

137. Finally, FSEIR 566 fails to adequately address the Project's impacts on the integrity of the wildlife corridors which currently exist on the Property, as well as the species which use the corridors, including, but not limited to, the mountain lion, mule deer, and coyote. These corridors currently link the Central and Southern Natural Community

Conservation Planning Subregional preserves, but their potential destruction or substantial modification is not sufficiently addressed.

(6) Archeological/Cultural Resources

138. FSEIR 566 is also deficient because it fails to adequately identify the potential array of archeological and cultural resources which currently exist on the Property -- such as, for example, possible Native American burial sites -- and to fully address the significant impacts that the rough grading will have on those resources. CEQA section 21083.2 required Respondents to identify the archaeological resources on the Property and to analyze the impacts of the rough grading on such resources. Despite this requirement, several of the "mitigation measures" proposed in FSEIR 566 stated that a certified archaeologist would be retained to survey the Property for cultural resources *after* FSEIR 566 has been certified. Again, deferring analysis in this manner is not permitted by CEQA or the CEQA Guidelines.

(7) Public Services

139. While acknowledging that the area's schools are already overcrowded and that the Project will add approximately 399 additional students to these schools, FSEIR 566 fails to adequately discuss the impact the Project will have upon the school system for the area.

G. Failure To Provide Legally Adequate Mitigation Measures And To Adopt An Adequate Mitigation Monitoring Program.

140. Respondents further failed to proceed in the manner required by law and abused their discretion by (a) failing to identify and adopt feasible mitigation measures for the numerous and significant environmental impacts of the Project, including, but not limited to, the impacts discussed herein, (b) adopting improper mitigation measures which were Impermissibly vague and which deferred analysis until after certification of the FSEIR, and (c) adopting an inadequate Mitigation Monitoring Program.

141. Guidelines section 15126 requires an EIR to identify and fully discuss all measures which are available to mitigate each and every significant environmental impact of a

proposed project. A project cannot be approved as proposed if there are feasible alternatives and mitigation measures which would substantially lessen the significant environmental impacts of the proposed project, but have not been incorporated into its design. (*See, e.g.*, CEQA § 21002; CEQA Guidelines §§15021, 15041.)

142. FSEIR 566 violates these and other provisions of CEQA and the CEQA Guidelines, as well as the Federal Endangered Species Act, by unlawfully limiting the mitigation measures which it discusses, and which Respondents adopted, to only those measures which would not result in, or require physical change to, the design of the Project as depicted on the Tract Map. FSEIR 566 provides no discussion of any legal or factual basis for such a limitation.

143. FSEIR 566 also violates the above provisions of CEQA and the Guidelines by failing to make any attempt to identify or discuss mitigation measures for many of the environmental impacts that will be caused by the Project, including, but not limited to, the Project's impact on the area's groundwater and its impacts on surrounding land uses, including, but not limited to, the religious uses by the Society and St. Michael's Abbey.

144. The mitigation measures which FSEIR 566 does contain, and which were adopted by Respondents, are legally inadequate because they fail to meet the standards established by CEQA and the Guidelines. Specifically, in order for a mitigation measure to be legally adequate it must be set forth in specific and detailed terms and it must be capable of (a) avoiding the impacts all together, (b) minimizing the impacts by limiting the degree or magnitude of the action and its implementation, (c) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment, (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, or (e) compensating for the impact by replacing or providing substitute resources or environments.

145. Many of the FSEIR's mitigation measures fail to meet these standards because they are nothing more than vague and generic promises to develop the sort of specific and detailed mitigation measures required by CEQA at some future time *after* the FSEIR has been certified. By deferring the development of the form and content of many of its mitigation

measures, FSEIR 566 deprives the public of the opportunity to review the mitigation measures to determine whether they can in fact mitigate the environmental impacts to which they are directed and meet the above standards. The mitigation measures which possess these deficiencies include, but are not limited to, the thirty-eight examples set forth in Appendix A to the comments to DSEIR 566 which St. Michael's Abbey submitted on August 21, 1997, and which are incorporated herein by reference.

146. Finally, the Mitigation Monitoring Program which Respondents adopted is also inadequate to meet the requirements of CEQA, including, but not limited to section 21081.6, because the mitigation measures set forth therein possess the same defects and deficiencies that are discussed above. Moreover, at least some of the additional mitigation measures which the Response to Comments indicated would be incorporated into the FSEIR have not been carried forward into the Mitigation Monitoring Program. For example, in response to comment SFC.2-66, the Response to Comments indicated that "five years of resource mitigation monitoring is hereby incorporated into the DEIR." However, this measure was neither incorporated into the FSEIR nor was it set forth in the Mitigation Monitoring Program.

H. Failure To Address The Cumulative Impacts Of The Project.

147. Respondents have further failed to proceed in the manner required by law and abused their discretion by failing to comply with the mandatory provisions of CEQA Guideline section 15130, which required Respondents to discuss significant cumulative impacts in FSEIR 566.

148. Specifically, CEQA Guidelines section 15130 requires an EIR to discuss the cumulative impacts of the relevant project and all past, present, and reasonably foreseeable future projects producing related or cumulative impacts, including the severity of those impacts and their likelihood of occurrence. Section 15130 also requires that this discussion of cumulative impacts include a summary of other projects anticipated in the region or area, a summary of expected environmental effects of those projects, and a reasonable analysis of the

cumulative impacts of the relevant project. The discussion of cumulative impacts must also include feasible mitigation measures.

149. Respondents did not comply with CEQA Guidelines section 15130 in that, *inter alia*, they failed to discuss the cumulative effects of the reuse of El Toro Marine Air Station as a commercial airport. In particular, FSEIR 566 is inadequate because it fails to consider the impacts of a commercial airport when conducting its analysis of the traffic, noise, and air quality impacts of the Project.

I. Failure To Consider Project Alternatives.

150. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to comply with the provision of CEQA Guidelines section 15126(d), which required Respondents to describe a range of reasonable alternatives to the Project, including an alternative site for the Project, and to evaluate the comparative merits of the alternatives.

151. Respondents did not comply with CEQA Guidelines section 15126(d) in that, *inter alia*, they failed to discuss viable alternative sites for the Project or properly explain why there were no feasible alternative sites discussed.

152. Moreover, although FSEIR 566 discusses possible on-site alternatives to the Project, it nonetheless violates CEQA and the CEQA Guidelines because throughout FSEIR 566 it is erroneously stated that changes to the Project that would alter the features of the Tract Map cannot be made because Respondents are allegedly unable to deviate therefrom. Hence, without any factual or legal support, FSEIR 566 provides project alternatives, but states that none of them can be considered because they would deviate from the Tract Map.

J. Failure To Adequately Respond To Comments.

153. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to comply with the mandatory provisions of CEQA section 21092.5 and CEQA Guidelines section 15088, which required that the Response to Comments provide a good faith, reasoned analysis of the issues presented by each comment. Conclusory statements unsupported by factual information are insufficient to meet this standard.

154. The Response to Comments which was prepared by Respondents failed to meet any aspect of this standard because it was not conducted in good faith and failed to provide any reasoned analysis of the comments that were submitted. Instead, Respondents simply (a) ignored comments, (b) referred the authors of the comments back to portions of the DSEIR which failed to address their concerns, or (c) stated that an analysis of the relevant issues will be conducted at some indeterminate time in the future.

155. For example, Respondents failed to respond to various legitimate concerns raised by the Society, St. Michael's Abbey, Saundra Jacobs, the U.S. Fish & Wildlife Service, and various other interested parties regarding, *inter alia*, the adequacy of the DSEIR's analysis of the geotechnical issues which exist on the Property, the Project's impacts on the Property's biological resources, and many of the other concerns regarding DSEIR 566 which are identified herein.

156. Moreover, Respondents have also refused to respond to the requests of the Society, St. Michael's Abbey, Saundra Jacobs, and other interested parties that Respondents recirculate DSEIR 566 after including the Grading Plans, Grading Plan Review and other important documents in the DSEIR.

* * *

157. As a result of Respondents' failure to comply with the requirements of CEQA and the CEQA Guidelines in approving and undertaking the actions alleged hereinabove, the Society is entitled to a peremptory writ of mandate which, *inter alia*:

(a) Directs Respondents to vacate and set aside the actions which they took on December 3, 1997, and February 24, 1998, in purporting to certify FSEIR 566; and

(b) Directs Defendants to suspend any and all Project activities which are based upon or are undertaken pursuant to the purported certification of FSEIR 566, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to whether to

certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

158. In addition, the Society is entitled to a stay pursuant to Code of Civil Procedure section 1094.5(g), or, alternatively, ancillary injunctive relief, prohibiting and enjoining Respondents and Real Parties from taking any actions in reliance upon, or pursuant to, Respondent's purported approval and certification of FSEIR 566.

FOURTH CAUSE OF ACTION

(Against All Defendants For A Writ of Mandate And Injunctive Relief Based On Violations Of CEQA And The Guidelines In Adopting Findings)

159. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and paragraphs 82 through 85, inclusive, paragraph 90, and paragraphs 93 through 156, inclusive, as set forth above.

160. To the extent that the Board's purported action on February 24, 1998, resulted in any determination upholding or adopting the findings (collectively, the "Findings") made by the Planning Commission in certifying FSEIR 566, which the Society expressly denies, the Society seeks a preemptory writ of mandate, pursuant to Code of Civil Procedures section 1094.5, directing Respondents to vacate and set aside, *inter alia*, the unlawful actions which they have taken or may hereafter take in (a) purportedly making the Findings, or (b) authorizing any other actions in reliance on, or pursuant to, such Findings.

161. Before an EIR is certified and a project is approved, CEQA section 21081 and CEQA Guidelines section 15091 require a public agency to make certain findings regarding each environmental impact associated with the project, and CEQA section 21081.5 and CEQA Guidelines section 15091(b) require that all such findings must be based upon substantial evidence in the record. Respondents failed to proceed in the manner required by law and abused their discretion by failing to make proper findings and by failing to support the findings that were made with substantial evidence in the record.

162. Specifically, CEQA and the Guidelines required Respondents, *inter alia*, to make one of two findings for each significant environmental impact identified in FSEIR 566

and to provide an explanation of the rationale for each finding they made. The two possible findings which Respondents could have made for each significant impact were that (a) the mitigation measures or project alternatives identified in the FSEIR would reduce the impact to a level of insignificance, or (b) the impact is unavoidable because one or more specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives which are identified in the FSEIR as relating to the impact in question. CEQA and the Guidelines required Respondents to make this later finding for each mitigation measure and project alternative that was identified by the FSEIR, but was not adopted by Respondents.

163. FSEIR 566 and each of the findings which Respondents made are based upon a fundamentally incorrect premise which renders Respondents' findings *per se* inadequate: i.e., that the Tract Map afforded Real Parties vested rights to develop the Project, such that Respondents were supposedly precluded from considering any mitigation measures or project alternatives which would cause the Project to deviate from the Tract Map. By arbitrarily limiting the wide array of mitigation measures and project alternatives that were available to reduce the impacts associated with the Project, Respondents necessarily adopted findings which were legally inadequate because they were based on a false premise regarding the vesting status of the Tract Map.

164. For example, paragraph 2.1 of the Findings expressly acknowledges that the Project, involving the construction of 705 units of manufactured housing, is incompatible with the adjacent wilderness regional park, St. Michael's Abbey, and the Society's Monastery. Nevertheless, the Findings state that this land use incompatibility is "unavoidable" because of "the recorded nature of the tract map."

165. In addition, the Findings are inadequate because they are conclusory, general, and not supported by substantial evidence in the record. For example, the Findings consider Alternative 3 to the Project as one which achieves all of the project objectives, yet rejects the alternative solely because the applicant for the Grading Permit had actually determined it to be economically infeasible. Respondents failed to cite to even one fact in support of this finding.

166. As a result of Respondents' failure to adopt adequate findings supported by substantial evidence as alleged hereinabove, the Society is entitled to a peremptory writ of mandate which, *inter alia*:

(a) Directs Respondents to vacate and set aside the actions which they took on December 3, 1997, and February 24, 1998, in purportedly making and adopting the Findings; and

(b) Directs Defendants to suspend any and all Project activities which are based upon or are undertaken pursuant to the purported adoption of the Findings, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to whether to certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

167. In addition, the Society is entitled to a stay pursuant to Code of Civil Procedure section 1094.5(g), or, alternatively, ancillary injunctive relief, prohibiting and enjoining Respondents and Real Parties from taking any actions in reliance upon, or pursuant to, Respondent's purported making and adoption of the Findings.

FIFTH CAUSE OF ACTION

(Against All Defendants For A Writ of Mandate And Injunctive Relief Based On Violations Of CEQA And The Guidelines In Adopting A Statement Of Overriding Considerations)

168. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and paragraphs 82 through 85, inclusive, paragraph 90, paragraphs 93 through 156, inclusive, and paragraphs 161 through 165, inclusive, as set forth above.

169. To the extent that the Board's purported action on February 24, 1998, resulted in any determination upholding the Planning Commission's adoption of a statement of overriding considerations (hereinafter referred to as the "Overriding Considerations"), which the Society expressly denies, the Society seeks a preemptory writ of mandate, pursuant to

Code of Civil Procedures section 1094.5, directing Respondents to vacate and set aside, *inter alia*, the unlawful actions which they have taken or may hereafter take in (a) purportedly adopting the Overriding Considerations, or (b) authorizing any other actions in reliance on, or pursuant to, such Overriding Considerations.

170. Section 15093 of the CEQA Guidelines provides that the body determining whether to approve the project which is the subject of CEQA review must balance the benefits of the proposed project against its unavoidable environmental risks. If the decision-making body determines that the benefits of a proposed project outweigh the unavoidable adverse environmental effects, the body approving the project must state in writing the specific reasons to support its approval of the project based on the final EIR and/or other information in the record. Such writing, called a statement of overriding considerations, is to be included in the record of the project approval.

171. Respondents failed to proceed in the manner required by law and abused their discretion by adopting the Overriding Considerations--justifying their decision to approve the "project"--without (a) placing project approval on any agenda, (b) considering whether to approve the Project, or (c) voting on project approval or denial. Accordingly, the adoption of the Overriding Considerations was meaningless and remains a nullity.

172. Respondents also failed to proceed in the manner required by law by including, as an overriding consideration the erroneous assumption that the Tract Map had acquired a "vesting status" which supposedly prevented the Planning Commission or the Board from exercising their statutory authority vested in them under the Specific Plan and under sections 15002(h) and 15141 of the CEQA Guidelines to change or modify the Project in order to mitigate the environmental impacts thereof. Specifically, paragraph 5.2.6 of the Overriding Considerations erroneously states that the Tract Map has a "vesting" status which "limits the ability of the applicant/lead agency to deviate from the physical design characteristics of the project to mitigate identified unavoidable adverse effects."

173. Moreover, the Overriding Considerations are inadequate under CEQA and the CEQA Guidelines because there is insufficient evidence in the record to establish that the

considerations upon which Respondents are relying do, in fact, override the numerous significant impacts of the Project. The principal Overriding Considerations which Respondents adopted were that (1) two-thirds of the 705 housing units to be constructed on the Property are to be sold as affordable housing units, and (2) the Project will stabilize existing unstable geotechnical conditions on the Property.

174. However, FSEIR 566 fails to contain any analysis or information that demonstrates that these overriding considerations will actually occur when the Project is completed. FSEIR 566 contains neither a financial analysis that demonstrates that two-thirds of the 705 housing units can be sold as affordable housing units without the developer losing money, nor does FSEIR 566 contain sufficient information to evaluate whether the proposed remedial grading will, in fact, stabilize the unstable geotechnical conditions which exist on the Property.

175. In light of the information that is available, it appears Respondents have made an unwarranted leap of faith because the achievement of these two overriding considerations is highly unlikely given the scope and severity of the geotechnical conditions which exist on the Property and the exorbitantly high costs of grading the Property due to those conditions.

176. As a result of the actions of Respondents in adopting the Overriding Considerations alleged above, the Society is entitled to a peremptory writ of mandate which, *inter alia*:

(a) Directs Respondents to vacate and set aside the actions which they took on December 3, 1997, and February 24, 1998, purportedly adopting the Overriding Considerations; and

(b) Directs Defendants to suspend any and all Project activities which are based upon or are undertaken pursuant to the purported adoption of the Overriding Considerations, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to

whether to certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

177. In addition, the Society is entitled to a stay pursuant to Code of Civil Procedure section 1094.5(g), or, alternatively, ancillary injunctive relief prohibiting and enjoining Respondents and Real Parties from taking any actions in reliance upon, or pursuant to, Respondent's Statement of Overriding Concerns.

SIXTH CAUSE OF ACTION

(Against All Defendants For Declaratory Relief Re Lack Of Grounds For Continuing To Exempt Property From The Specific Plan)

178. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and paragraphs 82 through 85, inclusive, paragraph 90, paragraphs 93 through 156, inclusive, paragraphs 161 through 165, inclusive, and paragraphs 170 through 175, inclusive, as set forth above.

179. An actual controversy has arisen and now exists between the Society and the Defendants regarding whether any legal basis exists for continuing to exempt the Property from the regulations and guidelines of the Specific Plan in that the Society contends, and the Defendants deny, *inter alia*, that:

(a) In adopting the Specific Plan, the Board expressly found that the Tract Map and the 1984 Zoning Ordinance were not consistent with the goals and objectives of the Specific Plan;

(b) The Board nonetheless exempted the Property from the regulations and guidelines of the Specific Plan, as long as the Property was developed in strict accordance with the Tract Map, because the Board believed that it could not take any action that would affect the value of the Property due to the fact that the then-current owner of the Property was in bankruptcy and a bankruptcy stay was in effect at the time the Board adopted the Specific Plan; and

(c) The grounds which supported the exemption when the Specific Plan was adopted in 1991 no longer exist because Real Parties, who are the current owners of the Property, are not in bankruptcy and there is no bankruptcy stay which prevents Respondents from changing the zoning and other land use regulations which currently apply to the Property.

180. In light of the circumstances alleged hereinabove, a judicial declaration is necessary and appropriate to resolve the above controversies between and among the Society and the Defendants, and to allow Respondents to pursue the land use goals and objectives of the Specific Plan. Respondents are no longer subject to any bankruptcy stay relating to the Property and thus are free to require the Specific Plan to be amended to impose its regulations and guidelines on any future development at the Property, prior to or in conjunction with the review and certification of any environmental documentation for the Grading Application.

WHEREFORE, the Society prays for relief and judgment as follows:

ON THE FIRST CAUSE OF ACTION

1. For declaratory and injunctive relief as prayed for hereinabove;

ON THE SECOND CAUSE OF ACTION

2. For declaratory relief as prayed for hereinabove;

ON THE THIRD CAUSE OF ACTION

3. For a peremptory writ of mandate pursuant to Code of Civil Procedure section 1094.5 as requested hereinabove, and for a stay, or, alternatively, ancillary injunctive relief, as prayed for hereinabove;

ON THE FOURTH CAUSE OF ACTION

4. For a peremptory writ of mandate pursuant to Code of Civil Procedure section 1094.5 as requested hereinabove, and for a stay, or, alternatively, ancillary injunctive relief, as prayed for hereinabove;

ON THE FIFTH CAUSE OF ACTION

5. For a peremptory writ of mandate pursuant to Code of Civil Procedure section 1094.5 as requested hereinabove, and for a stay, or, alternatively, ancillary injunctive relief, as prayed for hereinabove;

ON THE SIXTH CAUSE OF ACTION

6. For declaratory relief as prayed for hereinabove;

ON ALL CAUSES OF ACTION

7. For the Society's attorneys' fees pursuant to, *inter alia*, Code of Civil Procedure section 1021.5;

8. For the Society's cost of suit; and

9. For such other and further relief as the Court may deem just and proper.

DATED: March 5, 1998

EDMOND M. CONNOR
CRAIG L. GRIFFIN
DAVID J. HESSELTINE
CONNOR, CULVER, BLAKE & GRIFFIN LLP

By: _____
Edmond M. Connor
Attorneys for Petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA

VERIFICATION

I, William J. Fray, declare and say:

1. I am the President of the Board of Trustees of plaintiff and petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA, and I am authorized to make this verification on its behalf.

2. I have read the foregoing "**Complaint For Declaratory Relief and Petition For Writ Of Mandate**" and I hereby verify that the facts alleged therein are true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 5th day of March, 1998, at Irvine, California.

William J. Fray

INDEX OF ADMINISTRATIVE RECORD IN SUPPORT OF PETITIONERS' MOTIONS FOR SUMMARY ADJUDICATION OF ISSUES

Vedanta Society of Southern California v. County of Orange, et al.

(Consolidated Case No. 791309)

VOLUME 4 OF 5

(Tab Nos. 15 - 21; Pages 2286 - 2831)

15. October 7, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Orange County Planning Commission (and the exhibits thereto);

16. October 13, 1998 Agenda Item Transmittal from Thomas B. Mathews, Director, Planning and Development Services Department, to Board of Supervisors re Zone Change 98-3 and Area Plan 98-2;

Attachment A: Appeal letter, dated October 8, 1998, from H. Mike McKnight, TPG Management, Inc., to Thomas B. Mathews, Director, County of Orange Planning and Development Services Department;

Attachment B: Regional Map;

Attachment C: Chronology of Events;

Attachment D: Zone Change 98-3 (Draft Ordinance);

Attachment E: Saddleback Meadows Contingency Plan – 299 lots – Area Plan 98-2;

Attachment F: Analysis of Planning Issues;

Attachment G: Existing Bridlewood Residential District Regulations;

Attachment H: Manufactured Slopes Exhibit (omitted by County);

Attachment I: Planning Commission Minutes, Resolutions, Staff Reports, and Correspondence:

1. Planning Commission Minutes from October 7, 1998;

2. Planning Commission Minutes from September 22, 1998;

3. Planning Commission Minutes from August 25, 1998;

4. Resolution No. 98-14, Resolution of the Planning Commission of Orange County, California re Zone Change 98-3 and Area Plan 98-2;

5. October 7, 1998 P&DS/Current Planning Services Division Report to Orange County Planning Commission re Zone Change 98-3/Area Plan 98-2 (aka Contingency Plan) [attachments omitted by County but found elsewhere under this tab];

6. October 7, 1998 P&DS/Environmental & Project Planning Services Division Report to Orange County Planning Commission re Addendum PA980103 to Final EIR 566 Prepared for the Saddleback Meadows Contingency Plan;

Attachment: "Saddleback Meadows Response to Comments Addendum PA980103 Certified Final Subsequent EIR 566" (all other attachments omitted by County but found elsewhere under this tab);

7. August 25, 1998 P&DS/Environmental & Project Planning Services Division Report to the Orange County Planning Commission re Addendum PA980103 to Final EIR 566 Prepared for the Saddleback Meadows Contingency Plan (attachments omitted by County but found elsewhere under this tab);

8. August 25, 1998 P&DS/Current Planning Services Division Report to the Orange County Planning Commission re Zone Change 98-3/Area Plan 98-2 (aka Contingency Plan) [attachments omitted by County but found elsewhere under this tab];

9. October 7, 1998 memorandum from Ray Chandos, Secretary/Treasurer, Rural Canyons Conservation Fund, to Orange County Planning Commission;

10. October 7, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Orange County Planning Commission (exhibits omitted by County but found in this Limited Administrative Record at tab #15);

11. September 30, 1998 letter from William D. Ross, Esq., Law Offices of William D. Ross, to The Honorable Chuck McBurney, Chairman, and Members of the Orange County Planning Commission;

12. September 24, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to William D. Ross, Esq., Law Offices of William D. Ross (exhibits omitted by County);

13. September 23, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department (exhibits omitted by County);

14. September 2, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, Environmental & Project Planning Services Division, County of Orange Planning & Development Services Department (certain exhibits omitted by County);

Attachment J: October 7, 1998 memorandum from Planning Commissioner Tom Moody to Orange County Planning Commission;

Attachment K: Draft Board of Supervisors Resolution re Area Plan 98-2;

Attachment L: Analysis of Environmental/CEQA Issues;

Attachment M: Draft Board of Supervisors Resolution re Addendum PA980103;

Attachment N: Addendum PA980103 to Certified Final Subsequent EIR 566 (omitted by County but found in this Limited Administrative Record at tab #10);

17. October 21, 1998 Preliminary Tentative Tract Map Report re Tentative Tract Map No. 15230 (and attachments thereto);

18. October 21, 1998 Preliminary Tentative Tract Map Report re Tentative Tract Map No. 15784; (and attachments thereto);

19. Notice of public meeting to be held by the Orange County Subdivision Committee on October 21, 1998 re Tentative Tract Map No. 15230;

20. Notice of public meeting to be held by the Orange County Subdivision Committee on October 21, 1998 re Tentative Tract Map No. 15784;

21. October 21, 1998 letter from Edmond M. Connor, Esq. Connor, Culver, Blake & Griffin LLP, to Pat Stanton, Chair, Subdivision Committee, County of Orange (and exhibits thereto);

CONNOR, CULVER, BLAKE & GRIFFIN LLP
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October 7, 1998

Orange County Planning Commission
300 North Flower Street
Santa Ana, CA 92702-4048

Re: *Proposed Zone Change 98-3 and Area Plan 98-2/EIR*
Saddleback Meadows: 299-Unit Project

Dear Members of the Planning Commission:

As a supplement to my letters of August 25, September 2, and September 23, 1998, and without waiving any objections which have been stated to date on behalf of my clients, the Norbertine Fathers of Orange, the Saddleback Meadows Land Conservancy LLC, and the Vedanta Society of Southern California, I submit the following additional arguments in opposition to California Quartet's application for approval of Zone Change 98-3 ("ZC 98-3") and Area Plan 98-2 ("AP 98-2") for the development of a 299-unit, single-family detached residential housing project (the "299-Unit Project" or the "Project") at the Saddleback Meadows property (the "Property"):

A. Coastal California Gnatcatchers Have Recently Been Found on a Portion of The Property, Thereby Rendering the Developer's Prior Gnatcatcher Surveys Outdated and Invalid. A Formal Protocol Survey of the Entire Property Should Now Be Conducted as Part of a New or Subsequent EIR to Properly Assess the Impact of the Project on This Endangered Species.

The CEQA documentation relating to the presence of coastal California gnatcatchers on the Property is fatally flawed and must be corrected and recirculated for public review and comment -- particularly comments from the California Department of Fish & Game and the U.S. Fish & Wildlife Service.

determined that on-site coastal sage scrub habitat is *not* occupied by coastal California gnatcatchers . . . ." (Emphasis Added.) Likewise, on pages 4-130 and 4-139 of FSEIR 566, similar statements are made to the effect that no coastal California gnatcatchers were observed in connection with the surveys which California Quartet's consultants conducted four and five years ago in 1993 and 1994. However, a brief informal survey of but a small portion of the Property by my firm's consultant, Royce B. Riggan, has demonstrated that the prior gnatcatcher surveys are clearly outdated and incorrect because coastal California gnatcatchers *do* presently occupy the coastal sage scrub habitat at the Property.

At the August 25 session of the Planning Commission's hearing on ZC 98-3 and AP 98-2, my firm's consultant, Warren Singleton, pointed out that, in the southeast corner of the Property, the proposed rough grading operations for the 299-Unit Project would decimate a great many more acres of coastal sage scrub habitat than would otherwise be destroyed as part of the rough grading for the 705-unit manufactured housing/mobile home project (the "705-Unit Project") which was the subject of FSEIR 566. Mr. Singleton graphically demonstrated to the Planning Commission that, instead of reducing adverse environmental effects as claimed in the Addendum, the 299-Unit Project would actually have far worse impacts on (1) the biologically sensitive habitats and species found in the lush canyons located in the southeast corner of the Property because rough grading operations would be far more extensive at that location than under the 705-Unit Project; and (2) the Ramakrishna Monastery because a great many more residential units would be built much closer to the Monastery than would have occurred under the 705-Unit Project.

Following the August 25 Planning Commission hearing, I dispatched Royce Riggan -- who holds Federal Permit PRT-780195 and thus is officially licensed to conduct gnatcatcher surveys -- to visit the Property and determine whether the new areas to be impacted by the 299-Unit Project in the southeastern corner of the Property were occupied by coastal California gnatcatchers. While on a tour of that portion of the Property which was conducted by California Quartet's consultants in July 1998, I had noted how extensive the coastal sage scrub habitat was and how verdant and secluded the adjacent canyons were, and I could not believe that FSEIR 566 and the Addendum were correct in stating that *no* coastal California gnatcatchers were to be found in those locations.

I was not surprised, therefore, when, on September 23, 1998, after only two and a half hours at the site, Mr. Riggan, and his associate, Lisa Seneca observed two coastal California gnatcatchers: a juvenile of the year and an adult male. A copy of the California Native Species Field Survey Form confirming the two gnatcatcher sightings, which Mr. Riggan dutifully submitted to the Natural Diversity Database maintained by the California Department of Fish & Game, is attached as Exhibit "A" hereto. Based on the two sightings documented by Mr. Riggan and his associate, there is no longer any justification for the County's highly questionable actions

in allowing California Quartet to delay completing the May 1997 gnatcatcher survey of the Property in accordance with the USFWS presence/absence protocol. Both FSEIR 566 and the Addendum *concede* that a formal protocol gnatcatcher survey of the Project has not been conducted in recent years, and this is nothing short of unconscionable since the County is now considering whether to allow California Quartet to *decimate* virtually *all* of the coastal sage scrub habitat on the Property without even knowing the number of endangered birds that might be affected.

In addition to a formal protocol survey being undertaken, a new or subsequent EIR must now be prepared to fully and properly assess the impacts on this federally-listed endangered species, the coastal California gnatcatcher. Indeed, as underscored in the case cited in the letter to the Planning Commission from California Quartet's attorney, dated September 30, 1998, *Fund for Environmental Defense v. County of Orange* (1998) 204 Cal.App.3d 1538, 1550, CEQA section 21166 requires the preparation of a subsequent EIR when a "new protected or rare habitat or species of flora or fauna" is discovered after an EIR has been prepared. As explained in the *Fund for Environmental Defense* case, such a discovery constitutes a type of "change in circumstances" and "new information" under section 21166 which mandates the preparation of a subsequent EIR.

Of course, my clients continue to maintain that ZC 98-3 and AP 98-2 constitute a *new* project which is not the *same* as the 705-Unit Project manufactured housing/mobile home project authorized under Tract Map 10692. Although County staff now maintains that the 299-Unit Project and the 207-Unit Project are actually the *same* project for purposes of CEQA compliance, the County took an entirely different position two years ago when it stated on page 3-1 of Draft EIR No. 561 that "the proposed project [i.e., the 318-unit project] represents the *complete revision and redesign* of previously approved and recorded Tract Map 10692." (Emphasis added.) If, as my clients contend, the 299-Unit Project is *not* the same as the 705-Unit Project, then a new EIR must be prepared, particularly in light of the mandatory finding of significance which must now be made under CEQA Guidelines section 15065(a) because of the potential impact which the 299-Unit Project will have on "an endangered, rare, or threatened species."

B. <u>The Drainage and Grading Impacts Associated With the 299-Unit Project Should Be Addressed in a New or Subsequent EIR.</u>

As explained in great detail in the letter prepared by our firm's consultant, Warren Singleton, dated October 7, 1998, a copy of which is attached as Exhibit "B" hereto, the critically important drainage impacts of the 299-Unit Project have essentially been ignored in the CEQA documentation prepared by the County for ZC 98-3 and AP 98-2. Nowhere in FSEIR 566 or in the Addendum is a concept drainage plan for the 299-Unit Project to be found. Incredibly,

County staff is asking the Planning Commission to approve the development of 299 homes without any information being provided to the Commission or to the public as to exactly *where* storm, irrigation, and urban runoff from these hundreds of homes will be discharged on the Property.

The Addendum admits that such runoff will be dumped into natural drainage courses on the site which is a *radical* change from the stormdrain system proposed for the 705-Unit Project. However, although this major project change will be allowed to occur and huge volumes of water will be dumped on site, no document has been provided or referenced in the Addendum which would indicate the locations of the respective storm drain outlets to be constructed on the Property.

One can only *speculate*, based on the concept drainage plan for the 318-Unit Project described in Draft EIR 561 that, on a *daily* basis, a huge increase in runoff will be discharged into the geologically-unstable canyon areas adjacent to St. Michael's Abbey and the Ramakrishna Monastery. This is a frightening prospect because no analysis has been undertaken as to whether the introduction of the steady flow of water in these unstable canyon areas will create new geotechnical hazards by activating the landslide conditions which are clearly known to exist in the very locations where the water will be discharged.

Obviously, the major change in the stormdrain system for the 299-Unit Project necessitates the preparation of a new or subsequent EIR to address what has always been one of the most important concerns on the part of the Abbey and the Monastery, i.e., the potential geotechnical hazards created by the 299-Unit Project which could seriously undermine the stability of their respective facilities -- which are already suffering the effects of soils movement. To date, the CEQA documentation which has been prepared for the 299-Unit Project has simply ignored the very serious impacts which will be caused when a constant flow of water is added to areas on the Property which are known to be seriously unstable and prone to landsliding. This deficiency should be corrected and a new document should be circulated for public review and comment.

C. <u>The "44-178 Alternative" Should Be Analyzed in A New Or Subsequent EIR.</u>

In my September 2 letter to the County, I submitted plans relating to three different project alternatives, the 65-Unit Alternative, the 120-Unit Alternative, and the 127-Unit Alternative. Strangely, in what can only be described in a *Twilight Zone* statement, County staff has taken the position that the three alternatives have *not* been "submitted" for their review and thus they are free to overlook them for purposes of CEQA compliance. This appears to be a

rather convenient way for County staff to avoid *ever* having to address any reasonable project alternatives proposed by members of the public.

Undaunted by the strange tactics being employed by County staff, I will venture to suggest another project alternative that should be analyzed in a new or subsequent EIR *before* the Planning Commission takes any further action on ZC 98-3 and AP 98-2. Attached as Exhibit "C" hereto is an 11x17" plan showing the 44-acre portion of the Property which has been outlined in orange. This plan represents what I will refer to as the "44/178 Alternative," and it represents a project alternative which would allow a 44-acre parcel of the Property to be developed with residential uses, with the balance of the Property, i.e., 178 acres, being dedicated by the developer free of charge to the County to be preserved as permanent, undisturbed, undeveloped, natural open space. The number of units to be developed within the 44-acre parcel could vary depending on the desire of the developer and could include a mix of condominium units, assisted living facilities, single-family detached homes, etc.

The reason that it is so important to analyze the 44/178 Alternative is because the 44-acre development parcel would be situated on what is perceived to be the most "stable" soil at the Property, relatively speaking, and, if development were confined within that 44-acre parcel, very few sensitive habitats or species on the Property would be adversely impacted. In addition, such an Alternative would facilitate approval of the Southern Subregion NCCP because it would provide the wildlife corridor contemplated by the NCCP. As stated in the August 11 letter which was sent to the Board of Supervisors by the California Department of Fish & Game and the U.S. Fish & Wildlife Service, the wildlife agencies are interested in analyzing the 44/178 Alternative because of the many environmental benefits it affords. Accordingly, this Alternative should be studied in detail in a new or subsequent EIR before ZC 98-3 and AP 98-2 are approved by the Planning Commission.

D. <u>The Planning Commission Is Unlawfully Proceeding to Take Final Action on AP 98-2 Without Affording the Foothill/Trabuco Specific Plan Review Board an Opportunity to Make Its Recommendations on the Project</u>.

As I stated in my September 23 letter to Tom Mathews, the Planning Commission will violate both the Foothill/Trabuco Specific Plan and the Orange County Zoning Code if it proceeds to take any further action on the discretionary permit application relating to AP 98-2 *before* the Foothill/Trabuco Specific Plan Review Board (the "Review Board") has been afforded at least twenty-one (21) days within which to consider the merits of AP 98-2 and to report its recommendations thereon to the Planning Commission. Clearly, the Planning Commission is the "approving authority" with respect to *all* applications for Area Plans submitted to the County. Indeed, if no appeal is taken from the Planning Commission's approval of any given Area Plan, that approval becomes *final*.

Moreover, the Review Board is supposed to make its recommendations to the Planning Commission, *not* to the Board of Supervisors. As the County noted at page 4-11 of Draft EIR 561, "[d]iscretionary actions within the Specific Plan area are reviewed by the Foothill-Trabuco Specific Plan Review Board, who function as an advisory body to the *County Planning Commission*." (Emphasis added.) Aside from common courtesy, the Planning Commission is required by law to refrain from even *considering* California Quartet's application for approval of AP 98-2 until after the Review Board has been given at least 21 days to forward its recommendations on whether that Area Plan should be approved or denied.

Since the Review Board is charged with implementing the Foothill/Trabuco Specific Plan, it would seem only logical, not to mention lawful, to allow the Review Board adequate time within which to consider the impacts that will flow from *exempting* the 299-Unit Project from complying with the provisions of the Specific Plan. The CEQA documentation relating to ZC 98-3 and AP 98-2 is obviously deficient in that it does not address these impacts.

However, since it appears inevitable that the Planning Commission will refuse to honor the request of the Review Board for at least a two-week continuance of the Planning Commission's October 7 hearing, my clients must now face the sad fact that this matter appears headed for litigation. Accordingly, please be advised that, in addition to the objections raised in letters previously submitted by my firm and its consultants, my clients hereby incorporate and restate in opposition to ZC 98-3 and AP 98-2 each and every procedural and substantive contention, objection, comment, or argument raised in the letters which are listed in Exhibit "D" attached hereto. In addition, my clients also incorporate and restate each of the objections raised, or comments or arguments made, by any of their respective attorneys, representatives, or consultants at the public hearings or meetings held by the Planning Commission or the Board of Supervisors in connection with the review of FSEIR 566, including, but not limited to, hearings and meetings held on October 22, November 25, and December 3, 1997, and on February 24, 1998.

Very truly yours,

Edmond M. Connor

cc John Buzas
Frank McGill
Ray Brantley

EXHIBIT A

2292

California Native Species Field Survey Form

Mail To:
Natural Diversity Data Base
California Dept. of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ # _____
Copy To _____ Map Index # _____

Date of field work: Sept (mo.) 23 (day) 1998 (year)

Scientific name: *Polioptila californica californica*

Species Found? [✓] yes [ ] no _____ If not, why?
Total # Individuals: Two Subsequent visit: [ ]yes [ ]no
Compared to your last visit: [ ]more [ ]same [ ]fewer
Is this an existing NDDB occurrence? [ ] Yes, Occ.# [ ] no [ ] unk
Collection? If yes: _____ number _____ Museum/Herbarium

Reporter: Royce B. Riggan, Jr.
Lisa A. Seneca
Address: RBRiggan and Associates
11228 Zapata Avenue
San Diego CA 92126
Phone: (619) 233-5454
Other knowledgeable individuals (name/address/phone):
N/A

Plant Information

Phenology: _____ % vegetative _____ %flowering _____ %fruiting

Animal Information

Age structure: One #adults One #juveniles _____ #unknown
Site Function [✓] breeding [✓] foraging [✓] wintering [✓] roosting [ ] burrow site [ ] other

Location (Please also attach or draw map on back)

Found on a portion of the Saddleback Meadows property, see attached map [note: the entire property was NOT surveyed].

County: Orange County
Landowner/Manager: California Quartet, Ltd.
c/o TPG Management, Inc.
44 Montgomery Street, Suite 1300
San Francisco CA 94194
Quad Name: Santiago Peak Quadrangle
Elevation: ±1,250 ft UTM _____
T 6 S. R 7 W. NE ¼ of SE ¼ Sec 4 T _____ R _____ _____ ¼ of _____ ¼ Sec _____

Habitat Description: (Plant communities, dominants, associates, substrate/soils, aspect/slope)

The southeastern corner of the Saddleback Meadows property is a well developed Venturan Sage Scrub with high shrub species diversity. Elements of a mixed chaparral are found on steeper north facing slopes. The property is a critical wildlife corridor between the south Orange NCCP area and the existing NCCP preserves to the west and northwest. Other areas of Coastal Sage Scrub occur on adjacent public lands to the south.

Other rare spp? Federally listed species of Anostraca are known to occur in natural and artificial ponds found on the property. Coastal Cactus Wrens are resident at several points within the property.

Site Information: Current/surrounding land use: The property is currently used for extensive cattle grazing. Properties to the north are generally vacant, properties to the south are sparsely developed as are properties to the east.

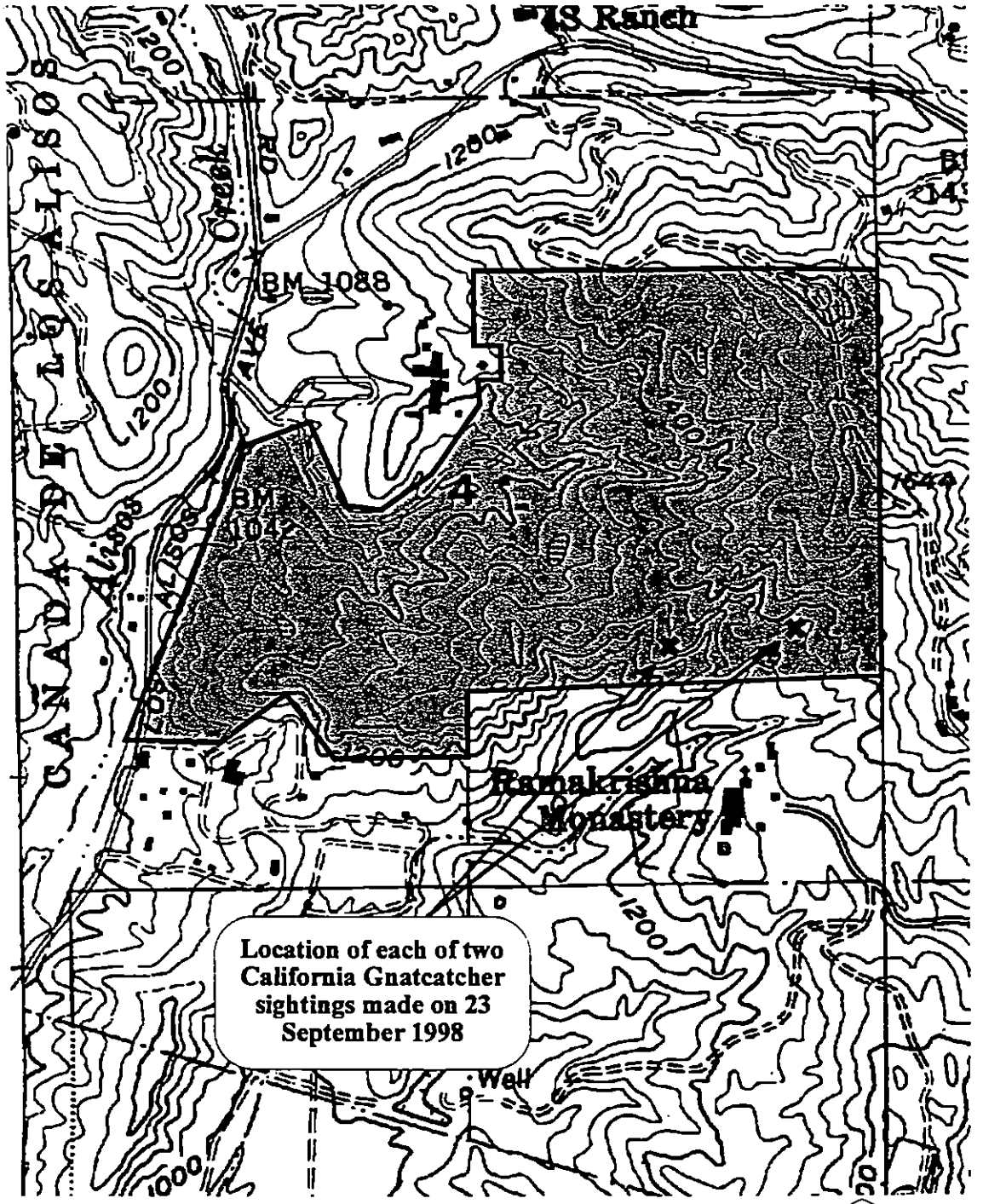
Visible disturbances, possible threats: The site is threatened by the current cattle grazing activity and by a pending land development plan. The latter would convert the site to urban level residential.

Overall site quality: [✓]Excellent [ ] Good [ ] Fair [ ] Poor Comments: 2293
The habitats in the southeastern corner of the site are (despite cattle grazing) in excellent condition.

Determination: (Check one or more, fill in blanks)
_____ Keyed in a site reference: _____
_____ Compared with specimen housed at: _____
_____ Compared with photo/drawing in: _____
_____ By another person (name): _____
✓ Other: Riggan (and Seneca) hold Federal Permit PRT-780195.

Photographs: (check one or more)	Slide	Print
Plant/animal	____	____
Habitat	____	____
Diagnostic Feature	____	____
Other	____	____

May we obtain duplicates at our expense? [ ]yes [ ]no



RBRiggan and Associates Job Number 1683.70A 20 June 1998

RBRiggan and Associates	Location of the Saddleback Meadows Property on a Scanned Portion of the U.S.G.S. 7½-minute Santiago Peak Quadrangle Map	Figure 1

2294

EXHIBIT B

2295

WARREN W. SINGLETON, P.E.

CONSULTANT

32442 SPYGLASS COURT
SAN JUAN CAPISTRANO
CALIFORNIA 92675
TEL/FAX (714) 240-5808

October 6,1998

Edmond M. Connor, Esq.
CONNOR, CULVER, BLAKE & GRIFFIN LLP
Attorneys At Law
2600 Michelson Drive
Suite 1450
Irvine, CA 92612

Re: Saddleback Meadows Property: Drainage and Grading Impacts of Proposed 299-Unit Project; Zone Change 98-3 and Area Plan 98-2

Dear Mr. Connor:

A. Drainage Impacts Have Not Been Adequately Addressed.

At your request, I have reviewed the "Water/Hydrology" section of Addendum PA980103 (pp. 32-37) for the proposed 299-unit project to be undertaken by California Quartet pursuant to Zone Change 98-3 and Area Plan 98-2, and I have determined that the analysis set forth in that section is woefully inadequate to describe the drainage impacts of the 299-unit project.

The Addendum does not provide a concept drainage plan for the 299-unit project. Instead, it merely refers the reader to Exhibit 22 at page 4-40 of FSEIR 566 to review the "master drainage concept" for the 705-unit manufactured housing/mobilehome project. However, that drainage plain is radically different from the storm drain system that would have to be used for the 299-unit project because, under the latter project, storm, irrigation, and urban runoff would be discharged directly into natural drainage courses on the property instead of being confined in drainage pipes running to El Toro Road.

The impact of storm and nuisance water runoff from the houses and streets to be built in the hillside areas of the Saddleback Meadows property is an issue which is not adequately addressed in the Addendum. The collection of runoff from developed areas which subsequently outlets to a local non-regional natural drainage course is the concern.

Southern California is generally a dry semi-arid region with annual rainfall in the range of 15 to 20 inches per year. The small natural local drainage courses, drainage areas up to several hundred acres, do not experience daily flows and are generally dry the majority of the year. Development creates streets and houses with impervious surfaces, therefore generally increasing the runoff. Landscaped and irrigated slopes and lots will receive 35 to 50 inches per year or more in irrigation, far more than the natural condition.

Irrigation runoff creates two concerns. First, water contaminated with pesticides, fertilizers and other man-made chemicals will be introduced to these natural, sensitive habitat areas on a daily basis. Secondly, over an extended period of time, 5, 10, or 20 years, underground migration of a portion of this excess water will affect the ground water condition. The increase in ground water should be studied and mitigation methods installed to protect the proposed development and surrounding properties from geologic instabilities. The Abbey to the northwest and the Monastery to the south have recently experienced ground movement.

Storm runoff from development areas creates several problems. The character of the runoff is changed from the natural condition of carrying soil and debris and concentrating flow over longer time span to one of a clean flow carrying little soil and debris over a considerably shorter time. The outlet of this concentrated clean flow into the steep, natural canyon areas will cause severe erosion and geologic failures. The existing average grade in these natural drainage courses range from 3% to 35%. Grades in man-made channels are limited to 3% or less to minimize erosion.

What is most troubling about this matter is the drainage facility information in the Addendum is not consistent with either Exhibit 22 in FSEIR 566 or Exhibit 25 from the previously disapproved Draft EIR 561 for the 318-unit project. For example, Exhibit 25 from Draft EIR 561 indicates that the 318-unit project was slated for eight storm drain facilities A through H, but the Addendum states that the 299-unit project will only access storm drains A, B, E, and H, without any explanation as to what happened to drain lines C, D, F, and G. The reader is simply left to guess about what the storm drain system will look like and where water will be discharged on the property. Clearly, further CEQA documentation is required.

In addition to providing an adequate discussion of drainage impacts, new CEQA documentation should address the following mitigation measures to avoid the disastrous consequences of dumping substantially increased volumes of runoff into geologically unstable areas of the property:

1) All runoff from developed lots and streets is to be confined to a storm drain collection system within the development. No concentrated flows from the developed area will outlet to natural drainage courses except at the regional facilities at El Toro Road.

2) Require a study of the long term effects of irrigation infiltration on the geologic structures and methods to minimize its impact.

B. Grading Impacts Have Not Been Adequately Addressed.

I have reviewed the "Soils and Geology" section of Addendum PA980103 (pp. 20-32) and I have determined that the analysis set forth in that section is grossly deficient with respect to analyzing the grading impacts of the 299-unit project.

The addendum does not discuss the permanent impacts which the grading will have on the land to be used for the purported "wildlife corridor", nor does it discuss the impacts on the sensitive biological resources in the southeastern canyon areas which will be necessitated by the incredibly long equipment ramps which have to constructed to make the 100 to 120 foot deep removals of landslide debris and construction of the buttress keys. The nature and extent of the remedial grading and the hazards posed by such grading have not been adequately discussed.

The elimination of grading in the north central portion of the site creates the exact situation discussed in the previous drainage section. The remedial grading along the northwest property line abutting the Abbey property has been completely eliminated. The conceptual drainage plan, Exhibit 25 from Draft EIR 561, indicates storm drain lines A and B would outlet increased urban runoff from the development to the existing natural drainage course that follows the common property line. Also storm drain line C, on that same Exhibit, would dump water into the geologiclly unstable canyons adjacent to the Ramakrishna Monastery. These are precisely the situations which will cause geologic failures and damage to adjacent properties.

The reduction in impacts to vegetation and habitat are marginal at best. The only significant reduction in impact is to the Oak Woodland, 97% to 59% destruction. The impact to the Ephemeral Ponds is unchanged. The impact to the Coastal Sage Scrub is virtually unchanged, 66% vs. 65%. This is due to the dramatic extension of the proposed 299-unit development in the southeast quadrant. Please refer to the Impacted Vegetation Map, Exhibit No. 42 from the Draft EIR 561 which shows the limit of remedial grading. Compare it to the Geotechnical Hazard Mitigation Plan, Exhibit No. 19 from FSEIR 566. The 299-unit proposal dramatically pushes deep into the coastal sage scrub area.

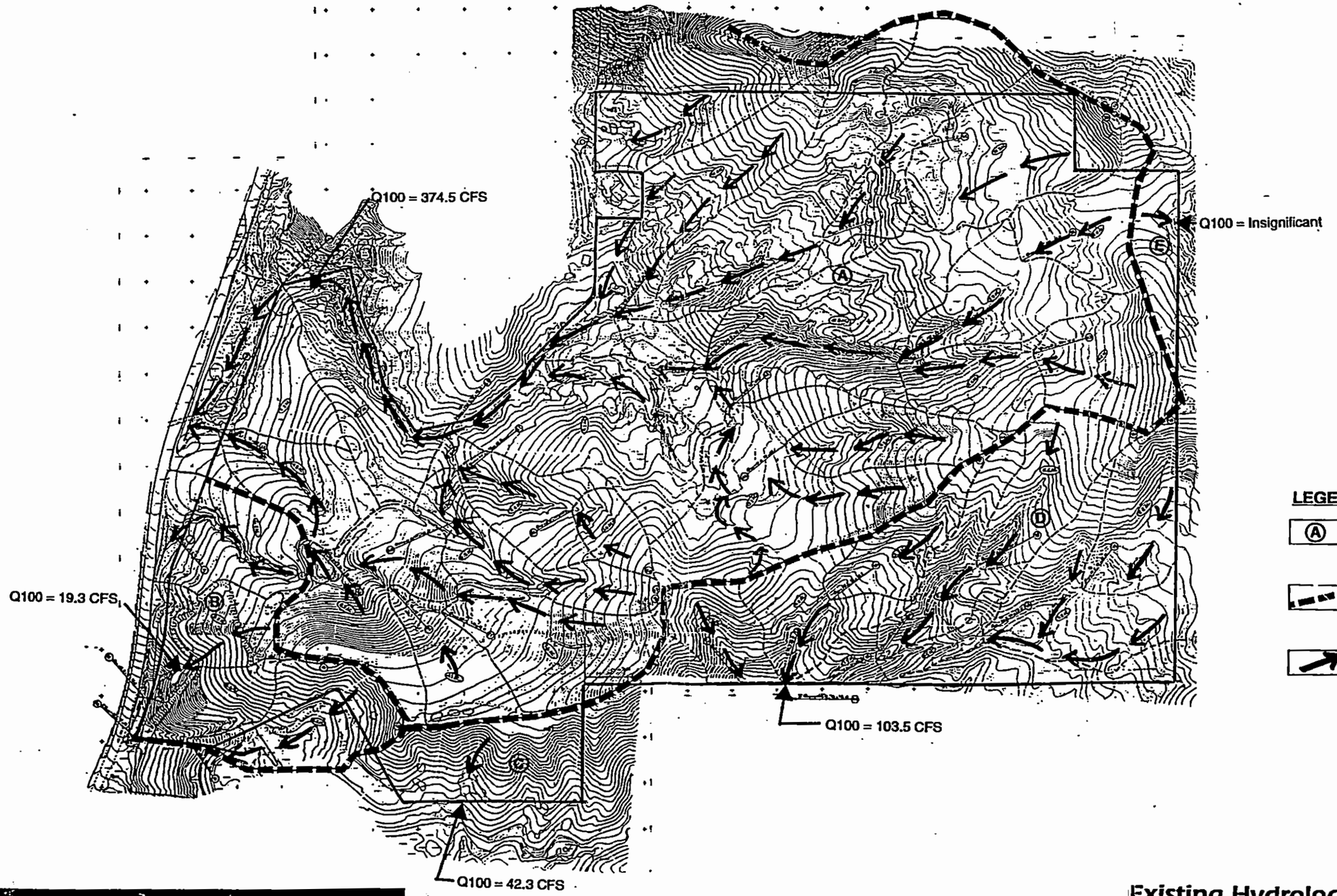
This is significant because this is a large contiguous area with the "Gifted Property" and O'Neill Regional Park to the south. This area also contains five (5) of the ten (10) Cactus Wren sites on the property. Recently, I have been informed that two Coastal California Gnatcatchers have been observed in this area.

If you should have any questions or comments concerning the above, please call me at your convenience.

Very truly yours,

Warren W. Singleton, P.E.

WWS
Enclosure



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

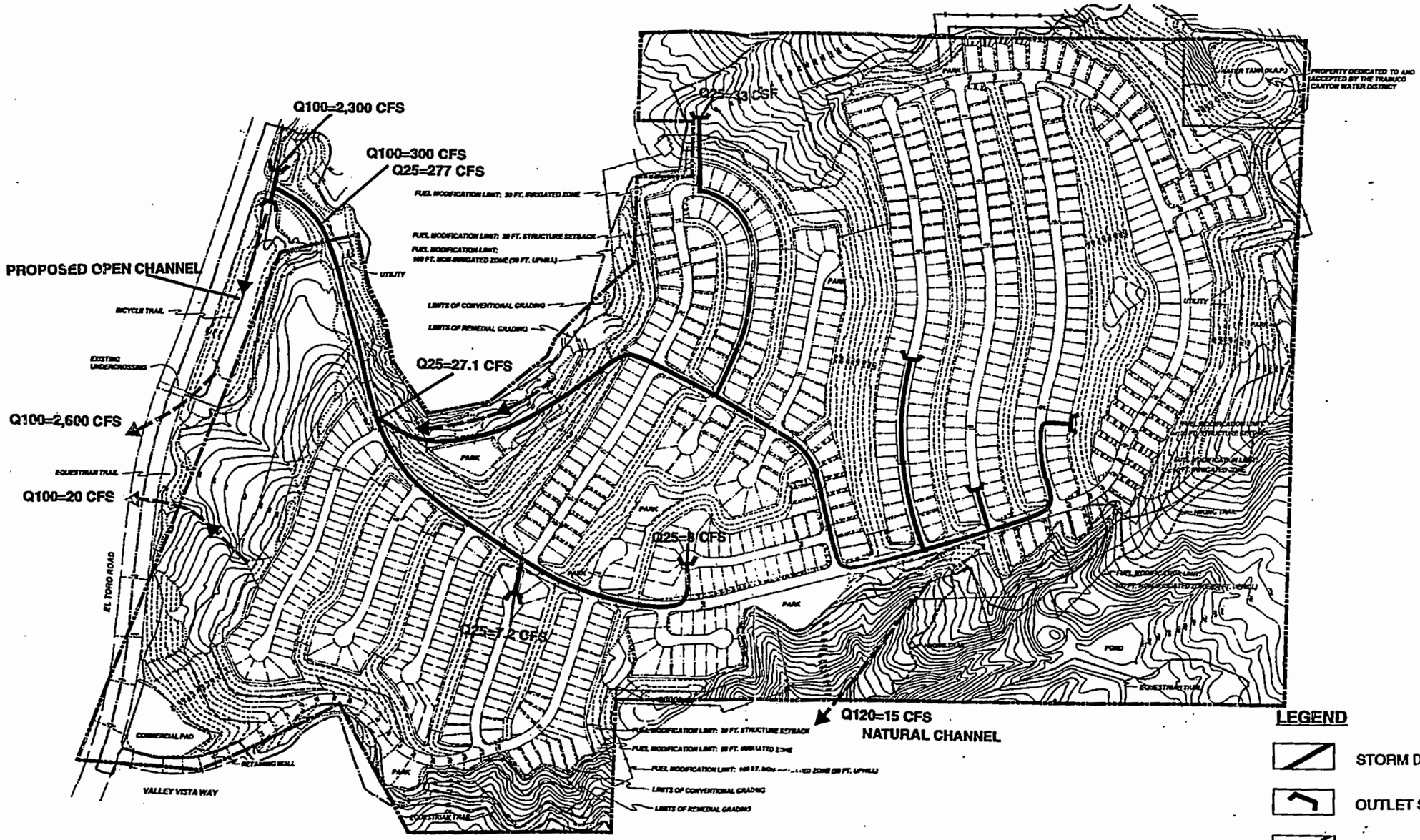
County of Orange P&DS
Scale: 1"=400'
Source: Hunsaker & Associates

N

2300

Existing Hydrology

EXHIBIT No. 21



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

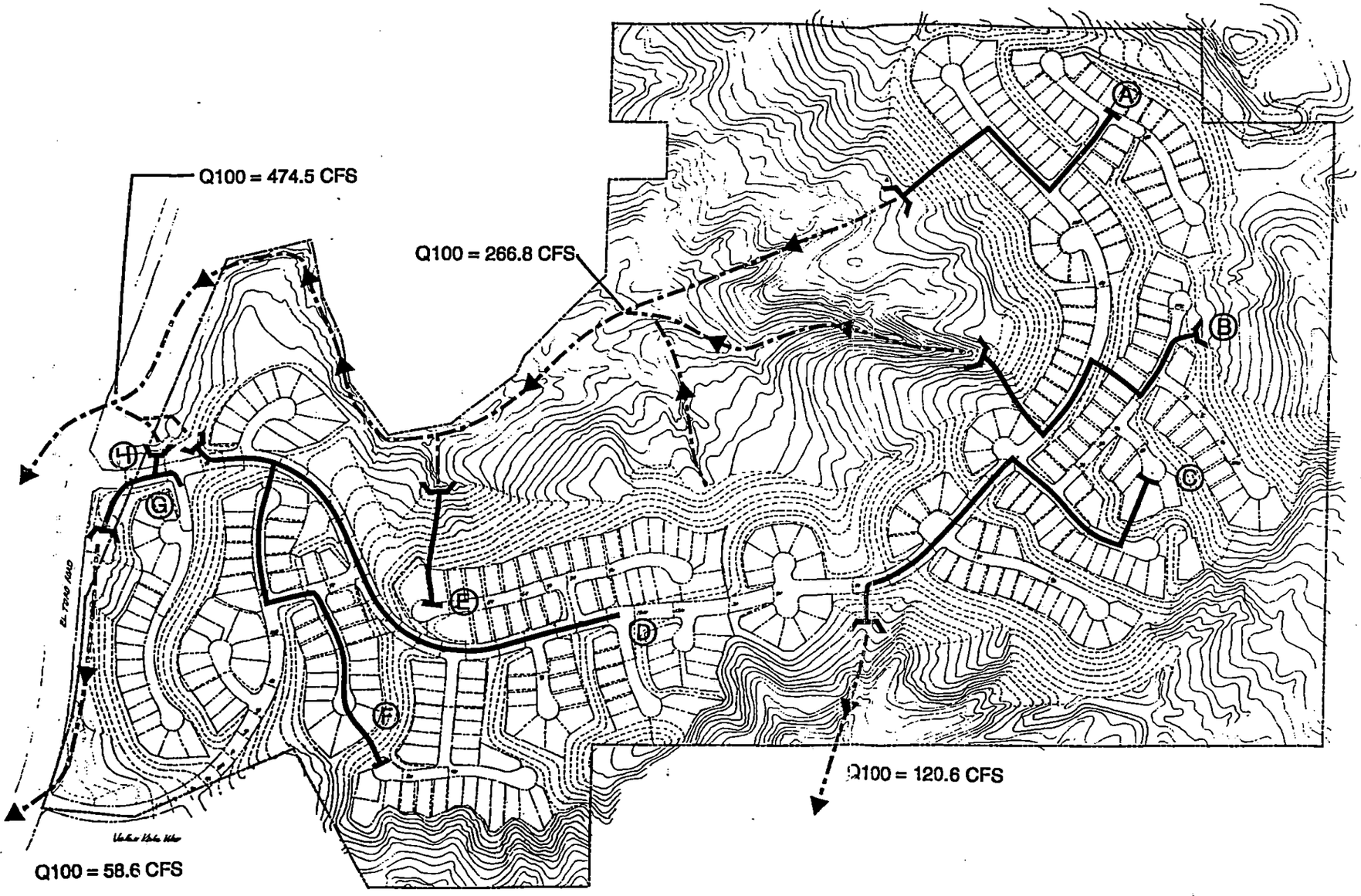
URBAN VISION
County of Orange P&DS
Scale: 1"=600'
Source: Nunedor & Associates

N

Conceptual Drainage Plan

2301

EXHIBIT No. 22



LEGEND

- Storm Drain
- Outlet Structure
- Natural Drainage Course

SADDLEBACK MEADOWS - VTTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

▪ OCEMA

SCALE: 1" = 400'

SOURCE: Hunsaker & Associates

N

URBAN VISION

Conceptual Drainage Plan

EXHIBIT NO. 25

2302

4-4

LEGEND

- FILL — FILL
- Qal — ALLUVIUM
- Qoal — OLDER ALLLUVIUM
- Qcol — COLLUVIUM
- SURFICIAL INSTABILITY
- /Qls\ — LANDSLIDE
- Tvs — VAQUEROS AND SESPE FORMAT
- Ts — SESPE FORMATION
- GEOLOGIC CONTACT
- SCARP
- FAULT

SADDLEBACK MEADOWS - VTTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

OCEMA

URBAN VISION

SCALE: 1" = 400'

SOURCE: G. A. Nicholl & Assoc.

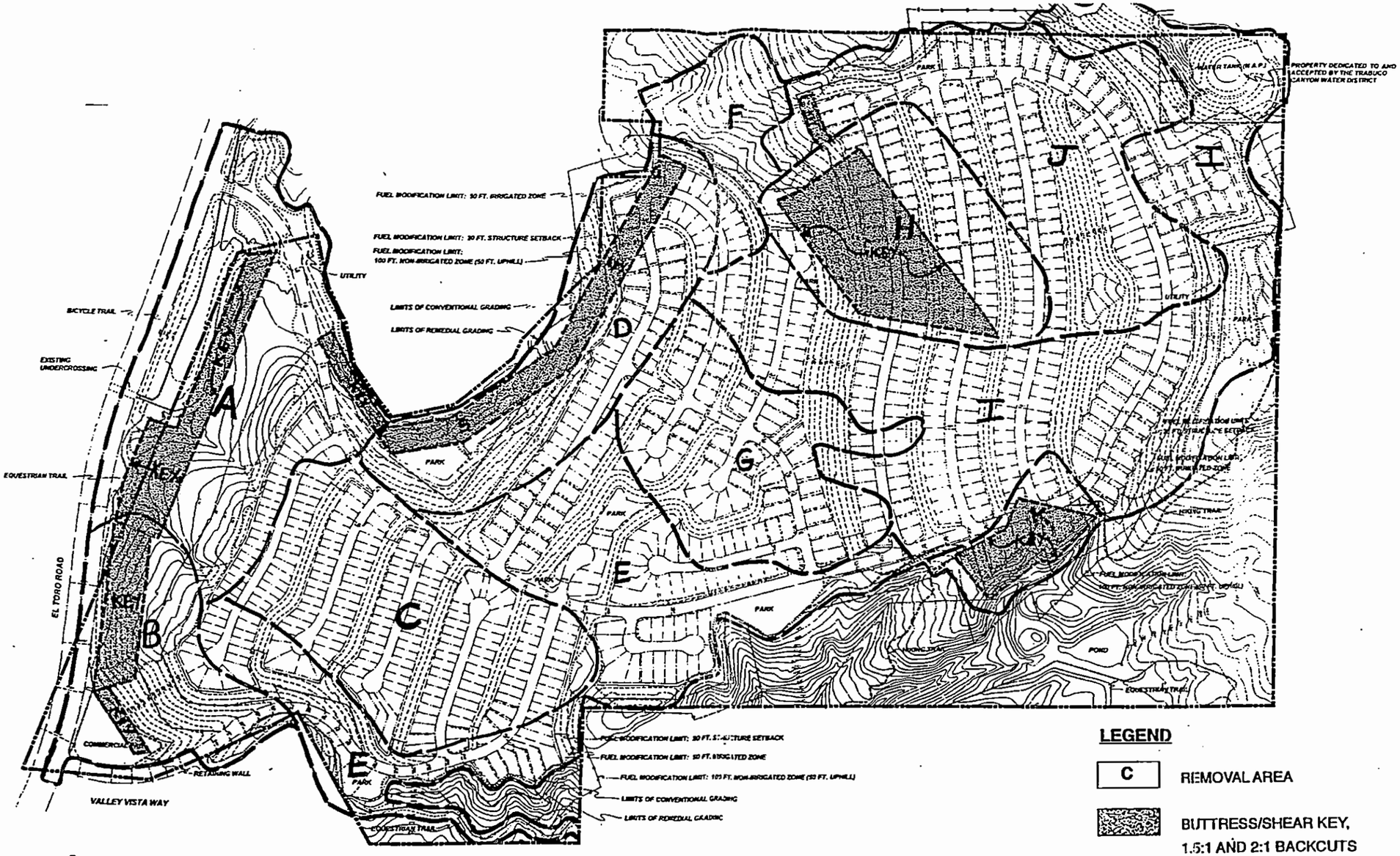
N

Geotechnical Resources

2303

EXHIBIT NO. 19

4-22



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

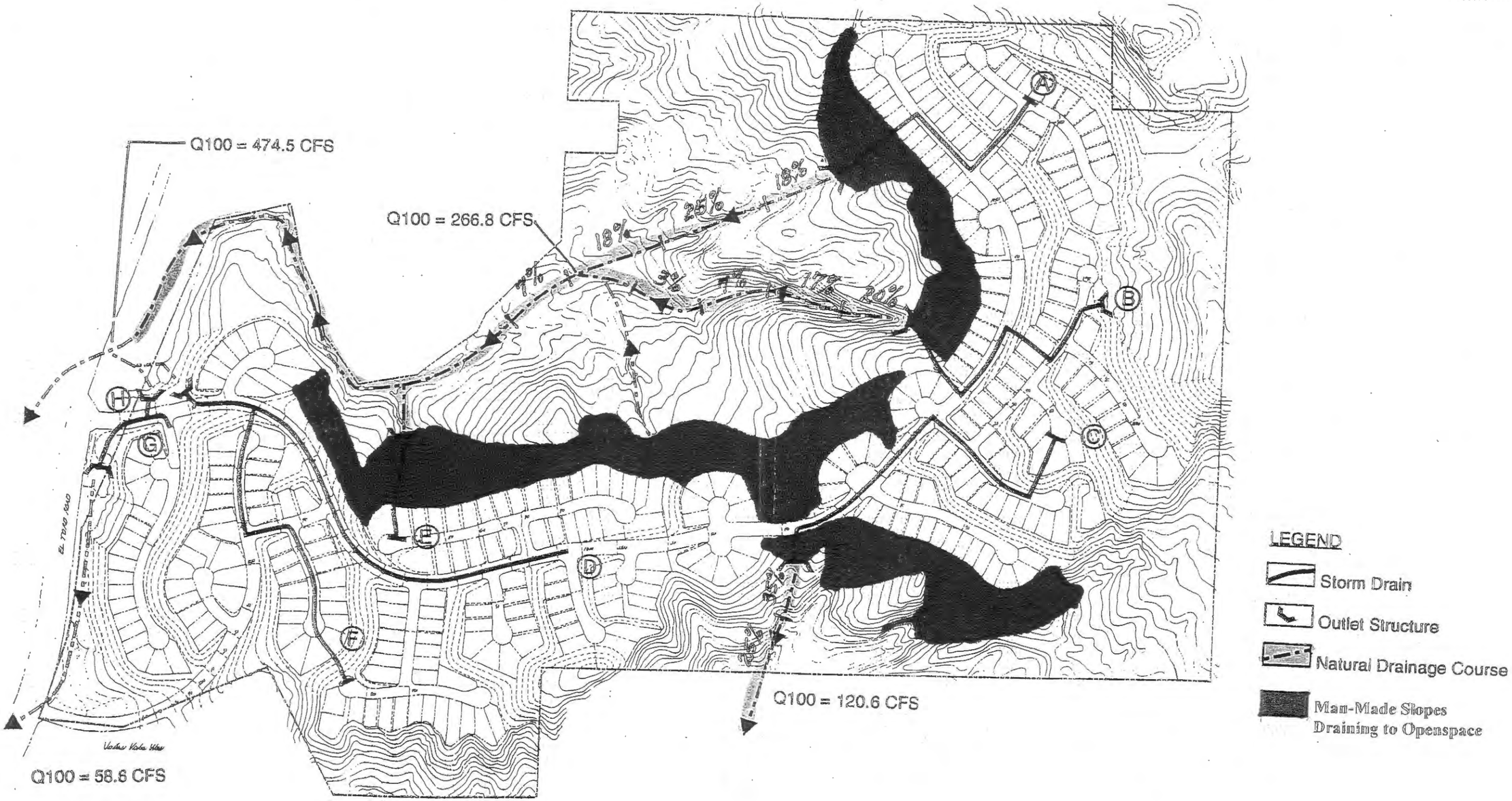
URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: G.A. Nicoll & Associates, Inc.

N

Geotechnical Hazard Mitigation Plan

EXHIBIT No. 19



SADDLEBACK MEADOWS - VTTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

URBAN VISION ▪ OCEMA

SCALE: 1" = 400'

SOURCE: Hunsaker & Associates

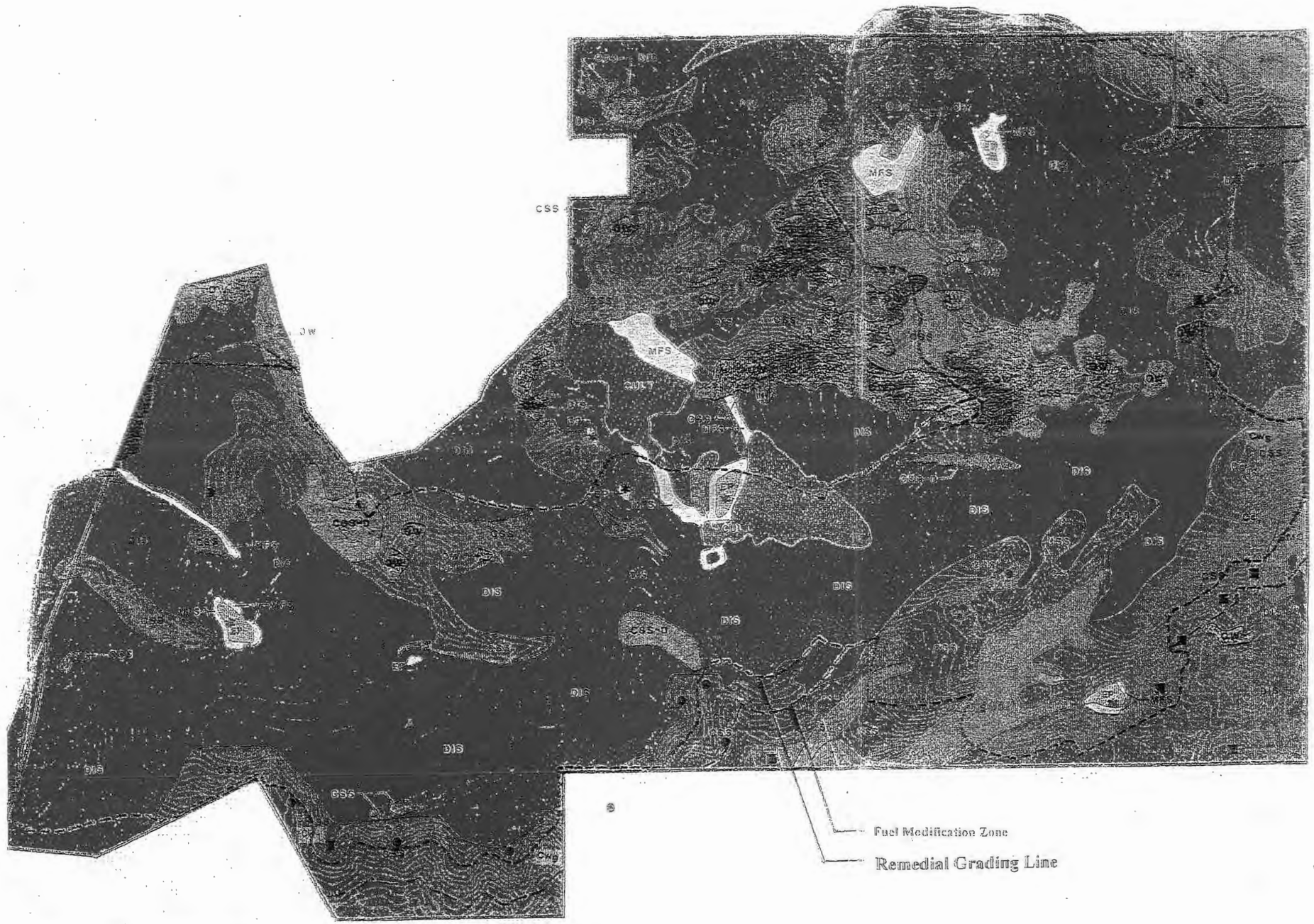
N

Conceptual Drainage Plan

EXHIBIT NO. 25

4-44

2305



LEGEND TO SENSITIVE RESOURCES

VEGETATION

- Venturan-Diegan Transitional Coastal Sage Scrub
- Venturan-Diegan Transitional Coastal Sage Scrub - Di
- Coast Live Oak Woodland
- Southern Sycamore Riparian Woodland
- Mulefat Scrub
- Southern Mixed Chaparral
- Ephemeral Ponds
- Annual Grassland
- Agricultural

SENSITIVE PLANTS

Ce Catalina Mariposa Lily
Calochortus catalinae

Cw Intermediate Mariposa Lily
Calochortus weedii ssp. *intermedius*

SENSITIVE ANIMALS

Riverside Fairy Shrimp
Streptocephalus woottoni

Coastal Whiptail
Cnemidophorus tigris multiscutatus

Cactus Wren
Campylorhynchus brunneicapillus

Southern California Rufous-Crowned Sparrow
Aimophila ruficeps canescens

Cooper's Hawk
Accipiter cooperii

Orangethroat Whiptail
Cnemidophorus hyperythrus beldingi

Loggerhead Shrike*
Lanius ludovicianus

*Observed by PSBS in 1989 but not mapped.

POOR QUALITY ORIGINAL

SADDLEBACK MEADOWS - VTTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

OCEMA

SCALE: 1" = 400'

SOURCE: Sweetwater Environmental Biologists, Inc.

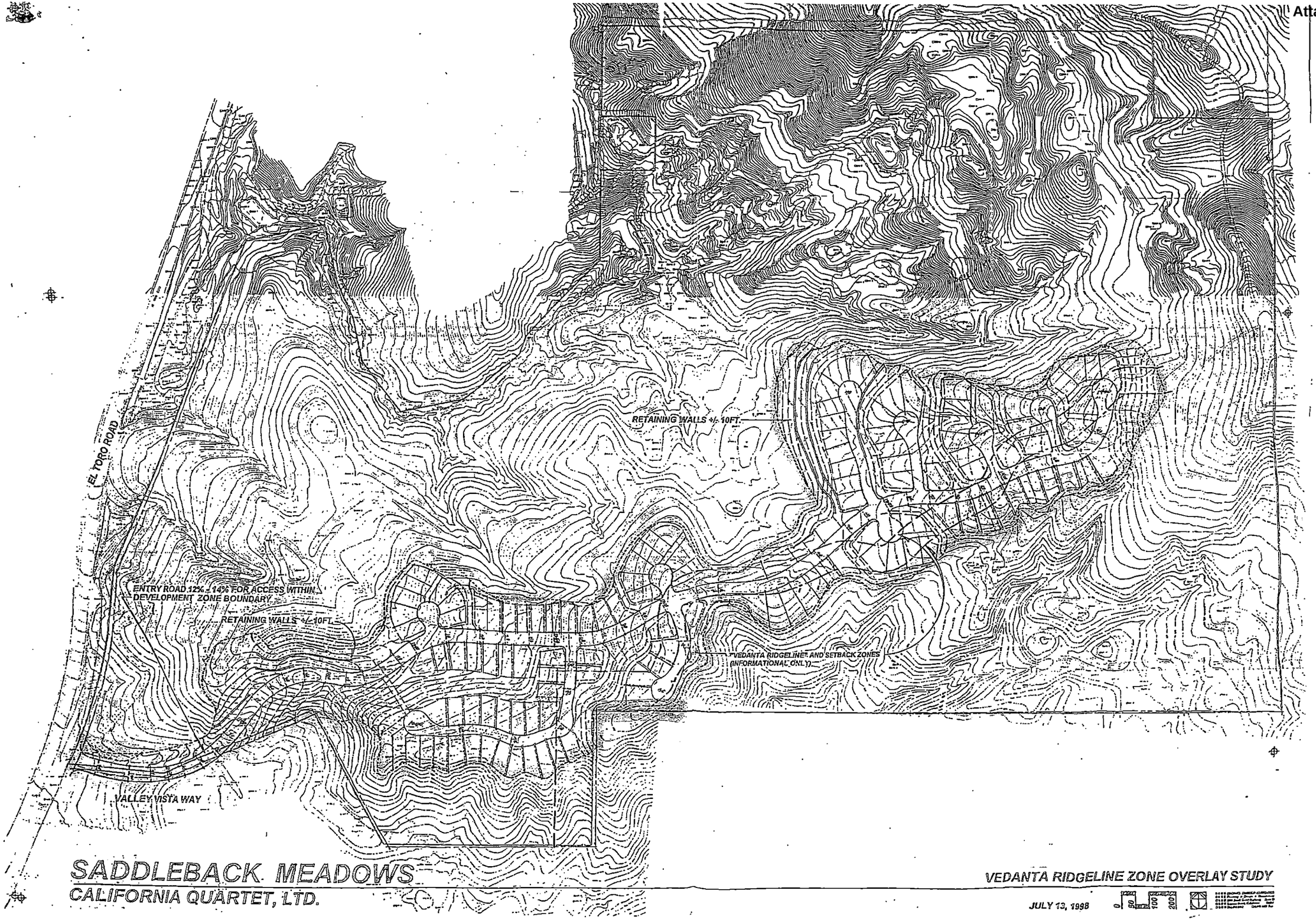
N

Impacted Vegetation Map

EXHIBIT NO. 42

EXHIBIT C

2307



SADDLEBACK MEADOWS
CALIFORNIA QUARTET, LTD.

VEDANTA RIDGELINE ZONE OVERLAY STUDY

JULY 13, 1998

0 50 100 200

2308

EXHIBIT "D"

LETTERS RE FSEIR 566

1. June 29, 1997, Robert A. Hamilton, Consulting Biologist, Conservation Chair, Orange County CNPS, to George Britton, County of Orange, Environmental & Project Planning Services Division;

2. August 5, 1997, Saundra F. Jacobs, REA, SFC Consultants, to Ray Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

3. August 6, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley and William Grieman, Environmental Planning Section, Orange County Planning & Development Services Department;

4. August 8, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Nicholas S. Chrisos, Esq., Office of County Counsel;

5. August 8, 1997, Gail C. Kobetich, U.S. Fish and Wildlife Service, and Ron Rempel, California Department of Fish and Game, to Raymond Brantley, Environmental & Project Planning Services;

6. August 11, 1997, Karen Steele Verlaan, City of Mission Viejo, to George Britton, Environmental & Project Planning Services;

7. August 11, 1997, Robert E. Anslow, Esq., Bowie, Arneson, Kadi, Wiles & Giannone, to George Britton, Manager, County of Orange, Planning & Development Services Department;

8. August 11, 1997, Kimberly A. Stocking to Planning and Development Services Department;

9. August 12, 1997, Wayne L. Brown to Manager, OCPDS/Environmental & Project Planning Services Division;

10. August 12, 1997, Amber Graves to Manager, OCPDS/Environmental & Project Planning Services Division;

11. August 12, 1997, Debra Moddelmog to Manager, OCPDS/Environmental & Project Planning Services Division;

12. August 12, 1997, Justin Watson to Manager, OCPDS/Environmental & Project Planning Services Division;

13. August 12, 1997, Kathy L. Graham, City of Lake Forest, to Raymond H.C. Brantley, Environmental Management Agency, Environmental & Project Planning;

14. August 12, 1997, J. David Stein, Southern California Association of Governments, to George Britton, Environmental & Project Planning Services;

15. August 13, 1997, Peter A. Hartman, Saddleback Valley Unified School District, to Ray Brantley, Environmental & Project Planning;

16. August 15, 1997, Bill Berry, State of California -- The Resources Agency, Department of Parks and Recreation, to Ray Brantley, County of Orange;

17. August 18, 1997, Ray Chandos, Rural Canyons Conservation Fund, to Raymond Brantley, Planning and Development Services Department;

18. August 21, 1997, David B. Cosgrove, Esq., Rutan & Tucker LLP, to Raymond Brantley, Orange County Planning & Development Services, Environmental & Project Planning Services Division;

19. August 22, 1997, Saundra F. Jacobs, REA, SFC Consultants, to Raymond Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

20. August 22, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, Environmental Planning Section, Orange County Planning & Development Services Department;

21. October 15, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, PDS/Environmental & Project Planning Service Division;

22. October 16, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

23. November 3, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

24. November 5, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

25. November 26, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

26. December 1, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

27. December 2, 1997, Saundra F. Jacobs, REA, SFC Consultants, to Raymond Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

28. December 2, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Orange County Planning Commission and George Britton and Raymond H.C. Brantley, PDS/Environmental & Project Planning Services;

29. December 18, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin P. de Mayo, Esq., Deputy County Counsel;

30. February 23, 1998, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Honorable Members of Board of Supervisors of Orange County, Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin P. de Mayo, Esq., Deputy County Counsel; and

31. February 20, 1998, Royce B. Riggan, Jr., AICP, RBRiggan and Associates, to Honorable Members of Board of Supervisors of Orange County.

AGENDA ITEM TRANSMITTAL

CONSENT ☐
DISCUSSION ☐
PUBLIC HEARING ☒

AGENCY/DEPT. USE

CEO REVIEW
☐ Concur
☐ Do Not Concur
☐ Exempt

CLERK USE ONLY

TO: BOARD OF SUPERVISORS COUNTY OF ORANGE

FROM: Planning and Development Services Dept.
FILE:

CONTACT FOR INFORMATION	PHONE
Frank McGill	834-2099
John Buzas	834-5906

MEETING DATE	SUBJECT	SUPV. DIST.
November 3, 1998	Saddleback Meadows Zone Change 98-3 and Area Plan 98-2 of California Quartet, Ltd.	3

SUMMARY OF REQUEST (Description for agenda)
Approve Zone Change (ZC) 98-3, consider the appeal of Area Plan (AP) 98-2, and uphold the Planning Commission action approving AP 98-2.

ADDITIONAL DATA:
See attached.

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:
Minute Order October 6, 1998, Item #100

FUNDING SOURCE(S)	CURRENT YEAR COST	ANNUAL COST	BUDGETED? ☐ YES ☐ NO
N/A	N/A	N/A	N/A

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?
☒ NO IF YES, STATE NUMBER PERMANENT LIMITED TERM

CONSISTENT WITH BOARD POLICY?
☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTION
1. Conduct Public Hearing
2. Adopt draft Resolution (Attachment M) approving EIR Addendum PA 980103
3. Adopt draft Ordinance (Attachment D) approving ZC 98-3
4. Adopt draft Resolution (Attachment K) approving AP 98-2

CONCURRENCES (If applicable)	ATTACHMENTS
County Counsel	See attached

10-13-98
DATE

Thomas B. Mathews, Director

2312

ADDITIONAL DATA:

BACKGROUND

Attachment C contains a detailed chronology of events from 1978 regarding Saddleback Meadows. In summary, the existing Saddleback Meadows Planned Community land use regulations were originally approved by the County of Orange in 1980. Saddleback Meadows Tract Map 10692 was recorded in 1988. When the Foothill/Trabuco Specific Plan (F/TSP) was adopted in 1991, the Saddleback Meadows Planned Community District Regulations and Recorded Tract Map 10692 were incorporated into the F/TSP. Per those regulations, the developer is only required to obtain an administratively approved grading permit and building permits in order to develop 705 manufactured homes.

In 1996, the Planning Commission and Board of Supervisors considered several development alternatives, but did not approve any of them. One of the alternatives, which was recommended by staff, was for 299 dwelling units. That alterative is similar to the applicant's current proposal called the "Contingency Plan". This plan is being processed in the event negotiations involving the Board of Supervisors and other parties to purchase Saddleback Meadows do not come to fruition.

On October 6, 1998, during your discussion of a possible purchase of Saddleback Meadows (Agenda Item #100), you directed that the landowner's application for 299 units be presented to your Board on this date. On October 7, 1998, the Planning Commission, by a vote of 4 to 1, recommended that your Board approve ZC 98-3 and EIR Addendum PA 980103. They also approved related AP 98-2. On October 8, 1998, AP 98-2 was appealed to your Board by California Quartet, Ltd. (Attachment A).

PROJECT DESCRIPTION

Location and Surrounding Land Uses

The Saddleback Meadows property (technically referred to as the Bridlewood Residential District) is located on the easterly side of El Toro Road and north of Valley Vista Way. North of the project site is St. Michael's Abbey, which operates a boarding school for boys. South of the project site is Hidden Hills/Hidden Ridge residential development, O'Neill Regional Park, and the Ramakrishna Monastery. West of the project site and El Toro Road is the Portola Hills residential development. East of the property over a major ridgeline is the Trabuco Canyon Residential District. (See Attachment B, Regional Map.)

Direction	Existing Use	Density	Zoning
Project Site	Agriculture	N/A	F/T Specific Plan
North	School/Abbey	N/A	F/T Specific Plan
South	Residential	3.1 du/ac.	Conventional Zoning
East	Open Space	N/A	F/T Specific Plan
West	Residential	3.2 du/ac.	Portola Hills PC

The land is presently used for grazing cattle and has been used for farming. There are many steep slopes and much erosion due to man's influence and naturally unstable geology. Most of the property rests on ancient landslides that remain unstable. Much of the site has been invaded by non-native plants.

Design Summary

- Total property: 222.2 acres
- 299 standard detached single-family homes
- Proposed open space dedication: 158.5 acres
- Density: 1.3 dwelling units per acre
- Average residential lot: 6,672 sq. ft.

Zone Change 98-3

The zone change (see Attachment D) would amend the F/TSP Bridlewood Residential District Regulations as follows:

1. Replace the reference to "Saddleback Meadows Planned Community" with "Residential Estates (Planned Development)"
2. Lower the maximum number of homes from 705 to 299.
3. Require a minimum of 155 acres of dedicated open space. (The Area Plan proposes 158.5 acres.)
4. Add the requirement for an approved area plan prior to any subdivision or grading activity.
5. Add the requirement for an approved use permit prior to issuance of building permits.
6. Require a performance bond prior to issuance of a grading permit.
7. Eliminate the requirement for 66 2/3 percent affordable housing.
8. Eliminate the requirement for a 1.7-acre neighborhood commercial site along El Toro Road.
9. Maintain the existing exemption from all the other regulations and guidelines in the F/TSP.

Area Plan 98-2

The applicant's proposed area plan (see Attachment E) consists of a text and four concept plans: (1) Development Plan, (2) Landscape and Re-vegetation, (3) Grading, and (4) Open Space/Trails. The area plan also includes a lengthy discussion of "rural character" with several illustrations.

PROJECT ANALYSIS

The analysis of planning issues is contained in Attachment F. The analysis of environmental and CEQA issues is contained in Attachment L. Public comments on this project received prior to October 30, 1998, will be transmitted to you.

F/TSP Review Board

This project was distributed for public review on August 7, 1998. However, no distribution was made to the F/TSP Review Board at that time because there were no members. On September 22, 1998, the Board of Supervisors appointed five members to the Review Board. On September 24th each Review Board member was given a copy of the proposed project, the environmental documentation and staff reports. They conducted a public meeting on September 29th and continued it to October 16, 1998. Any comments/recommendations from the Review Board will be transmitted to you.

ATTACHMENTS:

A. Appeal Letter
B. Regional Map
C. Chronology of Events
D. Zone Change 98-3 (Draft Ordinance)
E. Area Plan 98-2
F. Analysis of Planning Issues
G. Existing Bridlewood Residential Draft Regulations
H. Manufactured Slopes Exhibit
I. Planning Commission Minutes, Resolutions, Staff Reports and Correspondence
J. Commissioner Moody's Memo
K. Draft Board of Supervisors Resolution re: AP 98-2
L. Analysis of Environmental/CEQA Issues
M. Draft Board of Supervisors Resolution re: EIR Addendum PA 980103
N. EIR Addendum PA 980103

2315

ATTACHMENT A

APPEAL LETTER

TPG Management, Inc.
1601 Dove Street, #105
Newport Beach, CA 92660
949-253-9595 Telephone
949-955-1170 Facsimile

Via Hand Delivery

October 8, 1998

Mr. Thomas Mathews, Director
County of Orange
Planning and Development Services Department
300 North Flower Street,
3rd Floor, Room 315
Santa Ana, CA 92702-4048

Re: Saddleback Meadows - Appeal of Planning Commission Approval of Area Plan 98-2

Dear Mr. Mathews:

On behalf of California Quartet, Ltd., pursuant to Orange County Code section 7-9-150.4, we hereby appeal the Planning Commission decision of October 7, 1998 approving Area Plan 98-2.

Should have any questions concerning this appeal, please contact me at (714) 253-2907.

Very truly yours,

H. Mike McKnight
TPG Management, Inc.

cc: Benjamin P. de Mayo. Esq. Deputy County Counsel
Edmond M. Connor. Esq.
Daniel K. Winton. Esq.
William D. Ross. Esq.
H. Pike Oliver
David Brainerd
Frank Elfend
Frank McGill

ATTACHMENT B

REGIONAL MAP

SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

Exhibit 1

REGIONAL CONTEXT MAP

NOT TO SCALE

ATTACHMENT C

CHRONOLOGY OF EVENTS

SADDLEBACK MEADOWS
PROJECT CHRONOLOGY

August 1978 - Board of Supervisors approve General Plan Amendment (GPA) 78-1. Final EIR 059 was prepared and certified in conjunction with GPA.

March 1979 - Zone Change Application. Tentative Tract Map and Initial Study requests for mobile home subdivision submitted to County.

December 1980 - Tentative Tract Map 10692 conditionally approved for single-family, mobile home, residential subdivision of 714 homes and (1) commercial lot.

June 1984 - Board of Supervisors approve the Development Plan (2nd revised) for Saddleback Meadows which provided for 705 mobile home units and 1.7 acres of neighborhood commercial use.

October 1984 - The Orange County Subdivision Committee approves a 589-day stay of time in which to record the Final Map for Tentative Tract 10692. This action extended the expiration date for recording the Final Map for Saddleback Meadows to July 1986.

April 1986 - Southmark Pacific Corporation acquired Saddleback Meadows property from Ticor Title Company with the intention of Recording the Final Map. The Final Map did not record on July 14, 1986, because the Santa Ana Mountains County Water District imposed a sewer moratorium on July 16, 1986, which effectively extended indefinitely the life of the approved Tentative Tract Map No. 10692.

November 1988 - The development moratorium was terminated by action of the Santa Ana Mountains County Eater District.

December 1988 - Recordation of Final Map No. 10692, with associated improvement agreements and significant fees (in excess of $2,000,000) paid in furtherance of the Map which included Capital Improvement charges and Sewer Treatment Capacity Rights..

December 1991 - Board of Supervisors approve the Foothill/Trabuco Specific Plan which incorporates the project into the Specific Plan document by adopting the standards of Recorded Tract Map 10692

September 1992 - California Quartet, Ltd. acquires the note on the Saddleback Meadows property along with three other properties packaged together from the Resolution Trust Corporation (RTC). And begins foreclosure proceeding on the defaulted note.

April 1994 - California Quartet, Ltd. submits Grading Permit Application GA940031 for Phase I Grading of the 705 mobile homes(approx. 98.3 acres).

August 1994 - The environmental "Initial Study" is completed for the Grading Application with the County making the determination that an environmental impact report (EIR) is necessary.

August 1994 - California Quartet files a Letter of Appeal with the County, contesting the requirement for an EIR for the Grading Permit Application.

January 1995 - Two hearings are held regarding the appeal (January 17, & 31). On January 31, 1995 , California Quartet, Ltd. withdraws the appeal of the County's determination to require the preparation of an EIR for the Grading Permit Application GA940031. The applicant clarifies it's intent in regards to what the project is. The Planning Commission directs the applicant to develop a more compatible project in response to public testimony, staff concerns, and the Planning Commissions' direction (to take approx. 120 days) .

February-June 1995 - Applicant initiates public relations contacts with the community and neighbors and begins an intensive 6-month data gathering and design process which produces a logical progression of alternative plans concluding with a 318-Lot design proposal.

February 1, 1995 - William Ross, applicant's legal counsel, sends correspondence to G. Weiler, attorney for St. Michael's Abbey.

March 26, 1995 - H. Pike Oliver meets with approximately ten residents from Portola Hills, Hidden Ridge, and the general Trabuco Canyon Area at the Portola Hills Community Center to review work on the progress on the alternative plan for the development of the Saddleback Meadows property.

June 1, 1995 - H. Pike Oliver participates in meeting at the office of G. Weiler, attorney representing St. Michael's Abbey. Discusses the status of the project and potential for acquisition or partial acquisition of the property.

June 1995 - California Quartet, Ltd. presents a Revised Site Development Plan for Saddleback Meadows in the form of an information booklet to County EMA staff.

July 1995 - A formal Planning Application is submitted to the County based on a revised project proposal for 318 lots. The Planning Application consists of: 1) Zone change; 2) Area Plan; 3) EIR 561; 4) A Site Development Permit for geotechnical testing on the property. The site development permit allowed the continuation of geotechnical testing on the site after the County issued a stop-work notice to prevent further exploratory geotechnical testing on the property. This exploratory work was being performed to provide needed geological data on the site for use in conjunction with the revised site development plan. The County determined that

since this was a new application, the Saddleback Meadows project would have to abide by the guidelines contained in the Foothill Trabuco Specific Plan. The Specific Plan requires a site development permit to allow geotechnical testing on any property contained within the boundaries of the Specific Plan area, although as the applicant pointed-out, the existing Recorded Tract Map 10692 is exempt from the requirements of the Specific Plan.

August 11, 1995 - County completes the Initial Study and issues a Notice of Preparation (NOP) of an Environmental Impact Report for the revised project.

August 14, 1995 H. Pike Oliver conducts Community work session with approximately ten area residents at Portola Hills II Club House. (Community workbook.)

August 24, 1995 - County conducts its first public meeting on the revised project in the form of a Public Scoping meeting in conjunction with the preparation of the Draft EIR. This meeting was held at a local high school.

August 25, 1995 - H. Pike Oliver prepares for and participates in meeting with Ken France, owner of property near the site.

August 29, 1995 - William Ross letter to G. Weiler, attorney representing St. Michael's Abbey.

September 1995 - Bob Odle makes telephone contacts with property managers of neighboring HOA's. Advised by them to put all requests in writing and not to request any meetings until a revised plan is available.

October 1995 Community information mailer with detachable questionnaire is sent out to over 2,000 households in the area. (Copies of returned questionnaires are attached.)

October 10, 1995 H. Pike Oliver coordinates with Tom Mathews and his assistant on the review of the community mailer.

October 12, 1995 Richard Garlinghouse correspondence with G. Weiler, attorney representing St. Michael's Abbey.

October 13, 1995 Richard Garlinghouse correspondence with G. Weiler, attorney representing St. Michael's Abbey, with attachment (memo from Mike McKnight to Richard Garlinghouse.)

October 18, 1995 Bob Odle mails letters to property managers requesting an opportunity to present the new project to their Executive Board.

October 20, 1995 H. Pike Oliver has telephone conversation with Marie Walsh concerning the views from Hidden Ridge.

October 23, 1995 Mike McKnight of TPG Management sends follow-up letter to Marie Walsh in response to her telephone conversation with H. Pike Oliver on 10/20/95.

October 23, 1995 H. Pike Oliver has conversation with E. Wallace.

October 23, 1995 H. Pike Oliver has conversation with M. Nicholson.

October 23, 1995 H. Pike Oliver has an extensive telephone conversation with Mr. Kacsir, community resident.

October 23, 1995 Mike McKnight transmittal of Saddleback Meadows Community Mailer and copy of County memo regarding recent geological and archaeological activities on the Saddleback Meadows property to G. Weiler.

October 24, 1995 H. Pike Oliver has telephone conversation with Julia Chenette, area resident.

October 24, 1995 H. Pike Oliver has telephone conversation with Delia Juneau concerning view simulation.

October 25, 1995 H. Pike Oliver writes letter to Ken France, neighboring property owner.

October 25, 1995 Mike McKnight responds to D. Juncau's request for view simulation information on the project.

October 30, 1995 Bob Odle mails letters to the property managers extending an invitation to tour the site on November 11, 1995. No responses were received.

October 31, 1995 Bob Odle mails letters to each member of the Foothill/Trabuco Specific Plan Review Board, inviting them to visit the site and receive a guided tour. Mr. Odle was advised by two board members, one by telephone and one by letter, that the Board voted to decline the offer and would only accept such an offer if they could convene a public meeting.

October 15, 1995 - Application for Vesting Tentative Tract Map 15230, based on the revised project, is filed with the County.

February 5, 1996 - County files a Notice of Completion of the Draft Environmental Impact Report and begins the public circulation and comment period.

February 16, 1996 - Director of Planning, EMA, discusses Draft EIR 561 at the Foothill/Trabuco Review Board meeting.

March 8, 1996 - TPG Management discusses proposed project at Foothill/Trabuco Review Board meeting.

March 19, 1996 - First Planning Commission public hearing. County Staff made brief presentations on the Draft EIR document and the proposed Zone Change and Area Plan. TPG Management presented a summary of process involved to get to the plan that was currently before the Commission for review. The main objective of this first Planning Commission hearing was to afford the public an opportunity to comment on the Draft EIR document prior to the close of the 45-day public comment period (March 25, 1996). The Commission moved that the hearing be continued to an April 2, 1996 date.

April 2, 1996 - Second Planning Commission public hearing. The objective of this second public hearing was to afford the applicant an opportunity to present the project in detail, describe the design process thoroughly, present an analysis of the Specific Plan consistency issue, and have the opportunity to rebut questions and/or issues raised at the March 19, 1996 Planning Commission hearing. At the close of this hearing, the Planning Commission voted to continue the matter to a May 7, 1996 hearing date.

May 5, 1996 - Third Planning Commission hearing is postponed. County staff is concerned about the Resource Agencies (U.S. Fish and Wildlife Service & California Department of Fish and Game) sudden and unexpected reversal of their position on the projects proposed wildlife movement corridor alignment. And design. Time is needed to resolve the agencies concerns regarding the corridor alignment design..

May 8, 1996 - Design workshop session with County EMA staff regarding alternative wildlife corridor alignments. General and specific discussion regarding suggestions for design modifications with the applicant explaining the economic/financial ramifications of the suggestions and how they would render the project infeasible from an economic and development objective standpoint. Their was also discussion of the merits of EIR alternative No. 7 which addressed the size and width concerns of the wildlife corridor which until recently, appeared to be the primary source of the resource agency's concerns regarding the proposed project. Alternative 7 balanced the environmental/wildlife corridor issues with the project's development objectives.

May 17, 1996 - "ALL Hands" meeting with U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game, and Orange County EMA staff to discuss wildlife corridor design issues and Alternative 7. The resource agencies, primarily the

California Department of Fish and Game expressed their desire to see changes in the wildlife corridor location/alignment and its design.

May 20, 1996 - Field meeting held on the Saddleback Meadows site with same agency representatives attending the May 17, 1996 meeting to visualize in-the-field what was discussed at the previous week's meeting (May 17th).

May 23, 1996 - First meeting with Verlyn "Sonny" Jensen, an attorney who now represents St. Michael's Abbey. This meeting served as a vehicle for Mr. Jensen to re-establish dialogue with applicant. Dialogue with the Abbey had been suddenly and completely cut-off in November of 1995.

May 24, 1996 - Based on comments from the two previous meetings with the various resource agencies a number of alternative development plans were prepared (3) and presented to EMA staff. Staff indicated a preference for one of the alternatives presented.

May 28, 1996 - A meeting with EMA staff to discuss further refinements of the alternative development plan which ended up having 311 lots. Prior to the June 5, 1996 Planning Commission public hearing (this was to be hearing number 3) EMA staff reduced the lot yield to 299 lots and recommended this alternative (to become known as Alternative No. 8) to the Planning Commission.

June 5, 1996 - Third Planning Commission public hearing. EMA staff makes recommendation to the Planning Commission for Alternative No. 8 for 299 Lots, California Quartet, Ltd. counters with a version of Alternative No. 8 with 318 lots using the same development footprint and development envelope. Planning Commission moves to continue hearing to July 10, 1996.

July 1996 - Payment Plan established with the Orange County Tax Assessor's Office for Delinquent property taxes dating back to 1991 prior to California Quartet, Ltd.'s acquisition of the note and subsequent foreclosure proceedings

July 10, 1996 - Fourth Planning Commission public hearing. Staff recommended the following: 1) close the public hearing; 2) Approve the draft resolution certifying Final EIR 561 and recommend its adoption by the Board of Supervisors; 3) Approve the draft ordinance (staff Alternative ZC 95-5) and recommend adoption by the Board of Supervisors; 4) Tentatively approve the Staff alternative 8 (299-lots); 5) Request the applicant submit a revised area plan text and exhibits consistent with Staff alternative ZC 95-5 and Alternative 8 to EMA by July 18, 1996. 6) request staff prepare a draft Planning Commission Resolution for final action on the Area Plan. Commissioner Blamer motioned to continue the hearing to July 30, 1996. The motion was seconded by Commissioner Moody and carried by a 2-1 vote. Commissioner Long was absent.

July 30, 1996 - Fifth Planning Commission public hearing. The Planning Commission was unable to reach a decision and make a recommendation to the Board of Supervisors. The Commissioners voted four times on varying lot yields ranging from 318 down to 260. However, as divided as the commissioners appeared to be, a majority of the commissioners were in agreement on the general development envelope as depicted by Staff recommended Alternative No. 8. The Commission did however, recommend certification of the EIR document. Because the Commissioners were at an impasse on the substantive issues before them, i.e. the Zone Change and Area Plan, they recommended moving the project along to the Board of Supervisors for their consideration, as the Board has the final discretionary authority to approve these items and the project.

August 2, 1996 - California Quartet, Ltd. appeals Planning Commission action, because the Commission's inaction on making a recommendation to the Board of Supervisors on the substantive issues of the Zone Change and Area Plan are procedurally de-facto project denials.

September 10, 1996 - Submit Alternative 9 (318 lots) to EMA Staff and request that this alternative be considered by the Board of Supervisors as a plan which better addresses the concerns and issues raised by the public and the Planning Commissioners at the last hearing.

October 2, 1996 - Saddleback Valley Unified School District Board approves Mitigation Agreement for Saddleback Meadows.

October 22, 1996 - Board of Supervisors public hearing on appeal of Planning Commission Action. Supervisor Silva recuses himself from voting on the project. The Board denies the Appeal. The Supervisors then motion to approve a project with a density cap of 100 lots (Draft EIR alternative No. 4). The motion does not carry and the Board directs staff to report back to the Board by November 5th, on the process to initiate a reversion to acreage on the Saddleback Meadows property, (i.e. remove the existing Recorded Final Tract Map).

November 5, 1996 - Board of Supervisors hear EMA staff's report concerning the reversion to acreage procedure. The motion to initiate the reversion to acreage does not carry. Supervisor Saltarelli requests staff to inquire about the potential acquisition of the Saddleback Meadows property for public purposes. The Board does not certify the EIR.

November 7 & 8, 1996 - Attempted to submit grading permit application based on Final Tract map. County refuses to accept any applications for submittal of anything relating to Saddleback Meadows. The County had determined that the previous grading permit application filed in April 1994 had expired in 1995, therefore, a new application would be necessary to continue processing the grading permit.

November 8, 1996 - TPG Management receives letter from Thomas Mathews, the County Planning Director, officially apprising us of Supervisor Saltarelli's desire to explore possible full or partial acquisition of the Saddleback Meadows property by the County.

November 8, 1996 - Bill Ross transmits to Ben DeMayo, Deputy County Counsel, a draft of the proposed Tolling Agreement. The purpose of this tolling agreement is to provide additional time for the parties to negotiate in good faith without having to file and engage in litigation. This tolling agreement is consistent with the provisions of Code of Civil Procedure section 360.5 .

November 14, 1996 - Bill Ross requests the County to transmit copies of all documents maintained by the County Environmental Management Agency (EMA) that concern or are related to the recent attempt by California Quartet to submit for processing of a grading permit based on the Recorded Final Tract Map.

November 15, 1996 - Bill Ross transmits to the County a Demand Letter to process the Rough Grading Plan Application which the project civil engineer had attempted to submit on November 8 and 9, 1996.

November 15, 1996 - Bill Ross transmits letter to County regarding Settlement Discussions concerning the sale of Saddleback Meadows property for public purposes laying out the ground rules for such negotiations.

November 18, 1996 - TPG Management prepares several sketch studies which look at reduced development areas and lot yields at the request of EMA staff, these studies entail a variety of lot sizes.

November 26, 1996 - Bill Ross transmits to the County a Demand Letter to process the rough Grading Plan Application.

November 26, 1996 - Tolling Agreement executed between California Quartet, Ltd. and the County of Orange. The Tolling agreement is effective on November 21, 1996 and will expire 180 days from the effective date (May 20, 1997).

November 27, 1996 - Pike Oliver meets with Tom Mathews, EMA Planning Director, and discusses sketch studies of alternative reduced area plans for Saddleback Meadows produced in response to EMA staff's request. Tom Mathews requests additional information be provided on these sketch studies (statistical summaries with along with a comparison to Alternative No. 9)

November 27, 1996 - Letter to Bill Ross from EMA responding to Ross's correspondence dated November 15, 1996 and November 26, 1996 regarding California Quartet's attempt to file an application for a grading permit for Tract 10692. The letter states that the reason the application

was not accepted by the County was due to a misunderstanding by staff. The letter then states their assurance that the application will be accepted when presented again.

December 3,1996 - County accepts Grading application for Tract 10692 . Assigned Grading Application Number GA960048

December 20, 1996 - Applicant transmits additional information requested by Tom Mathews on November 27, 1996.

December 24, 1996 - County circulates Notice of Preparation (NOP) of a Draft Subsequent Environmental Impact Report related to Grading Application GA960048, Tract Map 10692. Starts a 30-day comment period.

February 6, 1997 - County re-circulates NOP document.

February 7, 1997 - Meeting requested by County staff to discuss potential full/partial acquisition possibilities with applicant and representatives from the community and neighbors. Attendees from the community included, two members, Randy Brusca and Ray Chandos from the Foothill/Trabuco Review Board; Verlyn Jensen Representing St. Michaels Abbey,; Richard Jennings of the Vendanta Society Ramakrishna Monastery, and Marie Walsh of Hidden Ridge.

February 21, 1997 - TPG Management makes an informational presentation before the Foothill/Trabuco Review Board to facilitate Randy Brusca and Ray Chandos' request at the February 7, 1996 meeting at the County. Discussion of the two (2) reduced project area studies which were discussed previously at the February 7, 1997 meeting.

February 28, 1997 - County has follow-up meeting to the March 7, 1997 with the same group of representatives from the community, to receive their feedback from the previous meeting.

March 7, 1997 - Applicant meets with County staff to discuss outcome of County's February 28, 1997 meeting with the same members of the community who attended the February 7, 1997 meeting

April 11, 1997 - The Director of Planning & Development Services transmits a letter to the Members of the Board of Supervisors providing a summary of the alternatives proposed by the landowner but not acted on by the Board of Supervisors in October 0f 1996, and the results of several meetings which had taken place between Planning & development Services staff, County Counsel, the landowner, and surrounding property/area representatives to explore acquisition opportunities of all or a portion of the property. Generally, the community representatives maintained that a 100-unit project clustered adjacent to El Toro Road was the maximum development acceptable. The landowner stated that the 100-unit alternative is not economically feasible. The Director's understanding is that the landowner will entertain any offer to purchase

all or a portion of the property, even though it is not now being marketed. Staff was unaware of any viable sources of funds, private or public, for this purpose. Therefore, the discussions have come to an end.

May 30, 1997 - Applicant submits application for Use permit (PA97-0086) to allow construction of a temporary project identification/future construction sign on the Saddleback Meadows property.

August 5, 1997 - First Planning Commission Hearing on Use permit to allow a temporary sign on the Saddleback Meadows property. The hearing on this application was continued to September 9, 1997.

September 9, 1997 - Planning Commission denies Use permit for sign.

September 19, 1997 - Applicant appeals the Planning Commission's denial of the Use Permit to Board of Supervisors.

October 21, 1997 - Board of Supervisors hears Applicant's appeal regarding the Planning Commission's denial of Use permit PA97-0086 to allow construction of a temporary sign on Saddleback Meadows. The Hearing is continued to December 9, 1997

October 22, 1997 - First Planning Commission public hearing to review certification of Subsequent EIR 566 to allow for the grading and development of 705 manufactured homes and a 1.5 acre neighborhood commercial center on Saddleback Meadows. The hearing was continued to December 3, 1998.

November 25, 1998 - Board of Supervisors hearing to modify the appeal procedures for SEIR 566 so that the SEIR should be reviewed and certified by the Planning Commission with an appeal going directly to the Board of Supervisors. Hearing is continued to December 9, 1997.

December 3, 1997 - Planning Commission Certifies Final Subsequent EIR 561.

December 9, 1997 - Board of Supervisors uphold Applicant's appeal of Planning Commissions denial of use Permit for a site sign on Saddleback Meadows.

December 9, 1997 - Board of Supervisors First reading of "An Ordinance of the County of Orange providing for appeal of certain Grading Permits". Item is continued to December 16, 1997.

December 16, 1997 - Board item that had been continued from December 9, 1997 regarding "An Ordinance of the County of Orange providing for appeal of certain Grading Permits" is not approved.

December 17, 1997 - The Chair of the Planning Commission transmits letter to members of the Board of Supervisors regarding the Commissions recent certification of SEIR 566 on Saddleback Meadows and recommending that the Board revisit an alternative zoning designation for Saddleback Meadows (Alternative No. 4 in SEIR 566, 299-units).

December 18, 1997 - The Vendanta Society of Southern California submits a notice of appeal regarding the Planning Commission's certification of FSEIR 566.

January 27, 1998 - Board of Supervisors Hearing regarding the appeal of the Planning Commission's certification of SEIR 566, as filed by the Vendanta Socitey of Southern California.

February 9, 1998
St. Michael's Abbey transmits an Offer to California Quartet, for a partial purchase of Saddleback Meadows through their legal representative.

February 24, 1998
Board of Supervisors hearing upholding Certification of EIR #566 Supervisor Spitzer to provide Board with an update regarding potential settlement negotiations with Applicant regarding pending litigation against the County, within 45-days(April 14, 1998).

March 6, 1998 - August 1998
First in a series of settlement negotiation meetings involving St. Michael's Abbey, the Ramakrishna Monastery, California Quartet, and the County. CQ agrees to study a series of reduced development alternatives in conjunction with partial acquisition.

March 6, 1998
First in a series of settlement meetings involving St. Michael's Abbey, the Ramakrishna Monastery, California Quartet, and the County. CQ commits to study a series of reduced development alternatives coupled with a partial purchase of the property.

March 23, 1998
Second settlement meeting: CQ discusses reduced alternatives analyzed since the last meeting while County staff unveils the "Mathews Plan" prepared by County staff.

April 1, 1998
Third settlement meeting: California Quartet presents a modified version of the staff alternative (a.k.a. the "Modified Mathews Plan" 130-150 units).

April 14, 1998
Supervisor Spitzer provides Board members with a status update.

April 20, 1998
Geotechnical meeting at the County to discuss issues and concerns related to Staff alternative and the modified staff ("Mathews Plan") alternative.

April 23, 1998
Fourth settlement meeting: St. Michael's Abbey and Ramakrishna Monastery air their concerns with geotechnical stability issues. CQ suggests and initiates getting respective geotechnical consultants together in a work/study session to discuss/address the concerns raised today. Verlyn Jensen conveys their latest offer in tabular form offering different amounts for various scenarios on the table and asks CQ to return with a counter offer at next settlement meeting.

May 4, 1998
CQ initiated meeting of respective geotechnical consultants to discuss/address concerns of Abbey and Monastery. This was intended to a solution oriented meeting, but that, apparently, was not an objective shared by all participants.

May 8, 1998
Fifth settlement meeting: CQ presents it's counter offer in tabular form. Abbey and Supervisor Spitzer appear to agree to a partial acquisition of $5.2 million in conjunction with a development program to be defined that would be somewhere between the County staff proposal and the CQ proposed modifcation to the staff proposal. The Abbey would provide $4.2 million and $1.0 milllion would come from the County. Ed Connor, representing the Ramakhrishna Monastery, rejects the idea of a modification to the staff proposed development program. After a caucus between Supervisor Spitzer and representatives of the Abbey and the Monastery the meeting concludes with Verlyn Jensen and Supervisor Spitzer making a combined cash offer of $8.0 million ($7.0 million from the Abbey and $1.0 million from the County) for the entire property.

May 26, 1998
Meeting initiated by Verlyn Jensen to discuss new offer for acquisition of the entire property — $12.2 million, with $10.2 million from the Abbey and $2.0 million from the County.

June 2, 1998
Board of Supervisors Hearing. Supervisor Spitzer presents status report on Saddleback Meadows settlement Negotiations with direction to County Counsel and staff to prepare for consideration by the Board a settlement agreement containing the following "Conceptual" terms: 1) $1.5 million in appropriated County funds (Strawberry Field funds) will be utilized to acquire an interest in the subject property with the understanding that it is to be used only in conjunction with $10.5 million from St. Michael's Abbey to purchase the entire property with escrow to close on or before October 29, 1998 with language tht if the "Strawberry Field funds" are not available for this proposal that it will not trigger the development option until the Board has had an opportunity to explore alternative funding and that County's contribution of $1.5 million shall be

reimbursed in the event the property is used for a purpose which derives financial benefit; 2) request that all litigation by St. Michael's Abbey and/or California Quartet will be tolled; 3) County staff will immediately begin processing general plan, specific plan, zone change, area plan, tentative tract map applications and any other required plan/application for the 299-lot development plan to be considered for approval if the acquisition is not completed by October 29, 1998 and; 4) Request that California Quartet cease processing any permits related to the 705-unit manufactured home subdivision until October 30, 1998.

June 12, 1998
Letter of intent regarding Purchase and sale of the Saddleback Meadows property. to CQ from St. Michael's Abbey. Abbey indicates that as part of the terms, they would be allowed to develop the property.

June 15, 1998
CQ formally requests County cease processing of the grading plan check application based on Recorded tract Map 10692 (705 units), in accordance with the conceptual terms of the settlement agreement referenced in the Board of Supervisors motion of June 2, 1998.

June 22, 1998
Area Plan & Zone Change Application for the 299-unit "Contingency Plan" Submitted to County.

June 23, 1998
Board of Supervisors Hearing. Supervisor Spitzer provides Board Members with a Saddleback Meadows Settlement negotiations Update. Next Update by Supervisor Spitzer scheduled for August 11, 1998.

July 3, 1998 - On behalf of the Norbertine fathers of Orange, the Saddleback meadows Land Conservancy, and the Vendanta Society of Southern California, Attorney Edmond M. Connor transmits to representatives of the owner of Saddleback Meadows a "Summary of Settlement Terms" and a "Supplemental Term Sheet".

July 17, 1998 - Attorney representing the owners of Saddleback Meadows transmits a Response to Mr. Connor's letter dated July 3, 1998.

August 10, 1998 - Site visit/meeting scheduled to discuss the issue of the "Vendanta Ridgeline Protection" a negotiation term contained in Mr. Connors Letter dated July 3, 1998 which when physically interpreted, severely impacts the partial development alternative's development envelope enough to make the project unfeasible.

PROJECT CHRONOLOGY

June 2, 1998	–	Board of Supervisors Minute Order Regarding Saddleback Meadows (attached).
June 15, 1998	–	California Quartet formally requests County to cease processing the grading permit application for 705 units.
June 22, 1998	–	Application for Zone Change 98-3/Area Plan 98-2 (aka Contingency Plan) to allow for 299 units filed by California Quartet.
June 22 to August 6, 1998	–	In-house review by County staff.
August 7, 1998	–	Distribution of project application and EIR Addendum for public review.
August 25, 1998	–	1st Planning Commission public hearing.
September 22, 1998	–	2nd Planning Commission public hearing (continued without discussion). F/TSP Review Board members appointed.
September 25, 1998	–	F/TSP Review Board members given copy of project application, EIR Addendum, and staff reports. Application for Saddleback Meadows subdivision maps (TT15230 and TT15784) for Contingency Plan filed.
September 29, 1998	–	F/TSP Review Board conducts public meeting on Contingency Plan.
October 7, 1998	–	3rd Planning Commission public hearing.
October 16, 1998	–	2nd F/TSP Review Board public hearing.

:sah(sm proj. chron.)
10/2/1998

ATTACHMENT D

ZONE CHANGE 98-3 (DRAFT ORDINANCE)

ORDINANCE NO. ____

AN ORDINANCE OF THE COUNTY OF ORANGE, CALIFORNIA ADOPTED PURSUANT TO THE STATE PLANNING AND ZONING LAWS, AMENDING THE FOOTHILL/TRABUCO SPECIFIC PLAN FOR SADDLEBACK MEADOWS (ZC98-3)

The Board of Supervisors of the County of Orange, California, does ordain as follows:

SECTION 1. Ordinance Nos. 3177, 3398, and 3468, which established regulations for the Saddleback Meadows (a.k.a. Bridlewood) Planned Community, are hereby repealed.

SECTION 2. The Foothill/Trabuco Specific Plan Section III.D.3, "Bridlewood Residential District," is hereby amended per Zone Change 98-3 as shown in Exhibit 1.

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3.0 Bridlewood Residential (BWR) District

3.1 Purpose and Intent

The Bridlewood Residential District is established to provide for the development and maintenance of low density detached single-family residential neighborhoods in steep hillside areas in such a manner that generous open space areas are featured.

3.2 Uses Permitted

Per the Residential Estates (Planned Development) District Regulations: Zoning Code sections 7-9-68 and 7-9-110.

3.3 Site Development Standards

Per the Residential Estates (Planned Development) District Regulations: Zoning Code sections 7-9-68 and 7-9-110.

3.4 Special Provisions

a. The minimum amount of open space shall be 70% (155 acres). Such open space shall be defined as follows: The open space area remaining after approved development is completed that has a natural appearance and will remain undisturbed thereafter except for possible approved fuel modification. Such areas may include, depending on design and landscaping, parks, manufactured slopes, and recreation trails.

b. Any development shall be in compliance with every regulation of this District (BWR) and shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.

c. Prior to the approval of any tentative subdivision map, an area plan addressing the entire District shall be approved.

d. A preliminary grading permit may be issued in compliance with the Grading & Excavation Code subsequent to the approval of an area plan and tentative tract map which creates residential building sites. The Grading Official shall require a performance bond prior to the issuance of the grading permit.

e. Prior to the issuance of any building permits for residential structures, a use permit shall be approved by the Planning Commission per Zoning Code section 7-9-150.

f. Only if all special provisions listed above are clearly implemented in the plan submitted for Planning Commission consideration, then, the maximum number of units the Commission may consider is 299 single family detached dwellings.

SADDLEBACK MEADOWS

CONTINGENCY PLAN - 299 LOTS

AREA PLAN 98-2

Prepared for:

County of Orange
Planning and Development Services Department

Prepared by:

TPG Management, Inc.
On behalf of
California Quartet, Ltd.

August 4, 1998

2337

TABLE OF CONTENTS

SECTION	PAGE
Area Plan Background	1
Area Plan Description	1
Open Space/Trail Concept Description	3
Grading Concept Description	5
Landscape/Re-vegetation Concept Description	7

EXHIBITS

Development Plan Concept

Open Space/Trail Concept

Contour Grading Concept

Landscape/Re-vegetation Concept

ATTACHMENTS

Attachment A: Saddleback Meadows Rural Character Statement

AREA PLAN 98-2
SADDLEBACK MEADOWS
CONTINGENCY PLAN- 299 LOTS

BACKGROUND

This plan has 299 single-family detached dwelling units and originated from the "Staff recommended" 299-Lot Alternative (a.k.a. Alternative 8 in EIR No. 561 and presented as Alternative 4 in the recently certified SEIR No. 566). However, this Area Plan submittal is nearly *identical* to a plan (referred to as "Alternative 9") submitted for consideration before the Board of Supervisors on October 22, 1996. The differences between Alternative 9 and the proposed "Contingency Plan - 299 Lots" can be summarized as follows: 1) A reduction in density from 318 lots, to 299 lots; 2) Significant buffering and landform berming has been added along the project edge adjacent to the Ramakrishna Monastery; 3) The need for three extensive "loffel walls" near the project edge adjacent to the Ramakrishna Monastery have been eliminated; and 4) The majority of side-yard retaining walls throughout the project have been eliminated. The intent of this alternative Area Plan, as was its predecessor, Alternative 9, is to provide a project that directly responds to the view impact concerns expressed by St. Michael's Abbey, the Ramakrishna Monastery, the Hidden Ridge Community, and to a lesser degree, Portola Hills. This Area Plan also incorporates community-wide design concepts, elements and features reflective of a "*rural-like*" character within the context and constraints of the site and the developer's objectives. These design elements and features were also first presented at the July 30, 1996 Planning Commission Hearing, in a document entitled "Saddleback Meadows Rural Character Statement", a copy of which has been included in this document.

DESCRIPTION

The average lot size for this project is approximately 6,672 s.f., with a minimum lot size of 5,000 s.f.. Access to the project would be provided via a gate guarded private street off El Toro Road immediately south of the existing Aliso Creek/Trail under-crossing structure. An emergency only access connects with Valley Vista Way. All habitable structures are proposed to be protected by automatic fire sprinkler systems. The project site is approximately 222.2 acres in size. Total open space exceeds approximately 70%.

The project acreage (222.2 acres) does not include the adjacent off-site water tank site. A water tank with a maximum capacity of 1.4 million gallons, and associated access road, are proposed off-site adjacent to the northeast corner of the project site to provide water service to the proposed project. The proposed water tank site was previously dedicated to the Trabuco Canyon Water District when the existing Final Tract Map was recorded (Tract No. 10692). The water tank will be approximately 30-feet tall, 100 to 110-feet in diameter, and will be bermed,

landscaped, and painted a complimentary color to the surrounding setting. A total of approximately 8 acres of off-site area would be affected as a result of project implementation to accommodate slope area, access roads, related remedial grading, the water tank, and County of Orange fuel modification requirements.

Onsite circulation is proposed with a system of private streets consisting of a primary spine street (56-foot r.o.w.) and a series of cul-de-sacs (41-,45-, and 52-foot r.o.w.). An encroachment easement is required from the County of Orange to accommodate the project access road where it traverses County owned property along the western-most boundary of the site.

The project has been designed to minimize impact on the existing land form. The homes have been located on the relatively level areas in a broad crescent shape flowing along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off the eastern and northern major ridgelines bordering the property. A primary design consideration in establishing the rural-like character of Saddleback Meadows is presenting a landscape enveloped community when viewed from the surrounding areas and from within the development. In response to this design intent and the interests of St. Michael's Abbey, the Ramakrishna Monastery and the neighboring Hidden Ridge community, specific grading techniques, site planning, and landscape elements will be incorporated within the project. The intent of these features will be to enhance the views of Saddleback Meadows from the surrounding areas. This will be accomplished through:

1. Creative contour grading that emphasizes and expands upon landforms;

2. Berming at select and appropriate locations to blend with natural terrain features while providing screening and buffering views into the project site from St. Michael's Abbey, the Ramakrishna Monastery and Hidden Ridge;

3. Creative site planning techniques that minimize rows of backyards along highly visible edges, incorporates slopes, landscape zones and landforms between homes and the surrounding neighbors, and neighborhood streets that climb with the terrain rather than flat roads common to non-terrain sites; and

4. An aesthetic community-wide landscape program that provides visual enhancement through significant perimeter and interior plantings (plant pallets will require OCFA approval), responds to seasonal changes, and provides filtered views of the community from the surrounding areas.

This plan goes to great lengths to mitigate off-site views of the project from neighboring properties, specifically: St. Michael's Abbey, the Ramakrishna Monastery, and the Hidden Ridge Community. This will be accomplished through a combination of thoughtful landscape design and the extensive use of berming techniques which will be integrated with the landform contouring, especially along the Main Spine Road, and along view sensitive development edges. This

approach will also enhance the project's edge conditions which will provide for more sensitive edge transitions to the project's large open space areas and O'Neill Regional Park.
A wildlife movement corridor has been incorporated into the project design to address the importance of regional wildlife movement linkages between regionally important open space areas such as O'Neill Regional Park, Whiting Ranch Wilderness Park and the Cleveland National Forest. This plan utilizes an east/west corridor alignment similar to that shown in the Foothill/Trabuco Specific Plan. This wildlife corridor, which bisects the project (called the central corridor), is a component of a three corridor concept which together is designed primarily to accommodate small and medium size mammals and birds, but would not preclude the occasional potential movement of large mammals as well. This corridor is comprised of a minimum 400' wide wildlife corridor with 50' setbacks located on either side. The onsite wildlife corridor is proposed to utilize an at-grade crossing (400') where the wildlife corridor traverses the development's main spine road. Due to the low level of traffic on this end of the project, the at-grade crossing is not anticipated to inhibit wildlife movement. Loffel walls are used in select locations to minimize the extent of manufactured slopes. Loffel walls allow for the growth of plant materials on and around the wall, eventually helping to screen the wall behind a blanket of vegetation.

Statistical Summary*

ONSITE	ACREAGE	% OF SITE
Residential Lots	45.8	21%
Streets (private)	17.8	8%
Regional Park	90.0	41%
Restricted Scenic Preservation Easement	68.5	30%
Subtotal	222.2	100%

* Acreages and percentages are approximations subject to refinement at the Tentative Map/Final Map stages.

OPEN SPACE/ TRAIL CONCEPT

The proposed Open Space/Trail Concept for Saddleback Meadows incorporates a variety of refinements which result in minimizing environmental impacts. In response to the Natural Communities Conservation Program (NCCP) goals and objectives, the project provides for a viable Wildlife Movement Corridor incorporated into the design of the project providing access from the Aliso Creek Corridor to O'Neill Regional Park. The design proposes the primarily undisturbed open space areas, along with re-vegetated slope areas of the project, for fee dedication to serve as an extension of O'Neill Regional Park. Trail connections are provided, linking the project to existing regional riding and hiking trails and bikeways. The project proposes a Trail Staging Area/Pocket Park, Ridgetop Park and the dedication of a significant amount of natural and re-vegetated open space. The proposed Trail Staging Area/Pocket Park provides a

direct link to the regional trail located on El Toro Road and the other proposed recreation features (Ridgetop Park and the Picnic area).

The Open Space/Trail Concept is composed of the following major elements:

1. **Trails**
   a. Live Oak Canyon Regional Riding and Hiking Trail
      - Project proposes the dedication of a 16' wide Recreation Easement along the El Toro Road frontage (approx. 1350 l.f). Final Alignment is subject to approval by the Manager, Harbors Beaches and Parks.

      - Maintenance for this Trail/Recreation Easement will be the responsibility of the County of Orange.

   b. Local Riding and Hiking Trail
      - Project proposes the dedication of a 16' wide Recreation Easement (approx. 4800 l.f., for local riding and hiking trail purposes, of which approximately 1,550 l.f. traverses Restricted Scenic Preservation Easement areas , while approximately 3,250 l.f. will traverse the Regional Park dedicated areas. Final Alignment is subject to approval by the Manager, Harbors Beaches and Parks.

      - This plan provides a linkage from the proposed Trail Staging Area/Pocket Park to the Live Oak Canyon Regional Riding and Hiking Trail on El Toro Road. Another trail will link the proposed Trail Staging Area/Pocket Park to the proposed Ridgetop Park (a.k.a. "Bridlewood Look-Out Park") and the "Picnic Area".

      - Maintenance for this Trail/Recreation Easement will be the responsibility of the County of Orange.

2. **Regional Park**
   As designated on the Open Space/Trail Concept Map:
      - This category of open space will serve as an extension of O' Neill Regional Park.

      - This category of open space encompasses approximately ±90 acres (±41% of the project)

      - As a extension of O' Neill Regional Park, these open space areas, which include the wildlife movement corridor, would be offered for dedication to the County of Orange.
      - The Regional Park will encompass areas which include the following areas which lie outside of the required fuel modification zones: "undisturbed" open space; Native

Enhancement Transition Areas; re-vegetated remedial graded and manufactured slope areas; Oak Woodlands; Oak Restoration Areas; undisturbed portions of the existing Olive Grove; as well as the preserved existing and re-created Ephemeral Ponds.

- Coastal Sage Scrub, Oaks, and other biological resources requiring on-site mitigation would take place in the areas dedicated for Regional Park purposes.

- The proposed Trail Staging/Pocket Park , Ridge Top Park (a.k.a.Bridlewood Look-Out Park) and Picnic Area will be located in the Regional Park extension. These features will be subject to approval of the Regional Park Development Plan.

- The final boundary of the Regional Park and the Riding and Hiking Trail alignments will be subject to the approval of the Manager of Harbors, Beaches, and Parks.

3. Restricted Scenic Preservation Easements

Areas designated as the following (approx. 68.5 acres) on the Open Space/Trail Concept Plan Map are to ensure that the scenic qualities of these edge areas are not impacted in the future by structures and development after they have been established:

- El Toro Road Community Edge Area
- Fuel Modification Zones (Wet Zone and Non-Irrigated Zones only)
- These areas will be maintained by an HOA and/or Community Maintenance District.
- Community slopes(Between residential lots and Roads).

CONTOUR GRADING CONCEPT

The grading concept for this alternative reflects a contour grading approach which utilizes techniques emphasizing variations and takes advantage of the curvilinear street and lotting design, rather than repetitive uniformity. Contour grading and the creative use of berms and landforms along the community's spine road provide for screening and buffering of views into the project site from various offsite locations. Numerous design features work together to establish the rural-like character. Contour grading with landform enhancement provides for edge treatments responsive to the natural terrain. The community's spine road alignment responds to the terrain and allows for landscape plantings on both sides to create the rural-like experience while driving through the community. Creative site planning responds to the intended rural character with setbacks from the spine road. This allows the project a more natural and organic ambiance in keeping with the rolling hillside setting. These contour grading techniques consist of the following:

1. Integrate grading into the context of existing topography using horizontal rounding of contours;

2. Blending of manufactured contours with natural existing contours;

3. Rounding at the top and toe of slopes to avoid harsh transitions; and

4. Design of development enclaves of varying size and irregular spacing to avoid a uniformly "terraced" appearance.

Earthwork Volumes:

Conventional Grading

- Balanced Cut/Fill (approximate)
  Cut Quantity: ±2,100,000 c.y.
  Fill Quantity: ±2,100,000 c.y.

- Total Import Quantity: 0
  Total Export Quantity: 0

Remedial Grading

- Total Remedial Grading (Remove & Replace): approximately ±6,800,000 c.y.

MAXIMUM GRADING STATISTICS

Manufactured Slopes	10-20 ft.	Over 20 ft.	Highest
Building Lots (with Type C slopes)*	N/A	N/A	N/A
Type B Slopes** (between building lots)	0 L.F.	5,700 L.F.	50 ft.
Roads	2,500 L.F.	3,100 L.F.	120 ft.

Contour Elevation Changes	10-20 ft.	Over 20 ft.	Highest
Building Sites	92 places	134 places	80 ft.
Roads	4,250 L.F.	7,300 L.F.	91 ft.

Retaining Walls	0 - 6 ft.	Over 6 ft.	Highest
	3,500 L.F.	N/A	6 ft.

Loffel Walls	0 - 6 ft.	Over 6 ft.	Highest
	0 L.F.	1,640 L.F.	40 ft.

* Type "C" slopes are owned and maintained by private owners

** Type "B" slopes are owned and maintained by the H.O.A./Community Maintenance District

Note: These figures are approximations subject to refinement at the Tentative Map and Final Map stages.

LANDSCAPE / REVEGETATION CONCEPT

The Landscape / Revegetation Concept for Saddleback Meadows seeks to integrate the landscape of the proposed project with the site's existing setting and that of the surrounding foothill region. The use of landscape materials (with native and introduced plant pallets approved by the OCFA), and the manner in which the landscape design concept is integrated into the project will reinforce the ability of Saddleback Meadows to respond to the following:

1. Views into the community from surrounding properties;
2. Views from within the Saddleback Community;
3. The desire to create a community character which reflects the transitional nature of the property from a suburban to semi-rural setting.

Interspersing primarily sycamore tree groupings at strategic locations throughout the project will blend the different landscape zones and integrate this community into the surrounding preserved natural open space areas. A predominant image of nature, open space and natural vegetation will be accomplished via:

1. Tall trees and shrub massings planted on slopes between the residential enclaves and within natural open spaces, on slopes between homes, and along community streets;

2. A priority given to landscape plantings, i.e. views of the community shall be through the landscape which blankets the architecture of the neighborhoods, thus allowing the landscape (incorporating Sycamores, Oaks, and other appropriate trees) to predominate over the built environment; and

3. Side slope and street tree plantings in the neighborhoods to provide for visible tree canopies above the roof lines.

4. An interlace of the natural and introduced landscape as one fabric.

The Landscape Concept consists of five (5) functional, yet integrated, areas and zones as shown on the Landscape / Revegetation Concept Plan. These areas and zones are as follows:

1) El Toro Road Community Edge Area

The El Toro Road Community Edge area will play a key role in providing a physical and visual buffer for the project from off-site views. Predominantly manufactured slopes are planned along El Toro Road. In addition, a key component of this edge is the preservation of Aliso Creek and it's existing riparian habitat along El Toro Road, just north of the proposed main project entry point. Therefore, this community edge adjacent to the road will be landscaped with introduced and native compatible plants reflecting and continuing the riparian landscape found along the Aliso Creek/El Toro Road Corridor. The California Sycamore, commonly found in riparian areas, will be the major slope tree along the El Toro Road Community Edge.

Further up the manufactured slope, the landscape will transition from riparian plants to ornamental and native compatible plants suitable for erosion control and for buffering and screening. Tree plantings at side-yard property lines of the residential lots located at the top of slopes will reduce the visual impact of dwellings when viewed from off-site. Meanwhile these tree groupings are intended to maintain views for individual lots. Additionally, this edge treatment is designed to provide visual screening of the project from vehicles traveling along El Toro Road.

2) Community Slope Area

Manufactured slopes will be landscaped to visually enhance the project, to control erosion, and to provide buffering/screening where appropriate and feasible. Trees will be located at the top of slopes and clustered near side-yard property lines of residential lots as well as on the slope itself. Trees planted on the slope will take into consideration the maximum tree height at maturity relative to its vertical location to the top of slope, so that views from residential lots will not be impaired when slope landscaping reaches full maturity. This will blend the manufactured on-site slopes with off-site natural areas, integrating the community landscape into the surrounding environs. California Sycamore and some Coastal Live Oak trees will be used in strategic locations throughout the community slopes, continuing the community landscape theme.

Major oak woodland areas and areas of the olive grove which are not impacted by development and/or remedial grading activities are identified on the Landscape/Revegetation Concept Plan as preserved. These areas identify major preserved tree stands and tree groupings only. For identification of individual preserved and impacted oak trees, refer to Sweetwater Environmental Biologists' Oak Tree Inventory, dated December 21, 1995.

3) Fire Fuel Modification Zones

The proposed project is within a designated "Special Fire Protection Area", consequently, the development and construction of the project are subject to requirements designed to mitigate the increased fire hazard (Ordinance 3960). The Orange County Fire Authority (OCFA) requires a fuel modification program along all edges of residential development exposed to fire hazard areas. The fuel modification program addresses three zones consisting of a "Setback Zone", "Wet Zone", and a "Non-Irrigated Zone", as shown on the Landscape and Revegetation Concept Plan Map. Maintenance responsibility for the setback zone lies with the private owner. Maintenance responsibility for the other zones will be with the H.O.A./ Community Maintenance District.

Saddleback Meadows' residential edges contain both upslope and downslope conditions with a combination of both manufactured and natural undisturbed slopes. The intent of the fuel modification is to utilize these slopes as a transition area between natural open space (fire hazard areas) and the residential edge and to provide an acceptable level of fire safety. The revegetated portion of these slopes will be landscaped using native compatible plant species which will meet

the public safety goals of the OCFA, reinforce the naturalized appearance of the manufactured slopes, and satisfy the aesthetic requirements of the project. Fire Fuel Modification Zones are designed to reflect the native enhancement transition zone criteria for plant material selection. The plant palettes for both of the Fire Fuel Modification Zones and the Native Enhancement Transition Zone overlap and contain many of the same species and varieties of plants. These plant pallets will be required to meet the approval of the OCFA.

Setback Zone - Is a twenty-foot (20') wide area within the rear yard setback of all residential lots abutting the fuel modification zone. No combustible construction or materials will be allowed in this zone. This zone will be maintained by the individual homeowner. (Not shown on the Landscape / Revegetation Concept Plan, see Preliminary Fuel Modification Plan).

Wet Zone - is a fifty-foot (50') wide landscape area, beginning at the residential rear yard property line. This zone includes an automatic irrigation system and low fuel fire resistive, native compatible plants.

Non-Irrigated Zone - Fire fuel modification zones are 100' wide. However, several upslope areas with 50' widths will be permitted with O.C.F.A. approval. In natural undisturbed slopes, existing native planting will be non-irrigated, pruned and thinned. The OCFA requires that all "dead and dying" materials be removed, pruned and thinned in non-irrigated zones Manufactured slopes will be **temporarily** irrigated and landscaped with native and native-compatible plant materials. Landscaping is intended to naturalize over time with irrigation to be abandoned upon establishment and naturalization.

Application of the Orange County Fire Authority's (OCFA) fuel modification criteria to the area located along the upper north-easterly project boundary, dictates that the fuel modification zone traverse off-site onto private property. This will require that an easement be obtained from the adjacent property owner, for the purposes of fuel modification, prior to the issuance of a grading permit. Maintenance responsibility for any off-site fuel modification zones will be the same as for on-site fuel modification zones (i.e. H.O.A. / Community Maintenance District).

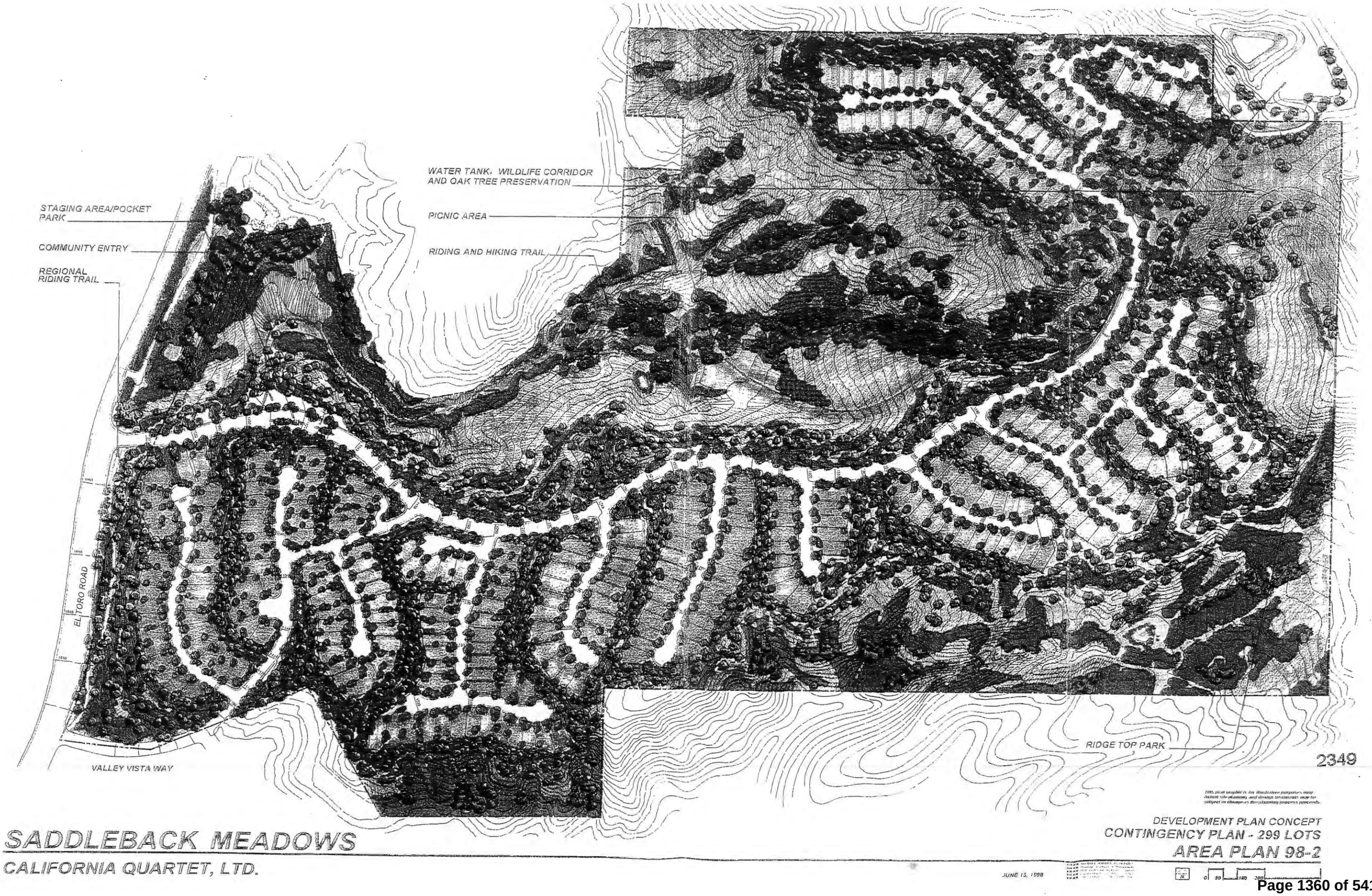
4) Native Enhancement Transition Area

Natural areas disturbed by remedial grading and located within designated open space areas will require revegetation with native or naturalized plant material to re-establish the previous coastal sage scrub (CSS). A high priority will be placed upon selecting plant material which is indigenous to the undisturbed natural areas and surrounding areas and which will provide a landscape with as much habitat value as is practical.

5) Existing Undisturbed Vegetation Area.

Open space areas undisturbed by remedial grading activities will be preserved and incorporated into the overall landscape concept. Only minimal clean-up of abandoned agricultural uses , if

necessary is planned. The elimination of livestock grazing on the property will allow the natural transition and succession of grasses to CSS and Chaparral plant communities over time. The majority of Oak Woodland mitigation will occur in this area within stands of existing non-native vegetation.

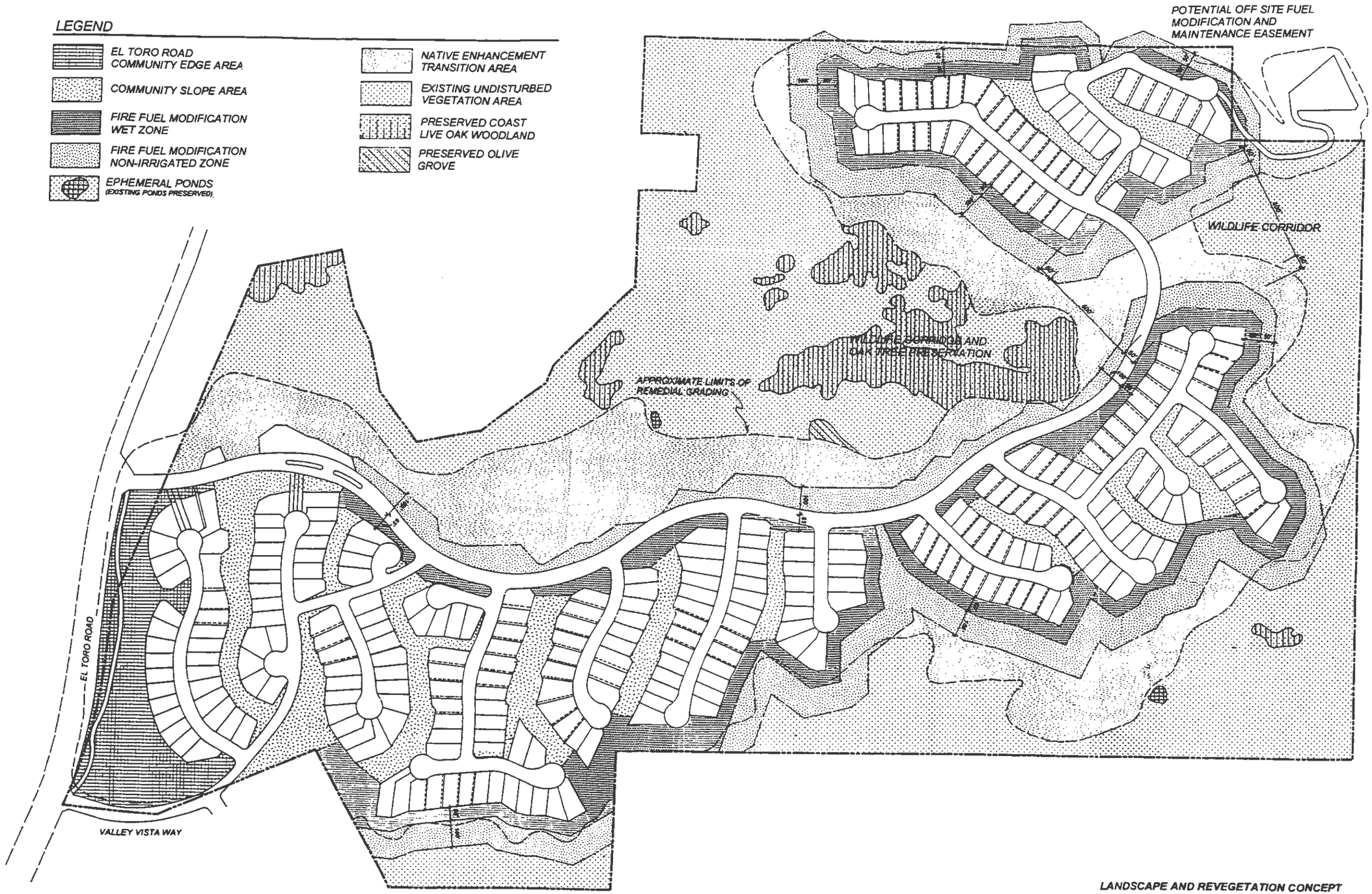


SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

DEVELOPMENT PLAN CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

JUNE 15, 1998

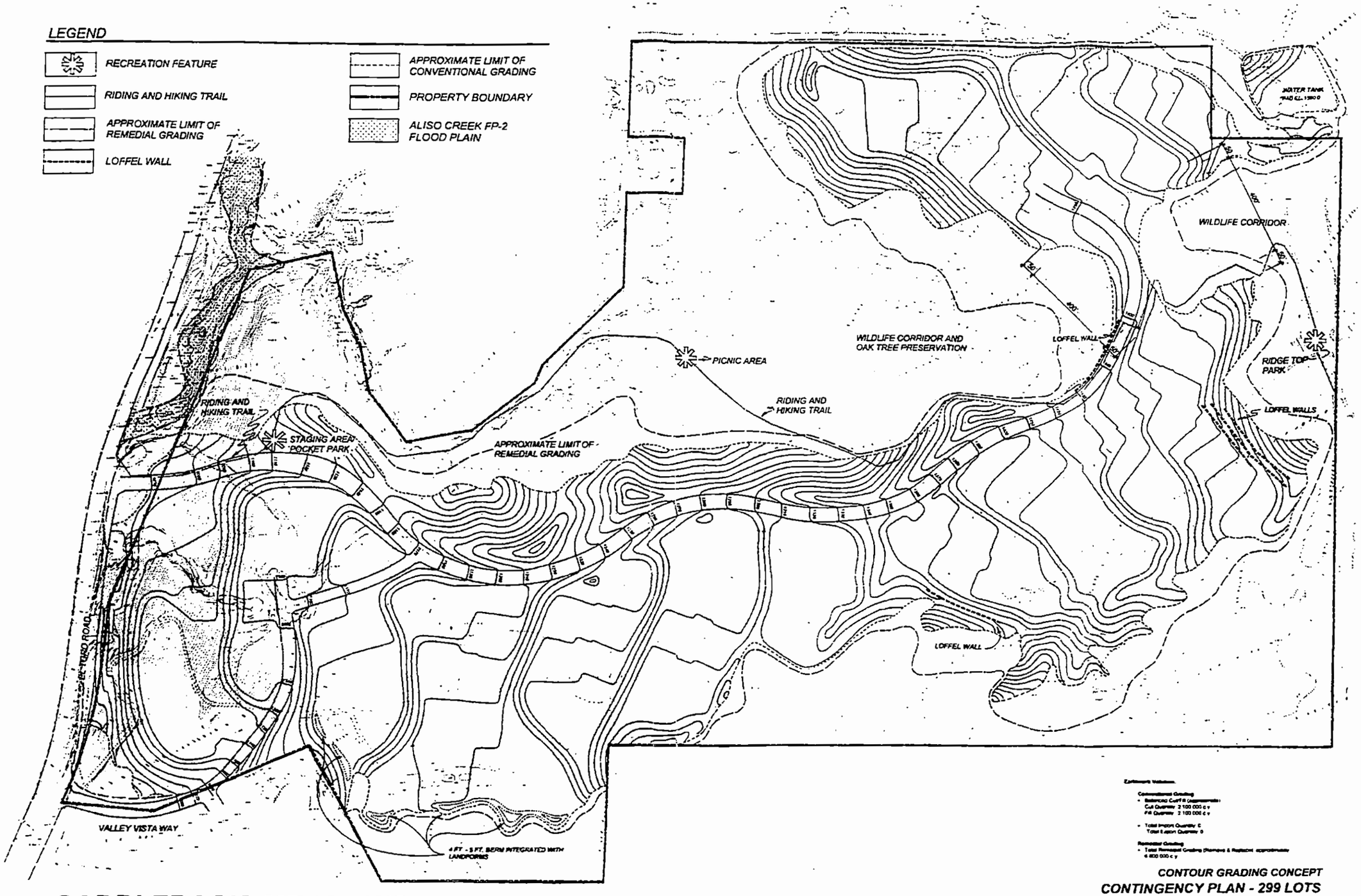


SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

LANDSCAPE AND REVEGETATION CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

MICHAEL MADDEN ASSOCIATES JUNE 22, 1998 0 50 100 200 400



Earthwork Volumes

Conventional Grading
- Balanced Cut/Fill (Approximate)
  Cut Quantity: 2,100,000 c.y.
  Fill Quantity: 2,100,000 c.y.
- Total Import Quantity: 0
  Total Export Quantity: 0

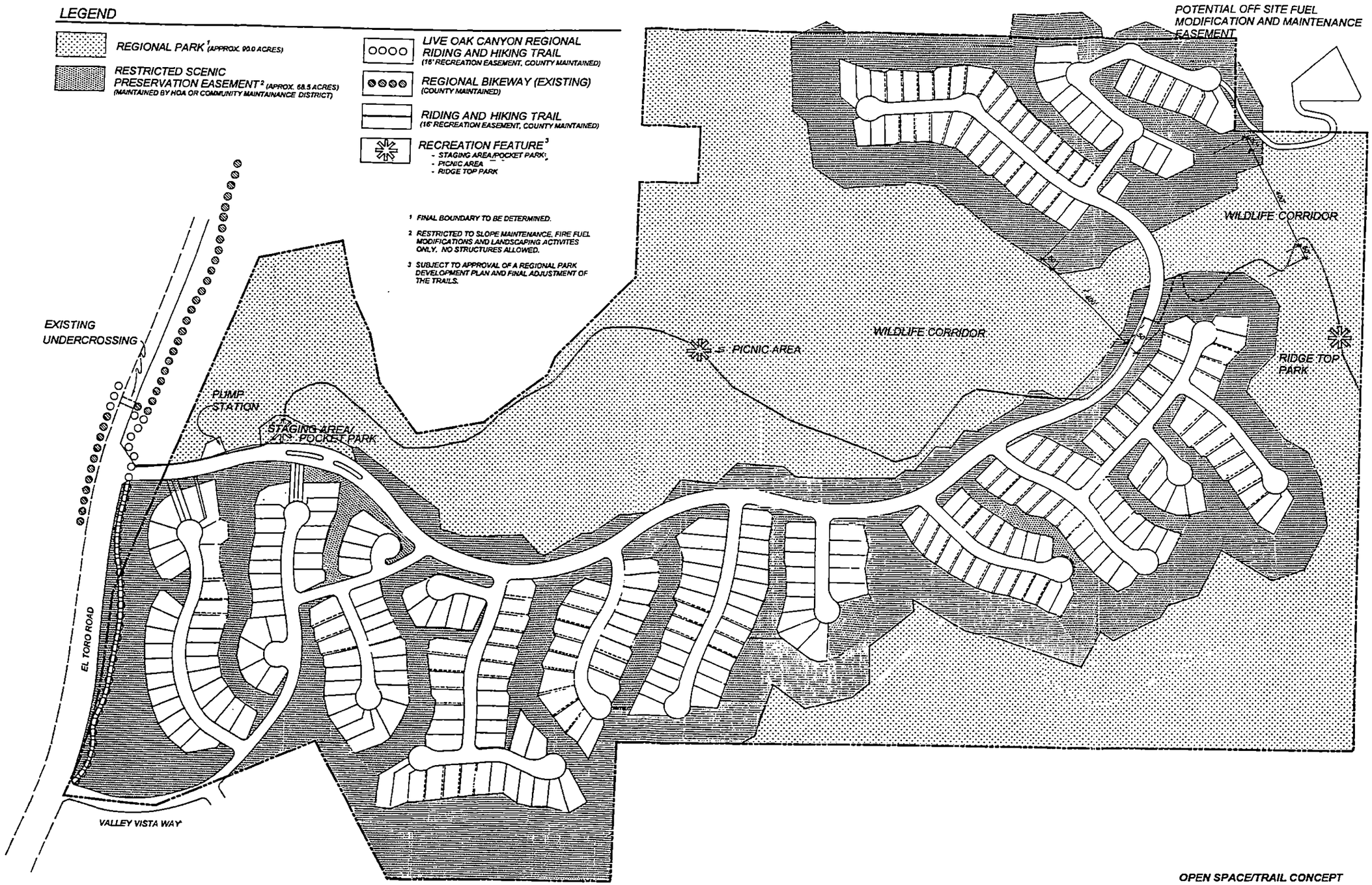
Remedial Grading
- Total Remedial Grading (Removal & Replace): approximately 4,600,000 c.y.

CONTOUR GRADING CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

MICHAEL MADDEN ASSOCIATES — JUNE 22, 1998 — 0 50 100 200 400



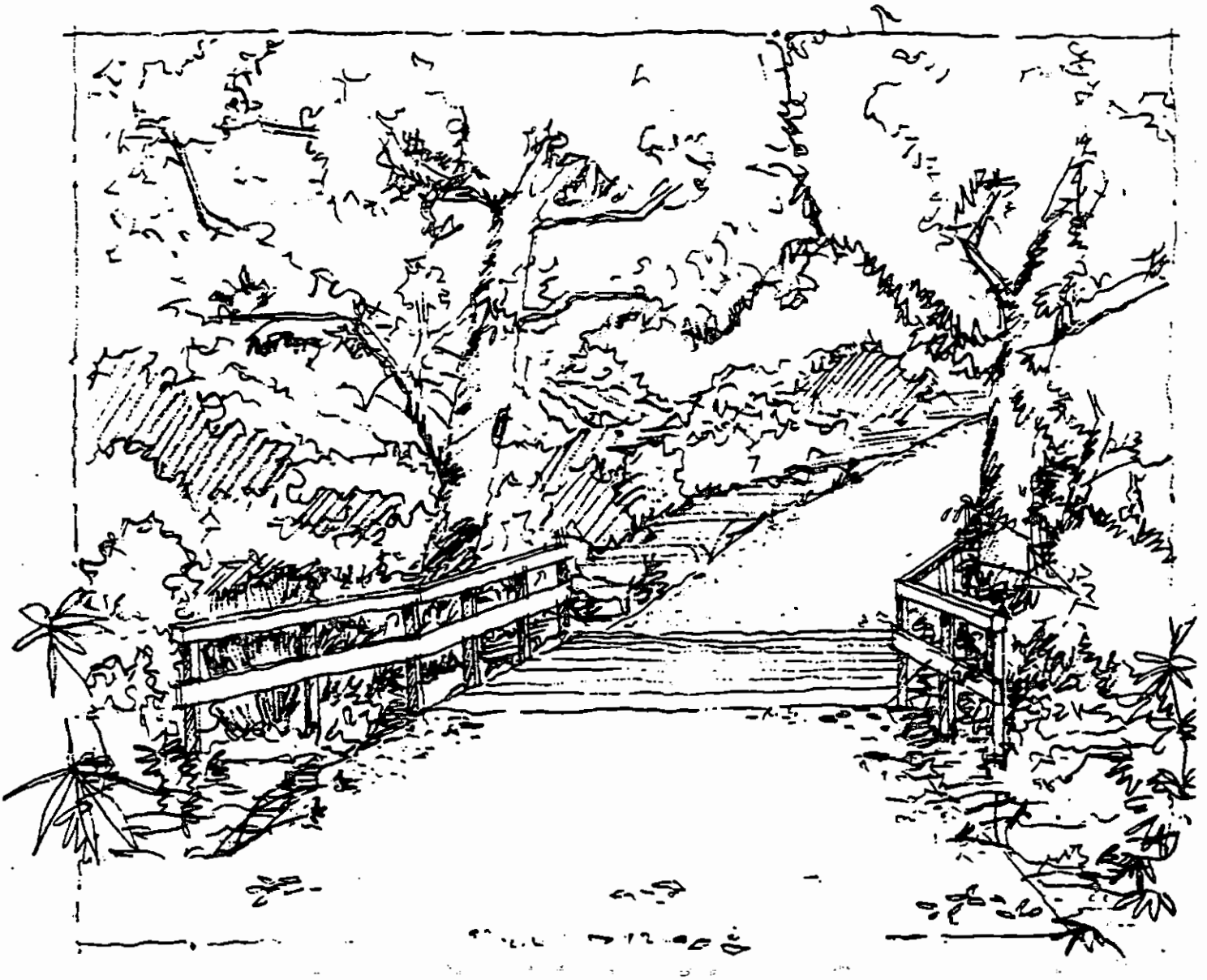
SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

OPEN SPACE/TRAIL CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

MICHAEL MADDEN ASSOCIATES JUNE 22, 1998 0 50 100 200 400

ATTACHMENT "A"



SADDLEBACK MEADOWS

RURAL CHARACTER STATEMENT

Prepared for:
California Quartet, Ltd.

2354

SADDLEBACK MEADOWS
RURAL CHARACTER STATEMENT

July 24, 1996

Prepared for:
California Quartet, Ltd.

Prepared by:
Michael Madden Associates

SADDLEBACK MEADOWS
RURAL CHARACTER STATEMENT

Purpose and Intent

The purpose and intent of this "character statement" booklet is to express the preliminary community design concepts that will eventually create the visual and physical character that the Saddleback Meadows community will have. This booklet addresses the basic design elements and considerations necessary in developing any community character, and ties those elements and considerations to the Saddleback Meadows community. It responds to the project teams intent for a rural community theme and character, as well as responding to design considerations expressed by Saint Michael's Abbey, Hidden Ridge residential community, and the Ramakrishna Monastery. It is a preliminary study intended to reflect the underlying design vocabulary that has been a consistent component of all land use and site planning studies conducted for this property.

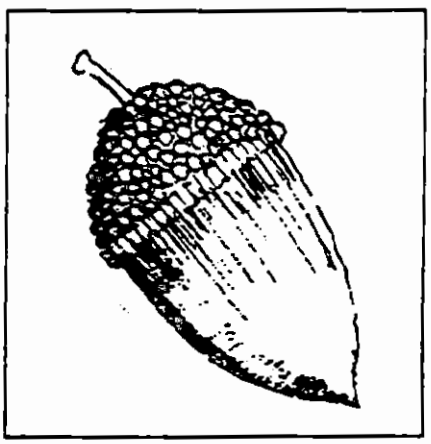
This "Rural Character Statement" is intended to be used as a guideline for community design and as a "tool of measure" to be used by the Planning Commissioners during the review of the Use Permit. The Use Permit requires a precise grading plan, detailed landscape plans, fuel modification plans and programs, architectural plans for all structures, and the precise location of all building and structures.

The planning and design of any proposed community is a combination of the physical site plan on the land and the design parameters initially established relating to the desired community character. The end result is a community whose physical character and composition relates directly with the landscape, streetscape and architectural fabric.

Approaching the Saddleback Meadows project with this philosophy, and with the desire to plan and design a community reflecting the qualities and character of a rural townscape, the initial community design elements establishing the rural character are presented in this booklet.

The "Rural Townscape" Character

The term "rural character" conjures up images of small towns set upon the land amidst a country setting. Winding roads are enveloped in trees and tree canopies. Rolling hills, field walls of stone and rock, woodlands, grasslands and fields surround the towns and provide a separation between each town. Natural areas outside of the towns are enjoyed by the people of the area for hiking, bicycling and horseback riding, exploring and treasure hunting, picnics, and rides in the country. Seasonal color through changing foliage and wild flowers accent the landscape, further emphasizing the character and appeal of the rural townscape and surrounding environment.



Villages and towns are visible and apparent within the landscape, yet blend with the land through a multitude of introduced, as well as natural features and elements. These include:

A. Country roads that transition into a town's main street;
B. Open fields or woodlands filtering into the outskirts of the town through open fields and parks, eliminating the visual boundary of the town and the country;
C. In hillside environments, steep winding streets that climb with the hillside;
D. Streetside elements such as wood rail fencing, simple wooden signs, and old street lamp;
E. The informal arrangement of trees and other plantings, whether curbside or used in other manners, accenting the natural appeal rather than rigid uniformity; and
F. Buildings and related architecture presenting softer earth tone qualities and utilizing materials that blend and are in harmony with the landscape and the natural elements.

The Rural Character of Saddleback Meadows

The character of the Saddleback Meadows community will be observed from two perspectives, these being:

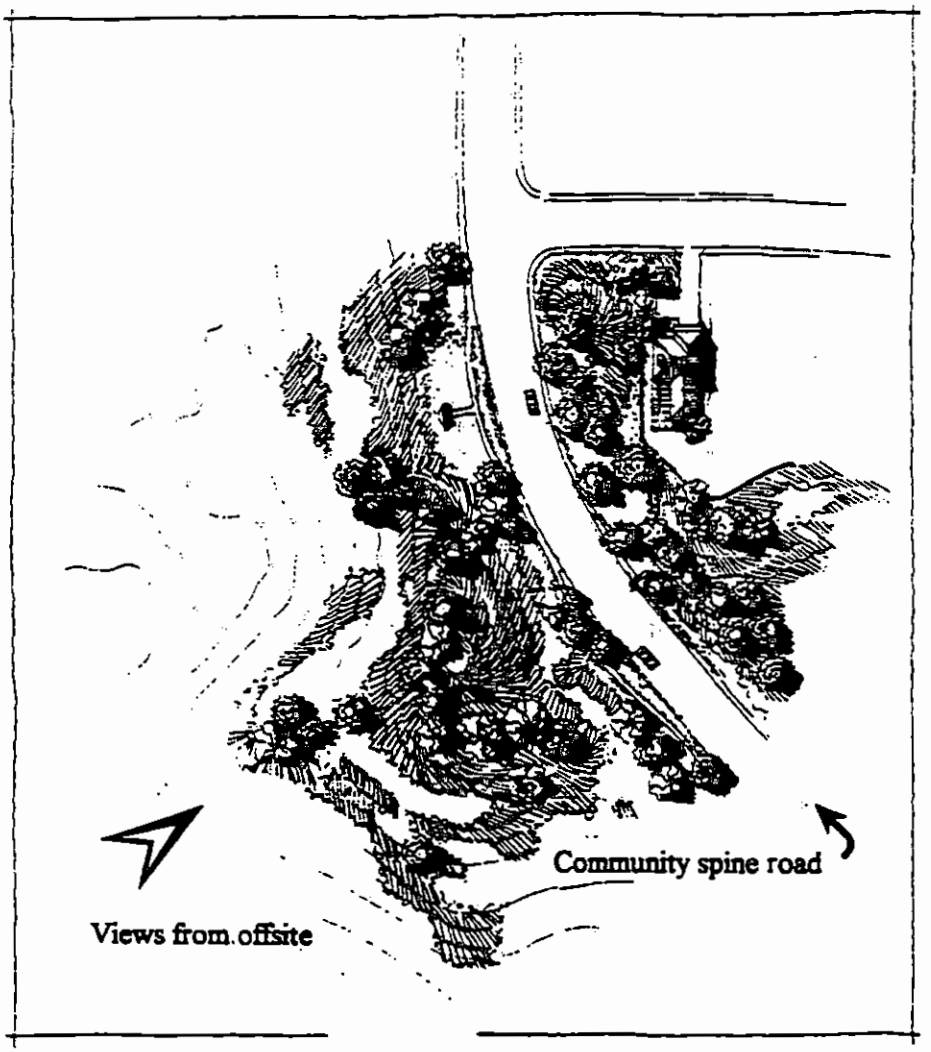
A. The "macro" scale:
    1. Public views into the community from off-site (El Toro Road, Saint Michael's Abbey, Hidden Ridge and the Ramakrishna Monastery); and
    2. Views of the community from within.

B. The "micro" scale:
    1. Views of community elements along highly visible public edges noticeable by the passing public, such as the El Toro Road edge and natural slopes adjacent to Saint Michael's Abbey, Hidden Ridge, and the Ramakrishna Monastery; and
    2. Visual elements and design details throughout the community noticeable from within the community.

The Saddleback Meadows community will incorporate community wide design elements and features reflective of the rural character. These features and elements will respond to the "macro" and "micro" levels of concern, as well as addressing the design considerations expressed by the adjacent neighbors.

A primary design consideration in establishing the rural character of Saddleback Meadows is presenting a landscaped enveloped community when viewed from the surrounding areas and from within. In response to this design intent and the interests of the Abbey, Hidden Ridge and the Monastery, specific grading techniques, site planning, and landscape elements will be incorporated within the plan. The intent of these features will be to enhance the views of Saddleback Meadows from the surrounding areas. This will be accomplished through:

1. Creative contour grading that emphasizes and expands upon landforms;
2. Berming at select and appropriate locations to blend with natural terrain features while providing screening and buffering views into the project site from the Abbey, Hidden Ridge and the Monastery;
3. Creative site planning techniques that minimize rows of backyards along highly visible edges, incorporates slopes, landscape zones and landforms between homes and the surrounding neighbors, and neighborhood streets that climb with the terrain rather than flat roads common to non-terrain sites; and
4. An aesthetic community wide landscape that provides visual enhancement through significant perimeter and interior plantings, providing filtered views of the community from the surrounding areas and responds to seasonal changes.

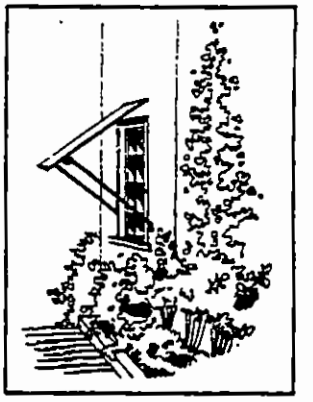


Numerous design features work together to establish the rural character. Contour grading with landform enhancement provides for edge treatments responsive to the natural terrain. The community's spine road alignment responds to the terrain and allows for landscape plantings on both sides to create the rural experience while driving through the community. Creative site planning responds to the intended rural character with setbacks from the spine road.

Contour grading and the creative use of berms and landforms along the community's spine road provide for screening and buffering of views into the project site from offsite.

Based upon the above described design considerations, the following design elements will be part of the Saddleback Meadows community to respond to views into the community from the surrounding areas and the desire to create the rural community character:

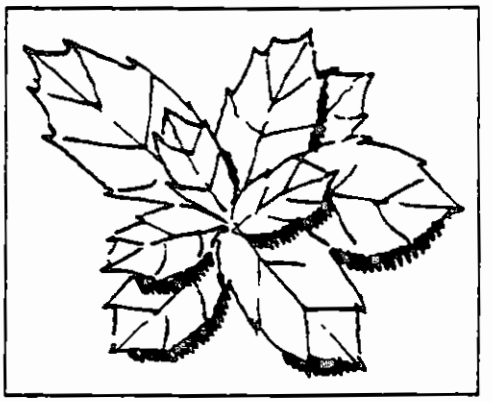
A. Blend the homes, streets and community elements with the natural surroundings. This is accomplished through:
   1.) Color compatibility of architecture with the natural landscape;
   2.) The use of natural and natural-like materials in architecture and streetscape elements;
   3.) Site planning and grading design encouraging landforms and berming, particularly along main community streets; and
   4.) An interlace of the natural and introduced landscape as one fabric.



B. Predominant image of green, nature, open space and plant materials, accomplished via:
   1.) Tall trees and shrub massings planted on slopes between the residential neighborhoods and within natural open spaces, on slopes between homes, and along community streets;
   2.) Priority given to landscape plantings, i.e. views of the community shall be through the landscape which blankets the architecture of the neighborhoods, thus allowing the landscape (incorporating Sycamores, Oaks, and other appropriate trees) to predominate over the built environment; and

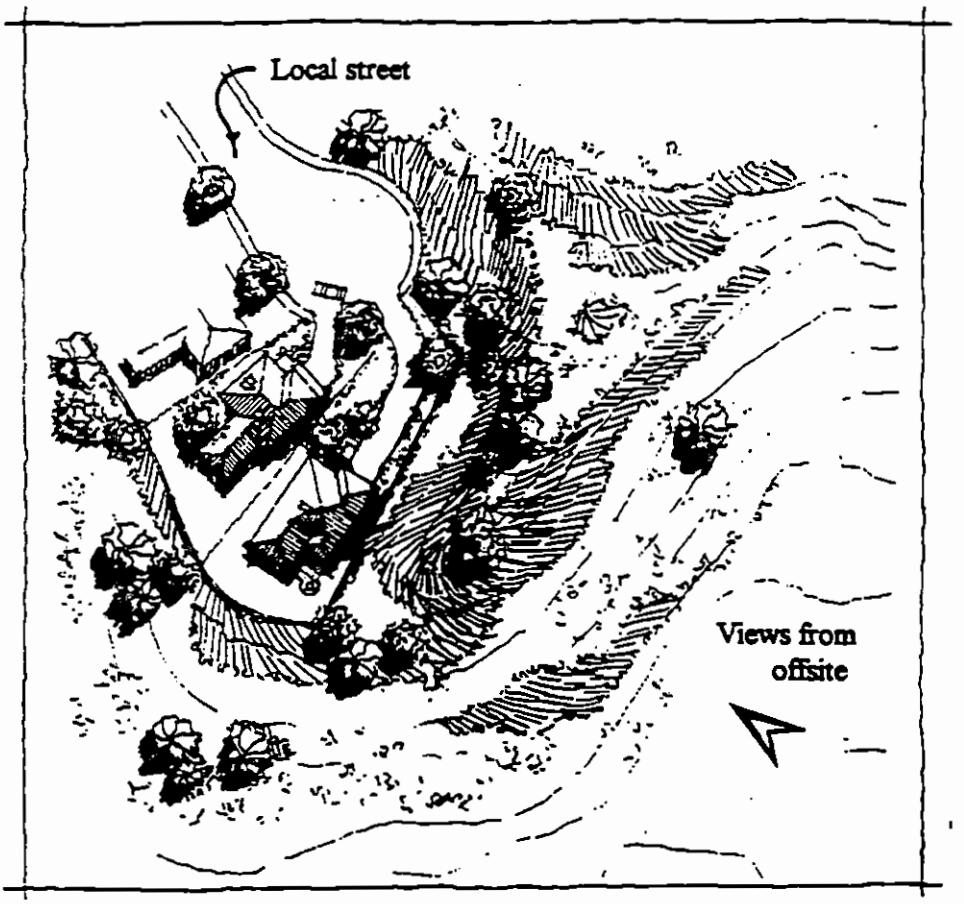
3.) Side slope and street tree plantings in the neighborhoods to provide for visible tree canopies above the rooflines.

The following design parameters will be part of Saddleback Meadows in response to views from within the community and the desire to create the rural community character:

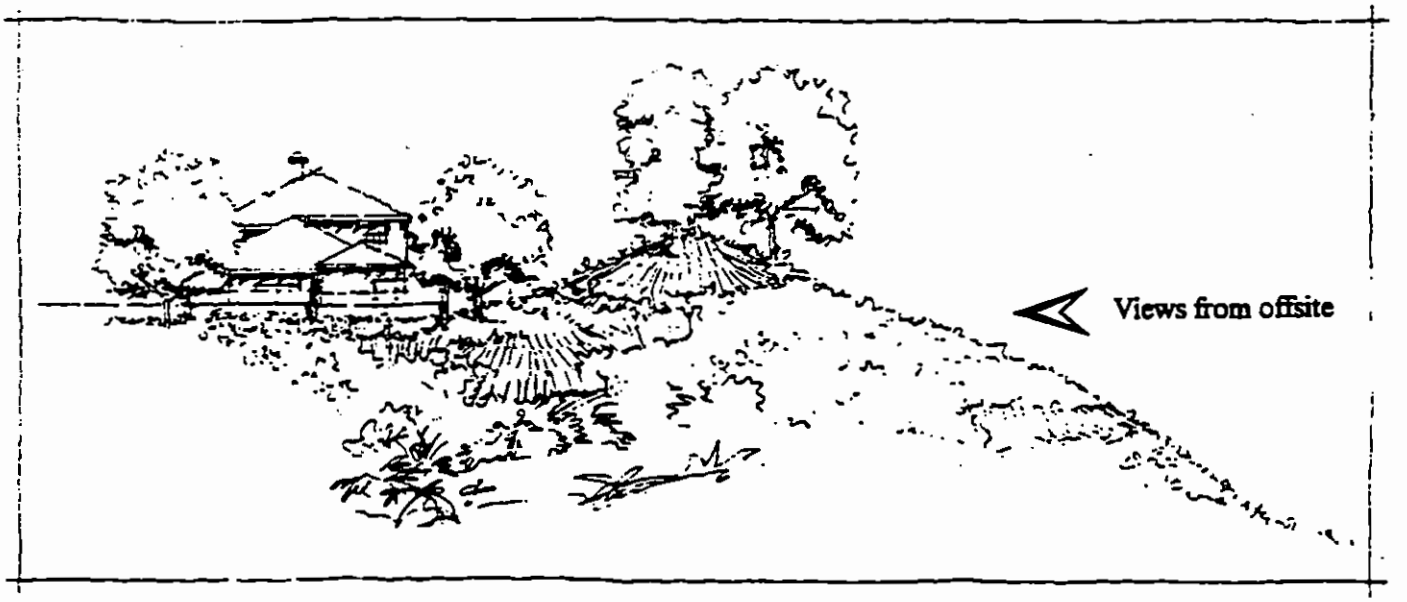


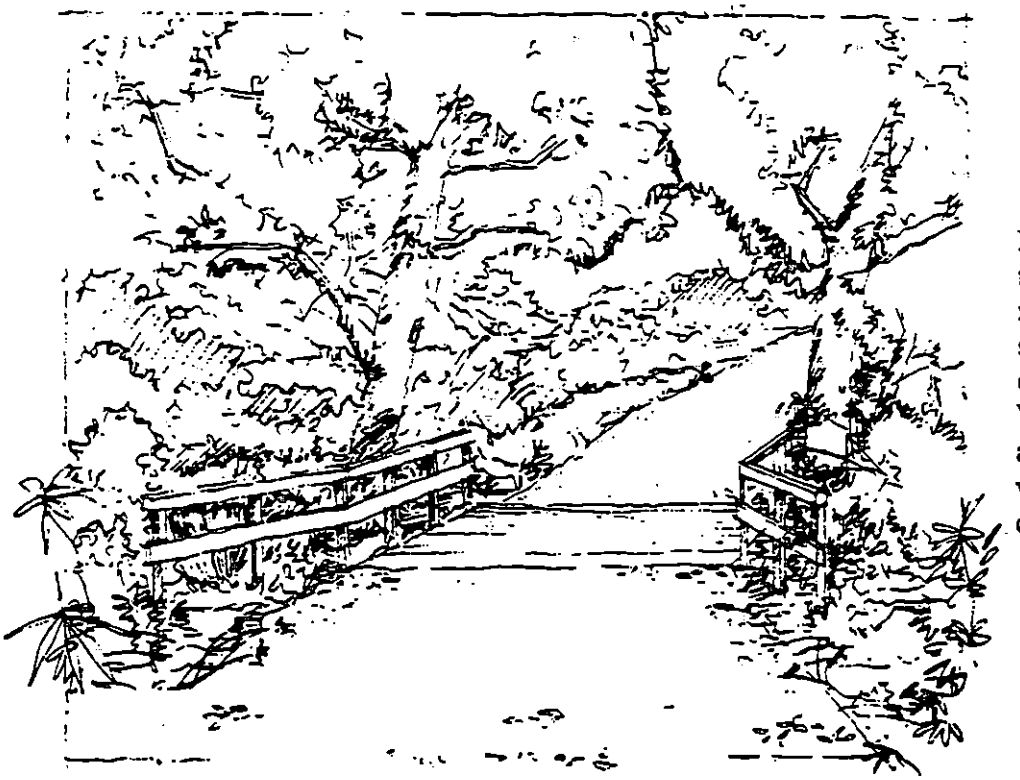
A. View windows into natural open spaces from the community streets and "pocket parks";
B. Informal plantings of landscape elements along the community streets, slopes and within the neighborhoods;
C. Blending of landscape elements and landform features transitioning from the natural to the man-made;
D. Movement in three-dimensions through landforms and plant massings, curvilinear, winding streets, and grade elevation in streets to accommodate the natural terrain;
E. Architecture: roofs, facades, design elements and details having a theme of natural materials and elements; and
F. Visual imagery along the community streets:
    1.) Informal slope plantings with tall canopy type trees for visual enclosure, presence and seasonal color;
    2.) Natural appearing materials such as wood rail fencing, stone/rock walls;
    3.) Narrow meandering walks and trails;
    4.) Minimal but thematic street signs and street lighting; and
    5.) Neighborhood tree planting requirements.

Based upon the above description of design intent in creating the rural character for the Saddleback Meadows community and responding to neighboring design interests, the following pages provide examples of design features and elements of the Saddleback Meadows project.

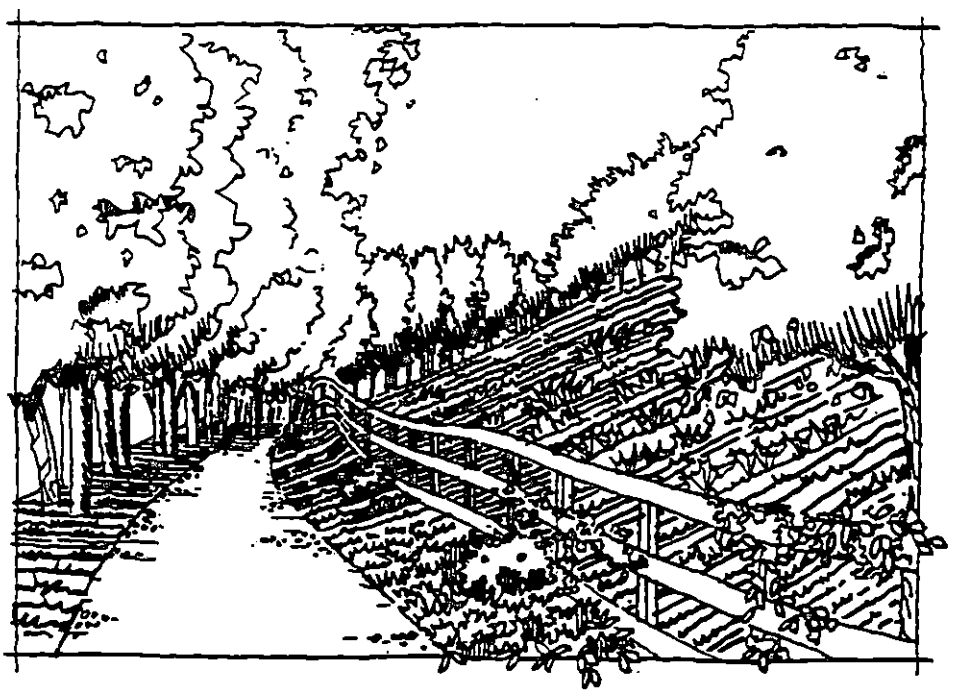


Consideration given to landforms and the replication of the existing terrain features along select project edges provides for a sense of "enclosure" for the neighborhoods while buffering views into the project from surrounding areas.



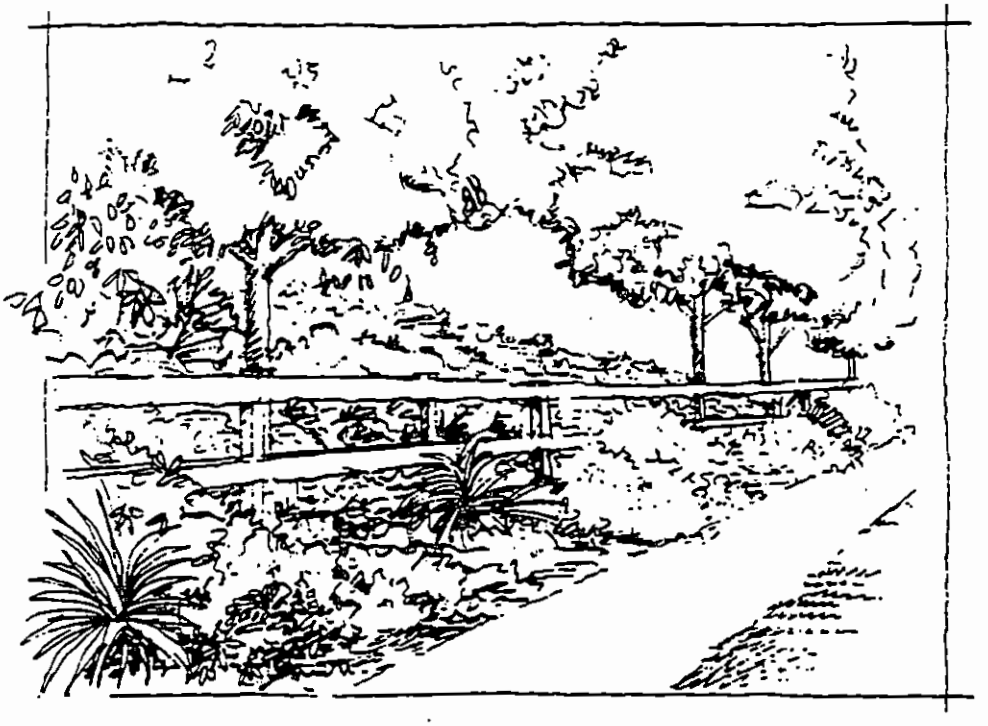


Riding, hiking and bicycling trails provide access to natural open spaces and should feature natural elements and materials. Wooden bridges provide access across swales while visually reinforcing the rural character.



Horse trails and/or bicycle trails can be incorporated as part of the community theme. Landscape setbacks from streets and thematic fencing encourage the rural flavor of the community.

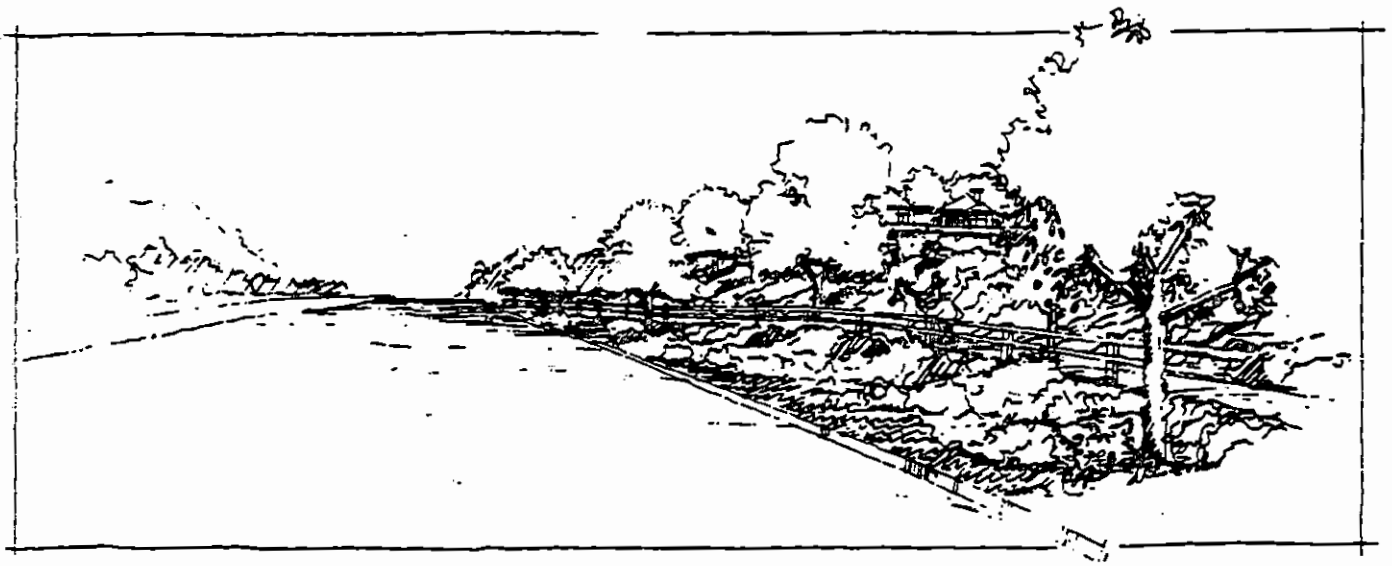
Meandering sidewalks along the community's spine road, enveloped by trees and landscape plantings, provide for an enjoyable walking experience through the community.



Visual accents of seasonal color in the landscape and natural appearing materials in fences and streetscape elements encourages the rural character within the community.

Simple wood-like sign posts provide information and direction while reflecting the desired character of the community.

Visual detail along public edges (El Toro Road) emphasizes the rural nature of Saddleback Meadows. Wood-like fencing, canopy trees and slope planting reflect the community theme and allow for filtered views into the hills beyond.



ATTACHMENT F

ANALYSIS OF PLANNING ISSUES

Density

The issue of density was the foremost issue discussed by the Planning Commission and Board of Supervisors in 1996. Saddleback Meadows may be regarded as a rural transition area because of its location along a heavily traveled road (El Toro Road) and at the western edge of the F/TSP area. The General Plan designates Saddleback Meadows and neighboring sites to the south and west as "Suburban Residential." Neighboring property to the north and east are designated as "Rural Residential." It is also separated from much of the F/TSP area by a major ridgeline to the east. See Attachment B, Regional Map.

The current zoning for this property (see Attachment G) allows 705 dwelling units. The Community Profile map would provide up to 444 dwelling units for Saddleback Meadows. The existing density for neighboring properties Portola Hills and Hidden Hills/Hidden Ridge, if applied to this site, would allow 666 dwelling units for Saddleback Meadows. The F/TSP zoning for the Upper Aliso Residential District to the north would allow 222 dwelling units for Saddleback Meadows while the F/TSP zoning for the Trabuco Canyon Residential District to the east would allow 111 dwelling units for Saddleback Meadows. Therefore, 299 units, or 1.3 dwelling units per acre, may be a reasonable density for this location.

Grading

Saddleback Meadows is a geologically unstable site. A landslide could naturally occur at any time and such a slide could impact adjoining properties. The proposed grading, when completed, is expected to eliminate the threat of slides to onsite residents and adjoining property owners. In order to accomplish this, extensive remedial grading is required. (Any significant project for this site is going to require extensive remedial grading due to the existing geological problems.) For the 705 dwelling unit project, there is 2.6 million cubic yards of conventional grading and 8.9 million yards of remedial grading. The Area Plan is proposing 2.1 million cubic yards of conventional grading and 6.8 million cubic yards of remedial grading. All grading is to take place on the site (i.e., no off-site trucking of material).

Open Space

The approved 705 dwelling unit project provides 129 acres of dedicated open space. The proposed Area Plan provides 158.5 acres of dedicated open space: 90 acres dedicated in fee for O'Neill Regional Park and 68.5 acres of restricted scenic preservation easement dedicated to the County. Some of this open space area (mostly in the scenic preservation area) will be disturbed during development.

After development is completed, these graded areas would be landscaped to have a natural looking appearance and remain undisturbed thereafter except for possible County required and approved fuel modification.

The dedicated open space area provides a very important east-west wildlife corridor, which is a major Natural Communities Conservation Program (NCCP) environmental goal in this region. A minor north-south wildlife corridor is also provided. The 705 dwelling unit project does not provide for any wildlife corridor.

Within the dedicated open space, the applicant is proposing about one mile of improved recreational trails, specifically:

- A missing link in the Live Oak Canyon Regional Riding & Hiking Trail.
- A connecting trail between Aliso Creek Regional Riding & Hiking Trail to the Viewpoint Spur Trail and O'Neill Regional Park.
- A staging area near El Toro Road.

Consistency with the F/TSP

The existing F/TSP states that the Bridlewood Residential District is exempt from all the other regulations and guidelines of the F/TSP. ZC98-3 proposes to maintain that exemption. However, the proposed project is largely, although not entirely, consistent with the other regulations and guidelines of the F/TSP for the following reasons:

1. The F/TSP Resources Overlay Component calls for the preservation of wildlife corridors, oak woodlands, major ridgelines, and scenic roadway corridors. The Area Plan complies with this except for a few of the oak trees being removed because of necessary remedial grading.

2. The F/TSP requires the dedication of 66 to 70 percent of a property for open space. The Area Plan proposes to dedicate 71 percent.

3. The F/TSP limits conventional grading volume to a maximum of 9,000 cubic yards per dwelling unit. The Area Plan averages out to 7,023 cubic yards of conventional grading per dwelling unit.

4. The F/TSP Development & Design Guidelines have largely been followed by the Area Plan via the Rural Character Statement, Landscape and Revegetation Concept, and Contour Grading Concept in AP 98-2.

The only significant Specific Plan provision that the proposed development is not in compliance with is the 30-foot limitation on the height of manufactured slopes. The number and height of the manufactured (see slopes Attachment H) are necessary to correct geological hazards and minimize grading in open space areas.

Integrity of F/TSP

At the October 7, 1998 Planning Commission public hearing, Commissioner Moody presented oral and written objections to the proposed project (see Attachment J). His principal objection was that the proposed project was violating the integrity of the F/TSP. He stated that because the

property is within the Specific Plan boundary, it should comply with all the regulations and guidelines of the F/TSP. Otherwise, it should be taken out of the Specific Plan area. He specifically stated that the project should have much lower density and less grading.

The issue of density and grading are addressed above by staff. The suggestion that Saddleback Meadows be taken out of the Specific Plan area is one that the Board of Supervisors could consider but staff does not recommend it at this time.

Conclusion

The proposed zone change and area plan, with 32 conditions of approval recommended by the Planning Commission and staff, will provide major public benefits in the form of additional regional park land, recreational trails, and an NCCP wildlife corridor. The project, as conditioned, will be in substantial overall compliance with the Foothill/Trabuco Specific Plan. The density cap of 299 is reasonable given existing residential densities in the Portola Hills and Hidden Ridge/Hidden Hills developments as well as what is allowed by the General Plan for the property. Compared to the approved project allowing 705 manufactured homes, the proposed project is a substantial reduction in the number of homes and amount of grading involved.

ATTACHMENT G

EXISTING BRIDLEWOOD RESIDENTIAL DRAFT REGULATIONS

3.0 Bridlewood Residential (BWR) District

3.1 Purpose and Intent

The Bridlewood Residential District is established to recognize the existing zoning and tract map approvals for the Bridlewood (Saddleback Meadows) property which permit the development of 705 manufactured homes on the site. While the Board of Supervisors does not believe that these approvals are consistent with the Goals and Objectives of the Specific Plan, the property owner has recently declared bankruptcy. A legal stay precludes the Board of Supervisors from taking any action related to the property that would affect its value. However, the provisions of this District require that the Specific Plan be amended to determine an appropriate density cap and District Regulations for the property in the event that it cannot be developed in a manner which is consistent with the approved zoning and tract map.

3.2 Special Provisions

a. As long as the site is developed in accordance with the existing Saddleback Meadows Planned Community zoning (Zone Change 84-3P) and Recorded Tract 10692, the project site shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.

b. Any development proposal which deviates from the approved Saddleback Meadows Planned Community zoning and Recorded Tract 10692 and which cannot be found to be in substantial compliance with these approvals shall require a Specific Plan Amendment which shall: 1) determine an appropriate density cap for the property; 2) establish new development regulations for the Bridlewood Residential District; and 3) be consistent with all of the provisions of the Specific Plan.

c. Prior to the issuance of any grading permits for the subject property, an Initial Study shall be conducted, per the requirements of CEQA, to determine if additional environmental documentation is required.

3.3 Uses Permitted

Per the Saddleback Meadows Planned Community (Zone Change 84-3P).

3.4 Site Development Standards

Per the Saddleback Meadows Planned Community (Zone Change 84-3P).

ATTACHMENT I

PLANNING COMMISSION MINUTES, RESOLUTIONS, STAFF REPORTS AND CORRESPONDENCE

PLANNING COMMISSION MINUTES

Date: October 7, 1998

Time: 1:34

Item 1.: Public Hearing – Zone Change 98-3/Area Plan 98-2, Addendum PA980103, of California Quartet.

Executive Officer Mathews introduced the project. He discussed the order of the staff presentations.

County Counsel representative deMayo reported on direction to staff by the Board of Supervisors.

Mr. Mathews discussed the history of the proposed project and clarified the intent of the Foothill/Trabuco Specific Plan (FTSP) in relationship to the original and proposed project. He discussed the amendment to the FTSP. Mr. Mathews discussed the letter from Commissioner Moody to the other Commissioner's. (See attachment 1).

Senior Planner McGill gave the staff presentation. He noted that a revision to the draft Planning Commission Resolution was handed out prior to the public hearing. Mr. McGill discussed the compliance of the proposed project with the Specific Plan regulations proposed by the applicant. He stated that the manufactured slopes were not in compliance with the FTSP but overall the project was in substantial compliance with the FTSP.

Executive Director of the Nature Reserve of Orange County (NROC) Tim Neely, presented background information on the NROC. He described the gnatcatcher as a song bird which is listed on the endangered species list. Mr. Neely stated that there is coastal sage scrub on the project site and that the natural habitat of the gnatcatcher is coastal sage scrub. Mr. Neely discussed the 4d permit rule that the applicant would have to apply for through the Fish & Wildlife Service. He stated that it has always been assumed that there were gnatcatchers in Saddleback Meadows.

Mr. Mathews stated that the project site has been utilized by man for a long time. He discussed the value of open space and the value that the Resource Agencies have placed on the project site. He noted that the project site is a challenge to develop.

Mr. McGill defined natural open space as meaning no grading after development is complete. He stated that with the amendment to the FTSP staff hoped to clarify the definition of natural open space. He stated that after the development is completed the area should still look natural except for the fuel modifications.

Commissioner Moody stated that he thought "natural open space" was no grading.

Mr. McGill responded that the term in the FTSP is not defined and has always been debated.

Senior Planner Brantely gave a brief presentation. He discussed the five issues raised at the previous public hearing. 1)Public Notification Requirements; 2) Recirculation of Certified Final Subsequent EIR 566; 3)Procedural errors; 4) Wildlife Corridor/NCCP; and, 5) Consideration of other alternatives. He stated that no new issues were identified in the response to comments. Mr. Brantley stated that the addendum prepared is sufficient for EIR 566.

Mr. Neely discussed the wildlife corridor and how it fits into the whole NROC. He pointed out that the wildlife corridor on the project site is the connection between the Central/Coastal Subregion and the Southern Subregion. He stated that the wildlife corridor proposed on the project site is the one requested by U.S. Fish & Wildlife Services. He pointed out the previously proposed wildlife corridor and noted that the Resource Agencies determined it was not acceptable. Mr. Neely stated that the Resource Agencies have not made a statement of approval or denial. He stated that any coastal sage scrub taken by this project is considered to be occupied and that take of habitat on this property would have to be approved by the U.S. Fish & Wildlife Services under a 4d Permit. He noted that the project site does not required a 4d Permit at this time. Mr. Neely stated that no new information has come forward on this project.

Frank Elfend, representing the applicant, stated that the previous speaker adequately address issues raised at the previous public hearing. He discussed the status of the negotiations and presented a letter from Supervisor Spitzer. (See attachment #2). He stated that he did attend the FTSP Review Board meeting and discussed his position with the Review Board. He discussed Mr. Connor's comments to the FTSP Review Board and his presentation to the Board of Supervisors at their public hearing yesterday. He discussed a letter written to Mr. Mathews from the FTSP Review Board requesting additional information be sent to them. He discussed the memo dated October 6, 1998 from County Counsel deMayo. (See attachment 3).

Mr. Mathews addressed the letter sent to him by the FTSP Review Board. He stated that the information they requested was included in the materials sent to them. He stated that the Review Board was given the information they were seeking.

William Ross, Attorney representing California Quartet, entered his comments into the record. (See attachment 4).

3:10 P.M.: The Commission took a break.

3:25 P.M.: The Chairman called the public hearing to order.

3:25 P.M.: The Chairman opened the public hearing.

Ed Connor, representing the Abbey and the Vedanta Society, stated that a new issue has been found and the Commission was be left with no choice but to require a new EIR be prepared. He stated that he personally hired a gnatcatcher surveyor and on September 23, 1998 he found two gnatcatchers on the project site. He noted that the surveyor has notified the Resources Agencies. He stated a new Subsequent EIR is required. Mr. Connor stated that the approval of 299 dwelling units will be worse than the original 705 units. He stated that the discharge of water has not been studied. Mr. Connor stated that if the Commission approved this project with 299 dwelling units it will ruin his clients way of life. Mr. Connor handed out an MOU that he requested the applicant sign before today's public hearing. (See attachment 5). Mr. Conner stated that they had a deal with the applicant and they backed out of the deal. He stated that Mr. Oliver was not authorization to sign any paper for the property owners.

Mr. Mathews stated that the coastal sage scrub is home to the gnatcatcher and we have indicated that the coastal sage scrub is occupied. He noted that Mr. Brantley and Mr. Neely have also previously indicated that the coastal sage scrub is occupied.

Mr. Mathews noted that he was contacted this morning by Tom Wilson of Silverado Canyon opposing the potential approval of the proposed project by the Planning Commission and the Board of Supervisors.

Adam Smith, a new appointed member of the FTSP Review Board, discussed the type of person he was. He stated that he was not comfortable making a recommendation in the time he was allotted. He stated that it was important for FTSP Review Board to make an intelligent recommendation. He requested a continuance to give appropriate time to the information that they recently received.

Bob Bennyhoff, resident of Orange Park Acres, stated that the proposal has been before numerous Panels, Commissions and Board of Supervisors. He stated that this plan seems to fit the FTSP and CEQA. Mr. Bennyhoff stated that he knew some of the newly appointed Review Board members and he suspected that the new Board of Review would disagree with this proposal also. He stated that this project case would probably wind up in court no matter what decision was made. He asked how much longer are we going to examine a piece of property? He noted that this property has been examined more than any other property in Orange County. Mr. Bennyhoff stated that a Geotechnical Engineer says this project can be done. He noted that there was no FTSP Review Board for over a year. He stated that the Planning Commission action is not final and that the Board of Supervisors will hear this project on November 3, 1998. He requested that the Planning Commission take a stand and let the Board of Supervisors hear the project and stand back and watch what happens.

Mr. Elfend offered rebuttal. He stated that the gnatcatcher issues has been addressed by Mr. Neely and Mr. Mathews. He stated that the only agreement acceptable to Mr. Connor is his agreement. He discussed the agreement with the Abbey to grade.

Pike Oliver, TPG Management, representing California Quartet LLC, handed out a letter authorizing him to represent the property owners. (See attachment 6). He stated that he participated in the discussion in good faith. Mr. Oliver stated that the Chambers Group was hired to conduct gnatcatcher survey and 12 surveys were conducted and no gnatcatchers were found. He listed the dates that the surveys were taken and noted that the surveys were taken under the specification of the U.S. Fish & Wildlife Service.

4:00 P.M.: No one else wishing to be heard, the Chairman closed the public hearing.

Mr. Mathews spoke to the Review Board's request for a continuance. He stated that the comments from the Review Board would be included in the Board of Supervisors submittal. He noted that staff was in receipt of a transmittal from Ray Chandos, Secretary/Treasurer of the Rural Canyons Conservation Fund. (See attachment 7).

Action 4:10 P.M.: The motion of Goacher, seconded by Long, to adopt the draft Resolution prepared by Environmental and Project Planning Services staff regarding EIR Addendum PA980103; and, Adopt the draft Resolution prepared by Current Planning Services staff regarding AP98-2; and, approve the draft Ordinance regarding ZC98-3 with modifications to the Special Provisions therein to read as follows:

3.4 Special Provisions

a. The minimum amount of open space shall be 70% (155 acres). Such open space shall be defined as follows: The open space area remaining after approved development is completed that has a natural appearance and will remain undisturbed thereafter except for possible approved fuel modification. Such areas may include, depending on design and landscaping, parks, manufactured slopes, and recreation trails.

b. Any development shall be in compliance with every regulation of this District (BWR) and shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.

c. Prior to the approval of any tentative subdivision map, an area plan addressing entire District shall be approved.

d. A preliminary grading permit may be issued in compliance with the Grading & Excavation Code subsequent to the approval of an area plan and tentative tract map which creates residential building sites. The Grading Official shall require a performance bond prior to the issuance of the grading permit.

e. Prior to the issuance of any building permits for residential structures, a use permit shall be approved by the Planning Commission per Zoning Code section 7-9-150.

f. Only if all special provisions listed above are clearly implemented in the plan submitted for Planning Commission consideration, then, the maximum number of units the Planning Commission may consider is 299 single-family detached dwellings.

A roll call vote was taken

AYES: Goacher, Long, Nielsen, McBurney
NOES: Moody

pc:ps

PLANNING COMMISSION MINUTES

Date: September 22, 1998

TIME: 1:35 P.M.

Item 2.: Public Hearing – Zone Change/Area Plan No. 98-3/98-2 Addendum PA980103, of Saddleback Meadows.

Executive Officer Buzas introduced the item. He stated that staff was requesting that this item be continued to October 7, 1998. He noted that the Board of Supervisors will hear this project on October 6, 1998.

1:35 P.M.: The Chairman opened the public hearing.

1:35 P.M.: No one wishing to be heard, the Chairman closed the public hearing.

Action: 1:35P.M.: The motion of Nielsen, seconded by Long, to continued Zone Change/Area Plan 98-3/98-2 to October 7, 1998, was carried by unanimous vote

Ps:ps

MINUTES

DATE: 8-25-98
TIME: 1:34 P.M.

Item 1.: Public Hearing – Zone Change 98-3, Area Plan PA98-2 Addendum PA980103, for Saddleback Meadows.

Executive Officer Buzas introduced the project.

Senior Planner McGill stated that the proposed project is for a Zone Change and an Area Plan. He discussed the purpose of each application. He stated that there are three main issues: density, grading and open space. He presented background information for the three main issues.

Mr. McGill discussed why staff felt that this area was a transition area. He noted that the Foothill/Trabuco Specific Plan does not say that the Saddleback Meadows area is a transition area. He stated that it does say that Saddleback Meadows is exempt from the Foothill/Trabuco Specific Plan for developing 705 units per its Recorded Tract Map. Mr. McGill stated that the proposed density is 299 units and is consistent with the General Plan and Community Profile.

Mr. McGill pointed out manufactured slopes and contour elevation changes on the exhibit and discussed why any significant development here would required a large amount of remedial grading. He pointed out the east west wildlife corridor which would be an important part of the NCCP on the exhibit. He pointed out the designated scenic preservation easement and the area to be dedicated as regional park.. (See Attachment 1). Mr. McGill discussed the benefits of hiking and bicycle trails. He stated that improvements within the final park boundaries and final trail alignment would be determined at a later date by Harbors, Beaches, and Parks.

Commissioner Moody read into the record a portion of the Foothill/Trabuco Specific Plan. (See Attachment 2). He asked how staff can say that Saddleback Meadows is exempt from the Foothill/Trabuco Specific Plan when this is a new project and not the original project proposed.

Mr. McGill responded that the applicant is requesting a zone change and it will be exempt for the Foothill/Trabuco Specific Plan.

Commissioner Moody stated that all regulations must be in accordance with the Specific Plan. He asked staff to get back to the Commission in writing before September 22, 1998 with an explanation.

Mr. Buzas responded that this is the applicants project and they are proposing to be exempt.

Commissioner Moody asked why the Commission is looking at this project in the middle of negotiations. He stated that this project should not be considered by the Planning Commission until after October 6, 1998.

County Counsel representative deMayo responded that the Board of Supervisors in March directed staff to process the applicants proposal of 299 units and be back to the Board of Supervisors by November 1998.

Commissioner Moody discussed the applicants proposal and stated that the Planning Commission should have been informed of the negotiations going on.

Commissioner Moody and deMayo discussed the negotiations and the timing of the project and why this project was brought before the Planning Commission today.

Commissioner Nielsen asked if there were any litigation associated with this project.

Mr. DeMayo responded yes. He stated that there was one litigation against the County by the applicant and one litigation by the Vedanta Society.

Commissioner Nielsen requested a close session under the Brown Act with County Counsel to know what should be said by the Planning Commission due to the litigations.

Commissioner Moody felt that the Planning Commission should be given information regarding negotiations before hearing this project.

Senior Planner Brantley gave the staff presentation. He stated that the proposed development of 299 units replaces the previously approved project of a 705 unit development. He stated that an EIR was prepared for the original request of 705 units. He stated that staff determined that an Addendum to the EIR was needed for the 299 unit project. Mr. Brantley stated that the currently proposed Contingency Plan for 299 units was examined previously for this site in the form of alternatives contained in proposed Final EIR 561 and Certified Subsequent EIR 566, although with slightly differing site plans. He stated that Alternative 4 from Certified SIER 566 and Alternatives 8 and 9 from Proposed FEIR 561, were previously evaluated. He noted that the Contingency Plan results from an extended evaluation by the applicant to address environmental concerns previously analyzed by reconfiguring the proposed project density, land use and location.

Mr. Brantley stated that none of the conditions described in Section 15162 calling for the preparation of a subsequent EIR have occurred. He stated that only minor technical changes or additions are necessary to make the EIR under consideration adequate under CEQA. He stated that the changes made by the Addendum do not raise important new issues about significant effects on the environment. Mr. Brantley stated that the changes related to the proposed project are of a minor nature. He stated that only minor technical changes to FEIR 566 are necessary in order to properly address the current project.

Planner III Grieman discussed key elements of the impact analysis including; land use compatibility; grading; biological resources including; wildlife corridor; NCCP; riparian resources; coast live oak woodland; Riverside fairy shrimp; coastal California gnatcatcher and Aesthetics. Mr. Grieman stated that the remaining environmental analysis checklist categories, including water/hydrology, transportation and circulation, air quality, noise, cultural/scientific resources, recreation, hazards, public services, and utilities and service systems were also analyzed in the Addendum. He stated that mitigation measures pertaining to these impact categories have been carried forward from Certified SEIR 566 to the Addendum.

Commissioner Moody stated that since the Addendum is connected to EIR 566 do we have to notify the public that this project is related to EIR 566. He asked what the legal requirements were.

Mr. DeMayo responded that no circulation period is required. He noted that interested parties were notified.

Commissioner Moody asked if U.S. Fish & Wildlife and the California Department of Fish & Game were notified.

Mr. Grieman stated that staff was in possession of a letter from U.S. Fish & Wildlife dated August 11, 1998 reiterating there previous responses.

Mr. Brantley stated that the Resource Agencies were notified as well as public interest groups. He stated that there is no requirement for a formal circulation of the Addendum.

Mr. Grieman noted that the Resource Agencies had not received the Addendum.

Mr. Brantley stood corrected.

Mr. DeMayo stated that the Chairman should open the public hearing and that a closed session could be held at a later date.

Frank Elfin, representing California Quartet, presented background information on the proposed project. He stated that negotiations have been going one for four years and in that four years no promises have been kept. He handed out a letter from Commission Long to the Board of Supervisors dated December 17, 1997. (See Attachment 3). Mr. Elfin stated that the proposal before the Commission today is the same project discussed in Commissioner Longs letter to the Board of Supervisors. He presented background information on the negotiations as directed by the Board of Supervisors. He stated that over a half dozen land use options were presented and we came to an agreement a few weeks before the June 2, 1998. Mr. Elfin stated that at the public hearing Supervisor Spitzer announced that St. Michael's Abby had agreed to purchase the property known as the Saddleback Meadows for a price of $11.7 million. He noted that at that time a motion was made by Supervisor Spitzer and seconded to have County staff start processing our application of 299 units which we have before the Planning Commission

today. He stated that the Board of Supervisors asked the applicant to put the 705 mobile home development on hold which we did. Mr. Elfin stated that the applicant received a call from Mr. Jensen saying that the money was not available, would we except another plan. He noted that this was discussed at the June 30, 1998 public hearing and Supervisor Spitzer stated that the offer by St. Michael's Abby was null and void. Mr. Elfin discussed the history of negotiations with the Vedanta Society and stated that we have been asked to put the project on hold again. He stated that the applicant wants action on this project. He requested approval of the 299 unit development.

Mr. Elfin stated that Mr. Connor, Attorney for the Vedanta Society and St. Michael's Abby went to USFWS and to CDFG and requested a letter from them requesting less development on property they did not own and they sent a letter requesting less development. He noted that he could go to the Resource Agencies and request the same letter for any piece of property and they would comply with the request.

Oliver Pike discussed the consistency of the proposed project. He stated that exemption was established on entitlements of the project. He stated that he has been working on this project for three years. He stated that he felt that it was appropriate for the Planning Commission to hear this project today. Mr. Pike stated that there was a need for some flexibility on the Foothill/Trabuco Specific Plan.

Bill Ross, Attorney, representing the applicant, stated that the proposal before the Planning Commission today is not the applicants proposal. He stated that the applicants proposal is for 318 units which is in litigation. Mr. Ross stated that circulation of the Addendum is not required per CEQA. He noted that the settlement discussion are subject to confidentiality provisions. He noted that Mr. Elfin has complied with this provision all the way. Mr. Ross discussed the litigation by Vedanta Society.

Mr. Elfin stated that he hoped that they have successfully explained why they are before the Planning Commission today. He stated that they are not going to be forced to give this land away. He requested approval of the 299 units.

2:20 P.M.: The Chairman opened the public hearing.

Ed Conner, Attorney, representing the Vedanta Society, the Norbertines and Saddleback Meadows Land Conservancy, stated that the confidentially provision has been violated by Mr. Elfin. He stated that USFWS told Mr. Neely that they did not approve of the plan which the Commission has not been told about. Mr. Conner stated that the negotiation deadline is October 5, 1998 and now the project is before the Commission and if a decision is made to approve it will give the applicant no reason to negotiate. He asked that the Commission play fair. Mr. Connor stated that a 45 day notice is required before this project is heard and he just found out the project was scheduled before the Commission 18 days ago. He stated that if things are done fair and we lose that is OK as long as it was handled fair. Mr. Conner entered into the record additional comments. (See Attachment 4).

Warren Singleton, Engineer, representing the Vedanta Society, presented background information on previous projects he has worked on. He presented an exhibit and pointed out the locations of the proposed 299 units. He stated that it was true that the 299 units will have less impact than the 705 units but not significantly less. Mr. Singleton stated that the wildlife corridor will be greatly disturbed. He noted that this was a very piece of land to develop. He pointed out the grading difference between the 299 unit proposal and 705 units. He pointed out the oak trees and stated that they are saving some of the oak trees where before all oak trees would have to removed. He discussed drainage and increased runoff. Mr. Singleton stated that remedial grading is the biggest expense in developing an area. He stated that grading for the proposed 299 units would require 83 percent more remedial grading than the 705 units due to the placement of the 299 units. He stated that the proposed project is economically unfeasible designed as proposed.

Royce Riggan, representing the Vedanta Society, stated that it was impossible to get his handout material to the Commission because there was no public review period. He expressed surprise that the Addendum was circulated for public review. Mr. Riggan stated that Mr. Neely, Executive Director of the NROC, laid out the proposed plans before USFWS (John Bradley, Jim Bartel and Liam) for review. He stated that USFWS told Mr. Neely that this plan was not acceptable. Mr. Riggan stated that the wildlife corridor as depicted on the applicants plans is really not a wildlife corridor. He stated that the area is on graded land and would have to be revegetated, is only 200 feet wide and crosses a road. Mr. Riggan entered further comments into the record. (See Attachment 5).

Saundra Jacobs, of FSC Consultants, entered her comments into the record. (See Attachment 6).

Mr. Elfin offered rebuttal to comments received today. He stated that he did not breach confidentially. He entered into the record an article from the Trabuco Canyon News. (See Attachment 7). He stated that every alternative that was presented was rejected by the Vedanta Society and St. Michael's Abby. Mr. Elfin stated that St. Michael's Abby has had four different lawyers representing them and they have all said give us one more week and we have been doing this and they are still asking for one more time. Mr. Elfin stated that a resolution does not look like it will come to an end and that is why we are requesting approval of 299 units.

Mr. Ross addressed the CEQA issues. He discussed CEQA requirements. He stated that there is no requirement for public circulation. He noted that the project is consistent with CEQA requirements. He discussed Mr. Singleton's comments on the 705 units VS: 299 units. Mr. Ross stated that it was his personal opinion that Mr. Connor is trying to delay again. He stated that his client will continue to work with the County on alternatives to reduce impacts.

3:55 P.M.: No one else wishing to be heard, the Chairman closed the public hearing.

Commissioner Moody stated that it was not right for the Commission to take action on this project today when negotiations are still in process. He stated that if this project came to the Commission after the Board of Supervisors heard this on October 6, 1998 we could take action. Commissioner Moody felt that too many legal concerns were raised today that needed answers and he felt uncomfortable with these issues. He felt that the Commission was being asked to be a party to conflict between the applicant and the Vedanta Society and St. Michael's Abby. Commissioner Moody felt that this project should be continued until after the Supervisors conference.

Commissioner Long stated that she disagreed with Commissioner Moody. She stated that the applicants request today is in compliance with the Planning Commission request to the Board of Supervisors. She stated that we have been assured by the applicant today that our action will not hinder negotiations. She stated that she would move to approve the project. There was no second.

Commissioner Goacher stated that if there was a procedural error in the notification process of this project staff needs to renotice the project. He stated that the Commission asked the applicant to bring this proposal back to us and he has done exactly what we asked. Commissioner Goacher stated that if he was sure that no procedural error occurred in the notification process he would move ahead today.

Commissioner Nielsen stated that he was not ready to go forward on this project today. He stated that he is not satisfied that all legal noticing has been complied with. He stated that staff has recommended a continuance so they must have a reason why they don't want us to take action today. Commissioner Nielsen stated that he did want to have a close session with County Counsel to discuss legal issues. He stated that there are procedural problems that needs to be addressed and he was not sure that all requirements had been complied with. He stated that he did like the project proposed better than the proposal of 705 units.

Mr. McGill discussed the reason staff was requesting a continuance to September 22, 1998.

Action 4:15 P.M.: The motion of Neilsen, seconded by Moody, to continue Zone Change/Area Plan 98-3/98-2 Addendum PA980103 to September 22, 1998.

A roll call vote was taken to continued.

AYES: Nielsen, Moody, Goacher
NAYES: Long, McBurney

Mr. DeMayo stated that the Planning Commission Secretary would agendize the closed session Commissioner Nielsen requested for September 22, 1998.

Commissioner Nielsen requested that all handout material be given to the Commission to give them sufficient time to digest. He stated that when the Commission get so many

RESOLUTION NO. 98-14
RESOLUTION OF THE PLANNING COMMISSION OF ORANGE COUNTY, CALIFORNIA

On motion of Commissioner Goacher, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Planning Commission conducted public hearings on Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the area known as Saddleback Meadows (aka Bridlewood); and

WHEREAS, the Planning Commission has considered EIR Addendum PA980103 and, by separate Planning Commission Resolution, found that it satisfies the requirements of CEQA for this project.

NOW, THEREFORE, BE IT RESOLVED that this Commission makes the following findings:

1. ZC98-3/AP98-2 is consistent with the objectives, policies, general land uses and programs specified by the General Plan.

2. AP98-2 is consistent with the provisions of the Zoning Code.

3. The location, size, design and operating characteristics of AP98-2, as conditioned, will not create conditions or situations that may be incompatible with other permitted uses in the vicinity.

4. AP98-2 will not result in conditions or circumstances contrary to the public health and safety and the general welfare.

5. AP98-2, as conditioned, satisfies the requirements of section 7-9-711 regarding public facilities.

6. The RE (PD), "Residential Estates (Planned Development)," site development standards regarding building site areas, building site coverage, area per unit, and number of dwelling units have been satisfied by AP98-2.

7. Condition of Approval No. 27 requires a use permit be approved which is consistent with AP98-2. A use permit may be approved for the entire project site or portions of the project site.

8. AP98-2, as conditioned, will provide significant public benefits in the form of major recreational trails, an important wildlife corridor for the Natural Communities Conservation Program and a large addition to O'Neill Regional Park.

BE IT FURTHER RESOLVED that this Commission recommends that the Board of Supervisors approve ZC98-3.

BE IT STILL FURTHER RESOLVED that this Commission approves AP98-2 subject to the following conditions:

1. CP NA NA TIME LIMIT
Approval of Area Plan 98-2 is subject to approval of Zone Change 98-3 by the Board of Supervisors. Upon such approval, Area Plan 98-2 is valid for a period of 48 months thereafter. If the preliminary grading permit is not issued within such period of time, this approval shall be terminated and Area Plan 98-2 shall thereafter be null and void.

2. CP CP NA REVOCATIO
Failure to abide by and faithfully comply with any and all conditions attached to this approving action shall constitute grounds for the revocation of said action by the Orange County Planning Commission.

3. CP CP G TENTATIVE TRACT MAP
Prior to the issuance of any grading permits, Tentative Tract Map 15230 shall be approved by the Subdivision Committee after a public hearing. Said tentative tract map must be found consistent with Area Plan 98-2.

4. CP CP G GRADING REVIEW
Prior to the issuance of any grading permits, the Manager, Current Planning Services, shall determine that the grading plan is consistent with Area Plan 98-2 and the approved tree preservation plan.

5. HP HP G TREE PRESERVATION PLAN
Prior to the issuance of any preliminary grading permit, a tree preservation plan shall be prepared which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and on-half feet above ground level). The tree preservation plan shall be consistent with the Area Plan 98-2 and the Foothill/Trabuco Specific Plan and approved by the Manager, Harbors Beaches, and Parks. The plan shall be signed and certified by a biologist or arborist.

6. EP SG/EP G FED ENDGD SPEC ACT
Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Services that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to I ratio. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning.

7. SG SG G GEOLOGY RPT
Prior to the issuance of any grading permits, the applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall include the information and be in a form as required by the Grading Manual.

8. SG SG G DRAINAGE
Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, provide:

A. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

B Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

9. SG SG G CROSS-LOT DRAINAGE

Prior to the issuance of any grading permits, and if determined necessary by the Manager, Subdivision and Grading, a letter of consent, in a form approved by the Manager, Subdivision and Grading, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to the issuance of any grading permit. Acceptance of cross-lot drainage on lots within the tract map boundaries shall be noted on the recorded map.

10. SG SG G VECTOR CONTROL

Prior to the issuance of any preliminary grading permits, the subdivider shall provide evidence to the Manager, Subdivision and Grading, that the Vector Control District has surveyed the site to determine if vector control measures are necessary. If warranted, the developer shall conduct such measures in a manner meeting the approval of the Manager, Subdivision and Grading.

11. HP HP G ARCHAEO OBS & SALVAGE

Prior to the issuance of any preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified archeologist has been retained, shall be present al the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeologist shall submit a follow-up report to the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, an analysis of any artifacts fond and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, Harbors, Beaches & Parks.

12. HP HP G PALEO OBS & SALVAGE

Prior to the issuance of an preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, Harbors, Beaches & Parks.

13. SG SG G GRADING NOTES

Prior to the issuance of any grading permits, the following guidelines shall be included in the "Notes Section" of the grading plans meeting the approval of the Manager, Subdivision and Grading.

A. During all grading and construction operations, all oak trees on the site, located adjacent to the approved limits of grading and identified in an approved Tree Management/Preservation Plan as trees to be preserved, shall be adequately fenced and protected from encroachment by grading and construction equipment. Grading, placement of fill, and storage of building materials and heavy equipment, shall be prohibited within the dripline of any tree identified for preservation as part of an approved Tree Management/Preservation Plan.

B. If required, retaining walls shall be used to protect the existing grades of oaks identified for preservation from surrounding cut and fill. However, these should not alter drainage from around the trees.

C. No type of surface, whether pervious or impervious, shall be placed within a six-foot radius of oak tree trunks. Where surfacing cannot be avoided, alternative types of paving should be utilized, such as gravel or porous brick with sand joints.

D. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

E. Natural drainage courses and natural grades outside the remedial grading impact area in proximity to and providing seasonal irrigation to oak trees shall not be altered.

F. In proximity to oak trees, only one trench should be dug to accommodate all utility lines. Where necessary, the impacted trees should be carefully pruned by an arborist in proportion to the total amount of root zone lost.

14. BP BP G CONSTRUCTION NOISE

A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits, that:

1. All construction vehicles or equipment, fixed or mobile, operated within 1000' of a dwelling shall be equipped with properly operating and maintained mufflers.

2. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

3. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the grading plans, will be considered as adequate evidence of compliance with this condition.

15. CP SG G PERFORMANCE BOND
Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, Subdivision and Grading.

16. HP HP G RE-ROUTING
Prior to the issuance of a preliminary grading permit, which includes the utilization of either the Aliso Creek Class 1 Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted by the applicant and approved by the Manager, Harbors, Beaches and Parks.

17. CP SG R
Prior to the recordation of any subdivision map which creates residential building sites, the preliminary grading activity for all of Area Plan 98-2 shall be completed to the satisfaction of the Manager, Subdivision and Grading.

18. HP HP R OPEN SPACE
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate to the County of Orange a minimum of seventy (70) percent of the project site as open space in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. The open space dedication shall be for: (1) regional park, and (2) restricted scenic preservation purposes. The Manager, Harbors, Beaches & Parks shall determine the final boundary between these open space acres.

Within the regional park area, the Manager, Harbors, Beaches & Parks shall determine what improvements, if any, shall be made. If determined appropriate by the Manager, Harbors, Beaches & Parks, the applicant shall be required to provide those improvements as shown and discussed in the Area Plan 09-2.

Within the restricted scenic preservation easement area, after dedication, no grading, structures (including stables and corrals), or commercial agriculture activities shall be permitted in this area. River rock walls not to exceed three feet, approved Loffel walls, and open fencing shall be permitted. An entry gate and identification sign shall be permitted subject to approval of a site development or use permit for such use. Future fuel modification, landscaping, and tree preservation shall be permitted subject to prior approvals granted by the Planning Commission.

19. HP HP R RECREATIONAL TRAILS
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate a recreation easement for those bikeways and regional riding and hiking trails shown and discussed in Area Plan 98-2 in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. Also, the applicant shall design the necessary improvements and enter into an agreement, accompanied by financial security, with the County of Orange to install the necessary improvements in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

20. HP HP R CLEANING UP
Prior to the recordation of any subdivision map that creates residential building sites, the existing old ranch house and all abandoned automobiles shall be removed in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

21. HP HP R LANDSCAPE PLAN
Prior to the recordation of any subdivision map which creates residential building sites, the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Manager, Harbors, Beaches & Parks. Said plan shall take into account the County Standard Plans for landscaped areas, adopted plant palette guides, applicable scenic and Foothill Trabuco Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

22. EP EP FIRE STATION FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

23. EP EP LIBRARY FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

24. EP EP SHERIFF STATION
Prior to the recordation of an subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning.

25. EC F F FUEL MODIFICATION
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall demonstrate to the satisfaction of the Fire Chief that necessary fuel modification in off-site locations will be maintained in perpetuity.

26. EP EP R AFFORDABLE HOUSING
Prior to the recordation of a subdivision map that creates residential building sites, the landowner shall provide a cash contribution to the County's General Plan Trust Fund. The specific methodology and amount of said contribution shall be subject to the approval of the Manager, Environmental & Project Planning. These funds shall be directed to support the County's overall efforts toward providing affordable housing, including but not limited to, future updates of the Orange County Housing Element and related programs for maintaining existing affordable housing and providing new affordable housing opportunities.

27. CP CP B USE PERMIT
Prior to the issuance of any building permits for residential structures, the applicant shall submit a use permit application for review by the Foothill/Trabuco Review Board and approval by the Planning Commission after a public hearing. Said use permit shall include, but not be limited to, the location of all structures and uses, precise landscaping plan, precise fuel modification plan and program, grading plan, and architectural plans for all structures. Said use permit must be found consistent with Area Plan 98-2.

28. F F GBU FUEL MOD PLAN
Prior to the approval of the use permit to construct residential structures, the applicant shall obtain the Fire Chief's approval, in consultation with the Manager, Environmental and Project Planning, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of combustible vegetation and the planting of drought tolerant fire resistant plants. However, only the minimum necessary fuel modification shall be approved by the Fire Chief. All practical mitigation measures to minimize the need for fuel modification shall be recommended by the Fire Chief such as use of non-combustible construction materials, interior fire sprinkler system and double-glassed windows. The required fuel modification shall be performed in a manner to minimize impacts on the natural environment as much as possible. The fuel modification plan shall then become effective after the Planning Commission approves the use permit.

29. SG SG B ROAD REE PROG
Prior to the issuance of building permits for residential construction, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, Subdivision and Grading.

A. Foothill Circulation Phasing Program
B. Foothill/Eastern Transportation Corridor
C. El Toro Road
D. Santiago Canyon Road

30. HP HP R LOCAL PARK FEES
Prior to the issuance of building permits for residential construction, the applicant shall pay in-lieu fees per the Local Park Code Requirements.

31. FTSP CP B SCHOOL FEES
Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the Manager, Current Planning, that he has reached a mitigation agreement with the District for the subject project proposal.

32. CP NA NA INDEMNIFICATION
Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may be required by a court to pay as a result of such action. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

AYES: Commissioners Nielsen, Goacher, Long, McBurney

NOES: Commissioners Moody

ABSENT: Commissioners

I HEREBY CERTIFY that the foregoing Resolution No. 98-14 was adopted on October 7, 1998 by the Orange County Planning Commission.

ORANGE COUNTY PLANNING COMMISSION

by Thomas B. Mathews, Executive Officer

PLANNING & DEVELOPMENT SERVICES DEPARTMENT REPORT

HEARING DATE: October 7, 1998

TO: Orange County Planning Commission

FROM: Current Planning Services Division

SUBJECT: Zone Change 98-3/Area Plan 98-2 (aka Contingency Plan)

LOCATION: Saddleback Meadows (easterly side of El Toro Road near Valley Vista Way (District 3)

STAFF CONTACT: Frank McGill (834-2099)

PROPOSAL: California Quartet, Ltd. proposes an amendment to the Foothill/Trabuco Specific Plan (ZC98-3) and a conceptual plan (AP98-2) to allow for the development of 299 standard detached single-family homes with 158 dedicated open space acres.

SYNOPSIS: Concerns related to zoning raised by the Planning Commission on August 25, 1998 are addressed in this report. We have attached the August 25, 1998 Staff Report for your reference. Staff have approved the requisite draft ordinance and resolution for approval of ZC98-3 and AP98-2 subject to 32 conditions of approval for the Commission's consideration.

BACKGROUND:

At the public hearing on August 25, 1998, the Planning Commission raised concerns regarding zoning and the environmental documentation. On September 22, 1998, the Planning Commission continued the public hearing to this date without discussing the project. The concerns regarding zoning are discussed below. The concerns regarding the environmental documentation are discussed in a separate staff report from the Environmental & Project Planning Services Division.

F/TSP REVIEW BOARD:

As reported to you, this project was distributed for public review on August 7, 1998. However no distribution was made to the Foothill/Trabuco Specific Plan Review Board at that time because there were no members. On September 22, 1998 the Board of Supervisors appointed five members to the Review Board. Subsequently, the new Review Board members have been given copies of the proposed project, the environmental documentation, and staff reports. The Review Board conducted a public meeting on September 29, 1998 to discuss this project. They voted to continue their meeting to October 16, 1998 and to request the Planning Commission postpone taking final action until after that date. A copy of their correspondence is in Attachment E. The next scheduled Planning Commission meeting after October 16 is October 20, 1998.

DISCUSSION:

A commissioner asked staff to respond to his view that the applicant's proposed zoning should comply with the existing zoning regulation that any zoning amendment "...be consistent with all the provisions of the Specific Plan." The staff response is the following:

Amending the Foothill/Trabuco Specific Plan is a "zone change." The State Planning and Zoning Laws enable local jurisdictions to adopt and amend zoning regulations. Orange County Zoning Code section 7-9-155, "Zoning Code Amendments and Zone Changes," provides local procedures for adopting and amending zoning regulations for the unincorporated area of Orange County. Supplementing this section is section 7-9-156, "Specific Plans." Lastly, section III.G.3. of the Foothill/Trabuco Specific Plan, "Amendment Procedures," incorporates Zoning Code sections 7-9-155 and 7-9-156 by reference.

Whenever the Board of Supervisors adopts a zoning ordinance, such zoning must be in compliance with State law but it need not be in compliance with any earlier zoning ordinance adopted by the Board. A Board cannot restrict itself or future Boards on zoning matters. Therefore, the existing provision in the Bridlewood Residential District Regulations (see Attachment C) that any future zoning for this site must require that development "...be consistent with all of the provisions of the Specific Plan" need not be complied with.

The applicant has submitted proposed zoning which states, "Any development ... shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District." The Planning Commission and/or Board of Supervisors may or may not agree with that proposed provision.

As discussed in the August 25, 1998, staff report, the applicant's development proposal is largely, although not entirely, consistent with all the regulations and guidelines of the Specific Plan for the following reasons:

1. The F/TSP Resources Overlay Component calls for the preservation of wildlife corridors, oak woodlands, major ridgelines, and scenic roadway corridors. The Contingency Plan complies with this except for a few of the oak trees being removed because of necessary remedial grading.

2. The F/TSP requires the dedication of 66 to 70 percent of a property for open space. The Contingency Plan proposes to dedicate 71 percent.

3. The F/TSP limits conventional grading volume to a maximum of 9,000 cubic yards per dwelling unit. The Contingency Plan averages 7,023 cubic yards of conventional grading per dwelling unit.

4. The F/TSP Development & Design Guidelines have largely been satisfied by the Contingency Plan via the Rural Character Statement, Landscape and Revegetation Concept, and Contour Grading Concept in AP 98-2.

The only significant Specific Plan provision that the proposed development is not in compliance with is the 30-foot limitation on the height of manufactured slopes The number and height of the manufactured slopes are necessary to correct geological hazards and minimize grading in open space areas.

CONCLUSION:

The proposed zone change and area plan, with 32 conditions of approval recommended by staff, will provide major public benefits in the form of a regional park, recreational trails, and an NCCP wildlife corridor. The project, as conditioned, will be in substantial overall compliance with the Foothill/Trabuco Specific Plan. The density cap of 299 is reasonable given existing residential densities in the Portola Hills and Hidden Ridge/Hidden Hills developments as well as what is allowed by the General Plan for this property. Compared to the approved project allowing 705 manufactured homes, the proposed project is a substantial reduction in the number of homes and amount of grading involved.

As stated earlier in this report, the F/TSP Review Board has requested the Planning Commission continue this item. To accommodate their request, staff would recommend October 20, 1998 as the next hearing date.

Staff has prepared and attached a draft Planning Commission Resolution and a draft Ordinance for the Commission's consideration when you decide to take final action.

RECOMMENDED ACTION:

1. Receive staff testimony and public testimony.

2. Continue the public hearing to October 20, 1998.

OR

3. Adopt the draft Planning Commission Resolution (Attachment A) which:

   A. Approves the draft Ordinance (Attachment B) and recommends adoption by the Board of Supervisors.

   B. Approves Area Plan 98-2 with 8 findings and 32 conditions.

Respectfully submitted,

John B Buzas

John B. Buzas, Manager
Current Planning Services

FM:sah

Attachments:

A. Draft Planning Commission Resolution
B. Draft Ordinance (ZC98-3)
C. Existing Bridlewood Residential District Regulations.
D. August 25, 1998 Planning Commission Report
E. Correspondence from F/TSP Review Board

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County of Orange

Planning & Development Services Department

DATE: September 3, 1998

TO: Distribution List

FROM: Director, Planning & Development Services Department

SUBJECT: Saddleback Meadows

On August 25, 1998, the Orange County Planning Commission continued the public hearing on the zone change and area plan for Saddleback Meadows to September 22, 1998. Subsequently, County Counsel has informed us that the hearing needs to be postponed to October 7, 1998 (see attached memo). Therefore, there will be no staff report on this project for September 22 and we expect the Planning Commission to continue the matter without discussion until October 7, 1998.

Thomas B. Mathews

FMc:sjk/1998-09-02

Attachment

COUNTY OF ORANGE
COUNTY COUNSEL

MEMORANDUM

August 31, 1998

TO: Supervisors Todd Spitzer and Thomas W. Wilson
Members of the Planning Commission

FROM: Ben de Mayo, Deputy County Counsel

SUBJECT: Saddleback Meadows

This morning, *California Quartet v. County of Orange. Vedanta Society, Intervenor* Orange County Superior Court Case No. 77-93-58 was scheduled for hearing before Superior Court Judge John Woolley. Following an in-chambers conference with Judge Woolley, the parties agreed to continue the Planning Commission hearing from September 22 to October 7, the day after the currently-scheduled status report to the Board of Supervisors, and to continue the court hearing until October 22, 1998.

If you have any questions concerning this matter, please advise.

BPD:
cc: Tom Mathews, Director, Planning and Development Services
William Ross, counsel to California Quartet
Ed Connor, counsel to Vedanta Society
Frank McGill, PDSD
Ray Brantley, PDSD
Pat Seraballs, PDSD

PLANNING & DEVELOPMENT SERVICES DEPARTMENT REPORT

DATE: October 7, 1998

TO: Orange County Planning Commission

FROM: P&DS/Environmental & Project Planning Services Division

SUBJECT: Addendum PA980103 to Final EIR 566 Prepared for the Saddleback Meadows Contingency Plan

LOCATION: North El Toro Road, ½ Mile Southerly of the El Toro/Live Oak/ Santiago Canyon Road Intersection in the Foothill/Trabuco Specific Plan Area of Unincorporated Orange County

CONTACT PERSONS: Raymond H. C. Brantley at (714) 834-3763
William Grieman at (714) 834-5175

PROPOSAL: Construction of a 299-unit, single family, subdivision on 222 acres, replacing a previously approved project for a 705-unit, manufactured single family housing development on the same site. Discretionary approvals include Zone Change ZC98-3, Area Plan AP98-2 and Tentative Tract Maps TT15230 and TT15784.

BACKGROUND:

This public hearing was continued from August 25, 1998. At the previous hearing, staff provided a lengthy discussion on the CEQA background of the project and the major impacts of the Contingency Plan. During that hearing, several issues of concern were raised by the public and the Planning Commission concerning the CEQA process as it relates to the proposed project and clarification on procedures. Following are the key issues raised and staff's response:

A. **Issue: Public Notification Requirements**

Several of the Planning Commissioners and members of the public expressed concern that the Addendum was not properly noticed, particularly in view of the fact that it was not distributed to the U.S. Fish and Wildlife Service and the California Department of Fish and Game (Resource Agencies).

Response:

The omission of sending the Resource Agencies the Addendum was a clerical error. Staff has rectified this error by, subsequent to the August 25 hearing, distributing copies of the Addendum

to the Resource Agencies. On August 31, PDSD staff met with representatives of the Resource Agencies to discuss the Addendum process as it relates to the proposed Contingency Plan. This meeting was constructive in clarifying the process and alleviating their concerns regarding the relationship of the Contingency Plan to Certified Subsequent EIR 566. In addition, copies of the document were sent to the Cities of Mission Viejo and Lake Forest.

It should be noted that, notwithstanding this error, CEQA Guidelines were followed in that, as indicated in Section 15164 of the CEQA Guidelines, an addendum does not require circulation or response to comments received thereon. However, it is County policy to fully inform all parties who have exhibited interest in a given project as to that project's latest status. Accordingly, in addition to sending all commentators on the Addendum a copy of the Response to Comments and staff report, staff is sending staff reports to all commentators on Certified Final Subsequent EIR 566. In so doing, staff has gone beyond the requirements of CEQA, with regard to Addendum circulation, by informing all commentators on the parent document (CFSEIR 566) of the Addendum's status. It is for these reasons that staff feels that recirculation of the Addendum is not required or warranted.

B. Issue: Recirculation of Certified Final Subsequent EIR 566

A major theme of public comment at the previous hearing was the need for recirculation of Certified Final Subsequent EIR 566 in light of the difference between the Contingency Plan and 705-unit manufactured housing project.

Response:

The Section referred to in the public testimony and correspondence regarding recirculation is CEQA Guidelines Section 15153. This section states that " the Lead Agency may employ a single EIR to describe more than one project, if such projects are essentially the same in terms of environmental impact. Further, the lead agency may use an earlier EIR prepared in ;connection with an earlier project to apply to a later project, if the circumstances of the projects are essentially the same."

The basic concept of Section 15153 is to avoid redundancy under CEQA when duplicating very similar projects in very similar locations. Although the County of Orange has determined that Section 15164 of the Guidelines, Addendum to an EIR, is more appropriate, the County has met all the requirements of Section with the proposed Contingency Plan.

C. Issue: Procedural Errors

Members of the public expressed concern about possible procedural errors with regard to the CEQA process for the Addendum. Members of the Commission requested that staff provide clarification. These concerns appear to be based on questions regarding proper environmental documentation for the Contingency Plan and public noticing.

Response:

As noted above, the omission of sending the Addendum to the Resource Agencies was a clerical error that was rectified through subsequent mailings of the document and a meeting with the Resource Agencies. With regard to whether an Addendum is the proper CEQA document to be required, as promulgated by, and in compliance with, Section 15164 of the CEQA Guidelines, the County of Orange determined that an Addendum is the appropriate environmental document for the Contingency Plan based upon the fact that only minor changes and modifications to Certified Final Subsequent EIR 566 are required to make that document adequate under the California Environmental Quality Act and County of Orange procedures.

The addendum has been prepared based on Certified Final Subsequent EIR 566, which was certified as adequate and in compliance with CEQA by the Orange County Board of Supervisors on February 24, 1998. The proposed project does not rely on a previously prepared EIR, as described in CEQA Guidelines Section 15153. Rather, it incorporates the use of an addendum to Certified Final Subsequent EIR 566 for a project clearly within the scope of that document. Public Resources Code Section 21000 and Section 15164 of the CEQA Guidelines outline the statutory requirements and conditions for the use of an addendum. Section 15164 states, in part:

> *(a)The lead agency or responsible agency shall prepare an addendum to a previously Certified Final Subsequent EIR if some changes or additions are necessary, but none of the conditions described in Section 15162 calling for the preparation of a subsequent EIR have occurred... (c) an addendum need not be circulated for public review, but can be included in, or attached to the final EIR . (d) the decision making body shall consider the addendum with the final EIR prior to making a decision on the project, (e) A brief explanation of the decision not to prepare a subsequent EIR, pursuant to Section 15162 should be included in an addendum to an EIR, the lead agencies required findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence.*

The Planning & Development Services Department determined that an addendum to Certified Final Subsequent EIR 566 is the appropriate environmental document for the proposed Contingency Plan project. This determination is in keeping with the intent of Section 15021 of the CEQA Guidelines, which requires the County, as the Lead Agency on the proposed project, seek to minimize environmental damage associated with proposed projects. In addition, the proposed project does not exceed any of the thresholds outlined in CEQA Guidelines 15162, which would require the preparation of a subsequent EIR. All of the identified environmental effects associated with the 299 unit project are less than those associated with the 705 unit project evaluated in Certified Final Subsequent EIR 566.

D. Issue: Wildlife Corridor/NCCP

One Commissioner expressed concern that issues related to the adequacy of the Wildlife Corridor had not been addressed.

Response:

The Corridor placement and design featured in the proposed Contingency Plan was also featured in Certified Final Subsequent EIR (CFSEIR) 566, which was certified by the Planning Commission, was appealed and upheld by the Board of Supervisors. Alternative 4 of CFSEIR 566 as well as Alternatives 8 and 9 of Proposed Final EIR 561 all reflect the corridor placement. The design and dimensions of the Corridor were derived through previous consultation with the Resource Agencies during the environmental review process associated with these two previous EIRs.

In their correspondence to the County, the Resource Agencies did express a preference for the lower density Alternatives contained within the previous EIRs, notwithstanding their verbal concurrence with the basic design parameters of the 400 foot wide Corridor as featured in the proposed Contingency Plan, although they have expressed a preference for a much wider corridor. Accordingly, the Resource Agency's position regarding the Wildlife Corridor featured in the Contingency Plan remains the same in that their previous comments included consideration of an identical corridor.

With regard to the Southern Subregion, NCCP related comments have been evaluated in both Certified Final Subsequent EIR 566 and Proposed Final EIR 561. The 299-unit Contingency Plan has incorporated many of the concerns identified in the two (2) previous EIRs relative to the NCCP, including a central wildlife corridor, preservation of, or replacement measures to ensure the continued sustainability of, valuable biological resources.

E. Issue: Consideration of Other Alternatives

The Commission requested additional clarification on the connection between other Alternatives and the Contingency Plan, particularly alternatives associated with the negotiations that are taking place between St. Michaels Abbey, the Vedanta Society and the County and the California Quartet. Staff was asked to provide the rationale as to why such alternative were not included in the Addendum or brought forth in some other way to the Commission.

Response:

Staff was presented with the Contingency Plan as a stand alone project. It has been analyzed as such. Proposed Final EIR 561 and Certified Final Subsequent EIR 566 analyzed a full range of alternatives, ranging from the No Project/No Development Alternative to the 705-unit manufactured housing project. No other alternative has been submitted to the County for environmental review.

An Addendum was determined to be the appropriate environmental documentation for the proposal based on CEQA Guidelines as discussed above and in the previous staff report. Should the identified alternatives be submitted to the County, they will be subjected to the same CEQA environmental documentation requirements as the proposed project.

RESPONSE TO COMMENTS

A Response to Comments Document has been prepared to address all written Comments received on Addendum PA980103. A copy of this document is attached to this report for the Planning Commission's review and consideration as Attachment A. Additionally, as is the County's policy, copies of the Response to Comments Document and this Staff Report has been provided to each Commentator.

CONCLUSION

As is evident from the discussions in the August 25 and October 7 PDSD Reports to the Planning Commission, the County of Orange places a high priority on meeting its responsibilities under the California Environmental Quality Act in a thorough and comprehensive manner. As Lead Agency on the Saddleback Meadows Contingency Plan, the County has been and remains in full control of the CEQA review process and the preparation of its environmental documents. In this regard, the County has supplemented the requirements of the CEQA Statutes and Guidelines with its own set of rigorous standards and requirements. In the case of the proposed Saddleback Meadows Contingency Plan, the County imposed additional requirements in order to ensure the integrity of the document.

Based upon the reconsideration of the Addendum, in light of public comments and issues raised by the Planning Commission, the Planning & Development Services Department has determined that the Addendum, combined with Certified Final Subsequent EIR 566, are the appropriate environmental documentation for the proposed Contingency Plan, Zone Change ZC98-3 and AP98-2

RECOMMENDED ACTIONS

1. Receive Staff Report and oral presentation;
2. Open public hearing to receive public testimony; and
3. Based upon the Addendum, the Environmental & Project Planning Services Reports dated August 25, 1998 and October 7, 1998, make the recommendation that the Board of Supervisors adopt the attached Revised Draft Resolution.

Respectfully submitted

George Britton, Manager
PDS/Environmental & Project Planning Services

RHCB/WG:wg

Attachments: **A Response to Comments Document**
B Revised Draft Board of Supervisors Resolution

SADDLEBACK MEADOWS

RESPONSE TO COMMENTS
ADDENDUM PA980103

CERTIFIED FINAL SUBSEQUENT EIR 566

STATE CLEARINGHOUSE NO. 96121072

ZONE CHANGE 98-3 and AREA PLAN 98-2
299-UNIT SINGLE-FAMILY PROJECT

LEAD AGENCY:

COUNTY OF ORANGE
PLANNING & DEVELOPMENT SERVICES DEPARTMENT
ENVIRONMENTAL & PROJECT PLANNING SERVICES DIVISION

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SEPTEMBER 1998

2402

I. INTRODUCTION

TABLE OF CONTENTS

Section			Page
I.	INTRODUCTION		1
	A.	Public Review Process	2
	B.	Organization of Comments and Responses	2
II.	MATRIX OF AGENCIES AND INTERESTED PERSONS COMMENTING ON THE ADDENDUM		3
III.	RESPONSE TO WRITTEN COMMENTS		6
	1.	John R. Byerly, Inc., August 24, 1998 (JRB)	7
	2.	Connor, Culver, Blake & Griffin LLP, August 25, 1998 (CCBG)	10
	3.	R.B. Riggen & Associates, August 24, 1998 (RBR)	22
	4.	SFC Consultants, August 25, 1998 (SFC)	30
	5.	California Department of Fish and Game, August 11, 1998 (CDFG)	46
	6.	Connor, Culver, Blake & Griffin LLP, September 2, 1998 (CCBG)	49
IV.	LETTERS RECEIVED FROM AGENCIES AND PERSONS		55

2404

I. INTRODUCTION

This document comprises the Response to Comments for Addendum PA980103 to Certified Final Subsequent EIR 566, which was prepared for the Saddleback Meadows 299-unit Contingency Plan project. The purpose of this document is twofold:

- Respond to all Comments of environmental significance received by the County of Orange relative to Addendum PA980103; and
- Incorporate revisions and minor additions into the Addendum based upon public and agency Comments.

A. PUBLIC REVIEW PROCESS

Addendum PA980103 was made available to various public agencies and interested individuals on August 25, 1998, and Comments were received. A total of six comment letters were received. Comments and verbal testimony were also received during the public hearing on the project before the Orange County Planning Commission held on August 25, 1998 in the PC Meeting Room in the OC Hall of Administration.

Comments and responses have been retyped and correspondingly numbered in sequential order. Copies of the actual Addendum comment letters are contained in Appendix A of this document. Each comment is retyped as it appeared in the actual letter including typographical errors. Responses follow each comment.

It should be noted that CEQA does not require an Addendum to be circulated for public review nor responses to Comments on the Addendum prepared. This document has been prepared to provide complete public disclosure.

B. ORGANIZATION OF COMMENTS AND RESPONSES

The following sections are included in this document:

- Matrix of Agencies and Interested Persons Commenting on the Addendum
- Responses to Comments
- Letters Received from Commenting Agencies and Persons

II. MATRIX OF AGENCIES AND INTERESTED PERSONS COMMENTING ON THE ADDENDUM

SADDLEBACK MEADOWS CONTINGENCY PLAN – 299 LOTS SCH NO. 96121072 COMMENTATORS	Grading	Hydrology	Geologic Hazards	Air Quality	Plants/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	General Comments	CEQA Procedures	Other/Non-CEQA	Alternatives	Project Description
August 24, 1998 1. John R. Byerly, Inc. 2257 S. Lilac Avenue Bloomington, CA 92316-2903	X	X	X																											
August 25, 1998 2. Connor, Culver, Blake & Griffin, LLP 2600 Michelson Drive, Suite 1450 Irvine, CA 92612																											X		X	
August 24, 1998 3. R.B. Riggen & Associates 11228 Zapata Avenue San Diego, CA 92126					X		X																				X		X	
August 25, 1998 4. SFG Consultants 26012 Marguerite Parkway, Suite H424 Mission Viejo, CA 92692	X	X	X		X	X	X					X																		

2407

August 11, 1998 5. California Department of Fish & Game Carlsbad Field Office 2730 Loker Avenue, West Carlsbad, CA 92008					X																								X		2408
September 2, 1998 6. Connor, Culver, Blake & Griffin, LLP 2600 Michelson Drive, Suite 1450 Irvine, CA 92612																												X		X	

III. RESPONSE TO WRITTEN COMMENTS

B. RESPONSE TO WRITTEN COMMENTS

JOHN R. BYERLY, INC., (JRB) **August 24, 1998**

JRB-1

Comment

Within the little time afforded by the County's expedited processing of the 299-unit "Contingency Plan" for the Saddleback Meadows property, I have attempted to review the geotechnical aspects of the referenced addendum to the earlier environmental impact report. This addendum anticipates the construction of 299 single-family dwelling units on the 222.2-acre site. Extensive grading (2.1 million cubic yards of cut and fill) is proposed to construct the building pads, associated streets, and open areas. Even more extensive grading (6.8 million cubic yards) is anticipated to remediate demonstrated unstable geologic conditions, including existing landslides, adverse bedding orientation, and loose and compressible alluvium and colluvium.

The problematic geotechnical issues associated with the 299-unit proposal remain unchanged from those that have been discussed in great detail with a reference to the 705-unit manufactured housing project, and presented to the Planning Commission and the Board of Supervisors with no meaningful Response. The issues of primary concern to this reviewer which mandate further analysis in an appropriate environmental impact report would include the following:

Response

The Comment summarizes the fact established over the past 19+ years, including the extensive reporting providing in Proposed FEIR 561 and Certified FEIR 566 that any project proposed on the Saddleback Meadows site will require extensive remedial and conventional grading. This information is contained in Addendum PA980103. The Comment does not require a response.

JRB-2

Comment

GRADING (Page 20) - The addendum continues to assume an average daily grading of 30,000 cubic yards per day, projecting a total time of grading of 10 months. At 30,000 cubic yards per day for 8.9 million cubic yards of fill, grading needs to be performed 7 days a week-no allowance for off-days for weekends or for inclement weather is provided in this estimate. It seems to this reviewer that it might be possible to achieve the average 30,000 cubic yards per day goal for the conventional grading. It seems highly unlikely that the grading to accomplish the alluvium/colluvium removals, construction of buttress fills, and other remedial grading that will be required can approach the projected rate of fill movement. If as seems likely, the remedial grading would be performed at an average rate of 10,000 cubic yards per day, and grading is performed on a 5-day per week basis, the remedial grading would require 31 months. With down-time for inclement weather, it is more realistic to project a total period of grading of 3 years. Even this projection is optimistic, and the site could easily experience 4 rain seasons during grading.

Response

As discussed in the Addendum and previously Certified Final Subsequent EIR 566, an average daily grading quantity of 30,000 cubic yards is a reasonable projection which has been achieved on several other large scale mass grading projects in Orange County. The total duration of grading operations, which is based on the 30,000 cubic yards per day factor, is correct.

JRB-3

Comment

EXCAVATION CONDITIONS (Page 29) - The addendum correctly anticipates heavy ground water seepage into excavations at the site. Not addressed is the impact of discharge of collected ground water seepage, the impact of the interruption in subsurface ground water flow on downstream wells, nor the impact of the presence of the deep shear keys for buttress fills on the final ground water conditions. Is there a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill?

Response

Groundwater seepage, subsurface groundwater flow, impacts on wells, and the effect of shear key construction on groundwater have all been addressed in the previous Response to Comments Document prepared for Certified Final EIR 566.

JRB-4

Comment

LONG-TERM SETTLEMENT (Page 31) - Fill depths exceeding 50 feet are suggested, with settlements associated with those fills of 4 to 6 inches. Construction of shear keys for buttress fills, however, will result in fills as deep as 130 feet. Fills of such great depths require additional evaluation that may necessitate compaction criteria well in excess of code minimums, special moisture conditioning of fill during compaction, and long-term settlement monitoring prior to building construction. These considerations are not addressed in the addendum.

Response

Specific settlement related requirements are regulated by the Orange County Grading & Excavation Code. The grading review process includes final engineering design, including any special requirements to mitigate any settlement problems. The County's grading inspection process includes monitoring grading activities by a soils engineer to ensure compliance with the Grading and Excavation Code.

JRB-5

Comment

PHASING OF EARTHWORK (Page 31) - The addendum continues to project a buttress backcut failure rate of 10 percent. Considering the subsurface conditions typified by landslides within landslides, this failure rate is surely unrealistically optimistic. Further, the effect of backcut failures on upstream and adjacent properties is not addressed.

These are the Comments that I have been able to prepare during the time allotted by the County's short notice to your firm regarding the public hearing to be held on August 25, 1998. I hope my comments have been helpful under the circumstances. Should there be questions, please feel free to call.

Response

The documented buttress backcut failure rate of 10 % is reasonable based upon other similar grading operations in similar geological conditions.

CONNOR, CULVER, BLAKE & GRIFFIN LLP, (CCBG) **August 25, 1998**

CCBG-1

Comment

On behalf of (1) the Vedanta Society; of Southern California ("Vedanta"); (2) the Norbertine Fathers of Orange (the "Norbertines"); and the Saddleback Meadows Land Conservancy LLC (the "Conservancy"), we respectfully submit this letter in opposition to California Quartet's application for approval of Zone Change 98-3 ("CZ 98-3" or the "Zone Change") and Area Plan 98-2 ("AP 98-2" or the "Area Plan") relating to a proposed 299-unit single family detached housing project (the "299-Unit Project"), which has been dubbed "Contingency Plan."

Based on the list of objections attached hereto, and based also on all oral and written Comments which are presented in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing, including, but not limited to, all expert opinions expressed by Royce Riggan, John Byerly, Warren Singleton, or Saundra Jacobs either orally or in writing in connection with the hearing, Vedanta, the Norbertines, and the Conservancy respectfully submit that the CEQA review process relating to, and the environmental documentation which has been prepared in support of ZC 98-3 and AP 98-2 is woefully inadequate from both a procedural and substantive standpoint.

Response

The Comment presents the views of the commentator relative to Addendum PA980103 and the CEQA review process employed by the County of Orange for the 299-unit Contingency Plan. No additional response is required.

CCBG-2

Comment

By (1) purporting to rely on a previously Certified Final Subsequent EIR for an *entirely different* project which is, itself, grossly deficient and is now being challenged in court, (2) failing to provide the public and responsible agencies (such as the state and federal wildlife agencies) with the 45-days' notice required by law, and (3) refusing to prepare, and circulate for public review and Comment, a new EIR to properly address important new information and substantial project changes involving new environmental impacts and additional project alternatives and mitigation measures which have not been addressed in any earlier EIR, the County is poised to violate CEQA and the Guidelines in numerous different respects in connection with the proposed Zone Change and Area Plan for the 299-Unit Project.

As a result of these CEQA violations, my office has not been afforded adequate time to prepare and submit Comments on ZC 98-3 and AP 98-2 and the environmental documentation relating thereto. Regrettably, history seems to be repeating itself in this case.

Indeed, one year ago last week, I submitted a lengthy letter to County staff objecting to the many procedural improprieties and substantive deficiencies relating to Draft Subsequent Environmental Impact Report No. 566 ("SEIR 566") which had been prepared to evaluate the environmental

impacts associated with the issuance of a grading permit for the construction of 705 units of manufactured housing at the Saddleback Meadows site. Because of the failure of the Draft SEIR to include the grading plans and soils reports upon which the grading permit application was based, and given the County's refusal to make these materials available for public review during the Comment period on the Draft SEIR, I was compelled to submit my August 1997 letter under protest.

Response

The addendum has been prepared based on Certified Final Subsequent EIR 566, which was certified as adequate and in compliance with CEQA by the Orange County Board of Supervisors on February 24, 1998. The proposed project does not rely on a previously prepared EIR, as described in CEQA Guidelines Section 15153. Rather, it incorporates the use of an addendum to Certified Final Subsequent EIR 566 for a project clearly within the scope of that document. Public Resources Code Section 21000 and Section 15164 of the CEQA Guidelines outline the statutory requirements and conditions for the use of an addendum. Section 15164 states:

> *The lead agency or responsible agency shall prepare an addendum to a previously Certified Final Subsequent EIR if some changes or additions are necessary, but none of the conditions described in Section 15162 calling for the preparation of a subsequent EIR have occurred. (c) an addendum need not be circulated for public review, but can be included in, or attached to the final EIR . (d) the decision making body shall consider the addendum with the final EIR prior to making a decision on the project, (e) A brief explanation of the decision not to prepare a subsequent EIR, pursuant to Section 15162 should be included in an addendum to an EIR, the lead agencies required findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence.*

An addendum to Certified Final Subsequent EIR 566 is the appropriate environmental document for the proposed project, as it is in keeping with the intent of Section 15021 of the CEQA Guidelines, which requires the lead agency to minimize environmental damage associated with proposed projects. In addition, the proposed project does not exceed any of the thresholds outlines in CEQA Guidelines 15162, which would require the preparation of a subsequent EIR. All of the identified environmental effects associated with the 299 unit project are less than those associated with the 705 unit project evaluated in Certified Final Subsequent EIR 566

CCBG-3

Comment

How ironic it is that, one year later, I must also submit this letter under protest because of the County's clear-cut violation of those provisions of the CEQA Guidelines which require a local agency to provide 45 days' written notice to interested persons of its intention to use an EIR, which was prepared in connection with an earlier project, as the environmental documentation for a separate, later project. Instead of the 45-day public notice required to be given under CEQA Guidelines sections 15087, 15105, and 15153, the County has inexplicably decided to provide only 18 days' written notice of its intention to use Final SEIR 566 for the 705-unit manufactured housing project (the "705-Unit Project") as the EIR for the 299-Unit Project.

Response

As indicated in Section 15164 of the CEQA Guidelines, an addendum does not require circulation or response to Comments received thereon. In sum, the addendum has adequately evaluated the environmental effects of the proposed 299 unit project, in compliance with the mandates of CEQA and no new EIR is required.

It should also be noted that both Proposed Final EIR 561 and Certified Final Subsequent EIR 566 contained Alternatives which were virtually identical to the proposed 299-unit Contingency Plan project evaluated by Addendum PA980103. Staff Alternative 8 and the proponent's Alternative 9 in Proposed FEIR 561 and Alternative 4 in Certified FEIR 566 are very close to the design of the proposed 299-unit Contingency Plan.

CCBG-4

Comment

At first blush, one might wonder how it is possible to use and EIR initially prepared to analyze the impacts of developing 705 units of manufactured housing as the EIR for an *entirely different* project--namely, a 299-unit single-family detached housing project which, among other things (1) involves building houses on land which was proposed to be left undeveloped by the 705-Unit Project; (2) proposed to develop a wildlife corridor through the middle of the project where none had been previously provided under the 705-Unit Project; and (3) purports to fully exempt the 299-Unit Project from compliance with the Foothill/Trabuco Specific Plan, despite express language in the Specific Plan requiring any new projects for the Saddleback Meadows property to be made "consistent" with the plan.

Admittedly, CEQA Guidelines section 15153(b) does allow a previously prepared EIR to be used as the environmental documentation for a "separate, later project" *provided* that the EIR for the earlier project meets certain criteria and *provided also* that the public is properly notified of the local agency's intention to rely on the previous EIR instead of preparing a *new* EIR for the *new* project. Unfortunately, the County has chosen to ignore the adequacy and public notice requirements set forth in CEQA Guidelines section 15153(b) and is trying, instead, to process and addendum (the "addendum") to Final SEIR 566 in an apparent attempt to avoid these requirements. Of course, the County's attempt to use the Addendum as the environmental documentation for the 299-Unit Project is illegal and improper for two very basic reasons.

Response

Please refer to response to Comment CCBG-2. The proposed 299 unit project is not exempt from the provisions of the Foothill/Trabuco Specific Plan (FTSP) and has been determined to be in substantial compliance / conformance with the policies and programs of the FTSP. As indicated in the response to CCBG-2 above, Section 15164 of the CEQA Guidelines require the Addendum to contain a statement explaining why a subsequent EIR has not been prepared pursuant to requirements outlined by Section 15162 of the CEQA Guidelines. This statement is included on pages 2 - 4 of Addendum PA980103.

CCBG-5

Comment

First, section 15164 of the CEQA Guidelines, which authorizes the preparation of "an addendum to a previously Certified Final Subsequent EIR if some changes or additions are necessary," only applies when the *same* project addressed in the previous EIR is being considered for a subsequent government approval at a more detailed level of planning. Obviously, when an entirely *different* project is being considered – such as a full-scale revision and redesign of the project which was analyzed in the previous EIR -- an addendum is *not* the appropriate document by which to describe and analyze substantial project changes involving new impacts, alternatives, and mitigation measures not discussed in the earlier EIR. Indeed, an addendum is only to be used to address minor technical changes or additions to a previously Certified Final Subsequent EIR, not to report on substantial project changes or significant new information about a *completely different* project.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-6

Comment

The second reason that the County is not allowed to adopt the Addendum in this case is that, assuming for the sake of argument that the Zone Change and the Area Plan actually involved the *same* 705-Unit Project addressed in Final SEIR 566 (which, of course, they do not), the provisions of section 15162 of the CEQA Guidelines would require the preparation of a subsequent of supplemental EIR. Specifically, new information and project changes relating to environmental impacts, project alternatives, mitigation measures not previously discussed in Final SEIR 566 would require the County to prepare another EIR and circulate it for public review and Comment.

County staff has determined that none of the conditions described in CEQA Guidelines section 15162 would require the preparation of a subsequent or supplemental EIR to address the environmental impacts associated with the proposed Zone Change and Area Plan for the 299-Unit Project. Vedanta, the Norbertines, and the Conservancy certainly disagree with this determination and wish to underscore what several California courts have already held, i.e., that Guidelines section 15162 and its companion section 21166 of CEQA only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project. When the proposed new activity constitutes a *separate* project, the "fair argument" test applies to the local agency's decision regarding whether to require a new EIR for the later project.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-7

Comment

Indisputably, the oral and written Comments which will be submitted in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing will constitute substantial evidence supporting a "fair argument" that the 299-Unit Project may cause significant environmental effects, and may involve important new project alternatives and mitigation measures, which were not previously addressed in Final SEIR 566 -- thereby necessitating the preparation of a new EIR to be circulated for public review and comment.

By submitting this letter, and by incorporating the oral and written Comments made at the August 25 public hearing in opposition to the proposed Zone Change and the Area Plan, my clients do not intend to waive their objections to the County's failure to provide the appropriate notice of its intention to rely on Final SEIR 566 as the EIR for the 299-Unit Project. However, within the little time afforded by the inadequate notice provided by the County, my office has attempted to formulate the attached objections and hereby submits them to the Planning Commission with the sincere hope that the County will review them in good faith and will correct the many defects and deficiencies which pervade the CEQA review process for the proposed Zone Change and the Area Plan.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-8

Comment

OBJECTIONS TO ADDENDUM PA980103 TO FSEIR 566, ZONE CHANGE 98-3, AND AREA PLAN 98-2

1. The County of Orange (the "County") has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined that FSEIR 566 adequately describes the significant environmental impacts of the 299-unit single family detached housing project referred to as the Saddleback Meadows Contingency Plan (the 299-Unit Project"), which impacts are more particularly described in the oral and written Comments (the "Comments") submitted to the Orange County Planning commission prior to or at its August 25, 19987 public hearing, including, but not limited to, the expert opinions of Royce B. Riggan, Jr., John R. Byerly, Warren W. Singleton, and Saundra F. Jacobs. (The comments of John R. Byerly regarding the geotechnical aspects of the 299-Unit Project are set forth in an August 21, 1998 letter to counsel which is attached hereto as Exhibit "A" and is incorporated herein by reference.)

Response

The Orange County Board of Supervisors Certified Final Subsequent EIR 566 as adequate on February 24, 1998. Responses to the Comment letters identified in the comment are contained elsewhere in this document.

CCBG-9

Comment

2. The County has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined the FSEIR 566 adequately describes the alternatives and mitigation measures related to the significant environmental impacts of the 299-Unit Project, as more particularly described in the Comments.

Response

Please refer to response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-10

Comment

3. The County has violated section 15153(b) 15087, and 15105 of the CEQA Guidelines in that it has failed to provide (a) public notice of its plans to use FSEIR 566 as the environmental documentation for the 299-Unit Project and (b) 45-day public review and Comment period on such key issues as "whether [FSEIR 566] should be used for [the 299-Unit Project] and whether there are any additional, reasonable, alternatives or mitigation measures that should be considered as ways of avoiding or reducing the significant effects of [the 299-Unit Project]."

Response

The county does not intend to use Certified Final Subsequent EIR 566 as the environmental documentation for the proposed 299 unit project, as described above. An addendum has been prepared to serve as the requisite CEQA mandated environmental documentation for the proposed project.

CCBG-11

Comment

4. The County has violated section 15063(g) of the CEQA Guidelines in that, at the time it determined that an initial study was required for the 299-Unit Project, it failed to consult with the United States Fish and Wildlife Service, the California Department of Fish and Game, the Army Corp. of Engineers, and all other responsible and trustee agencies responsible for the resources affected by the 299-Unit Project, to obtain the recommendation of those agencies as to the appropriate environmental documentation for the 299-Unit Project.

Response

Section 15164 of the CEQA Guidelines does not require consultation with responsible, trustee or other agencies as part of the requirements for preparation of an addendum. These agencies were formally consulted with during the preparation of EIRs 561 and 566, and their Comments and concerns have been a matter of public record since this consultation. In fact, several of the concerns identified by the identified resource agencies for both EIR 561 and 566 have been incorporated in to the 299 unit project.

CCBG-12

Comment

5. The County has violated CEQA and the CEQA Guidelines, to the extent that it has sought to invoke the provisions of section 15164 of the CEQA Guidelines, in that section 15164 only allows the preparation of an addendum when the same "project" is involved. In this case, there are two separate and distinct projects, i.e., a grading application for a 705-unit mobilehome/manufactured housing project (the "705-Unit Project") and an application for a zone change and area plan for the 299-Unit Project.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-13

Comment

6. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project", which they clearly are not, the County has violated section 15162(a)(1) and (2) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the effects of the 299-Unit Project, which proposes substantial changes in the "project" and is based upon substantial changes in the circumstances surrounding the "project", in that, among other things, (a) the 299-Unit Project will involve mass grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project; (b) the 299-Unit Project will involve a proposed wildlife corridor for which there is no analysis in FSEIR 566 and about which the public has not had an opportunity to Comment with respect to its viability, and (c) the U.S. Fish and Wildlife Service and the California Department of Fish and Game have indicated in an August 11, 1998 correspondence to the Orange County Board of Supervisors that the adoption of the 299-Unit Project may jeopardize the approval of the Southern Region of the NCCP program in the (i) "Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCp Central/Coastal Subregion" and (ii) the proposed wildlife corridor may not prove to be viable. (A true and correct copy of the August 11, 1998 correspondence from U.S. fish and Wildlife Service and the California Department of Fish and Game to the Orange County Board of Supervisors is attached hereto as Exhibit "B" and is incorporated herein by reference.)

Response

The 299 unit project does not result in any additional grading impacts as compared to the 705 unit project evaluated in EIR 566. In fact, as indicated in the Addendum, the 299 unit project will impact approximately 30 acres less than the approved 705 unit project. FSEIR 566 contains several alternatives which contain an almost identical wildlife movement corridor .to that proposed by the 299 unit project., which has been evaluated. The identified letter from the USFWS and CDFG is responded to separately in this document.

CCBG-14

Comment

7. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(A) and (B) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance described in the Comments which shows that the 299-Unit Project will have significant effects on the environment that are not discussed in FSEIR 566 and/or are substantially more severe than the impacts discussed in FSEIR 566, including, but not limited to, (a) the grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project, (b) the categorical exemption of the Saddleback Meadows property from the provisions of the Foothill/Trabuco Specific Plan, and (c) the additional reduction and/or destruction of valuable biological resources.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-15

Comment

8. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(C) of the CEQA Guidelines in that it has improperly determined that ta subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance which shows that the mitigation measures that were proposed during the public review period for Draft SEIR 566 (but which FSEIR 566 failed to consider and deemed infeasible because of its erroneous assumption that the County was precluded from even considering any mitigation measures that would cause the "project" to deviate from Recorded Tract Map 10692 are now feasible because the Recorded Tract Map is to be superseded *in toto*.

Response

The proposed 299 unity project contains many mitigating features as compared to the approved 705 unit project. These mitigating features are detailed in the addendum.

CCBG-16

Comment

9. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(D) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance that has come to light since FSEIR 566 was certified regarding new project alternatives which are considerably different from those analyzed in FSEIR 566 and would reduce one or more of the significant impacts identified in the Comments, but that California Quartet, Ltd., has, to date, declined to adopt, including but

not limited to, (a) the Mathews' alternative for the development of a 65-unit single family detached housing project on 44 acres of the property.

Response

The identified alternatives have not been submitted to the County for review and, as such, have not been the subject of any environmental analysis / review to date. Should any of these identified alternatives be submitted to the County, they will be subjected to environmental review as required by CEQA. Both EIR 561 and 566 contain an extensive and reasonable range of alternatives to the proposed project.

CCBG-17

Comment

10. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15153(d) of the CEQA Guidelines in that it has improperly determined that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-18

Comment

11. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(a) of the CEQA Guidelines in that it has improperly determined that the processing of an addendum would be appropriate and that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-19

Comment

12. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(e) of the CEQA Guidelines in that it has failed to provide a brief explanation, supported by substantial evidence, of its determination that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

Response

Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

CCBG-20

Comment

Zone Change 98-3 and Area Plan 98-2 violate the provisions of the Foothill Trabuco Specific Plan (the "FTSP") in that they are part of a development proposal for the 299-Unit Project which deviates from Recorded Tract Map 10692 without providing for an amendment to the FTSP that (a) is adopted pursuant to the amendment procedures established by the FTSP and (b) is consistent with all of the provisions of the FTSP, including, but not limited to, (i) the development and design guidelines established by the FTSP, (ii) the goals and objectives of the FTSP, and (iii) all other provisions of the FTSP identified in the Comments.

Response

The proposed 299 unit project will be subject to all of the policies and requirements of the FTSP, as they relate to the Bridlewood Residential District.

CCBG-21

Comment

14. The County has violated CEQA and the CEQA Guidelines in that it has improperly relied upon FSEIR 566, which is a legally inadequate CEQA document that was improperly certified for the reasons set forth in that certain "Complaint for Declaratory Relief and Petition for Writ of Mandate," which is attached hereto as Exhibit "C" and is incorporated herein by reference, including, but not limited to:

    a) In certifying FSEIR 566, the County did not comply with the special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566;

    b) The special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566 violated CEQA in that, *inter alia*, it unlawfully separated the decision whether to certify FSEIR 566 without taking action on the project for which the FSEIR was prepared;

    c) It improperly limits the mitigation measures its considers to only those that would not cause the project to deviate from Recorded Tract Map 10692;

    d) The analysis and information set forth in FSEIR 566 is legally inadequate under CEQA and the CEQA Guidelines in that, *inter alia:*

        (i) It fails to properly describe the discretionary approval which it was prepared to analyze;

        (ii) It fails to provide the required level of specificity;

        (iii) It fails to provide the required level of technical detail;

        (iv) It was not amended and recirculated after significant new information regarding the discretionary approval it was prepared to analyze was released;

(v) Its certification was separated from the discretionary approval it was prepared to analyze;

(vi) It fails to adequately address all environmental impacts of the discretionary approval it was prepare to analyze, including, but not limited to:

a. Soils and Geology;
b. Water/Hydrology;
c. Transportation/Circulation;
d. Air Quality;
e. Biological Resources;
f. Archeological/Cultural Resources; and
g. Public Services;

(vii) It fails to provide legally adequate mitigation measures and an adequate mitigation measures and an adequate mitigation monitoring program was not adopted;

(viii) It fails to address the cumulative impacts of the project associated with the discretionary approval it was prepared to analyze;

(ix) It fails to consider project alternatives; and

(x) It fails to adequately respond to Comments;

(e) Adequate and proper findings, supported by substantial evidence in the record, were not made in support of the certification of FSEIR 566; and

(f) The Statement of Overriding Considerations was improperly adopted in connection with the certification of FSEIR 566.

Response

The Comment lists the challenges in the litigation that is pending and cannot be addressed at this time. The County Board of Supervisors Certified Final Subsequent EIR 566 as adequate on February 24, 1998. The County assumes that its actions will be upheld. However, no ruling has been reached by the Courts as of the date of the preparation of this Response to Comments Document to Addendum PA980103.

CCBG-22

Comment

15. The County has violated CEQA and the CEQA Guidelines, to the extent that the "Draft Area Plan Conditions of Approval" attempt in any way to eliminate or modify any of the "Standard Conditions of Approval" that are set forth in FSEIR 566 and Addendum PA980103 as mitigation measures which must be completed prior to the issuance of any grading permit, including, but not limited to, (a) SC 7-2 requiring a 1603 Streambed Alteration Agreement from the California Department of Fish and Game, (b) SC 7-3 requiring the necessary individual or nationwide permit from the Army Corp. of Engineers pursuant to section 404 of the Federal Clean Water Act, and (c) SC 7-5 and 7-7 requiring from the U.S. Fish and Wildlife Service (i) appropriate federal approvals required for impacts to Coastal Sage Scrub and (ii) written proof that the removal of any native vegetation from the project site complies with the Federal Endangered Species Act, in that it has attempted to reduce or eliminate

feasible mitigation measures that are set froth in FSEIR 566 and Addendum PA980103 to reduce significant environmental impacts.

Response

All Standard Conditions of Approval identified in Certified Final Subsequent EIR 566 remain valid for the proposed 299-unit Contingency Plan project. These Conditions of Approval include the requirements that the project proponent secure permits from the United States Fish & Wildlife Service (USFWS), the California Department of Fish & Game (CDFG) and the Army Corps of Engineers (ACOE).

CCBG-23

Comment

13. The County has violated CEQA and the CEQA Guidelines in that Addendum PA980103 to FSEIR 566 is inadequate and incomplete due to, *inter alia*, the omission of volume two of Appendix "G", the "Supplemental Geotechnical Assessment for Contingency Pan – 299 Lots," which purportedly contains the computer output documents for the slope stability analysis performed by G.A. Nicoll and Associates, Inc.

Response

As stated earlier in this Response to Comments Document, an Addendum does not require Noticing or Circulation. The County of Orange has distributed copies of the Addendum as a courtesy to community and homeowner groups. The identified technical geotechnical information is available for review at the County of Orange, Planning and Development Services Department, Environmental & Project Planning Services Division, located at 300 North Flower Street, Ste. 321, Santa Ana, California 92702.

R.B. RIGGEN & ASSOCIATES, (RBR) **August 24, 1998**

RBR-1

Comment

In the 24-plus years I have served as an environmental consultant (both in the preparation and defense of EIR's, and as an expert witness) I have never seen such a blatant attempt to circumvent the requirements of CEQA in the name of expediency. The fact that Zone Change 98-3 and Area Plan 98-2 for the 299-unit single family detached housing project are being processed as a "contingency plan" does not excuse compliance with state laws nor does it allow for any corners to be cut just so the contingency plan can be voted on before the end of the year.

However, by purporting to rely on a fatally flawed Addendum to SEIR 566 as the environmental documentation for the Zone Change and the Area Plan, the County of Orange has shirked its responsibility to conduct a careful, deliberate, and legally proper environmental assessment of the impacts, alternatives, and mitigation relating to the 299-unit project. In violation of CEQA Guidelines sections 15063, 15153, 15162 and 15164, the County has sought to "short cut" the environmental review process by using a so-called "Addendum" to avoid the public notice and consultation requirements. Approval of this "Addendum" will place Orange County at legal (and financial) risk, and will severely compromise the County's ability to complete a South County NCCP plan. Granting entitlements for 299-homes will not be viewed favorably by either the California Department of Fish and Game or the United States Fish and Wildlife Service - neither of which appears to have been properly notified or consulted about the new project.

I urge the Commission to reject both the Addendum to SEIR 566 and the associated Zone Change 98-3 and Area Plan 98-2 for the 299 Single-family-unit project. I would also urge the Commission to direct staff to have prepared a legally adequate CEQA document and have that document circulated for public review and Comment.

Response

The Comment represents the opinion of the commentator, who indicates extensive experience in environmental consulting. CEQA allows disagreements among experts. It is the County's contention that the Addendum to Certified Final Subsequent EIR 566 has been prepared in compliance with the requirements of CEQA and the County of Orange procedures. Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

The statement regarding the future review by CDFG and USFWS is speculative and is not within the responsibility of the County of Orange. The County has fulfilled its responsibilities by analyzing known and potential impacts to biological resources and including mitigation measures which ensure compliance with resource agencies' requirements.

RBR-2

Comment

I have reviewed this document and make these Comments on behalf of the Vedanta Society of Southern California. I should note that, although I have previously testified before the Board of Supervisors on SEIR 566, I received no notice at all from the County as to the availability of the

"Addendum". In fact, I received a copy of the "Addendum" from Counsel within the week, leaving inadequate time to review and respond to the document.

Response

The Planning & Development Services Department, Environmental & Project Planning Services Division did not receive a request to add the Commentator on the Saddleback Meadows distribution list. Please refer to Response to Comment CCBG-2 and 3.

RBR-3

Comment

Addendum PA 98013 is not a legally permissive document under the California Environmental Quality Act. The document is seriously flawed in the following ways:

A. SEIR 566, to which this document purports to be an Addendum, is itself deficient and is currently the subject of a lawsuit to invalidate its certification.

B. The project and its circumstances have triggered the tests of Guidelines Section 15162 in numerous ways. Substantial project changes, new information from the wildlife agencies, additional project alternatives which have come to light, and feasible mitigation measures which have not been adequately considered all mandate the preparation of a new or subsequent EIR. An addendum is not, therefore, an appropriate environmental document to support the Zone Change and Area Plan.

C. Substantive technical issues are ignored or are addressed in the most cursory way. The document is materially defective by its silence on numerous issues including the lack of mitigation for several significant effects.

D. The use of an Addendum is a transparent attempt to avoid the Public Notice and Review process that would be mandated under Guidelines Sections 15153 and 15162.

Response

The Commentator is correct that Certified FEIR 566 is in litigation. The statement that the document is deficient is speculative since no court ruling has occurred regarding the litigation. The public review process on Saddleback Meadows has exceeded all state and County requirements. Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

RBR-4

Comment

Subsequent Environmental Impact Report (SEIR) 566. I had the opportunity to provide the Board of Supervisors with written Comments as to the adequacy of SEIR 566. I include that letter by reference and have attached a copy for the Commissions review and use. In addition, the United States Fish and Wildlife Service and the California Department of Fish and Game commented extensively on the adequacy of SEIR 566. The wildlife agency's comments were never responded to adequately in writing, as is required by law (see Guidelines Section 15088). That letter (dated 8 August 1997) is also attached for the Commission's information and review.

Response

The Orange County Board of Supervisors has responsibilities for the County of Orange. The wildlife agencies have responsibilities related to preserving biological resources. The County and wildlife agencies disagreed on Certified Final Subsequent EIR 566, which the BOS found adequate and complete on February 24, 1998. Specific provisions were included in FSEIR 566 which ensured that the project proponent would mitigate for any impacts to biological resources. The concerns identified by the wildlife agencies were specifically addressed in the Response to Comments Document; the Statement of Overriding Considerations, adopted in Certified FEIR 566, made specific findings regarding Saddleback Meadows's impacts on biological resources.

RBR-5

Comment

An Addendum is NOT the Appropriate CEQA Document. Section 15162 of the CEQA Guidelines (California Code of Regulations) governs when an Addendum to an EIR can be prepared and when a Supplemental or Subsequent EIR is the appropriate document. The relevant parts of that code section read as follows:

"(a) When an EIR has been certified...no subsequent EIR for that project shall be prepared unless...the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

"(1) Substantial changes are proposed in the project which will required revisions...due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

"2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR...due to the involvement of new significant environmental effects of a substantial increase in the severity of previously identified significant effects.

"(3) New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time of the previous EIR was certified..., shows any of the following:

"(A) The project will have one or more significant effects not discussed in the previous EIR,

"(B) Significant effects previously examined will be substantially more sever than shown in the previous EIR,

"(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project but the project proponents decline to adopt the mitigation measure or alternative,

"(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative."

Response

The Comment represents a disagreement among experts. Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4 for the County's position.

RBR-6

Comment

While one might argue that an Addendum to SEIR 566 would be appropriate for *some* issues (i.e., air quality effects are reduced with the smaller project), there is a more compelling argument that a new EIR and public review period are required for a number of the aspects of the new 299-unit project. For example:

- **New Project Alternatives.** Subsequent to the certification of SEIR 566, Saint Michael's Abbey and the Ramakrishna Monastery have entered into a series of negotiations with the Saddleback Meadows developer with the intent of purchasing the bulk of the property (178-acres) for open space purposes. The balance of the property (35- to 44-acres following purchase) would be considered for various development alternatives ranging from 65 to 130 single family homes. These are clearly reasonable alternatives not discussed in SEIR 566 and are alternatives that the project proponent has, to date, declined to adopt. Clearly the tests of 15162(a)(3)(C) and (D) are met and a subsequent EIR and public review period is required.
- **Southern Subregion NCCP.** On 11 August 1998, a letter jointly signed by the United States Fish and Wildlife Service and the California Department of Fish and Game (copy attached) was submitted to the Board of Supervisors of Orange County. This letter states that "County maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion." SEIR 566 (at pages 4-128, 4-148, and, 4-150) refers briefly to the wildlife corridor issue. Under the heading "Significant Impacts of Project Prior to Mitigation" (p. 4-150), the SEIR indicates that "Implementation of the proposed project would conflict with existing wildlife movement corridors..." Subsequent to this statement, the SEIR offers no mitigation.

In that the discussion of the NCCP wildlife corridor is cursory at best in SEIR 566, and since this is identified by the wildlife agencies in their 11 August 1998 letter as the "only" corridor linking the NCCP subregions, the "... substantial increase in the severity of previously identified significant effects" test of 15162 is clearly met and a new Subsequent EIR and public review period are required.

This requirement for a "new EIR" is doubly compelling when one considers that the County is, with this project, potentially compromising its ability to obtain the approval of the Southern Subregion NCCP, a point of critical interest to many builder/developers besides the Saddleback Meadows developer, California Quartet, Ltd.

Response

The identified alternatives noted in the Comment are not the subject of this environmental review. The Project under consideration at this time is the Contingency Project of California Quartet, Inc. No other alternative has been submitted to the County for environmental review. Should the

identified alternatives be submitted to the County, they will be subjected to the same CEQA environmental documentation requirements as the proposed project.

With regard to the Southern Subregion NCCP related Comments have been evaluated in Certified Final Subsequent EIR 566 and Proposed Final EIR 561. In fact, the 299-unit Contingency Plan has incorporated many of the concerns identified in the two (2) previous EIRs relative to the NCCP, including a central wildlife corridor, preservation of, or replacement measures to ensure the continued sustainability of, valuable biological resources.

RBR-7

Comment

The Addendum for the 299-unit alternative includes a narrow, ostensible "wildlife corridor" through the subdivision. A road traverses the central part of the "corridor" and includes lands that would be extensively graded, thereby requiring revegetation of native plant species. In addition, the revegetation area and the narrowest part of the corridor contain the fuel modification zones associated with the surrounding residential developments. Fuel modification zones are, by definition lacking in both horizontal and vertical cover and are not properly part of a wildlife corridor. The wildlife agencies have not reviewed this proposal, however, although the County is required to have consulted these agencies under section 15063(g) of the Guidelines. That the County has not consulted the Wildlife agencies on this "project" is extraordinary, given the *purported* close working relationship between those agencies and the County staff on the Southern Subregion NCCP.

Response

The Comment restates information contained in EIR 566 and the Addendum relative to the features of the wildlife movement corridor. The resource agencies have previously commented on the adequacy of the proposed wildlife corridor. Please refer to Response to Comments Document on Draft EIR 566.

RBR-8

Comment

Technical Errors and Lack of Mitigation. The California Courts, in interpreting the implementation of CEQA, have been most specific in their requirements for adequate mitigation measures. Feasible, implementable, mitigation measures must be specified by the CEQA document for each of the potentially significant impacts or effects identified for the project. Neither the so-called Addendum nor the original SEIR 566 meet this test. My letter of 17 February 1998 (copy attached) cities case law in support of this conclusion. to cite a few of several possible examples of technical deficiencies from the Addendum and SEIR:

- **Wetlands/Fairy Shrimp.** Both SEIR 566 and Addendum PA 98013 are clear (albeit very brief) in showing that the implementation of either the approved project or the 299 d.u. alternative will result in a significant loss of wetlands and the Federally designated Endangered Riverside Fairy Shrimp. However, no mitigation for this loss is identified, other than generalized statements that permits will be required from the Army Corps of Engineers

(ACOE) and from the California Department of Fish and Game, and that mitigation can be accomplished on-site. None of the critical questions about this mitigation are answered. Can the on-site vernal pools be moved?, Can newly created pools support the endangered Fairy Shrimp?, In order to obtain an ACOE permit, a 401 (c)(3) "alternatives" analysis must be prepared - can an analysis supportive of development be prepared in light of the presence of the endangered species and the rarity of this habitat type in Orange County? Clearly this is a legally significant omission of the Addendum.

Response

The Comment is incorrect. Both the Addendum and Certified Final Subsequent EIR 566 include a comprehensive mitigation program designed to offset impacts to onsite sensitive biological resources. In total, 15 separate mitigation measures are proposed to mitigate impacts to biological resources. All Resource Agency Permit requirements must be satisfied prior to the issuance of grading permits.

RBR-9

Comment

- **Wildlife Corridor.** The 299 d.u. plan ostensibly includes a wildlife corridor through the subdivision. However, the bulk of this narrow corridor, at the "pinch point" is on land that will be graded and then revegetated to native species. Obviously this revegetation will be critical to the success of the corridor concept, yet no revegetation plans are given in the Addendum, no species lists, no information that will allow a reviewer to gage the potential (or actual) success of the revegetation/mitigation measure. Clearly this is a significant technical flaw in the document.

Response

The Comment is incorrect. Both the Addendum and Certified Final Subsequent EIR 566 contain a comprehensive mitigation program designed to offset impacts to onsite sensitive biological resources. In total, 15 separate mitigation measures are proposed to mitigate impacts to biological resources.

RBR-10

Comment

- **Gnatcatcher.** At a minimum an EIR (or an Addendum) must assess those effects that require a mandatory finding of significance. Saddleback Meadows has not been the subject of a directed survey for the Coastal California Gnatcatcher in four years. (Addendum, p. 76). However, recent studies for the NCCP (Dudek and Associates) have identified breeding pairs of Gnatcatchers literally at the periphery of the project site. An EIR (or an Addendum) that makes no attempt to assess the potential effect of the project on a Federally listed species is flawed on its face (see CEQA Guidelines section 15065).

"Take" as defined under the Federal Endangered Species Act also includes indirect effects on the listed species. To the extent that the proposed wildlife corridor through the project is inadequate to allow the passage of Gnatcatchers between the Southern and Central NCCP subregions, then there is a fair argument that a "take" has been committed. Yet the Addendum is silent on this issue and gives the question of the Gnatcatcher the most minimal discussion. Clearly the "Addendum" is fatally flawed in its discussion of this listed species.

Response

The project site has been the subject of previous directed surveys for coastal California gnatcatchers, with none identified onsite. Mitigation Measure SC 7-11 contained in the Addendum PA980103 requires the resurvey of the project site to determine if gnatcatchers occur onsite.

RBR-11

Comment

Avoidance of Public Review. "Public participation is an essential part of the CEQA process" (Guidelines Section 15201). This concept is pervasive throughout both the Act and the Guidelines. When the document is not an original EIR, but a follow-on document as is the case here, *Sutter Sensible Planning, Inc. v Sutter County Board of Supervisors* [(3d Dist. 1981) 122 Cal. App..3d 813] provides appropriate guidance as to the need for recirculation for additional public review:

"[R]ecirculation is required, for example, when the new information added to an EIR discloses:

"(1) a new substantial environmental impact resulting from the project or from a new mitigation measure proposed to be implemented;

"(2) a substantial increase in the severity of an environmental impact unless mitigation measures are adopted that reduce the impact to a level of insignificance;

"(3) a feasible project alternative or mitigation measure that clearly would lessen the environmental impact of the project, but which the project's proponents decline to adopt."

Response

The Comment denies the extensive public review and special requirements imposed by the County in conjunction with the review of the Saddleback Meadows project since 1994. The thresholds noted by the comment with regard to requirements for recirculating an EIR have not been reached by the Contingency Plan. Please refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

RBR-12

Comment

As discussed above, the *Sutter* Court's tests for recirculation to public review are clearly met by the so-called "Addendum." For example:

- With the publication earlier this year of the Alternatives for the Southern Subregion NCCP and with the wildlife agency's letter of 11 August 1998 (see attached) it is now abundantly clear that this project will potentially impact the ability of Orange County to obtain an approvable South County plan. Certainly this is a "substantial increase" in a significant effect for which the Addendum offers no mitigation that will reduce the effect to a level of insignificance.
- Saint Michael's Abbey and Ramakrishna Monastery have been discussing feasible alternatives with the developer and the County, alternatives which would preserve a substantial amount of open space. Since these alternatives would clearly lessen the impacts of the project, and in that the proponent has declined to adopt any of these alternatives, recirculation of the document is mandated.

Response

Please refer to the Response to Comments RBR-11. Please also refer to Response to Comments CCBG-2 , CCBG-3 and CCBG-4.

RBR-13

Comment

In conclusion, the apparent "rush" to approve a 299-unit project involving massive impacts without even coming close to preparing the proper CEQA documentation is unseemly and unjustified. Moreover, given the critical importance of the Saddleback Meadows property to the success of the Southern Subregion NCCP, the failure to provide the wildlife agencies with even the courtesy of a notification regarding a new 299-unit project that would directly and significantly impact the viability of the NCCP is inexplicable, particularly when these agencies have shown such interest in the development of the Saddleback Meadows property.

According, the Planning Commission should not participate in such a legally improper process and should direct the staff to comply with all applicable CEQA requirements before presenting the Zone Change and the Area Plan for consideration. At a minimum, this will require preparation of a new Environmental Impact Report and circulation of that document for Public Review and Comment.

Response

Comment noted regarding consultation with the wildlife agencies. Since the Planning Commission hearing on August 25, copies of the Addendum have been provided for review and comment to both the California Department of Fish and Game and the Fish and Wildlife Service. In addition, County staff have also met with these agencies.

SFC CONSULTANTS,(SFC) **August 25, 1998**

SFC-1

Comment

SFC Consultants (SFC) has hurriedly reviewed the Saddleback Meadows Addendum to Certified Final Subsequent EIR 566 for CEQA compliance and consistency, and provides the following Comments for you and your Planning Commission's consideration at it's meeting of August 25, 1998. By submitting these comments on the Addendum, SFC does not intend to waive its objections to the many procedural irregularities relating to how the EIR is being processed by the County of Orange.

In fact, it is with great concern that I am submitting these Comments at all since I was not notified of the availability of an Addendum to Saddleback Meadows SEIR 566, even though I have made a clear record of my continued interest in participating in, and being informed about, any CEQA review process relating to the Saddleback Meadows property. It was by pure luck that I happened to be at the County Clerk Recorder Office when I walked to the Administration building to review the Public Hearing notices. It was at this time that I noted the Addendum EIR and Planning Commission hearing scheduled for August 25, 1998.

With the considerable amount of time that I have spent to date in Commenting on previous CEQA documents for the Saddleback Meadows project, I would expect to be included in all distributions of any subsequent documents. According to my conversation with Mr. Bill Grieman, the Addendum was distributed to selected private residents, homeowner associations, concerned legal entities and the surrounding religious organizations, totaling eleven Addendum recipients. IT does not appear that even the City of Mission Viejo or other affected local agencies were notified of what is being referred to an the 299-unit "contingency plan."

In fact I contacted Ms. Karen Steele, Senior Planner at the City of Mission Viejo, in order to confirm their receipt of the Addendum. Ms. Steele indicated that the City was not aware of any Addendum, and it the City had been notified, a thorough review of the Addendum would have been undertaken by the City Planning and Transportation Departments. I believe the same would be true with respect to the City of Lake Forest. At any rate, for future reference, please add me to the mailing list of interested persons for all future land use matters relating to the development of the Saddleback Meadows property.

As an EIR preparer myself, it is clear that the applicant is once again trying to avoid full public disclosure and involvement by relying on an Addendum which does not require public circulation. Under CEQA Guidelines Sections 15162 and 15164, it is not proper to rely on the Addendum as the CEQA documentation for a 299-unit single family detached housing project that purports to exempt itself wholesale from the Foothill/Trabuco Specific Plan.

New information regarding project impacts, reasonable project alternatives, and available mitigation measures not previously considered clearly mandates the preparation and circulation of a new EIR for the decidedly different project.

Response

As promulgated by, and in compliance with, Section 15164 of the CEQA Guidelines, the County of Orange determined that an Addendum is the appropriate environmental document for the Contingency Plan based upon the fact that only minor changes and modifications to Certified Final Subsequent EIR 566 are required to make that document adequate under the California Environmental Quality Act and County of Orange procedures.

An Addendum does not require recirculation and/or Noticing of Availability of the document. However, the County of Orange, as a courtesy, provided copies of the document for public review. Additionally, the Planning Commission hearing of August 25, 1998 was a properly noticed hearing, and the public, as always, was invited to provide testimony on the project.

Although SFC Consultants was not notified and given copies of the Addendum previously, the County will ensure that Ms. Jacobs, as well as the cities of Lake Forest and Mission Viejo, will be individually notified of all future public hearings involving the proposed project.

SFC-2

Comment

Over one year ago, on August 22, 1997, SFC provided you and your Planning Commission with nineteen pages of Comments on the Draft SEIR 566, which at that time was proposed for 705 units. Within that document, I highlighted numerous deficiencies in the SEIR which I felt required correction or supplementation prior to the SEIR being certified.

At the October 22, 1997 Planning Commission meeting, I presented major concerns about the inadequacy of the written responses to my Comments, and I raised other questions regarding the adequacy of the SEIR which have not been answered to date. SFC acknowledges that, in the weeks following after the October 22 Planning Commission hearing, the County made additional reports, materials, and technical studies regarding the project, available for public review. With the additional information which was made available, the County's written responses to many of SFC's comments from my August 22 letter were no longer valid. More importantly, the additional materials (e.f., mitigation monitoring program, grading plans and soils reports) which were made available, are the type of "significant new information" which would have required the Draft SEIR to be recirculated under section 15088.5 of the CEQA Guidelines.

On December 2, 1997, SFC provided the County with fifteen pages of Comments, which addressed concerns that were not adequately addressed within the SEIR 566. Within my December 2, 1997 letter, I addressed those comments from my August 22 letter to which no substantive response had been provided. I am disappointed that, even in the recent Addendum, the County has still not responded to my comments, despite ample time to have done so.

In conclusion, I cannot believe that the County has sought to process the 299-unit project without full public disclosure and proper CEQA compliance. Relying on a previously prepared SEIR (which is itself deficient and is currently being litigated) without properly informing the public and responsible state and federal agencies, and trying to process a Zone Change and an Area Plan for 299 homes on the basis of an "Addendum" which is not circulated for public review and Comment does not come close to complying with CEQA and the Guidelines. To protect the record,

however, I have prepared the attached comments within the very little time which has been afforded to me.

Response

The Comment reflects the fact that SFC Consultants disagrees with the County. The County maintains that the comments provided by SFC Consultants on Draft EIR 566 were completely responded to in the Response to Comments Document, which became part of the Certified Final Subsequent EIR.

Regarding the Comment on the choice of an Addendum, please refer to Response to Comments SFC-1 and CCBG-2 , CCBG-3 and CCBG-4 found elsewhere in this document.

SFC-3

Comment

Section II, 3. Project Description

1) **Page 5-15, Project Description**. Nowhere in the project description does the proposed Zone Change (AC98-3) or Area Plan (AP98-2) appear as a description or mitigation measure, yet the title of the addendum indicates both a Zone Change and Area Plan. How can the title of the Addendum refer to two significant changes to the Saddleback Meadows project yet have no substantive discussion of these changes? One short sentence beginning at the end of Page 14 and continuing at the top of page 15 refers to the Zone Change, but that appears to be the only reference to it. What is inexplicably missing from the Project Description section is a detailed explanation that the Zone Change includes an amendment of the Foothill/Trabuco Specific Plan to *exempt* the 299-unit project from the development criteria and restrictions set for the in the Specific Plan. Since the Specific Plan expressly requires that any new project for the Saddleback Meadows property by "consistent" with the Specific Plan, the exemption subsumed within the Zone Change represents the type of "substantial changes" referred to in the Guidelines section 15162 (a) which necessitates the preparation of another EIR to address the numerous respects in which the 299-unit project would significantly deviate from the Specific Plan and subvert the overall goals, objectives and policies that Plan was designed to achieve.

Response

The Commentator is partially correct. As noted, the title page of Addendum PA980103 identifies the required discretionary approvals. The Project Description would have been more clear if the Section had included the details on the Zone Change and Area Plan. This is not a fatal flaw of the document. In stating that any reference to the proposed Area Plan and Zone Change is not substantively discussed in the body of the Addendum, Zone Change 98-3 is referenced on page 14 of the Addendum.

The Area Plan is required of any project and the zone change is mandated to amend the FTSP to allow for a significantly reduced density project. These actions are procedural in nature and will result in the net reduction in impacts as com[pared to the approved 705 unit project.. The requirement for an Area Plan and zone change does not exceed the threshold which would require additional environmental analysis. Please refer to Response to Comment CCBG-3.

However, the Commentator confuses Project with Project Description. The "Project"according to Section 15378 of the CEQA Guidelines, represents the whole of the action, which is the construction of a 299-unit single family development. The Project is substantially less impactful than the previous 705-unit manufactured housing development.

SFC-4

Comment

Page 1, Housing Element. The original 705 unit project description within SEIR 566 indicated that the removal of the mandated inclusionary Housing Program (HP) requirements could undermine the Countywide calculations used to eliminate the affordable housing mandate. Yet no thorough discussion of housing issues, including the possibility of eliminating the need for affordable units was considered in the SEIR, nor was it considered in the response to Comments on the SEIR. This section of the Addendum indicates that the 299-unit project would still be required to apply the IHP even though the County-mandated affordable housing requirements have since been rescinded. Yet page 15, top of page, indicates that the County of Orange would be required to implement a General Plan Amendment to modify project-related affordable housing requirements. Is the County planning to initiate a General Plan Amendment as part of this project application? And if so, will it include a thorough discussion of housing issues?" This discussion of housing issues within the County and their applicability to the Saddleback Meadows project would constitute new information under CEQA Guidelines 15162 and would require a new EIR and a public circulation thereof.

Response

Implementation of the proposed project would effectively eliminate the Bridlewood Residential District related requirements for affordable housing under the now defunct affordable housing program.

SFC-5

Comment

Section III, 1. Land Use Compatibility

3) Page 17 Foothill-Trabuco Specific Plan. This section is grossly misleading and false to the extent that it states that "the project is exempt from the provisions of the Specific Plan." In fact, just the opposite is true. As clearly stated on Page III-20 of the Specific Plan, the exemption that the 705-unit manufactured housing project currently enjoys is to be automatically revoked in the event a new project, such as a 299-unit project, is approved and the new project is to be "consistent" with the Specific Plan.

Response

Please refer to Response to Comment SFC-3 and CCBG-4.

SFC-6

Comment

4) Pages 17 and 18. What is not being disclosed here is that Zone Change (ZC) 98-3 provides a *new* exemption for the 299-unit project to exclude it from coverage by the Specific Plan. Such an

exemption is completely at odds with what the Board of Supervisors intended when it adopted the Specific Plan in December 1991 and expressly stated that any development proposal for the saddleback Meadows property which deviated from Recorded Tract Map No. 10692 had to be brought into consistency with "all of the provisions of the specific Plan." (FTSP at p. III-20, s 3.2 (b)(3).) The proposed *new* exemption provided for in Section 3.4c of ZC 98-3 is a blatant reversal of the Board's 1991 directive and thus represents a significant new change under CEQA Guidelines section 15162 which should be addressed as part of a new EIR to be circulated for public review and Comment. The failure of the Addendum to quote the relevant portion of the Specific Plan imposing a "consistency" requirement on all new project relating to Saddleback Meadows, and the failure to mention the new exemption provided for in ZC 98-03, are quite troubling and clearly inexcusable.

Response

Please refer to Response to Comment SFC-3 and CCBG-4.

SFC-7

Comment

5) Page 19 , Mitigation Measures. Attachment A of Appendix A at the back of the Addendum is the Saddleback Meadows Rural Character Statement. Yet the mitigation measures for the Addendum do not include provisions for the inclusion of these attached guidelines. SFC's previous Comments to SEIR 566 suggested that land use mitigation should include: Setback criteria, buffer zones of vegetation, pet restrictions, ridgeline protection, project phasing coupled with an Annual Monitoring Report under Zoning Code section 7-9-103.2(a)(12) to identify imbalances between development and infrastructure, etc. Notwithstanding the requirements of CEQA Guidelines section 15126(c), these new mitigations represent measures not previous introduced in SEIR 566, through identified pictorially in the site plan (buffer zone), and should be included in a revised draft Subsequent EIR and circulated for public review and input.

Response

The referenced rural character statement is hereby incorporated into the mitigation measure section of the land use portion of the addendum. With regard to specific setback criteria, buffer zones of vegetation, pet restrictions, etc., these are land use regulations and are included in the project conditions; they do not belong in the environmental document.

SFC-8

Comment

6. CEQA Guidelines Section 15131 (b) expressly recognizes that construction can adversely impact religious practices: "if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment". Although the Land Use Compatibility section of the Addendum indicates that the reduction of residential units from 705 to 299 and the incorporation of the Saddleback Meadows "Rural Character Statement" responds to the project team's intent for a rural community as expressed by Saint Michael's Abbey and the Ramakrishna Monastery, these measures should be included as

additional mitigation and should be addressed in a new EIR and be circulated for public and agency review. Without incorporation of these measures as mitigation, the current Addendum and mitigation is deficient, as SEIR 566 was, with no attempt to mitigate impacts on surrounding religious uses to any level at all.

Response

One of the primary design criteria for the 299 unit project was to buffer existing surrounding land uses, including the Ramakrishna Monastery and Saint Michael's Abbey. The 299 unit project provides for enhanced buffering of the monastery through a variety of design features including berming, density reduction, backcut grading, etc These design features substantially reduce the impact of the proposed project as compared to the approved 705-unit manufactured home project.

SFC-9

Comment

Section III. 2. Soils and Geology

7) Page 22, Geotechnical Conditions, last paragraph at bottom of page. The Addendum briefly indicates that Pages 4-13 through 4-33 of SEIR 566 remain appropriate for the project. However, the Groundwater section of SEIR 566 was never properly addressed and remains deficient. The major areas of groundwater Comments and concerns are located within pages 4-13 through 4-33 of the SEIR 566, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: **Page 4-16,** Ground Water: It appears from the State Water Resources Board map of wells in the area that there are at least five wells located northerly, westerly and southerly of the site and landslide areas. These wells depend on the groundwater and saturated zones will be encountered (according to the geotechnical study). This excess groundwater will require pumping to a point to where the bottom layer of the 120-foot key cut will need to be cleaned out. The EIR does not discuss the high probability that his excessive pumping may impact groundwater and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact in CEQA Guidelines Appendix G(h) and (i). The EIR provides neither discussion of this important issue, nor any mitigation for potential impacts to these wells. While the EIR preparer, or the geotechnical engineer of the project, may speculate that the surrounding wells are being fed by Aliso Creek or "other groundwater", **there is no factual basis to support the conclusion that there will be "no significant groundwater impact" caused by the project grading and development.** The Planning Commission must be provided with complete information on this issue before passing on the adequacy of DSEIR 566, and gathering groundwater information during remedial grading for future decisions, and complying with the water resource agencies, is not the proper way to proceed.

The EIR preparer's response to my Comments of SEIR 566 indicated that this comment is speculative and declines to deal with the very real concern about the impacts on surrounding water wells. Interestingly, the EIR itself includes speculative information that the surrounding wells are being fed by Aliso Creek or other groundwater (in addition to other speculative statements in the SEIR which SFC has previously pointed out). My concern here is that the

Planning Commission is about to rely on a previous SEIR that incorrectly states that there will be "no significant groundwater impact" caused by the project grading and development. The EIR preparer appears unwilling or unable to perform the analysis necessary to comment on the actual impacts to surrounding wells.

Response

Both Proposed Final EIR 561 and Certified Final EIR 566 include comprehensive discussions, as well as complete technical reports, on geotechnical and hydrological impacts associated with the proposed Saddleback Meadows project.

Additionally, the Commentator is reminded that, whether or not the environmental document specifically calls out a specific mitigation, all grading and any required groundwater pumping must be conducted in compliance with the Orange County Grading and Excavation Code. Please refer to previous Response to Comments Document from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-10

Comment

8) Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: **Page 4-24**, last two paragraphs. These paragraphs state that "unfavorable conditions (i.e. "some ground water") can be mitigated by implementing corrective grading concepts". Yet DSEIR only speculates on the mitigation necessary to truly lessen future impacts to the development from groundwater and postpones for <u>future</u> analysis whatever specific mitigation measures might eventually be proposed by the soils engineer for the project (see page 4-25). This is not keeping with CEQA.

Again, the concerns expressed above are still valid and should be addressed as part of a new EIR that is circulated for public and agency review.

Response

Both Proposed Final EIR 561 and Certified Final EIR 566 contain comprehensive discussions on geotechnical and hydrological impacts associated with the Saddleback Meadows project. Again, the Commentator is reminded that all grading and any required groundwater pumping must be conducted in compliance with the Orange County Grading and Excavation Code. Please refer to previous Response to Comments Document from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-11

Comment

9) Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: **Page 4-31,** Mitigation Measure 2-34. Ironically, this so-called "mitigation measure" provided more detailed information regarding groundwater problems and dewatering than any discussion set forth in the text of DSEIR 566. Although page 4-24 of the text merely alludes to "some" groundwater that might be encountered during grading, this mitigation measure paints a far more

graphic and alarming picture, **"Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water is foreseen in nearly all major cuts decreasing in volume with time, and being less at high elevations as well as in cuts made late in the year."**

As indicated above groundwater wells are located adjacent to the site and landslide areas. Impacts to surrounding groundwater and groundwater wells from required pumping and dewatering are not even discussed in the text of the DSEIR, yet this mitigation measure appears to expect it. Again, the DSEIR does not, but certainly should discuss the extreme likelihood that this excessive pumping may impact groundwater wells and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact under CEQA.

The Planning Commission must be provided with enough factual information before it is asked to certify this EIR. Gathering groundwater information during remedial grading is not proper mitigation.

My previous Comment on groundwater, seepage, and impacts to down gradient wells should be addressed prior to approving any Addendum.

Response

Please refer to previous Response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-12

Comment

10) Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: Page 4-33, Section 4.2.7. of the DEIR should be changed to read "Implementation of this proposed project, with the mitigation measures outlined above will result in unavoidable adverse geotechnical impacts." At a minimum, there are significant groundwater impacts and slope stability issues that have not been adequately discussed or mitigated in DSEIr 566 and revision and recirculation of the DSEIR is in order to allow public comment on these matters when they are completed.

Again, the concerns expressed above are still valid and should be addressed as part of a new EIR that is circulated for public and agency review.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-13

Comment

Section III.3 Water/Hydrology

11) Page 22, Geotechnical Conditions, last paragraph at bottom of page. The addendum briefly indicates that Pages 4-33 through 4-43 of SEIR 566 remain appropriate for the project. However, the tru facts are that the Water Hydrology section of SEIR 566 was never properly addressed and remains deficient. The major areas of water and hydrology Comments and concerns are located within pages 4-33 through 4-43 of SEIR 566, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: **Page 4-38** The EIR states that alterations of the rate of flow of groundwater or impacts to groundwater quality are considered to be insignificant. The geotechnical report indicates that groundwater and saturated zones will require dewatering during grading and excavation of the sheer key. Groundwater from these slide planes will require pumping for an undetermined period of times (as demonstrated in Mitigation Measure 2-34). At least five (5) groundwater wells are located near this project site, directly in the path of the groundwater flow.

The geotechnical report has completely disregarded the impacts that may be incurred downstream during construction dewatering. ***This EIR section should consider impacts to groundwater as significant,*** *otherwise the Planning Commission should not certify this EIR with an incorrect impact finding.*

SEIR 566 incorrectly states that there will be no significant impacts to groundwater caused by the project grading and development, and the SEIR was certified with these incorrect findings. The SEIR should have stated that "significant impacts may occur to groundwater due to project grading and development," The Addendum which addresses this project cannot rely on a SEIR that was certified with incorrect findings.

Response

Please refer to previous Response to Comments from SFC Consultants dated October 1997.

SFC-14

Comment

12) Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: Page 4-42, Mitigation Measure 3-5. How and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and downstream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent? The mitigation measure is not enforceable and does not reduce impacts in any way. It should be deleted.

The response to this Comment to SEIR 566 was non-responsive and yet the SEIR 566 was still certified. Again, how and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and downstream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent?

Response

Please refer to previous Response to Comments from SFC Consultants dated October 1997.

SFC-15

Comment

13) Excerpted from SFC Consultants Comments letter dated August 22, 1197 for SEIR 566: Page 4-43, Section 4.3.7. indicates that implementation of the proposed mitigation measures would result in no unavoidable adverse impacts to groundwater hydrology, yet there is no information on impacts to downstream wells from excessive dewatering to support the less than significant impact. This conclusion should be changed to **potentially significant impacts will result after implementation of the mitigation measures.** In addition, the new information associated with the new finding will require recirculation of DSEIR 566.

No information has yet been presented to support the SEIR's conclusion that unavoidable adverse impacts to groundwater hydrology will not occur. Since the SEIR has been certified with this incorrect finding, the Addendum is also deficient. The impact statement should be changed to state that "significant impacts may occur to groundwater due to project grading and development," then a new EIR should be circulated for public and agency Comment.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-16

Comment

Section III.4. Transportation/Circulation

14) Page 42, Second Paragraph. The Addendum briefly indicates that Pages 4-44 through 4-83 of SEIR 566 remain appropriate for the 299-unit project, but the Transportation/Circulation section of SEIR 566 was never properly addressed and remains deficient. The major areas of traffic and circulation Comments and concerns are located within pages 4-43 through 4-83 ;of the SEIr, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: The traffic section of the DSEIR unfairly limits its review of intersection impacts to El Toro Road/Santa Margarita Parkway and north. No explanation is given in the DSEIR for this limiting factor, and no analysis is included for the intersections along El Toro south to the San Diego Freeway (I-5). The DSEIR should include all intersections that will be impacted by the 705-unit project.

The EIR preparer for SEIR 566 had justified the lack of analysis south of Santa Margarita Parkway to "Distribution of project related traffic generation...has been reviewed and approved by the County of Orange, Traffic Engineering Division." Yet the Response went on to say "...the majority of traffic will be oriented to the south/west of the site." I am disappointed that, even in

the recent Addendum, the County has still not responded to my Comment, despite ample time to have don so. Please clarify what EIR preparer is trying to say and respond to the comment properly.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC -17

Comment

Section III.6 Noise Analysis

15) Page 66, First Paragraph. The Addendum makes a poor and questionable attempt to actually respond to a Comment from SEIR 566 relating to the noise impacts on adjacent religious facilities. The Addendum attempts to justify these impacts by; indicating that "These facilities are already exposed to single event aircraft noise that is much louder than a distant barking dog, lawnmower or auto horn associated with project residential uses." The Addendum goes on to indicated that intervening topography" and reduction in the number of units from 705 to 299 would offset such noise impacts. Such a conclusory response unsupported by a revised noise analysis for this Addendum is prohibited under CEQA Guideline Section 15088(b). Before the Addendum attempts to make conslusory statements such as this, a revised noise analysis should be prepared and discussed in a new EIR that is circulated for public and agency review.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-18

Comment

16) Page 66, Third Paragraph. By means of a passing reference to Page 4-101 through 4-118 of SEIR 566, the Addendum suggests that the noise impacts of the 299-unit project are adequately addressed in the SEIR. The Noise section of SEIR 566 however, never properly addressed the impacts of noise on religious facilities and remains deficient. The major areas of noise Comments and concerns are located within pages 4-101 through 4-118 of SEIR 566, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the noise impacts from the reuse of the El Toro Marine Corp Air Station as a commercial airport or the noise from traffic associated with the commercial airport.

Once this information has been included in this DSEIR, this document should be recirculated for public review.

Page 4-102, Baseline Noise Levels. The Noise section of the DSEIR provides a baseline discussion of the current impacts from the El Toro MCAS fly-overs which exist at present, but the impact section of the EIR fails to identify potential CNEL contours as a result of the base reuse plan as an active commercial airport.

Page 4-103, the first paragraph discusses an area of proposed open space as the project location where the 62 dB CNEL contour falls. This may have been true for the previous EIR 561, however, page 7 of the noise study provided in Appendix G states that the 62dB CNEL location is in an area of proposed commercial development. The proper location of the 63 dB CNEL should be verified prior to EIR certification.

*Page 4-103, third paragraph, states "Depending upon future site re-use, aircraft noise may or may not be an important issue." **The aircraft noise from a commercial airport at El Toro will be an important issue.** Nowhere else in the DSEIR is the El Toro MCAS reuse discussed or incorporated by reference. No commercial aircraft noise impact analysis is provided. The DSEIR should include project related noise impacts as a result of the El Toro reuse plan as a commercial airport and traffic related impacts. Once this information has been included in this DSEIR, the document should be recirculated for public review.*

Page 4-103, fourth paragraph indicates that individual fly-over events may be noise intrusive and mitigation has been provided. However, neither the baseline discussion, impacts analysis nor the mitigation measures in the DSEIR include mitigation for a multiple fly-over commercial airport.

The EIR preparer for SEIR 566 made no attempt to respond to any of the issues concerning the future use of the El Toro MCAS. I am disappointed that, even in the recent Addendum, the County has still not responded to my Comment, despite ample time to have done so. Please respond to the issues regarding the future use of the El Toro MCAS as a commercial airport.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-19

Comment

Section III.7. Biological Resources

17) Page 73, First Paragraph. The Addendum includes the same discussion of the NCCP as SEIR 566, however, a footnote has been added to this paragraph. Unfortunately, the actual text of the footnote has been omitted leaving the reader to guess at its significance. Please provide the text of this footnote.

18) Page 73, First Paragraph. The Addendum refers to a new analysis of biological issues that was recently prepared for the 299-unit project which is currently proposed. However, the body of the Addendum does not clearly refer the reader to Appendix G where a copy of this new analysis is located. The new biological report within Appendix G contains new information which has never been publicly reviewed or Commented upon. Notwithstanding the requirements of CEQA

Guidelines section 15126(c), this new report represent information not previous discussed in SEIR 566, and should be included in a new EIR that is circulated for public review and input under.

18) Page 79, Last paragraph at bottom of page. The Addendum briefly indicates that Pages 4-118 through 4-154 of SEIR 566 remain appropriate for the 299-unit project. However, the tru facts are that the Biological Resources section of SEIR 566 was never properly addressed and remains deficient. The major areas of biological resource Comments and concerns are located within pages 4-118 through 4-154 of the SEIR, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: Page 4-153, Mitigation Measures SC 7-1 through 7-7 and measures 7-111 through 7-14 would appear to be of ;no value in light of the ;note placed on the preliminary grading plans...this EIR does not adequately satisfy CEQA Guidelines Section 15126 (c) requirements at this time. Gathering further information and complying with resource agencies in the future is not proper mitigation. Biological mitigation for ACOE and CDFG coordination may change the development plan, which would then require a revised EIR.

This Comment was not adequately addressed in SEIR 566 and the Addendum likewise fails to address the issue raised by this comment. These important issues must be addressed before any further action is taken.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-20

Comment

19) Page 84, Mitigation Measure SC 7-8

Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: Page 4-155, Mitigation Measure 7-8, F, states that an experienced nursery or other landscape contractor shall care for the transplanted trees for only six (6) months. The biological report states on page 49, second paragraph, **"In order to ensure the success of mitigation, the Project proponent should enter into a five year secured agreement with the County of Orange to cover the projected cost to install, monitor, and report on the mitigation Project. This agreement will be in the form of a 100 percent bond."** This extremely important mitigation measure is found nowhere in the DSEIR. If the DSEIR does not reflect the recommendations of the expert biologist, then mitigation measure 7-8 F is ineffective and invalid. The DSEIR cannot be certified without amending this measure to reflect the biologist's recommendation.

The EIR preparer for SEIR 566 stated in their response to this Comment that "[t]he provision for five years of biological resource mitigation monitoring is hereby incorporated into the DEIR. However, rather than incorporate this mitigation measure, the Corrections and Additions section

of the SEIR 566 simply states: "Page 4-155, Mitigation Measure 7-8: the following mitigation measure is added to the draft EIR: *All biological resource mitigation measures shall be monitored for compliance with applicable resource agency requirements and established success criteria, to the satisfaction of the manager PDS/Subdivisions and the Administrator Planning and Zoning."* Nowhere in the Corrections section is the five year mitigation monitoring mentioned. Moreover, neither the Addendum, nor the new biology report, located in Appendix G of the Addendum makes any reference whatsoever to this mitigation measure.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-21

Comment

20) Page 87, Mitigation Measure SC 7-11. Although this mitigation measure requires a gnatcatcher survey to be conducted pursuant to the current USFWS protocol, and to the satisfaction of the WSFWS and the County, it does not provide for sufficient mitigation in the event the gnatcatcher is found to exist on the Saddleback Meadows property. This mitigation measure was a good start, but it is inadequate for the real purpose of protecting endangered species. The measure should include provisions for mitigation of gnatcatcher habitat, including on- and off-site mitigation, if necessary.

21) Page 88, Mitigation Measures. The mitigation measure noted in the Response to Comments of SEIR 566, Section H, Corrections and Additions to the Draft EIR for Page 4-153, Paragraph 4 has not been incorporated into the Addendum, even through the County has had ample time to have done so.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-22

Comment

Section III.8. Aesthetics

2) Page 94, Mitigation Measure PDF 8-4. The mitigation measure noted in the Response to Comments of SEIR 566, Section H, Corrections and Additions to the Draft EIR for Page 4-174, Mitigation Measure 8-4, has not been incorporated into the Addendum, despite ample time for the County to have done so.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-23

Comment

Section III.9. Cultural/Scientific Resources

23) Page 103, History. The Addendum briefly indicates that Pages 4-173 through 4-192 of SEIR 566 remain appropriate for the project, but the Cultural Resources section of SEIR 566 never properly addressed the direct or indirect environmental impacts of the project on the religious or sacred uses within the potential impact area. The major areas of Cultural/Scientific Resources Comments and concerns are located within pages 4-192 through 4-192 of the SEIR, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants Comments letter dated August 22, 1997 for SEIR 566: Page 4-178. The DSEIR makes no attempt to analyze either the direct or indirect environmental impacts of the project on the religious or sacred uses within the potential impact area. In this case, the potential impact area extends outside of the boundary. This important issue should be discussed in the DSEIR prior to certification.

The EIR preparer was non-responsive to this Comment. This commend should be addressed as part of the Addendum.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

SFC-24

Comment

Mitigation Monitoring Plan

An EIR preparer, I believe that the mitigation monitoring program is the most important document that will come out of the final approval process for the Addendum or any future EIR. The Monitoring Program should be user friendly and a dynamic document, not something to file away on a shelf once approved. As indicated in my Response to the County of Orange dated December 2, 1997:

A) The County should require that the applicant hire an independent mitigation monitor, as selected by the County, to assist the County in monitoring and verifying implementation of both the standard county mitigation measures and the additional mitigation measures. For example:

Air Quality. Most of the air quality mitigation measures are the responsibility of the applicant. The applicant, or the applicant's contractor, may not have specialized knowledge of mitigation monitoring, but a specialized mitigation monitor would.

Biological Resources. The applicant is responsible for plan relocation. This should be delegated to a mitigation monitor to verify implementation.

B) No where in the mitigation monitoring program does the USFWS, the CDFG, or the ACOE show up in the Responsible Person column. These agencies should be added as responsible parties.

C) None of the additional mitigation measures listed in the Response to Comments are reflected in the Mitigation Monitoring Program. The new mitigation should be reflected in the monitoring program prior to certification.

No Mitigation Monitoring Plan has yet been made available for the Addendum.

Response

Please refer to previous response to Comments from SFC Consultants on Draft EIR 566, dated October, 1997.

CALIFORNIA DEPARTMENT OF FISH AND GAME,(CDFG) August 11, 1998

CDFG-1

Comment

The California Department of Fish and Game and the U.S. Fish and Wildlife Service collectively the Wildlife Agencies) recently learned about a Planning Application Hearing for the Saddleback Meadows project scheduled for the County Board of Supervisors on August 11, 1998. The applicant is proposing a 299 single-family dwelling u;nit project at Saddleback Meadows. The wildlife Agencies and County have a lengthy history of communication concerning the project site and a variety of development proposal alternatives have been reviewed. The project site provides a critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans. In this letter we reiterate our position on the proposed Saddleback Meadows project and provide Comments on a recent proposal that could affect the project.

Response

The Comment restates information contained in the Draft EIR. No response is required.

CDFG-2

Comment

The Wildlife Agencies, other Federal and State agencies, County of Orange, and local jurisdictions are participating in the Natural Community Conservation Planning (NCCP) program to conserve wildlife and habitat resources while accommodating economic growth and development. Our previous Comments on Saddleback Meadows Project - Draft Environmental Impact Report (DEIR) No. 561 (February 1996) and in our August 8, 1997, letter concerning the Saddleback Meadows Draft Subsequent Environmental Report No. 566 (DSEIR) (June 1997) identified significant biological issues related to the project site. These biological issues include habitat connectivity, wildlife corridors, sensitive habitats, and occupied wetlands with a federally listed animal. These sensitive habitats include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about 4 acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp *(Streptocephalus woottoni)* is known to occur within at least seven wetlands (identified as "ephemeral ponds") spread throughout the site. Our letter evaluating the DSEIR identified Alternative '3' which proposed a clustered, lower density development, presented the least environmental impact, but would nonetheless substantially impact the wildlife corridor integrity. The 299-unit development posed a significant impact to the existing habitat connecting from O'Neill Regional Park (Southern Subregion) to the Cleveland National Forest and other open space habitat in the central portion of the Central/Coastal Subregion. The Wildlife Agencies are willing to work with the project applicant to redesign a cluster development in order to preserve the wildlife corridor.

Response

The Comment restates information contained in Addendum PA980103 and Certified Final Subsequent EIR 566 relative to biological resources. The agencies position relative to the wildlife corridor and the project in general is noted.

It should be noted that the proposed 299-unit Contingency Plan proposal represents an evolution of project to incorporate the majority of the features identified by the resource agencies in previous Comments to Proposed Final EIR 561 and Certified Final Subsequent EIR 566, to mitigate impacts to biological resources. These include the proposed 400-foot wide wildlife movement corridor, preservation or replacement of eight (8) ephemeral ponds, preservation of the majority of the oak woodland habitat and onsite native Rougetata, offsite hanbitat creation and replanting with native plant species.

CDFG-3

Comment

Other animal species considered sensitive by the Wildlife Agencies occur on or adjacent to the project site. The Wildlife Agencies documented rare and sensitive Cactus wren (Camphylorhynchus brunneicapillus) on site. The coastal California gnatcatcher (Polikoptila californica californica) (gnatcatcher), a federally threatened species, could utilize the site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. Both of these animals, as well as other wildlife, would utilize Saddleback Meadows as a wildlife corridor. County maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion.

Response

The Comment restates information discussed in detail in Proposed FEIR 561and Certified Final Subsequent EIR 566. This information was also included in Addendum PA980103. No additional response is required.

CDFG-4

Comment

We have been informed by two interested parties, Saint Michael's Abbey and Vedanta Society of Southern California, that a new clustered development alternative proposal and purchase of significant open space on the site have been offered to the current property owner. The Wildlife Agencies are willing to work with the current landowners and all interested parties in reaching a workable development solution.

Response

The referenced negotiations are ongoing with no agreement in place or expected to be in place in the near future. In the absence of such agreement, no additional Response regarding alternative development plans is appropriate at this time.

CDFG-5

Comment

The Wildlife Agencies believe a workable solution exists to permit development, while maintaining an essential biological connection between the NCCP Central/Coastal and Southern Subregions. We request that the Board consider this alternative approach that may provide a solution acceptable to all parties. If you have any questions or Comments, we are available to discuss this matter further. Please feel free to contact us at your earliest convenience.

Response

The referenced negotiations are ongoing with no agreement in place or expected to be in place in the near future. In the absence of such agreement, no additional Response is appropriate at this time.

CONNOR, CULVER, BLAKE & GRIFFIN, LLP (CCBG2) **September 2, 1998**

CCBG2-1

Comment

Without waiving any of the objections set forth in my letter to the Planning Commission, dated August 25, 1998, including, but not limited to, the lack of adequate public notice under CEQA Guidelines section 15153 (b)(2), but in the interest of ensuring that County staff, the Planning Commission, and responsible state and federal agencies, are afforded an opportunity to consider whether to require the preparation of a new EIR to analyze the additional impacts, alternatives, and mitigation measures associated with proposed Zone Change 98-3 and Area Plan 98-2 permit development of a 299-unit single-family detached housing project (the "299-Unit Project") on the Saddleback Meadows property (the "Property"), please find enclosed the following:

1) An 8-1/2x2/11" copy of a conceptual site plan (entitled and hereinafter referred to as the "6-Unit Alternative"), which was prepared by County staff on or about March 23, 1998, to show the proposed layout on the Property of 65 single-family detached dwelling units on approximately 35 acres out of the 222 total acres which comprise the Property;

2) A 3'x4' copy of a site plan (entitle and hereinafter referred to as the "127-Unit Alternative") which was prepared on or about July 13, 1998, by California Quartet's consultant, Michael Madden Associates, to show the proposed layout on the Property of 127 single-family detached dwelling u;nits on approximately 5,000 to 6,000 sq. ft. lots, covering a development footprint of approximately 44 acres located in the same general vicinity as the 65-Unit Alternative; and

3) An 18"X51" copy of a site plan (entitled and hereinafter referred to as the "12-Unit Alternative"), which was prepared on or about August 31, 1998, and was revised on September 2, 1998, by the consultant for Vedanta Society/St. Michael's Abbey, Warren W. Singleton, P.E., to show the proposed layout on the Property of 120 single-family detached dwelling units on basically the same development footprint covered by the 127-Unit Alternative, except for certain grading and fuel modification pull-backs for ridgeline protection and canyon preservation purposed. Also enclosed is a copy of a letter from Mr. Singleton, dated August 31, 1998, providing some explanatory notes regarding the 120-Unit Alternative.

Response

The alternatives referenced in the Comment letter have not been submitted to the county for review and as such are not appropriate for inclusion in the addendum or any other environmental document at this time. Should additional alternative development scenarios become a component of the negotiation, and subsequently submitted to the county for review, additional environmental documentation will be completed at that time.

CCBG2-2

Comment

Since the County is proposing to "use an EIR from an earlier project [i.e., FSEIR 566] as the EIR for a

separate, later project [i.e., the 299-Unit Project]," then section 15153(b)(2)(D) provides that one of the "key issues" involving the use of the previously-Certified Final Subsequent EIR "whether the EIR should be used for this project and whether there are any *additional, reasonable alternatives* for mitigation measures that should be considered as ways of avoiding or reducing the significant effects of the project." Of course, if additional reasonable alternatives exist which were not considered by the lead agency in certifying the EIR for the "earlier project," that earlier EIR should not be used as the environmental documentation for the "separate, later project."

Indeed, subsection (d) of section 15153 clearly states that "an EIR prepared for an earlier project shall *not* be used as the EIR for a later project if any of the conditions described in Section 15162 would require preparation of a subsequent of supplemental EIR.) (Emphasis added.) Under CEQA Guidelines section 15162(a((3)(D), a subsequent EIR must be prepared if "new information" shows that "alternatives which are considerably different from those analyzed in the previous EIR would *substantially reduce* one or more significant effects on the environment, but the project proponents decline to adopt the ... alternative[s]. (Emphasis added).

Obviously, FSEIR 566 did not analyze the 65-Unit Alternative, the 120-Unit Alternative, or the 127-Unit Alternative. In differing degrees, each of these Alternatives would *significantly* reduce the environmental impacts associated with the 299-unit project in that they would preserve virtually all of the oak woodlands, coastal sage scrub habitats, and vernal ponds on the Property, and would provide for an ample wildlife corridor over undisturbed terrain. Of course, only the 120-Unit Alternative would ensure that no grading or construction occurred in the biologically-sensitive canyon areas south of the east/west ridgeline on the Property which are to serve as part of the wildlife connectivity links between Whiting Ranch Wilderness Park and O'Neill Park.

Response

The alternatives referenced in the Comment letter have not been submitted to the county for review and as such are not appropriate for inclusion in the addendum or any other environmental document at this time. Should additional alternative development scenarios become a component of the negotiation,s and subsequently submitted to the county for review, additional environmental documentation will be completed at that time.

CCBG2-3

Comment

The indisputable fact of the matter is that the 65-Unit, 120-Unit, and 127-Unit Alternatives would each avoid the substantial environmental devastation that would otherwise be wreaked upon the Property by the 299-Unit Project in connection with the mass grading of the proposed wildlife corridor, particularly in the lush canyons which presently link up with O'Neill Park. Accordingly, a new or subsequent EIR should be prepared to, among other things, analyze each of these three Alternatives from two different perspectives: (1) as stand-alone projects which would require California Quartet to dedicate all of the non-development areas of the Property (approximately 178 acres) as permanent open space and (2) projects which would involve California Quartet's sale of the same non-development acres to third parties, such as my clients and the County of Orange, for cash consideration.

Response

The alternatives referenced in the Comment letter have not been submitted to the county for review and as such are not appropriate for inclusion in the addendum or any other environmental document at this time. Should additional alternative development scenarios become a component of the negotiations, and subsequently submitted to the county for review, additional environmental documentation will be completed at that time.

CCBG2-4

Comment

As your Department has been made well aware, based on the extensive factual chronology presented by Mr. Frank Elfend at the August 25 session of the Planning Commission's hearing on the 299-Unit Project, and as a result of Mr. Elfend's earlier public presentations to the Board of Supervisors on June 23, and August 11, 1998, my clients and the County are currently involved in negotiations with California Quartet for the purchase of the approximately 178 acres which would be left undeveloped under the three Alternatives discussed above. Indeed, it is precisely because these negotiations are still ongoing that the 299-Unit Project has been dubbed a "Contingency Plan" which California Quartet intends to pursue in the event that the negotiations do not prove fruitful.

If, the next-scheduled session of the Planning commission's hearing on the 299-Unit Project – which, by stipulated court order of August 31, 1998, has been continued to October 7, 1998 – you determine that California Quartet, for whatever reason, has declined to proceed with any of the three Alternatives discussed above, I presume that you Department will order the preparation of a subsequent EIR under the terms of CEQA Guidelines section 15162(a(3)(D). In the Staff Report, dated August 25, 1998, which the Environmental & Project Planning Services Division submitted to the Planning Commission in connection with its public hearing on the 299-Unit Project, it was stated that "none of the conditions described in Section 15162 calling for preparing a supplemental or Subsequent EIR have occurred ..." Of course, that statement would no longer be true if California Quartet proceeds to reject any of the Alternatives discussed above as of the next Planning commission hearing scheduled for October 7, 1998. For example, if California Quartet were to refuse to accept the 120-Unit Alternative as of the October 7 hearing, then a subsequent EIR would be required to analyze this alternative under the provisions of section 15162(a)(3)(D) because no discussion of this alternative is to be found in FSEIR 566.

Response

The alternatives referenced in the Comment letter have not been submitted to the County for review and as such are not appropriate for inclusion in the Addendum or any other environmental document at this time. Should additional alternative development scenarios become a component of the negotiations, and subsequently submitted to the county for review, additional environmental documentation will be completed at that time.

CCBG2-5

Comment

However, I do not believe it is necessary for your Department to wait until the October 7 Planning Commission hearing to make the determination that a *new* EIR should be prepared for the 299-Unit

Project. As I explained at the August 25 hearing, my clients, the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC, do not necessarily agree with you Department's determination that section 15162 of the CEQA Guidelines applies in this case. The California courts have clearly held that CEQA section 21166, and its companion section 15162 of the Guidelines, only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project.

When the proposed new activity is a *separate* project – as it certainly is in this case – the "fair argument" test is the standard which applies in determining whether a new (as opposed to a subsequent or supplemental) EIR must be prepared to analyze the *separate* project. Under the "fair argument" test, a new EIR must be prepared whenever it can be fairly argued on the basis of substantial evidence that the proposed project may have a significant environmental impact.

Response

A new EIR is not required for the reasons as outlined in Response to Comment CCBG-2, and the fact that the existing addendum adequately evaluated the environmental effects of the proposed 299 unit project.

CCBG2-6

Comment

In light of the oral and written Comments which were submitted by my firm, Royce Riggan, John Byerly, Warren Singleton, and Saundra Jacobs at the August 25 public hearing, there are numerous environmental impacts associated with the development of the 299-Unit Project which were not addressed in FSEIR 566 and which mandate the preparation of a new EIR under the "fair argument" test. Aside from the obvious impacts which will be caused by the fact that the 299-Unit Project pushes grading and development activities significantly closer to the Ramakrishna Monastery and raised unanswered questions regarding water runoff and drainage impacts that will be caused by the new houses to be build northeast of St. Michael's Abbey, there is no discussion in FSEIR 566 regarding (1) whether the wildlife corridor proposed for the 299-Unit Project would comport with the goals and objectives of the NCCP planning process and (2) whether it would preclude or any way *jeopardize* finalization of the Southern Subregion component of the NCCP. Clearly, these impacts should be addressed in a new EIR and the public, as well as the appropriate federal and state wildlife agencies, should be allowed to comment on these important environmental matters.

In closing, my clients would request that the County immediately cease processing the 299-Unit Project unless and until the County complies with CEQA and sends out a Notice of Preparation for a new EIR to address the environmental impacts, reasonable project alternatives and feasible mitigation measures associated with the development of the 299-Unit Project.

Response

A new EIR is not required for the reasons outlined in Response to Comment 2, and the fact that the existing addendum adequately evaluated the environmental effects of the proposed 299 unit project

CCBG2-7

Transmitted with this letter are six blackline copies of the Alternate (120) Lot Study which was presented at last Thursday's meeting. The map is a compilation of the three work sketches presented last week.

The lots and street shown in solid lines are the revised layout. The lots and streets which are not changed are outlined with dashed lines. The revised total lot count is one hundred and twenty (120) units.

Comments regarding the design proposals:

- The grades on the main entry street were held per the proposed California Quartet Study (CQ).
- In order to provide lots in the upper eastern portion of the site grading, remedial grading and fuel modification were allowed to occur in the one hundred (100) foot setback zone which Vedanta originally proposed to be north of the ridgeline.
- The ridgeline has generally been protected in the upper portion of the site, from the second Cul-de-sac south of the spine road to the eastern limits. The moving of the spine road and lots north away from the ridgeline provides for the one hundred and fifty foot Fire Fuel Modification area and maintains the ridgeline. Although the cut slope is at the ridgeline or slightly beyond, the road or lots will likely not require remedial grading beyond the ridge and down into the bottom of the first or second canyon as all of the previous proposals have done.
- The first long Cul-de-sac south of the spine road impacts the lower ridgeline and some Coastal Sage Scrub. The Hidden Hill development south of this area has already disturbed a portion of this Coastal Sage area. This was not changed from the CQ study.
- The addition of the twelve lots on the lower portion of the spine road should be of benefit geotechnically. The proposed spine road was being cut deeply into the hill, up to ninety (90) feet. This removal of material should benefit the stability of the area: The addition of lots north of the spine road removes additional material and contours the remaining hill as previously proposed. If additional unloading is desirable the hill could be layed back further.
- The extension of the second Cul-de-sac north of the spine road, adding eight (8(lots, was sloped down away from the spine road to minimize the fill depth and the limits of grading. This should not trigger extensive additional remedial grading since the same geologic features are involved.
- The second Cul-de-sac south of the spine road was pulled back to accommodate Fire Fuel Modification. The lot count was reduced from six (6) to three (3). The ridgeline is being lowered in this area. The proposed grading created a cut slope facing north and west away; from the Monastery. The slope becomes small at the end of the Cul-de-sac allowing some view of the homes on this street. The grading should not impact the Coastal Sage Scrub which is down slope to the south and east.

The California Quartet (127) Study and the Vedanta Alternate (120) Study are just that, studies. Once the features of the original and alternate studies are agreed upon a precise engineered site plan should be prepared. The fine tuning of horizontal and vertical alignments and lot layouts may result in the gaining of two or three lots. This precise design would be the next step and be use for a Tentative Map.

Response

Processing of the 299 unit project is scheduled to continue at the October 7, 1998 Planning Commission public hearing.

IV. LETTERS RECEIVED FROM AGENCIES AND PERSONS

John R. Byerly
INCORPORATED

August 24, 1998

David J. Hesseltine
Connor, Culver, Blake and Griffin
2600 Michelson Drive, Suite 1450
Irvine, California 92612

Rpt. No.: 5833
File No.: S-8753

Subject: Saddleback Meadows, El Toro Road, Orange County, California; Geotechnical Review of Addendum to Environmental Impact Report 566

Reference: Addendum PA980103 to Certified Final Subsequent Environmental Impact Report 566, Urban Vision, August 19, 1998

Dear Mr. Hesseltine:

Within the little time afforded by the County's expedited processing of the 299-unit "Contingency Plan" for the Saddleback Meadows property, I have attempted to review the geotechnical aspects of the referenced addendum to the earlier environmental impact report. This addendum anticipates the construction of 299 single-family dwelling units on the 222.2-acre site. Extensive grading (2.1 million cubic yards of cut and fill) is proposed to construct the building pads, associated streets, and open areas. Even more extensive grading (6.8 million cubic yards) is anticipated to remediate demonstrated unstable geologic conditions, including existing landslides, adverse bedding orientation, and loose and compressible alluvium and colluvium.

The problematic geotechnical issues associated with the 299-unit proposal remain unchanged from those that have been discussed in great detail with reference to the 705-unit manufactured housing project, and presented to the Planning Commission and the Board of Supervisors with no meaningful response. The issues of primary concern to this reviewer which mandate further analysis in an appropriate environmental impact report would include the following:

GEOTECHNICAL ENGINEERS • TESTING AND INSPECTION
2257 South Lilac Ave., Bloomington, CA 92316-2903
Bloomington (909) 877-1324 Riverside (909) 783-1910 Fax (909) 877-5210

GRADING (Page 20)

The addendum continues to assume an average daily grading of 30,000 cubic yards per day, projecting a total time of grading of 10 months. At 30,000 cubic yards per day for 8.9 million cubic yards of fill, grading needs to be performed 7 days a week–no allowance for off-days for weekends or for inclement weather is provided in this estimate. It seems to this reviewer that it might be possible to achieve the average 30,000 cubic yards per day goal for the conventional grading. It seems highly unlikely that the grading to accomplish the alluvium/colluvium removals, construction of buttress fills, and other remedial grading that will be required can approach the projected rate of fill movement. If, as seems likely, the remedial grading would be performed at an average rate of 10,000 cubic yards per day, and grading is performed on a 5-day per week basis, the remedial grading would require 31 months. With down-time for inclement weather, it is more realistic to project a total period of grading of 3 years. Even this projection is optimistic, and the site could easily experience 4 rain seasons during grading.

EXCAVATION CONDITIONS (Page 29)

The addendum correctly anticipates heavy ground water seepage into excavations at the site. Not addressed is the impact of discharge of collected ground water seepage, the impact of the interruption in subsurface ground water flow on downstream wells, nor the impact of the presence of the deep shear keys for buttress fills on the final ground water conditions. Is there a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill?

LONG-TERM SETTLEMENT (Page 31)

Fill depths exceeding 50 feet are suggested, with settlements associated with those fills of 4 to 6 inches. Construction of shear keys for buttress fills, however, will result in fills as deep as 130 feet. Fills of such great depths require additional evaluation that may necessitate compaction criteria well in excess of code minimums, special moisture conditioning of fill during compaction, and long-term settlement monitoring prior to building construction. These considerations are not addressed in the addendum.

PHASING OF EARTHWORK (Page 31)

The addendum continues to project a buttress backcut failure rate of 10 percent. Considering the subsurface conditions typified by landslides within landslides, this failure rate is surely unrealistically optimistic. Further, the effect of backcut failures on upstream and adjacent properties is not addressed.

These are the comments that I have been able to prepare during the time allotted by the County's short notice to your firm regarding the public hearing to be held on August 25, 1998. I hope my comments have been helpful under the circumstances. Should there be questions, please feel free to call.

Sincerely,

JOHN R. BYERLY, INC.

John R. Byerly, Geotechnical Engineer

JRB:mh

Copies: (3) Client

2461

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August 25, 1998

Orange County Planning & Development
Services Department
300 North Flower Street, Room 321
Post Office Box 4048
Santa Ana, CA 92702-4048

Re: *Zone Change 98-3/Area Plan 98-2/EIR Addendum PA980103*
299-Unit Contingency Plan
Public Hearing of August 25, 1998

Honorable Members of the Planning Commission:

On behalf of (1) the Vedanta Society of Southern California ("Vedanta"); (2) the Norbertine Fathers of Orange (the "Norbertines"); and the Saddleback Meadows Land Conservancy LLC (the "Conservancy"), we respectfully submit this letter in opposition to California Quartet's application for approval of Zone Change 98-3 ("ZC 98-3" or the "Zone Change") and Area Plan 98-2 ("AP 98-2" or the "Area Plan") relating to a proposed 299-unit single family detached housing project (the "299-Unit Project"), which has been dubbed a "Contingency Plan."

Based on the list of objections attached hereto, and based also on all oral and written comments which are presented in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing, including, but not limited to, all expert opinions expressed by Royce Riggan, John Byerly, Warren Singleton, or Saundra Jacobs either orally or in writing in connection with the hearing, Vedanta, the Norbertines, and the Conservancy respectfully submit that the CEQA review process relating to, and the environmental documentation which has been prepared in support of, ZC 98-3 and AP 98-2 is woefully inadequate from both a procedural and substantive standpoint.

By (1) purporting to rely on a previously certified EIR for an *entirely different* project which is, itself, grossly deficient and is now being challenged in court, (2) failing to provide the public and responsible agencies (such as the state and federal wildlife agencies) with the 45-days' notice required by law, and (3) refusing to prepare, and circulate for public review

and comment, a new EIR to properly address important new information and substantial project changes involving new environmental impacts and additional project alternatives and mitigation measures which have not been addressed in any earlier EIR, the County is poised to violate CEQA and the Guidelines in numerous different respects in connection with the proposed Zone Change and Area Plan for the 299-Unit Project.

As a result of these CEQA violations, my office has not been afforded adequate time to prepare and submit comments on ZC 98-3 and AP 98-2 and the environmental documentation relating thereto. Regrettably, history seems to be repeating itself in this case.

Indeed, one year ago last week, I submitted a lengthy letter to County staff objecting to the many procedural improprieties and substantive deficiencies relating to Draft Subsequent Environmental Impact Report No. 566 ("SEIR 566") which had been prepared to evaluate the environmental impacts associated with the issuance of a grading permit for the construction of 705 units of manufactured housing at the Saddleback Meadows site. Because of the failure of the Draft SEIR to include the grading plans and soils reports upon which the grading permit application was based, and given the County's refusal to make these materials available for public review during the comment period on the Draft SEIR, I was compelled to submit my August 1997 letter under protest.

How ironic it is that, one year later, I must also submit this letter under protest because of the County's clear-cut violation of those provisions of the CEQA Guidelines which require a local agency to provide 45 days' written notice to interested persons of its intention to use an EIR, which was prepared in connection with an earlier project, as the environmental documentation for a separate, later project. Instead of the 45-day public notice required to be given under CEQA Guidelines sections 15087, 15105, and 15153, the County has inexplicably decided to provide only 18 days' written notice of its intention to use Final SEIR 566 for the 705-unit manufactured housing project (the "705-Unit Project") as the EIR for the 299-Unit Project.

At first blush, one might wonder how it is possible to use an EIR initially prepared to analyze the impacts of developing 705 units of manufactured housing as the EIR for an *entirely different* project – namely, a 299-unit single-family detached housing project which, among other things (1) involves building houses on land which was proposed to be left undeveloped by the 705-Unit Project; (2) proposes to develop a wildlife corridor through the middle of the project where none had been previously provided under the 705-Unit Project; and (3) purports to fully exempt the 299-Unit Project from compliance with the Foothill/Trabuco Specific Plan, despite express language in the Specific Plan requiring any new projects for the Saddleback Meadows property to be made "consistent" with the Plan.

Admittedly, CEQA Guidelines section 15153(b) does allow a previously prepared EIR to be used as the environmental documentation for a "separate, later project" *provided* that

the EIR for the earlier project meets certain criteria and *provided also* that the public is properly notified of the local agency's intention to rely on the previous EIR instead of preparing a *new* EIR for the *new* project. Unfortunately, the County has chosen to ignore the adequacy and public notice requirements set forth in CEQA Guidelines section 15153(b) and is trying, instead, to process an addendum (the "Addendum") to Final SEIR 566 in an apparent attempt to avoid these requirements. Of course, the County's attempt to use the Addendum as the environmental documentation for the 299-Unit Project is illegal and improper for two very basic reasons.

First, section 15164 of the CEQA Guidelines, which authorizes the preparation of "an addendum to a previously certified EIR if some changes or additions are necessary," only applies when the *same* project addressed in the previous EIR is being considered for a subsequent government approval at a more detailed level of planning. Obviously, when an entirely *different* project is being considered -- such as a full-scale revision and redesign of the project which was analyzed in the previous EIR -- an addendum is *not* the appropriate document by which to describe and analyze substantial project changes involving new impacts, alternatives, and mitigation measures not discussed in the earlier EIR. Indeed, an addendum is only to be used to address minor technical changes or additions to a previously certified EIR, not to report on substantial project changes or significant new information about a *completely different* project.

The second reason that the County is not allowed to adopt the Addendum in this case is that, assuming for the sake of argument that the Zone Change and the Area Plan actually involved the *same* 705-Unit Project addressed in Final SEIR 566 (which, of course, they do not), the provisions of section 15162 of the CEQA Guidelines would require the preparation of a subsequent or supplemental EIR. Specifically, new information and project changes relating to environmental impacts, project alternatives, mitigation measures not previously discussed in Final SEIR 566 would require the County to prepare another EIR and circulate it for public review and comment.

County staff has determined that none of the conditions described in CEQA Guidelines section 15162 would require the preparation of a subsequent or supplemental EIR to address the environmental impacts associated with the proposed Zone Change and Area Plan for the 299-Unit Project. Vedanta, the Norbertines, and the Conservancy certainly disagree with this determination and wish to underscore what several California courts have already held, i.e., that Guidelines section 15162 and its companion section 21166 of CEQA only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project. When the proposed new activity constitutes a *separate* project, the "fair argument" test applies to the local agency's decision regarding whether to require a new EIR for the later project.

Indisputably, the oral and written comments which will be submitted in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing will constitute substantial evidence supporting a "fair argument" that the 299-Unit Project may cause significant

environmental effects, and may involve important new project alternatives and mitigation measures, which were not previously addressed in Final SEIR 566 -- thereby necessitating the preparation of a new EIR to be circulated for public review and comment.

By submitting this letter, and by incorporating the oral and written comments made at the August 25 public hearing in opposition to the proposed Zone Change and the Area Plan, my clients do not intend to waive their objections to the County's failure to provide the appropriate notice of its intention to rely on Final SEIR 566 as the EIR for the 299-Unit Project. However, within the little time afforded by the inadequate notice provided by the County, my office has attempted to formulate the attached objections and hereby submits them to the Planning Commission with the sincere hope that the County will review them in good faith and will correct the many defects and deficiencies which pervade the CEQA review process for the proposed Zone Change and the Area Plan.

Very truly yours,

Edmond M. Connor

OBJECTIONS TO ADDENDUM PA980103 TO FSEIR 566, ZONE CHANGE 98-3, AND AREA PLAN 98-2

1. The County of Orange (the "County") has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined that FSEIR 566 adequately describes the significant environmental impacts of the 299-unit single family detached housing project referred to as the Saddleback Meadows Contingency Plan (the "299-Unit Project"), which impacts are more particularly described in the oral and written comments (the "Comments") submitted to the Orange County Planning Commission prior to or at its August 25, 1998 public hearing, including, but not limited to, the expert opinions of Royce B. Riggan, Jr., John R. Byerly, Warren W. Singleton, and Saundra F. Jacobs. (The comments of John R. Byerly regarding the geotechnical aspects of the 299-Unit Project are set forth in an August 21, 1998 letter to counsel which is attached hereto as Exhibit "A" and is incorporated herein by reference.)

2. The County has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined that FSEIR 566 adequately describes the alternatives and mitigation measures related to the significant environmental impacts of the 299-Unit Project, as more particularly described in the Comments.

3. The County has violated section 15153(b), 15087, and 15105 of the CEQA Guidelines in that it has failed to provide (a) public notice of its plans to use FSEIR 566 as the environmental documentation for the 299-Unit Project and (b) a 45-day public review and comment period on such key issues as "whether [FSEIR 566] should be used for [the 299-Unit Project] and whether there are any additional, reasonable, alternatives or mitigation measures that should be considered as ways of avoiding or reducing the significant effects of [the 299-Unit Project]."

4. The County has violated section 15063(g) of the CEQA Guidelines in that, at the time it determined that an initial study was required for the 299-Unit Project, it failed to consult with the United States Fish and Wildlife Service, the California Department of Fish and Game, the Army Corp. of Engineers, and all other responsible and trustee agencies responsible for the resources affected by the 299-Unit Project, to obtain the recommendation of those agencies as to the appropriate environmental documentation for the 299-Unit Project.

5. The County has violated CEQA and the CEQA Guidelines, to the extent that it has sought to invoke the provisions of section 15164 of the CEQA Guidelines, in that section 15164 only allows the preparation of an addendum when the same "project" is involved. In this case, there are two separate and distinct projects, i.e., a grading application for a 705-unit mobilehome/manufactured housing project (the "705-Unit Project") and an application for a zone change and area plan for the 299-Unit Project.

6. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," which they clearly are not, the County has violated section 15162(a)(1) and (2) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the effects of the 299-Unit Project, which proposes substantial changes in the "project" and is based upon substantial changes in the circumstances surrounding the "project," in that, among other things, (a) the 299-Unit Project will involve mass grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project; (b) the 299-Unit Project will involve a proposed wildlife corridor for which there is no analysis in FSEIR 566 and about which the public has not had an opportunity to comment with respect to its viability, and (c) the U.S. Fish and Wildlife Service and the California Department of Fish and Game have indicated in an August 11, 1998 correspondence to the Orange County Board of Supervisors that the adoption of the 299-Unit Project may jeopardize the approval of the Southern Region of the NCCP program in that (i) "Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion" and (ii) the proposed wildlife corridor may not prove to be viable. (A true and correct copy of the August 11, 1998 correspondence from U.S. Fish and Wildlife Service and the California Department of Fish and Game to the Orange County Board of Supervisors is attached hereto as Exhibit "B" and is incorporated herein by reference.)

7. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(A) and (B) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance described in the Comments which shows that the 299-Unit Project will have significant effects on the environment that are not discussed in FSEIR 566 and/or are substantially more severe than the impacts discussed in FSEIR 566, including, but not limited to, (a) the grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project, (b) the categorical exemption of the Saddleback Meadows property from the provisions of the Foothill/Trabuco Specific Plan, and (c) the additional reduction and/or destruction of valuable biological resources.

8. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(C) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance which shows that the mitigation measures that were proposed during the public review period for Draft SEIR 566 (but which FSEIR 566 failed to consider and deemed infeasible because of its erroneous assumption that the County was precluded from even considering any mitigation measures that would cause the "project" to deviate from Recorded Tract Map 10692) are now feasible because the Recorded Tract Map is to be superseded *in toto*.

9. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(D) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance that has come to light since FSEIR 566 was certified regarding new project alternatives which are considerably different from those analyzed in FSEIR 566 and would reduce one or more of the significant impacts identified in the Comments, but that California Quartet, Ltd., has, to date, declined to adopt, including but not limited to, (a) the Mathews' alternative for the development of a 65-unit single family detached housing project on 35 acres of the Saddleback Meadows property and (b) the modified Mathews' alternative for the development of a 130-unit single family detached housing project on 44 acres of the property.

10. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15153(d) of the CEQA Guidelines in that it has improperly determined that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

11. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(a) of the CEQA Guidelines in that it has improperly determined that the processing of an addendum would be appropriate and that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

12. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(e) of the CEQA Guidelines in that it has failed to provide a brief explanation, supported by substantial evidence, of its determination that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

13. Zone Change 98-3 and Area Plan 98-2 violate the provisions of the Foothill Trabuco Specific Plan (the "FTSP") in that they are part of a development proposal for the 299-Unit Project which deviates from Recorded Tract Map 10692 without providing for an amendment to the FTSP that (a) is adopted pursuant to the amendment procedures established by the FTSP and (b) is consistent with all of the provisions of the FTSP, including, but not limited to, (i) the development and design guidelines established by the FTSP, (ii) the goals and objectives of the FTSP, and (iii) all other provisions of the FTSP identified in the Comments.

14. The County has violated CEQA and the CEQA Guidelines in that it has improperly relied upon FSEIR 566, which is a legally inadequate CEQA document that was improperly certified for the reasons set forth in that certain "Complaint for Declaratory Relief and Petition for Writ of Mandate," which is attached hereto as Exhibit "C" and is incorporated herein by reference, including, but not limited to:

(a) In certifying FSEIR 566, the County did not comply with the special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566;

(b) The special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566 violated CEQA in that, *inter alia*, it unlawfully separated the decision whether to certify FSEIR 566 without taking action on the project for which the FSEIR was prepared;

(c) It improperly limits the mitigation measures its considers to only those that would not cause the project to deviate from Recorded Tract Map 10692;

(d) The analysis and information set forth in FSEIR 566 is legally inadequate under CEQA and the CEQA Guidelines in that, *inter alia*:

(i) It fails to properly describe the discretionary approval which it was prepared to analyze;

(ii) It fails to provide the required level of specificity;

(iii) It fails to provide the required level of technical detail;

(iv) It was not amended and recirculated after significant new information regarding the discretionary approval it was prepared to analyze was released;

(v) Its certification was separated from the discretionary approval it was prepared to analyze;

(vi) It fails to adequately address all environmental impacts of the discretionary approval it was prepare to analyze, including, but not limited to:

a. Soils and Geology;
b. Water/Hydrology;
c. Transportation/Circulation;
d. Air Quality;
e. Biological Resources;
f. Archeological/Cultural Resources; and
g. Public Services;

(vii) It fails to provide legally adequate mitigation measures and an adequate mitigation monitoring program was not adopted;

(viii) It fails to address the cumulative impacts of the project associated with the discretionary approval it was prepared to analyze;

(ix) It fails to consider project alternatives; and

(x) It fails to adequately respond to comments;

(e) Adequate and proper findings, supported by substantial evidence in the record, were not made in support of the certification of FSEIR 566; and

(f) The Statement of Overriding Considerations was improperly adopted in connection with the certification of FSEIR 566.

15. The County has violated CEQA and the CEQA Guidelines, to the extent that the "Draft Area Plan Conditions of Approval" attempt in any way to eliminate or modify any of the "Standard Conditions of Approval" that are set forth in FSEIR 566 and Addendum PA980103 as mitigation measures which must be completed

prior to the issuance of any grading permit, including, but not limited to, (a) SC 7-2 requiring a 1603 Streambed Alteration Agreement from the California Department of Fish and Game, (b) SC 7-3 requiring the necessary individual or nationwide permit from the Army Corp. of Engineers pursuant to section 404 of the Federal Clean Water Act, and (c) SC 7-5 and 7-7 requiring from the U.S. Fish and Wildlife Service (i) appropriate federal approvals required for impacts to Coastal Sage Scrub and (ii) written proof that the removal of any native vegetation from the project site complies with the Federal Endangered Species Act, in that it has attempted to reduce or eliminate feasible mitigation measures that are set forth in FSEIR 566 and Addendum PA980103 to reduce significant environmental impacts.

16. The County has violated CEQA and the CEQA Guidelines in that Addendum PA980103 to FSEIR 566 is inadequate and incomplete due to, *inter alia*, the omission of volume two of Appendix "G," the "Supplemental Geotechnical Assessment for Contingency Pan – 299 Lots," which purportedly contains the computer output documents for the slope stability analysis performed by G.A. Nicoll and Associates, Inc.

RBRiggan and Associates

24 August 1998

The Honorable Chairman and Members
of the Planning Commission
Orange County
10 Civic Center Plaza
Santa Ana, California 92702

Reference: Saddleback Meadows — EIR Addendum PA980103 — Request for Preparation of a Legally Adequate Document

Dear Chairman and Members of the Planning Commission:

In the 24-plus years I have served as an environmental consultant (both in the preparation and defense of EIR's, and as an expert witness) I have never seen such a blatant attempt to circumvent the requirements of CEQA in the name of expediency. The fact that Zone Change 98-3 and Area Plan 98-2 for the 299-unit single family detached housing project are being processed as a "contingency plan" does not excuse compliance with state laws nor does it allow for any corners to be cut just so the contingency plan can be voted on before the end of the year.

However, by purporting to rely on a fatally flawed Addendum to SEIR 566 as the environmental documentation for the Zone Change and the Area Plan, the County of Orange has shirked its responsibility to conduct a careful, deliberate, and legally proper environmental assessment of the impacts, alternatives, and mitigation relating to the 299-unit project. In violation of CEQA Guidelines sections 15063, 15153, 15162 and 15164, the County has sought to "short cut" the environmental review process by using a so-called "Addendum" to avoid the public notice and consultation requirements. Approval of this "Addendum" will place Orange County at legal (and financial) risk, and will severely compromise the County's ability to complete a South County NCCP plan. Granting entitlements for 299-homes will not be viewed favorably by either the California Department of Fish and Game or the United States Fish and Wildlife Service — neither of which appears to have been properly notified or consulted about the new project.

I urge the Commission to **reject** both the Addendum to SEIR 566 and the associated Zone Change 98-3 and Area Plan 98-2 for the 299 Single-family-unit project. I would also urge the Commission to direct staff to have prepared a legally adequate CEQA document and have that document circulated for public review and comment.

I have reviewed this document and make these comments on behalf of the Vedanta Society of Southern California. I should note that, although I have previously testified before the Board of Supervisors on SEIR 566, I received no notice at all from the County as to the availability of the "Addendum." In fact, I received a copy of the "Addendum" from Counsel within the week, leaving inadequate time to review and respond to the document.

Addendum PA980103 is not a legally permissive document under the California Environmental Quality Act. The document is seriously flawed in the following ways:

A. SEIR 566, to which this document purports to be an Addendum, is itself deficient and is currently the subject of a lawsuit to invalidate its certification;

B. The project and its circumstances have triggered the tests of Guidelines Section 15162 in numerous ways. Substantial project changes, new information from the wildlife agencies, additional project alternatives which have come to light, and feasible mitigation measures which have not been adequately considered all mandate the preparation of a new or subsequent EIR. An Addendum is not, therefore, an appropriate environmental document to support the Zone Change and Area Plan.

C. Substantive technical issues are ignored or are addressed in the most cursory way. The document is materially defective by its silence on numerous issues including the lack of mitigation for several significant effects.

D. The use of an Addendum is a transparent attempt to avoid the Public Notice and Review process that would be mandated under Guidelines Sections 15153 and 15162.

Subsequent Environmental Impact Report (SEIR) 566. I had the opportunity to provide the Board of Supervisors with written comments as to the adequacy of SEIR 566. I include that letter by reference and have attached a copy for the Commissions review and use. In addition, the United States Fish and Wildlife Service and the California Department of Fish and Game commented extensively on the adequacy of SEIR 566. The wildlife agency's comments were never responded to adequately in writing, as is required by law (see Guidelines Section 15088). That letter (dated 8 August 1997) is also attached for the Commission's information and review.

An Addendum is NOT the Appropriate CEQA Document. Section 15162 of the CEQA Guidelines (California Code of Regulations) governs when an Addendum to an EIR can be prepared and when a Supplemental or Subsequent EIR is the appropriate document. The relevant parts of that code section read as follows:

> "(a) When an EIR has been certified . . . no subsequent EIR for that project shall be prepared unless . . . the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:
>
> > "(1) Substantial changes are proposed in the project which will required revisions . . . due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

> "(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR . . . due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
> "(3) New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time of the previous EIR was certified . . . , shows any of the following:
>
> > "(A) The project will have one or more significant effects not discussed in the previous EIR,
> > "(B) Significant effects previously examined will be substantially more sever than shown in the previous EIR,
> > "(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project but the project proponents decline to adopt the mitigation measure or alternative,
> > "(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative."

While one might argue that an Addendum to SEIR 566 would be appropriate for *some* issues (i.e., air quality effects are reduced with the smaller project), there is a more compelling argument that a new EIR and public review period are required for a number of the aspects of the new 299-unit project. For example:

- **New Project Alternatives**. Subsequent to the certification of SEIR 566, Saint Michael's Abbey and the Ramakrishna Monastery have entered into a series of negotiations with the Saddleback Meadows developer with the intent of purchasing the bulk of the property (178-acres) for open space purposes. The balance of the property (35- to 44-acres following purchase) would be considered for various development alternatives ranging from 65 to 130 single family homes. These are clearly reasonable alternatives not discussed in SEIR 566 and are alternative that the project proponent has, to date, declined to adopt. Clearly the tests of 15162(a)(3)(C) and (D) are met and a subsequent EIR and public review period is required.

- **Southern Subregion NCCP**. On 11 August 1998, a letter jointly signed by the United States Fish and Wildlife Service and the California Department of Fish and Game (copy attached) was submitted to the Board of Supervisors of Orange County. This letter states that "County

maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion." SEIR 566 (at pages 4-128, 4-148, and, 4-150) refers briefly to the wildlife corridor issue. Under the heading "Significant Impacts of Project Prior to Mitigation" (p. 4-150), the SEIR indicates that "Implementation of the proposed project would conflict with existing wildlife movement corridors . . ." Subsequent to this statement, the SEIR offers no mitigation.

In that the discussion of the NCCP wildlife corridor is cursory at best in SEIR 566, and since this is identified by the wildlife agencies in their 11 August 1998 letter as the "only" corridor linking the NCCP subregions, the ". . . substantial increase in the severity of previously identified significant effects" test of 15162 is clearly met and a new Subsequent EIR and public review period are required.

This requirement for a "new EIR" is doubly compelling when one considers that the County is, with this project, potentially compromising its ability to obtain the approval of the Southern Subregion NCCP, a point of critical interest to many builder/developers besides the Saddleback Meadows developer, California Quartet, Ltd.

The Addendum for the 299-unit alternative includes a narrow, ostensible "wildlife corridor" through the subdivision. A road traverses the central part of the "corridor" and includes lands that would be extensively graded, thereby requiring revegetation of native plant species. In addition, the revegetation area and the narrowest part of the corridor contain the fuel modification zones associated with the surrounding residential developments. Fuel modification zones are, by definition lacking in both horizontal and vertical cover and are not properly part of a wildlife corridor. The wildlife agencies have not reviewed this proposal, however, although the County is required to have consulted these agencies under section 15063(g) of the Guidelines. That the County has not consulted the Wildlife agencies on this "project" is extraordinary, given the *purported* close working relationship between those agencies and the County staff on the Southern Subregion NCCP.

Technical Errors and Lack of Mitigation. The California Courts, in interpreting the implementation of CEQA, have been most specific in their requirements for adequate mitigation measures. Feasible, implementable, mitigation measures must be specified by the CEQA document for each of the potentially significant impacts or effects identified for the project. Neither the so-called Addendum nor the original SEIR 566 meet this test. My letter of 17 February 1998 (copy attached) cites case law in support of this conclusion. To cite a few of several possible examples of technical deficiencies from the Addendum and SEIR:

- **Wetlands/Fairy Shrimp.** Both SEIR 566 and Addendum PA980103 are clear (albeit very brief) in showing that the implementation of either the approved project or the 299 d.u. alternative will result in a significant loss of wetlands and the Federally designated

Endangered Riverside Fairy Shrimp. However, no mitigation for this loss is identified, other than generalized statements that permits will be required from the Army Corps of Engineers (ACOE) and from the California Department of Fish and Game, and that mitigation can be accomplished on-site. None of the critical questions about this mitigation are answered. Can the on-site vernal pools be moved?, Can newly created pools support the endangered Fairy Shrimp?, In order to obtain an ACOE permit, a 401(c)(3) "alternatives" analysis must be prepared — can an analysis supportive of development be prepared in light of the presence of the endangered species and the rarity of this habitat type in Orange County? Clearly this is a legally significant omission of the Addendum.

- **Wildlife Corridor**. The 299 d.u. plan ostensibly includes a wildlife corridor through the subdivision. However, the bulk of this narrow corridor, at the "pinch point" is on land that will be graded and then revegetated to native species. Obviously this revegetation will be critical to the success of the corridor concept, yet no revegetation plans are given in the Addendum, no species lists, no information that will allow a reviewer to gage the potential (or actual) success of the revegetation/mitigation measure. Clearly this is a significant technical flaw in the document.

- **Gnatcatcher**. At a minimum an EIR (or an Addendum) must assess those effects that require a mandatory finding of significance. Saddleback Meadows has not been the subject of a directed survey for the Coastal California Gnatcatcher in four years (Addendum, p. 76). However, recent studies for the NCCP (Dudek and Associates) have identified breeding pairs of Gnatcatchers literally at the periphery of the project site. An EIR (or an Addendum) that makes no attempt to assess the potential effect of the project on a Federally listed species is flawed on its face (see CEQA Guidelines section 15065).

  "Take" as defined under the Federal Endangered Species Act also includes indirect effects on the listed species. To the extent that the proposed wildlife corridor through the project isinadequate to allow the passage of Gnatcatchers between the Southern and Central NCCP subregions, then there is a fair argument that a "take" has been committed. Yet the Addendum is silent on this issue and gives the question of the Gnatcatcher the most minimal discussion. Clearly the "Addendum" is fatally flawed in its discussion of this listed species.

Avoidance of Public Review. "Public participation is an essential part of the CEQA process" (Guidelines Section 15201). This concept is pervasive throughout both the Act and the Guidelines. When the document is not an original EIR, but a follow-on document as is the case here, *Sutter Sensible Planning, Inc. v. Sutter County Board of Supervisors* [(3d Dist. 1981) 122 Cal. App. 3d 813] provides appropriate guidance as to the need for recirculation for additional public review:

> "[R]ecirculation is required, for example, when the new information added to an EIR discloses:
>
> > "(1) a new substantial environmental impact resulting from the project or from a new mitigation measure proposed to be implemented;
> > "(2) a substantial increase in the severity of an environmental impact unless mitigation measures are adopted that reduce the impact to a level of insignificance;
> > "(3) a feasible project alternative or mitigation measure that clearly would lessen the environmental impact of the project, but which the project's proponents decline to adopt."

As discussed above, the *Sutter* Court's tests for recirculation to public review are clearly met by the so-called "Addendum." For example:

- With the publication earlier this year of the Alternatives for the Southern Subregion NCCP and with the wildlife agency's letter of 11 August 1998 (see attached) it is now abundantly clear that this project will potentially impact the ability of Orange County to obtain an approvable South County plan. Certainly this is a "substantial increase" in a significant effect for which the Addendum offers no mitigation that will reduce the effect to a level of insignificance.

- Saint Michael's Abbey and the Ramakrishna Monastery have been discussing feasible alternatives with the developer and the County, alternatives which would preserve a substantial amount of open space. Since these alternatives would clearly lessen the impacts of the project, and in that the proponent has declined to adopt any of these alternatives, recirculation of the document is mandated.

In conclusion, the apparent "rush" to approve a 299-unit project involving massive impacts without even coming close to preparing the proper CEQA documentation is unseemly and unjustified. Moreover, given the critical importance of the Saddleback Meadows property to the success of the Southern Subregion NCCP, the failure to provide the wildlife agencies with even the courtesy of a notification regarding a new 299-unit project that would directly and significantly impact the viability of the NCCP is inexplicable, particularly when these agencies have shown such interest in the development of the Saddleback Meadows property.

According, the Planning Commission should not participate in such a legally improper process and should direct the staff to comply with all applicable CEQA requirements before presenting the Zone Change and the Area Plan for consideration. At a minimum, this will require preparation of a new Environmental Impact Report and circulation of that document for Public Review and comment.

Sincerely,

Royce B. Riggan, Jr., AICP
Principal
Consulting Biologist [Permit PRT-780195]

RBR:ct

cc: Dr. John Bradley — Division Chief, Fish and Wildlife Service, Carlsbad Field Office
Mr. William Tippets — NCCP Field Program Supervisor, California Department of Fish and Game

Attachments:

1. Letter from Riggan to the Orange County Board of Supervisors, dated 20 February 1998
2. Letter from the Wildlife Agencies to the Orange County Board of Supervisors, dated 11 August 1998
3. Letter from the Wildlife Agencies to Mr. Raymond Brantley, Orange County, dated 8 August 1997

[:\1683-let-009.wpd]

RBRiggan and Associates

20 February 1998

Honorable Members of
Board of Supervisors of Orange County
10 Civic Center Plaza
Santa Ana, California 92702

Reference: Saddleback Meadows — Appeal of Certification of Final Subsequent Environmental Impact Report 566

Dear Members of the Board:

RBRiggan and Associates has reviewed the Saddleback Meadows' Final Subsequent Environmental Impact Report No. 566. We find the document to be woefully inadequate in its treatment of biological resources, and not in compliance with the dictates of CEQA and the CEQA Guidelines. Specifically, we have noted the following deficiencies:

Impacts Not Defined. An EIR is required to identify and address the possible significant impacts of the project (see Calif. Code of Regulations, Section 15126(a)). The Saddleback Meadows EIR is fatally flawed as written in that it ignores certain potentially significant impacts to biological resources and/or puts off to some future time the identification of such impacts. For example:

- Current Federal protocols for the California Gnatcatcher (*Polioptila californica californica*) require reliance on surveys less than a year old. Regional populations of the Gnatcatcher have increased significantly since the last survey of the subject property in 1994. The site may very well be occupied habitat in 1998; despite the conclusionary language in the EIR (see page 4-130) "The coastal California Gnatcatcher . . . [is] not found onsite." The EIR does not identify the potential impact to this federally listed species. Instead, the determination of impact is improperly deferred to some future point (see EIR, page 4-157, paragraph SC 7-11).

- The EIR indicates that (page 4-119) "On June 1994, PSBS documented the . . . potential for additional fairy shrimp [species] in all onsite ponds." The presence or absence of additional federally listed wildlife species is a critical question. If project implementation will effect additional endangered species not identified in the EIR (such as the federally listed Vernal Pool Fairy Shrimp, *Branchinecta lynchi*) then the impacts of the EIR are significantly understated and the EIR is defective on its face.

- The Quino Checkerspot Butterfly (*Euphydryas editha quino*) was listed as endangered under the federal Endangered Species Act in January of 1997. Mentioned in the EIR text only in Table 27 (see page 4-140), the EIR opines that: "Focused surveys are needed for detection but are not warranted." This is a conclusionary statement not supported by any evidence in

the record. The species was once common at various points within the County (see Orsak, 1977, *The Butterflies of Orange County*, California, pp. 135-138). Potential impacts of the project to this federally listed, endangered species, can only be determined by a protocol survey for the species. Absent such a survey, the EIR is clearly inadequate.

Vernal Pools. The EIR states (page 4-120) that "The ephemeral ponds onsite are not vernal pools, but rather are holding ponds for watering cattle which graze on the site." This is a conclusionary statement of the EIR and is not supported by evidence presented within the document. The *Vernal Pools of Southern California Draft Recovery Plan* (Fish and Wildlife Service, 1997) clearly identifies these "ephemeral ponds" as vernal pools and suggests that their origin is as slump ponds on landslides in clay soils, certainly an origin consistent with the geology of the project site. If these are functional vernal pools then the significance assessment of the EIR is flawed and needs to be materially revised. A comprehensive survey of these pools (one that is seasonally appropriate) needs to be conducted to determine their functional classification.

Mitigation of Biological Impacts. The mitigation measures outlined for the anticipated impacts of the project on biological resources are generic and contemplate that, at some future unspecified time, the actual form and content of the measures will be defined. The majority of the mitigation measures are addressed as "standard conditions of approval" and are keyed to some future time in the development of the project. The EIR itself states (at page 4-152) that: ". . . specific standard county conditions . . . have been developed to ensure that a comprehensive biological resources mitigation program is devised and approved . . . prior to the issuance of grading permits." This is a clear violation of CEQA. Both the Act and case law require specificity in mitigation measures and require that the public have an opportunity to review those mitigation measures as a part of the EIR. For example:

- *Sundstrom v. County of Mendocino* (1st Dist. 1988) 202 Cal. App 3d 296 (248 Cal.Rptr. 352) — The court of appeals faulted the county for assuming that various other agencies would be able to devise mitigation measures which would avoid potential significant impacts. Because there was no certainty that success could be achieved, in this regard the agency had no basis for finding that the project's impacts would be insignificant.

- *Oro Fino Gold Mining Corporation v. County of El Dorado* (3d Dist. 1990) 225 Cal. App. 3d 872-885 (274 Cal.Rptr. 720) — The court disapproved of mitigation measures requiring post-approval formulation of a reclamation plan, erosion control plan, dust plan, and fire plan, saying ". . . the CEQA process demands that mitigation measures timely be set forth, that environmental information be complete and relevant, and that environmental decisions be made in an accountable arena."

- *Gentry v. City of Murrieta* (4th Dist. 1995) 36 Cal. App. 4th 13589 (43 Cal. Rptr. 2d 170) — The court held that, in adopting a Negative Declaration the city improperly deferred the formulation of specific mitigation measures. The City had required the project applicant to obtain a Stephens' Kangaroo Rat report and to ". . .comply with any recommendations in the report." However, the court noted that since ". . . there was substantial evidence to support a fair argument that the Project, even as mitigated . . ., would have a significant impact on the Stephens' Kangaroo Rat," any proposed mitigation for this impact had to be made available for public review and could not be left to be formulated in the future (Gentry, supra, 36 Cal. App. 4th at 1397 (43 Cal. Rptr. 2d. 170)).

Absent specificity in the mitigation measures the approving officials cannot determine whether or not the identified impacts can be mitigated or whether a wholesale redesign of the project will be necessary. In addition, the public cannot determine the adequacy of the proposed mitigation and is denied any ability to provide input to the approval process. Absent specificity in the mitigation measures, the EIR is fatally flawed.

Significant and Not Mitigable Impacts. It cannot be determined from the EIR which impacts to biological resources are not mitigable. If there are impacts which cannot be mitigated and thus are unavoidable, then CEQA requires the Lead Agency to adopt appropriate findings (see Calif. Code of Regulations, section 15091(a)). At present, the analysis of the biological resources is sufficiently flawed and the recommended mitigation measures are sufficiently vague that it cannot be determined whether or not overriding considerations will be required.

In addition, to the extent that the following are not mitigable, then there are additional ramifications for both the developer and the County. Approval of the project as proposed could significantly affect the County's ability to complete the NCCP planning effort. The lack of feasibility inherent in the identified mitigation measures in the EIR could also force abandonment of the present development plants and preparation of a significant project redesign. Specifically:

- The EIR (page 4-144) indicates that the loss of Coastal Sage Scrub Habitat would be permitted under the "Interim Take 4(d) Rule." However, certain findings must be made relative to the 4(d) Rule, to the effect that the anticipated habitat loss ". . . will not preclude connectivity between areas of high habitat values" and will not ". . . preclude or prevent the preparation of the subregional NCCP." It would appear that these findings cannot be made.

- Loss of 97 percent and "312 individuals" (EIR page 4-145) of Coast Live Oak Woodland. This impact is considered significant ". . . because of their [the oaks] . . . function as part of the planned NCCP regional wildlife corridor." "Implementation of the project as proposed

will directly impact wildlife movement through the project site, as it does not contain any design features which seek to facilitate wildlife movement. It cannot be assumed that wildlife would be able to move through the project site as currently designed." (EIR, page 4-148). Approval of the project, therefore, would appear to significantly compromise the NCCP planning effort.

- A total of 3.43 acres of definable wetlands would be impacted by the project (EIR page 4-146). It is extremely unlikely that a section 404 permit for the loss of 3.43 acres of wetlands and populations of one or more federally endangered species can be obtained. In this special instance, therefore, the County should require that the 404-Permit be obtained *prior* to issuance of any grading permit by the County Building Official.

Additional Public Review Required. CEQA Section 21092.1, Section 15088.5 of the CEQA Guidelines, and relevant case law clearly requires the EIR to be recirculated for an additional public review period when "significant new information" is added to an EIR. Clear-cut identification of the actual impacts to biological resources, re-writing of the mitigation measures to provide the level of specificity required by the statutes, and completion of the required additional field work, all constitute "significant new information." The courts have been most clear, the public must be given a ". . . meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect . . ." Recirculation of the Subsequent EIR (once the necessary corrections have been made) for an additional public review period is clearly required.

Requirements to Bring the EIR to Legal Adequacy. Additional field work, a comprehensive reassessment and re-writing of the mitigation measures, and re-circulation of the EIR for an additional public review period will be required to bring the document to legal adequacy. Specifically, before FSEIR 566 can properly be certified as being adequate and complete under CEQA, it will be necessary to:

- Complete a comprehensive survey of the property to determine the presence or absence of the threatened Coastal California Gnatcatcher. Once a survey has been completed to federal protocols, revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Complete a comprehensive survey of the on-site ponds to determine the presence or absence of other listed species of Anostraca (fairy shrimp). If additional listed species of Fairy Shrimp are identified, then revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Complete a protocol survey for the Quino Checkerspot Butterfly. If this endangered species is found within the bounds of the project, then revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Conduct a comprehensive survey of the "vernal pools" to determine the presence or absence of additional vernal pool plant and animal indicator species. This survey should be conducted without the presence of cattle and should be conducted at seasonally appropriate times. If these "ponds" prove to be definable vernal pools, then revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Prepare comprehensive and impact specific mitigation measures. This can be accomplished, obviously, only after a complete list of impacts (and their significance) has been developed. The mitigation measures must be substantively related to the impact identified.

Sincerely,

Royce B. Riggan. Jr., AICP
Principal
(PRT-195078)

RBR:ct

[:\1671-let.002]

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August 11, 1998

Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92703

Saddleback Meadows Project
Orange County, California

Dear Board of Supervisors:

The California Department of Fish and Game and the U. S. Fish and Wildlife Service (collectively the Wildlife Agencies) recently learned about a Planning Application Hearing for the Saddleback Meadows project scheduled for the County Board of Supervisors on August 11, 1998. The applicant is proposing a 299 single-family dwelling unit project at Saddleback Meadows. The Wildlife Agencies and County have a lengthy history of communication concerning the project site and a variety of development proposal alternatives have been reviewed. The project site provides a critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans. In this letter we reiterate our position on the proposed Saddleback Meadows project and provide comments on a recent proposal that could affect the project.

The Wildlife Agencies, other Federal and State agencies, County of Orange, and local jurisdictions are participating in the Natural Community Conservation Planning (NCCP) program to conserve wildlife and habitat resources while accommodating economic growth and development. Our previous comments on Saddleback Meadows Project - Draft Environmental Impact Report (DEIR; No. 561 ,February 1996) and in our August 8, 1997, letter concerning the Saddleback Meadows Draft Subsequent Environmental Report No. 566 (DSEIR) (June 1997) identified significant biological issues related to the project site. These biological issues include habitat connectivity, wildlife corridors, sensitive habitats, and occupied wetlands with a federally listed animal. These sensitive habitats include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about 4 acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified as "ephemeral ponds") spread throughout the site. Our letter

evaluating the DSEIR identified Alternative '3' which proposed a clustered, lower density development, presented the least environmental impact, but would nonetheless substantially impact the wildlife corridor integrity. The 299-unit development posed a significant impact to the existing habitat connection from O'Neill Regional Park (Southern Subregion) to the Cleveland National Forest and other open space habitat in the central portion of the Central/Coastal Subregion. The Wildlife Agencies are willing to work with the project applicant to redesign a cluster development in order to preserve the wildlife corridor.

Other animal species considered sensitive by the Wildlife Agencies occur on or adjacent to the project site. The Wildlife Agencies documented rare and sensitive Cactus wren (*Camphylorhynchus brunneicapillus*) on site. The coastal California gnatcatcher (*Polioptila californica californica*)(gnatcatcher), a federally threatened species, could utilize the site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. Both of these animals, as well as other wildlife, would utilize Saddleback Meadows as a wildlife corridor. County maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion.

We have been informed by two interested parties, Saint Michael's Abbey and Vedanta Society of Southern California, that a new clustered development alternative proposal and purchase of significant open space on the site have been offered to the current property owner. The Wildlife Agencies are willing to work with the current landowners and all interested parties in reaching a workable development solution.

The Wildlife Agencies believe a workable solution exists to permit development, while maintaining an essential biological connection between the NCCP Central/Coastal and Southern Subregions. We request that the Board consider this alternative approach that may provide a solution acceptable to all parties. If you have any questions or comments, we are available to discuss this matter further. Please feel free to contact us at your earliest convenience.

Sincerely,

Jim A. Bartel
Assistant Field Supervisor
U. S. Fish and Wildlife Service

for Gail Presley
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (G.Presley, B.Tippets)

U. S. Fish and Wildlife Service (J.Bradley)

d:\sadback.ncp

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Mr. Raymond Brantley
Environmental & Project Planning Services
300 N. Flower St.
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AUG 0 8 1997

Draft Subsequent Environmental Report (DSEIR) No. 566
for the Saddleback Meadows Project, Orange County, California.

Dear Mr. Brantley:

The U. S. Fish and Wildlife Service (Service) and California Department of Fish and Game (Department) Natural Community Conservation Planning (NCCP) program staffs (i.e., "the Wildlife Agencies") have reviewed the above DSEIR. The project is located within the Southern Subregion Orange County NCCP Planning Area, near the border with the NCCP Central Subregion. The preferred project proposes the phased development of 705 manufactured, single-family residential units on a 222.9-acre site near the intersection of El Toro Road and Live Oak Canyon Road, impacting a total of about 191 acres on site and 20 acres off site. About 14% of the project site is proposed to remain as open space.

Biological resources on site include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about four acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified in the DSEIR as "ephemeral ponds") spread throughout the site. Several plant and animal species considered sensitive by the Wildlife Agencies occur (e.g., cactus wren [*Campylorhynchus brunneicapillus*]) or may occur. The coastal California gnatcatcher (*Polioptila californica californica*) hereafter "gnatcatcher," a federally threatened species, is likely to occur on site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. The Quino checkerspot butterfly (*Euphydras editha quino*), a federally endangered species, may occur as well.

Along with the No Project/No Development Alternative ("Alternative 1") required by the California Environmental Quality Act (CEQA), there are four other alternatives presented in the DSEIR. Alternative '1' would avoid any adverse environmental impacts to the project site. Alternative '2' proposes 150 housing units with a minimum lot size of 20,000 feet^2, disturbing more than 138 acres. This would result in elimination of oak woodlands, CSS, and ephemeral ponds of which some rare and sensitive species are obligate residents. Noise decibel levels would increase and possibly affect wildlife in adjacent O'Neill Regional Park. Alternative '3' proposes

100 single family units on a 31.7 acre portion of the site. This alternative avoids about 191 acres of habitat, thereby appearing to allow connection between open space areas north, south, and east of the project site. However, this project alternative will impact two ephemeral ponds and CSS habitat. Alternative '4' proposes 299 housing units, disturbing about 165 acres. A wildlife corridor, narrowing to 400 feet in width and going up a nearly vertical slope, is proposed to be bisected by a road. Alternative '5' proposes 318 housing units within a development area of 113 acres, leaving about 110 acres in open space. The wildlife corridor would be the same as for Alternative '4' except that the minimum width would be about 700 feet. The proposed project appears to conflict with the earlier-adopted Foothill-Trabuco and Aliso Creek Corridor Specific Plans and also fails to describe adequate project design for maintaining corridor integrity of the Orange County NCCP Reserves. In evaluating alternatives 2-5, Alternative '3' would have the least environmental impact; but would nonetheless, substantially impact wildlife corridor integrity between subregional NCCP reserve areas in Orange County.

The Wildlife Agencies have formally commented at different stages of the proposed project. We have also met with the project applicant and their consultants, including a meeting at the project site on May 20, 1996. On June 29, 1994, the Service wrote a letter stating that project approval must be deferred until the Southern Subregion NCCP was finalized. In 1996, both agencies commented on the DEIR (No. 561). The Service letter stated that the location of this development within and adjacent to occupied habitat of rare species could compromise the NCCP reserve and its ability to function as a wildlife corridor through the direct and indirect impacts of habitat destruction, fragmentation, noise, and lighting. Our comments were based upon a project alternative, similar to alternative four, which provided more open space than the proposed preferred alternative presented in this DSEIR.

In general, the DSEIR does not adequately describe the biological resources of the project area. The document only describes and analyzes impacts of the different alternatives in a superficial manner. Referring to our joint Wildlife Agency letter of January 30, 1997, responding to the Notice of Preparation, at least eight of our requested information items were completely or partially ignored, without explanation. Available data were not identified. Further, the Initial Study (p. 17) states that the scope of the EIR discussion will provide a "detailed discussion" and "[A] re-inventory of the existing unique, sensitive . . . flora and fauna within the project site . . . " Also to be provided was "[A] detailed analysis of the project's impacts to wildlife movement, including mitigation measures to avoid or reduce those impacts." Neither of these items was adequately accomplished.

The Wildlife Agencies offer the following specific information and recommendations to assist the County and the project applicant in planning for the preservation of sensitive wildlife species, habitats, and wildlife corridors within the proposed project area, and as a means to assist you in complying with pertinent statutes. Page numbers refer to the DSEIR unless otherwise noted.

1-1, paragraph 2 and 4-41, paragraph 4. Both of these statements should read as "effect."

4-41, exhibits 21, 22, 53. Interference with existing hydrology on site is shown with the construction of the preferred alternative. Impacts to "ephemeral ponds" not directly within the project footprint would also occur. Analyze these impacts further.

4-43, last paragraph. The Wildlife Agencies disagree with the conclusions that there would be "... no unavoidable adverse impacts to surface or groundwater hydrology" and that water quality impacts would be "... to less than significant levels" since current hydrological conditions support the existence of these areas. Implementation of the preferred alternative, including alteration of drainage patterns, would result in the direct loss of a minimum of seven ephemeral ponds on site.

4-110. The noise impact analysis is cursory and needs to refer to appropriate literature attributing impact to avian populations due to noise. Also, in the cases of "major airport runways" the analysis is biased by not considering adjacent land use changes in the context of the distribution of the coastal California gnatcatcher.

4-119, paragraph 2. There was no Service protocol for presence/absence of gnatcatchers in 1993 and 1994.

4-122, exhibit 50. Western spadefoot toad (*Scaphiopus hammondi*) is identified in the exhibit (and on page 4-137) as occurring on site; however, the discussion about amphibians on page 4-126 states that "[N]o amphibians were observed during the surveys of the site." Correct this discrepancy.

4-123, paragraph 2. Add that the NCCP refers to the Southern Orange County Subregion to distinguish this planning effort from other ongoing and completed efforts.

4-125, "Ephemeral Ponds." The Wildlife Agencies disagree with the assertion that "all of the ephemeral ponds were artificially created a number of years ago..." Given the geological conditions of frequent landslides in the area, these wetlands could have been "slump" or "slope" ponds that underwent human modification at a later time. These types of wetlands are known in both Orange and San Diego counties. Further information is needed in the DSEIR regarding the origin of these wetlands in the context of the proposed impacts.

As identified by Maria Simovich, Ph.D., a consultant for the former applicant, some of the on site wetlands contain a high diversity of aquatic invertebrates, strongly suggestive of the more natural origin of these wetlands. Known to occur in at least some ponds with Riverside fairy shrimp and western spadefoot are cladocerans (e.g., *Daphnia*, 2 or 3 species likely), copepods, ostracods (seed shrimp), and clam shrimp (*Cyzicus californicus*). Clam shrimp have a restricted distribution in coastal southern California. Further information is needed in the DSEIR regarding aquatic invertebrates in the context of the proposed impacts.

4-126, Invertebrates, last sentence. The DSEIR states that "[H]undreds of additional invertebrates are expected to use the site." No data are provided to support this statement. The Wildlife Agencies presume that this statement refers to the expected number of species, not the number of individuals. Please qualify and support the statement.

4-126, Amphibians. The last sentence erroneously implies that the distribution of amphibians is restricted to steep slopes. No data are provided to support this statement. The likely widespread distribution on site of western spadefoot toad, Pacific treefrog (*Hyla regilla*), and western toad (*Bufo boreas*) needs to be noted and discussed. Please revise the discussion.

4-126, Reptiles. The correct name is the orange-throated whiptail lizard. Please correct this name throughout the document (e.g., 4-138, -147).

4-130, paragraph 1. The DSEIR states that the "[Southern] subregion will incorporate public lands of the Cleveland National Forest (CNF)." We suggest that this statement be removed or properly qualified since no additional conservation benefits would occur unless the U.S. Forest Service (USFS) is a signatory to an NCCP agreement. The USFS is not participating in the Orange County Central/Coastal NCCP and has not indicated that it wishes to be a "participating landowner" in the Southern Subregion. The DSEIR should not presume that future CNF management activities will be compatible with an NCCP.

4-130, paragraph 2. The DSEIR states that the gnatcatcher is not found onsite. Surveys to current Service protocol were not done. The last gnatcatcher surveys were done in 1994. Surveys should be conducted according to Service protocol to determine the baseline status for the species. The results of these surveys will be needed to assess impacts, including the number of gnatcatchers subject to "take," in accordance with the Intra-Service Biological Opinion for the 4(d) rule.

4-130, paragraph 3. The correct name is the Central-Coastal Subregion.

4-130, paragraph 4. The DSEIR refers to the "disturbed nature of the site" in the context of fulfilling wildlife corridor "needs in the area." No additional information is provided to support this assertion. The existing landscape linkages and documented presence of mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*), all of which would use a wildlife corridor within the project area, needs to be noted and discussed. Mountain lion movement through the area was not disclosed in the DSEIR. This study was undertaken by Paul Beier, Ph.D, and reported in the scientific literature. For further explanation of our request that these data be disclosed and discussed in the context of this proposed project, refer to item number eight in our joint wildlife agency letter of January 30, 1997.

4-131. exhibit 51. This exhibit is difficult to interpret since it was originally a color map of larger size. For example, gumtrochaea and cactus wrens are noted in the legend but are not available on the exhibit. We suggest that the exhibit be redone to show only relevant information.

4-133. paragraph 3. The DSEIR says that "The fragmented nature of much of the coastal sage scrub onsite makes it low quality." However, the current gnatcatcher status is uncertain and most wildlife surveys were out of date, having been conducted in 1993 and 1994. The paragraph continues by stating that the steep slopes support the highest diversity of animal species, but no data are provided to support this statement.

4-133. paragraph 3. The site also contains a habitat linkage, also qualifying it as at least "intermediate value" according the Revelation Logic Flow Chart.

4-136. exhibit 53. One pond identified as a "potential mitigation area" is in the project footprint of the preferred alternative, as shown on exhibits 18 and 22. Since this area would be under housing and infrastructure and no longer in its present condition, please correct this discrepancy.

4-137. paragraph 3. The western spadefoot toad is a California State Species of Concern.

4-137, -139, and -148. state that the site "must be considered occupied by gnatcatcher until proven otherwise." This is inconsistent with the statement on 4-130 that the gnatcatcher is not found on site. Correct and clarify this discussion.

4-139. The distribution information for the gnatcatcher is incomplete. The species occurs in portions of Ventura, eastern Los Angeles, and San Bernardino Counties. The discussion regarding limited slope characteristics is not valid. Gnatcatchers occur on steep slopes, using them for nesting, foraging, and movement.

4-140. The wildlife agencies disagree that focused surveys for the Quino checkerspot butterfly are not warranted. The limited surveys accomplished do not support the assertion that the probability of occurrence is "low." Appropriate habitat (CSS, chaparral, and grassland) exists within the project site. Surveys consistent with the Service 1997 protocol should be completed.

4-141. The correct scientific name for the sunbeam lanier is *Citrus cavanus*. It is properly referred to as a raptor. The accepted common name for *Agelaius tricolor* is the tricolored blackbird. The "C2 (category two)" category was discontinued by the Service in February 1996. The gnatcatcher is a California State Species of Concern.

4-144. There is no analysis of connectivity loss in this discussion of the project in relation to the NCCP findings. However, 4-148 states that "[t]he project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve [sic], due to restricted wildlife

movement." Further on page 4-130, paragraph 3 it says, "the project site occupies a linkage area between the Central and Southern NCCP Subregional preserves [sic], where a wildlife corridor is needed." Please clarify and further analyze this crucial issue. We suggest explanatory text with an exhibit or exhibits specifically rendered.

4-145, "Ephemeral Ponds." The use of acreage by itself is inappropriate since it does not sufficiently disclose the impacts of the preferred alternative. The Wildlife Agencies suggest that the number of ponds also be used as a measure of impact. From the diagrams in the DSEIR, it appears that seven of the eight ponds identified as supporting Riverside fairy shrimp would be directly in the project footprint. The other pond would be subject to edge effects and adverse impacts to water quality. This impact is not apparent when only the acreage figure is considered.

4-147, Western spadefoot toad. The DSEIR states that the population is small in size. However, no data are provided to support this statement such as the results of a scientifically valid population survey. In the absence of data, we suggest that the statement be eliminated.

4-148, Wildlife Movement. The statement "It can not [sic] be assumed that wildlife would be able to move through the project site..." should be further explained. Further explanation is needed since it is known that there would be the virtual elimination of wildlife and their movements in a high density residential development as the preferred alternative proposes.

4-151, -152, Conceptual Mitigation Program. The last sentence on 4-151 states that the program was developed based on input from the wildlife agencies. Regarding the mitigation ratios presented, the DSEIR provides no rationale to support these ratios. Further, the position of the Wildlife Agencies is that the ratios are unjustified and inappropriately low in relation to the proposed impacts, given other mitigation agreements.

6-3, table 39. The "no project" alternative states that there would be a continuation of grazing impacts. Include that this is a discretionary landowner activity, otherwise unrelated to the proposed project.

6-4, paragraph 1. The DSEIR states that "[O]ngoing degradation of onsite biological resources related to cattle grazing operations would continue to occur." This degradation should be further described. For example, on our May 20, 1996 site visit, Wildlife Agency representatives observed cattle within some of the onsite wetlands. We also observed apparently free-ranging horses nearby. Further discussion of the presence of livestock and horses is needed in relation to impacts to Riverside fairy shrimp, other invertebrate species, and CSS. Crushing of fairy shrimp "cysts" and adverse changes to water quality are likely to occur within ponds subject to use by cows and horses. Literature references showing CSS impacts due to grazing should also be referred to and discussed.

6-4, and continuing. The discussion of biological resources impacts is cursory, allowing extremely limited comparison opportunity among the alternatives. A detailed matrix chart of alternatives versus type and amount of habitat impact (e.g., CSS, Riverside fairy shrimp) would help to synthesize the data. However, it appears that alternative three, the 100 unit alternative on 32 acres, would directly avoid seven of the eight ponds occupied by Riverside fairy shrimp, most of the loss of CSS habitat, as well as minimize impacts to wildlife movement.

5-1. The Inventory of Unavoidable Adverse Impacts should include the amount of CSS loss and the likely "take" of gnatcatchers.

Appendix C, Notice of Preparation (NOP), page 3. Note that our joint Wildlife Agency NOP commented about "Plant/Animal Life."

Appendices D (Conceptual Wetland Mitigation Plan) and E (Conceptual Upland Mitigation Plan) were missing from Appendix 'H,' the Biological Resources Assessment prepared by Sweetwater Environmental Biologists, Inc. The Assessment is a draft, dated March 20, 1997. If an updated version is available, include it in the revised DSEIR.

In conclusion, the DSEIR is inadequate. Major revisions and additions are needed, including completion of updated field surveys and a literature search. For example, the gnatcatcher discussion should include a description and analysis of the regional distribution of CSS, gnatcatcher, and cactus wrens, in relation to the project area. Vegetation maps and species locations in both digitized and hardcover format are available from the County of Orange.

The Wildlife Agencies anticipate that the issues discussed above will be included and addressed in any additional CEQA documents and be presented to the Wildlife Agencies for review and comment. Until the impact assessment and mitigation recommendations are revised to respond to our concerns, the Wildlife Agencies recommend against certification of the DSEIR as currently proposed.

The Wildlife Agencies appreciate working with the County on NCCP conservation planning issues. Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. The area of the proposed project is also the only linkage to the NCCP Central Subregion in Orange County. An improperly implemented project would permanently destroy the integrity of the linkage between the

Subregion reserves. If you have any questions or comments please contact Liann H. Davis, NCCP Associate Wildlife Biologist (Department) at 619-467-4207 or Robert James, Fish and Wildlife Biologist (Service) at 760-431-9440.

Sincerely,

Gail C. Kobetich
Field Supervisor
U.S. Fish and Wildlife Service

Ron Rempel
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (B. Tippets, P. Wolf, S. Harris, T. Dickerson)
County of Orange (T. Neely)
Rod Meade
U.S. Army Corps of Engineers (L. Morales, S. McNeil)

1-6-97-TA-262

SFC
Consultants

August 25, 1998

Mr. Ray Brantley
Orange County Planning and Development Services Department
Environmental and Project Planning Services Division
300 N. Flower, Room 321
Santa Ana, CA 92702-4048

Subject: Saddleback Meadows - Comments on Addendum PA980103 for Certified Final EIR 566 and Mitigation Monitoring Program;
Zone Change 98-3 and Area Plan 98-2;
299 Single-Family-Unit Project

Dear Mr. Brantley:

SFC Consultants (*SFC*) has hurriedly reviewed the Saddleback Meadows Addendum to Certified Final Subsequent EIR 566 for CEQA compliance and consistency, and provides the following comments for you and your Planning Commission's consideration at it's meeting of August 25, 1998. By submitting these comments on the Addendum, *SFC* does not intend to waive its objects to the many procedural irregularities relating to how this EIR is being processed by the County of Orange.

In fact, it is with great concern that I am submitting these comments at all since I was not notified of the availability of an Addendum to Saddleback Meadows SEIR 566, even though I have made a clear record of my continued interest in participating in, and being informed about, any CEQA review process relating to the Saddleback Meadows property. It was by pure luck that I happened to be at the County Clerk Recorder Office when I walked to the Administration building to review the Public Hearing notices. It was at this time that I noted the Addendum EIR and Planning Commission hearing scheduled for August 25, 1998.

With the considerable amount of time that I have spent to date in commenting on previous CEQA documents for the Saddleback Meadows project, I would expect to be included in all distributions of any subsequent documents. According to my conversation with Mr. Bill Grieman, the Addendum was distributed to selected private residents, homeowner associations, concerned legal entities and the surrounding religious organizations, totaling eleven Addendum recipients. It does not appear that even the City of Mission Viejo or other affected local agencies were notified of what is being referred to an the 299-unit "contingency plan."

In fact I contacted Ms. Karen Steele, Senior Planner at the City of Mission Viejo, in order to confirm their receipt of the Addendum. Ms. Steele indicated that the City was not aware of any Addendum,

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and if the City had been notified, a thorough review of the Addendum would have been undertaken by the City Planning and Transportation Departments. I believe the same would be true with respect to the City of Lake Forest. At any rate, for future reference, please add me to the mailing list of interested persons for all future land use matters relating to the development of the Saddleback Meadows property.

As an EIR preparer myself, it is clear that the applicant is once again trying to avoid full public disclosure and involvement by relying on an Addendum which does not require public circulation. Under CEQA Guidelines Sections 15162 and 15164, it is not proper to rely on the Addendum as the CEQA documentation for a 299-unit single family detached housing project that purports to exempt itself wholesale from the Foothill/Trabuco Specific Plan.

New information regarding project impacts, reasonable project alternatives, and available mitigation measures not previously considered clearly mandates the preparation and circulation of a new EIR for the decidedly different project.

Over one year ago, on August 22, 1997, *SFC* provided you and your Planning Commission with nineteen pages of comments on the Draft SEIR 566, which at that time was proposed for 705 units. Within that document, I highlighted numerous deficiencies in the SEIR which I felt required correction or supplementation prior to the SEIR being certified.

At the October 22, 1997 Planning Commission meeting, I presented major concerns about the inadequacy of the written responses to my comments, and I raised other questions regarding the adequacy of the SEIR which have not been answered to date. *SFC* acknowledges that, in the weeks following after the October 22 Planning Commission hearing, the County made additional reports, materials, and technical studies regarding the project, available for public review. With the additional information which was made available, the County's written responses to many of *SFC*'s comments from my August 22 letter were no longer valid. More importantly, the additional materials (e.g., mitigation monitoring program, grading plans and soils reports) which were made available, are the type of "significant new information" which would have required the Draft SEIR to be recirculated under section 15088.5 of the CEQA Guidelines.

On December 2, 1997, *SFC* provided the County with fifteen pages of comments, which addressed concerns that were not adequately addressed within the SEIR 566. Within my December 2, 1997 letter, I addressed those comments from my August 22 letter to which no substantive response had been provided. I am disappointed that, even in the recent Addendum, the County has still not responded to my comments, despite ample time to have done so.

In conclusion, I cannot believe that the County has sought to process the 299-unit project without full public disclosure and proper CEQA compliance. Relying on a previously prepared SEIR (which is itself deficient and is currently being litigated) without properly informing the public and responsible state and federal agencies, and trying to process a Zone Change and an Area Plan for 299 homes on the basis of an "Addendum" which is not circulated for public review and comment,

does not come close to complying with CEQA and the Guidelines. To protect the record, however, I have prepared the attached comments within the very little time which has been afforded to me.

Please call me at my office if you have any questions.

Sincerely,

SFC Consultants

Saundra F. Jacobs, REA
Principal

SFJ/sg

Attachment

SFC Consultants

COMMENTS TO ADDENDUM PA980103 FOR CERTIFIED FINAL SUBSEQUENT EIR 566

The following comments are listed in the same order as the Addendum EIR sections for convenience.

Section II, 3. Project Description

1) **Page 5-15, Project Description.** Nowhere in the project description does the proposed Zone Change (ZC98-3) or Area Plan (AP98-2) appear as a description or mitigation measure, yet the title of the Addendum indicates both a Zone Change and Area Plan. How can the title of the Addendum refer to two significant changes to the Saddleback Meadows project yet have no substantive discussion of these changes? One short sentence beginning at the end of Page 14 and continuing at the top of page 15 refers to the Zone Change, but that appears to be the only reference to it. What is inexplicably missing from the Project Description section is a detailed explanation that the Zone Change includes an amendment of the Foothill/Trabuco Specific Plan to *exempt* the 299-unit project from the development criteria and restrictions set forth in the Specific Plan. Since the Specific Plan expressly requires that any new project for the Saddleback Meadows property be "consistent" with the Specific Plan, the exemption subsumed within the Zone Change represents the type of "substantial changes" referred to in the Guidelines section 15162 (a) which necessitates the preparation of another EIR to address the numerous respects in which the 299-unit project would significantly deviate from the Specific Plan and subvert the overall goals, objectives and policies that Plan was designed to achieve.

2) **Page 12, Housing Element.** The original 705 unit project description within SEIR 566 indicated that the removal of the mandated Inclusionary Housing Program (IHP) requirements could undermine the Countywide calculations used to eliminate the affordable housing mandate. Yet no thorough discussion of housing issues, including the possibility of eliminating the need for affordable units was considered in the SEIR, nor was it considered in the response to comments on the SEIR. This section of the Addendum indicates that the 299-unit project would still be required to apply the IHP even though the County-mandated affordable housing requirements have since been rescinded. Yet page 15, top of page, indicates that the County of Orange would be required to implement a General Plan Amendment to modify project-related affordable housing requirements. Is the County planning to initiate a General Plan Amendment as part of this project application? And if so, will it include a thorough discussion of housing issues? This discussion of housing issues within the County and their applicability to the Saddleback Meadows project would constitute new information under CEQA Guidelines 15162 and would require a new EIR and public circulation thereof.

Section III, 1. Land Use Compatibility

3) **Page 17, Foothill-Trabuco Specific Plan**. This section is grossly misleading and false to the extent that it states that "the project is exempt from the provisions of the Specific Plan." In fact, just the opposite is true. As clearly stated on Page III-20 of the Specific Plan, the exemption that the 705-unit manufactured housing project currently enjoys is to be automatically revoked in the event a new project, such as a 299-unit project, is approved and the new project is to be "consistent" with the Specific Plan.

4) **Pages 17 and 18**. What is not being disclosed here is that Zone Change (ZC) 98-3 provides a *new* exemption for the 299-unit project to exclude it from coverage by the Specific Plan. Such an exemption is completely at odds with what the Board of Supervisors intended when it adopted the Specific Plan in December 1991 and expressly stated that any development proposal for the Saddleback Meadows property which deviated from Recorded Tract Map No. 10692 had to be brought into consistency with "all of the provisions of the Specific Plan." (FTSP at p. III-20, s 3.2 (b)(3).) The proposed *new* exemption provided for in Section 3.4c of ZC 98-3 is a blatant reversal of the Board's 1991 directive and thus represents a significant new change under CEQA Guidelines section 15162 which should be addressed as part of a new EIR to be circulated for public review and comment. The failure of the Addendum to quote the relevant portion of the Specific Plan imposing a "consistency" requirement on all new projects relating to Saddleback Meadows, and the failure to mention the new exemption provided for in ZC 98-03, are quite troubling and clearly inexcusable.

5) **Page 19, Mitigation Measures**. Attachment A of Appendix A at the back of the Addendum is the Saddleback Meadows Rural Character Statement. Yet the mitigation measures for the Addendum do not include provisions for the inclusion of these attached guidelines. *SFC*'s previous comments to SEIR 566 suggested that land use mitigation should include: Setback criteria, buffer zones of vegetation, pet restrictions, ridgeline protection, project phasing coupled with an Annual Monitoring Report under Zoning Code section 7-9-103.2(a)(12) to identify imbalances between development and infrastructure, etc. Notwithstanding the requirements of CEQA Guidelines section 15126(c), these new mitigations represent measures not previous introduced in SEIR 566, though identified pictorially in the site plan (buffer zone), and should be included in a revised draft Subsequent EIR and circulated for public review and input.

6) CEQA Guidelines Section 15131 (b) expressly recognizes that construction can adversely impact religious practices: "if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment". Although the Land Use Compatibility section of the Addendum indicates that the reduction

of residential units from 705 to 299 and the incorporation of the Saddleback Meadows "Rural Character Statement" responds to the project team's intent for a rural community as expressed by Saint Michael's Abbey and the Ramakrishna Monastery, these measures should be included as additional mitigation and should be addressed in a new EIR and be circulated for public and agency review. Without incorporation of these measures as mitigation, the current Addendum and mitigation is deficient, as SEIR 566 was, with no attempt to mitigate impacts on surrounding religious uses to any level at all.

Section III. 2. Soils and Geology

7) **Page 22, Geotechnical Conditions, last paragraph at bottom of page.** The Addendum briefly indicates that Pages 4-13 through 4-33 of SEIR 566 remain appropriate for the project. However, the Groundwater section of SEIR 566 was never properly addressed and remains deficient. The major areas of groundwater comments and concerns are located within pages 4-13 through 4-33 of the SEIR 566, precisely those pages that are not addressed in the Addendum.

> Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-16,*** *Ground Water: It appears from the State Water Resources Board map of wells in the area that there are at least five wells located northerly, westerly and southerly of the site and landslide areas. These wells depend on the groundwater supplies to remain in operation. During remedial grading, perched groundwater and saturated zones will be encountered (according to the geotechnical study). This excess groundwater will require pumping to a point to where the bottom layer of the 120-foot key cut will need to be cleaned out. The EIR does not discuss the high probability that this excessive pumping may impact groundwater and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact in CEQA Guidelines Appendix G(h) and (i). The EIR provides neither discussion of this important issue, nor any mitigation for potential impacts to these wells. While the EIR preparer, or the geotechnical engineer for the project, may speculate that the surrounding wells are being fed by Aliso Creek or "other groundwater",* ***there is no factual basis to support the conclusion that there will be "no significant groundwater impact" caused by project grading and development.*** *The Planning Commission must be provided with complete information on this issue before passing on the adequacy of DSEIR 566, and gathering groundwater information during remedial grading for future decisions, and complying with the water resource agencies, is not the proper way to proceed.*

The EIR preparer's response to my comments of SEIR 566 indicated that this comment is speculative and declines to deal with the very real concern about the impacts on surrounding water wells. Interestingly, the EIR itself includes speculative information that the surrounding wells are being fed by Aliso Creek or other groundwater (in addition to

other speculative statements in the SEIR which *SFC* has previously pointed out). My concern here is that the Planning Commission is about to rely on a previous SEIR that incorrectly states that there will be "no significant groundwater impact" caused by the project grading and development. The EIR preparer appears unwilling or unable to perform the analysis necessary to comment on the actual impacts to surrounding wells.

8)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-24**, last two paragraphs. These paragraphs state that "unfavorable conditions (i.e. "some ground water") can be mitigated by implementing corrective grading concepts". Yet the DSEIR only speculates on the mitigation necessary to truly lessen future impacts to the development from groundwater and postpones for future analysis whatever specific mitigation measures might eventually be proposed by the soils engineer for the project (see page 4-25). This is not in keeping with CEQA.*

Again, the concerns expressed above are still valid and should be addressed as part of a new EIR that is circulated for public and agency review.

9)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-31**, Mitigation Measure 2-34. Ironically, this so-called "mitigation measure" provides more detailed information regarding groundwater problems and dewatering than any discussion set forth in the text of DSEIR 566. Although page 4-24 of the text merely alludes to "some" groundwater that might be encountered during grading, this mitigation measure paints a far more graphic and alarming picture, **"Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher elevations as well as in cuts made late in the year."** As indicated above, groundwater wells are located adjacent to the site and landslide areas. Impacts to surrounding groundwater and groundwater wells from required pumping and dewatering are not even discussed in the text of the DSEIR, yet this mitigation measure appears to expect it. Again, the DSEIR does not, but certainly should, discuss the extreme likelihood that this excessive pumping may impact groundwater wells and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact under CEQA. The Planning Commission must be provided with enough factual information before it is asked to certify this EIR. Gathering groundwater information during remedial grading is not proper mitigation.*

My previous comment on groundwater, seepage, and impacts to down gradient wells should be addressed prior to approving any Addendum.

10)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-33**, Section 4.2.7 of **the DEIR should be changed to read "Implementation of this proposed project, with the mitigation measures outlined above will result in unavoidable adverse geotechnical impacts."** At a minimum, there are significant groundwater impacts and slope stability issues that have not been adequately discussed or mitigated in DSEIR 566 and revision and recirculation of the DSEIR is in order to allow public comment on these matters when they are completed.*

Again, the concerns expressed above are still valid and should be addressed as part of a new EIR that is circulated for public and agency review.

Section III. 3. Water/Hydrology

11) **Page 22, Geotechnical Conditions, last paragraph at bottom of page.** The Addendum briefly indicates that Pages 4-33 through 4-43 of SEIR 566 remain appropriate for the project. However, the true facts are that the Water/Hydrology section of SEIR 566 was never properly addressed and remains deficient. The major areas of water and hydrology comments and concerns are located within pages 4-33 through 4-43 of SEIR 566, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-38** The EIR states that alterations of the rate of flow of groundwater or impacts to groundwater quality are considered to be insignificant. The geotechnical report indicates that groundwater and saturated zones will require dewatering during grading and excavation of the sheer key. Groundwater from these slide planes will require pumping for an undetermined period of times (as demonstrated in Mitigation Measure 2-34). At least five (5) groundwater wells are located near this project site, directly in the path of the groundwater flow. The geotechnical report has completely disregarded the impacts that may be incurred downstream during construction dewatering. **This EIR section should consider impacts to groundwater as significant**, otherwise the Planning Commission should not certify this EIR with an incorrect impact finding.*

SEIR 566 incorrectly states that there will be no significant impacts to groundwater caused by the project grading and development, and the SEIR was certified with these incorrect findings. The SEIR should have stated that "significant impacts may occur to groundwater due to project grading and development," The Addendum which addresses this project cannot rely on a SEIR that was certified with incorrect findings.

12)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-42, Mitigation Measure 3-5. How and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and downstream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent? The mitigation measure is not enforceable and does not reduce impacts in any way. It should be deleted.*

The response to this comment to SEIR 566 was non-responsive and yet the SEIR 566 was still certified. Again, how and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and downstream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent?

13)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-43, Section 4.3.7 indicates that implementation of the proposed mitigation measures would result in no unavoidable adverse impacts to groundwater hydrology, yet there is no information on impacts to downstream wells from excessive dewatering to support the less than significant impact. This conclusion should be changed to* ***potentially significant impacts will result after implementation of the mitigation measures.*** *In addition, the new information associated with the new finding will require recirculation of DSEIR 566.*

No information has yet been presented to support the SEIR's conclusion that unavoidable adverse impacts to groundwater hydrology will not occur. Since the SEIR has been certified with this incorrect finding, the Addendum is also deficient. The impact statement should be changed to state that "significant impacts may occur to groundwater due to project grading and development," then a new EIR should be circulated for public and agency comment.

Section III. 4. Transportation/Circulation

14) Page 42, Second Paragraph. The Addendum briefly indicates that Pages 4-44 through 4-83 of SEIR 566 remain appropriate for the 299-unit project, but the Transportation/Circulation section of SEIR 566 was never properly addressed and remains deficient. The major areas of traffic and circulation comments and concerns are located within pages 4-43 through 4-83 of the SEIR, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *The traffic section of the DSEIR unfairly limits its review of intersection*

impacts to El Toro Road/ Santa Margarita Parkway and north. No explanation is given in the DSEIR for this limiting factor, and no analysis is included for the intersections along El Toro south to the San Diego Freeway (I-5). The DSEIR should include all intersections that will be impacted by the 705-unit project.

The EIR preparer for SEIR 566 had justified the lack of analysis south of Santa Margarita Parkway to "Distribution of project related traffic generation...has been reviewed and approved by the County of Orange, Traffic Engineering Division." Yet the response went on to say "... the majority of traffic will be oriented to the south/west of the site." I am disappointed that, even in the recent Addendum, the County has still not responded to my comment, despite ample time to have done so. Please clarify what the EIR preparer is trying to say and respond to the comment properly.

Section III. 6. Noise Analysis

15) Page 66, First Paragraph. The Addendum makes a poor and questionable attempt to actually respond to a comment from SEIR 566 relating to the noise impacts on adjacent religious facilities. The Addendum attempts to justify these impacts by indicating that "These facilities are already exposed to single event aircraft noise that is much louder than a distant barking dog, lawnmower or auto horn associated with project residential uses." The Addendum goes on to indicate that "intervening topography" and reduction in the number of units from 705 to 299 would offset such noise impacts. Such a conclusory response unsupported by a revised noise analysis for this Addendum is prohibited under CEQA Guideline Section 15088(b). Before the Addendum attempts to make conclusory statements such as this, a revised noise analysis should be prepared and discussed in a new EIR that is circulated for public and agency review.

16) Page 66, Third Paragraph. By means of a passing reference to Page 4-101 through 4-118 of SEIR 566, the Addendum suggests that the noise impacts of the 299-unit project are adequately addressed in the SEIR. The Noise section of SEIR 566 however, never properly addressed the impacts of noise on religious facilities and remains deficient. The major areas of noise comments and concerns are located within pages 4-101 through 4-118 of SEIR 566, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the noise impacts from the reuse of the El Toro Marine Corp Air Station as a commercial airport or the noise from traffic associated with the commercial airport. Once this information has been included in this DSEIR, this document should be recirculated for public review.*

Page 4-102, Baseline Noise Levels. The Noise section of the DSEIR provides a baseline discussion of the current impacts from the El Toro MCAS fly-overs which exist at present, but the impact section of the EIR fails to identify potential CNEL contours as a result of the base reuse plan as an active commercial airport.

Page 4-103, the first paragraph discusses an area of proposed open space as the project location where the 62 dB CNEL contour falls. This may have been true for the previous EIR 561, however, page 7 of the noise study provided in Appendix G states that the 62dB CNEL location is in an area of proposed commercial development. The proper location of the 62 dB CNEL should be verified prior to EIR certification.

Page 4-103, third paragraph, states "Depending upon future site re-use, aircraft noise may or may not be an important issue." ***The aircraft noise from a commercial airport at El Toro will be an important issue.*** *Nowhere else in the DSEIR is the El Toro MCAS reuse discussed or incorporated by reference. No commercial aircraft noise impact analysis is provided. The DSEIR should include project related noise impacts as a result of the El Toro reuse plan as a commercial airport and traffic related impacts. Once this information has been included in this DSEIR, the document should be recirculated for public review.*

Page 4-103, fourth paragraph indicates that individual fly-over events may be noise intrusive and mitigation has been provided. However, neither the baseline discussion, impact analysis nor the mitigation measures in the DSEIR include mitigation for a multiple fly-over commercial airport.

The EIR preparer for SEIR 566 made no attempt to respond to any of the issues concerning the future use of the El Toro MCAS. I am disappointed that, even in the recent Addendum, the County has still not responded to my comment, despite ample time to have done so. Please respond to the issues regarding the future use of the El Toro MCAS as a commercial airport.

Section III. 7. Biological Resources

17) **Page 73, First Paragraph.** The Addendum includes the same discussion of the NCCP as SEIR 566, however, a footnote has been added to this paragraph. Unfortunately, the actual text of the footnote has been omitted leaving the reader to guess at its significance. Please provide the text of this footnote.

18) **Page 77, First Paragraph.** The Addendum refers to a new analysis of biological issues that was recently prepared for the 299-unit project which is currently proposed. However, the body of the Addendum does not clearly refer the reader to Appendix G where a copy of this new analysis is located. The new biological report within Appendix G

contains new information which has never been publicly reviewed or commented upon. Notwithstanding the requirements of CEQA Guidelines section 15126(c), this new report represent information not previous discussed in SEIR 566, and should be included in a new EIR that is circulated for public review and input under.

18) **Page 79, Last paragraph at bottom of page.** The Addendum briefly indicates that Pages 4-118 through 4-154 of SEIR 566 remain appropriate for the 299-unit project. However, the true facts are that the Biological Resources section of SEIR 566 was never properly addressed and remains deficient. The major areas of biological resource comments and concerns are located within pages 4-118 through 4-154 of the SEIR, precisely those pages that are not addressed in the Addendum.

> Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-153, Mitigation Measures SC 7-1 through 7-7 and measures 7-11 through 7-14 would appear to be of no value in light of the note placed on the preliminary grading plans...this EIR does not adequately satisfy CEQA Guidelines Section 15126 (c) requirements at this time. Gathering further information and complying with resource agencies in the future is not proper mitigation. Biological mitigation for ACOE and CDFG coordination may change the development plan, which would then require a revised EIR.*

This comment was not adequately addressed in SEIR 566 and the Addendum likewise fails to address the issue raised by this comment. These important issues must be addressed before any further action is taken.

19) **Page 84, Mitigation Measure SC 7-8.**

> Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-155, Mitigation Measure 7-8, F, states that an experienced nursery or other landscape contractor shall care for the transplanted trees for only six (6) months. The biological report states on page 49, second paragraph,* ***"In order to ensure the success of mitigation, the Project proponent should enter into a five year secured agreement with the County of Orange to cover the projected cost to install, monitor, and report on the mitigation Project. This agreement will be in the form of a 100 percent bond."*** *This extremely important mitigation measure is found nowhere in the DSEIR. If the DSEIR does not reflect the recommendations of the expert biologist, then mitigation measure 7-8 F is ineffective and invalid. The DSEIR cannot be certified without amending this measure to reflect the biologist's recommendation.*

The EIR preparer for SEIR 566 stated in their response to this comment that "[t]he provision for five years of biological resource mitigation monitoring is hereby incorporated into the DEIR. However, rather than incorporate this mitigation measure, the Corrections

and Additions section of the SEIR 566 simply states: "Page 4-155, Mitigation Measure 7-8: the following mitigation measure is added to the draft EIR: *All biological resource mitigation measures shall be monitored for compliance with applicable resource agency requirements and established success criteria, to the satisfaction of the manager PDS/Subdivisions and the Administrator Planning and Zoning.*" Nowhere in the Corrections section is the five year mitigation monitoring mentioned. Moreover, neither the Addendum, nor the new biology report, located in Appendix G of the Addendum makes any reference whatsoever to this mitigation measure.

20) **Page 87, Mitigation Measure SC 7-11.** Although this mitigation measure requires a gnatcatcher survey to be conducted pursuant to the current USFWS protocol, and to the satisfaction of the USFWS and the County, it does not provide for sufficient mitigation in the event the gnatcatcher is found to exist on the Saddleback Meadows property. This mitigation measure was a good start, but it is inadequate for the real purpose of protecting endangered species. The measure should include provisions for mitigation of gnatcatcher habitat, including on- and off-site mitigation, if necessary.

21) **Page 88, Mitigation Measures.** The mitigation measure noted in the Response to Comments of SEIR 566, Section H, Corrections and Additions to the Draft EIR for Page 4-153, Paragraph 4 has not been incorporated into the Addendum, even though the County has had ample time to have done so.

Section III. 8. Aesthetics

22) **Page 94, Mitigation Measure PDF 8-4.** The mitigation measure noted in the Response to Comments of SEIR 566, Section H, Corrections and Additions to the Draft EIR for Page 4-174, Mitigation Measure 8-4, has not been incorporated into the Addendum, despite ample time for the County to have done so.

Section III. 9. Cultural/Scientific Resources

23) **Page 103, History.** The Addendum briefly indicates that Pages 4-173 through 4-192 of SEIR 566 remain appropriate for the project, but the Cultural Resources section of SEIR 566 never properly addressed the direct or indirect environmental impacts of the project on the religious or sacred uses within the potential impact area. The major areas of Cultural/Scientific Resources comments and concerns are located within pages 4-192 through 4-192 of the SEIR, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-178. The DSEIR makes no attempt to analyze either the direct or indirect environmental impacts of the project on the religious or sacred uses within the potential impact area. In this case, the potential impact area extends outside*

of the property boundary. This important issue should be discussed in the DSEIR prior to certification.

The EIR preparer was non-responsive to this comment. This comment should be addressed as part of the Addendum.

Mitigation Monitoring Plan

As an EIR preparer, I believe that the mitigation monitoring program is the most important document that will come out of the final approval process for the Addendum or any future EIR. The Monitoring Program should be user friendly and a dynamic document, not something to file away on a shelf once approved. As indicated in my response to the County of Orange dated December 2, 1997:

A) The County should require that the applicant hire an independent mitigation monitor, as selected by the County, to assist the County in monitoring and verifying implementation of both the standard county mitigation measures and the additional mitigation measures. For example:

***Air Quality.** Most of the air quality mitigation measures are the responsibility of the applicant. The applicant, or the applicant's contractor, may not have specialized knowledge of mitigation monitoring, but a specialized mitigation monitor would.*

***Biological Resources.** The applicant is responsible for plant relocation. This should be delegated to a mitigation monitor to verify implementation.*

B) No where in the mitigation monitoring program does the USFWS, the CDFG, or the ACOE show up in the Responsible Person column. These agencies should be added as responsible parties.

C) None of the additional mitigation measures listed in the Response to Comments are reflected in the Mitigation Monitoring Program. The new mitigation should be reflected in the monitoring program prior to certification.

No Mitigation Monitoring Plan has yet been made available for the Addendum.

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August 11, 1998

Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92703

Saddleback Meadows Project
Orange County, California

Dear Board of Supervisors:

The California Department of Fish and Game and the U. S. Fish and Wildlife Service (collectively the Wildlife Agencies) recently learned about a Planning Application Hearing for the Saddleback Meadows project scheduled for the County Board of Supervisors on August 11, 1998. The applicant is proposing a 299 single-family dwelling unit project at Saddleback Meadows. The Wildlife Agencies and County have a lengthy history of communication concerning the project site and a variety of development proposal alternatives have been reviewed. The project site provides a critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans. In this letter we reiterate our position on the proposed Saddleback Meadows project and provide comments on a recent proposal that could affect the project.

The Wildlife Agencies, other Federal and State agencies, County of Orange, and local jurisdictions are participating in the Natural Community Conservation Planning (NCCP) program to conserve wildlife and habitat resources while accommodating economic growth and development. Our previous comments on Saddleback Meadows Project - Draft Environmental Impact Report (DEIR; No. 561 ,February 1996) and in our August 8, 1997, letter concerning the Saddleback Meadows Draft Subsequent Environmental Report No. 566 (DSEIR) (June 1997) identified significant biological issues related to the project site. These biological issues include habitat connectivity, wildlife corridors, sensitive habitats, and occupied wetlands with a federally listed animal. These sensitive habitats include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about 4 acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified as "ephemeral ponds") spread throughout the site. Our letter

2507

evaluating the DSEIR identified Alternative '3' which proposed a clustered, lower density development, presented the least environmental impact, but would nonetheless substantially impact the wildlife corridor integrity. The 299-unit development posed a significant impact to the existing habitat connection from O'Neill Regional Park (Southern Subregion) to the Cleveland National Forest and other open space habitat in the central portion of the Central/Coastal Subregion. The Wildlife Agencies are willing to work with the project applicant to redesign a cluster development in order to preserve the wildlife corridor.

Other animal species considered sensitive by the Wildlife Agencies occur on or adjacent to the project site. The Wildlife Agencies documented rare and sensitive Cactus wren (*Camphylorhynchus brunneicapillus*) on site. The coastal California gnatcatcher (*Polioptila californica californica*)(gnatcatcher), a federally threatened species, could utilize the site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. Both of these animals, as well as other wildlife, would utilize Saddleback Meadows as a wildlife corridor. County maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion.

We have been informed by two interested parties, Saint Michael's Abbey and Vedanta Society of Southern California, that a new clustered development alternative proposal and purchase of significant open space on the site have been offered to the current property owner. The Wildlife Agencies are willing to work with the current landowners and all interested parties in reaching a workable development solution.

The Wildlife Agencies believe a workable solution exists to permit development, while maintaining an essential biological connection between the NCCP Central/Coastal and Southern Subregions. We request that the Board consider this alternative approach that may provide a solution acceptable to all parties. If you have any questions or comments, we are available to discuss this matter further. Please feel free to contact us at your earliest convenience.

Sincerely,

Jim A. Bartel
Assistant Field Supervisor
U. S. Fish and Wildlife Service

for Gail Presley
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (G.Presley, B.Tippets)

U. S. Fish and Wildlife Service (J.Bradley)

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September 2, 1998

Mr. Raymond H.C. Brantley
Environmental & Project Planning
Services Division
County of Orange Planning & Development
Services Department
P.O. Box 4048
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Santa Ana, CA 92702-4048

Re: *Saddleback Meadows: Zone Change 98-3/Area Plan 98-2*
Request for New EIR to Analyze Additional Impacts, Alternatives, and Mitigation Measures re 299-Unit Project

Dear Mr. Brantley:

Without waiving any of the objections set forth in my letter to the Planning Commission, dated August 25, 1998, including, but not limited to, the lack of adequate public notice under CEQA Guidelines section 15153(b)(2), but in the interest of ensuring that County staff, the Planning Commission, and responsible state and federal agencies, are afforded an opportunity to consider whether to require the preparation of a new EIR to analyze the additional impacts, alternatives, and mitigation measures associated with proposed Zone Change 98-3 and Area Plan 98-2 to permit development of a 299-unit single-family detached housing project (the "299-Unit Project") on the Saddleback Meadows property (the "Property"), please find enclosed the following:

(1) An 8-1/2x11" copy of a conceptual site plan (entitled and hereinafter referred to as the "65-Unit Alternative"), which was prepared by County staff on or about March 23, 1998, to show the proposed layout on the Property of 65 single-family detached dwelling units on approximately 8,000 sq. ft. estate-size lots, covering a development footprint of approximately 35 acres out of the 222 total acres which comprise the Property;

(2) A 3'x4' copy of a site plan (entitled and hereinafter referred to as the "127-Unit Alternative") which was prepared on or about July 13, 1998, by California Quartet's consultant, Michael Madden Associates, to show the proposed layout on the Property of 127 single-family detached dwelling units on approximately 5,000 to 6,000 sq. ft. lots, covering a development footprint of approximately 44 acres located in the same general vicinity as the 65-Unit Alternative; and

(3) An 18"x51" copy of a site plan (entitled and hereinafter referred to as the "120-Unit Alternative"), which was prepared on or about August 31, 1998, and was revised on September 2, 1998, by the consultant for Vedanta Society/St. Michael's Abbey, Warren W. Singleton, P.E., to show the proposed layout on the Property of 120 single-family detached dwelling units on basically the same development footprint covered by the 127-Unit Alternative, except for certain grading and fuel modification pull-backs for ridgeline protection and canyon preservation purposes. Also enclosed is a copy of a letter from Mr. Singleton, dated August 31, 1998, providing some explanatory notes regarding the 120-Unit Alternative.

Since the County is proposing to "use an EIR from an earlier project [i.e., FSEIR 566] as the EIR for a separate, later project [i.e., the 299-Unit Project]," then section 15153(b)(2)(D) provides that one of the "key issues" involving the use of the previously-certified EIR are "whether the EIR should be used for this project and whether there are any *additional, reasonable alternatives* for mitigation measures that should be considered as ways of avoiding or reducing the significant effects of the project." Of course, if additional reasonable alternatives exist which were not considered by the lead agency in certifying the EIR for the "earlier project," that earlier EIR should not be used as the environmental documentation for the "separate, later project."

Indeed, subsection (d) of section 15153 clearly states that "an EIR prepared for an earlier project shall *not* be used as the EIR for a later project if any of the conditions described in Section 15162 would require preparation of a subsequent or supplemental EIR." (Emphasis added.) Under CEQA Guidelines section 15162(a)(3)(D), a subsequent EIR must be prepared if "new information" shows that "alternatives which are considerably different from those analyzed in the previous EIR would *substantially reduce* one or more significant effects on the environment, but the project proponents decline to adopt the . . . alternative[s]." (Emphasis Added.)

Obviously, FSEIR 566 did not analyze the 65-Unit Alternative, the 120-Unit Alternative, or the 127-Unit Alternative. In differing degrees, each of these

Alternatives would *significantly* reduce the environmental impacts associated with the 299-unit project in that they would preserve virtually all of the oak woodlands, coastal sage scrub habitats, and vernal ponds on the Property, and would provide for an ample wildlife corridor over undisturbed terrain. Of course, only the 120-Unit Alternative would ensure that no grading or construction occurred in the biologically-sensitive canyon areas south of the east/west ridgeline on the Property which are to serve as part of the wildlife connectivity links between Whiting Ranch Wilderness Park and O'Neill Park.

The indisputable fact of the matter is that the 65-Unit, 120-Unit, and 127-Unit Alternatives would each avoid the substantial environmental devastation that would otherwise be wreaked upon the Property by the 299-Unit Project in connection with the mass grading of the proposed wildlife corridor, particularly in the lush canyons which presently link up with O'Neill Park. Accordingly, a new or subsequent EIR should be prepared to, among other things, analyze each of these three Alternatives from two different perspectives: (1) as stand-alone projects which would require California Quartet to dedicate all of the non-development areas of the Property (approximately 178 acres) as permanent open space and (2) projects which would involve California Quartet's sale of the same non-development acres to third parties, such as my clients and the County of Orange, for cash consideration.

As your Department has been made well aware, based on the extensive factual chronology presented by Mr. Frank Elfend at the August 25 session of the Planning Commission's hearing on the 299-Unit Project, and as a result of Mr. Elfend's earlier public presentations to the Board of Supervisors on June 23 and August 11, 1998, my clients and the County are currently involved in negotiations with California Quartet for the purchase of the approximately 178 acres which would be left undeveloped under the three Alternatives discussed above. Indeed, it is precisely because these negotiations are still ongoing that the 299-Unit Project has been dubbed a "Contingency Plan" which California Quartet intends to pursue in the event that the negotiations do not prove fruitful.

If, at the next-scheduled session of the Planning Commission's hearing on the 299-Unit Project -- which, by stipulated court order of August 31, 1998, has been continued to October 7, 1998 -- you determine that California Quartet, for whatever reason, has declined to proceed with any of the three Alternatives discussed above, I presume that your Department will order the preparation of a subsequent EIR under the terms of CEQA Guidelines section 15162(a)(3)(D). In the Staff Report, dated August 25, 1998, which the Environmental & Project Planning Services Division submitted to the Planning Commission in connection with its public hearing on the 299-Unit Project, it was stated that "none of the conditions described in Section 15162 calling for preparing a

Supplemental or Subsequent EIR have occurred. . . ." Of course, that statement would no longer be true if California Quartet proceeds to reject any of the Alternatives discussed above as of the next Planning Commission hearing scheduled for October 7, 1998. For example, if California Quartet were to refuse to accept the 120-Unit Alternative as of the October 7 hearing, then a subsequent EIR would be required to analyze this alternative under the provisions of section 15162(a)(3)(D) because no discussion of this alternative is to be found in FSEIR 566.

However, I do not believe it is necessary for your Department to wait until the October 7 Planning Commission hearing to make the determination that a *new* EIR should be prepared for the 299-Unit Project. As I explained at the August 25 hearing, my clients, the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC, do not necessarily agree with your Department's determination that section 15162 of the CEQA Guidelines applies in this case. The California courts have clearly held that CEQA section 21166, and its companion section 15162 of the Guidelines, only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project.

When the proposed new activity is a *separate* project -- as it certainly is in this case -- the "fair argument" test is the standard which applies in determining whether a new (as opposed to a subsequent or supplemental) EIR must be prepared to analyze the *separate* project. Under the "fair argument" test, a new EIR must be prepared whenever it can be fairly argued on the basis of substantial evidence that the proposed project may have a significant environmental impact.

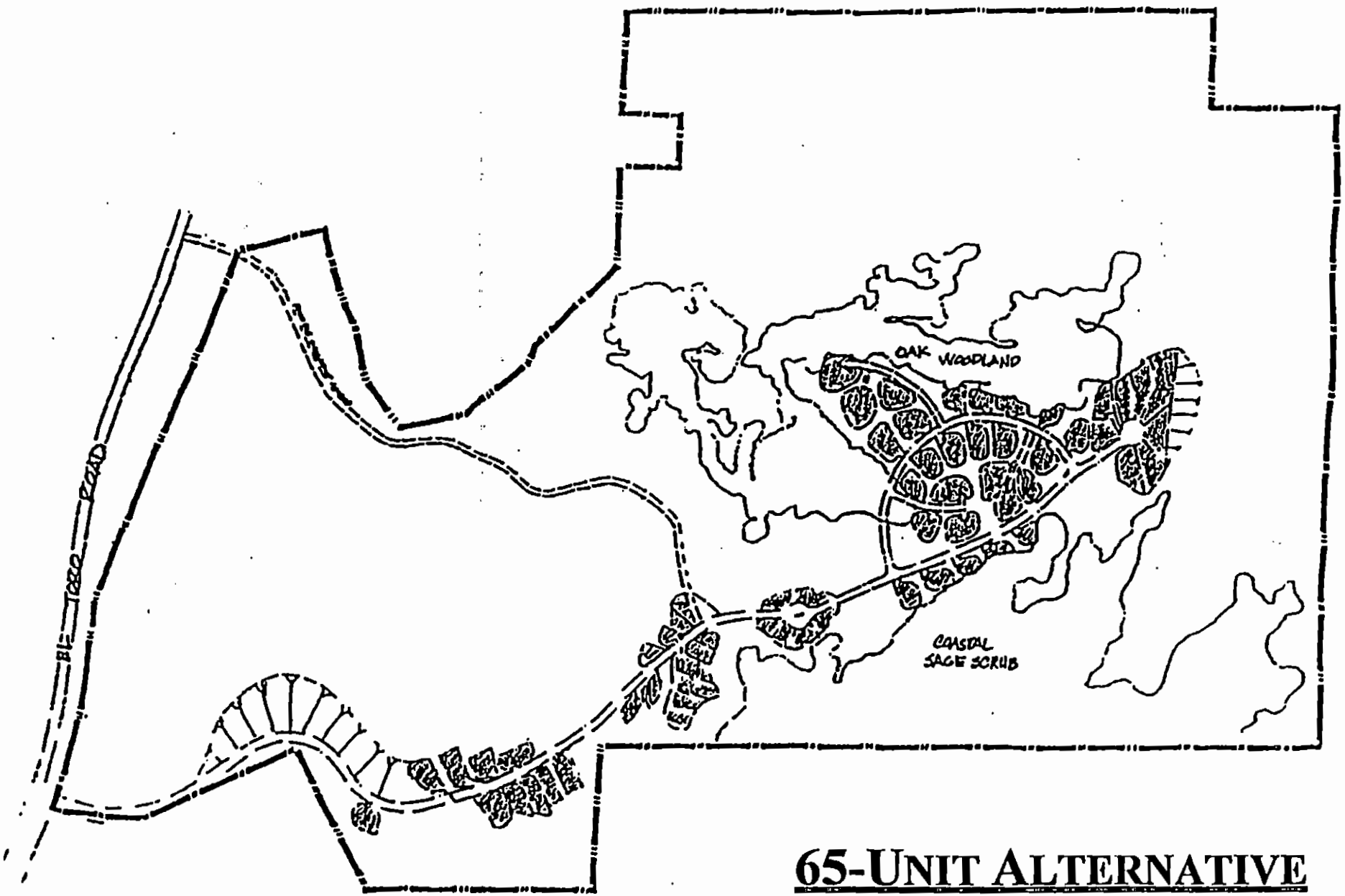
In light of the oral and written comments which were submitted by my firm, Royce Riggan, John Byerly, Warren Singleton, and Saundra Jacobs at the August 25 public hearing, there are numerous environmental impacts associated with the development of the 299-Unit Project which were not addressed in FSEIR 566 and which mandate the preparation of a new EIR under the "fair argument" test. Aside from the obvious impacts which will be caused by the fact that the 299-Unit Project pushes grading and development activities significantly closer to the Ramakrishna Monastery and raises unanswered questions regarding water runoff and drainage impacts that will be caused by the new houses to be built northeast of St. Michael's Abbey, there is no discussion in FSEIR 566 regarding (1) whether the wildlife corridor proposed for the 299-Unit Project would comport with the goals and objectives of the NCCP planning process and (2) whether it would preclude or in any way *jeopardize* finalization of the Southern Subregion component of the NCCP. Clearly, these impacts should be addressed in a new EIR and the public, as well as the appropriate federal and state wildlife agencies, should be allowed to comment on these important environmental matters.

In closing, my clients would request that the County immediately cease processing the 299-Unit Project unless and until the County complies with CEQA and sends out a Notice of Preparation for a new EIR to address the environmental impacts, reasonable project alternatives and feasible mitigation measures associated with the development of the 299-Unit Project.

Very truly yours,

Edmond M. Connor

cc Commissioner Richard Goacher
Commissioner Ben Nielsen
Commissioner Chuck McBurney
Commissioner Shirley Commons-Long
Commissioner Tom Moody
Tom Mathews
Ben de Mayo, Esq.
Frank McGill
Bill Tippets - CA Fish & Game
John Bradley - U.S. Fish & Wildlife
William D. Ross, Esq.



65-UNIT ALTERNATIVE

Prepared by County of Orange
Planning & Development Services Dept.
March 23, 1998

SADDLEBACK MEADOWS

WARREN W. SINGLETON, P.E.

CONSULTANT

32442 SPYGLASS COURT
SAN JUAN CAPISTRANO
CALIFORNIA 92675
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August 31,1998

Edmond M. Connor, Esq.
CONNOR, CULVER, BLAKE & GRIFFIN LLP
Attorneys At Law
2600 Michelson Drive
Suite 1450
Irvine, CA 92612

Re: Saddleback Meadows Property, Alternate (120) Lot Study

Dear Mr. Connor:

Transmitted with this letter are six blackline copies of the Alternate (120) Lot Study which was presented at last Thursday's meeting. The map is a compilation of the three work sketches presented last week.

The lots and streets shown in solid lines are the revised layout. The lots and streets which are not changed are outlined with dashed lines. The revised total lot count is one hundred and twenty (120) units.

Comments regarding the design proposals:

- The grades on the main entry street were held per the proposed California Quartet Study (CQ).
- In order to provide lots in the upper eastern portion of the site grading, remedial grading and fuel modification were allowed to occur in the one hundred (100) foot setback zone which Vedanta originally proposed to be north of the ridgeline.
- The ridgeline has generally been protected in the upper portion of the site, from the second Cul-de Sac south of the spine road to the eastern limits. The moving of the spine road and lots north away from the ridgeline provides for the one hundred and fifty foot Fire Fuel Modification area and maintains the ridgeline. Although the cut slope is at the ridgeline or slightly beyond, the road or lots will likely not require remedial grading beyond the ridge and down into the bottom of the first or second canyon as all of the previous proposals have done.

2515

- The first long Cul-de-sac south of the spine road impacts the lower ridgeline and some Coastal Sage Scrub. The Hidden Hill development south of this area has already disturbed a portion of this Coastal Sage area. This was not changed from the CQ study.
- The addition of the twelve lots on the lower portion of the spine road should be of benefit geotechnically. The proposed spine road was being cut deeply into the hill, up to ninety (90) feet. This removal of material should benefit the stability of the area. The addition of lots north of the spine road removes additional material and contours the remaining hill as previously proposed. If additional unloading is desirable the hill could be layed back further.
- The extension of the second Cul-de-Sac north of the spine road, adding eight (8) lots, was sloped down away from the spine road to minimize the fill depth and the limits of grading. This should not trigger extensive additional remedial grading since the same geologic features are involved.
- The second Cul-de-Sac south of the spine road was pulled back to accommodate Fire Fuel Modification. The lot count was reduced from six (6) to three (3). The ridgeline is being lowered in this area. The proposed grading creates a cut slope facing north and west away from the Monastery. The slope becomes small at the end of the Cul-de-Sac allowing some view of the homes on this street. The grading should not impact the Coastal Sage Scrub which is down slope to the south and east.

The California Quartet (127) Study and the Vedanta Alternate (120) Study are just that, studies. Once the features of the original and alternate studies are agreed upon a precise engineered site plan should be prepared. The fine tuning of horizontal and vertical alignments and lot layouts may result in the gaining of two or three lots. This precise design would be the next step and be used for a Tentative Map.

Please call me at (949) 240-5808 if you have any questions or require additional information.

Very truly yours,

Warren W. Singleton, P.E.

Attachments

PLANNING & DEVELOPMENT SERVICES DEPARTMENT REPORT

DATE:	**August 25, 1998**
TO:	**Orange County Planning Commission**
FROM:	**P&DS/Environmental & Project Planning Services Division**
SUBJECT:	**Addendum PA980103 to Final EIR 566 Prepared for the Saddleback Meadows Contingency Plan**
LOCATION:	**North El Toro Road, ½ Mile Southerly of the El Toro/Live Oak/ Santiago Road Intersection in the Foothill/Trabuco Specific Plan Area of Unincorporated Orange County**
CONTACT PERSONS:	**Raymond H. C. Brantley at (714) 834-3763** **William Grieman at (714) 834-5175**

PROPOSAL:

PROJECT DESCRIPTION

The project proposes the construction of 299 single family detached dwelling units, with an average lot size of 6,672 square feet and a minimum lot size of 5,000 square feet. The projects site is approximately 222 acres in size and located on the easterly side of El Toro Road, approximately one-half mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County.

The project has been designed to minimize impacts on existing landforms. To more effectively screen the project from St. Michaels Abbey, the Ramakrishna Monastery, and the neighboring Hidden Ridge community, specific grading techniques, site planning, and landscape elements will be incorporated in the design. The project features a wildlife corridor, preservation of the southerly ephemeral pond, an extension of O'Neill Regional Park, trail connections, preservation of oak woodland and coastal sage scrub, and the elimination of a commercial use.

The proposed project replaces a previously approved project for a 705-unit manufactured single family development on the same site. Discretionary approvals include Zone Change ZC98-3, Area Plan AP98-2 and a Tentative Tract map.

The development includes extensive remedial grading to stabilize several ancient and surficial landslides and incorporates several project design features which preserve significant biological resources in accordance with the objectives of the Orange County Natural Communities Conservation Program (NCCP).

PROJECT BACKGROUND

During the past four (4) years, the Saddleback Meadows site has received detailed environmental reviews for planning compliance with CEQA on two separate previous occasions:

- EIR 561 was prepared in 1995-96 for a 318-unit, conventional SFD development on lots averaging 5000 sq. ft. The application, which included a Zone Change, Area Plan and Tentative Tract Map, was not not approved by the Board of Supervisors; and

- EIR 566 was prepared in conjunction with Grading Permit Application GA960048 for recorded Tract 10692 for a 705-unit manufactured housing subdivison. This EIR was certified by the Planning Commission on December 3, 1997 and upon appeal, the EIR certification was upheld by the Orange County Board of Supervisors on January 27, 1998.

The currently proposed Contingency Plan for 299 residential units was examined previously for this site in the form of alternatives contained in Proposed Final EIR 561 and Certified Subsequent EIR 566, although with slightly differing site plans. The alternatives contained in the Appendix of the Addendum are Alternative 4 from Certified SEIR 566 and Alternatives 8 and 9 from Proposed FEIR 561, which were previously evaluated. The Contingency Plan results from an extended evaluation by the applicant to address environmental concerns previously analyzed by reconfiguring the proposed project density, land use and location.

LEGISLATIVE INTENT OF CEQA

Section 21000(g) of the Public Resources Code, the CEQA Statutes, states the intent of the California Environmental Quality Act (CEQA) as follows:

> It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying living environment for every Californian.

PROJECT DEFINED

Under Section 15002(d) of CEQA Guidelines, a project is defined as an activity subject to CEQA. Further, the term project refers to an activity which is proposed that has a potential for resulting in a physical change in the environment either directly or ultimately. Section 15377 defines a private project as a project which will be carried out by a person other than a governmental agency, but the project will need a discretionary approval from one or more governmental agencies.

The proposed development is regarded as a private project, because of the discretionary approvals required to implement it. These include a Planning Application/ Zone Change, Area Plan and Tentative Tract map.

STANDARD OF REVIEW

The CEQA Guidelines provide guidance for use of previously certified EIRs with a subsequent activity. Specifically, where a previous EIR has been certified for a larger project, the later activity or project is examined in light of the previously certified EIR. The Guidelines also provide that a Tiered EIR may be incorporated into an Addendum to an EIR to address significant and cumulative program impacts analyzed and considered in the Tiered EIR (Section 15164).

A. **Explanation of a Subsequent EIR:** Guidelines Section 15162 specify where an EIR has been previously prepared, an EIR need not be prepared for subsequent actions unless any of the following conditions prevail:

1. Subsequent changes are proposed in the project which will require important revisions of the previous EIR due to the involvement of new significant environmental impacts not considered in the previous EIR;

2. Substantial changes occur with respect to circumstances under which the project is undertaken, or

3. New information of substantial importance to the project becomes available, and

   a. The new information was not known and could not have been known at the time the previous EIR was certified as complete ..., and

   b. The new information shows any of the following:

      - The project will have one or more significant effects not discussed in the EIR;
      - Significant effects previously examined will be substantially more severe than shown in the EIR;
      - Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project; or
      - Mitigation measures or alternatives not previously considered in the EIR would substantially lessen one or more significant effects on the environment.

B. **Explanation of an Addendum EIR:** According to CEQA Guidelines Section 15164 (a), the Lead Agency shall prepare an Addendum to an EIR if the following prevail:

1. None of the conditions described in Section 15162 calling for the preparation of a Subsequent EIR have occurred;

2. Only minor technical changes or additions are necessary to make the EIR under consideration adequate under CEQA;

3. The changes made by the Addendum do not raise important new issues about the significant effects on the environment.

DECISION TO PREPARE AN ADDENDUM

None of the conditions described in Section 15162 calling for preparing a Supplemental or Subsequent EIR have occurred, and changes related to the proposed project are of a minor nature. The County of Orange has determined that only minor technical changes to FEIR 566 are necessary in order to properly address the current Project.

In accordance with Guidelines Section 15063, Initial Study (PA980103) was completed. Based upon the foregoing information, it was determined that FEIR 566 adequately analyzes all of the major impacts of the proposed project, that no major, subsequent changes are proposed with respect to the circumstances surrounding this project, and that no new information of significance has become available that would substantially affect the validity of FEIR 566. It was determined an Addendum is appropriate for the proposed project in order to provide project specific analysis, to provide clarification and address minor changes to FEIR 566.

This Addendum has been prepared for the project and will be considered, along with Certified SEIR 566 by the Planning Commission in its consideration of the proposed Zone Change/Area Plan application.

CONSIDERATIONS IN INITIAL STUDY

In order to determine the possible impacts of the proposed Contingency Plan, the County of Orange, as the Lead Agency for the project, is required to consider all relevant data related to the planning and environmental review process regarding the project and also solicit input from Responsible Agencies and interested parties. Following is a listing of key documents, County Divisions, interest groups, and Resource Agencies utilized in the overall review process for Saddleback Meadows and incorporated into the Initial Study review process.

1. Certified Subsequent EIR 566, certified by the Orange County Planning Commission for a 705-unit manufactured single-family residential project for the same site;

2. Proposed Final EIR 561, prepared for a 318-unit conventional single-family residential project for the same site;

3. Foothill/Trabuco Specific Plan FEIR 531 and Specific Plan Land Use Regulations;

4. Site Plan, Tentative Tract Maps and Plot Plans for the proposed project;

5. Comments received from the public and interested parties on the two previous projects on the subject site, including:
   - Rural Canyon Residents Association;
   - The Vedanta Society;
   - Foothill/Trabuco Specific Plan Review Board;

- St. Michael's Abbey; and
- Portola Hills HOA I
- Portola Hills HOA II
- Hidden Ridge HOA
- Canyon View HOA
- ETI Corral 357
- Orange County Horsemen Assoc.
- Serrano Creek Ranch Equestrian Center
- Gabrieleno Indians
- Sierra Club
- National Audubon Society

6. Comments received from the Public Resources Agencies on the two previous projects proposed on the subject site, including:
   - US Fish and Wildlife Service;
   - CA Department of Fish & Game; and
   - US Army Corps of Engineers.

7. Comments received from technical divisions of the County including:
   - PDS: Subdivision & Grading Services Division - Geotechnical & Grading Plan Check Section,
   - PDS: Subdivision & Grading Services Division - NPDES Section;
   - PDS: Subdivision & Grading Services Division – Traffic Section;
   - Current Planning Services Division - Orange County Natural Communities Conservation Program.
   - Environmental & Project Planning Services Division - Advance Planning and Transportation Planning Sections;
   - Building Permits Services Division - Acoustics Section.
   - Public Facilities & Resources Department: HBP Division; Environmental Resources Division; Traffic Engineering Division;
   - Orange County Fire Authority;
   - Field checks of proposed project site and the project vicinity; and
   - A detailed analysis of the CEQA Environmental Checklist.

ANALYSIS OF THE PROPOSED PROJECT'S IMPACTS

The Addendum discusses each of the environmental analysis checklist categories as they relate to the proposed 299 unit project in comparison with the approved 705 unit project. To provide for a comprehensive and accurate comparison of the impacts of the approved and proposed projects, the Addendum utilizes identical impact significance criterion for each of the checklist categories. Additionally, the Addendum discusses cumulative impacts and carries forward appropriate mitigation measures from Certified SEIR 566.

Following is a summary of the key elements of the impact analysis.

Land Use Compatibility

The land use compatibility impacts associated with the approved 705 unit project are significant, as demonstrated in Certified SEIR 566 and reiterated in the Addendum. This is due to the approved project's high number of units and attending intensity-related impacts. In comparison, the proposed project will result in reduced land use compatibility impacts, largely a result of the substantially fewer number of units. Additionally, the proposed project provides additional buffering through site design utilizing landform berming and contour grading in concert with landscaping to further screen and filter views of the development edges. A major design feature of the proposed project for 299 units is the single loaded primary spine road (residential development south of the spine road and landform grading to the north), which is intended to screen off-site views of the on-site development area. The proposed project also features a cluster design concept, providing room for a wildlife movement corridor system and effectively providing visual relief through the apportionment of the development into three residential enclaves. Additional single-family residential dwellings were located within the north central portion of the project site in the approved project, as compared to the proposed project, which has undisturbed open space in the same area.

Grading

Due to its larger scale and greater intensity, implementation of the approved project for 705 units would require 2.6 million cubic yards of conventional grading to achieve planned elevations and profiles and associated access roadways and 8.9 million cubic yards of remedial grading to stabilize the proposed slopes through the creation of buttresses, shear keys, and stabilization fills for a total grading quantity of 11.5 million cubic yards. In comparison, implementation of the proposed project for 299 units would require approximately 2.1 million cubic yards of conventional grading and 6.8 million cubic yards of remedial grading for a total grading quantity of 8.9 million cubic yards. Accordingly, the required grading for the proposed project would require 2.6 million cubic yards less than that required to implement the proposed project. Grading quantities incrementally decrease under the proposed project as a result of the reduced earthwork required to create the landform grading along the visually prominent project edges.

Based on an average daily grading volume of 30,000 cubic yards/day, total grading for the approved 705 unit project (11.5 million cubic yards) would require approximately 18 months to complete. In comparison, the proposed 299 unit project, based on a total grading quantity of 8.9 million cubic yards, would require approximately 10 months to complete. For both projects, all preliminary grading would be completed in one continuous phase.

A supplemental geotechnical evaluation of the proposed project is included in Appendix A of the Addendum. The supplemental investigation (G.A. Nicoll, 6/22/98) evaluates the proposed project and its impact on site conditions, revises the previous geotechnical cross sections to reflect the new grades, conducts stability analyses, and provides other additional geotechnical data to supplement the previous geotechnical investigation of November, 1995. The study confirms that the remedial grading quantity for the proposed project (299 lots) is significantly reduced from the 705 unit grading concept for the original entitled plan. The total remedial grading quantity for the

proposed project is approximately 6.8 million cubic yards compared to the approved project with 8.9 million cubic yards. The study concluded that the site is developable.

Biological Resources

The Biological Resources section of the Addendum discusses the biological resource impacts associated with the proposed 299 unit project in comparison with the approved 705 unit project. A biological issues analysis (Helix, 2/20/98) was prepared for the proposed 299 unit project and is included in the Addendum as Appendix G. The results of the analysis are presented under the four categories of corridor analysis, vegetation impacts, oak tree impacts, and sensitive species impacts, paralleling the discussion in Certified SEIR 566, and are also discussed in the body of the Addendum. Following is a summary of the discussion.

Wildlife Corridor

Implementation of the approved 705 unit project would directly impact wildlife movement through the project site, as it contains no design features which seek to facilitate wildlife movement. It cannot be assumed that wildlife would be able to move through the project site as currently designed. The approved project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve, due to restricted wildlife movement.

In comparison, the proposed 299 unit project features a 400 foot wide wildlife corridor which will increase the viability of wildlife connectivity through Saddleback Meadows. The corridor, as planned in the proposed project, is expected to be wide enough for wildlife movement. Topography on either side of the corridor is conducive to wildlife movement because it coincides with an area of natural canyon topography. The revegetation within the corridor is expected to provide the necessary cover for wildlife to add to the corridor's viability. The 50-foot wide spine road crossing the corridor is not expected to inhibit wildlife movement due to the low traffic levels anticipated for this road. The wildlife corridor is expected to function adequately.

NCCP

Impacts to coastal sage scrub resulting from implementation of the proposed 299 unit project would be similar to those for the approved 705 unit project. Under the approved project, 50.3 acres of coastal sage scrub would be impacted, while 45.8 acres will be impacted under the proposed project. In accordance with the NCCP, the loss of 45.8 acres of Venturan-Diegan transitional coastal sage scrub due to project implementation is less than the allowable five percent loss of the total coastal sage scrub in the subregion. Accordingly, the proposed project is in compliance with the NCCP. Mitigation measures related to accounting and preservation of coastal sage scrub and compliance with the NCCP through the securing of appropriate Resource Agency permits have been carried forward in the Addendum from Certified SEIR 566.

Riparian Resources

The loss of riparian resources associated with the proposed project, which include 0.6 acres of ephemeral pond (all but two of the ponds), 0.21 acres of southern sycamore riparian woodland, and 2.01 acres of mule fat scrub, are similar to, although slightly less than, those resulting from implementation of the approved 705 unit project. Mitigation measures from Certified SEIR 566, which require the securing of appropriate permits from the Resource Agencies for the protection of riparian resources, have been carried forward in the Addendum.

Coast Live Oak Woodland

Implementation of the approve project would result in the loss of 14.0 acres (284 individual trees) of the total 14.5 acres (298 individual trees) of coast live oak woodland on the project site. However, the proposed 299 unit project would impact only 5.7 acres (175 individual trees). A total of 123 oak trees (approximately 41 percent) occur outside the remedial grading zone and are considered preserved. Mitigation measures related to preservation and enhancement of the impacted coast live oak woodland habitat have been carried forward from Certified SEIR 566 to the Addendum.

Riverside fairy shrimp

As stated under Riparian Resources above, all but two of the ephemeral ponds, habitat supporting the Riverside fairy shrimp, will be directly impacted by both the approved and the proposed projects. Mitigation measures relating to the relocation and establishment of a mitigation plan designed to mitigate impacts to Riverside fairy shrimp/pond habitat have been carried forward from Certified SEIR 566 to the Addendum.

Coastal California Gnatcatcher

Previous field surveys have determined that on-site coastal sage scrub habitat is not occupied by coastal California gnatcatchers, although current surveys have not been completed to USFWS presence/absence protocol. As such, on-site coastal sage scrub habitats must be considered occupied by coastal California gnatcatcher until proven otherwise. Mitigation measures relating to conducting adequate studies to determine the presence of the coastal California gnatcatcher have been carried forward from Certified SEIR 566 to the Addendum.

Aesthetics

As with the approved project, the proposed project for 299 units would substantially alter the existing topography and visual character of the project site. The landform/contour grading, berming, and wildlife corridor system included in the proposed project would help to break up the long linear massing of housing which would result with implementation of the approved 705 unit project and create areas of housing separated by 150 to 500 foot stretches of open space.

Visual impacts to St. Michael's Abbey would be substantially reduced under the proposed project as compared to the approved project due to the relocation of residential lots north of the on-site spine road, extensive landform grading, and implementation of a trail head/staging area. View impacts of the project site from the Ramakrishna Monastery would be reduced as compared with the approved project by implementation of the berming/contour grading, the wildlife corridor system and associated open space areas, and through the elimination of several loffel walls which would reduce the height and intensity of adjacent manufactured slopes.

Other Impacts

The remaining environmental analysis checklist categories, including water/hydrology, transportation and circulation, air quality, noise, cultural/scientific resources, recreation, hazards, public services, and utilities and service systems are fully discussed in the Addendum. Mitigation measures pertaining to these impact categories have been carried forward from Certified SEIR 566 to the Addendum.

CONCLUSION

As is evident from the foregoing discussion, the County of Orange places a high priority on meeting its responsibilities under the California Environmental Quality Act in a thorough and comprehensive manner. As Lead Agency on the Saddleback Meadows Contingency Plan, the County is in full control of the CEQA review process and the preparation of its environmental document. In this regard, the County has supplemented the requirements of the CEQA Statutes and Guidelines with its own set of rigorous standards and requirements. In the case of the proposed Saddleback Meadows Contingency Plan, the County imposed additional requirements in order to ensure the integrity of the document.

RECOMMENDATIONS

1. Receive Staff Report and oral presentation;
2. Open public hearing to receive public testimony; and
3. Based upon the Addendum and the Environmental & Project Planning Services Report, make the recommendation that the Board of Supervisors adopt the attached Draft Resolution.

Respectfully submitted,

George Britton

George Britton, Manager
Environmental & Project Planning Services Division

RHCB/WG:wg

Attachments: Attachment 1 – Addendum PA980103
Attachment 2 – Draft Board of Supervisors Resolution

PLANNING & DEVELOPMENT SERVICES DEPARTMENT REPORT

HEARING DATE: August 25, 1998

TO: Orange County Planning Commission

FROM: Current Planning Services Division

SUBJECT: Zone Change 98-3/Area Plan 98-2 (aka Contingency Plan)

LOCATION: Saddleback Meadows (easterly side of El Toro Road near Valley Vista Way). District 3.

STAFF CONTACT: Frank McGill (834-2099)

PROPOSAL: California Quartet, Ltd. proposes an amendment to the Foothill/Trabuco Specific Plan (ZC 98-3) and a conceptual plan of development (AP 98-2) to allow for the development of 299 standard detached single-family homes with 158 dedicated open space acres.

SYNOPSIS: This is an orientation briefing for the Planning Commission and an opportunity for the public to comment on the applicant's proposed project. Staff recommends the hearing be continued to September 22, 1998.

CEQA COMPLIANCE

EIR Addendum PA 980103 has been prepared to satisfy CEQA. It is discussed in a separate staff report for this item.

PUBLIC NOTICE AND REVIEW

A display ad noticing this hearing was posted on-site on August 7, 1998 and published in the Saddleback Valley News on August 14, 1998. Additionally, those individuals and entities listed in Attachment A were sent a public notice and copies of ZC 98-3, AP 98-2, and the EIR Addendum on August 7, 1998. Currently, there are no members of the F/TSP Review Board to send the project for review and comment.

PROJECT BACKGROUND

Attachment B contains a detailed chronology of events from 1978 regarding Saddleback Meadows (aka Bridlewood). In summary, the existing entitlements for the property are based on land use regulations originally approved by the County of Orange over 15 years ago. Saddleback Meadows Tract Map 10692 was recorded in 1988. When the Foothill/Trabuco Specific Plan (F/TSP) was adopted in 1991, the Saddleback Meadows Planned Community District Regulations and Recorded Tract Map 10692 were incorporated into the F/TSP. Per those regulations, the developer is only required to obtain

an administratively approved grading permit and building permits in order to develop 705 manufactured homes.

In 1996, the Planning Commission and Board of Supervisors considered several development alternatives, but did not approve any of them. One of the alternates, which was recommended by staff, was for 299 dwelling units. That alternative is similar to the applicant's current proposal called the "Contingency Plan". This plan is being processed in the event negotiations involving the Board of Supervisors and other parties to purchase Saddleback Meadows do not come to fruition. Various alternative development projects are discussed in EIRs 561 and 566. The Contingency Plan is discussed below.

PROJECT DESCRIPTION

Location and Surrounding Land Uses

The Saddleback Meadows property (technically referred to as the Bridlewood Residential District) is located on the easterly side of El Toro Road and north of Valley Vista Way. North of the project site is St. Michael's Abbey, which operates a boarding school for boys. South of the project site is Hidden Hills/Hidden Ridge residential development, O'Neill Regional Park, and the Ramakrishna Monastery. West of the project site and El Toro Road is the Portola Hills residential development. East of the property over a major ridgeline is the Trabuco Canyon Residential District. (See Attachment B, Regional Map.)

Direction	Existing Use	Density	Zoning
Project Site	Agriculture	N/A	F/T Specific Plan
North	School/Abbey	N/A	F/T Specific Plan
South	Residential	3.1 du/ac.	Conventional Zoning
East	Open Space	N/A	F/T Specific Plan
West	Residential	3.2 du/ac.	Portola Hills PC

The land is presently used for grazing cattle and has been used for farming. There are many steep slopes and much erosion due to man's influence and naturally unstable geology. Most of the property rests on ancient landslides that remain unstable. Much of the site has been invaded by non-native plants.

Design Summary

- Total property: 222.2 acres
- 299 standard detached single-family homes
- Proposed open space dedication: 158.5 acres
- Density: 1.3 dwelling units per acre
- Average residential lot: 6,672 sq. ft.

Zone Change 98-3

The applicant's proposed zone change (see Attachment D) would amend the F/TSP Bridlewood Residential District Regulations as follows:

1. Replace the reference to "Saddleback Meadows Planned Community" with "Residential Estates (Planned Development)"
2. Lower the maximum number of homes from 705 to 299.
3. Require at least 155 acres of dedicated open space. (The Area Plan proposes 158.5 acres.)
4. Add the requirement for an approved area plan prior to any subdivision or grading activity.
5. Add the requirement for an approved use permit prior to issuance of building permits.
6. Require a performance bond prior to issuance of a grading permit.
7. Eliminate the requirement for 66 2/3 percent affordable housing.
8. Eliminate the requirement for a 1.7-acre neighborhood commercial site along El Toro Road.
9. Maintain the existing exemption from all the other regulations and guidelines in the F/TSP.

Area Plan 98-2

The applicant's proposed area plan (see Attachment E) consists of a text and four concept plans: (1) Development Plan, (2) Landscape and Re-vegetation, (3) Grading, and (4) Open Space/Trails. The area plan also includes a lengthy discussion of "rural character" with several illustrations.

PROJECT ANALYSIS

Density

The issue of density was the foremost issue discussed by the Planning Commission and Board of Supervisors in 1996. Saddleback Meadows may be regarded as a rural transition area because of its location along a heavily traveled road (El Toro Road) and at the western edge of the F/TSP area. The General Plan designates Saddleback Meadows and neighboring sites to the south and west as "Suburban Residential." Neighboring property to the north and east are designated as "Rural Residential." It is also separated from much of the F/TSP area by a major ridgeline to the east.

The current zoning for this property allows 705 dwelling units. The Community Profile map would provide up to 444 dwelling units for Saddleback Meadows. The existing density for neighboring properties Portola Hills and Hidden Hills/Hidden Ridge, if applied to this site, would allow 666 dwelling units for Saddleback Meadows. The F/TSP zoning for the Upper Aliso Residential District to the north would allow 222 dwelling units for Saddleback Meadows while the F/TSP zoning for the Trabuco Canyon Residential District to the east would allow 111 dwelling units for Saddleback Meadows. Therefore, 299 units, or 1.3 dwelling units per acre, may be a reasonable density for this location.

Grading

Saddleback Meadows is a geologically unstable site. A landslide could naturally occur at any time and such a slide could impact adjoining properties. The proposed grading, when completed, is expected to eliminate the threat of slides to onsite residents and adjoining property owners. In order to accomplish this, extensive remedial grading is required. (Any significant project for this site is going to require extensive remedial grading due to the existing geological problems.) For the 705 dwelling unit project, there is 2.6 million cubic yards of conventional grading and 8.9 million yards of remedial grading. The Contingency Plan is proposing 2.1 million cubic yards of conventional grading and 6.8 million cubic yards of remedial grading. All grading is to take place on the site (i.e., no off-site trucking of material).

Open Space

The 705 dwelling unit project provides 129 acres of dedicated open space. The Area Plan provides 158.5 acres of dedicated open space: 90 acres dedicated in fee for O'Neill Regional Park and 68.5 acres of restricted scenic preservation easement dedicated to the County. Some of this open space area (mostly in the scenic preservation area) will be disturbed during development for the following purposes:

- Removal of landslide hazards.
- Revegetation that would enhance animal and plant habitats.
- Erosion control and drainage improvements.
- Fuel modification (thinning out vegetation for fire safety).
- Oak tree relocation.
- Trail improvements.

After development is completed, these graded areas would be landscaped to have a natural looking appearance and remain undisturbed thereafter except for possible County required and approved fuel modification.

The dedicated open space area provides a very important east-west wildlife corridor, which is a major Natural Communities Conservation Program (NCCP) environmental goal in this region. A minor north-south wildlife corridor is also provided. The 705 dwelling unit project does not provide for any wildlife corridor.

Within the dedicated open space, the applicant is proposing about one mile of improved recreational trails, specifically:

- A missing link in the Live Oak Canyon Regional Riding & Hiking Trail.
- A connecting trail between Aliso Creek Regional Riding & Hiking Trail to the Viewpoint Spur Trail and O'Neill Regional Park.
- A staging area near El Toro Road.

The final trail alignments, regional park boundaries and trail/park improvements would be determined by the Manager, Harbors, Beaches & Parks after remedial grading has been completed.

Consistency with the F/TSP

The existing F/TSP states that the Bridlewood Residential District is exempt from all the other regulations and guidelines of the F/TSP. The Contingency Plan proposes to maintain that exemption. However, the Contingency Plan is largely, although not entirely, consistent with the other regulations and guidelines of the F/TSP for the following reasons:

1. The F/TSP Resources Overlay Component calls for the preservation of wildlife corridors, oak woodlands, major ridgelines, and scenic roadway corridors. The Contingency Plan fully complies with this except for a few of the oak trees being removed because of necessary remedial grading.
2. The F/TSP requires the dedication of 66 to 70 percent of a property for open space. The Contingency Plan proposes to dedicate 71 percent.
3. The F/TSP limits conventional grading volume to a maximum of 9,000 cubic yards per dwelling unit and manufactured slopes to a maximum of 30 feet in height. The Contingency Plan averages out to 7,023 cubic yards of conventional grading per dwelling unit. Most, but not all, manufactured slopes are less than 30 feet in height.
4. The F/TSP Development & Design Guidelines have largely been followed by Contingency Plan via the Rural Character Statement, Landscape and Revegetation Concept, and Contour Grading Concept in AP 98-2.

Conditions of Approval

Staff has drafted 32 conditions of approval regarding Area Plan 98-2. (See Attachment F.) Many of these conditions are requirements of the F/TSP which this project would not otherwise be subject to for reasons discussed above. An example is the requirement to prepare a tree preservation plan. Other conditions require the payment of fees for a number of public facilities: fire station, library, sheriff station, schools, local park improvements, and road/intersection improvements. Another condition requires that prior to any residential construction, precise plans will be available for public review and Planning Commission approval regarding landscaping, fuel modification, grading, and the design and location of structures. These draft conditions will be the basis for preparing and presenting the Planning Commission Resolution to approve this project at your next meeting.

CONCLUSION

Compared to the approved project allowing 705 manufactured homes, the proposed project is a substantial reduction in the number of homes and amount of grading involved. It offers major public benefits in the form of parks, trails and wildlife corridors. It offers more opportunities for public review before build-out than the approved project. The proposed project is less dense than surrounding residential development and is substantially, but not entirely, consistent with all the regulations and guidelines of the F/TSP.

We would appreciate receiving any input from the Planning Commission as well as public comments about the project at this hearing.

RECOMMENDATIONS

1. Receive staff report and public testimony.
2. Continue hearing to September 22, 1998.

Respectfully submitted,

John B. Buzas, Manager
Current Planning Services Division

FMc:sjk/1998-08-06

Attachments:

A. Project Distribution List
B. Regional Map
C. Chronology of Events
D. Applicant's Proposed Zone Change
E. Applicant's Proposed Area Plan
F. Draft Area Plan Conditions of Approval

ATTACHMENT F

DRAFT AREA PLAN CONDITIONS OF APPROVAL

Revised August 17, 1998

DRAFT
Conditions of Approval
For
Saddleback Meadows Contingency Plan
Area Plan 98-2

1. CP NA NA TIME LIMIT
Approval of Area Plan 98-2 is subject to approval of Zone Change 98-3 by the Board of Supervisors. Upon such approval, Area Plan 98-2 is valid for a period of 48 months thereafter. If the preliminary grading permit is not issued within such period of time, this approval shall be terminated and Area Plan 98-2 shall thereafter be null and void.

2. CP CP NA REVOCATION
Failure to abide by and faithfully comply with any and all conditions attached to this approving action shall constitute grounds for the revocation of said action by the Orange County Planning Commission.

3. CP CP G TENTATIVE TRACT MAP
Prior to the issuance of any grading permits, Tentative Tract Map 15230 shall be approved by the Subdivision Committee after a public hearing. Said tentative tract map must be found consistent with Area Plan 98-2.

4. CP CP G GRADING REVIEW
Prior to the issuance of any grading permits, the Manager, Current Planning Services, shall determine that the grading plan is consistent with Area Plan 98-2 and the approved tree preservation plan.

5. HP HP G TREE PRESERVATION PLAN
Prior to the issuance of any preliminary grading permit, a tree preservation plan shall be prepared which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and on-half feet above ground level). The tree preservation plan shall be consistent with the Area Plan 98-2 and the Foothill/Trabuco Specific Plan and approved by the Manager, Harbors Beaches, and Parks. The plan shall be signed and certified by a biologist or arborist.

6. EP SG/EP G FED ENDGD SPEC ACT
Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Services that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning.

7. SG SG G GEOLOGY RPT
Prior to the issuance of any grading permits, the applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall include the information and be in a form as required by the Grading Manual.

8. SG SG G DRAINAGE
Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, provide:

A. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

B Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

9. SG SG G CROSS-LOT DRAINAGE
Prior to the issuance of any grading permits, and if determined necessary by the Manager, Subdivision and Grading, a letter of consent, in a form approved by the Manager, Subdivision and Grading, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to the issuance of any grading permit. Acceptance of cross-lot drainage on lots within the tract map boundaries shall be noted on the recorded map.

10. SG SG G VECTOR CONTROL
Prior to the issuance of any preliminary grading permits, the subdivider shall provide evidence to the Manager, Subdivision and Grading, that the Vector Control District has surveyed the site to determine if vector control measures are necessary. If warranted, the developer shall conduct such measures in a manner meeting the approval of the Manager, Subdivision and Grading.

11. HP HP G ARCHAEO OBS & SALVAGE
Prior to the issuance of any preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified archeologist has been retained, shall be present al the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeologist shall submit a follow-up report to the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, an analysis of any artifacts fond and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, Harbors, Beaches & Parks.

12. HP HP G PALEO OBS & SALVAGE

Prior to the issuance of an preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, Harbors, Beaches & Parks.

13. SG SG G GRADING NOTES

Prior to the issuance of any grading permits, the following guidelines shall be included in the "Notes Section" of the grading plans meeting the approval of the Manager, Subdivision and Grading.

A. During all grading and construction operations, all oak trees on the site, located adjacent to the approved limits of grading and identified in an approved Tree Management/Preservation Plan as trees to be preserved, shall be adequately fenced and protected from encroachment by grading and construction equipment. Grading, placement of fill, and storage of building materials and heavy equipment, shall be prohibited within the dripline of any tree identified for preservation as part of an approved Tree Management/Preservation Plan.

B. If required, retaining walls shall be used to protect the existing grades of oaks identified for preservation from surrounding cut and fill. However, these should not alter drainage from around the trees.

C. No type of surface, whether pervious or impervious, shall be placed within a six-foot radius of oak tree trunks. Where surfacing cannot be avoided, alternative types of paving should be utilized, such as gravel or porous brick with sand joints.

D. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

E. Natural drainage courses and natural grades outside the remedial grading impact area in proximity to and providing seasonal irrigation to oak trees shall not be altered.

F. In proximity to oak trees, only one trench should be dug to accommodate all utility lines. Where necessary, the impacted trees should be carefully pruned by an arborist in proportion to the total amount of root zone lost.

14. BP BP G CONSTRUCTION NOISE

A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits, that:

1. All construction vehicles or equipment, fixed or mobile, operated within 1000' of a dwelling shall be equipped with properly operating and maintained mufflers.

2. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

3. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the grading plans, will be considered as adequate evidence of compliance with this condition.

15. CP SG G PERFORMANCE BOND

Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, Subdivision and Grading.

16. HP HP G RE-ROUTING

Prior to the issuance of a preliminary grading permit, which includes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted by the applicant and approved by the Manager, Harbors, Beaches and Parks.

17. CP SG R

Prior to the recordation of any subdivision map which creates residential building sites, the preliminary grading activity for all of Area Plan 98-2 shall be completed to the satisfaction of the Manager, Subdivision and Grading.

18. HP HP R OPEN SPACE

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate to the County of Orange a minimum of seventy (70) percent of the project site as open space in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. The open space dedication shall be for: (1) regional park, and (2) restricted scenic preservation purposes. The Manager, Harbors, Beaches & Parks shall determine the final boundary between these open space acres.

Within the regional park area, the Manager, Harbors, Beaches & Parks shall determine what improvements, if any, shall be made. If determined appropriate by the Manager, Harbors, Beaches & Parks, the applicant shall be required to provide those improvements as shown and discussed in the Area Plan 09-2.

Within the restricted scenic preservation easement area, no grading, structures (including stables and corrals), or commercial agriculture activities shall be permitted in this area. River rock walls not to exceed three feet, approved Loffel walls, and open fencing shall be permitted. An entry gate and identification sign shall be permitted subject to approval of a site development or use permit for such use. Future fuel modification, landscaping, and tree preservation shall be permitted subject to prior approvals granted by the Planning Commission.

19. HP HP R RECREATIONAL TRAILS

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate a recreation easement for those bikeways and regional riding and hiking trails shown and discussed in Area Plan 98-2 in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. Also, the applicant shall design the necessary improvements and enter into an agreement, accompanied by financial security, with the County of Orange to install the necessary improvements in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

20. HP HP R CLEANING UP

Prior to the recordation of any subdivision map that creates residential building sites, the existing old ranch house and all abandoned automobiles shall be removed in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

21. HP HP R LANDSCAPE PLAN

Prior to the recordation of any subdivision map which creates residential building sites, the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Manager, Harbors, Beaches & Parks. Said plan shall take into account the County Standard Plans for landscaped areas, adopted plant palette guides, applicable scenic and Foothill Trabuco Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

22. EP EP FIRE STATION FACILITY

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

23. EP EP LIBRARY FACILITY

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

24. EP EP SHERIFF STATION

Prior to the recordation of an subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning.

25. EC F F FUEL MODIFICATION

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall demonstrate to the satisfaction of the Fire Chief that necessary fuel modification in off-site locations will be maintained in perpetuity.

26. EP EP R AFFORDABLE HOUSING

Prior to the recordation of a subdivision map that creates residential building sites, the landowner shall provide a cash contribution to the County's General Plan Trust Fund. The specific methodology and amount of said contribution shall be subject to the approval of the Manager, Environmental & Project Planning. These funds shall be directed to support the County's overall efforts toward providing affordable housing, including but not limited to, future updates of the Orange County Housing Element and related programs for maintaining existing affordable housing and providing new affordable housing opportunities.

27. CP CP B USE PERMIT

Prior to the issuance of any building permits for residential structures, the applicant shall submit a use permit application for review by the Foothill/Trabuco Review Board and approval by the Planning Commission after a public hearing. Said use permit shall include, but not be limited to, the location of all structures and uses, precise landscaping plan, precise fuel modification plan and program, grading plan, and architectural plans for all structures. Said use permit must be found consistent with Area Plan 98-2.

28. F F GBU FUEL MOD PLAN

Prior to the approval of the use permit to construct residential structures, the applicant shall obtain the Fire Chief's approval, in consultation with the Manager, Environmental and Project Planning, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of combustible vegetation and the planting of drought tolerant fire resistant plants. However, only the minimum necessary fuel modification shall be approved by the Fire Chief. All practical mitigation measures to minimize the need for fuel modification shall be recommended by the Fire Chief such as use of non-combustible construction materials, interior fire sprinkler system and double-glassed windows. The required fuel modification shall be performed in a manner to minimize impacts on the natural environment as much as possible. The fuel modification plan shall then become effective after the Planning Commission approves the use permit.

29. SG SG B ROAD REE PROG

Prior to the issuance of building permits for residential construction, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, Subdivision and Grading.

A. Foothill Circulation Phasing Program
B. Foothill/Eastern Transportation Corridor
C. El Toro Road
D. Santiago Canyon Road

30. HP HP R LOCAL PARK FEES

Prior to the issuance of building permits for residential construction, the applicant shall pay in-lieu fees per the Local Park Code Requirements.

31. FTSP CP B SCHOOL FEES

Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the Manager, Current Planning, that he has reached a mitigation agreement with the District for the subject project proposal.

32. CP NA NA INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may be required by a court to pay as a result of such action. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

FM:sah
8/18/1998

RURAL CANYONS CONSERVATION FUND
P.O. Box 556, Trabuco Canyon, CA 92678

October 7, 1998

TO: Orange County Planning Commission, Via Fax (834-4652)

FROM: Ray Chandos, Secretary/Treasurer

RE: Saddleback Meadows 299-unit "Contingency" Proposal, Subdivisions

- Since the Foothill/Trabuco Specific Plan and the Zoning Code do require it, we urge you to await the recommendation of the Foothill/Trabuco Specific Plan Review Board, scheduled for October 16, prior to any action on this proposal.

- Another federally-listed threatened species, the California gnatcatcher, has recently been discovered inhabiting the Saddleback Meadows site. Two individuals were observed during a limited survey, and more may inhabit the site. This new information now necessitates revision and recirculation of the environmental documentation under CEQA.

- Approval of this proposal rejected by the Board in 1996 would remove all incentive to conclude ongoing negotiations for acquisition of this scenic site.

- Approval jeopardizes continued public ownership of the prime 240-acre section of O'Neill Park donated by the Vedanta Society in the 1970's, and the continued existence of the Ramakrishna Monastery and St. Michael's Abbey--will your administration be remembered for driving these unique, public-serving institutions out of Orange County?

- The Specific Plan also requires referral of all tentative subdivision maps to the Review Board prior to action by the Subdivision Committee, yet county staff has scheduled tract maps for October 21 approval.

- Please give the interests of present and future Orange County residents the priority they deserve in considering this proposal benefiting foreign-based land speculators.

CONNOR, CULVER, BLAKE & GRIFFIN LLP

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October 7, 1998

Orange County Planning Commission
300 North Flower Street
Santa Ana, CA 92702-4048

Re: *Proposed Zone Change 98-3 and Area Plan 98-2/EIR*
Saddleback Meadows: 299-Unit Project

Dear Members of the Planning Commission:

As a supplement to my letters of August 25, September 2, and September 23, 1998, and without waiving any objections which have been stated to date on behalf of my clients, the Norbertine Fathers of Orange, the Saddleback Meadows Land Conservancy LLC, and the Vedanta Society of Southern California, I submit the following additional arguments in opposition to California Quartet's application for approval of Zone Change 98-3 ("ZC 98-3") and Area Plan 98-2 ("AP 98-2") for the development of a 299-unit, single-family detached residential housing project (the "299-Unit Project" or the "Project") at the Saddleback Meadows property (the "Property"):

A. Coastal California Gnatcatchers Have Recently Been Found on a Portion of The Property, Thereby Rendering the Developer's Prior Gnatcatcher Surveys Outdated and Invalid. A Formal Protocol Survey of the Entire Property Should Now Be Conducted as Part of a New or Subsequent EIR to Properly Assess the Impact of the Project on This Endangered Species.

The CEQA documentation relating to the presence of coastal California gnatcatchers on the Property is fatally flawed and must be corrected and recirculated for public review and comment -- particularly comments from the California Department of Fish & Game and the U.S. Fish & Wildlife Service.

determined that on-site coastal sage scrub habitat is *not* occupied by coastal California gnatcatchers . . . ." (Emphasis Added.) Likewise, on pages 4-130 and 4-139 of FSEIR 566, similar statements are made to the effect that no coastal California gnatcatchers were observed in connection with the surveys which California Quartet's consultants conducted four and five years ago in 1993 and 1994. However, a brief informal survey of but a small portion of the Property by my firm's consultant, Royce B. Riggan, has demonstrated that the prior gnatcatcher surveys are clearly outdated and incorrect because coastal California gnatcatchers *do* presently occupy the coastal sage scrub habitat at the Property.

At the August 25 session of the Planning Commission's hearing on ZC 98-3 and AP 98-2, my firm's consultant, Warren Singleton, pointed out that, in the southeast corner of the Property, the proposed rough grading operations for the 299-Unit Project would decimate a great many more acres of coastal sage scrub habitat than would otherwise be destroyed as part of the rough grading for the 705-unit manufactured housing/mobile home project (the "705-Unit Project") which was the subject of FSEIR 566. Mr. Singleton graphically demonstrated to the Planning Commission that, instead of reducing adverse environmental effects as claimed in the Addendum, the 299-Unit Project would actually have far worse impacts on (1) the biologically sensitive habitats and species found in the lush canyons located in the southeast corner of the Property because rough grading operations would be far more extensive at that location than under the 705-Unit Project; and (2) the Ramakrishna Monastery because a great many more residential units would be built much closer to the Monastery than would have occurred under the 705-Unit Project.

Following the August 25 Planning Commission hearing, I dispatched Royce Riggan -- who holds Federal Permit PRT-780195 and thus is officially licensed to conduct gnatcatcher surveys -- to visit the Property and determine whether the new areas to be impacted by the 299-Unit Project in the southeastern corner of the Property were occupied by coastal California gnatcatchers. While on a tour of that portion of the Property which was conducted by California Quartet's consultants in July 1998, I had noted how extensive the coastal sage scrub habitat was and how verdant and secluded the adjacent canyons were, and I could not believe that FSEIR 566 and the Addendum were correct in stating that *no* coastal California gnatcatchers were to be found in those locations.

2 weeks ago. Why is it just

I was not surprised, therefore, when, on September 23, 1998, after only two and a half hours at the site, Mr. Riggan, and his associate, Lisa Seneca observed two coastal California gnatcatchers: a juvenile of the year and an adult male. A copy of the California Native Species Field Survey Form confirming the two gnatcatcher sightings, which Mr. Riggan dutifully submitted to the Natural Diversity Database maintained by the California Department of Fish & Game, is attached as Exhibit "A" hereto. Based on the two sightings documented by Mr. Riggan and his associate, there is no longer any justification for the County's highly questionable actions

in allowing California Quartet to delay completing the May 1997 gnatcatcher survey of the Property in accordance with the USFWS presence/absence protocol. Both FSEIR 566 and the Addendum *concede* that a formal protocol gnatcatcher survey of the Project has not been conducted in recent years, and this is nothing short of unconscionable since the County is now considering whether to allow California Quartet to *decimate* virtually *all* of the coastal sage scrub habitat on the Property without even knowing the number of endangered birds that might be affected.

In addition to a formal protocol survey being undertaken, a new or subsequent EIR must now be prepared to fully and properly assess the impacts on this federally-listed endangered species, the coastal California gnatcatcher. Indeed, as underscored in the case cited in the letter to the Planning Commission from California Quartet's attorney, dated September 30, 1998, *Fund for Environmental Defense v. County of Orange* (1998) 204 Cal.App.3d 1538, 1550, CEQA section 21166 requires the preparation of a subsequent EIR when a "new protected or rare habitat or species of flora or fauna" is discovered after an EIR has been prepared. As explained in the *Fund for Environmental Defense* case, such a discovery constitutes a type of "change in circumstances" and "new information" under section 21166 which mandates the preparation of a subsequent EIR.

Of course, my clients continue to maintain that ZC 98-3 and AP 98-2 constitute a *new* project which is not the *same* as the 705-Unit Project manufactured housing/mobile home project authorized under Tract Map 10692. Although County staff now maintains that the 299-Unit Project and the 207-Unit Project are actually the *same* project for purposes of CEQA compliance, the County took an entirely different position two years ago when it stated on page 3-1 of Draft EIR No. 561 that "the proposed project [i.e., the 318-unit project] represents the *complete revision and redesign* of previously approved and recorded Tract Map 10692." (Emphasis added.) If, as my clients contend, the 299-Unit Project is *not* the same as the 705-Unit Project, then a new EIR must be prepared, particularly in light of the mandatory finding of significance which must now be made under CEQA Guidelines section 15065(a) because of the potential impact which the 299-Unit Project will have on "an endangered, rare, or threatened species."

B. <u>The Drainage and Grading Impacts Associated With the 299-Unit Project Should Be Addressed in a New or Subsequent EIR.</u>

As explained in great detail in the letter prepared by our firm's consultant, Warren Singleton, dated October 7, 1998, a copy of which is attached as Exhibit "B" hereto, the critically important drainage impacts of the 299-Unit Project have essentially been ignored in the CEQA documentation prepared by the County for ZC 98-3 and AP 98-2. Nowhere in FSEIR 566 or in the Addendum is a concept drainage plan for the 299-Unit Project to be found. Incredibly,

County staff is asking the Planning Commission to approve the development of 299 homes without any information being provided to the Commission or to the public as to exactly *where* storm, irrigation, and urban runoff from these hundreds of homes will be discharged on the Property.

The Addendum admits that such runoff will be dumped into natural drainage courses on the site which is a *radical* change from the stormdrain system proposed for the 705-Unit Project. However, although this major project change will be allowed to occur and huge volumes of water will be dumped on site, no document has been provided or referenced in the Addendum which would indicate the locations of the respective storm drain outlets to be constructed on the Property.

One can only *speculate*, based on the concept drainage plan for the 318-Unit Project described in Draft EIR 561 that, on a *daily* basis, a huge increase in runoff will be discharged into the geologically-unstable canyon areas adjacent to St. Michael's Abbey and the Ramakrishna Monastery. This is a frightening prospect because no analysis has been undertaken as to whether the introduction of the steady flow of water in these unstable canyon areas will create new geotechnical hazards by activating the landslide conditions which are clearly known to exist in the very locations where the water will be discharged.

Obviously, the major change in the stormdrain system for the 299-Unit Project necessitates the preparation of a new or subsequent EIR to address what has always been one of the most important concerns on the part of the Abbey and the Monastery, i.e., the potential geotechnical hazards created by the 299-Unit Project which could seriously undermine the stability of their respective facilities -- which are already suffering the effects of soils movement. To date, the CEQA documentation which has been prepared for the 299-Unit Project has simply ignored the very serious impacts which will be caused when a constant flow of water is added to areas on the Property which are known to be seriously unstable and prone to landsliding. This deficiency should be corrected and a new document should be circulated for public review and comment.

C. <u>The "44-178 Alternative" Should Be Analyzed in A New Or Subsequent EIR.</u>

In my September 2 letter to the County, I submitted plans relating to three different project alternatives, the 65-Unit Alternative, the 120-Unit Alternative, and the 127-Unit Alternative. Strangely, in what can only be described in a *Twilight Zone* statement, County staff has taken the position that the three alternatives have *not* been "submitted" for their review and thus they are free to overlook them for purposes of CEQA compliance. This appears to be a

rather convenient way for County staff to avoid *ever* having to address any reasonable project alternatives proposed by members of the public.

Undaunted by the strange tactics being employed by County staff, I will venture to suggest another project alternative that should be analyzed in a new or subsequent EIR *before* the Planning Commission takes any further action on ZC 98-3 and AP 98-2. Attached as Exhibit "C" hereto is an 11x17" plan showing the 44-acre portion of the Property which has been outlined in orange. This plan represents what I will refer to as the "44/178 Alternative," and it represents a project alternative which would allow a 44-acre parcel of the Property to be developed with residential uses, with the balance of the Property, i.e., 178 acres, being dedicated by the developer free of charge to the County to be preserved as permanent, undisturbed, undeveloped, natural open space. The number of units to be developed within the 44-acre parcel could vary depending on the desire of the developer and could include a mix of condominium units, assisted living facilities, single-family detached homes, etc.

The reason that it is so important to analyze the 44/178 Alternative is because the 44-acre development parcel would be situated on what is perceived to be the most "stable" soil at the Property, relatively speaking, and, if development were confined within that 44-acre parcel, very few sensitive habitats or species on the Property would be adversely impacted. In addition, such an Alternative would facilitate approval of the Southern Subregion NCCP because it would provide the wildlife corridor contemplated by the NCCP. As stated in the August 11 letter which was sent to the Board of Supervisors by the California Department of Fish & Game and the U.S. Fish & Wildlife Service, the wildlife agencies are interested in analyzing the 44/178 Alternative because of the many environmental benefits it affords. Accordingly, this Alternative should be studied in detail in a new or subsequent EIR before ZC 98-3 and AP 98-2 are approved by the Planning Commission.

D. <u>The Planning Commission Is Unlawfully Proceeding to Take Final Action on AP 98-2 Without Affording the Foothill/Trabuco Specific Plan Review Board an Opportunity to Make Its Recommendations on the Project</u>.

As I stated in my September 23 letter to Tom Mathews, the Planning Commission will violate both the Foothill/Trabuco Specific Plan and the Orange County Zoning Code if it proceeds to take any further action on the discretionary permit application relating to AP 98-2 *before* the Foothill/Trabuco Specific Plan Review Board (the "Review Board") has been afforded at least twenty-one (21) days within which to consider the merits of AP 98-2 and to report its recommendations thereon to the Planning Commission. Clearly, the Planning Commission is the "approving authority" with respect to *all* applications for Area Plans submitted to the County. Indeed, if no appeal is taken from the Planning Commission's approval of any given Area Plan, that approval becomes *final*.

Moreover, the Review Board is supposed to make its recommendations to the Planning Commission, *not* to the Board of Supervisors. As the County noted at page 4-11 of Draft EIR 561, "[d]iscretionary actions within the Specific Plan area are reviewed by the Foothill-Trabuco Specific Plan Review Board, who function as an advisory body to the *County Planning Commission*." (Emphasis added.) Aside from common courtesy, the Planning Commission is required by law to refrain from even *considering* California Quartet's application for approval of AP 98-2 until after the Review Board has been given at least 21 days to forward its recommendations on whether that Area Plan should be approved or denied.

Since the Review Board is charged with implementing the Foothill/Trabuco Specific Plan, it would seem only logical, not to mention lawful, to allow the Review Board adequate time within which to consider the impacts that will flow from *exempting* the 299-Unit Project from complying with the provisions of the Specific Plan. The CEQA documentation relating to ZC 98-3 and AP 98-2 is obviously deficient in that it does not address these impacts.

However, since it appears inevitable that the Planning Commission will refuse to honor the request of the Review Board for at least a two-week continuance of the Planning Commission's October 7 hearing, my clients must now face the sad fact that this matter appears headed for litigation. Accordingly, please be advised that, in addition to the objections raised in letters previously submitted by my firm and its consultants, my clients hereby incorporate and restate in opposition to ZC 98-3 and AP 98-2 each and every procedural and substantive contention, objection, comment, or argument raised in the letters which are listed in Exhibit "D" attached hereto. In addition, my clients also incorporate and restate each of the objections raised, or comments or arguments made, by any of their respective attorneys, representatives, or consultants at the public hearings or meetings held by the Planning Commission or the Board of Supervisors in connection with the review of FSEIR 566, including, but not limited to, hearings and meetings held on October 22, November 25, and December 3, 1997, and on February 24, 1998.

Very truly yours,

Edmond M. Connor

cc John Buzas
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File No: 312/3

September 30, 1998

The Honorable Chuck McBurney, Chairman
and Members of the Orange County Planning Commission
300 N. Flower Street, Room 356
Santa Ana, California 92702

Re: Zone Change 98-3; Plan 98-2 Addendum PA 980103; Continued Commission Hearing Date: October 7, 1998

Dear Chairman McBurney and Members of the Commission:

This communication responds to issues raised in the Commission's hearing of August 25, 1998 on behalf of the Project Applicant, California Quartet ("CQ") for approval of Zone Change 98-3 and Area Plan 98-2 (collectively, the "Project"). Project approval would authorize a 299-unit single-family detached housing development on the Saddleback Meadows property ("subject property") adjacent to El Toro Road in unincorporated territory of the County of Orange ("County").

This communication will respond to issues raised during the Commission hearing by Commission members and to issues raised in a August 25, 1998 communication by Mr. Edmond Connor, counsel for the Vedanta Society of Southern California, the Norbertine Fathers of Orange and the Saddleback Meadows Land Conservancy LLC (collectively "the Opposition").

I. FACTUAL SUMMARY

A. Issues Raised Concerning Commission Procedure

Questions raised at the prior hearing centered on the Zone Change and Area Plan requests and their relationship to the Foothill/Trabuco Specific Plan ("Specific Plan") and how the Project could be found to be consistent with the Specific Plan which provides that as long

as the Saddleback Meadow property is developed in accordance with the existing Saddleback Meadows Plan Community Zoning, Zone Change 84-3P and Recorded Tract 10692 the subsequent project would be exempt from the Plan's regulations and guidelines. (Specific Plan, p. III-20). Questions were also raised as to the status of negotiations between the County Board of Supervisors and the Applicant and others with respect to another project configuration for the subject property.

B. Environmental Analysis Issues

Also raised was the propriety of the method of environmental assessment of impact of the Project on the environment under provisions of the California Environmental Quality Act (Public Resources Code section 21000 *et seq.*, "CEQA"). Specifically, advanced was the issue of whether the Project Addendum and prior certified Final Subsequent Environmental Impact Report No. 566 (the "FSEIR") which assessed the implementation of the 705-unit development proposal[1] for the subject property by Grading Permit, could assess the Project impacts.

The Opposition claims that the addendum method of Project environmental impact analysis is inadequate under CEQA and the CEQA Guidelines[2] because:

1. The Addendum relies on a previously certified environmental impact report ("EIR") for an entirely different project;

2. A 45 day notice is required by CEQA Guidelines sections 15153(b), 15087 and 15105 for reliance on a prior EIR; and,

3. A new EIR "which addressed important new information and substantial project changes involving new environmental impact and additional project alternatives and mitigation measures not addressed in the previous EIR should have been accomplished."

The argument advanced by the Opposition is based on the unsupported contention that the Zone Change and Area Plan are a "*different* project" that:

1. Would build homes on land which was proposed to be left undeveloped by the 705-unit project;

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[1] The 705-unit proposal emanates from recorded Tract No. 10692.

[2] The CEQA Guidelines are found at Title 14 California Code of Regulations section 15000 *et seq.*

2. Would result in wildlife corridor through the middle of the subject property when none had been previously provided under the 705-unit project; and,

3. Purports to be exempt from compliance with the Specific Plan despite the Specific Plan requirements that new projects must be consistent with the Plan.

II. SUMMARY OF RESPONSE TO ISSUES RAISED AT PRIOR HEARING

A. The Project, is consistent with the Specific Plan as either: (1) an exemption for an environmentally preferable alternative for development of the property under CEQA and therefore, consistent with the legislative discretion of the County, may be included as a portion of the Specific Plan as an exception exactly as exists presently for the existing zoning and Recorded Tract Map; or, (2) as a project of incrementally and significantly reduced density and impact on the Project site which is consistent with the Specific Plan.

B. The Addendum method of Project environmental impact analysis complies with CEQA as it contains a refined analysis of a previous alternative for development of the subject property which, through modification by reduction in density and site coverage further reduces Project impacts on the environment, one of the declared legislative purposes of a CEQA analysis.

III. ANALYSIS

A. Approval Of The Zone Change And Area Plan Is Consistent With The Specific Plan.

Consistent with the policies of CEQA (*see infra*, section III.B.) the Project significantly and incrementally reduces density from that authorized by the Recorded Tract and previously designated zoning. As such, it is consistent with the Specific Plan language contained on p. III-20.

Also, it is consistent with the administrative practice of the County as evidenced in the Plan itself to "exempt" this property from provisions of the Specific Plan as was accomplished with the present applicable land use designation for the subject property.

The Applicant has also consistently shown how the Project is consistent with Plan provisions as a portion of the Bridlewood Residential Planning District.

B. Response To CEQA Issues.

Initially, a factual misrepresentation advanced by the Opposition needs to be corrected. The Opposition claims that the addendum method of analysis under CEQA is inappropriate because the Project is a separate project application for which adequate notice and circulation was not given, which, as a separate project, requires the preparation of subsequent or supplemental environmental impact report under the provisions of Public Resources Code section 21166.

In December of 1997, this Commission expressed its intention and recommendation to the Board of Supervisors that the preferred density of development on the subject property would be a 299-unit configuration. A 299-unit configuration substantially similar with the Project was analyzed as Alternative No. 4 to FSEIR No. 566 ("Alternative No. 4"). Alternative No. 4 also analyzes a wildlife corridor configuration substantially similar in location and dimension to that portrayed in the Addendum. (See, FSEIR, Alternative No. 4, Exhibit 68; Addendum, Exhibit 4). The Addendum also shows in Exhibit 4 that housing will not be build on portions of the subject property proposed to be left vacant in the Project analyzed in the FSEIR.

The Project Addendum released on August 7, 1998, offers modifications and technical changes to Alternative No. 4,[3] again, a proposal for a 299-unit development of the subject property.

This method of environmental analysis by the County is consistent with, and legally authorized by, CEQA for approval of both the Zone Change and the Area Plan.

One of the central purposes of CEQA, which is legislative declared, is to prevent significant avoidable damage to the environment by encouraging lead agencies to require changes in projects or requesting that the Applicant provide those change to a project through the approval of project alternatives [CEQA Guideline section 15002(a), (h), section 15021(a)] or by imposing specific conditions to mitigate the identified impacts of the Project (Public Resources Code section 21004). This is precisely what has occurred with respect to the Project. There has been a reduction of the intensity of the proposed use and the imposition of additional mitigation measures to a previously proposed project alternative for the development of the subject property.

The suggestion that the Project is a different separate project is not supported by any substantial evidence in the record. In fact, legal authority exists for the proposition

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[3] It is respectfully noted that a 299 unit alternative was also assessed with respect to the 318-unit Zone Change and Area Plan proposal in DEIR No. 561 as Alternative No. 8.

specifically emanating from a prior case handled by this Commission and the County where there was an increase in the intensity of the Project and that was not identified as a later separate project or a project which met the criteria under Public Resources Code section 21166 requiring the preparation of a supplemental or subsequent EIR.

In *Fund for Environmental Defense v. County of Orange*, 204 Cal.App.3d 1538 (1988) ("*Fund for Environmental Defense*") the Fourth District Court of Appeal affirmed an Orange County Superior Court decision which denied a petition for writ of mandate challenging the County's decision to issue a new used permit for the development of a medical research and laboratory complex of increased intensity from the previously approved on land surrounded by a wilderness park.

Fund for Environmental Defense involved the challenge of a County decision to issue a new use permit for development of a medical research facility on property surrounded by Casper Wilderness Park. The project had been previously approved in October of 1981 with a certification by the Board of Final EIR No. 234. The new use application was filed in 1986, and among other things, increased the size of the authorized development 30% from 308,000 to 415,000 square feet, authorized twenty-three buildings rather than twenty-two buildings, increased the number of parking spaces from 825 to 900 and the footprint of the project from 308,000 to 331,000 square feet. The development was also changed in that it decentralized the project by spreading out the buildings to be authorized by the new use permit. The changed project was analyzed by way of a lengthy addendum to County FEIR No. 234, which was submitted with the new use permit and approved both by this Commission and the Board. The Court of Appeal held that an addendum was the appropriate method of environmental review as the change in the circumstances surrounding the project did not raise new adverse effects that were not raised, analyzed and discussed in the original EIR. *Fund for Environmental Defense, supra*, 204 Cal.App.3d at 1550-1552. Thus, in *Fund for Environmental Defense*, an addendum was used and approved by the Court of Appeal (serving as precedent state-wide) where there was an increase of significant physical dimensions for the originally approved project. Here, in contrast, there is no increase in the physical dimensions of the originally approved project; rather, the Grading Application is the initial step in development of only a portion of the Final Tract. Here, the Project represents a decrease in intensity from that approved and analyzed in the Recorded Final Tract as implemented through grading as well as the 318-unit proposal advanced in DEIR No. 561.

The method of analysis for compliance with CEQA employed here is identical to that contained in *Fund for Environmental Defense* only that here there is no intensification of the project but rather a significant reduction in the intensity of development proposal.

The administrative construction of County Staff in proposing this legally authorized method of environmental analysis under CEQA is an administrative interpretation of the

statute -- CEQA and the implementing CEQA Guidelines -- that is entitled to great weight. *Benton v. Board of Supervisors*, 226 Cal.App.3d 1467, 1479 (1991). This administrative construction is in addition to the specific authority of *Fund for Environmental Defense* authorizing the precise environmental impact analysis procedure now before you for review.

As to the specific contention raised during the prior hearing that the resource agencies -- the Department of Fish and Game and the United States Fish and Wildlife Service - were not consulted concerning this Project, as noted during your previous Commission hearing, there is an extensive comment letter from the Resource Agencies concerns (FSEIR, Response to Comments, August 8, 1997 Communication of U.S. Wildlife Services and Department of Fish and Game). Additionally, we are informed that the Resource Agencies have again been contacted by County Staff.

Finally, on the notice and circulation contentions of the Opposition there is no requirement for circulation of an addendum under CEQA.[4]

The Opposition's contention that the prior FSEIR is grossly deficient and is being challenged in litigation is accurate only with respect to existing litigation.[5] However, that prior certified EIR is entitled to all presumptions concerning its validity until there is an affirmative order of the court indicating that it is in some manner deficient. Public Resources Code sections 21185; Evidence Code section 664.

The Opposition contention that there is an inadequate geotechnical analysis of that impact on the physical environment associated with the Project is contradicted by the content of the FSEIR and the Addendum. See, FSEIR, pp. 4-14, 4-42. Included in this analysis is an extensive drainage and mitigation monitoring plan as well as several mitigation conditions requiring further geotechnical reports in the grading permit process which would allow for the further imposition of conditions consistent with information which may be forthcoming in those reports.

In summary, if one were to accept the Opposition's analysis of noncompliance with CEQA of the Addendum before you, it is in essence arguing against the well-articulated and confirmed policy of CEQA to continually narrow or reduce the environmental impacts of a

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[4] See CEQA Guidelines section 15164 which provides that an addendum is not subject to the circulation requirements for other methods of environmental analysis.

[5] *See Vedanta Society of Southern California v. County of Orange, et al.*, Orange County Superior Court Case No. 791309.

project through project modification through use of project alternatives and to mitigate project effects on the environment.[6]

IV. CONCLUSION

A. The Project, is consistent with the Specific Plan as either: (1) an exemption for an environmentally preferable alternative for development of the property under CEQA and therefore, consistent with the legislative discretion of the County, may be included as a portion of the Specific Plan as an exception exactly as exists presently for the existing zoning and Recorded Tract Map; or, (2) as a project of incrementally and significantly reduced density and impact on the Project site which is consistent with the Specific Plan.

B. The Addendum method of Project environmental impact analysis complies with CEQA as it contains a refined analysis of a previous alternative for development of the subject property which, through modification by reduction in density and site coverage further reduces Project impacts on the environment, one of the declared legislative purposes of a CEQA analysis.

Very truly yours,

William D. Ross

WDR:mgl
cc: The Honorable Todd Spitzer, Supervisor
The Honorable Tom Wilson, Supervisor
Mr. Pike Oliver
Mr. Frank Elfend
Benjamin de Mayo, Deputy County Counsel
Raymond H. C. Brantley
Edmond Connor, Esq.

[6] California Supreme Court Justice Janice Brown has characterized similar conduct of continual compliance with the law by referencing the language "no good deed goes unpunished." *See, Alcaraz v. Vece*, 14 Cal.4th 1149, 1198 (1997).

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September 24, 1998

William D. Ross, Esq.
Law Offices of William D. Ross
520 South Grand Avenue, Suite 300
Los Angeles, CA 90071-2610

Re: *Vedanta Society of Southern California v. County of Orange, et al.*

Dear Mr. Ross:

To assist the parties in drafting (1) a settlement and release agreement and (2) a purchase and sale contract, I have enclosed an exhibit which shows the contours (highlighted in orange) of the 44-acre Development Area which the parties agreed on at the September 22 negotiating session. The balance of the Saddleback Meadows property shown on the exhibit would consist of the 178-acre Conservation Area which would be subject to the language of the Conservation Easement which you supplied to Mr. Winton on August 28, 1998. For your information, the enclosed exhibit is a reduced version of the plan prepared by Michael Madden Associates, dated July 13, 1998, which I displayed on the wall at last Tuesday's negotiating session.

We will need to discuss how we will go about describing the exact boundaries of the 44-acre Development Area and the 178-acre Conservation Area for purposes of the sales contract, the grant deed, the title insurance policies, the Conservation Easement, etc. If a survey needs to be performed to specifically map and describe the boundary lines of the 44-acre parcel and the 178-acre parcel, then we should address that matter immediately.

Also, since the 178-acre Conservation Area will consist of undisturbed open space, with the possible exception of certain passive recreational uses covering a portion thereof, we will want to pursue the suggestion which you raised at our

September 11 meeting regarding the processing of a General Plan Amendment to designate the Conservation Area exclusively as open space so that no annual sewer district assessment(s) would have to be paid on the 178-acre parcel. As we discussed on September 11, the County could process the GPA for the Conservation Area at the same time that it processed the entitlements for the 44-acre Development Area.

We can discuss the proposed GPA in greater detail when we meet tomorrow to finalize the terms of the purchase and sale agreement. You have indicated that it should be a fairly easy task to wrap up the final deal points and I am looking forward to reaching agreement on the final terms so that we can start drafting the necessary documents.

Very truly yours,

Edmond M. Connor

EMC:art

Enclosure

cc: Supervisor Todd Spitzer
Supervisor Tom Wilson
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Holly Veale
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September 23, 1998

Thomas B. Mathews, Director
Orange County Planning & Development
Services Department
300 North Flower Street, Room 321
Post Office Box 4048
Santa Ana, California 92702-4048

VIA OVERNITE EXPRESS

Re: Proposed Zone Change 98-3 and Area Plan 98-2 for 299-Unit Project -- Saddleback Meadows

Dear Tom:

As you witnessed at yesterday's negotiating session, the parties reached agreement on the contours of a 44-acre "Development Area" and a 178-acre "Conservation Area," as those terms are defined on page 3 of Mr. Ross's letter to me of July 17, 1998. The parties agreed that the boundaries of the 44-acre Development Area would be as depicted on the plan prepared by Michael Madden Associates, dated July 13, 1998, which I displayed on the wall at yesterday's meeting and highlighted in orange. I will endeavor to have reduced copies of that highlighted map prepared and circulated to all parties.

The parties also agreed at yesterday's meeting that the 178-acre Conservation Area would be subject to the terms of the Conservation Easement which Mr. Ross transmitted to Mr. Winton on August 28, 1998. As I noted at the meeting, the Conservation Easement provides that the 178-acre Conservation Area will, among other things, "be retained forever in its natural, undeveloped and unimproved, unspoiled scenic and open space condition." That language provides my clients with the assurance they need that the natural buffer zones surrounding their respective properties will remain the type of undisturbed open space which -- as I tried to explain at yesterday's meeting -- is so vital to their monastic way of life.

The one exception to the language of the Conservation Easement which was discussed at yesterday's meeting was that, unless the County agrees to take a portion of the 178-acre Conservation Area in fee and to annex it to O'Neill Park, the parties may have to

provide for some type of "low impact" recreational use for at least some portion of the 178-acre parcel in order to accommodate the conditions imposed by the State of California for the County to be able to access the $1.5 million of "Strawberry Field" funds which the County is planning on contributing towards the purchase price of the Conservation Area. Dan Winton and I spoke to Stella Oviedo and Ben de Mayo following yesterday's meeting and I think we should be able to work out language to accommodate the "recreational use" needs of the County. Also, since the parties have now agreed that the Development Area will be a total of 44 acres in size and that California Quartet will be free to develop as many single-family units as it would like within that Development Area, we have been assured by the representatives of California Quartet that all of the remaining "deal points" can easily be resolved.

Although the parties reached agreement on the two most important issues facing them: (1) the contours of the 44-acre Development Area and (2) the preservation of 178 acres of undisturbed open space in accordance with the terms of the Conservation Easement, the one troubling aspect about yesterday's meeting was that, despite the objections which Mr. Winton and I voiced to Mr. Elfend's suggestion that the County proceed with its processing of the 299-Unit Project, it was determined that the 299-Unit Project would continue to be processed as a "contingency plan" by the Planning Commission and the Board of Supervisors.

Of course, it was underscored at the meeting that my clients would preserve all of their rights to oppose the approval of the proposed Zone Change and Area Plan for the 299-Unit Project. As such, I am submitting this letter to register my clients' formal protest over the County's failure to comply with the very explicit procedural requirements of the Foothill/Trabuco Specific Plan (the "Specific Plan") with respect to the approval of discretionary permits, such as Area Plan 98-2.

Specifically, on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC, I object to the fact that, in violation of section III.G.2 of the Specific Plan, your Department has failed to forward California Quartet's application for approval of Zone Change 98-3 and Area Plan 98-2 to the Foothill/Trabuco Specific Plan Review Board (the "Review Board") for its review and recommendations prior to the Planning Commission's consideration of the application. As you know, the application must be sent to the Review Board for its consideration at least twenty-one (21) days prior to the time that the Planning Commission takes action on the application.

Considering the public controversy surrounding this project, there would appear to be no justification for not allowing the Review Board to hold a public meeting and to make appropriate recommendations to the Planning Commission regarding the proposed Zone Change and Area Plan before the Planning Commission takes any further

action on the 299-Unit Project. Indeed, more so in this case than in any other case, it would appear to be absolutely essential -- and clearly beneficial -- to obtain input from the Review Board regarding the 299-Unit Project because the proposed Zone Change and Area Plan are completely at odds with the provisions of the Specific Plan and cannot be approved unless an *exemption* from the Specific Plan is granted. Accordingly, before taking the drastic step of *exempting* the 299-Unit Project from compliance with the Specific Plan, the County should comply with its own ordinances and allow the Review Board to consider this highly-controversial project.

As you are aware, my clients have already objected to, among other things, (a) the County's failure to provide the requisite public notice regarding its decision to use FSEIR 566 as the EIR for the 299-Unit Project and (b) its refusal to prepare a new or subsequent EIR to address the new impacts, alternatives and mitigation measures associated with the 299-Unit Project. We would respectfully request, therefore, that the procedural improprieties which have already taken place not be further compounded by any unlawful acts which would prevent the Review Board from exercising its statutory right and duty to carefully weigh the pros and cons of the proposed Zone Change and Area Plan and to make recommendations to the Planning Commission regarding whether the 299-Unit Projects should be approved.

Very truly yours,

Edmond M. Connor

EMC/art

cc: Supervisor Todd Spitzer
Supervisor Tom Wilson
Paul Hernandez
Denis Bilodeau
Holly Veale
Frank McGill
Ray Brantley
Benjamin de Mayo, Esq.
Dan Winton, Esq.
William Ross, Esq.

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September 2, 1998

Mr. Raymond H.C. Brantley
Environmental & Project Planning
Services Division
County of Orange Planning & Development
Services Department
P.O. Box 4048
300 North Flower Street, Room 321
Santa Ana, CA 92702-4048

Re: *Saddleback Meadows: Zone Change 98-3/Area Plan 98-2*
Request for New EIR to Analyze Additional Impacts, Alternatives, and Mitigation Measures re 299-Unit Project

Dear Mr. Brantley:

Without waiving any of the objections set forth in my letter to the Planning Commission, dated August 25, 1998, including, but not limited to, the lack of adequate public notice under CEQA Guidelines section 15153(b)(2), but in the interest of ensuring that County staff, the Planning Commission, and responsible state and federal agencies, are afforded an opportunity to consider whether to require the preparation of a new EIR to analyze the additional impacts, alternatives, and mitigation measures associated with proposed Zone Change 98-3 and Area Plan 98-2 to permit development of a 299-unit single-family detached housing project (the "299-Unit Project") on the Saddleback Meadows property (the "Property"), please find enclosed the following:

(1) An 8-1/2x11" copy of a conceptual site plan (entitled and hereinafter referred to as the "65-Unit Alternative"), which was prepared by County staff on or about March 23, 1998, to show the proposed layout on the Property of 65 single-family detached dwelling units on approximately 8,000 sq. ft. estate-size lots, covering a development footprint of approximately 35 acres out of the 222 total acres which comprise the Property;

(2) A 3'x4' copy of a site plan (entitled and hereinafter referred to as the "127-Unit Alternative") which was prepared on or about July 13, 1998, by California Quartet's consultant, Michael Madden Associates, to show the proposed layout on the Property of 127 single-family detached dwelling units on approximately 5,000 to 6,000 sq. ft. lots, covering a development footprint of approximately 44 acres located in the same general vicinity as the 65-Unit Alternative; and

(3) An 18"x51" copy of a site plan (entitled and hereinafter referred to as the "120-Unit Alternative"), which was prepared on or about August 31, 1998, and was revised on September 2, 1998, by the consultant for Vedanta Society/St. Michael's Abbey, Warren W. Singleton, P.E., to show the proposed layout on the Property of 120 single-family detached dwelling units on basically the same development footprint covered by the 127-Unit Alternative, except for certain grading and fuel modification pull-backs for ridgeline protection and canyon preservation purposes. Also enclosed is a copy of a letter from Mr. Singleton, dated August 31, 1998, providing some explanatory notes regarding the 120-Unit Alternative.

Since the County is proposing to "use an EIR from an earlier project [i.e., FSEIR 566] as the EIR for a separate, later project [i.e., the 299-Unit Project]," then section 15153(b)(2)(D) provides that one of the "key issues" involving the use of the previously-certified EIR are "whether the EIR should be used for this project and whether there are any *additional, reasonable alternatives* for mitigation measures that should be considered as ways of avoiding or reducing the significant effects of the project." Of course, if additional reasonable alternatives exist which were not considered by the lead agency in certifying the EIR for the "earlier project," that earlier EIR should not be used as the environmental documentation for the "separate, later project."

Indeed, subsection (d) of section 15153 clearly states that "an EIR prepared for an earlier project shall *not* be used as the EIR for a later project if any of the conditions described in Section 15162 would require preparation of a subsequent or supplemental EIR." (Emphasis added.) Under CEQA Guidelines section 15162(a)(3)(D), a subsequent EIR must be prepared if "new information" shows that "alternatives which are considerably different from those analyzed in the previous EIR would *substantially reduce* one or more significant effects on the environment, but the project proponents decline to adopt the . . . alternative[s]." (Emphasis Added.)

Obviously, FSEIR 566 did not analyze the 65-Unit Alternative, the 120-Unit Alternative, or the 127-Unit Alternative. In differing degrees, each of these

Alternatives would *significantly* reduce the environmental impacts associated with the 299-unit project in that they would preserve virtually all of the oak woodlands, coastal sage scrub habitats, and vernal ponds on the Property, and would provide for an ample wildlife corridor over undisturbed terrain. Of course, only the 120-Unit Alternative would ensure that no grading or construction occurred in the biologically-sensitive canyon areas south of the east/west ridgeline on the Property which are to serve as part of the wildlife connectivity links between Whiting Ranch Wilderness Park and O'Neill Park.

The indisputable fact of the matter is that the 65-Unit, 120-Unit, and 127-Unit Alternatives would each avoid the substantial environmental devastation that would otherwise be wreaked upon the Property by the 299-Unit Project in connection with the mass grading of the proposed wildlife corridor, particularly in the lush canyons which presently link up with O'Neill Park. Accordingly, a new or subsequent EIR should be prepared to, among other things, analyze each of these three Alternatives from two different perspectives: (1) as stand-alone projects which would require California Quartet to dedicate all of the non-development areas of the Property (approximately 178 acres) as permanent open space and (2) projects which would involve California Quartet's sale of the same non-development acres to third parties, such as my clients and the County of Orange, for cash consideration.

As your Department has been made well aware, based on the extensive factual chronology presented by Mr. Frank Elfend at the August 25 session of the Planning Commission's hearing on the 299-Unit Project, and as a result of Mr. Elfend's earlier public presentations to the Board of Supervisors on June 23 and August 11, 1998, my clients and the County are currently involved in negotiations with California Quartet for the purchase of the approximately 178 acres which would be left undeveloped under the three Alternatives discussed above. Indeed, it is precisely because these negotiations are still ongoing that the 299-Unit Project has been dubbed a "Contingency Plan" which California Quartet intends to pursue in the event that the negotiations do not prove fruitful.

If, at the next-scheduled session of the Planning Commission's hearing on the 299-Unit Project -- which, by stipulated court order of August 31, 1998, has been continued to October 7, 1998 -- you determine that California Quartet, for whatever reason, has declined to proceed with any of the three Alternatives discussed above, I presume that your Department will order the preparation of a subsequent EIR under the terms of CEQA Guidelines section 15162(a)(3)(D). In the Staff Report, dated August 25, 1998, which the Environmental & Project Planning Services Division submitted to the Planning Commission in connection with its public hearing on the 299-Unit Project, it was stated that "none of the conditions described in Section 15162 calling for preparing a

Supplemental or Subsequent EIR have occurred. . . ." Of course, that statement would no longer be true if California Quartet proceeds to reject any of the Alternatives discussed above as of the next Planning Commission hearing scheduled for October 7, 1998. For example, if California Quartet were to refuse to accept the 120-Unit Alternative as of the October 7 hearing, then a subsequent EIR would be required to analyze this alternative under the provisions of section 15162(a)(3)(D) because no discussion of this alternative is to be found in FSEIR 566.

However, I do not believe it is necessary for your Department to wait until the October 7 Planning Commission hearing to make the determination that a *new* EIR should be prepared for the 299-Unit Project. As I explained at the August 25 hearing, my clients, the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC, do not necessarily agree with your Department's determination that section 15162 of the CEQA Guidelines applies in this case. The California courts have clearly held that CEQA section 21166, and its companion section 15162 of the Guidelines, only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project.

When the proposed new activity is a *separate* project – as it certainly is in this case – the "fair argument" test is the standard which applies in determining whether a new (as opposed to a subsequent or supplemental) EIR must be prepared to analyze the *separate* project. Under the "fair argument" test, a new EIR must be prepared whenever it can be fairly argued on the basis of substantial evidence that the proposed project may have a significant environmental impact.

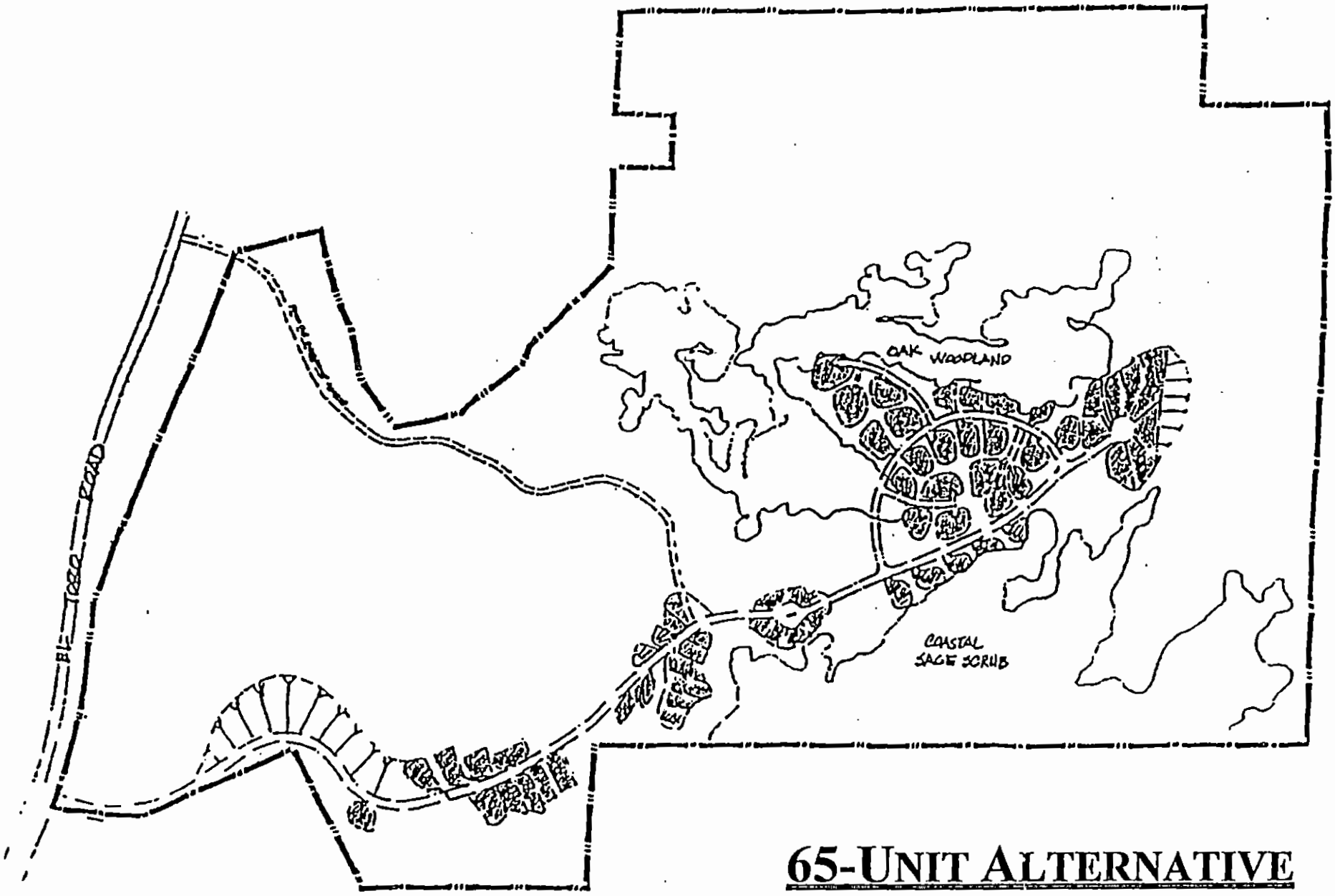
In light of the oral and written comments which were submitted by my firm, Royce Riggan, John Byerly, Warren Singleton, and Saundra Jacobs at the August 25 public hearing, there are numerous environmental impacts associated with the development of the 299-Unit Project which were not addressed in FSEIR 566 and which mandate the preparation of a new EIR under the "fair argument" test. Aside from the obvious impacts which will be caused by the fact that the 299-Unit Project pushes grading and development activities significantly closer to the Ramakrishna Monastery and raises unanswered questions regarding water runoff and drainage impacts that will be caused by the new houses to be built northeast of St. Michael's Abbey, there is no discussion in FSEIR 566 regarding (1) whether the wildlife corridor proposed for the 299-Unit Project would comport with the goals and objectives of the NCCP planning process and (2) whether it would preclude or in any way *jeopardize* finalization of the Southern Subregion component of the NCCP. Clearly, these impacts should be addressed in a new EIR and the public, as well as the appropriate federal and state wildlife agencies, should be allowed to comment on these important environmental matters.

In closing, my clients would request that the County immediately cease processing the 299-Unit Project unless and until the County complies with CEQA and sends out a Notice of Preparation for a new EIR to address the environmental impacts, reasonable project alternatives and feasible mitigation measures associated with the development of the 299-Unit Project.

Very truly yours,

Edmond M. Connor

cc Commissioner Richard Goacher
Commissioner Ben Nielsen
Commissioner Chuck McBurney
Commissioner Shirley Commons-Long
Commissioner Tom Moody
Tom Mathews
Ben de Mayo, Esq.
Frank McGill
Bill Tippets - CA Fish & Game
John Bradley - U.S. Fish & Wildlife
William D. Ross, Esq.



65-UNIT ALTERNATIVE

Prepared by County of Orange
Planning & Development Services Dept.
March 23, 1998

SADDLEBACK MEADOWS

WARREN W. SINGLETON, P.E.
CONSULTANT
32442 SPYGLASS COURT
SAN JUAN CAPISTRANO
CALIFORNIA 92675
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August 31,1998

Edmond M. Connor, Esq.
CONNOR, CULVER, BLAKE & GRIFFIN LLP
Attorneys At Law
2600 Michelson Drive
Suite 1450
Irvine, CA 92612

Re: Saddleback Meadows Property, Alternate (120) Lot Study

Dear Mr. Connor:

Transmitted with this letter are six blackline copies of the Alternate (120) Lot Study which was presented at last Thursday's meeting. The map is a compilation of the three work sketches presented last week.

The lots and streets shown in solid lines are the revised layout. The lots and streets which are not changed are outlined with dashed lines. The revised total lot count is one hundred and twenty (120) units.

Comments regarding the design proposals:

- The grades on the main entry street were held per the proposed California Quartet Study (CQ).
- In order to provide lots in the upper eastern portion of the site grading, remedial grading and fuel modification were allowed to occur in the one hundred (100) foot setback zone which Vedanta originally proposed to be north of the ridgeline.
- The ridgeline has generally been protected in the upper portion of the site, from the second Cul-de Sac south of the spine road to the eastern limits. The moving of the spine road and lots north away from the ridgeline provides for the one hundred and fifty foot Fire Fuel Modification area and maintains the ridgeline. Although the cut slope is at the ridgeline or slightly beyond, the road or lots will likely not require remedial grading beyond the ridge and down into the bottom of the first or second canyon as all of the previous proposals have done.

- The first long Cul-de-sac south of the spine road impacts the lower ridgeline and some Coastal Sage Scrub. The Hidden Hill development south of this area has already disturbed a portion of this Coastal Sage area. This was not changed from the CQ study.
- The addition of the twelve lots on the lower portion of the spine road should be of benefit geotechnically. The proposed spine road was being cut deeply into the hill, up to ninety (90) feet. This removal of material should benefit the stability of the area. The addition of lots north of the spine road removes additional material and contours the remaining hill as previously proposed. If additional unloading is desirable the hill could be layed back further.
- The extension of the second Cul-de-Sac north of the spine road, adding eight (8) lots, was sloped down away from the spine road to minimize the fill depth and the limits of grading. This should not trigger extensive additional remedial grading since the same geologic features are involved.
- The second Cul-de-Sac south of the spine road was pulled back to accommodate Fire Fuel Modification. The lot count was reduced from six (6) to three (3). The ridgeline is being lowered in this area. The proposed grading creates a cut slope facing north and west away from the Monastery. The slope becomes small at the end of the Cul-de-Sac allowing some view of the homes on this street. The grading should not impact the Coastal Sage Scrub which is down slope to the south and east.

The California Quartet (127) Study and the Vedanta Alternate (120) Study are just that, studies. Once the features of the original and alternate studies are agreed upon a precise engineered site plan should be prepared. The fine tuning of horizontal and vertical alignments and lot layouts may result in the gaining of two or three lots. This precise design would be the next step and be used for a Tentative Map.

Please call me at (949) 240-5808 if you have any questions or require additional information.

Very truly yours,

Warren W. Singleton, P.E.

Attachments

ATTACHMENT J

COMMISSIONER MOODY'S MEMO

October 7, 1998

To: Orange County Planning Commission

From: Commissioner Tom Moody

Subject: Bridlewood Zone Change/Area Plan

As Commissioners we have a responsibility to permit private property owners reasonable use of their property within the law (G.P. Zoning). We don't have an obligation to guarantee an applicant profits at the expense of the scenic resources a specific plan was designed to protect.

In making our decision on this project it is not appropriate for us to consider this particular 299 unit plan preferred by the applicant in comparison to the 705 mobile home unit map on the property. Nor is it appropriate to compare it with "Portola Hills." This is what the applicant has asked us to do and incredibly staff supports this approach, as well. An entirely new project has been proposed deviating from the Saddleback Meadows Project. It is appropriate only to consider the project in the context of the Specific Plan of which it is a part.

The Foothill-Trabuco Specific Plan never envisioned the aggressive grading required on this site to build 299 units. The plan's goals and objectives (I-5-I-7) emphasize "resource preservation," "rural character", " provide large lot development in resource constrained areas", "allowing development on hillsides and minor ridge lines provided grading for the structures and building pads is limited."

The staff report indicates that the 299 unit plan is consistent in terms of conventional grading because the plan averages 7,023 cubic yards per unit. (Below the 9,000 limit) The only reason this standard is met is because the divisor (the number of units) is such a high number (299). Using the same logic the project would be even more consistent with the 400 units or the 705.

Incredibly, the staff report also indicates that dedication of 71% of the project in open space meets the requirement for 66% open space dedication. Most of this open space is distributed open space as a result of the massive grading. Page III-52 describes the open space as "permanent natural open space," and specifically prohibits grading in these open space areas.

The objective of the plan includes preservation of natural rural features by limiting both development and grading. This clearly has not been accomplished in the 299 unit plan.

9) The Planning Commission may approve Alternative Grading Standards provided specific findings are made by the Commission pursuant to Section III.G.2.d.

i. Each individual project proposal (excluding building sites of one (1) acre or less which were existing at the time of Specific Plan adoption) shall preserve a minimum of sixty-six (66) percent of the site in permanent, natural open space which shall be offered for dedication in fee or within preservation easements to the County of Orange or its designee in a manner meeting the approval of the Manager, EMA/Harbors, Beaches and Parks/Program Planning Division. No grading, structures (including stables and corrals), walls (except for river rock walls not to exceed three feet), fences (except open fencing) or commercial agricultural activities shall be permitted in the natural open space area. Fuel modification shall be permitted within said open space areas if required by the Fire Chief in conjunction with an approved Fuel Modification Plan; however, the development should be designed so that fuel modification impacts to the open space areas are minimized.

j. Landscaping and fuel modification per the Landscaping and Fuel Modification Regulations (Section III.E) and the Development and Design Guidelines (Section IV.C.).

k. Lighting. All exterior lighting shall be strictly limited to those locations where it is required for safety reasons. All lighting shall be designed so that direct light rays shall be confined to the premises and so that light sources are shielded from off-site view.

l. Off-street parking. Per Zoning Code section 7-9-145, except as follows:

Two covered parking spaces shall be required for each dwelling. An additional covered or uncovered parking space shall be provided within 200 feet of the dwelling; however, on-street parking shall not be utilized for this additional space.

m. Private street standards. Private streets shall be established in accordance with the following:

1) Streets where on-street parking is prohibited: Minimum paved width twenty-four (24) feet.

2) Streets where on-street parking will be limited to one side only: Minimum paved width twenty-eight (28) feet.

3) Streets with on-street parking permitted on both sides: Minimum paved width thirty-six (36) feet.

topographic features." [Also, see related objectives under "Resource Preservation" and "Equestrian/Recreational Opportunities," below.]

d) Minimize the intrusion of development and landform alteration within the viewsheds of Live Oak/Trabuco Canyon Road and Santiago Canyon Road without precluding development which blends into the natural terrain and does not require excessive landform alteration.

2) Resource Preservation:

a) Develop a Resources Overlay Component of the Specific Plan to ensure the preservation of significant landform, biological and scenic resources.

b) Preserve significant landform features, including major ridgelines and rock outcroppings, while allowing limited development on minor ridgelines provided the development blends into the natural terrain and does not require excessive landform alteration.

c) Preserve significant biological resources, including oak woodlands, riparian areas and wildlife mobility corridors.

d) Preserve the oak tree canopy along Live Oak/Trabuco Canyon Road.

e) Preserve the Arroyo Trabuco/Trabuco Creek as permanent open space to ensure the preservation of the wildlife mobility corridor present in the creek and ensure consistency with the Resources Element of the County's General Plan which designates the creek as an Open Space, Conservation and Scenic Corridor. [Also, see related objectives under "Equestrian/Recreational Opportunities," below.]

3) Development Potential:

a) Provide some development potential (minimum of one dwelling unit) on each existing building site except for extreme situations where public health and safety concerns would preclude development of a site. For example, some building sites may be un-developable due to: 1) the site's location entirely within a floodplain where flood hazards cannot be adequately mitigated; 2) the lack of suitable legal access; 3) dependence on a septic system on a site which cannot percolate; or 4) severe topographic or geotechnical constraints. No building sites will be specifically designated as un-developable by the Specific Plan Land Use Plan and Land Use District Regulations; however, the ability of each site to be developed will be

c. Plano Trabuco Planning Area

The Plano Trabuco Planning Area is located south of Trabuco Creek adjacent to existing development in the Rancho Santa Margarita and Robinson Ranch Planned Communities. The planning area is predominantly level in terrain, with minimal native vegetation due to extensive agricultural activities. Because of its proximity to adjacent development and infrastructure and its relatively flat terrain, it is more readily developable than the other two planning areas.

C. GOALS AND OBJECTIVES

1.0 Specific Plan Goals

a. Rural Character/Forest Buffer: To preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest.

b. Resource Preservation: To preserve significant landform, biological and scenic resources.

c. Development Potential: To ensure at least some development potential on each individual property.

d. Circulation/Infrastructure: To provide for a circulation system and other infrastructure adequate to serve the ultimate level of development permitted.

e. Equestrian/Recreational Opportunities: To provide equestrian and other recreational opportunities.

2.0 Specific Plan Objectives

The objectives listed below are intended to achieve the Specific Plan Goals. The objectives applicable to the entire Specific Plan Area are listed first, followed by objectives which are specific to the three planning areas.

a. Area-Wide Objectives

1) Rural Character/Forest Buffer:

a) Utilize architectural/design guidelines to establish rural standards.

b) Provide a buffer to the Cleveland National Forest by limiting development in areas adjacent to the forest.

c) Preserve the Arroyo Trabuco/Trabuco Creek as permanent open space to implement the buffer zone policy of the Growth Management Plan Element of the General Plan which requires the "physical separation of major communities by means of open space areas/corridors or on natural features such as creeks or prominent

ATTACHMENT K

DRAFT BOARD OF SUPERVISORS RESOLUTION
RE: AP98-2

RESOLUTION OF THE BOARD OF SUPERVISORS OF ORANGE COUNTY, CALIFORNIA

On motion of Supervisor _____, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Planning Commission conducted public hearings on Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the area known as Saddleback Meadows (aka Bridlewood); and

WHEREAS, the Planning Commission has considered EIR Addendum PA980103 and found that it satisfies the requirements of CEQA for this project.

WHEREAS, the Planning Commission approved AP98-2 subject to 32 conditions and recommended that this Board approve ZC98-3; and

WHEREAS, the Planning Commission's action on AP98-2 was appealed to this Board; and

WHEREAS, this Board has conducted a noticed public hearing on ZC98-3 and AP98-2; and

WHEREAS, this Board has reviewed and considered the action of the Foothill/Trabuco Specific Plan Review Board; and

WHEREAS, this Board has considered EIR Addendum PA980103 and, by separate Resolution, found that it satisfies the requirements of CEQA for this project; and

WHEREAS, this Board, by separate Ordinance, has approved ZC98-3.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

1. AP98-2 is consistent with the objectives, policies, general land uses and programs specified by the General Plan.
2. AP98-2 is in substantial compliance with the Foothill/Trabuco Specific Plan.
3. AP98-2 is consistent with the provisions of the Zoning Code.
4. The location, size, design and operating characteristics of AP98-2, as conditioned, will not create conditions or situations that may be incompatible with other permitted uses in the vicinity.
5. AP98-2 will not result in conditions or circumstances contrary to the public health and safety and the general welfare.
6. AP98-2, as conditioned, satisfies the requirements of section 7-9-711 regarding public facilities.
7. The RE (PD), "Residential Estates (Planned Development)," site development standards regarding building site areas, building site coverage, area per unit, and number of dwelling units have been satisfied by AP98-2.

8. Condition of Approval No. 27 requires a use permit be approved which is consistent with AP98-2. A use permit may be approved for the entire project site or portions of the project

9. AP98-2, as conditioned, will provide significant public benefits in the form of major recreational trails, an important wildlife corridor for the Natural Communities Conservation Program and a large addition to O'Neill Regional Park.

BE IT FURTHER RESOLVED that this Board upholds the action of the Planning Commission and approves AP98-2 subject to the following conditions:

1. CP NA NA TIME LIMIT
Area Plan 98-2 is valid for a period of 48 months beginning with the effective date for ZC98-3. If the preliminary grading permit is not issued within such period of time, this approval shall be terminated and Area Plan 98-2 shall thereafter be null and void.

2. CP CP NA REVOCATION
Failure to abide by and faithfully comply with any and all conditions attached to this approving action shall constitute grounds for the revocation of said action by the Orange County Planning Commission.

3. CP CP G TENTATIVE TRACT MAP
Prior to the issuance of any grading permits, Tentative Tract Map 15230 shall be approved by the Subdivision Committee after a public hearing. Said tentative tract map must be found consistent with Area Plan 98-2.

4. CP CP G GRADING REVIEW
Prior to the issuance of any grading permits, the Manager, Current Planning Services, shall determine that the grading plan is consistent with Area Plan 98-2 and the approved tree preservation plan.

5. HP HP G TREE PRESERVATION PLAN
Prior to the issuance of any preliminary grading permit, a tree preservation plan shall be prepared which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and on-half feet above ground level). The tree preservation plan shall be consistent with the Area Plan 98-2 and the Foothill/Trabuco Specific Plan and approved by the Manager, Harbors Beaches, and Parks. The plan shall be signed and certified by a biologist or arborist.

6. EP SG/EP G FED ENDGD SPEC ACT
Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Services that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning.

7. SG SG G GEOLOGY RPT
Prior to the issuance of any grading permits, the applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall include the information and be in a form as required by the Grading Manual.

8. SG SG G DRAINAGE
Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, provide:

A. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

B Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

9. SG SG G CROSS-LOT DRAINAGE
Prior to the issuance of any grading permits, and if determined necessary by the Manager, Subdivision and Grading, a letter of consent, in a form approved by the Manager, Subdivision and Grading, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to the issuance of any grading permit. Acceptance of cross-lot drainage on lots within the tract map boundaries shall be noted on the recorded map.

10. SG SG G VECTOR CONTROL
Prior to the issuance of any preliminary grading permits, the subdivider shall provide evidence to the Manager, Subdivision and Grading, that the Vector Control District has surveyed the site to determine if vector control measures are necessary. If warranted, the developer shall conduct such measures in a manner meeting the approval of the Manager, Subdivision and Grading.

11. HP HP G ARCHAEO OBS & SALVAGE
Prior to the issuance of any preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified archeologist has been retained, shall be present al the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeologist shall submit a follow-up report to the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, an analysis of any artifacts fond and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, Harbors, Beaches & Parks.

12. HP HP G PALEO OBS & SALVAGE
Prior to the issuance of an preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for

paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, Harbors, Beaches & Parks.

13. SG SG G GRADING NOTES

Prior to the issuance of any grading permits, the following guidelines shall be included in the "Notes Section" of the grading plans meeting the approval of the Manager, Subdivision and Grading.

A. During all grading and construction operations, all oak trees on the site, located adjacent to the approved limits of grading and identified in an approved Tree Management/Preservation Plan as trees to be preserved, shall be adequately fenced and protected from encroachment by grading and construction equipment. Grading, placement of fill, and storage of building materials and heavy equipment, shall be prohibited within the dripline of any tree identified for preservation as part of an approved Tree Management/Preservation Plan.

B. If required, retaining walls shall be used to protect the existing grades of oaks identified for preservation from surrounding cut and fill. However, these should not alter drainage from around the trees.

C. No type of surface, whether pervious or impervious, shall be placed within a six-foot radius of oak tree trunks. Where surfacing cannot be avoided, alternative types of paving should be utilized, such as gravel or porous brick with sand joints.

D. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

E. Natural drainage courses and natural grades outside the remedial grading impact area in proximity to and providing seasonal irrigation to oak trees shall not be altered.

F. In proximity to oak trees, only one trench should be dug to accommodate all utility lines. Where necessary, the impacted trees should be carefully pruned by an arborist in proportion to the total amount of root zone lost.

14. BP BP G CONSTRUCTION NOISE

A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits, that:

1. All construction vehicles or equipment, fixed or mobile, operated within 1000' of a dwelling shall be equipped with properly operating and maintained mufflers.

2. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

3. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the grading plans, will be considered as adequate evidence of compliance with this condition.

15. CP SG G PERFORMANCE BOND
Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, Subdivision and Grading.

16. HP HP G RE-ROUTING
Prior to the issuance of a preliminary grading permit, which includes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted by the applicant and approved by the Manager, Harbors, Beaches and Parks.

17. CP SG R
Prior to the recordation of any subdivision map which creates residential building sites, the preliminary grading activity for all of Area Plan 98-2 shall be completed to the satisfaction of the Manager, Subdivision and Grading.

18. HP HP R OPEN SPACE
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate to the County of Orange a minimum of seventy (70) percent of the project site as open space in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. The open space dedication shall be for: (1) regional park, and (2) restricted scenic preservation purposes. The Manager, Harbors, Beaches & Parks shall determine the final boundary between these open space acres.

Within the regional park area, the Manager, Harbors, Beaches & Parks shall determine what improvements, if any, shall be made. If determined appropriate by the Manager, Harbors, Beaches & Parks, the applicant shall be required to provide those improvements as shown and discussed in the Area Plan 09-2.

Within the restricted scenic preservation easement area, after dedication, no grading, structures (including stables and corrals), or commercial agriculture activities shall be permitted in this area. River rock walls not to exceed three feet, approved Loffel walls, and open fencing shall be permitted. An entry gate and identification sign shall be permitted subject to approval of a site development or use permit for such use. Future fuel modification, landscaping, and tree preservation shall be permitted subject to prior approvals granted by the Planning Commission.

19. HP HP R RECREATIONAL TRAILS
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate a recreation easement for those bikeways and regional riding and hiking trails shown and discussed in Area Plan 98-2 in a manner meeting the approval of the Manager,

Harbors, Beaches & Parks. Also, the applicant shall design the necessary improvements and enter into an agreement, accompanied by financial security, with the County of Orange to install the necessary improvements in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

20. HP HP R CLEANING UP
Prior to the recordation of any subdivision map that creates residential building sites, the existing old ranch house and all abandoned automobiles shall be removed in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

21. HP HP R LANDSCAPE PLAN
Prior to the recordation of any subdivision map which creates residential building sites, the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Manager, Harbors, Beaches & Parks. Said plan shall take into account the County Standard Plans for landscaped areas, adopted plant palette guides, applicable scenic and Foothill Trabuco Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

22. EP EP FIRE STATION FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

23. EP EP LIBRARY FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

24. EP EP SHERIFF STATION
Prior to the recordation of an subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning.

25. EC F F FUEL MODIFICATION
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall demonstrate to the satisfaction of the Fire Chief that necessary fuel modification in off-site locations will be maintained in perpetuity.

26. EP EP R AFFORDABLE HOUSING
Prior to the recordation of a subdivision map that creates residential building sites, the landowner shall provide a cash contribution to the County's General Plan Trust Fund. The specific methodology and amount of said contribution shall be subject to the approval of the Manager, Environmental & Project Planning. These funds shall be directed to support the County's overall efforts toward providing affordable housing, including but not limited to, future updates of the Orange County Housing Element and related programs for maintaining existing affordable housing and providing new affordable housing opportunities.

27. CP CP B USE PERMIT
Prior to the issuance of any building permits for residential structures, the applicant shall submit a use permit application for review by the Foothill/Trabuco Review Board and approval by the Planning Commission after a public hearing. Said use permit shall include, but not be limited to, the location of all structures and uses, precise landscaping plan, precise fuel modification plan and program, grading plan, and architectural plans for all structures. Said use permit must be found consistent with Area Plan 98-2.

28. F F GBU FUEL MOD PLAN
Prior to the approval of the use permit to construct residential structures, the applicant shall obtain the Fire Chief's approval, in consultation with the Manager, Environmental and Project Planning, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of combustible vegetation and the planting of drought tolerant fire resistant plants. However, only the minimum necessary fuel modification shall be approved by the Fire Chief. All practical mitigation measures to minimize the need for fuel modification shall be recommended by the Fire Chief such as use of non-combustible construction materials, interior fire sprinkler system and double-glassed windows. The required fuel modification shall be performed in a manner to minimize impacts on the natural environment as much as possible. The fuel modification plan shall then become effective after the Planning Commission approves the use permit.

29. SG SG B ROAD REE PROG
Prior to the issuance of building permits for residential construction, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, Subdivision and Grading.

A. Foothill Circulation Phasing Program
B. Foothill/Eastern Transportation Corridor
C. El Toro Road
D. Santiago Canyon Road

30. HP HP R LOCAL PARK FEES
Prior to the issuance of building permits for residential construction, the applicant shall pay in-lieu fees per the Local Park Code Requirements.

31. FTSP CP B SCHOOL FEES
Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the

Manager, Current Planning, that he has reached a mitigation agreement with the District for the subject project proposal.

32. CP NA NA INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may be required by a court to pay as a result of such action. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

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Attachment L

Analysis

Of

Environmental/CEQA

Issues

ANALYSIS OF ENVIRONMENTAL/CEQA ISSUES

I. CONCLUSIONS

The Planning & Development Services Department (PDSD) is the Agency designated by the County of Orange (Lead Agency) to discharge the responsibilities of the California Environmental Quality Act. As indicated by the August 25 and October 7, 1998 Environmental & Project Planning Services Division Reports to the Planning Commission, the Agency places a high priority on meeting its responsibilities in a thorough and comprehensive manner. Regarding the Saddleback Meadows Contingency Plan, PDSD has been and remains in full control of the CEQA review process and the preparation of its environmental documents, including supplementing the requirements of the CEQA Statutes and Guidelines with its own set of rigorous standards and requirements.

Based upon Addendum PA980103, the Staff Reports and presentations, public comments and issues raised at the Planning Commission hearings, the Planning & Development Services Department has determined that the Addendum, combined with Certified Final Subsequent EIR 566, are the appropriate environmental documentation for the proposed Contingency Plan, Zone Change ZC98-3 and AP98-2.

This document summarizes key issues identified during the CEQA process for the Contingency Plan. It is organized as follows:

- A summary of the CEQA background and conclusions is provided;
- A summary of the Contingency Plan's impacts are provided; and
- A summary of key issues raised at the first Planning Commission hearing on the Contingency Plan is provided.

II. CEQA BACKGROUND

A. PROJECT BACKGROUND

During the past four (4) years, the Saddleback Meadows site has received detailed environmental reviews for planning compliance with CEQA on two separate previous occasions:

- Proposed Final EIR 561 was prepared in 1995-96 for a 318-unit, conventional SFD development on lots averaging 5000 sq. ft. The application, which included a Zone Change, Area Plan and Tentative Tract Map, was not not approved by the Board of Supervisors; and
- Certified Final Subsequent EIR 566 was prepared in conjunction with Grading Permit Application GA960048 for recorded Tract 10692 for a 705-unit manufactured housing subdivison. This EIR was certified by the Planning Commission on December 3, 1997 and upon appeal, the EIR certification was upheld by the Orange County Board of Supervisors on January 27, 1998.

The currently proposed Contingency Plan for 299 residential units was examined previously for this site in the form of alternatives contained in Proposed Final EIR 561 and Certified Subsequent EIR 566, although with slightly differing site plans. The alternatives contained in the Appendix of the Addendum are Alternative 4 from Certified SEIR 566 and Alternatives 8 and 9 from Proposed FEIR 561, which were previously evaluated. The Contingency Plan results from an extended evaluation by the applicant to address environmental concerns previously analyzed by reconfiguring the proposed project density, land use and location.

B. PROJECT DEFINED

Under Section 15002(d) of CEQA Guidelines, a project is defined as an activity subject to CEQA. Further, the term project refers to an activity which is proposed that has a potential for resulting in a physical change in the environment either directly or ultimately. Section 15377 defines a private project as a project which will be carried out by a person other than a governmental agency, but the project will need a discretionary approval from one or more governmental agencies.

The proposed development is regarded as a private project, because of the discretionary approvals required to implement it. These include a Planning Application/ Zone Change, Area Plan and Tentative Tract map.

C. STANDARD OF REVIEW

The CEQA Guidelines provide guidance for use of previously certified EIRs with a subsequent activity. Specifically, where a previous EIR has been certified for a larger project, the later activity or project is examined in light of the previously certified EIR. The Guidelines also provide that a Tiered EIR may be incorporated into an Addendum to an EIR to address significant and cumulative program impacts analyzed and considered in the Tiered EIR (Section 15164).

1. **Explanation of a Subsequent EIR:** Guidelines Section 15162 specify where an EIR has been previously prepared, an EIR need not be prepared for subsequent actions unless any of the following conditions prevail:
   - Subsequent changes are proposed in the project which will require important revisions of the previous EIR due to the involvement of new significant environmental impacts not considered in the previous EIR;
   - Substantial changes occur with respect to circumstances under which the project is undertaken, or
   - New information of substantial importance to the project becomes available.
2. **Explanation of an Addendum EIR:** According to CEQA Guidelines Section 15164 (a), the Lead Agency shall prepare an Addendum to an EIR if the following prevail:
   - None of the conditions described in Section 15162 calling for the preparation of a Subsequent EIR have occurred;

- Only minor technical changes or additions are necessary to make the EIR under consideration adequate under CEQA;
- The changes made by the Addendum do not raise important new issues about the significant effects on the environment.

D. DECISION TO PREPARE AN ADDENDUM

None of the conditions described in Section 15162 calling for preparing a Supplemental or Subsequent EIR have occurred, and changes related to the proposed project are of a minor nature. The Planning & Development Services Department has determined that only minor technical changes to FEIR 566 are necessary in order to properly address the current Project, that FEIR 566 adequately analyzes all of the major impacts of the proposed project, that no major changes are proposed with respect to the circumstances surrounding this project, and that no new information of significance has become available that would substantially affect the validity of FEIR 566. Therefore, an Addendum is appropriate for the proposed project in order to provide project specific analysis, to provide clarification and address minor changes to FEIR 566.

E. CONSIDERATIONS IN INITIAL STUDY

In accordance with Guidelines Section 15063, the Initial Study was completed to determine the possible impacts of the proposed Contingency Plan. Following is a listing of key documents, County Divisions, interest groups, and Resource Agencies utilized in the overall review process for Saddleback Meadows and incorporated into the Initial Study review process.

1. **Documents** - Certified Final Subsequent EIR 566, certified by the Orange County Planning Commission for a 705-unit manufactured single-family residential project for the same site; Proposed Final EIR 561, prepared for a 318-unit conventional single-family residential project for the same site; Foothill/Trabuco Specific Plan FEIR 531 and Specific Plan Land Use Regulations; Site Plan, Tentative Tract Maps and Plot Plans for the proposed project;
2. **Comments** - Input received from the public and interested parties on the two previous projects on the subject site, including: Rural Canyon Residents Association; The Vedanta Society; Foothill/Trabuco Specific Plan Review Board; St. Michael's Abbey; Portola Hills HOA I and Portola Hills HOA II; Hidden Ridge HOA; Canyon View HOA; ETI Corral 357 Orange County Horsemen Assoc.; Serrano Creek Ranch Equestrian Center; the Gabrieleno Indians; Sierra Club; and National Audubon Society
3. **Comments** - Input received from the Public Resources Agencies on the two previous projects proposed on the subject site, including: US Fish and Wildlife Service; CA Department of Fish & Game; and US Army Corps of Engineers.
4. **Comments** - Technical input from divisions of the County including: PDS: Subdivision & Grading Services Division, - Geotechnical & Grading Plan Check Section; NPDES Section; and Traffic Section; Current Planning Services Division -

Orange County Natural Communities Conservation Program; Environmental & Project Planning Services Division - Advance Planning and Transportation Planning Sections; Building Permits Services Division - Acoustics Section; Public Facilities & Resources Department: HBP Division; Environmental Resources Division; Traffic Engineering Division; Orange County Fire Authority;

5. **Field checks** of proposed project site and the project vicinity; and
6. CEQA Checklist - A detailed analysis of the CEQA Environmental Checklist.

III. PROPOSED CONTINGENCY PLAN'S ENVIRONMENTAL IMPACTS

Following is a summary of the key elements of the impact analysis in the Addendum and Staff Reports. The Addendum discusses each of the environmental analysis checklist categories as they relate to the proposed 299 unit project in comparison with the approved 705 unit project.

A LAND USE COMPATIBILITY

The land use compatibility impacts associated with the approved 705 unit project are significant, as demonstrated in Certified SEIR 566 and reiterated in the Addendum. This is due to the approved project's high number of units and attending intensity-related impacts. In comparison, the proposed project will result in reduced land use compatibility impacts, largely a result of the substantially fewer number of units. Additionally, the proposed project provides additional buffering through site design utilizing landform berming and contour grading in concert with landscaping to further screen and filter views of the development edges. A major design feature of the proposed project for 299 units is the single loaded primary spine road (residential development south of the spine road and landform grading to the north), which is intended to screen off-site views of the on-site development area. The proposed project also features a cluster design concept, providing room for a wildlife movement corridor system and effectively providing visual relief through the apportionment of the development into three residential enclaves. Additional single-family residential dwellings were located within the north central portion of the project site in the approved project, as compared to the proposed project, which has undisturbed open space in the same area.

B. GRADING

Due to its larger scale and greater intensity, implementation of the approved project for 705 units would require 2.6 million cubic yards of conventional grading to achieve planned elevations and profiles and associated access roadways and 8.9 million cubic yards of remedial grading to stabilize the proposed slopes through the creation of buttresses, shear keys, and stabilization fills for a total grading quantity of 11.5 million cubic yards. In comparison, implementation of the proposed project for 299 units would require approximately 2.1 million cubic yards of conventional grading and 6.8 million cubic yards of remedial grading for a total grading quantity of 8.9 million cubic

yards. Accordingly, the required grading for the proposed project would require 2.6 million cubic yards less than that required to implement the proposed project. Grading quantities decrease under the Contingency Plan as a result of the reduced earthwork required to create the landform grading along the visually prominent project edges.

C. BIOLOGICAL RESOURCES

The Biological Resources section of the Addendum discusses the biological resource impacts associated with the proposed 299 unit project in comparison with the approved 705 unit project. A biological issues analysis (Helix, 2/20/98) was prepared for the proposed 299 unit project and is included in the Addendum as Appendix G. The results of the analysis are presented under the four categories of corridor analysis, vegetation impacts, oak tree impacts, and sensitive species impacts, paralleling the discussion in Certified SEIR 566, and are also discussed in the body of the Addendum.

D. WILDLIFE CORRIDOR

Implementation of the approved 705 unit project would directly impact wildlife movement through the project site, as it contains no design features which seek to facilitate wildlife movement. It cannot be assumed that wildlife would be able to move through the project site as currently designed. The approved project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve, due to restricted wildlife movement.

In comparison, the proposed 299 unit project features a 400 foot wide wildlife corridor which will increase the viability of wildlife connectivity through Saddleback Meadows. The corridor, as planned in the proposed project, is expected to be wide enough for wildlife movement. Topography on either side of the corridor is conducive to wildlife movement because it coincides with an area of natural canyon topography. The revegetation within the corridor is expected to provide the necessary cover for wildlife to add to the corridor's viability. The 50-foot wide spine road crossing the corridor is not expected to inhibit wildlife movement due to the low traffic levels anticipated for this road. The wildlife corridor is expected to function adequately.

E. NCCP

Impacts to coastal sage scrub resulting from implementation of the proposed 299 unit project would be similar to those for the approved 705 unit project. Under the approved project, 50.3 acres of coastal sage scrub would be impacted, while 45.8 acres will be impacted under the proposed project. In accordance with the NCCP, the loss of 45.8 acres of Venturan-Diegan transitional coastal sage scrub due to project implementation is less than the allowable five percent loss of the total coastal sage scrub in the subregion. Accordingly, the proposed project is in compliance with the NCCP. Mitigation measures related to accounting and preservation of coastal sage scrub and compliance with the NCCP through the securing of appropriate Resource Agency permits have been carried forward in the Addendum from Certified Final SEIR 566.

F. RIPARIAN RESOURCES

The loss of riparian resources associated with the proposed project, which include 0.6 acres of ephemeral pond (all but two of the ponds), 0.21 acres of southern sycamore riparian woodland, and 2.01 acres of mule fat scrub, are similar to, although slightly less than, those resulting from implementation of the approved 705 unit project. Mitigation measures from Certified SEIR 566, which require the securing of appropriate permits from the Resource Agencies for the protection of riparian resources, have been carried forward in the Addendum.

G. COAST LIVE OAK WOODLAND

Implementation of the approve project would result in the loss of 14.0 acres (284 individual trees) of the total 14.5 acres (298 individual trees) of coast live oak woodland on the project site. However, the proposed 299 unit project would impact only 5.7 acres (175 individual trees). A total of 123 oak trees (approximately 41 percent) occur outside the remedial grading zone and are considered preserved. Mitigation measures related to preservation and enhancement of the impacted coast live oak woodland habitat have been carried forward from Certified SEIR 566 to the Addendum.

H. RIVERSIDE FAIRY SHRIMP

As stated under Riparian Resources above, all but two of the ephemeral ponds, habitat supporting the Riverside fairy shrimp, will be directly impacted by both the approved and the proposed projects. Mitigation measures relating to the relocation and establishment of a mitigation plan designed to mitigate impacts to Riverside fairy shrimp/pond habitat have been carried forward from Certified SEIR 566 to the Addendum.

I. COASTAL CALIFORNIA GNATCATCHER

Previous field surveys have determined that on-site coastal sage scrub habitat is not occupied by coastal California gnatcatchers, although current surveys have not been completed to USFWS presence/absence protocol. As such, on-site coastal sage scrub habitats must be considered occupied by coastal California gnatcatcher until proven otherwise. Mitigation measures relating to conducting adequate studies to determine the presence of the coastal California gnatcatcher have been carried forward from Certified SEIR 566 to the Addendum.

J. AESTHETICS

As with the approved project, the proposed project for 299 units would substantially alter the existing topography and visual character of the project site. The landform/contour grading, berming, and wildlife corridor system included in the proposed project would help to break up the long linear massing of housing which would result with implementation of the approved 705 unit project and create areas of housing separated by 150 to 500 foot stretches of open space.

Visual impacts to St. Michael's Abbey would be substantially reduced under the proposed project as compared to the approved project due to the relocation of residential lots north of the on-site spine road, extensive landform grading, and implementation of a trail head/staging area. View impacts of the project site from the Ramakrishna Monastery would be reduced as compared with the approved project by implementation of the berming/contour grading, the wildlife corridor system and associated open space areas, and through the elimination of several loffel walls which would reduce the height and intensity of adjacent manufactured slopes.

K. OTHER IMPACTS

The remaining environmental analysis checklist categories, including water/hydrology, transportation and circulation, air quality, noise, cultural/scientific resources, recreation, hazards, public services, and utilities and service systems are fully discussed in the Addendum. Mitigation measures pertaining to these impact categories have been carried forward from Certified SEIR 566 to the Addendum.

IV. KEY ISSUES DURING PLANNING COMMISSION HEARINGS

During the Planning Commission hearing on August 25, 1998, several key issues were raised by the public and the Planning Commission requested responses and/or clarification. The following summarizes those issues:

A PUBLIC NOTIFICATION REQUIREMENTS

Several of the Planning Commissioners and members of the public expressed concern that the Addendum was not properly noticed, particularly in view of the fact that it was not distributed to the U.S. Fish and Wildlife Service and the California Department of Fish and Game (Resource Agencies).

The omission of sending the Resource Agencies the Addendum was a clerical error. Staff has rectified this error by, subsequent to the August 25 hearing, distributing copies of the Addendum to the Resource Agencies. On August 31, PDSD staff met with representatives of the Resource Agencies to discuss the Addendum process as it relates to the proposed Contingency Plan. This meeting was constructive in clarifying the process and alleviating their concerns regarding the relationship of the Contingency Plan to Certified Final Subsequent EIR 566. In addition, copies of the document were sent to the Cities of Mission Viejo and Lake Forest.

It should be noted that, notwithstanding this oversight, CEQA Guidelines were followed in that, as indicated in Section 15164 of the CEQA Guidelines, an Addendum does not require circulation or response to comments received thereon. However, it is County policy to fully inform all parties who have exhibited interest in a given project as to that project's latest status. Accordingly, in addition to sending all commentators on the Addendum a copy of the Response to Comments and staff report, staff sent copies of staff reports to all commentators on Certified Final Subsequent EIR 566. In so doing, staff has gone beyond the requirements of CEQA, with regard to Addendum circulation, by informing all commentators on the parent document (CFSEIR 566) of

the Addendum's status. It is for these reasons that staff feels that recirculation of the Addendum is not required or warranted.

B. Recirculation of Certified Final Subsequent EIR 566

A major theme of public comment at the August 25, 1998 hearing was the need for recirculation of Certified Final Subsequent EIR 566 in light of the difference between the Contingency Plan and 705-unit manufactured housing project.

The Section referred to in the public testimony and correspondence regarding recirculation is CEQA Guidelines Section 15153. This section states that " the Lead Agency may employ a single EIR to describe more than one project, if such projects are essentially the same in terms of environmental impact. Further, the lead agency may use an earlier EIR prepared in ;connection with an earlier project to apply to a later project, if the circumstances of the projects are essentially the same."

The basic concept of Section 15153 is to avoid redundancy under CEQA when duplicating very similar projects in very similar locations. Although the County of Orange has determined that Section 15164 of the Guidelines, Addendum to an EIR, is more appropriate, the County has met all the requirements of Section with the proposed Contingency Plan.

C. Wildlife Corridor/NCCP

The Corridor placement and design featured in the proposed Contingency Plan was also featured in Certified Final Subsequent EIR (CFSEIR) 566, which was certified by the Planning Commission, was appealed and upheld by the Board of Supervisors. Alternative 4 of CFSEIR 566 as well as Alternatives 8 and 9 of Proposed Final EIR 561 all reflect the placement of the corridor at this location. The design and dimensions of the Corridor were derived through previous consultation with the Resource Agencies during the environmental review process associated with these two previous EIRs.

In their correspondence to the County, the Resource Agencies did express a preference for the lower density Alternatives contained within the previous EIRs, notwithstanding their verbal concurrence with the basic design parameters of the 400 foot wide Corridor as featured in the proposed Contingency Plan, although they have expressed a preference for a much wider corridor. Accordingly, the Resource Agency's position regarding the Wildlife Corridor featured in the Contingency Plan remains the same in that their previous comments included consideration of an identical corridor.

With regard to the Southern Subregion, NCCP related comments have been evaluated in both Certified Final Subsequent EIR 566 and Proposed Final EIR 561. The 299-unit Contingency Plan has incorporated many of the concerns identified in the two (2) previous EIRs relative to the NCCP, including a central wildlife corridor, preservation of, or replacement measures to ensure the continued sustainability of, valuable biological resources.

E. Consideration of Other Alternatives

The Commission requested additional clarification on the connection between other Alternatives and the Contingency Plan, particularly alternatives associated with the negotiations that are taking place between St. Michaels Abbey, the Vedanta Society, the County and the California Quartet. The Planning Commission asked why such alternative were not included in the Addendum or brought forth in some other way to the Commission.

PDSD was presented with the Contingency Plan as a stand alone project. It has been analyzed as such. Proposed Final EIR 561 and Certified Final Subsequent EIR 566 analyzed a full range of alternatives, ranging from the No Project/No Development Alternative to the 705-unit manufactured housing project. No other alternative has been submitted to the County for environmental review.

An Addendum was determined to be the appropriate environmental documentation for the proposal based on CEQA Guidelines as discussed above and in the previous staff report. Should the identified alternatives be submitted to the County, they will be subjected to the same CEQA environmental documentation requirements as the proposed project.

V. RESPONSE TO COMMENTS DOCUMENT

A Response to Comments Document has been prepared to address all written Comments received on Addendum PA980103 prior to the October 7, 1998 Planning Commission hearing. A copy of this document was attached to the October 7, 1998 Environmental & Project Planning Services Report for the Planning Commission's review and consideration as Attachment A. Additionally, as is the County's policy, copies of the Response to Comments Document and the Report were provided to each person and/or group who submitted comments.

Attachment M

Draft

Board of Supervisors

Resolution

Addendum PA980103

2591

Revised Draft

RESOLUTION OF THE BOARD OF SUPERVISORS

ADDENDUM PA980103 to FEIR 566

SADDLEBACK MEADOWS CONTINGENCY PLAN
Zone Change ZC98-3 and Area Plan 98-2

ORANGE COUNTY, CALIFORNIA

_____, 1998

On the motion of Supervisor _____, duly seconded and carried, the following Resolution was adopted.

WHEREAS, on December 10, 1991, this Board certified Final EIR 531 for the Foothill/Trabuco Specific Plan, which designated the Saddleback Meadows site as a residential site in the Upper Aliso District; and

WHEREAS, Grading Permit application GA940031 was submitted to the County in April 1994, for Phase I of Tract 10692, a 705-unit manufactured single family residential project, for which the County required the preparation of an EIR, which was subsequently appealed in August 1994; and

WHEREAS, the applicant withdrew the appeal on January 31, 1995, whereupon the Planning Commission directed the applicant to revise the project for one more compatible with surrounding land use; and

WHEREAS, the applicant submitted a revised, 318-unit, conventional single-family residential project, including zone change, area plan and tentative tract map for which EIR 561was prepared; and

WHEREAS, the Board of Supervisors denied the revised project zone change on October 22, 1997; and

WHEREAS, applicant submitted Grading Permit application GA960048 for the entirety of Tract 10692, for which the County required the preparation of EIR 566; and

WHEREAS, the Orange County Planning Commission reviewed all documentation comprising proposed Final SEIR 566 for the proposed project, as of December 3, 1997, certifying Final SEIR 566 as complete and adequate and in compliance with all requirements of the CEQA Statutes, the State CEQA Guidelines and County of Orange procedures; and

WHEREAS, the Board of Supervisors upheld the certification of Final Subsequent EIR 566 on February 24, 1998; and

WHEREAS, following negotiations with the County and private parties concerning the possible purchase of the Saddleback Meadows site, the applicant submitted a Zone Change and Area Plan application for the subject 299-unit Contingency Plan, for which the County prepared Addendum PA980103.

NOW THEREFORE, based upon Addendum PA980103 and Certified FSEIR 566, this Board makes the following findings:

1. The Board finds that Final EIR 566 identified all significant environmental effects of the Contingency Plan, as set forth in the STATEMENT OF FINDINGS, FACTS IN SUPPORT OF FINDINGS AND STATEMENT OF OVERRIDING CONSIDERATIONS, in the certification of the Final Subsequent EIR.
2. The Board finds that, per the criteria set forth in Section 15162 of the CEQA Guidelines, the proposed Contingency Plan does not trigger the preparation of a subsequent EIR.
3. The Board finds that, per Section 15164 of the CEQA Guidelines, the proposed Contingency Plan meets all the criteria which would allow the preparation of an Addendum to Certifed FSEIR 566.

4. The Board finds that, together, Addendum PA980103 and Certified FSEIR 566, satisfy all requirements of the State CEQA Statutes and Guidelines and County of Orange procedures for the Saddleback Meadows Contingency Plan.
5. The Board finds that, pursuant to Section 711.4 of the California Fish and Game Code, although there is evidence that the proposed Contingency Plan has a potential for adverse effects on wildlife resources, and thereby is subject to F&G fees, the fees for the proposed project site have been previously paid in conjunction with Certified Final SEIR 566.
6. The Board finds that, although the proposed project will have a significant impact upon Coastal Sage Scrub habitat, because of proposed mitigation measures imposed on the project and project design features, the project will not preclude the ability to prepare an effective Subregional Natural Communities Conservation Planning (NCCP) Program.

_____
Chairman of the Board of Supervisors

SIGNED AND CERTIFIED THAT A COPY
OF THIS DOCUMENT HAS BEEN DELIVERED
TO THE CHAIRMAN OF THE BOARD

_____
DARLENE J. BLOOM
Clerk of the Board of Supervisors
County of Orange, California

AYES: SUPERVISORS

NOES: SUPERVISORS

ABSENT: SUPERVISORS

STATE OF CALIFORNIA)
)
COUNTY OF ORANGE)

I, DARLENE J. BLOOM, Clerk of the Board of Supervisors of Orange County, California, hereby certify that the above and foregoing Resolution was duly and regularly adopted by the said Board at a regular meeting thereof held on the _____ day of _____, 1998, and passed by a _____ vote of said Board members present.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 1998.

_____
DARLENE J. BLOOM
Clerk of the Board of Supervisors
of Orange County, California

Attachment N

Addendum PA980103

To

Certified Final Subsequent EIR 566

2596

PRELIMINARY

TENTATIVE TRACT MAP REPORT

DATE: October 21, 1998

SUBJECT: Tentative Tract Map No. 15230

SUBDIVIDER: California Quartet, LTD

ENGINEER: Hunsaker & Associates

SUBDIVISION SECTION CONTACT: Vic Bellaschi 834-5045

LOCATION: On the easterly side of El Toro Road approximately 1,500 feet southerly of Live Oak Canyon Road in the Cooks Corner-Live Oak Canyon area.

ASSESSORS PARCEL NO. 856-011-portion 20; 856-071-01 thru 09; 856-081-01 thru 12; 856-091-01 thru 11.

PROJECT NO. EP/PP 69873

SUMMARY: Proposes a subdivision of approximately 222 acres of land into 299 lots for single family residential development, 1 lot for a pump station, 1 lot for a gated entry, 2 lots for regional park purposes, 20 lots for landscaped slopes/open space and 17 lots for private streets.

Area Plan (AP) 98-2 and Zone Change (ZC) 98-3 were conditionally approved by the Planning Commission on October 7, 1998 and pertain to the development of subject Tentative Tract Map No. 15230

NOTIFICATION:

All federal, state, and county departments, divisions and agencies having cognizance of the affected area, the Foothill/Trabuco Specific Plan Review Board, the Marine Corps Air Station, the Rural Canyons Conservation Fund, and all property owners within 300 feet of this property.

GENERAL PLAN CONSISTENCY/ZONING COMPLIANCE:

Land Use Element: 1B Suburban Residential (.5-18 du/ac)

Community Profile: 1.2 Low Density Residential

Specific Plan: Foothill/Trabuco Specific Plan
Bridlewood Residential (BWR) District

Proposed Density: 1.35 du/ac

This project, as conditioned, is consistent with and in conformance with the General Plan and its implementing documents.

2597

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT:

The proposed project is covered by Final EIR No. 566 previously certified on June 2, 1998 and Addendum PA 980103. Prior to project approval, the Subdivision Committee must assert that, together, they are adequate to satisfy the requirements of CEQA for the proposed project.

EXISTING CONDITIONS:

The subject property is sloping undeveloped terrain which is in its natural state.

DRAINAGE:

The subject property is located primarily within the Los Alisos Area Master Plan of Drainage (MPD). MPD Facility J01P09 is involved and requires construction. MPD fees of $550.00 per acre are required to be paid (within the portion of the project that is within the Los Alisos MPD).

SOUND CONSIDERATION:

This property area is impacted by intrusive noises. The extent of mitigation required can be determined in connection with an acoustical report which may be required when future development.

RECREATION AND OPEN SPACE:

Master Plan of Regional Recreation Facilities

Regional Park Dedication: The subdivider is required to dedicate in fee to the County of Orange Lots LL and MM for regional park purposes and an addition to the O'Neill Regional Park.

Master Plan of Regional Riding and Hiking Trails

Regional Trail Dedication:

The Live Oak Canyon Regional Riding and Hiking Trial, which is depicted within the Recreation Element of the General Plan, is aligned along the east side of and adjacent to El Toro Road and runs through a portion of Lot R. The subdivider is required to dedicate to the County of Orange a recreation easement for that portion of the subject Riding and Hiking Trail aligned through Lot R as well as improve said trail, both onsite and offsite, from the south property line near Valley Vista Way to the existing El Toro Road undercrossing located to the north.

Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated o the County within a recreation easement aligned east-west through the proposed project. A recreation easement for the local riding and hiking trail shall be dedicated to the County for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trial, both within and outside the future regional park, in addition to a connection from the stating area along the community spine road offsite to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers a well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area shall be required.

Trail Reroutes-Bikeway and Riding and Hiking Trails:

The Aliso Creek Class I Off-Road bikeway, the Live Oak Canyon Regional Riding and Hiking Trail and the El Toro Road Class II On-Road Bikeway will require re-routing plans during construction of the subject tentative tract. The subdivider is required to submit said re-route plans prior to the issuance of any grading permits.

Master Plan of Local Parks (Local Park Code)

The Local Park Code requirement for the subject tentative map is 2.392 net usable acres of park land based upon a proposal to build 299 dwelling units at a gross residential density of 1.35 du/ac (299 du x .008 ac/du).

The Local Park Code requirements for the subject tentative map will be satisfied through the payment of in-lieu fees prior to the issuance of building permits.

Resources Element – Open Space Component

Scenic Preservation Easements: The subdivider is required to dedicate to the County of Orange restricted scenic preservation easements over Lots R, CC, DD, EE, FF, GG, HH, II and JJ.

Landscape Plan: A landscape plan which includes the improvements and maintenance of the restricted scenic preservation easements will be required.

Urban Edge Treatment Plan/Viewshed Analysis: The subdivider is required to submit to the County of Orange for approval an urban edge treatment plan/viewshed analysis.

Master Plan of Countywide Bikeways

The Master Plan of Countywide Bikeways (MPCB) indicates a Class II On-Road Bikeway along the northbound lane of El Toro Road.

PUBLIC SERVICES AND UTILITIES:

Schools

This property is within the boundaries of the Saddleback Valley Unified School District. The developer is subject to the provisions of Assembly Bill AB 2926, or other mitigating measures designed to provide for school facilities and/or funding, such as community facilities districts.

Facilities Fee Programs

This project area is located in a facilities fee program area, as the program is defined in Section 7-9-702, Codified Ordinances of Orange County, for the funding of library service, fire station and sheriff substation facilities.

Water/Sewer

This project is within the boundaries of the Trabuco Canyon Water District. The District stated in their "will-serve" letter that the District will be capable of providing water and sewage disposal service to this development.

Water Quality Control

The Trabuco Canyon Water District operates in accordance with requirements prescribed by the California Regional Water Quality Control Board, San Diego Region.

Fire Protection and Safety

Existing and proposed fire protection services should be capable of providing an adequate level of fire protection services to this development.

This property is located in a very high fire hazard area due to wildland exposure.

County Service Area (CSA)

This property is within the boundaries of County Service Area No. 26.

CIRCULATION:

Scenic Highway Corridors

The Master Plan of Scenic Highways designates El Toro Road as a landscape/viewscape corridor.

Access/Highways/Streets/Roads

Access to the proposed development within the subject tentative tract map will be from El Toro Road, an unimproved major arterial highway, via Spine Street. Emergency access to the proposed development will be provided via Valley Vista Way.

Major Thoroughfare and Bridge Fee Program

This project lies within the area of benefit of the Foothill Circulation Phasing Program. The developer is required to pay fees in accordance with the adopted program.

This project lies within the area of benefit of the Foothill/Eastern Transportation Corridor. The developer is required to pay Foothill/Eastern Major Thoroughfare and Bridge fees in accordance with the adopted program.

This project lies within the proposed area of benefit of the Santiago Canyon Road Fee Program. The developer is required to pay Major Thoroughfare and Bridge fees in accordance with the adopted program.

This property lies within the area of benefit of the El Toro Road Fee Program. The subdivider is required to pay Major Thoroughfare and Bridge fees in accordance with the adopted program.

Off-Site Fee Program

This project will be responsible for participation in fee programs off-site which will involve expenditures in excess of $155,000.00. Accordingly, the provisions of Section 66452.6(a), Subdivision Map Act, do apply to this project.

COMMENTS FROM CIVIC GROUPS AND OTHERS NOTIFIED:

Comments were received from Ray Chandos-Secretary/Treasurer of the Rural Canyons Conservation Fund.

DEVIATIONS FROM STANDARDS OF DESIGN:

The subdivider may request deviations from County-approved standard design criteria in accordance with Section 7-9-291 of the Orange County Subdivision Code. In the absence of any approved deviation request or if there is a conflict between the tentative map and the County-approved standard design criteria, the County-approved standard design criteria will prevail.

Deviations Requested

1. Deviation from the Orange County Subdivision Code Section 7-9-283 (Man Made Slopes) to allow the Type "C" Slopes on certain lots to heights above the maximum permitted height of 20 feet.

2. Deviation from Standard Plan 1107 (Typical Sections) to allow an increase in the maximum permitted grade on "R" Street from 10% to 12%.

3. Deviation from Orange Count Subdivision Code Section 7-9-274 (Curved Local Street and Highway Radii) to allow for the reduction of the centerline radius to less than the required 250 feet as follows:

Street	Radius Requested (Feet)
"L"	215

SUBIVISION COMMITTEE ACTION:

The following findings and conditions are offered for the Subdivision Committee's consideration,.

Findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the proposed subdivision, together with the provisions for its design and improvement, is consistent with the Foothill/Trabuco Specific Plan.

X. That the design and improvement of the proposed subdivision are suitable for the uses proposed, and the subdivision can be developed in compliance with the applicable zoning regulations pursuant to Section 7-9-254 of the Subdivision Code.

XI. That the tentative map is consistent with both Area Plan (AP) 98-2 and Zone Change (ZC) 98-3.

XII. That the Subdivision Committee has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

XIII. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XIV. That the proposed project will have a significant unmitigated impact upon Coastal Sage Scrub habitat and, therefore, will preclude the ability to prepare an effective subregional Natural Communities Conservation Planning (NCPP) Program.

XV. That the discharge of waste from the proposed subdivision into the existing sewer system of the Trabuco Canyon Water District will not result in violations of existing requirements prescribed by the California Regional Water Quality Control Board, San Diego Region.

XVI. That the design of the subdivision and its improvements do provide, to the extent feasible, for future passive or natural heating or cooling opportunities as specified in Section 66473.1 of the Government Code (Subdivision Map Act).

XVII. That the following determinations apply to fees required by Sections 7-9-700 through 713, Codified Ordinances of Orange County:

A. Purpose of fees: Fire protection, paramedic, law enforcement, library, and general County services.

B. Use of fees: Construction of new fire station, sheriff substation, library, and general County facilities in newly developing areas which have inadequate service.

C. Relationship between use of fees and type of development: Dwelling units and commercial/industrial structures and their occupants require fire protection, paramedic, law enforcement, library, and general County services.

D. Relationship between need for facilities and type of project: Project is located in newly developing area which has inadequate fire protection, paramedic, library services, and sheriff substation and general County facilities.

E. Relationship between amount of fees and cost of the portion of the facilities attributable to the development: Fees represent project's pro rata share of the cost of the fire station, sheriff substation, library, and general County facilities.

XVIII. That because of participation in fee programs for off-site improvements, this project will qualify for consideration under Section 66452.6 of the Subdivision Map Act.

XIX. That the deviations from the standards of design set forth in the Subdivision Code Subdivision Committee Report were considered and found to be justified based upon the reasons set forth in the Subdivision Committee Report or special circumstances which apply.

XX. That the Local Park Code Requirement can be met by the payment of in-lieu fees.

XXI. That the monitoring requirements of Public Resources Code Section 21081.6 (AB 3180) will be considered as having been met in that the design of the subject project, the satisfaction of the requirements of the County's building, grading, fire, and other codes and ordinances and the satisfaction of the conditions of approval applied to the project will implement the mitigation measures contained in EIR No. 566 an Addendum PA 980103.

XXII. That the applicant is hereby provided notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval as well as the reports and actions accompanying this approval and that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun

Conditions:

Codes (for time of performance/type of condition)

(G)	Grading Permit	(S)	Standard Condition
(R)	Recordation	(SS)	Site Specific Condition
(B)	Building Permit		
(U)	Use and Occupancy		
(SL)	Sale, Lease, or Rental		
(NA)	Timing not Specified		

NOTE: Any improvements required prior to the recordation of a final map shall be completed or the subdivider shall enter into an agreement with the County of Orange guaranteeing the improvements. Said agreement shall be accompanied by financial security guaranteeing the installation of the improvements at the time stated in the agreement.

1. CP NA NA SPECIAL

Approval of Vesting TTM 15230 is subject to final approval of Zone Change 98-3 and Area Plan 98-2. Prior to recordation of VTTM 15230, the Manager, Current Planning shall determine that it is in substantial compliance with final approved Zone Change 98-3 and Area Plan 98-2. Otherwise, a revised tentative map approved by the Subdivision Committee shall be required.

2. Prior to the issuance of any grading permits, the applicant shall satisfy the following conditions from the draft Planning Commission Resolution for Area Plan 98-2.

4. Grading Review
5. Tree Preservation Plan
6. Federal Endangered Species
7. Geology Report
8. Drainage
9. Cross-Lot Drainage
10. Vector Control
11. Archaeo Observation & Salvage
12. Paleo Observation & Salvage
13. Grading Notes
14. Construction Noise
15. Performance Bond
16. Re-Routing Trails

3. Prior to the recordation of a subdivision map which creates residential building sites, the subdivider shall satisfy the following conditions from the draft Planning Commission Resolution for Area Plan 98-2:

    17. Preliminary Grading Completed
    18. Open Space Dedication
    19. Recreational Trails
    20. Ranch House Clean Up
    21. Landscape Plan
    22. Fire Station
    23. Library
    24. Sheriff Station
    25. Off-Site Fuel Modification
    26. Affordable Housing

4. SG SG G LOFFEL WALLS

    Prior to the issuance of a grading permit, a letter of justification and design plans for the proposed loffel walls shall be presented to and approved by the Manager, Subdivision and Grading Services.

5. BP BP RGB RESIDENTIAL ACOUSTICAL REPORT

    All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dba CNEL in all habitable rooms and a source specific exterior standard of 65 d.b.a. CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

    A. Prior to the recordation of a subdivision map or prior to the issuance of grading permits, as determined by the Manager, Building Permits, the applicant shall submit an acoustical analysis report to the Manager, Building Permits, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report.

6. SG SG RG DRAINAGE STUDY

    Prior to issuance of any grading permits, the following drainage studies shall be submitted to and approved by the Manager, Subdivision and Grading:

    A. A drainage study of the subdivision including diversions, off-site areas that drain onto and/or through the subdivision, and justification of any diversions; and

    B. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and

    C. Detailed drainage studies indicating how the tract map grading, in conjunction with the drainage conveyance systems including applicable swales, channels street flows, catch basins, storm drains and flood water retarding, will allow building pads to be safe from inundation from rainfall runoff which may be expected from all storms up to and including the theoretical 100-year flood.

7. SG SG RG DRAINAGE IMPROVEMENTS

A. Prior to the issuance of any grading permits, the applicant shall in a manner meeting the approval of the Manager, Subdivision and Grading:

1) Design provisions for surface drainage; and

2) Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

3) Dedicate the associated easements to the County of Orange, if determined necessary.

B. Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only) said improvements shall be constructed in a manner meeting the approval of the Manager, Construction.

8. SG SG R MPD PARTICIPATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only), the subdivider shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, Subdivision and Grading, including payment of fees and the construction of the necessary facilities.

9. SG SG R EASEMENT SUBORDINATION

Prior to the recordation of an subdivision map (except maps for financing and conveyance purposes only), the subdivider shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, for review and approval.

10. SG SG G GRADING DEVIATION

Prior to the issuance of any grading permits, if the applicant submits a grading plan and the Manager, Subdivision and Grading, determines that it shows a significant deviation from the grading on the approved tentative tract map and Area Plan 98-2, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative map and/or area plan application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required

11. CP HP R ACCESS

Prior to recordation of any subdivision map that creates residential building sites, a 400 foot wide access easement across Lot A (Spine Street) from Lot MM to Lot LL shall be dedicated to the County of Orange in a manner meeting the approval of the Manager, Harbors, Beaches & Parks in consultation with the Manager, Subdivision and Grading. The primary purpose of the access easement is to provide for continuity of the wildlife corridor and O'Neill Regional Park.

Signs identifying a wildlife crossing area shall be posted within 100 feet of each point where the street transverses the wildlife corridor.

12. Master Plan of Regional Recreation Facilities:

Regional Park Dedication:

Lots LL and MM shall be dedicated to the County as an addition to O'Neill Regional Park, exclusive of manufactured slopes; which should be retained in separate lots. Regional park dedication shall be in done in compliance with the following conditions:

A. Prior to the recordation of the first subdivision map that creates residential building sites, the subdivider shall make an irrevocable offer of dedication in fee to the County of Orange, or its designee, of Lots LL and MM, exclusive of manufactured slopes, for regional park purposes in a form approved by the Chief, Harbors, Beaches and Parks, Program Management & Coordination suitable for recording. Said offer shall be free and clear of money and all other encumbrances, liens, leases, fees, easements (recorded and unrecorded), assessments and unpaid taxes, except those meeting the approval of the Chief, Harbors, Beaches and Parks, Program Management and Coordination. Until such time as the offer is accepted by the County or its designee, the subdivider or assigns and successors shall be responsible for maintenance and upkeep of the above-referenced lots.

B. Prior to the recordation of any subdivision map that creates residential building sites, the subdivider shall survey and monument all lots dedicated for regional park purposes, and stake the property line of the dedication area(s) with durable, long-lasting, high visibility markers at all angle points and line of sight obstructions to the satisfaction of the Manager, Harbors Beaches & Parks.

C. Prior to recordation of the regional park dedication, the existing old ranch house sited within future regional park land shall be demolished except for the rock work subject to the approval of the Chief, HBP/Program Management & Coordination.

13. Master Plan of Regional Riding and Hiking Trails/County Bikeways:

Regional Trail Dedication:

A. The Live Oak Canyon Regional Riding and Hiking Trail is depicted within the Recreation Element aligned through Lot R, adjacent El Toro Road, through the proposed project. A recreation easement for this riding and hiking trail shall be dedicated to the County which includes trail improvements, including trail improvements just offsite along El Toro Road, north to the intersection of El Toro Road and the community spine road, as well as north to the existing under crossing of El Toro Road, in compliance with the following conditions:

1. Prior to the recordation an applicable subdivision map that creates residential building site the subdivider shall:

a. Irrevocably offer a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. The subdivider shall not grant any easement(s) over the property subject to the recreation easement unless such easements are first reviewed and approved by the Chief, HBP/Program Management & Coordination.

b. Design the necessary improvements(both onsite and offsite) for the trail, including, but not limited to grading, erosion control, signage and fencing, as applicable, in manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Subdivision & Grading. Further, the subdivider shall enter into an agreement,

accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

2. Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Chief, HBP/Program Management & Coordination, to ensure that the proposed grading provides for, will not interfere with, or preclude the installation of the riding and hiking trail in a location and in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to the issuance of final certificates of use and occupancy and the release of financial security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Construction.

B. Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated to the County within a recreation easement aligned east-west through the proposed project.

A recreation easement for the local riding and hiking trail shall be dedicated to the County for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trail, *both* within and outside the future regional park, in addition to a connection from the staging area along the community spine road *offsite* to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers as well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area shall be done in compliance with the above.

C. Trail Reroutes/Bikeway and Riding and Hiking Trails:

1. The Aliso Creek Class I, paved Off-Road Bikeway, as well as the Live Oak Canyon Regional Riding and Hiking Trail will require re-routing plans during construction of the proposed project. Therefore, the following condition shall apply:

   Prior to any grading and/or construction activities which precludes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted subject to the approval of the Chief, HBP/Program Management & Coordination.

2. The same condition shall also be applicable to the Class II On-Road Bikeway aligned along the north bound lane of El Toro Road contiguous the proposed project.

14. Master Plan Local Parks (Local Park Code):

The Local Park Code requirement is 2.392 acres of park land based upon a proposal to build 299 residential units at a gross density of 1.35 du/ac (299 x .008 ac/du).

Prior to issuance of building permits the Local Park Code requirement shall be met by *payment of in-lieu fees.*

15. Resources Element (Open Space Component):

A. Dedicate Restricted Scenic Preservation Easement:

Fuel modification areas, manufactured slopes and remedial grading areas sited between the regional park dedication area and residential development, the fuel modification and native enhancement transition area contiguous El Toro Road, and northerly most fuel modification and native enhancement transition area, shall be placed within restricted scenic preservation easement areas. These areas include Lots R, CC, DD, EE, FF, GG, HH, II and JJ. *(NOTE: Manufactured slopes now depicted within Lots MM and LL the regional park, should be depicted within separate open space lots and restricted scenic preservation easements placed over them).* Restricted scenic preservation easements shall be dedicated to the County of Orange in compliance with the following conditions:

1. Prior to the recordation of any applicable final tract map which creates residential building sites, the subdivider shall make an irrevocable offer to dedicate an easement to the County of Orange or its designee over Lots R, CC, DD, EE, FF, GG, HH, II, and JJ, for restricted scenic preservation purposes in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. in consultation with the Manager, Current Planning. Maintenance, upkeep and liability for said easement area shall remain the responsibility of the subdivider or assigns and successors (i.e., homeowner's association) or current underlying owner(s) of said easement area and shall not be included in said dedication offer. The subdivider shall not grant any easement over any property subject to said easement unless such easements are made subordinate to said easement offer in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

2. The subdivider shall note limitations and restrictions for said easement by a reference on the final map to a previously recorded document or by the recordation of a separate document concurrent with the recordation of subject map in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to recordation of any applicable final tract map or as determined by the Chief, HBP Program Management & Coordination, the subdivider shall survey and monument all parcels of the land to be dedicated for restricted scenic preservation easement purposes, and submit plans showing how the development boundaries of the restricted scenic preservation easement parcel(s) is marked to be visible for monitoring purposes by Grantee to the satisfaction of the Chief, HBP/Coastal & Historical Facilities.

B. Public Area Landscaping:

The areas to be irrevocably offered to the County of Orange for restricted scenic preservation purposes shall be landscaped, equipped for irrigation, as applicable, and improved in accordance with an approved landscape plan as stated below:

1. Preliminary Plan

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Chief, HBP/Program Management &

Coordination. Said plan shall take into account Area Plan 98-2, County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487(Water Conservation Measures), and Board Resolution 90-1341(Water Conservation Implementation Plan).

2. Detailed Plan

Prior to the issuance of any building permits, the applicant shall submit a detailed landscape plan for approval to the Manager, Subdivision & Grading, in consultation with the Chief, HBP/Program Management & Coordination. Detailed plans shall show the detailed irrigation and landscaping design.

3. Installation Certification

Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, the applicant shall install said improvements and have the installation certified by a licensed landscape architect or licensed landscape contractor, as having been installed in accordance with the approved detailed plans. The applicant shall furnish said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable to the Manager, Construction, and the Manager, Building Inspection, prior to the issuance of any certificates of use and occupancy.

C. Urban Edge Treatment Plan/Viewshed Analysis:

Prior to the approval of any use permits for residential structures, an urban edge treatment plan/viewshed analysis shall be submitted to the County subject to the approval of the Chief, HBP/Program Management & Coordination. The Urban edge treatment plan/viewshed analysis shall comply with the following criteria:

1. Establish building height and setback limits (i.e., Building Envelope Formula) and grading treatments to preserve views attained from within existing and proposed parks and open space areas as well as from along designated scenic highways (i.e., El Toro Road) as identified by the Master Plan of Regional Recreational Facilities (Recreation Element), Open Space Component (Resources Element) and Master Plan of Scenic Highways (Transportation Element) respectively. Moreover, views from St, Michaels Abbey, the Ramakrishna Monastery and neighboring Hidden Ridge Community shall also be addressed. Viewshed analysis cross sections should be provided as seen from these areas to proposed residential structures.

2. Eliminate and/or reduce to the greatest extent possible conflicts which may impact the existing and future recreational utility of a regional recreation recreational facility and open space areas.

3. Eliminate and/or reduce to the greatest extent possible potential operation and maintenance problems resulting from encroachment, unauthorized entry, private development fuel modification requirements, flood control facilities, and maintenance of privately landscaped manufactured slopes and maintenance roads as they relate to future and existing regional recreational facilities.

4. Establish appropriate landscape/fuel modification treatments and wall and/or fence treatments including berms to provide appropriate transition from regional recreational facilities and open space areas to private development areas.

5. Establish smooth and gradual transition between graded slopes and existing slopes within the park and open space areas using variable slopes (2:1-4:1).

6. Obscure slope drainage structures with a variety of plant materials.

7. Incorporate architectural and design techniques into the project in order to enhance off-site views attained from within parks and significant open space.

8. All landscaping of manufactures slopes interfacing significant open space areas should be exclusively native, as applicable, to preserve the biological and scenic integrity of regional corridors, open space and park lands.

16. FF GBU — FIRE HYDRANTS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit a fire hydrant location plan for the review and approval of the Fire Chief.

17. FF RBU — AUTOMATIC FIRE SPRINKLERS

A. Prior to the recordation of a subdivision map, which creates residential building sites, a note shall be placed on the map stating that all structures shall be protected by an automatic fire sprinkler system, in a manner meeting the approval of the Fire Chief.

18. FF RG — FIRE ACCESS ROADS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall obtain approval of the Fire Chief for all fire protection access easements and shall dedicate them to the County.

B. Prior to the issuance of any grading permits, the applicant shall submit and obtain approval of plans for all roads, streets and courts, public or private, from the Fire Chief in consultation with the Manager, Subdivision and Grading Services. The plans shall include the plan view, sectional view, and indicate the grade and width (28-ft. minimum) of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be approved by the Fire Chief and if needed, clearly marked when a dead-end street exceeds 150 feet or when otherwise required. Applicable CC&R's, or other approved documents, shall contain provisions which prohibit obstructions such as speed bumps/humps, control gates or other modifications within said easement or access road unless prior approval of the Fire Chief is granted. Grade shall not exceed 10%. Up to 15% is allowed when all structures served by the road are protected by automatic sprinklers.

C. Street signs. A note shall be placed on the fire protection access easement plan indicating that all street/road signs shall be designed and maintained to be either internally or externally illuminated in a manner meeting the approval of the Fire Chief.

19. FF BU STREET MARKINGS

Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit plans and obtain approval from the Fire Chief for fire lanes on required fire access roads less than 36 feet in width. The plans shall indicate the locations of red curbing and signage. A drawing of the proposed signage with the height, stroke and coloring of lettering and the contrasting background color shall be submitted to and approved by the Fire Chief.

20. F F R TRAFFIC SIGNAL PREEMPTION

Prior to the recordation of the applicable subdivision map which creates residential building sites, as determined by the Fire Chief in consultation with the Manager, Subdivision and Grading Services, the subdivider shall enter into an agreement with the County for the installation of traffic signal preemption equipment for the surrounding controlled intersections. Said agreement shall be accompanied by financial security.

21. F F RRB FIRE HAZARD NOTIFICATION

A. A Special Fire Protection Area Notification. Prior to the recordation of any final tract map which creates residential building sites, the subdivider shall place a note on the map meeting the approval of the Fire Chief that the property is in a **"Special Fire Protection Area"** and must meet all requirements for development within the area or file for an exclusion with the Fire Chief.

B. Special Fire Protection Area Development. Prior to issuance of a building permit, the applicant shall meet all requirements for development and construction within a Special Fire Protection Area as identified in Orange County Ordinance 3960, including increased street widths, Class A roof assemblies, fire sprinklers, etc.

22. F F G FUEL MODIFICATION

A. Prior to the issuance of a preliminary grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services and Subdivision and Grading Services of a conceptual fuel modification plan and program.

B. Prior to the issuance of any precise grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services, and Subdivision and Grading Services of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to the structures by vegetation, the CC&R's, or other approved documents, shall contain provisions for maintaining the fuel modification zones including the removal of all dead and dying vegetation subject to triennial inspections.

23. F F G ACCESS GATES

Prior to the issuance of any grading permits, the applicant shall submit and obtain the Fire Chief's approval for the construction of any gate across required Fire Authority access roads/drives. Contact the Orange County Fire Authority at (714) 744-0403 for a copy of the "Guidelines for Fire Authority Emergency Access".

24. SG SG B FOOTHILL/EASTERN TRANSPORTATION CORRIDOR

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fees Program for the Foothill/Eastern Transportation Corridor.

25. SG SG B FOOTHILL CIRCULATION PHASING

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for the Foothill Circulation Phasing Program.

26. SG SG B SANTIAGO CANYON ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for Santiago Canyon Road.

27. SG SG B EL TORO ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for El Toro Road.

28. SG SG B ARTERIAL RIGHT-OF-WAY

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall dedicate ultimate half-width road right-of-way to major arterial highway standards across the property frontage in a manner meeting the approval of the Manager, Subdivision and Grading Services.

29. SG SG R SANTIAGO CANYON ROAD

Prior to recordation of any subdivision map that creates residential building sites, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manager, Subdivision and Grading Services.

30. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall provide a cash deposit for the difference in cost of designing and constructing the roadway improvements proposed with the project along the property frontage as compared to the cost associated with the ultimate configuration of El Toro Road, as determined by PF&RD/Program Development Division, all in a manner meeting the approval of the Manager, Subdivision and Grading Services.

31. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall design and construct a northbound right turn lane and a southbound left turn lane on El Toro Road at the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading Services.

32. SG SG G TRAFFIC SIGNAL

Prior to recordation of a subdivision map that creates residential building site, the applicant shall design and construct a traffic signal at the intersection of El Toro and the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading in consultation with the Manager, Program Development Division.

33. SG SG G SIGHT DISTANCE

Prior to issuance of a grading permit, adequate sight distance shall be provided at all intersections per Standard Plan 1117, and at all driveways, in a manner meeting the approval of the Manager, Subdivision and Grading Services; this includes any necessary revisions to the plan to remove slopes and other encroachments from the Limited Use Area.

34. SG SG G "C" STREET

Prior to the issuance of a grading permit, the applicant shall design "C" Street 40' in width, curb to curb, with sidewalk on both sides.

35. SG SG G UTILITY EASEMENT

Prior to the issuance of a grading permit, the applicant shall design both sides of all of the private streets with a 3' public utility easement.

36. SG SG G GATED ENTRY

Prior to the issuance of a grading permit, the applicant shall design the gated entry area to facilitate vehicular turnaround movements prior to reaching the gate in a manner meeting the approval of the Manager, Subdivision and Grading Services.

37. SG SG R LOT 296

Prior to recordation of a final map, the applicant shall design Lot 296 with 20' minimum of property frontage.

38. SG SG G EMERGENCY ACCESS

Prior to the issuance of a grading permit, the applicant shall design the emergency only access between "B" Street and existing Valley Vista in a manner meeting the approval of the Manager, Subdivision and Grading Services.

39. SG SG R PVT STREET NOTIFICATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall place a note on the map that states:

"The private streets constructed within this map shall be owned, operated and maintained by the developer, successors or assigns. The County of Orange shall have no responsibility therefore unless pursuant to appropriate sections of the Streets and Highways Code of the State of California, the said private streets have been accepted into the County Road System by appropriate resolution of the Orange County Board of Supervisors."

40. SG SG R STREET IMPROVEMENTS

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall design and construct the following improvements in accordance with plans and specifications meeting the approval of the Manager, Subdivision and Grading:

A. Streets, bus stops, on-road bicycle trails, street names, signs, striping and stenciling.

B. The water distribution system and appurtenances which shall also conform to the applicable laws and adopted regulations enforced by the County Fire Chief.

C. Underground utilities (including gas, cable, electrical and telephone), streetlights, and mailboxes.

41. CP CP INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit or, in the alternative, the relinquishment of such permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

42. CP CP

Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents, or employees to attack, set aside, void, or annual approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

43. CP NOTIFICATION

This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval. You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

RURAL CANYONS CONSERVATION FUND
PO BOX 556
TRABUCO CANYON, CA 92678

October 2, 1998

Patrick J. Stanton, Manager
Subdivision and Grading Services
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: Proposed TTM No. 15230, Project No. EP/PP 69873

Dear Mr. Stanton:

The proposed subdivision cannot legally be approved:

1. It conflicts with the governing zoning ordinance, viz. the Foothill/Trabuco Specific Plan which requires a specific plan amendment prior to any development proposal other than recorded tract map number 10692. Under state law, all subdivisions must be consistent with any governing specific plan.

2. Under the Specific Plan (pages III-86, D-3), the proposal must be reviewed by the Foothill/Trabuco Specific Plan Review Board prior to any action by the County. This has not occurred.

3. EIR 566 no longer suffices as valid environmental documentation for this project under CEQA. A field survey conducted by R.B. Riggan and Associates on September 23, 1998 discovered two California gnatcatchers inhabiting the Saddleback Meadows site. Since the entire site was not surveyed, more gnatcatchers may be present there. The California gnatcatcher is currently protected as a threatened species by both federal and state endangered species acts.

The above constitutes new information about the proposed project's potentially significant environmental impacts. Therefore, a subsequent or supplemental EIR must now be prepared and circulated for review and comment.

Thank you for the opportunity to comment on the proposed subdivision.

Sincerely,

Ray Chandos

Ray Chandos
Secretary/Treasurer

2616

RESOLUTION NO. 98-14
RESOLUTION OF THE PLANNING COMMISSION
OF ORANGE COUNTY, CALIFORNIA

On motion of Commissioner Goacher, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Planning Commission conducted public hearings on Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the area known as Saddleback Meadows (aka Bridlewood); and

WHEREAS, the Planning Commission has considered EIR Addendum PA980103 and, by separate Planning Commission Resolution, found that it satisfies the requirements of CEQA for this project.

NOW, THEREFORE, BE IT RESOLVED that this Commission makes the following findings:

1. ZC98-3/AP98-2 is consistent with the objectives, policies, general land uses and programs specified by the General Plan.

2. AP98-2 is consistent with the provisions of the Zoning Code.

3. The location, size, design and operating characteristics of AP98-2, as conditioned, will not create conditions or situations that may be incompatible with other permitted uses in the vicinity.

4. AP98-2 will not result in conditions or circumstances contrary to the public health and safety and the general welfare.

5. AP98-2, as conditioned, satisfies the requirements of section 7-9-711 regarding public facilities.

6. The RE (PD), "Residential Estates (Planned Development)," site development standards regarding building site areas, building site coverage, area per unit, and number of dwelling units have been satisfied by AP98-2.

7. Condition of Approval No. 27 requires a use permit be approved which is consistent with AP98-2. A use permit may be approved for the entire project site or portions of the project site.

8. AP98-2, as conditioned, will provide significant public benefits in the form of major recreational trails, an important wildlife corridor for the Natural Communities Conservation Program and a large addition to O'Neill Regional Park.

BE IT FURTHER RESOLVED that this Commission recommends that the Board of Supervisors approve ZC98-3.

BE IT STILL FURTHER RESOLVED that this Commission approves AP98-2 subject to the following conditions:

1. CP NA NA TIME LIMIT
Approval of Area Plan 98-2 is subject to approval of Zone Change 98-3 by the Board of Supervisors. Upon such approval, Area Plan 98-2 is valid for a period of 48 months thereafter. If the preliminary grading permit is not issued within such period of time, this approval shall be terminated and Area Plan 98-2 shall thereafter be null and void.

2. CP CP NA REVOCATION
Failure to abide by and faithfully comply with any and all conditions attached to this approving action shall constitute grounds for the revocation of said action by the Orange County Planning Commission.

3. CP CP G TENTATIVE TRACT MAP
Prior to the issuance of any grading permits, Tentative Tract Map 15230 shall be approved by the Subdivision Committee after a public hearing. Said tentative tract map must be found consistent with Area Plan 98-2.

4. CP CP G GRADING REVIEW
Prior to the issuance of any grading permits, the Manager, Current Planning Services, shall determine that the grading plan is consistent with Area Plan 98-2 and the approved tree preservation plan.

5. HP HP G TREE PRESERVATION PLAN
Prior to the issuance of any preliminary grading permit, a tree preservation plan shall be prepared which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and on-half feet above ground level). The tree preservation plan shall be consistent with the Area Plan 98-2 and the Foothill/Trabuco Specific Plan and approved by the Manager, Harbors Beaches, and Parks. The plan shall be signed and certified by a biologist or arborist.

6. EP SG/EP G FED ENDGD SPEC ACT
Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Services that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning.

7. SG SG G GEOLOGY RPT
Prior to the issuance of any grading permits, the applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall include the information and be in a form as required by the Grading Manual.

8. SG SG G DRAINAGE
Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, provide:

A. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

B Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

9. SG SG G CROSS-LOT DRAINAGE
Prior to the issuance of any grading permits, and if determined necessary by the Manager, Subdivision and Grading, a letter of consent, in a form approved by the Manager, Subdivision and Grading, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to the issuance of any grading permit. Acceptance of cross-lot drainage on lots within the tract map boundaries shall be noted on the recorded map.

10. SG SG G VECTOR CONTROL
Prior to the issuance of any preliminary grading permits, the subdivider shall provide evidence to the Manager, Subdivision and Grading, that the Vector Control District has surveyed the site to determine if vector control measures are necessary. If warranted, the developer shall conduct such measures in a manner meeting the approval of the Manager, Subdivision and Grading.

11. HP HP G ARCHAEO OBS & SALVAGE
Prior to the issuance of any preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified archeologist has been retained, shall be present al the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeologist shall submit a follow-up report to the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, an analysis of any artifacts fond and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigatio and disposition of the resources, shall be subject to the approval of the Manager, Harbors, Beaches & Parks.

12. HP HP G PALEO OBS & SALVAGE
Prior to the issuance of an preliminary grading permit, the project applicant shall provide writte evidence to the Manager, Subdivision and Grading, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project develope which ensure proper exploration and/or salvage. Excavated finds shall be offered to the Count of Orange, or its designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, Harbors, Beaches & Parks.

13. SG SG G GRADING NOTES

Prior to the issuance of any grading permits, the following guidelines shall be included in the "Notes Section" of the grading plans meeting the approval of the Manager, Subdivision and Grading.

A. During all grading and construction operations, all oak trees on the site, located adjacent to the approved limits of grading and identified in an approved Tree Management/Preservation Plan as trees to be preserved, shall be adequately fenced and protected from encroachment by grading and construction equipment. Grading, placement of fill, and storage of building materials and heavy equipment, shall be prohibited within the dripline of any tree identified for preservation as part of an approved Tree Management/Preservation Plan.

B. If required, retaining walls shall be used to protect the existing grades of oaks identified for preservation from surrounding cut and fill. However, these should not alter drainage from around the trees.

C. No type of surface, whether pervious or impervious, shall be placed within a six-foot radius of oak tree trunks. Where surfacing cannot be avoided, alternative types of paving should be utilized, such as gravel or porous brick with sand joints.

D. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

E. Natural drainage courses and natural grades outside the remedial grading impact area in proximity to and providing seasonal irrigation to oak trees shall not be altered.

F. In proximity to oak trees, only one trench should be dug to accommodate all utility lines. Where necessary, the impacted trees should be carefully pruned by an arborist in proportion to the total amount of root zone lost.

14. BP BP G CONSTRUCTION NOISE

A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits, that:

1. All construction vehicles or equipment, fixed or mobile, operated within 1000' of a dwelling shall be equipped with properly operating and maintained mufflers.

2. All operations shall comply with Orange County Codified Ordinance Division 6.(Noise Control).

3. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the grading plans, will be considered as adequate evidence of compliance with this condition.

15. CP SG G PERFORMANCE BOND
Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, Subdivision and Grading.

16. HP HP G RE-ROUTING
Prior to the issuance of a preliminary grading permit, which includes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted by the applicant and approved by the Manager, Harbors, Beaches and Parks.

17. CP SG R
Prior to the recordation of any subdivision map which creates residential building sites, the preliminary grading activity for all of Area Plan 98-2 shall be completed to the satisfaction of the Manager, Subdivision and Grading.

18. HP HP R OPEN SPACE
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate to the County of Orange a minimum of seventy (70) percent of the project site as open space in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. The open space dedication shall be for: (1) regional park, and (2) restricted scenic preservation purposes. The Manager, Harbors, Beaches & Parks shall determine the final boundary between these open space acres.

Within the regional park area, the Manager, Harbors, Beaches & Parks shall determine what improvements, if any, shall be made. If determined appropriate by the Manager, Harbors, Beaches & Parks, the applicant shall be required to provide those improvements as shown and discussed in the Area Plan 09-2.

Within the restricted scenic preservation easement area, after dedication, no grading, structures (including stables and corrals), or commercial agriculture activities shall be permitted in this area. River rock walls not to exceed three feet, approved Loffel walls, and open fencing shall b permitted. An entry gate and identification sign shall be permitted subject to approval of a site development or use permit for such use. Future fuel modification, landscaping, and tree preservation shall be permitted subject to prior approvals granted by the Planning Commission.

19. HP HP R RECREATIONAL TRAILS
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate a recreation easement for those bikeways and regional riding and hikin trails shown and discussed in Area Plan 98-2 in a manner meeting the approval of the Manager. Harbors, Beaches & Parks. Also, the applicant shall design the necessary improvements and enter into an agreement, accompanied by financial security, with the County of Orange to install the necessary improvements in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

20. HP HP R CLEANING UP
Prior to the recordation of any subdivision map that creates residential building sites, the existing old ranch house and all abandoned automobiles shall be removed in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

21. HP HP R LANDSCAPE PLAN
Prior to the recordation of any subdivision map which creates residential building sites, the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Manager, Harbors, Beaches & Parks. Said plan shall take into account the County Standard Plans for landscaped areas, adopted plant palette guides, applicable scenic and Foothill Trabuco Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

22. EP EP FIRE STATION FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

23. EP EP LIBRARY FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

24. EP EP SHERIFF STATION
Prior to the recordation of an subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning.

25. EC F F FUEL MODIFICATION
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall demonstrate to the satisfaction of the Fire Chief that necessary fuel modification in off-site locations will be maintained in perpetuity.

26. EP EP R AFFORDABLE HOUSING
Prior to the recordation of a subdivision map that creates residential building sites, the landowner shall provide a cash contribution to the County's General Plan Trust Fund. The specific methodology and amount of said contribution shall be subject to the approval of the Manager, Environmental & Project Planning. These funds shall be directed to support the County's overall efforts toward providing affordable housing, including but not limited to, future updates of the Orange County Housing Element and related programs for maintaining existing affordable housing and providing new affordable housing opportunities.

27. CP CP B USE PERMIT

Prior to the issuance of any building permits for residential structures, the applicant shall submit a use permit application for review by the Foothill/Trabuco Review Board and approval by the Planning Commission after a public hearing. Said use permit shall include, but not be limited to, the location of all structures and uses, precise landscaping plan, precise fuel modification plan and program, grading plan, and architectural plans for all structures. Said use permit must be found consistent with Area Plan 98-2.

28. F F GBU FUEL MOD PLAN

Prior to the approval of the use permit to construct residential structures, the applicant shall obtain the Fire Chief's approval, in consultation with the Manager, Environmental and Project Planning, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of combustible vegetation and the planting of drought tolerant fire resistant plants. However, only the minimum necessary fuel modification shall be approved by the Fire Chief. All practical mitigation measures to minimize the need for fuel modification shall be recommended by the Fire Chief such as use of non-combustible construction materials, interior fire sprinkler system and double-glassed windows. The required fuel modification shall be performed in a manner to minimize impacts on the natural environment as much as possible. The fuel modification plan shall then become effective after the Planning Commission approves the use permit.

29. SG SG B ROAD REE PROG

Prior to the issuance of building permits for residential construction, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, Subdivision and Grading.

A. Foothill Circulation Phasing Program
B. Foothill/Eastern Transportation Corridor
C. El Toro Road
D. Santiago Canyon Road

30. HP HP R LOCAL PARK FEES

Prior to the issuance of building permits for residential construction, the applicant shall pay in-lieu fees per the Local Park Code Requirements.

31. FTSP CP B SCHOOL FEES

Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the Manager, Current Planning, that he has reached a mitigation agreement with the District for the subject project proposal.

32. CP NA NA INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may be required by a court to pay as a result of such action. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

AYES: Commissioners Nielsen, Goacher, Long, McBurney

NOES: Commissioners Moody

ABSENT: Commissioners

I HEREBY CERTIFY that the foregoing Resolution No. 98-14 was adopted on October 7, 1998 by the Orange County Planning Commission.

ORANGE COUNTY PLANNING COMMISSION

by Thomas B. Mathews, Executive Officer

PRELIMINARY

TENTATIVE TRACT MAP REPORT

DATE: October 21, 1998

SUBJECT: Tentative Tract Map No. 15784

SUBDIVIDER: California Quartet, LTD

ENGINEER: Hunsaker & Associates

SUBDIVISION SECTION CONTACT: Vic Bellaschi 834-5045

LOCATION: On the easterly side of El Toro Road approximately 1,500 feet southerly of Live Oak Canyon Road in the Cooks Corner-Live Oak Canyon area.

ASSESSORS PARCEL NO. 856-011-portion 20; 856-071-01 thru 09; 856-081-01 thru 12; 856-091-01 thru 11.

PROJECT NO. EP/PP 69881

SUMMARY: Proposes a subdivision of approximately 222 acres of land into 7 lots for conveyance purposes only.

NOTE: See TT 15230 for the future development of the subject property.

NOTIFICATION:

All federal, state, and county departments, divisions and agencies having cognizance of the affected area, the Foothill/Trabuco Specific Plan Review Board, the Marine Corps Air Station, the Rural Canyons Conservation Fund, and all property owners within 300 feet of this property.

GENERAL PLAN CONSISTENCY/ZONING COMPLIANCE:

Land Use Element: 1B Suburban Residential (.5-18 du/ac)

Community Profile: 1.2 Low Density Residential

Specific Plan: Foothill/Trabuco Specific Plan
Bridlewood Residential (BWR) District

This project, as conditioned, is consistent with and in conformance with the General Plan and its implementing documents.

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT:

The proposed project is covered by Final EIR No. 566 previously certified on June 2, 1998 and Addendum PA 980103. Prior to project approval, the Subdivision Committee must assert that, together, they are adequate to satisfy the requirements of CEQA for the proposed project.

EXISTING CONDITIONS:

The subject property is sloping undeveloped terrain ~~which is in its natural state~~.

DRAINAGE:

Master Plan of Drainage requirements will be a consideration in connection with the future development of the subject property.

SOUND CONSIDERATION:

This property area is impacted by intrusive noises. The extent of mitigation required can be determined in connection with the acoustical report which will be required when future development is proposed.

RECREATION AND OPEN SPACE:

Master Plan of Regional Recreation Facilities, Master Plan of Regional Riding and Hiking Trails, Master Plan of Local Parks (Local Park Code), Resources Element – Open Space Component and Master Plan of Countywide Bikeways will be considerations with the future development.

PUBLIC SERVICES AND UTILITIES:

In connection with the future development, schools, water service, sewer service, cable service, water quality control, fire protection and safety, and library services will be considerations.

CIRCULATION:

Regional and internal infrastructure requirements will be a consideration when any future development is proposed. This will include participation in the applicable Major Thoroughfare and Bridge Fee Programs.

COMMENTS FROM CIVIC GROUPS AND OTHERS NOTIFIED:

Comments were received from Ray Chandos – Secretary/Treasurer of the Rural Canyons Conservation Fund.

SUBDIVISION COMMITTEE ACTION:

Tentative Tract No. 15784 is approved, and the approval includes the following 11 findings, and is subject to the 4 conditions which follow the findings:

Findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the Subdivision Committee has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

X. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XI. That the proposed project will have a significant unmitigated impact upon Coastal Sage Scrub habitat and, therefore, will preclude the ability to prepare an effective subregional Natural Communities Conservation Planning (NCPP) Program.

Conditions:

Codes (for time of performance/type of condition)

(G)	Grading Permit	(S)	Standard Condition
(R)	Recordation	(SS)	Site Specific Condition
(NA)	Timing not Specified		

(G) 1. SG SG G GRADING RESTRICTION

(S) Notwithstanding any grading/elevations that are shown on the tentative tract map, or the provisions of Orange County Zoning Code Section 7-9-139 (Grading and Excavation), approval of this tentative tract map does not authorize the issuance of any grading permits.

(NA)2. SG NA NA INDEMNIFICATION

(S) Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents or employees to attack, set aside, void, or annul an approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

(R) 3. SG SG R CONVEYANCE MAP

(SS) Prior to the recordation of the final tract map, a note shall be placed on the final tract map stating, "This tract map is for conveyance purposes only and the lots created by this tract map are not legal building sites" in a manner meeting the approval of the Manager, Subdivision and Grading.

(SS)4. CP NOTIFICATION

This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval.

You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

I hereby certify that Tentative Tract Map No. 15784 was approved upon the foregoing conditions by the Orange County Subdivision Committee, on October 21, 1998, and will expire on October 21, 2001.

P. J. Stanton, Manager
Subdivision and Grading Services
Chairperson, Subdivision Committee

PJS/VB:no[W]

2628

RURAL CANYONS CONSERVATION FUND
PO BOX 556
TRABUCO CANYON, CA 92678

October 2, 1998

Patrick J. Stanton, Manager
Subdivision and Grading Services
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: Proposed TTM No. 15784, Project No. EP/PP 69881

Dear Mr. Stanton:

The proposed subdivision cannot legally be approved:

1. It conflicts with the governing zoning ordinance, viz. the Foothill/Trabuco Specific Plan which requires a specific plan amendment prior to any development proposal other than recorded tract map number 10692. The attached "Project Proposal" says "This is an application for a *development* permit." Under state law, all subdivisions must be consistent with any governing specific plan.

2. Under the Specific Plan (pages III-86, D-3), the proposal must be reviewed by the Foothill/Trabuco Specific Plan Review Board prior to any action by the County. This has not occurred.

3. EIR 566 no longer suffices as valid environmental documentation for this project under CEQA. A field survey conducted by R.B. Riggan and Associates on September 23, 1998 discovered two California gnatcatchers inhabiting the Saddleback Meadows site. Since the entire site was not surveyed, more gnatcatchers may be present there. The California gnatcatcher is currently protected as a threatened species by both federal and state endangered species acts.

The above constitutes new information about the proposed project's potentially significant environmental impacts. Therefore, a subsequent or supplemental EIR must now be prepared and circulated for review and comment.

Thank you for the opportunity to comment on the proposed subdivision.

Sincerely,

Ray Chandos

Ray Chandos
Secretary/Treasurer

2629

PUBLIC NOTICE

of a public meeting to be held by the Orange County Subdivision Committee

DATE OF MEETING: October 21, 1998

TIME OF MEETING: 1:30 P.M. or as soon thereafter as possible

LOCATION: H. George Osborne Building, Room 503, 300 N. Flower Street, Santa Ana, California

PROJECT: TENTATIVE TRACT MAP NO. 15230

FILED BY: CALIFORNIA QUARTET, LTD.

LOCATED: ON THE EASTERLY SIDE OF EL TORO ROAD APPROXIMATELY 1,500 FEET SOUTHERLY OF LIVE OAK CANYON ROAD IN THE COOKS CORNER-LIVE OAK CANYON AREA

PROPOSING: THE SUBDIVISION OF APPROXIMATELY 222 ACRES OF LAND INTO 259 LOTS FOR SINGLE FAMILY RESIDENTIAL DEVELOPMENT, 1 LOT FOR A PUMP STATION, 1 LOT FOR A GATED ENTRY, 2 LOTS FOR REGIONAL PARK PURPOSES, 20 LOTS FOR LANDSCAPED SLOPES/OPEN SPACE AND 17 LOTS FOR PRIVATE STREETS.

WILL BE CONSIDERED AT THIS MEETING: All persons either favoring or opposing this proposal are invited to present their view at this meeting. It is requested that any written response be submitted to the Planning and Development Services Department (PDS) prior to the meeting date. At the hearing, the proposal may be approved, conditionally approved, continued to another date or withdrawn. If you challenge the action taken on this project in court, you may be limited to raising only those issues you or someone else raised at the public meeting described in this notice, or in written correspondence delivered to the Planning and Development Services Department prior to the public meeting.

FOR FURTHER INFORMATION: Telephone 834-6045 or call at the Subdivision Section Office, 300 North Flower Street, Development Processing Center, Santa Ana, California, or write to Planning and Development Services, P.O. Box 4048, Santa Ana, California 92702-4048. To facilitate response, refer to Tentative Tract Map No. 15230

ENVIRONMENTAL INFORMATION: THE REQUIREMENTS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT HAVE BEEN MET BY EMA'S DETERMINATION THAT THE PROJECT IS WITHIN THE SCOPE OF PREVIOUSLY FINALIZED EIR 556.

APPEAL PROCEDURE. Any interested person may appeal a decision of the Subdivision Committee on this project to the Planning Commission within ten (10) calendar days upon submittal of required documents and the payment of a fee of $385.00. The appeal must be filed at the Development Processing Center, Subdivision Section, 300 North Flower Street, Santa Ana, California.

2630

PUBLIC NOTICE

of a public meeting to be held by the Orange County Subdivision Committee

DATE OF MEETING: October 21, 1998

TIME OF MEETING: 1:30 P.M. or as soon thereafter as possible

LOCATION: H. George Osborne Building, Room 503, 300 N. Flower Street, Santa Ana, California

PROJECT: TENTATIVE TRACT MAP NO. 15784

FILED BY: CALIFORNIA QUARTET, LTD.

LOCATED: ON THE EASTERLY SIDE OF EL TORO ROAD APPROXIMATELY 1,500 FEET SOUTHERLY OF LIVE OAK CANYON ROAD IN THE COOKS CORNER-LIVE OAK CANYON AREA.

PROPOSING: THE SUBDIVISION OF APPROXIMATELY 222 ACRES OF LAND INTO 7 LOTS FOR CONVEYANCE PURPOSES ONLY.

WILL BE CONSIDERED AT THIS MEETING: All persons either favoring or opposing this proposal are invited to present their view at this meeting. It is requested that any written response be submitted to the Planning and Development Services Department (PDS) prior to the meeting date. At the hearing, the proposal may be approved, conditionally approved, continued to another date or withdrawn. If you challenge the action taken on this project in court, you may be limited to raising only those issues you or someone else raised at the public meeting described in this notice, or in written correspondence delivered to the Planning and Development Services Department prior to the public meeting.

FOR FURTHER INFORMATION: Telephone 834-5045 or call at the Subdivision Section Office, 300 North Flower Street, Development Processing Center, Santa Ana, California, or write to Planning and Development Services, P.O. Box 4048, Santa Ana, California 92702-4048. To facilitate response, refer to: Tentative Tract Map No. 15784.

ENVIRONMENTAL INFORMATION: THE REQUIREMENTS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT HAVE BEEN MET BY EMA'S DETERMINATION THAT THE PROJECT IS WITHIN THE SCOPE OF PREVIOUSLY FINALIZED EIR 566.

APPEAL PROCECURE. Any interested person may appeal a decision of the Subdivision Committee on this project to the Planning Commission within ten (10) calendar days upon submittal of required documents and the payment of a fee of $385.00. The appeal must be filed at the Development Processing Center, Subdivision Section, 300 North Flower Street, Santa Ana, California.

2631

CONNOR, CULVER, BLAKE & GRIFFIN LLP
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October 21, 1998

Pat Stanton, Chair
Subdivision Committee
County of Orange
300 North Flower Street, Room 503
Santa Ana, California 92702

Re: *Saddleback Meadows: Public Hearing re Tentative Tract Map Nos. 15230 and 15784*

Dear Mr. Stanton:

On behalf of the Norbertine Fathers of Orange, the Saddleback Meadows Land Conservancy LLC, and the Vedanta Society of Southern California, we oppose the approval of Tentative Tract Map Nos. 15230 and 15784 (collectively, the "Tract Maps") on the basis of each of the previously-stated objections to Zone Change 98-3 and Area Plan 98-2 which are set forth in the letters attached hereto as Exhibits "E" through "J" inclusive. We believe that such objections apply with equal force to the Tract Maps and, accordingly, we incorporate them herein as if set forth in full hereat.

Tentative Tract Map No. 15230 ("TT 15230") would allow the Saddleback Meadows property to be developed as a 299-unit, single-family detached housing project (the "299-Unit Project" or the "Project"). In addition to the objections to the 299-Unit Project which we have already stated on behalf of our clients, we further object to proposed TT 15230 (and its companion financing map) on the grounds listed in Exhibit "A" attached hereto and on each of the following grounds:

A. <u>The Subdivision Committee Should Continue Its Hearing on the Tract Maps Until the FTSP Review Board Has Had an Opportunity to Submit Its Recommendations Thereon.</u>

The bylaws of the Foothill/Trabuco Specific Plan Review Board (the "FTSP Review Board"), which are set forth in Appendix D to the Foothill/Trabuco Specific Plan (the "Specific Plan"), specifically provide at page D-3 that the FTSP Review

Board is to review all "Subdivision Maps" covered by the Specific Plan and to report its findings thereon to the appropriate department of the County of Orange which, in this case, would be the Subdivision Committee. The bylaws also provide that the FTSP Review Board is to be afforded a minimum of twenty-one (21) days within which to complete its assigned task and to report its recommendations. Under the bylaws, only the FTSP Review Board is entitled to *waive* this 21-day requirement.

Less than 21 days ago, County staff apparently transmitted various materials relating to the Tract Maps to the members of the FTSP Review Board, and thus the Subdivision Committee is not authorized to proceed with its October 21 hearing on the Tract Maps because to do so would be a clear violation of the Specific Plan. As such, the Subdivision Committee should continue its hearing on the Tract Maps until the FTSP Review Board has been afforded adequate time to review and report back on the Maps. Indeed, since the Tract Maps are contingent upon the approval of Zone Change 98-3 which will not even be voted on by the Board of Supervisors until November 3 at the earliest, there is absolutely *no* reason that the Subdivision Committee's hearing on the Tract Maps must go forward on October 21 and cannot be postponed until after the November 3 Board hearing on Zone Change 98-3.

The accelerated pace at which the Tract Maps are being processed by the County is unseemly and unjustified. At the public meeting which it conducted last Friday night (October 16) to consider Zone Change 98-3 and Area Plan 98-2, the FTSP Review Board adopted a resolution, a copy of which is attached as Exhibit "B" hereto, demanding that the Tract Maps be removed from the agenda of the Subdivision Committee's October 21 meeting and be referred to the Review Board for its recommendations. Failure to heed the demand of the FTSP Review Board will violate both the letter and the spirit of the Specific Plan, and will constitute an affront to the residents of the Trabuco Canyon area.

B. <u>The CEQA Documentation for the Tract Maps Failed to Address Site-Specific and Cumulative Impacts to Coastal California Gnatcatchers Inhabiting the NCCP Southern Subregion</u>.

Now that the County has reached the "tract map" stage of the 299-Unit Project, there is no possible justification for continuing to ignore the recent discovery of coastal California gnatcatchers at the Property and failing to amend and recirculate the appropriate CEQA documentation to reflect this fact. Also, it is nothing short of a legal and environmental scandal that County staff has allowed California Quartet to delay completion of updated gnatcatcher surveys of the Property which the federal and state agencies started calling for almost *22 months ago*.

On January 30, 1997, the California Department of Fish & Game and the U.S. Fish & Wildlife Service (collectively, the "Resource Agencies") sent a letter to County staff, a copy of which is attached as Exhibit "C" hereto in which they noted that the 1993 and 1994 gnatcatcher surveys of the Property upon which Draft EIR 561 was based were no longer valid and, as such, "updated surveys" needed to be completed in connection with the preparation of Draft SEIR 566:

> "Available data in EIR No. 561 regarding coastal California gnatcatcher . . . surveys indicated that surveys were done in 1993 and 1994. The agencies accept survey results as valid for only 12 months. Gnatcatchers are known to occur adjacent to the proposed project area. *We suggest that updated surveys be done for this species.* This updated survey protocol includes a total of seven surveys in the breeding season or nine in the non-breeding season." (Emphasis added.)

Although almost *two years* have passed since the Resource Agencies made their proposal for updated gnatcatcher surveys of the Property, *such surveys have still not been completed.* This, of course, is inexcusable and renders FSEIR 566 and the Addendum thereto grossly deficient with respect to adequately assessing impacts to an endangered species present at the Property. Although the Addendum to FSEIR 566 *alludes* to gnatcatcher surveys having been commenced in May 1997, no explanation is given as to why these surveys were never completed and were never reported on in the CEQA documentation for TT 15230.

Of course, of even greater concern is the fact that, at the October 7 Planning Commission hearing on Zone Change 98-3 and Area Plan 98-2, the developer's representative, Mr. Pike Oliver, stated at the podium that approximately six gnatcatcher surveys of the Property were performed in April, May, and June of this year. This is a shocking revelation for at least two reasons. First, it is highly improper for the results of these surveys to have been *excluded* from the Addendum to FSEIR 566, even though the Addendum was prepared well *after* the surveys were purportedly completed. Secondly, the fact that California Quartet was still in the process of trying to complete the updated gnatcatcher surveys which the Resource Agencies had called for as far back as January 1997 should have been revealed by County staff because it would have proven that the CEQA documentation for the 299-Unit Project was and remains *incomplete* and that the County is *not* in a position to legally take action on Zone Change 98-3, Area Plan 98-2, and the Tract Maps.

To date, County staff has sought to excuse its failure to obtain updated gnatcatcher surveys of the Property from California Quartet on the grounds that one can just *assume* that the coastal sage scrub habitat at the Property is inhabited by gnatcatchers.

However, County staff has never indicated *how many* gnatcatchers it assumes are present and will be eradicated by the development of the 299-Unit Project. CEQA does not allow County staff the luxury of such an uninformed *assumption* at this late stage in the planning process about what exactly the impacts will be on an endangered species present at the project site. What County staff is essentially admitting is that it assumes there will be an impact on gnatcatchers inhabiting the approximately 50 acres of coastal sage scrub habitat which will be destroyed by the development of the 299-Unit Project, but the *extent* of that impact -- i.e., how many gnatcatchers will actually be killed at the site -- is completely *unknown* to the County as it prepares to approve TT 15230.

To suggest that County staff is engaging in *reckless* environmental planning with respect to gnatcatcher impacts at the Property would be an understatement. This is particularly true in light of a recent *L.A. Times* article, dated September 3, 1998, a copy of which is attached as Exhibit "D" hereto, in which it was reported that the Resource Agencies are gravely concerned that the prescribed limits for interim gnatcatcher "take" in the NCCP Southern Subregion have been exceeded and that no more 4(d) permits for interim "take" of gnatcatchers will be allowed in that Subregion until the NCCP plan for that area is completed sometime in the future.

In light of the information set forth in this article, it is clear that the CEQA documentation for TT 15230 does not adequately address the *cumulative* impacts which the 299-Unit Project will have on coastal California gnatcatchers present in the NCCP Southern Subregion. Moreover, the same CEQA documentation is based on the premise that California Quartet will be allowed to obtain a 4(d) permit to kill gnatcatchers at the Property. What is needed, therefore, is a new or subsequent EIR for TT 15230 which fully and properly assesses project impacts on gnatcatchers present in the NCCP Southern Subregion, both on a site-specific level and on a Subregional level.

C. <u>The Proposed Destruction of Almost 70% of the Property's Coastal Sage Scrub Habitat Will Prevent the County from Making the Findings Required Under the NCCP Conservation Guidelines</u>.

As stated on page 72 of the Addendum to FSEIR 566, the County must be in a position to make the following "NCCP Findings" prior to approving "coastal sage scrub impacts": (1) the habitat loss will not preclude connectivity between areas of high habitat values and (2) "the habitat loss will not preclude or prevent the preparation of the subregional NCCP." In light of (a) its failure to timely and adequately consult with the Resource Agencies regarding the sufficiency of the wildlife corridor proposed as part of TT 15230, (b) the loss of approximately 70% of the coastal sage scrub habitat at the Property which is contemplated by the 299-Unit Project, and (c) the numerous statements made to date by the Resource Agencies with respect to the critical importance of the

Property as constituting the last available link between the NCCP Central/Coastal and Southern Subregions, the County is simply not in a position to make any such findings at this point.

In the joint letter from the Resource Agencies, dated January 30, 1997, which was referred to earlier, the Agencies stated unequivocally that the proposed linkage between the NCCP Central/Coastal and Southern Subregions could be permanently destroyed by the development of the Property:

> "Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. The area of the proposed project is also the *only* linkage to the NCCP Central Subregion in Orange County. An improperly implemented project would *permanently destroy* the integrity of the linkage between the Subregion reserves." (Emphasis added.)

Likewise, in their joint letter to the Board of Supervisors, dated August 11, 1998, the Resource Agencies described the Property as a "critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans." In a recent article in the *Orange County Register*, a copy of which is attached hereto, John Bradley of the U.S. Fish & Wildlife Service clearly stated the Service's preference for a project alternative with less density than the proposed 299-Unit Project. However, County staff has failed to fully engage the representatives of the Resource Agencies to understand and accommodate their views on whether the 299-Unit Project provides the wildlife linkage which they hope to achieve. Moreover, County staff has also sought to minimize, and even misrepresent, the true views of the Resource Agencies with respect to the 299-Unit Project. (See attached letters from National Audubon Society, dated October 15 and 19, 1998.)

Because TT 15230 poses such an obvious risk of jeopardizing or precluding the approval of the Southern Subregion NCCP, the Subdivision Committee should require the preparation of a new or subsequent EIR for TT 15230 to properly assess this risk. Moreover, County staff should accept the invitation of the Resource Agencies, set forth in their August 11 letter to the Board of Supervisors, to work with California Quartet and all interested parties in reaching a workable development solution that would involve a clustered development and a substantial dedication of natural open space which would be sufficient to ensure adequate wildlife corridor/habitat linkage between the NCCP Central/Coastal and Southern Subregions. These discussions should focus initially on the feasibility of the 44/178 Alternative which has been the subject of recent negotiations between the parties or a similar alternative which would ensure that the 178 acres which are the subject of the 44/178 Alternative (see copy of draft

Memorandum of Understanding attached hereto) are permanently preserved as natural, undisturbed open space so as to protect the sensitive biological resources on the Property, while still allowing for approximately 44 acres of the Property to be developed for residential uses.

Without such input being obtained from comprehensive discussions with representatives of the Resource Agencies, the CEQA documentation for TT 15230 is obviously deficient with respect to reasonable project alternatives and with respect to the issues of whether the 299-Unit Project will preclude connectivity between areas of high habitat values and will also preclude preparation and finalization of the Southern Subregional NCCP.

D. The CEQA Documentation for TT 15230 Fails to Adequately Assess Potential Impacts on O'Neill Park Caused by Rough Grading, Fuel Modification, and Drainage Activities Relating to the 299-Unit Project.

Exhibit 6 in the Addendum to FSEIR 566 is noteworthy for what it does *not* show: it does not show whether the development of TT 15230 will impact areas of O'Neill Park in terms of rough grading or fuel modification activities associated with the 299-Unit Project. This particular Exhibit is simply deceptive because if the dotted lines relating to the limits of fuel modification and remedial grading were extended and linked as they should be along the southern boundary of the Property, it would be obvious that portions of O'Neill Park would be impacted by such activities.

The CEQA documentation for 15230 fails to address either the impacts or the risks associated with performing grading and fuel modification in portions of O'Neill Park adjacent to the southern boundary line of the Property. As set forth in the 1974 agreement between the Vedanta Society and the County, a copy of which is attached hereto, the consequences of disturbing those portions of O'Neill Park by activities which would alter or defoliate the topography in those areas would trigger a reverter clause which would allow the Vedanta Society to reclaim title to approximately 240 acres of O'Neill Park. The risk of losing such valuable parkland should be addressed in the CEQA documentation ***before*** TT 15230 is approved in its present form.

Also, TT 15230 should not be approved unless and until adequate CEQA documentation is prepared to discuss the impacts of discharging storm, irrigation, and urban runoff into pristine areas of O'Neill Park adjacent to the southern boundary of the Property. The Addendum to FSEIR 566 contains only general, boilerplate references to possible impacts to natural drainage courses caused by runoff originating from the hundreds of homes to be built as part of the 299-Unit Project. The CEQA documentation for TT 15230 concedes that urban runoff -- consisting of toxic materials such as "oil,

grease, cleaning products, herbicides, pesticides, and fertilizers" -- would be dumped into the natural drainage courses at the Property, but such documentation is devoid of any discussion of what impacts such toxic materials would have on the fragile ecosystem of those portions of O'Neill Park immediately adjacent to the southern boundary of the Property.

Although there is a reference on page 33 of the Addendum to FSEIR 566 that the urban runoff generated by the 299-Unit Project would be subject to a NPDES Permit, that is simply a reference to possible *mitigation* of an impact which is neither discussed nor disclosed in the Addendum. Moreover, since there is no discussion of the extent of the impacts of toxic materials, there is no basis for judging whether the proposed future mitigation would be adequate or even what the mitigation would be to somehow remove toxic waste from stormdrain runoff discharged into natural water course. Of course, trying to gain any reasonable understanding of how O'Neill Park will be affected by the daily flow of toxic waste is complicated by the fact that the CEQA documentation for TT 15230 contains *no* plan or diagram which shows what the proposed storm drain system is for the 299-Unit Project. Indeed, the Addendum to FSEIR 566 directs the reader to the concept drainage plan for the 705-Unit Project which obviously has no relevance to the design of the stormdrain system for the 299-Unit Project. On page 33 of the Addendum to FSEIR 566, the "proposed drainage facility summary" is set forth, but it only refers to *four* stormdrain lines for the 299-Unit Project, but this is entirely at odds with the *eight* stormdrain lines proposed for the 318-Unit Project as depicted on Exhibit 25 to Draft EIR 561.

Does this discrepancy mean that a *new* stormdrain system has been designed for TT 15230, but has not been disseminated for public review and comment? These questions should be answered by preparing and recirculating a new or subsequent EIR to address the critically-important drainage impacts associated with the development of the 299-Unit Project.

Very truly yours,

Edmond M. Connor

APPENDIX TO OCTOBER 21, 1998 LETTER TO ORANGE COUNTY SUBDIVISION COMMITTEE REGARDING TENTATIVE TRACT MAP NOS. 15230 AND 15784

Exhibit "A": Additional Objections to Tentative Tract Map Nos. 15230 and 15784;

Exhibit "B": October 16, 1998 Resolution of the Foothill/Trabuco Specific Plan Review Board;

Exhibit "C": January 30, 1997 letter from Gail C. Kobetich, Field Supervisor, U.S. Fish and Wildlife Service, and Ron Rempel, NCCP Program Manager, California Department of Fish and Game, to Raymond Brantley, EMA/Environmental & Project Planning;

Exhibit "D": September 3, 1998 Los Angeles Times news article entitled "Bird Grounds Some Landowners; Development: Officials, concerned about how many endangered gnatcatchers remain in South County, have begun denying permits to clear land on single plots -- signaling possible delay on later projects";

Exhibit "E": August 24, 1998 letter from Royce B. Riggan, Jr., AICP, RBRiggan and Associates, to The Honorable Chairman and Members of the Planning Commission, Orange County;

Exhibit "F": August 25, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Honorable Members of the Planning Commission, Orange County Planning & Development Services Department;

Exhibit "G": August 25, 1998 letter from Saundra F. Jacobs, REA, SFC Consultants, to Ray Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

Exhibit "H": September 2, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, Environmental & Project Planning Services Division, County of Orange Planning & Development Services Department;

Exhibit "I": September 23, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department;

Exhibit "J": October 7, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Orange County Planning Commission;

Exhibit "K": October 5, 1998 draft of Memorandum of Understanding between Saddleback Meadows Land Conservancy LLC and California Quartet, Ltd.;

Exhibit "L": October 16, 1998 Orange County Register news article entitled "A Battleground; Environment: Another county wildlife corridor is at odds with development";

Exhibit "M": October 15 and 19, 1998 letters from Peter DeSimone, Manager, Starr Ranch Sanctuary, National Audubon Society, California, to Supervisor Todd Spitzer, Orange County Board of Supervisors, and to Bill Tippets, California Department of Fish and Game, and John Bradley, U.S. Fish and Wildlife Service;

Exhibit "N": Southern Subregion NCCP, Reserve/Open Space Concepts 1 and 4;

Exhibit "O" Landscape and Revegetation Concept, Exhibit "6," from Addendum PA980103 regarding Area Plan 98-2; and

Exhibit "P": March 26, 1974 Open Space Conservation Program Agreement between the Vedanta Society of Southern California and the Orange County Harbors, Beaches, and Parks District.

EXHIBIT "A"

2641

EXHIBIT "A"

ADDITIONAL OBJECTIONS TO TENTATIVE TRACT MAP NOS. 15230 and 15784

In addition to all previously-stated objections to proposed Zone Change 98-3 and Area Plan 98-2 to permit the Saddleback Meadows property (the "Property") to be developed as a 299-unit, single-family detached housing project (the "299-Unit Project" or the "Project"), which objections are incorporated herein as if set forth in full hereat in opposition to Tentative Tract Map Nos. 15230 and 15784 (collectively, the "Tract Maps"), the following additional objections to the Tract Maps are submitted as follows:

(1) The Tract Maps are inconsistent with the goals, objectives, components, regulations, and guidelines set forth in the Foothill/Trabuco Specific Plan (the "Specific Plan"), including (a) the goals and objectives relating to rural character and resource preservation; (b) the resources overlay component relating to wildlife corridors, oak woodlands, tree management/preservation, and streambeds; (c) the Bridlewood Residential District Regulations; (d) landscaping regulations; (e) grading standards relating to the maximum height of manufactured slopes and the 70% "natural open space" requirement; (f) area plan submittal requirements; (g) grading, drainage and site planning guidelines; and (h) architectural guidelines;

(2) There are no overriding considerations which justify exempting the 299-Unit Project from complying with the Specific Plan, and such an exemption coming at the request of a landowner/developer would set a bad precedent and would seriously undermine the important goals and objectives of the Specific Plan;

(3) The Tract Maps involve unavoidable adverse environmental impacts which cannot be mitigated to acceptable levels and will destroy hundreds of acres of oak woodlands, vernal ponds, coastal sage scrub habitat, and other biotic communities teeming with sensitive, threatened, or endangered flora and fauna, including the coastal

California gnatcatcher and the Riverside fairy shrimp. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared to date for the Tract Maps;

(4) The Tract Maps involve massive and unacceptable grading impacts which would subject the residents of the Trabuco Canyon area to several years of excessive noise, dust, and traffic delays associated with excavating and recompacting approximately nine million cubic yards of soil which will remain exposed to the wind during dry seasons, and the rain during wet seasons, over the course of at least three years before the rough grading is completed. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared to date for the Tract Maps;

(5) The Tract Maps pose unacceptable geotechnical hazards and risks which would endanger and adversely affect the safety, usability, or stability of the land holdings immediately adjacent to the Property, including St. Michael's Abbey and the Ramakrishna Monastery, both of which are currently experiencing structural damage due to soils subsidence and instability. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared to date for the Tract Maps;

(6) The Tract Maps will permanently alter and destroy the natural buffer zones which, for almost 50 years, have served as part of a monastic enclave for two religious groups: the Vedanta Society which founded the Ramakrishna Monastery in the late 40's and the Norbertine Fathers of Orange which founded St. Michael's Abbey in the early 60's. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared to date for the Tract Maps;

(7) The proposed rough grading, fuel modification, and drainage activities associated with the development of the 299-Unit Project could constitute a basis for triggering the reverter clause in the March 1974 Agreement between the Vedanta

Society and the County, thereby entitling Vedanta to regain title and possession of approximately 240 acres of O'Neill Park adjacent to the Ramakrishna Monastery. This is a completely unnecessary and unacceptable risk of losing valuable parkland and open space and the impact of such a loss has not been adequately addressed and mitigated in the CEQA documentation prepared to date for the Tract Maps;

(8) The Tract Maps would jeopardize or destroy a critical habitat connection between the NCCP Central/Coastal and Southern Subregions of the County of Orange by providing an inadequate wildlife corridor to connect Whiting Ranch Wilderness Park and O'Neill Park. In addition, the proposed loss of coastal sage scrub habitat associated with the development of the 299-Unit Project would preclude connectivity between areas of high habitat value and, as a result, would preclude or prevent the preparation and finalization of the Southern Subregion NCCP. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared to date for the Tract Maps;

(9) The California Department of Fish & Game and the U.S. Fish & Wildlife Service (collectively, the "Resource Agencies") have not been properly and adequately notified and consulted by the County in connection with the Tract Maps, particularly with respect to their input regarding an appropriate wildlife corridor and a possible clustered development on approximately 35-40 acres which would be compatible therewith;

(10) The 299-Unit Project which is the subject of the Tract Maps constitutes a complete revision and redesign of the 705-unit mobilehome project authorized by Tract Map No. 10692 (the "705-Unit Project") and thus constitutes a new project which requires preparation of a new Environmental Impact Report ("EIR"). Alternatively, a Subsequent EIR should be prepared for the Tract Maps in light of (a) the major project changes associated with the 299-Unit Project, including the new wildlife corridor placement, on-site drainage of storm, irrigation, and urban runoff

(including the daily discharge of toxic materials into pristine areas of O'Neill Park), and additional grading in the sensitive southeast canyon areas of the Property; (b) the newly-discovered presence of coastal California gnatcatchers on the Property and the outdated and incomplete nature of the gnatcatcher surveys of the Property which have been undertaken to date; (c) innovative project alternatives not previously considered in the prior CEQA documentation, including the 65-Unit Alternative and the 44/178 Alternative; and (d) feasible mitigation measures not previously considered, such as a 100% performance bond to cover the possibility of the developer's failure to complete all conventional and remedial grading operations;

(11) Final Subsequent Environmental Impact Report No. 566 ("FSEIR 566") and the Addendum thereto are seriously deficient and inadequate to serve as the CEQA documentation for the Tract Maps in that they fail to properly address the adverse impacts, reasonable project alternatives, and feasible mitigation measures associated with the 299-Unit Project and, to the extent that County staff seeks to rely on FSEIR 566 as the EIR for the Tract Maps, the County has failed to provide adequate public notice of its intended action to responsible state and federal agencies and to the general public; and

(12) Although the 299-Unit Project involves fewer residential units than the 705-Unit Project, it still involves massively destructive environmental impacts and, in certain respects, far worse impacts than the 705-Unit Project in terms of drainage, geotechnical hazards, and grading impacts on St. Michael's Abbey and the Ramakrishna Monastery. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared to date for the Tract Maps.

EXHIBIT "B"

A RESOLUTION OF THE FOOTHILL/TRABUCO SPECIFIC PLAN REVIEW BOARD

Approved October 16, 1998

At its previous meeting on September 29, this Board formally recommended that the Orange County Planning Commission postpone its hearing of the Saddleback Meadows project, scheduled for October 7, to allow this Board the 21-day review period provided by the Foothill/Trabuco Specific Plan and the Orange County Zoning Code. Anticipating the cooperation of the Planning Commission, this Board also scheduled a hearing of the Saddleback Meadows project for October 16. Despite this Board's recommendation, the Planning Commission approved the Saddleback Meadows Area Plan on October 7 , and recommended that the Orange County Board of Supervisors approve the Zone Change at its November 3 meeting. In addition, the subdivision maps for Saddleback Meadows have been scheduled for approval by the Orange County Subdivision Committee on October 21, again not allowing for the 21-day review mandated by the Specific Plan.

In view of these events, the Foothill/Trabuco Specific Plan Review Board:

1. Strongly objects to the Planning Commission's October 7 actions in approving the Area Plan and recommending approval of the Zone Change for Saddleback Meadows as violations of the Specific Plan and Zoning Code, both of which require a minimum 21-day review period for this Board prior to Planning Commission action;

2. Strongly objects to the County's failure to timely refer the Saddleback Meadows subdivision maps to this Board as required by the Specific Plan;

3. Demands that the Orange County Board of Supervisors immediately remove the Saddleback Meadows project from its November 7 agenda, and refer it to this Board for review and recommendation to the Planning Commission, as required by the Specific Plan and Zoning Code;

4. Demands that the County of Orange immediately remove the Saddleback Meadows subdivision maps from the October 21 agenda of the Orange County Subdivision Committee, and refer them to this Board for review and recommendation to the Subdivision Committee, as required by the Specific Plan;

5. Directs the Secretary to transmit this resolution to the Orange County Board of Supervisors, the Orange County Planning Commission, the Orange County Subdivision Committee, and the Director of Planning as soon as possible.

EXHIBIT "C"

U.S. Fish & Wildlife Service
2730 Loker Avenue West
Carlsbad, CA 92008
(619) 431-9440
FAX: (619) 431-9618

CA Dept. of Fish & Game
1416 Ninth Street
PO Box 944209
Sacramento CA 94244-2090
(916) 653-9767
FAX: (916) 653-2588

January 30, 1997

Mr. Raymond Brantley
EMA/Environmental & Project Planning
300 N. Flower St., Room 321
P.O. Box 4048
Santa Ana, California 92702-4048

Notice of Preparation to Prepare a Draft Environmental Report (DEIR) No. 566 for Saddleback Meadows Residential Development, Orange County, California.

Dear Mr. Brantley:

The U. S. Fish and Wildlife Service (Service) and California Department of Fish and Game (Department) Natural Community Conservation Planning (NCCP) program staff (i.e., "agencies") have reviewed the above referenced document. The project is located within the Southern Subregion Orange County NCCP Planning Area. The preferred project alternative proposes the phased development of 705 manufactured, single-family residential units on a 222.9-acre site near the intersection of El Toro Road and Live Oak Canyon Road. A total of 10% of the project site is proposed to remain as open space. There are two County of Orange (County) staff alternatives presented. Staff Alternative 'A' would allow 150 sf units with a minimum lot size of 20,000 feet^2. Staff Alternative 'B' would reduce the number of dwelling units on the project site to no more than 100 on approximately 30 acres. The proposed project may conflict with the earlier-adopted Foothill-Trabuco and Aliso Creek Corridor Specific Plans.

The NOP outlines the project chronology from 1978. The agencies have formally commented at different stages of the proposed project. We have also met with the project applicant and their consultants, including a meeting at the project site on May 20, 1996. On June 29, 1994, the Service wrote a letter stating that project approval must be deferred until the Southern Subregion NCCP was finalized. In 1996, both agencies commented on DEIR No. 561. The Service letter stated that the location of this development within and adjacent to occupied habitat of rare species could compromise the NCCP reserve and its ability to function as a wildlife corridor through the direct and indirect impacts of habitat destruction, fragmentation, introduction of exotic species, noise, and lighting. Our comments were based upon a project alternative that provided more open space than the proposed preferred alternative.

The agencies offer the following specific information and recommendations to assist the County in planning for the preservation of sensitive wildlife species, habitats, and wildlife corridors within the proposed project area, and as a means to assist you in complying with pertinent

statutes. To facilitate the evaluation of the proposed project from the standpoint of environmental resource planning, we request that the DEIR contain the following specific information:

1) A complete discussion of the purpose and need for the project and each of the project alternatives.

2) A complete description of the proposed project, including all practicable alternatives that have been considered to reduce project impacts to wetland areas, coastal sage scrub, and other rare habitat types and species.

3) Descriptions of the biological resources associated with each habitat type. These descriptions should include both qualitative and quantitative assessments of the resources present on the proposed project site, such as coastal sage scrub, southern maritime chaparral, oak woodland, southern willow scrub, mulefat scrub, and other wetlands. Information from EIR No. 561 and other sources should be updated as necessary. Maps and tables should be used to summarize these data.

4) Specific acreage and descriptions of coastal sage scrub within the project area and impacts due to project alternatives.

5) An assessment of direct, indirect, and cumulative project impacts to wildlife and associated habitats as a result of this project and other reasonably expected projects. All facets of the project (e.g., construction, implementation, operation and maintenance) should be included in this assessment.

6) Cumulative impacts should include an adequate discussion of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency, pursuant to §15130 of the CEQA Guidelines. This discussion should include projects such as the proposed Live Oak Plaza and Foothill Ranch projects.

7) Available data in EIR No. 561 regarding coastal California gnatcatcher (*Polioptila californica californica*) surveys indicated that surveys were done in 1993 and 1994. The agencies accept survey results as valid for only 12 months. Gnatcatchers are known to occur adjacent to the proposed project area. We suggest that updated surveys be done for this species. The updated survey protocol includes a total of seven surveys in the breeding season or nine in the non-breeding season.

8) An assessment of existing wildlife corridors and impacts due to the proposed project and its alternatives. The agencies recommend that the DEIR disclose and analyze any

impacts within this linkage area by utilizing aerial photographs and graphic techniques such as maps and tables. Data from the mountain lion telemetry studies conducted by Paul Beier Ph.D., and other applicable investigations conducted in the area should be included in this assessment. We suggest that this assessment of wildlife corridors include a field survey using applicable techniques to determine wildlife use within the proposed project area. These techniques should include but not be limited to one or more of the following: track pads, scent stations, wildlife sign identification, and automatic photographic techniques.

9) A list of Federal candidate, proposed or listed species, state-listed species, and locally sensitive species that are on or near the project site should be included with a detailed discussion of these species, including information pertaining to their local status and distribution. The Service will provide a list of these species in a separate letter. The real and anticipated impacts of the project on these species should be fully addressed.

10) The status and likely impacts to botanical resources, including rare plants, should be reassessed. A literature search should be conducted, including a review of the Natural Diversity Database maintained by the State of California, for species that are Federal and State listed, proposed, candidate, or are otherwise considered to be endemic or rare by knowledgable authorities such as the California Native Plant Society. These species of interest for this proposed project would include but not necessarily be limited to Catalina mariposa lily (*Calochortus catalinae*) and intermediate mariposa lily (*Calochortus weedii ssp. intermedius*).

11) Surveys should be conducted for the Quino checkerspot (*Euphydryas editha quino*), a Federal endangered species. The biologist conducting this survey should contact the Carlsbad Field Office to obtain the most current survey guidelines.

12) The current status of fairy shrimp on the project site should be discussed. This would include the endangered Riverside fairy shrimp (*Streptocephalus woottoni*), the proposed endangered San Diego fairy shrimp (*Branchinecta sandiegoensis*) and the threatened vernal pool fairy shrimp (*Branchinecta lynchi*). Riverside fairy shrimp is known to occur on the proposed project site.

13) Specific mitigation plans to fully offset project-related impacts, including proposals for mitigating the cumulative impacts of direct and indirect habitat loss, degradation, or modification. The project site supports significant biological resources and is part of a regional wildlife corridor. Adverse project-related impacts should be mitigated, to the maximum extent practicable, through on-site conservation or revegetation of impacted habitat types. The objective of each mitigation plan should be to offset the project-induced qualitative and quantitative losses of wildlife habitat values. These mitigation

plans involving restoration and enhancement should be prepared by persons with specific expertise on southern California ecosystems and state-of-the-art native plant revegetation techniques. Each plan should include, at a minimum: a) the location of the mitigation site; b) the species, actual number, and size of the plants to be used (seeds and seedlings should be obtained from an appropriate on-site location or from a site in the immediate vicinity of the project site); c) a schematic layout depicting the arrangement of the plants within the compensation area; d) time of year that planting will occur; e) identification of the irrigation methodology to be employed; f) measures to be taken to control exotic vegetation on site; g) a detailed monitoring program that includes provisions for replanting areas where planted materials have not survived; and h) identification of the agency or party responsible for assuring the successful creation of the mitigation habitat and providing for the perpetual conservation of the restoration site.

14) An analysis of the effects of the project on the hydrology of any riparian or wetland communities within the sphere of influence of the project. Of particular importance is an analysis of the adequacy of proposed means to convey major flood or runoff flows without impacting vegetation off-site or in the restoration area. Also of great interest would be an analysis of the effects on hydrology of the Riverside fairy shrimp occupied habitat due to the proposed project.

15) Identification of methods to be employed to prevent soil erosion and siltation to adjacent areas designated as open space and NCCP reserve lands.

16) Measures to be taken to perpetually protect habitat values that are created during restoration (mitigation). Issues that should be addressed include restrictions on vehicle and people access, proposed land dedications, monitoring and management programs, control of illegal dumping, restrictions on lighting near mitigation areas, etc.

17) A thorough analysis of expected noise impacts on avian species and other wildlife and measures to be taken to mitigate any adverse impacts resulting from noise levels.

The agencies appreciate working with the County on NCCP conservation planning issues. Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. The area of the proposed project is also the only linkage to the NCCP Central Subregion in Orange County. An improperly implemented project would permanently destroy the integrity of the linkage between the Subregion reserves.

If you have any questions or comments please contact Liam H. Davis, Associate Wildlife Biologist (Department) at 619-467-4207 or Robert James, Fish and Wildlife Biologist (Service) at 619-431-9440.

Sincerely,

for Gail C. Kobetich
Field Supervisor
U.S. Fish and Wildlife Service

for Ron Rempel
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (B. Tippets, P. Wolf, L. Davis, S. Harris, T. Dickerson)
U.S. Fish and Wildlife Service (D. Harlow, B. James)

1-6-97-TA-66

2653

EXHIBIT "D"

ORANGE COUNTY

SECTION B

METRO

THURSDAY
SEPTEMBER 3, 1998 oct

Los Angeles Times

Los Angeles Times

Bird Grounds Some Landowners

■ Development: Officials, concerned about how many endangered gnatcatchers remain in South County, have begun denying permits to clear land on single plots—signaling possible delays on larger projects.

By DEBORAH SCHOCH
TIMES STAFF WRITER

In a move with broad implications for future growth, federal wildlife officials have begun denying permits to some southern Orange County landowners seeking to clear plots of land containing rare California gnatcatchers.

A few landowners recently learned they cannot immediately move ahead and grade single-family lots because of uncertainty over how many of the federally protected birds still reside in the region given the current building boom.

The federal clampdown comes as a reminder of how growth is intrinsically tied to the welfare of a tiny bird that mews like a kitten and dwells on some of the nation's most desirable and expensive coastal real estate.

It also foreshadows what could be in store—significant building delays on a larger scale—if developers, government officials and environmentalists fail to move ahead with a landmark program to create wildlife preserves in Orange County and elsewhere in the region.

"It's frustrating to see this process grinding its gears like this," said conservation biologist Dennis Murphy, a key player in crafting that program in the early 1990s.

The extent of the problem won't be known for several weeks, when the U.S. Fish and Wildlife Service completes a study of the local gnatcatcher population.

Under the best scenario for birds and builders alike, the review could find so many gnatcatchers that regulators can resume issuing permits. But in a worst-case scenario, if regulators find the gnatcatcher's future is imperiled, they could be forced to choose a more time-consuming permitting process, slowing down the rate of South County development until a special nature preserve is completed.

Officials don't know which projects could be slowed. But county has drawn up a list of South County projects that could disrupt gnatcatchers or their habitat before the preserve is in place. That rough-draft list, requested by the Fish and Wildlife Service, includes two car dealerships, homes in Coto de Caza, the controversial Saddleback Meadows housing project and the 434-home Marblehead development in San Clemente.

"We need to ask ourselves again, 'Are we giving too much? Is it jeopardizing the species?' " said John Bradley, the service's supervising biologist for Orange and Los Angeles counties.

The new wariness on the part of wildlife regulators hints at the fragility of a natior ally acclaimed 1993 compromise intende to quell a clash between property rights and the Endangered Species Act in Southern California's sage-specked coastal hills.

The reason: Construction of several major housing projects in the San Clemente area may have exhausted the number of South County gnatcatchers allowed to be harmed or disturbed under the 1993 compromise.

Please see GNATCATCHER, B6

2655

GNATCATCHER: Preserve Is Behind Schedule

Continued from B1

That compromise was supposed to be merely a temporary measure. It permitted limited land development and gnatcatcher losses while wilderness preserves were designed to protect rare species.

But more than five years later, creation of a planned 40,000-acre-plus South County preserve is lagging far behind schedule, stretching the limits of the temporary rules. While county officials overseeing the reserve's creation predicted in May that a draft reserve design could be ready by July, that deadline has been missed. Some say a draft may not materialize until late this year.

In the meantime, with the bird limit reached or exceeded, small landowners have been caught in the squeeze.

Already, some landowners attempting to build homes in Coto de Caza are entangled in endangered species red tape—exactly the scenario the compromise was supposed to avoid. The precise number could change because more permits are in the pipeline.

The property owners are "in shock. I hear from some of them that it's the first time they've heard there are gnatcatchers out there," said Gary Medeiros, county chief of resource planning. "They're not large companies, and they can't afford to be overextended like this. . . . They're a bit upset with the whole situation, and I don't blame them."

Medeiros and Fish and Wildlife officials are working to design short-term solutions so that the Coto de Caza landowners can build their homes. But a larger question remains: What will the service decide when it completes its review of the gnatcatcher's well-being throughout Southern California?

The current situation is rekindling memories of the early 1990s, when the impending listing of the tiny gnatcatcher on the federal endangered species list sparked a regional development debate.

The gnatcatcher lives in coastal sage scrub, a mix of plants that once blanketed the coastal hills of Southern California. Today, with 90% of sage scrub developed, it ranks as one of the most endangered habitats in the United States.

Under the guidelines, no more than 5% of the coastal sage scrub or 5% of gnatcatchers population was to be destroyed during the reserve planning process.

About 562 pair of gnatcatchers remained in South County this spring, federal biologists said. The guidelines allowed for 19 pair—or 38 birds—to be harmed by development in South County. But the Forster Ranch project and other recent permits gave the go-ahead for 58 gnatcatchers to be removed or destroyed, including two lost with plans for a new South County high school.

Now, another review is underway, and some officials believe Forster Ranch pushed the gnatcatcher count below the federal guidelines.

Federal regulators are reviewing how many gnatcatchers really live in the region and whether further building will jeopardize their survival. That study is legally required because federal tallies showed the number of harmed gnatcatchers was near or at the limit. Until the study is completed in late September or early October, officials said they will hold off issuing new permits for clearing areas inhabited by the songbird. They are continuing to allow clearing of bird-free coastal sage scrub.

Some finger-pointing is accompanying the current gnatcatcher snafu.

County planning official Tim Neely calls the small landowners' plight a "procedural crisis," and he criticizes the Fish and Wildlife Service for not moving more quickly to craft a solution after issuing a flurry of permits to major developers in February.

"I don't know why it's taking as long as it is," Neely said.

That's exactly what some federal regulators and environmentalists are saying about the long-delayed South County reserve plan, which many consider the ultimate panacea for the gnatcatcher problem. That reserve is being designed under county oversight in tandem with the Rancho Mission Viejo LLC, southern Orange County's largest landowner.

A rare public meeting on the plan brought a standing room-only crowd of more than 200 people to a San Clemente school auditorium in May. Many voiced concerns about the impact of new development on what some call "the lost wilderness," a huge expanse of open land largely owned by Rancho Mission Viejo LLC and brimming with rare plants and animals such as the gnatcatcher.

"They had that public meeting but nothing's happened," said Dan Silver, coordinator of the Endangered Habitats League, a conservation group.

Diane Gaynor, spokeswoman for the Rancho Mission Viejo, disputed the notion that preserve planning is behind schedule. Instead, talks have expanded to include wetlands preservation as part of the preserve design, she said.

Some critics point to the flurry of permits that the Fish and Wildlife Service issued in the days leading up to the Feb. 15 start of gnatcatcher nesting season, a six-month period when grading is discouraged. One especially controversial permit was issued Feb. 11 to the 1,037-home Forster Ranch project in San Clemente, allowing habitat of 33 gnatcatchers to be destroyed.

In all, four permits allowing the clearing of land containing 49 South County gnatcatchers were granted immediately before nesting season began—including permits for the massive Ladera and Talega Valley developments. By contrast, one landowner recently denied a permit had a lot containing two gnatcatchers, and another man's lot contained a single bird.

Murphy, the chief architect of conservation guidelines for Gov. Pete Wilson's Natural Community Conservation Planning program, criticized the Forster Ranch permit as "a horrible, horrible deal. I don't know what was going on. . . . Some squeaky-wheel event resulted in what I would consider a disproportionate take of habitat on this one property."

EXHIBIT "E"

RBRiggan and Associates

24 August 1998

The Honorable Chairman and Members
of the Planning Commission
Orange County
10 Civic Center Plaza
Santa Ana, California 92702

Reference: Saddleback Meadows — EIR Addendum PA980103 — Request for Preparation of a Legally Adequate Document

Dear Chairman and Members of the Planning Commission:

In the 24-plus years I have served as an environmental consultant (both in the preparation and defense of EIR's, and as an expert witness) I have never seen such a blatant attempt to circumvent the requirements of CEQA in the name of expediency. The fact that Zone Change 98-3 and Area Plan 98-2 for the 299-unit single family detached housing project are being processed as a "contingency plan" does not excuse compliance with state laws nor does it allow for any corners to be cut just so the contingency plan can be voted on before the end of the year.

However, by purporting to rely on a fatally flawed Addendum to SEIR 566 as the environmental documentation for the Zone Change and the Area Plan, the County of Orange has shirked its responsibility to conduct a careful, deliberate, and legally proper environmental assessment of the impacts, alternatives, and mitigation relating to the 299-unit project. In violation of CEQA Guidelines sections 15063, 15153, 15162 and 15164, the County has sought to "short cut" the environmental review process by using a so-called "Addendum" to avoid the public notice and consultation requirements. Approval of this "Addendum" will place Orange County at legal (and financial) risk, and will severely compromise the County's ability to complete a South County NCCP plan. Granting entitlements for 299-homes will not be viewed favorably by either the California Department of Fish and Game or the United States Fish and Wildlife Service — neither of which appears to have been properly notified or consulted about the new project.

I urge the Commission to reject both the Addendum to SEIR 566 and the associated Zone Change 98-3 and Area Plan 98-2 for the 299 Single-family-unit project. I would also urge the Commission to direct staff to have prepared a legally adequate CEQA document and have that document circulated for public review and comment.

I have reviewed this document and make these comments on behalf of the Vedanta Society of Southern California. I should note that, although I have previously testified before the Board of Supervisors on SEIR 566, I received no notice at all from the County as to the availability of the "Addendum." In fact, I received a copy of the "Addendum" from Counsel within the week, leaving inadequate time to review and respond to the document.

2658

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professional environmental services

Addendum PA980103 is not a legally permissive document under the California Environmental Quality Act. The document is seriously flawed in the following ways:

A. SEIR 566, to which this document purports to be an Addendum, is itself deficient and is currently the subject of a lawsuit to invalidate its certification;

B. The project and its circumstances have triggered the tests of Guidelines Section 15162 in numerous ways. Substantial project changes, new information from the wildlife agencies, additional project alternatives which have come to light, and feasible mitigation measures which have not been adequately considered all mandate the preparation of a new or subsequent EIR. An Addendum is not, therefore, an appropriate environmental document to support the Zone Change and Area Plan.

C. Substantive technical issues are ignored or are addressed in the most cursory way. The document is materially defective by its silence on numerous issues including the lack of mitigation for several significant effects.

D. The use of an Addendum is a transparent attempt to avoid the Public Notice and Review process that would be mandated under Guidelines Sections 15153 and 15162.

Subsequent Environmental Impact Report (SEIR) 566. I had the opportunity to provide the Board of Supervisors with written comments as to the adequacy of SEIR 566. I include that letter by reference and have attached a copy for the Commissions review and use. In addition, the United States Fish and Wildlife Service and the California Department of Fish and Game commented extensively on the adequacy of SEIR 566. The wildlife agency's comments were never responded to adequately in writing, as is required by law (see Guidelines Section 15088). That letter (dated 8 August 1997) is also attached for the Commission's information and review.

An Addendum is NOT the Appropriate CEQA Document. Section 15162 of the CEQA Guidelines (California Code of Regulations) governs when an Addendum to an EIR can be prepared and when a Supplemental or Subsequent EIR is the appropriate document. The relevant parts of that code section read as follows:

> "(a) When an EIR has been certified . . . no subsequent EIR for that project shall be prepared unless . . . the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:
>
> > "(1) Substantial changes are proposed in the project which will required revisions . . . due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

> "(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR . . . due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
> "(3) New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time of the previous EIR was certified . . . , shows any of the following:
> "(A) The project will have one or more significant effects not discussed in the previous EIR,
> "(B) Significant effects previously examined will be substantially more sever than shown in the previous EIR,
> "(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project but the project proponents decline to adopt the mitigation measure or alternative,
> "(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative."

While one might argue that an Addendum to SEIR 566 would be appropriate for *some* issues (i.e., air quality effects are reduced with the smaller project), there is a more compelling argument that a new EIR and public review period are required for a number of the aspects of the new 299-unit project. For example:

- **New Project Alternatives.** Subsequent to the certification of SEIR 566, Saint Michael's Abbey and the Ramakrishna Monastery have entered into a series of negotiations with the Saddleback Meadows developer with the intent of purchasing the bulk of the property (178-acres) for open space purposes. The balance of the property (35- to 44-acres following purchase) would be considered for various development alternatives ranging from 65 to 130 single family homes. These are clearly reasonable alternatives not discussed in SEIR 566 and are alternative that the project proponent has, to date, declined to adopt. Clearly the tests of 15162(a)(3)(C) and (D) are met and a subsequent EIR and public review period is required.

- **Southern Subregion NCCP.** On 11 August 1998, a letter jointly signed by the United States Fish and Wildlife Service and the California Department of Fish and Game (copy attached) was submitted to the Board of Supervisors of Orange County. This letter states that "County

maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion." SEIR 566 (at pages 4-128, 4-148, and, 4-150) refers briefly to the wildlife corridor issue. Under the heading "Significant Impacts of Project Prior to Mitigation" (p. 4-150), the SEIR indicates that "Implementation of the proposed project would conflict with existing wildlife movement corridors . . ." Subsequent to this statement, the SEIR offers no mitigation.

In that the discussion of the NCCP wildlife corridor is cursory at best in SEIR 566, and since this is identified by the wildlife agencies in their 11 August 1998 letter as the "only" corridor linking the NCCP subregions, the ". . . substantial increase in the severity of previously identified significant effects" test of 15162 is clearly met and a new Subsequent EIR and public review period are required.

This requirement for a "new EIR" is doubly compelling when one considers that the County is, with this project, potentially compromising its ability to obtain the approval of the Southern Subregion NCCP, a point of critical interest to many builder/developers besides the Saddleback Meadows developer, California Quartet, Ltd.

The Addendum for the 299-unit alternative includes a narrow, ostensible "wildlife corridor" through the subdivision. A road traverses the central part of the "corridor" and includes lands that would be extensively graded, thereby requiring revegetation of native plant species. In addition, the revegetation area and the narrowest part of the corridor contain the fuel modification zones associated with the surrounding residential developments. Fuel modification zones are, by definition lacking in both horizontal and vertical cover and are not properly part of a wildlife corridor. The wildlife agencies have not reviewed this proposal, however, although the County is required to have consulted these agencies under section 15063(g) of the Guidelines. That the County has not consulted the Wildlife agencies on this "project" is extraordinary, given the *purported* close working relationship between those agencies and the County staff on the Southern Subregion NCCP.

Technical Errors and Lack of Mitigation. The California Courts, in interpreting the implementation of CEQA, have been most specific in their requirements for adequate mitigation measures. Feasible, implementable, mitigation measures must be specified by the CEQA document for each of the potentially significant impacts or effects identified for the project. Neither the so-called Addendum nor the original SEIR 566 meet this test. My letter of 17 February 1998 (copy attached) cites case law in support of this conclusion. To cite a few of several possible examples of technical deficiencies from the Addendum and SEIR:

- **Wetlands/Fairy Shrimp.** Both SEIR 566 and Addendum PA980103 are clear (albeit very brief) in showing that the implementation of either the approved project or the 299 d.u. alternative will result in a significant loss of wetlands and the Federally designated

Endangered Riverside Fairy Shrimp. However, no mitigation for this loss is identified, other than generalized statements that permits will be required from the Army Corps of Engineers (ACOE) and from the California Department of Fish and Game, and that mitigation can be accomplished on-site. None of the critical questions about this mitigation are answered. Can the on-site vernal pools be moved?, Can newly created pools support the endangered Fairy Shrimp?, In order to obtain an ACOE permit, a 401(c)(3) "alternatives" analysis must be prepared — can an analysis supportive of development be prepared in light of the presence of the endangered species and the rarity of this habitat type in Orange County? Clearly this is a legally significant omission of the Addendum.

- **Wildlife Corridor.** The 299 d.u. plan ostensibly includes a wildlife corridor through the subdivision. However, the bulk of this narrow corridor, at the "pinch point" is on land that will be graded and then revegetated to native species. Obviously this revegetation will be critical to the success of the corridor concept, yet no revegetation plans are given in the Addendum, no species lists, no information that will allow a reviewer to gage the potential (or actual) success of the revegetation/mitigation measure. Clearly this is a significant technical flaw in the document.

- **Gnatcatcher.** At a minimum an EIR (or an Addendum) must assess those effects that require a mandatory finding of significance. Saddleback Meadows has not been the subject of a directed survey for the Coastal California Gnatcatcher in four years (Addendum, p. 76). However, recent studies for the NCCP (Dudek and Associates) have identified breeding pairs of Gnatcatchers literally at the periphery of the project site. An EIR (or an Addendum) that makes no attempt to assess the potential effect of the project on a Federally listed species is flawed on its face (see CEQA Guidelines section 15065).

  "Take" as defined under the Federal Endangered Species Act also includes indirect effects on the listed species. To the extent that the proposed wildlife corridor through the project isinadequate to allow the passage of Gnatcatchers between the Southern and Central NCCP subregions, then there is a fair argument that a "take" has been committed. Yet the Addendum is silent on this issue and gives the question of the Gnatcatcher the most minimal discussion. Clearly the "Addendum" is fatally flawed in its discussion of this listed species.

Avoidance of Public Review. "Public participation is an essential part of the CEQA process" (Guidelines Section 15201). This concept is pervasive throughout both the Act and the Guidelines. When the document is not an original EIR, but a follow-on document as is the case here, *Sutter Sensible Planning, Inc. v. Sutter County Board of Supervisors* [(3d Dist. 1981) 122 Cal. App. 3d 813] provides appropriate guidance as to the need for recirculation for additional public review:

> "[R]ecirculation is required, for example, when the new information added to an EIR discloses:
>
> > "(1) a new substantial environmental impact resulting from the project or from a new mitigation measure proposed to be implemented;
> > "(2) a substantial increase in the severity of an environmental impact unless mitigation measures are adopted that reduce the impact to a level of insignificance;
> > "(3) a feasible project alternative or mitigation measure that clearly would lessen the environmental impact of the project, but which the project's proponents decline to adopt."

As discussed above, the *Sutter* Court's tests for recirculation to public review are clearly met by the so-called "Addendum." For example:

- With the publication earlier this year of the Alternatives for the Southern Subregion NCCP and with the wildlife agency's letter of 11 August 1998 (see attached) it is now abundantly clear that this project will potentially impact the ability of Orange County to obtain an approvable South County plan. Certainly this is a "substantial increase" in a significant effect for which the Addendum offers no mitigation that will reduce the effect to a level of insignificance.

- Saint Michael's Abbey and the Ramakrishna Monastery have been discussing feasible alternatives with the developer and the County, alternatives which would preserve a substantial amount of open space. Since these alternatives would clearly lessen the impacts of the project, and in that the proponent has declined to adopt any of these alternatives, recirculation of the document is mandated.

In conclusion, the apparent "rush" to approve a 299-unit project involving massive impacts without even coming close to preparing the proper CEQA documentation is unseemly and unjustified. Moreover, given the critical importance of the Saddleback Meadows property to the success of the Southern Subregion NCCP, the failure to provide the wildlife agencies with even the courtesy of a notification regarding a new 299-unit project that would directly and significantly impact the viability of the NCCP is inexplicable, particularly when these agencies have shown such interest in the development of the Saddleback Meadows property.

According, the Planning Commission should not participate in such a legally improper process and should direct the staff to comply with all applicable CEQA requirements before presenting the Zone Change and the Area Plan for consideration. At a minimum, this will require preparation of a new Environmental Impact Report and circulation of that document for Public Review and comment.

Sincerely,

Royce B. Riggan, Jr., AICP
Principal
Consulting Biologist [Permit PRT-780195]

RBR:ct

cc: Dr. John Bradley — Division Chief, Fish and Wildlife Service, Carlsbad Field Office
Mr. William Tippets — NCCP Field Program Supervisor, California Department of Fish and Game

Attachments:

1. Letter from Riggan to the Orange County Board of Supervisors, dated 20 February 1998
2. Letter from the Wildlife Agencies to the Orange County Board of Supervisors, dated 11 August 1998
3. Letter from the Wildlife Agencies to Mr. Raymond Brantley, Orange County, dated 8 August 1997

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RBRiggan and Associates

20 February 1998

Honorable Members of
Board of Supervisors of Orange County
10 Civic Center Plaza
Santa Ana, California 92702

Reference: Saddleback Meadows — Appeal of Certification of Final Subsequent Environmental Impact Report 566

Dear Members of the Board:

RBRiggan and Associates has reviewed the Saddleback Meadows' Final Subsequent Environmental Impact Report No. 566. We find the document to be woefully inadequate in its treatment of biological resources, and not in compliance with the dictates of CEQA and the CEQA Guidelines. Specifically, we have noted the following deficiencies:

Impacts Not Defined. An EIR is required to identify and address the possible significant impacts of the project (see Calif. Code of Regulations, Section 15126(a)). The Saddleback Meadows EIR is fatally flawed as written in that it ignores certain potentially significant impacts to biological resources and/or puts off to some future time the identification of such impacts. For example:

- Current Federal protocols for the California Gnatcatcher (*Polioptila californica californica*) require reliance on surveys less than a year old. Regional populations of the Gnatcatcher have increased significantly since the last survey of the subject property in 1994. The site may very well be occupied habitat in 1998; despite the conclusionary language in the EIR (see page 4-130) "The coastal California Gnatcatcher . . . [is] not found onsite." The EIR does not identify the potential impact to this federally listed species. Instead, the determination of impact is improperly deferred to some future point (see EIR, page 4-157, paragraph SC 7-11).

- The EIR indicates that (page 4-119) "On June 1994, PSBS documented the . . . potential for additional fairy shrimp [species] in all onsite ponds." The presence or absence of additional federally listed wildlife species is a critical question. If project implementation will effect additional endangered species not identified in the EIR (such as the federally listed Vernal Pool Fairy Shrimp, *Branchinecta lynchi*) then the impacts of the EIR are significantly understated and the EIR is defective on its face.

- The Quino Checkerspot Butterfly (*Euphydryas editha quino*) was listed as endangered under the federal Endangered Species Act in January of 1997. Mentioned in the EIR text only in Table 27 (see page 4-140), the EIR opines that: "Focused surveys are needed for detection but are not warranted." This is a conclusionary statement not supported by any evidence in

the record. The species was once common at various points within the County (see Orsak, 1977, *The Butterflies of Orange County*, California, pp. 135-138). Potential impacts of the project to this federally listed, endangered species, can only be determined by a protocol survey for the species. Absent such a survey, the EIR is clearly inadequate.

Vernal Pools. The EIR states (page 4-120) that "The ephemeral ponds onsite are not vernal pools, but rather are holding ponds for watering cattle which graze on the site." This is a conclusionary statement of the EIR and is not supported by evidence presented within the document. The *Vernal Pools of Southern California Draft Recovery Plan* (Fish and Wildlife Service, 1997) clearly identifies these "ephemeral ponds" as vernal pools and suggests that their origin is as slump ponds on landslides in clay soils, certainly an origin consistent with the geology of the project site. If these are functional vernal pools then the significance assessment of the EIR is flawed and needs to be materially revised. A comprehensive survey of these pools (one that is seasonally appropriate) needs to be conducted to determine their functional classification.

Mitigation of Biological Impacts. The mitigation measures outlined for the anticipated impacts of the project on biological resources are generic and contemplate that, at some future unspecified time, the actual form and content of the measures will be defined. The majority of the mitigation measures are addressed as "standard conditions of approval" and are keyed to some future time in the development of the project. The EIR itself states (at page 4-152) that: ". . . specific standard county conditions . . . have been developed to ensure that a comprehensive biological resources mitigation program is devised and approved . . . prior to the issuance of grading permits." This is a clear violation of CEQA. Both the Act and case law require specificity in mitigation measures and require that the public have an opportunity to review those mitigation measures as a part of the EIR. For example:

- *Sundstrom v. County of Mendocino* (1st Dist. 1988) 202 Cal. App 3d 296 (248 Cal.Rptr. 352) — The court of appeals faulted the county for assuming that various other agencies would be able to devise mitigation measures which would avoid potential significant impacts. Because there was no certainty that success could be achieved, in this regard the agency had no basis for finding that the project's impacts would be insignificant.

- *Oro Fino Gold Mining Corporation v. County of El Dorado* (3d Dist. 1990) 225 Cal. App. 3d 872-885 (274 Cal.Rptr. 720) — The court disapproved of mitigation measures requiring post-approval formulation of a reclamation plan, erosion control plan, dust plan, and fire plan, saying ". . . the CEQA process demands that mitigation measures timely be set forth, that environmental information be complete and relevant, and that environmental decisions be made in an accountable arena."

- *Gentry v. City of Murrieta* (4th Dist. 1995) 36 Cal. App. 4th 13589 (43 Cal. Rptr. 2d 170) — The court held that, in adopting a Negative Declaration the city improperly deferred the formulation of specific mitigation measures. The City had required the project applicant to obtain a Stephens' Kangaroo Rat report and to ". . .comply with any recommendations in the report." However, the court noted that since ". . . there was substantial evidence to support a fair argument that the Project, even as mitigated . . ., would have a significant impact on the Stephens' Kangaroo Rat," any proposed mitigation for this impact had to be made available for public review and could not be left to be formulated in the future (Gentry, supra, 36 Cal. App. 4th at 1397 (43 Cal. Rptr. 2d. 170)).

Absent specificity in the mitigation measures the approving officials cannot determine whether or not the identified impacts can be mitigated or whether a wholesale redesign of the project will be necessary. In addition, the public cannot determine the adequacy of the proposed mitigation and is denied any ability to provide input to the approval process. Absent specificity in the mitigation measures, the EIR is fatally flawed.

Significant and Not Mitigable Impacts. It cannot be determined from the EIR which impacts to biological resources are not mitigable. If there are impacts which cannot be mitigated and thus are unavoidable, then CEQA requires the Lead Agency to adopt appropriate findings (see Calif. Code of Regulations, section 15091(a)). At present, the analysis of the biological resources is sufficiently flawed and the recommended mitigation measures are sufficiently vague that it cannot be determined whether or not overriding considerations will be required.

In addition, to the extent that the following are not mitigable, then there are additional ramifications for both the developer and the County. Approval of the project as proposed could significantly affect the County's ability to complete the NCCP planning effort. The lack of feasibility inherent in the identified mitigation measures in the EIR could also force abandonment of the present development plants and preparation of a significant project redesign. Specifically:

- The EIR (page 4-144) indicates that the loss of Coastal Sage Scrub Habitat would be permitted under the "Interim Take 4(d) Rule." However, certain findings must be made relative to the 4(d) Rule, to the effect that the anticipated habitat loss ". . . will not preclude connectivity between areas of high habitat values" and will not ". . . preclude or prevent the preparation of the subregional NCCP." It would appear that these findings cannot be made.

- Loss of 97 percent and "312 individuals" (EIR page 4-145) of Coast Live Oak Woodland. This impact is considered significant ". . . because of their [the oaks] . . . function as part of the planned NCCP regional wildlife corridor." "Implementation of the project as proposed

will directly impact wildlife movement through the project site, as it does not contain any design features which seek to facilitate wildlife movement. It cannot be assumed that wildlife would be able to move through the project site as currently designed." (EIR, page 4-148). Approval of the project, therefore, would appear to significantly compromise the NCCP planning effort.

- A total of 3.43 acres of definable wetlands would be impacted by the project (EIR page 4-146). It is extremely unlikely that a section 404 permit for the loss of 3.43 acres of wetlands and populations of one or more federally endangered species can be obtained. In this special instance, therefore, the County should require that the 404-Permit be obtained *prior* to issuance of any grading permit by the County Building Official.

Additional Public Review Required. CEQA Section 21092.1, Section 15088.5 of the CEQA Guidelines, and relevant case law clearly requires the EIR to be recirculated for an additional public review period when "significant new information" is added to an EIR. Clear-cut identification of the actual impacts to biological resources, re-writing of the mitigation measures to provide the level of specificity required by the statutes, and completion of the required additional field work, all constitute "significant new information." The courts have been most clear, the public must be given a ". . . meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect . . ." Recirculation of the Subsequent EIR (once the necessary corrections have been made) for an additional public review period is clearly required.

Requirements to Bring the EIR to Legal Adequacy. Additional field work, a comprehensive reassessment and re-writing of the mitigation measures, and re-circulation of the EIR for an additional public review period will be required to bring the document to legal adequacy. Specifically, before FSEIR 566 can properly be certified as being adequate and complete under CEQA, it will be necessary to:

- Complete a comprehensive survey of the property to determine the presence or absence of the threatened Coastal California Gnatcatcher. Once a survey has been completed to federal protocols, revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Complete a comprehensive survey of the on-site ponds to determine the presence or absence of other listed species of Anostraca (fairy shrimp). If additional listed species of Fairy Shrimp are identified, then revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Complete a protocol survey for the Quino Checkerspot Butterfly. If this endangered species is found within the bounds of the project, then revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Conduct a comprehensive survey of the "vernal pools" to determine the presence or absence of additional vernal pool plant and animal indicator species. This survey should be conducted without the presence of cattle and should be conducted at seasonally appropriate times. If these "ponds" prove to be definable vernal pools, then revise the EIR's assessment of impacts accordingly and provide specific mitigation measures.

- Prepare comprehensive and impact specific mitigation measures. This can be accomplished, obviously, only after a complete list of impacts (and their significance) has been developed. The mitigation measures must be substantively related to the impact identified.

Sincerely,

Royce B. Riggan. Jr., AICP
Principal
(PRT-195078)

RBR:ct

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AUG 0 8 1997

**Draft Subsequent Environmental Report (DSEIR) No. 566
for the Saddleback Meadows Project, Orange County, California.**

Dear Mr. Brantley:

The U. S. Fish and Wildlife Service (Service) and California Department of Fish and Game (Department) Natural Community Conservation Planning (NCCP) program staffs (i.e., "the Wildlife Agencies") have reviewed the above DSEIR. The project is located within the Southern Subregion Orange County NCCP Planning Area, near the border with the NCCP Central Subregion. The preferred project proposes the phased development of 705 manufactured, single-family residential units on a 222.3-acre site near the intersection of El Toro Road and Live Oak Canyon Road, impacting a total of about 191 acres on site and 20 acres off site. About 14% of the project site is proposed to remain as open space.

Biological resources on site include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about four acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified in the DSEIR as "ephemeral ponds") spread throughout the site. Several plant and animal species considered sensitive by the Wildlife Agencies occur (e.g., cactus wren [*Campylorhynchus brunneicapillus*]) or may occur. The coastal California gnatcatcher (*Polioptila californica californica*) hereafter "gnatcatcher," a federally threatened species, is likely to occur on site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. The Quino checkerspot butterfly (*Euphydryas editha quino*), a federally endangered species, may occur as well.

Along with the No Project/No Development Alternative ("Alternative 1") required by the California Environmental Quality Act (CEQA), there are four other alternatives presented in the DSEIR. Alternative "1" would avoid any adverse environmental impacts to the project site. Alternative "2" proposes 150 housing units with a minimum lot size of 20,000 feet^2, disturbing more than 125 acres. This would result in elimination of oak woodlands, CSS, and ephemeral ponds of which some rare and sensitive species are obligate residents. Noise decibel levels would increase and possibly affect wildlife in adjacent O'Neill Regional Park. Alternative "3" proposes

2670

100 single family units on a 31.7 acre portion of the site. This alternative avoids about 191 acres of habitat, thereby appearing to allow connection between open space areas north, south, and east of the project site. However, this project alternative will impact two ephemeral ponds and CSS habitat. Alternative '4' proposes 299 housing units, disturbing about 165 acres. A wildlife corridor, narrowing to 400 feet in width and going up a nearly vertical slope, is proposed to be bisected by a road. Alternative '5' proposes 318 housing units within a development area of 113 acres, leaving about 110 acres in open space. The wildlife corridor would be the same as for Alternative '4' except that the minimum width would be about 700 feet. The proposed project appears to conflict with the earlier-adopted Foothill-Trabuco and Aliso Creek Corridor Specific Plans and also fails to describe adequate project design for maintaining corridor integrity of the Orange County NCCP Reserves. In evaluating alternatives 2-5, Alternative '3' would have the least environmental impact; but would nonetheless, substantially impact wildlife corridor integrity between subregional NCCP reserve areas in Orange County.

The Wildlife Agencies have formally commented at different stages of the proposed project. We have also met with the project applicant and their consultants, including a meeting at the project site on May 20, 1996. On June 29, 1994, the Service wrote a letter stating that project approval must be deferred until the Southern Subregion NCCP was finalized. In 1996, both agencies commented on the DEIR (No. 561). The Service letter stated that the location of this development within and adjacent to occupied habitat of rare species could compromise the NCCP reserve and its ability to function as a wildlife corridor through the direct and indirect impacts of habitat destruction, fragmentation, noise, and lighting. Our comments were based upon a project alternative, similar to alternative four, which provided more open space than the proposed preferred alternative presented in this DSEIR.

In general, the DSEIR does not adequately describe the biological resources of the project area. The document only describes and analyzes impacts of the different alternatives in a superficial manner. Referring to our joint Wildlife Agency letter of January 30, 1997, responding to the Notice of Preparation, at least eight of our requested information items were completely or partially ignored, without explanation. Available data were not identified. Further, the Initial Study (p. 17) states that the scope of the EIR discussion will provide a "detailed discussion" and "[A] re-inventory of the existing unique, sensitive . . . flora and fauna within the project site . . ." Also to be provided was "[A] detailed analysis of the project's impacts to wildlife movement, including mitigation measures to avoid or reduce those impacts." Neither of those items was adequately accomplished.

The Wildlife Agencies offer the following specific information and recommendations to assist the County and the project applicant in planning for the preservation of sensitive wildlife species, habitats, and wildlife corridors within the proposed project area, and as a means to assist you in complying with pertinent statutes. Page numbers refer to the DSEIR unless otherwise noted:

1-1, paragraph 2 and 4-41, paragraph 4. Both of these statements should read as "effect."

4-41, exhibits 21, 22, 53. Interference with existing hydrology on site is shown with the construction of the preferred alternative. Impacts to "ephemeral ponds" not directly within the project footprint would also occur. Analyze these impacts further.

4-43, last paragraph. The Wildlife Agencies disagree with the conclusions that there would be "... no unavoidable adverse impacts to surface or groundwater hydrology" and that water quality impacts would be "... to less than significant levels" since current hydrological conditions support the existence of these areas. Implementation of the preferred alternative, including alteration of drainage patterns, would result in the direct loss of a minimum of seven ephemeral ponds on site.

4-110. The noise impact analysis is cursory and needs to refer to appropriate literature attributing impact to avian populations due to noise. Also, in the cases of "major airport runways" the analysis is biased by not considering adjacent land use changes in the context of the distribution of the coastal California gnatcatcher.

4-119, paragraph 2. There was no Service protocol for presence/absence of gnatcatchers in 1993 and 1994.

4-122, exhibit 50. Western spadefoot toad (*Scaphiopus hammondi*) is identified in the exhibit (and on page 4-137) as occurring on site; however, the discussion about amphibians on page 4-126 states that "[N]o amphibians were observed during the surveys of the site." Correct this discrepancy.

4-123, paragraph 2. Add that the NCCP refers to the Southern Orange County Subregion to distinguish this planning effort from other ongoing and completed efforts.

4-125, "Ephemeral Ponds." The Wildlife Agencies disagree with the assertion that "all of the ephemeral ponds were artificially created a number of years ago..." Given the geological conditions of frequent landslides in the area, these wetlands could have been "slump" or "slope" ponds that underwent human modification at a later time. These types of wetlands are known in both Orange and San Diego counties. Further information is needed in the DSEIR regarding the origin of these wetlands in the context of the proposed impacts.

As identified by Maria Simovich, Ph.D., a consultant for the former applicant, some of the on site wetlands contain a high diversity of aquatic invertebrates, strongly suggestive of the more natural origin of these wetlands. Known to occur in at least some ponds with Riverside fairy shrimp and western spadefoot are cladocerans (e.g., *Daphnia*, 2 or 3 species likely), copepods, ostracods (seed shrimp), and clam shrimp (*Cyzicus californicus*). Clam shrimp have a restricted distribution in coastal southern California. Further information is needed in the DSEIR regarding aquatic invertebrates in the context of the proposed impacts.

4-126, Invertebrates, last sentence. The DSEIR states that "[H]undreds of additional invertebrates are expected to use the site." No data are provided to support this statement. The Wildlife Agencies presume that this statement refers to the expected number of species, not the number of individuals. Please qualify and support the statement.

4-126, Amphibians. The last sentence erroneously implies that the distribution of amphibians is restricted to steep slopes. No data are provided to support this statement. The likely widespread distribution on site of western spadefoot toad, Pacific treefrog (*Hyla regilla*), and western toad (*Bufo boreas*) needs to be noted and discussed. Please revise the discussion.

4-126, Reptiles. The correct name is the orange-throated whiptail lizard. Please correct this name throughout the document (e.g., 4-138, -147).

4-130, paragraph 1. The DSEIR states that the "[Southern] subregion will incorporate public lands of the Cleveland National Forest (CNF)." We suggest that this statement be removed or properly qualified since no additional conservation benefits would occur unless the U.S. Forest Service (USFS) is a signatory to an NCCP agreement. The USFS is not participating in the Orange County Central/Coastal NCCP and has not indicated that it wishes to be a "participating landowner" in the Southern Subregion. The DSEIR should not presume that future CNF management activities will be compatible with an NCCP.

4-130, paragraph 2. The DSEIR states that the gnatcatcher is not found onsite. Surveys to current Service protocol were not done. The last gnatcatcher surveys were done in 1994. Surveys should be conducted according to Service protocol to determine the baseline status for the species. The results of these surveys will be needed to assess impacts, including the number of gnatcatchers subject to "take," in accordance with the Intra-Service Biological Opinion for the 4(d) rule.

4-130, paragraph 3. The correct name is the Central-Coastal Subregion.

4-130, paragraph 4. The DSEIR refers to the "disturbed nature of the site" in the context of fulfilling wildlife corridor "needs in the area." No additional information is provided to support this assertion. The existing landscape linkages and documented presence of mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*), all of which would use a wildlife corridor within the project area, needs to be noted and discussed. Mountain lion movement through the area was not disclosed in the DSEIR. This study was undertaken by Paul Beier, Ph.D, and reported in the scientific literature. For further explanation of our request that these data be disclosed and discussed in the context of this proposed project, refer to item number eight in our joint wildlife agency letter of January 30, 1997.

4-131, exhibit 51. This exhibit is difficult to interpret since it was originally a color map of larger size. For example, gnatcatchers and cactus wrens are noted in the legend but are invisible on the exhibit. We suggest that the exhibit be redone to show only relevant information.

4-133, paragraph 3. The DSEIR says that "The fragmented nature of much of the coastal sage scrub onsite makes it low quality." However, the current gnatcatcher status is unknown and most wildlife surveys were out of date, having been conducted in 1993 and 1994. The paragraph continues by stating that the steep slopes support the highest diversity of animal species, but no data are provided to support this statement.

4-133, paragraph 3. The site also contains a habitat linkage, also qualifying it as at least "intermediate value" according the Evaluation Logic Flow Chart.

4-136, exhibit 53. One pond identified as a "potential mitigation area" is in the project footprint of the preferred alternative, as shown on exhibits 18 and 22. Since this area would be under housing and infrastructure and no longer in its present condition, please correct this discrepancy.

4-137, paragraph 3. The western spadefoot toad is a California State Species of Concern.

4-137, -139, and -148 state that the site "must be considered occupied by gnatcatcher until proven otherwise." This is inconsistent with the statement on 4-130 that the gnatcatcher is not found on site. Correct and clarify this discussion.

4-139. The distribution information for the gnatcatcher is incomplete. The species occurs in portions of Ventura, eastern Los Angeles, and San Bernardino Counties. The assertion regarding limited slope characteristics is not valid. Gnatcatchers occur on steep slopes, using them for nesting, foraging, and movement.

4-140. The wildlife agencies disagree that focused surveys for the Quino checkerspot butterfly are not warranted. The limited surveys accomplished do not support the assertion that the probability of occurrence is "low." Appropriate habitat (CSS, chaparral, and grassland) exists within the project site. Surveys consistent with the Service 1997 protocol should be completed.

4-141. The correct scientific name for the northern harrier is *Circus cyaneus*. It is properly referred to as a raptor. The accepted common name for *Agelaius tricolor* is the tricolored blackbird. The "C2 (category two)" category was discontinued by the Service in February 1996. The gnatcatcher is a California State Species of Concern.

4-144. There is no analysis of connectivity loss in this discussion of the project in relation to the NCCP Findings. However, 4-148 states that "[T]he project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve [sic], due to restricted wildlife

movement." Further on page 4-130, paragraph 3 it says, "the project site occupies a linkage area between the Central and Southern NCCP Subregional preserves [sic], where a wildlife corridor is needed." Please clarify and further analyze this crucial issue. We suggest explanatory text with an exhibit or exhibits specifically rendered.

4-145, "Ephemeral Ponds." The use of acreage by itself is inappropriate since it does not sufficiently disclose the impacts of the preferred alternative. The Wildlife Agencies suggest that the number of ponds also be used as a measure of impact. From the diagrams in the DSEIR, it appears that seven of the eight ponds identified as supporting Riverside fairy shrimp would be directly in the project footprint. The other pond would be subject to edge effects and adverse impacts to water quality. This impact is not apparent when only the acreage figure is considered.

4-147, Western spadefoot toad. The DSEIR states that the population is small in size. However, no data are provided to support this statement such as the results of a scientifically valid population survey. In the absence of data, we suggest that the statement be eliminated.

4-148, Wildlife Movement. The statement "It can not [sic] be assumed that wildlife would be able to move through the project site..." should be further explained. Further explanation is needed since it is known that there would be the virtual elimination of wildlife and their movements in a high density residential development as the preferred alternative proposes.

4-151, -152, Conceptual Mitigation Program. The last sentence on 4-151 states that the program was developed based on input from the wildlife agencies. Regarding the mitigation ratios presented, the DSEIR provides no rationale to support these ratios. Further, the position of the Wildlife Agencies is that the ratios are unjustified and inappropriately low in relation to the proposed impacts, given other mitigation agreements.

6-3, table 39. The "no project" alternative states that there would be a continuation of grazing impacts. Include that this is a discretionary landowner activity, otherwise unrelated to the proposed project.

6-4, paragraph 1. The DSEIR states that "[O]ngoing degradation of onsite biological resources related to cattle grazing operations would continue to occur." This degradation should be further described. For example, on our May 20, 1996 site visit, Wildlife Agency representatives observed cattle within some of the onsite wetlands. We also observed apparently free-ranging horses nearby. Further discussion of the presence of livestock and horses is needed in relation to impacts to Riverside fairy shrimp, other invertebrate species, and CSS. Crushing of fairy shrimp "cysts" and adverse changes to water quality are likely to occur within ponds subject to use by cows and horses. Literature references showing CSS impacts due to grazing should also be referred to and discussed.

2675

6-4, and continuing. The discussion of biological resources impacts is cursory, allowing extremely limited comparison opportunity among the alternatives. A detailed matrix chart of alternatives versus type and amount of habitat impact (e.g., CSS, Riverside fairy shrimp) would help to synthesize the data. However, it appears that alternative three, the 100 unit alternative on 32 acres, would directly avoid seven of the eight ponds occupied by Riverside fairy shrimp, most of the loss of CSS habitat, as well as minimize impacts to wildlife movement.

5-1. The Inventory of Unavoidable Adverse Impacts should include the amount of CSS loss and the likely "take" of gnatcatchers.

Appendix C, Notice of Preparation (NOP), page 3. Note that our joint Wildlife Agency NOP comments about "Plant/Animal Life."

Appendices D (Conceptual Wetland Mitigation Plan) and E (Conceptual Upland Mitigation Plan) were missing from Appendix 'H,' the Biological Resources Assessment prepared by Sweetwater Environmental Biologists, Inc. The Assessment is a draft, dated March 20, 1997. If an updated version is available, include it in the revised DSEIR.

In conclusion, the DSEIR is inadequate. Major revisions and additions are needed, including completion of updated field surveys and a literature search. For example, the gnatcatcher discussion should include a description and analysis of the regional distribution of CSS, gnatcatcher, and cactus wren, in relation to the project area. Vegetation maps and species locations in both digitized and hardcover format are available from the County of Orange.

The Wildlife Agencies anticipate that the issues discussed above will be included and addressed in any additional CEQA documents and be presented to the Wildlife Agencies for review and comment. Until the impact assessment and mitigation recommendations are revised to respond to our concerns, the Wildlife Agencies recommend against certification of the DSEIR as currently proposed.

The Wildlife Agencies appreciate working with the County on NCCP conservation planning issues. Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. The area of the proposed project is also the only linkage to the NCCP Central Subregion in Orange County. An improperly implemented project would permanently destroy the integrity of the linkage between the

Subregion reserves. If you have any questions or comments please contact Liam H. Davis, NCCP Associate Wildlife Biologist (Department) at 619-467-4207 or Robert James, Fish and Wildlife Biologist (Service) at 760-431-9440.

Sincerely,

Gail C. Kobetich
Field Supervisor
U.S. Fish and Wildlife Service

Ron Rempel
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (B. Tippets, P. Wolf, S. Harris, T. Dickerson)
County of Orange (T. Neely)
Rod Meade
U.S. Army Corps of Engineers (L. Moraler, S. McNeil)

1-6-97-TA-252

EXHIBIT "F"

2678

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August 25, 1998

Orange County Planning & Development
Services Department
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Santa Ana, CA 92702-4048

Re: *Zone Change 98-3/Area Plan 98-2/EIR Addendum PA980103*
299-Unit Contingency Plan
Public Hearing of August 25, 1998

Honorable Members of the Planning Commission:

On behalf of (1) the Vedanta Society of Southern California ("Vedanta"); (2) the Norbertine Fathers of Orange (the "Norbertines"); and the Saddleback Meadows Land Conservancy LLC (the "Conservancy"), we respectfully submit this letter in opposition to California Quartet's application for approval of Zone Change 98-3 ("ZC 98-3" or the "Zone Change") and Area Plan 98-2 ("AP 98-2" or the "Area Plan") relating to a proposed 299-unit single family detached housing project (the "299-Unit Project"), which has been dubbed a "Contingency Plan."

Based on the list of objections attached hereto, and based also on all oral and written comments which are presented in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing, including, but not limited to, all expert opinions expressed by Royce Riggan, John Byerly, Warren Singleton, or Saundra Jacobs either orally or in writing in connection with the hearing, Vedanta, the Norbertines, and the Conservancy respectfully submit that the CEQA review process relating to, and the environmental documentation which has been prepared in support of, ZC 98-3 and AP 98-2 is woefully inadequate from both a procedural and substantive standpoint.

By (1) purporting to rely on a previously certified EIR for an *entirely different* project which is, itself, grossly deficient and is now being challenged in court, (2) failing to provide the public and responsible agencies (such as the state and federal wildlife agencies) with the 45-days' notice required by law, and (3) refusing to prepare, and circulate for public review

and comment, a new EIR to properly address important new information and substantial project changes involving new environmental impacts and additional project alternatives and mitigation measures which have not been addressed in any earlier EIR, the County is poised to violate CEQA and the Guidelines in numerous different respects in connection with the proposed Zone Change and Area Plan for the 299-Unit Project.

As a result of these CEQA violations, my office has not been afforded adequate time to prepare and submit comments on ZC 98-3 and AP 98-2 and the environmental documentation relating thereto. Regrettably, history seems to be repeating itself in this case.

Indeed, one year ago last week, I submitted a lengthy letter to County staff objecting to the many procedural improprieties and substantive deficiencies relating to Draft Subsequent Environmental Impact Report No. 566 ("SEIR 566") which had been prepared to evaluate the environmental impacts associated with the issuance of a grading permit for the construction of 705 units of manufactured housing at the Saddleback Meadows site. Because of the failure of the Draft SEIR to include the grading plans and soils reports upon which the grading permit application was based, and given the County's refusal to make these materials available for public review during the comment period on the Draft SEIR, I was compelled to submit my August 1997 letter under protest.

How ironic it is that, one year later, I must also submit this letter under protest because of the County's clear-cut violation of those provisions of the CEQA Guidelines which require a local agency to provide 45 days' written notice to interested persons of its intention to use an EIR, which was prepared in connection with an earlier project, as the environmental documentation for a separate, later project. Instead of the 45-day public notice required to be given under CEQA Guidelines sections 15087, 15105, and 15153, the County has inexplicably decided to provide only 18 days' written notice of its intention to use Final SEIR 566 for the 705-unit manufactured housing project (the "705-Unit Project") as the EIR for the 299-Unit Project.

At first blush, one might wonder how it is possible to use an EIR initially prepared to analyze the impacts of developing 705 units of manufactured housing as the EIR for an *entirely different* project -- namely, a 299-unit single-family detached housing project which, among other things (1) involves building houses on land which was proposed to be left undeveloped by the 705-Unit Project; (2) proposes to develop a wildlife corridor through the middle of the project where none had been previously provided under the 705-Unit Project; and (3) purports to fully exempt the 299-Unit Project from compliance with the Foothill/Trabuco Specific Plan, despite express language in the Specific Plan requiring any new projects for the Saddleback Meadows property to be made "consistent" with the Plan.

Admittedly, CEQA Guidelines section 15153(b) does allow a previously prepared EIR to be used as the environmental documentation for a "separate, later project" *provided* that

the EIR for the earlier project meets certain criteria and *provided also* that the public is properly notified of the local agency's intention to rely on the previous EIR instead of preparing a *new* EIR for the *new* project. Unfortunately, the County has chosen to ignore the adequacy and public notice requirements set forth in CEQA Guidelines section 15153(b) and is trying, instead, to process an addendum (the "Addendum") to Final SEIR 566 in an apparent attempt to avoid these requirements. Of course, the County's attempt to use the Addendum as the environmental documentation for the 299-Unit Project is illegal and improper for two very basic reasons.

First, section 15164 of the CEQA Guidelines, which authorizes the preparation of "an addendum to a previously certified EIR if some changes or additions are necessary," only applies when the *same* project addressed in the previous EIR is being considered for a subsequent government approval at a more detailed level of planning. Obviously, when an entirely *different* project is being considered – such as a full-scale revision and redesign of the project which was analyzed in the previous EIR – an addendum is *not* the appropriate document by which to describe and analyze substantial project changes involving new impacts, alternatives, and mitigation measures not discussed in the earlier EIR. Indeed, an addendum is only to be used to address minor technical changes or additions to a previously certified EIR, not to report on substantial project changes or significant new information about a *completely different* project.

The second reason that the County is not allowed to adopt the Addendum in this case is that, assuming for the sake of argument that the Zone Change and the Area Plan actually involved the *same* 705-Unit Project addressed in Final SEIR 566 (which, of course, they do not), the provisions of section 15162 of the CEQA Guidelines would require the preparation of a subsequent or supplemental EIR. Specifically, new information and project changes relating to environmental impacts, project alternatives, mitigation measures not previously discussed in Final SEIR 566 would require the County to prepare another EIR and circulate it for public review and comment.

County staff has determined that none of the conditions described in CEQA Guidelines section 15162 would require the preparation of a subsequent or supplemental EIR to address the environmental impacts associated with the proposed Zone Change and Area Plan for the 299-Unit Project. Vedanta, the Norbertines, and the Conservancy certainly disagree with this determination and wish to underscore what several California courts have already held, i.e., that Guidelines section 15162 and its companion section 21166 of CEQA only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project. When the proposed new activity constitutes a *separate* project, the "fair argument" test applies to the local agency's decision regarding whether to require a new EIR for the later project.

Indisputably, the oral and written comments which will be submitted in opposition to the proposed Zone Change and Area Plan at the August 25 public hearing will constitute substantial evidence supporting a "fair argument" that the 299-Unit Project may cause significant

environmental effects, and may involve important new project alternatives and mitigation measures, which were not previously addressed in Final SEIR 566 -- thereby necessitating the preparation of a new EIR to be circulated for public review and comment.

By submitting this letter, and by incorporating the oral and written comments made at the August 25 public hearing in opposition to the proposed Zone Change and the Area Plan, my clients do not intend to waive their objections to the County's failure to provide the appropriate notice of its intention to rely on Final SEIR 566 as the EIR for the 299-Unit Project. However, within the little time afforded by the inadequate notice provided by the County, my office has attempted to formulate the attached objections and hereby submits them to the Planning Commission with the sincere hope that the County will review them in good faith and will correct the many defects and deficiencies which pervade the CEQA review process for the proposed Zone Change and the Area Plan.

Very truly yours,

Edmond M. Connor

OBJECTIONS TO ADDENDUM PA980103 TO FSEIR 566, ZONE CHANGE 98-3, AND AREA PLAN 98-2

1. The County of Orange (the "County") has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined that FSEIR 566 adequately describes the significant environmental impacts of the 299-unit single family detached housing project referred to as the Saddleback Meadows Contingency Plan (the "299-Unit Project"), which impacts are more particularly described in the oral and written comments (the "Comments") submitted to the Orange County Planning Commission prior to or at its August 25, 1998 public hearing, including, but not limited to, the expert opinions of Royce B. Riggan, Jr., John R. Byerly, Warren W. Singleton, and Saundra F. Jacobs. (The comments of John R. Byerly regarding the geotechnical aspects of the 299-Unit Project are set forth in an August 21, 1998 letter to counsel which is attached hereto as Exhibit "A" and is incorporated herein by reference.)

2. The County has violated section 15153(b) of the CEQA Guidelines in that it has improperly determined that FSEIR 566 adequately describes the alternatives and mitigation measures related to the significant environmental impacts of the 299-Unit Project, as more particularly described in the Comments.

3. The County has violated section 15153(b), 15087, and 15105 of the CEQA Guidelines in that it has failed to provide (a) public notice of its plans to use FSEIR 566 as the environmental documentation for the 299-Unit Project and (b) a 45-day public review and comment period on such key issues as "whether [FSEIR 566] should be used for [the 299-Unit Project] and whether there are any additional, reasonable, alternatives or mitigation measures that should be considered as ways of avoiding or reducing the significant effects of [the 299-Unit Project]."

4. The County has violated section 15063(g) of the CEQA Guidelines in that, at the time it determined that an initial study was required for the 299-Unit Project, it failed to consult with the United States Fish and Wildlife Service, the California Department of Fish and Game, the Army Corp. of Engineers, and all other responsible and trustee agencies responsible for the resources affected by the 299-Unit Project, to obtain the recommendation of those agencies as to the appropriate environmental documentation for the 299-Unit Project.

5. The County has violated CEQA and the CEQA Guidelines, to the extent that it has sought to invoke the provisions of section 15164 of the CEQA Guidelines, in that section 15164 only allows the preparation of an addendum when the same "project" is involved. In this case, there are two separate and distinct projects, i.e., a grading application for a 705-unit mobilehome/manufactured housing project (the "705-Unit Project") and an application for a zone change and area plan for the 299-Unit Project.

6. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," which they clearly are not, the County has violated section 15162(a)(1) and (2) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the effects of the 299-Unit Project, which proposes substantial changes in the "project" and is based upon substantial changes in the circumstances surrounding the "project," in that, among other things, (a) the 299-Unit Project will involve mass grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project; (b) the 299-Unit Project will involve a proposed wildlife corridor for which there is no analysis in FSEIR 566 and about which the public has not had an opportunity to comment with respect to its viability, and (c) the U.S. Fish and Wildlife Service and the California Department of Fish and Game have indicated in an August 11, 1998 correspondence to the Orange County Board of Supervisors that the adoption of the 299-Unit Project may jeopardize the approval of the Southern Region of the NCCP program in that (i) "Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion" and (ii) the proposed wildlife corridor may not prove to be viable. (A true and correct copy of the August 11, 1998 correspondence from U.S. Fish and Wildlife Service and the California Department of Fish and Game to the Orange County Board of Supervisors is attached hereto as Exhibit "B" and is incorporated herein by reference.)

7. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(A) and (B) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance described in the Comments which shows that the 299-Unit Project will have significant effects on the environment that are not discussed in FSEIR 566 and/or are substantially more severe than the impacts discussed in FSEIR 566, including, but not limited to, (a) the grading and permanent alteration of land that was to be left undisturbed and undeveloped by the 705-Unit Project, (b) the categorical exemption of the Saddleback Meadows property from the provisions of the Foothill/Trabuco Specific Plan, and (c) the additional reduction and/or destruction of valuable biological resources.

8. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(C) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance which shows that the mitigation measures that were proposed during the public review period for Draft SEIR 566 (but which FSEIR 566 failed to consider and deemed infeasible because of its erroneous assumption that the County was precluded from even considering any mitigation measures that would cause the "project" to deviate from Recorded Tract Map 10692) are now feasible because the Recorded Tract Map is to be superseded *in toto*.

9. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15162(a)(3)(D) of the CEQA Guidelines in that it has improperly determined that a subsequent EIR is not required to address the 299-Unit Project, despite the new information of substantial importance that has come to light since FSEIR 566 was certified regarding new project alternatives which are considerably different from those analyzed in FSEIR 566 and would reduce one or more of the significant impacts identified in the Comments, but that California Quartet, Ltd., has, to date, declined to adopt, including but not limited to, (a) the Mathews' alternative for the development of a 65-unit single family detached housing project on 35 acres of the Saddleback Meadows property and (b) the modified Mathews' alternative for the development of a 130-unit single family detached housing project on 44 acres of the property.

10. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15153(d) of the CEQA Guidelines in that it has improperly determined that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

11. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(a) of the CEQA Guidelines in that it has improperly determined that the processing of an addendum would be appropriate and that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

12. Assuming *arguendo* that the 299-Unit Project and the 705-Unit Project are the same "project," the County has violated section 15164(e) of the CEQA Guidelines in that it has failed to provide a brief explanation, supported by substantial evidence, of its determination that none of the conditions described in section 15162 would require the preparation of a subsequent or supplemental EIR.

13. Zone Change 98-3 and Area Plan 98-2 violate the provisions of the Foothill Trabuco Specific Plan (the "FTSP") in that they are part of a development proposal for the 299-Unit Project which deviates from Recorded Tract Map 10692 without providing for an amendment to the FTSP that (a) is adopted pursuant to the amendment procedures established by the FTSP and (b) is consistent with all of the provisions of the FTSP, including, but not limited to, (i) the development and design guidelines established by the FTSP, (ii) the goals and objectives of the FTSP, and (iii) all other provisions of the FTSP identified in the Comments.

14. The County has violated CEQA and the CEQA Guidelines in that it has improperly relied upon FSEIR 566, which is a legally inadequate CEQA document that was improperly certified for the reasons set forth in that certain "Complaint for Declaratory Relief and Petition for Writ of Mandate," which is attached hereto as Exhibit "C" and is incorporated herein by reference, including, but not limited to:

(a) In certifying FSEIR 566, the County did not comply with the special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566;

(b) The special CEQA review process the Board of Supervisors adopted for the review of FSEIR 566 violated CEQA in that, *inter alia*, it unlawfully separated the decision whether to certify FSEIR 566 without taking action on the project for which the FSEIR was prepared;

(c) It improperly limits the mitigation measures its considers to only those that would not cause the project to deviate from Recorded Tract Map 10692;

(d) The analysis and information set forth in FSEIR 566 is legally inadequate under CEQA and the CEQA Guidelines in that, *inter alia*:

(i) It fails to properly describe the discretionary approval which it was prepared to analyze;

(ii) It fails to provide the required level of specificity;

(iii) It fails to provide the required level of technical detail;

(iv) It was not amended and recirculated after significant new information regarding the discretionary approval it was prepared to analyze was released;

(v) Its certification was separated from the discretionary approval it was prepared to analyze;

(vi) It fails to adequately address all environmental impacts of the discretionary approval it was prepare to analyze, including, but not limited to:

a. Soils and Geology;
b. Water/Hydrology;
c. Transportation/Circulation;
d. Air Quality;
e. Biological Resources;
f. Archeological/Cultural Resources; and
g. Public Services;

(vii) It fails to provide legally adequate mitigation measures and an adequate mitigation monitoring program was not adopted;

(viii) It fails to address the cumulative impacts of the project associated with the discretionary approval it was prepared to analyze;

(ix) It fails to consider project alternatives; and

(x) It fails to adequately respond to comments;

(e) Adequate and proper findings, supported by substantial evidence in the record, were not made in support of the certification of FSEIR 566; and

(f) The Statement of Overriding Considerations was improperly adopted in connection with the certification of FSEIR 566.

15. The County has violated CEQA and the CEQA Guidelines, to the extent that the "Draft Area Plan Conditions of Approval" attempt in any way to eliminate or modify any of the "Standard Conditions of Approval" that are set forth in FSEIR 566 and Addendum PA980103 as mitigation measures which must be completed

prior to the issuance of any grading permit, including, but not limited to, (a) SC 7-2 requiring a 1603 Streambed Alteration Agreement from the California Department of Fish and Game, (b) SC 7-3 requiring the necessary individual or nationwide permit from the Army Corp. of Engineers pursuant to section 404 of the Federal Clean Water Act, and (c) SC 7-5 and 7-7 requiring from the U.S. Fish and Wildlife Service (i) appropriate federal approvals required for impacts to Coastal Sage Scrub and (ii) written proof that the removal of any native vegetation from the project site complies with the Federal Endangered Species Act, in that it has attempted to reduce or eliminate feasible mitigation measures that are set forth in FSEIR 566 and Addendum PA980103 to reduce significant environmental impacts.

16. The County has violated CEQA and the CEQA Guidelines in that Addendum PA980103 to FSEIR 566 is inadequate and incomplete due to, *inter alia*, the omission of volume two of Appendix "G," the "Supplemental Geotechnical Assessment for Contingency Pan – 299 Lots," which purportedly contains the computer output documents for the slope stability analysis performed by G.A. Nicoll and Associates, Inc.

EXHIBIT "A"

John R. Byerly
INCORPORATED

August 24, 1998

David J. Hesseltine
Connor, Culver, Blake and Griffin
2600 Michelson Drive, Suite 1450
Irvine, California 92612

Rpt. No.: 5833
File No.: S-8753

Subject: Saddleback Meadows, El Toro Road, Orange County, California; Geotechnical Review of Addendum to Environmental Impact Report 566

Reference: Addendum PA980103 to Certified Final Subsequent Environmental Impact Report 566, Urban Vision, August 19, 1998

Dear Mr. Hesseltine:

Within the little time afforded by the County's expedited processing of the 299-unit "Contingency Plan" for the Saddleback Meadows property, I have attempted to review the geotechnical aspects of the referenced addendum to the earlier environmental impact report. This addendum anticipates the construction of 299 single-family dwelling units on the 222.2-acre site. Extensive grading (2.1 million cubic yards of cut and fill) is proposed to construct the building pads, associated streets, and open areas. Even more extensive grading (6.8 million cubic yards) is anticipated to remediate demonstrated unstable geologic conditions, including existing landslides, adverse bedding orientation, and loose and compressible alluvium and colluvium.

The problematic geotechnical issues associated with the 299-unit proposal remain unchanged from those that have been discussed in great detail with reference to the 705-unit manufactured housing project, and presented to the Planning Commission and the Board of Supervisors with no meaningful response. The issues of primary concern to this reviewer which mandate further analysis in an appropriate environmental impact report would include the following:

GRADING (Page 20)

The addendum continues to assume an average daily grading of 30,000 cubic yards per day, projecting a total time of grading of 10 months. At 30,000 cubic yards per day for 8.9 million cubic yards of fill, grading needs to be performed 7 days a week–no allowance for off-days for weekends or for inclement weather is provided in this estimate. It seems to this reviewer that it might be possible to achieve the average 30,000 cubic yards per day goal for the conventional grading. It seems highly unlikely that the grading to accomplish the alluvium/colluvium removals, construction of buttress fills, and other remedial grading that will be required can approach the projected rate of fill movement. If, as seems likely, the remedial grading would be performed at an average rate of 10,000 cubic yards per day, and grading is performed on a 5-day per week basis, the remedial grading would require 31 months. With down-time for inclement weather, it is more realistic to project a total period of grading of 3 years. Even this projection is optimistic, and the site could easily experience 4 rain seasons during grading.

EXCAVATION CONDITIONS (Page 29)

The addendum correctly anticipates heavy ground water seepage into excavations at the site. Not addressed is the impact of discharge of collected ground water seepage, the impact of the interruption in subsurface ground water flow on downstream wells, nor the impact of the presence of the deep shear keys for buttress fills on the final ground water conditions. Is there a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill?

LONG-TERM SETTLEMENT (Page 31)

Fill depths exceeding 50 feet are suggested, with settlements associated with those fills of 4 to 6 inches. Construction of shear keys for buttress fills, however, will result in fills as deep as 130 feet. Fills of such great depths require additional evaluation that may necessitate compaction criteria well in excess of code minimums, special moisture conditioning of fill during compaction, and long-term settlement monitoring prior to building construction. These considerations are not addressed in the addendum.

PHASING OF EARTHWORK (Page 31)

The addendum continues to project a buttress backcut failure rate of 10 percent. Considering the subsurface conditions typified by landslides within landslides, this failure rate is surely unrealistically optimistic. Further, the effect of backcut failures on upstream and adjacent properties is not addressed.

These are the comments that I have been able to prepare during the time allotted by the County's short notice to your firm regarding the public hearing to be held on August 25, 1998. I hope my comments have been helpful under the circumstances. Should there be questions, please feel free to call.

Sincerely,

JOHN R. BYERLY, INC.

John R. Byerly, Geotechnical Engineer

JRB:mh

Copies: (3) Client

2691

EXHIBIT "B"

2692

US Fish & Wildlife Service
Carlsbad Field Office
2730 Loker Avenue, West
Carlsbad, CA 92008
(760) 431-9440
FAX (760) 431-9624

CA Dept. of Fish & Game
1416 Ninth Street
PO Box 944209
Sacramento, CA 94244-2090
(916) 653-9767
FAX (916) 653-2588

August 11, 1998

Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92703

Saddleback Meadows Project
Orange County, California

Dear Board of Supervisors:

The California Department of Fish and Game and the U. S. Fish and Wildlife Service (collectively the Wildlife Agencies) recently learned about a Planning Application Hearing for the Saddleback Meadows project scheduled for the County Board of Supervisors on August 11, 1998. The applicant is proposing a 299 single-family dwelling unit project at Saddleback Meadows. The Wildlife Agencies and County have a lengthy history of communication concerning the project site and a variety of development proposal alternatives have been reviewed. The project site provides a critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans. In this letter we reiterate our position on the proposed Saddleback Meadows project and provide comments on a recent proposal that could affect the project.

The Wildlife Agencies, other Federal and State agencies, County of Orange, and local jurisdictions are participating in the Natural Community Conservation Planning (NCCP) program to conserve wildlife and habitat resources while accommodating economic growth and development. Our previous comments on Saddleback Meadows Project - Draft Environmental Impact Report (DEIR) No. 561 (February 1996) and in our August 8, 1997, letter concerning the Saddleback Meadows Draft Subsequent Environmental Report No. 566 (DSEIR) (June 1997) identified significant biological issues related to the project site. These biological issues include habitat connectivity, wildlife corridors, sensitive habitats, and occupied wetlands with a federally listed animal. These sensitive habitats include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about 4 acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified as "ephemeral ponds") spread throughout the site. Our letter

evaluating the DSEIR identified Alternative '3' which proposed a clustered, lower density development, presented the least environmental impact, but would nonetheless substantially impact the wildlife corridor integrity. The 299-unit development posed a significant impact to the existing habitat connection from O'Neill Regional Park (Southern Subregion) to the Cleveland National Forest and other open space habitat in the central portion of the Central/Coastal Subregion. The Wildlife Agencies are willing to work with the project applicant to redesign a cluster development in order to preserve the wildlife corridor.

Other animal species considered sensitive by the Wildlife Agencies occur on or adjacent to the project site. The Wildlife Agencies documented rare and sensitive Cactus wren (*Camphylorhynchus brunneicapillus*) on site. The coastal California gnatcatcher (*Polioptila californica californica*)(gnatcatcher), a federally threatened species, could utilize the site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. Both of these animals, as well as other wildlife, would utilize Saddleback Meadows as a wildlife corridor. County maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion.

We have been informed by two interested parties, Saint Michael's Abbey and Vedanta Society of Southern California, that a new clustered development alternative proposal and purchase of significant open space on the site have been offered to the current property owner. The Wildlife Agencies are willing to work with the current landowners and all interested parties in reaching a workable development solution.

The Wildlife Agencies believe a workable solution exists to permit development, while maintaining an essential biological connection between the NCCP Central/Coastal and Southern Subregions. We request that the Board consider this alternative approach that may provide a solution acceptable to all parties. If you have any questions or comments, we are available to discuss this matter further. Please feel free to contact us at your earliest convenience.

Sincerely,

Jim A. Bartel
Assistant Field Supervisor
U. S. Fish and Wildlife Service

for Gail Presley
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (G.Presley, B.Tippets)

U. S. Fish and Wildlife Service (J.Bradley)

dzsdbrdck.ncp

EXHIBIT "C"

EDMOND M. CONNOR, State Bar No. 65515
CRAIG L. GRIFFIN, State Bar No. 145777
DAVID J. HESSELTINE, State Bar No. 186904
CONNOR, CULVER, BLAKE & GRIFFIN LLP
2600 Michelson Drive, Suite 1450
Irvine, CA 92612

Attorneys For Plaintiff and Petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA

FILED
ORANGE COUNTY SUPERIOR COURT
MAR 0 5 1998
ALAN SLATER, Executive Officer/Clerk
BY K. WOLFE

SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF ORANGE

VEDANTA SOCIETY OF SOUTHERN CALIFORNIA, a California non-profit religious corporation,

Plaintiff and Petitioner,

v.

COUNTY OF ORANGE, a political subdivision of the State of California; BOARD OF SUPERVISORS OF COUNTY OF ORANGE, the duly elected legislative body of the County; PLANNING COMMISSION OF COUNTY OF ORANGE, the duly appointed subagency of the Board; LARRY NEES, the duly appointed Building Official of the County; and DOES 1 through 25, inclusive,

Defendants and Respondents.

CALIFORNIA QUARTET, LTD., a California limited partnership; ARADI, LTD., a Nevada limited partnership; ARADI, INC., a Nevada corporation; and DOES 26 through 50, inclusive,

Defendants and Real Parties in Interest.

Case No. 791309

COMPLAINT FOR DECLARATORY RELIEF AND PETITION FOR WRIT OF MANDATE

JUDGE TULLY H. SEYMOUR
DEPT. 30

2696

As a verified Complaint for Declaratory Relief and Petition for Writ of Mandate (the "Complaint and Petition") against (a) defendants and respondents COUNTY OF ORANGE (the "County"), BOARD OF SUPERVISORS OF COUNTY OF ORANGE (the "Board"), PLANNING COMMISSION OF COUNTY OF ORANGE (the "Planning Commission"), LARRY NEES ("Nees"), and DOES 1 through 25, inclusive (hereinafter, the County, the Board, the Planning Commission, NEES, and DOES 1 through 25, inclusive, are sometimes collectively referred to as the "Respondents"), and (b) defendants and real parties in interest CALIFORNIA QUARTET, LTD. ("California Quartet"), ARADI, LTD. ("Aradi, Ltd."), ARADI, INC. ("Aradi, Inc.") [hereinafter, California Quartet, Aradi, Ltd., and Aradi, Inc., are sometimes collectively referred to as "Aradi"], and DOES 26 through 50, inclusive (hereinafter, Aradi and DOES 26 through 50, inclusive, are sometimes collectively referred to as "Real Parties" and the Respondents and the Real Parties are sometimes collectively referred to herein as the "Defendants"), plaintiff and petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA (the "Society") alleges as follows:

I. SUMMARY OF COMPLAINT AND PETITION

1. Neither the public, nor the environment, has been well served by the County's unfortunate and ill-advised actions in (a) purporting to certify that Final Subsequent Environmental Impact Report No. 566 ("FSEIR 566" or the "FSEIR") properly complied with the dictates of the California Environmental Quality Act ("CEQA") and (b) attempting to adopt findings and a statement of overriding considerations as if the County were issuing some form of "project approval" — even though no project approval was ever agendized for consideration by the Planning Commission or the Board at public hearings relating to FSEIR 566.

2. As an informational document, FSEIR 566 is grossly deficient and fails to comply with CEQA in numerous respects. More importantly, however, aside from its many

shortcomings as an environmental compliance document, FSEIR 566 is a legal nullity because it has never been officially certified by the County.

3. Indeed, the County has taken the position that, at the public hearing held on February 24, 1998, the 2-2 vote taken by the Board in connection with Supervisor William Steiner's motion to deny the Society's appeal of the Planning Commission's certification of FSEIR 566 somehow caused the appeal to fail and the certification to be upheld. However, there is no County ordinance which would support such an outcome because the "tie vote" rule set forth in section 7-9-157 of the Orange County Zoning Code only applies if "action on a discretionary permit" is involved, and neither the Planning Commission, nor the Board, took any action in approving or disapproving any such permit.

4. Moreover, the County's position that the Board's tie vote caused the Planning Commission's certification of FSEIR 566 to be upheld is completely at odds with numerous California appellate court decisions holding that a tie vote in this type of situation constitutes *no action* on the part of the Board and does *not* result in the Planning Commission's action being upheld or ratified by the Board.

5. The anomalous situation which has arisen, therefore, is that, contrary to California law, the County is proceeding as if FSEIR 566 has been properly certified under CEQA -- when, in fact, it has not. The tie vote taken by the Board at the February 24 public hearing on the Society's appeal did not result in any type of "determination" being made by the Board with respect to the appeal, even though the Board was expressly required to make such a "determination" in accordance with step no. 3 of the "Approval & Appeal Process for FSEIR 566," which was unlawfully adopted by the Board on November 25, 1997.

6. Regrettably, this litigation has been necessitated because County Counsel erroneously opined at the February 24 hearing -- and the County continues to believe and maintain -- that the Board's tie vote on Supervisor Steiner's motion to deny the Society's appeal caused the Planning Commission's certification of FSEIR 566 to be upheld *by default*. To challenge this unfounded position, the Society is seeking a declaration from the Court that, at the February 24 hearing, the Board did *not* make any determination on the Society's appeal

and certainly did *not* uphold or ratify the Planning Commission's action, either directly or indirectly.

7. Of course, without the Board's affirmative "ratification" of the Planning Commission's approval of FSEIR 566 --which the Board was expressly required to give under step no. 4 of the "Approval & Appeal Process for FSEIR 566" -- the Building Official of the County is not allowed -- according to the County's own rules -- to issue a grading permit to the Real Parties to commence grading operations on the 705-unit manufactured housing/mobile home project (the "Project") to be developed at the Saddleback Meadows property (the "Property"). Unfortunately, however, the County believes that the Board's tie vote amounted to Board ratification of the Planning Commission's action, and thus the Society is seeking injunctive relief herein to ensure that no grading permit is issued to the Real Parties, pending a hearing on the merits of this Complaint and Petition.

8. The Society is also seeking a declaration from the Court that the special CEQA review procedures adopted by the Board on November 25, 1997, were invalid because they unlawfully attempted to separate the certification of FSEIR 566 from the approval of the very project which the FSEIR was designed to evaluate, i.e., Grading Application No. GA960048 (the "Grading Application") which was submitted by Real Parties in December 1996. Moreover, the Society is asking the Court to declare that any future action taken by the County in considering whether to certify FSEIR 566 and approve the Grading Application be conducted jointly by the Planning Commission and the Building Official, with their joint determination being appealable to the Board under CEQA section 21151(c).

9. In addition to the declaratory relief sought in this action, the Society is also seeking a writ of mandate to direct the County to set aside and vacate its purported certification of FSEIR 566 and its purported adoption of the December 1997 "Findings, Facts, & Overriding Considerations" (hereinafter collectively referred to as the "Findings/Considerations") on the grounds that such actions by the County were:

(a) *Entirely unprecedented*, because never before in its history has the County approved an EIR without also taking action on the discretionary

project approval which triggered the preparation of the EIR in the first place, such as a tract map, a site plan, a grading permit, etc.;

(b) *Procedurally defective*, because it was a clear violation of CEQA for the Planning Commission to attempt to certify FSEIR 566 and to adopt the Findings/Considerations as if the Commission were actually approving a "project" when, in fact, no project approval was ever presented to, or considered by, the Planning Commission or the Board relating to Final Tract Map No. 10692 (the "Tract Map") or to Grading Application No. GA960048 (the "Grading Application") -- which, by the County's own admission, was the "initiating activity" which caused FSEIR 566 to be prepared;

(c) *Substantively inadequate*, because (i) the discussion of impacts, project alternatives, and feasible mitigation measures in FSEIR 566 was woefully deficient, (ii) the County's responses to the written comments submitted by members of the public were unbelievably evasive and non-responsive, and (iii) the entire FSEIR was premised on the false and misleading assumption that the Tract Map had somehow acquired a "vesting status" which prevented the County from adopting mitigation measures which might necessitate alterations to the physical design of the Project authorized by the Tract Map; and

(d) *Totally unnecessary*, because both the Planning Commission and the Board made it perfectly clear at the respective public hearings they held on December 3, 1997, and February 24, 1998, that they were opposed to allowing a 705-unit manufactured housing/mobilehome project to be developed at the Property and preferred, instead, to consider various project alternatives which would necessarily cause FSEIR 566 to be rendered useless and obsolete.

A. **Major Error No. 1: Scope of FSEIR Was Unfairly Curtailed Due to Incorrect Legal Assumption Regarding Vesting Status of Tract Map.**

10. Probably the single most egregious error committed by the County which tainted the entire CEQA review process for FSEIR 566 and doomed it to failure was the decision which County staff made sometime after the process got underway to arbitrarily *limit* the scope of the Draft SEIR so as to unfairly *exclude* from consideration any mitigation measures which might result in a change being made to the physical design of the Project as approved by the Tract Map -- such as, for example, mitigation measures which would call for oak tree groves or environmentally-sensitive riparian areas to be preserved, or certain 100-foot-deep excavations to be entirely eliminated, with the result that one or more areas of previously-approved manufactured housing sites could not be developed.

11. A cursory review of FSEIR and the Findings/Considerations will suffice to demonstrate that, throughout these documents, statements were made to the effect that "mitigation measures which would alter features of the final recorded tract map *cannot* be implemented to reduce all project impacts to a level of insignificance [because of the County's] *inability to deviate from the final recorded tract map*." (FSEIR 566, § 2.8, p. 2-10; § 3.2, p. 3-8, emphasis added.)

12. In fact, as one of the six Overriding Considerations adopted by the Planning Commission as part of its Resolution certifying FSEIR 566, the Planning Commission concluded that "Recorded Tract Map 10692 *limits the ability* of the applicant/lead agency to *deviate* from the physical design characteristics of the project to mitigate identified unavoidable adverse effects." (Findings/Considerations, § 5.2.6, p. 83, emphasis added.)

13. By taking the position that its "hands were tied" and that it could not "deviate" from the Tract Map, the County unjustifiably curtailed the scope of the environmental analysis set forth in FSEIR 566 by electing not to consider any feasible mitigation measures which would cause the Tract Map to be changed or altered in any way.

14. What is troublesome, however, is that at the time the "Notice of Preparation" relating to FSEIR 566 was sent out to the public in February 1997, no mention was made by the County of any plan to arbitrarily limit the scope of the Draft SEIR so as to exclude consideration of feasible mitigation measures which might warrant changes being made to the design or intensity of the development authorized by the Tract Map. Indeed, it was not until some four months later when the Draft SEIR was circulated for public review that the public was informed of the County's position regarding the "inviolable" status which the Tract Map had supposedly acquired in the eyes of the County.

15. The unfair manner in which the Draft SEIR was restricted in scope was certainly compounded when the Planning Commission was instructed by County Counsel at the public hearing held on December 3, 1997, that it was *not* allowed to consider any changes or alterations to the Tract Map in contemplating how to lessen or avoid the adverse environmental effects of the Project. This instruction directly contravened the provisions of sections 15002(h) and 15041 of the CEQA Guidelines which clearly authorize the lead agency for a project to "require changes in any or all activities involved in the project in order to lessen or avoid significant effects on the environment."

16. The apparent reason that the County adopted the legally incorrect position that it was not allowed to change or deviate from the Tract Map was that it purportedly believed that the Tract Map had acquired some sort of "vesting status," i.e., that Aradi had supposedly acquired "vested rights" to develop the Project free from any changes or alterations to the Tract Map which might otherwise be called for by the County in seeking to mitigate the adverse impacts of the Project.

17. However, (a) since the Tract Map was not approved as a vesting tentative map and is not otherwise protected by a development agreement, and (b) since the County has never issued any development permits to Aradi or its successors with respect to the Project, it is exceedingly clear under California law that Aradi has *no* vested rights to develop the Property, regardless of whether Aradi has incurred substantial pre-development expenses to date.

B. **Major Error No. 2: Overly-General Project Description in FSEIR Resulted in Failure to Address Construction-Level Impacts Associated with Grading Application.**

18. In addition to incorrectly viewing the Tract Map as if it had risen to the level of a "vested right," the other major error committed by the County which unfairly skewed the CEQA review process for FSEIR 566 was the County's failure and refusal to recognize that, from the outset, the Draft SEIR should have addressed the construction-level impacts associated with the approval of the Grading Application. When the Grading Application was submitted by Aradi in December 1996, the County expressly determined that a "Subsequent EIR is required to evaluate the effects of the *grading application*." (FSEIR 566, § 2.4, pp. 2-8 and 2-9, emphasis added.) Indeed, during the public review proceedings for FSEIR 566, the County expressly conceded that the "Grading Permit Application was the *initiating action* which resulted in the determination that DEIR 566 be prepared . . . ." (Response to Comments, p. 1-1, emphasis added.)

19. Ironically, however, after determining in December 1996 that a Subsequent EIR was needed to study the effects of the Grading Application, the County spent the next 12 months "running away" from this decision by steadfastly refusing -- despite repeated objections by the Society and other members of the public -- to have the Draft SEIR address the specific, construction-level impacts which would flow from the County's approval of the Grading Application.

20. Without any justification or explanation of any kind, the County decided that the Draft SEIR would only have to address the broad impacts of the overall Project, instead of the specific effects of the rough grading, and that a "planning level of detail," as opposed to a construction level of detail, was all that was required for the environmental analysis that was to be set forth in the Draft SEIR.

21. At no time during the public comment period for Draft SEIR 566 did the County make available for public review the 40-scale grading plans submitted in connection

with the Grading Application, nor did it allow the public to gain access to the soils reports which contained the "*more detailed evaluation* of the slope stability . . . [to] be conducted during the 40-scale grading plan review to accompany the grading permit application." (FSEIR 566, Appendix D, ¶ 4, p.4, emphasis added.)

22. By failing to provide the public with critically-important information regarding the 8.9 million cubic yards of remedial grading to be undertaken as part of the Project, such as, for example, the design of the shear keys to be constructed at the site, the County effectively prevented the Society's geotechnical consultants from being able to, *inter alia*, (a) evaluate the adequacy of the proposed remedial grading plan for the Project, (b) determine how the 100-foot-deep shear key excavations could possibly be accomplished without activating massive landsliding on the Property which, in turn, would threaten the stability of the slopes surrounding the Monastery, and (c) develop an accurate estimate of the duration of the proposed rough grading for the Project in order to determine how many *years* the landowners surrounding the Property would be subjected to the impacts of extensive mass grading operations.

23. Despite several letters of protest submitted by the Society, it was not until late October 1997 -- when the members of the Planning Commission balked at considering the adequacy of FSEIR 566 unless they were first allowed to review the 40-scale grading plans and the accompanying soils reports for the Project -- that the County finally made certain grading plans and reports available for public review.

24. Unfortunately, however, this was a case of "too little too late" because, not only did these materials still leave a great many questions unanswered, but, by the time these grading plans and reports were made available in November 1997, the 45-day public comment period for Draft SEIR 566 had been closed for over two months. Despite this fact, the County refused to (a) revise the Draft SEIR in order to analyze and incorporate the new grading plans and reports which the County had belatedly decided to make available for review at only one location and (b) recirculate the revised Draft for public review and comment.

C. Major Error No. 3: Certification of FSEIR and Adoption of Findings/Considerations Were Impermissibly Separated from Approval of the Grading Application.

25. The third major error committed by the County in processing FSEIR 566 was its unprecedented decision (a) to have the Planning Commission and the Board consider the adequacy of FSEIR 566 without simultaneously considering whether to approve the discretionary project, i.e., the Grading Application, which triggered preparation of the FSEIR in the first place and (b) to have the Planning Commission adopt 83 pages of detailed findings and overriding considerations as if it were, in fact, issuing some sort of "project approval." Of course, without any project approval having been agendized for its consideration, the Planning Commission was not authorized under CEQA to make any "findings" which might later be adopted by the County's Building Official in deciding whether to approve Aradi's Grading Application.

26. The administrative record will amply demonstrate that the County was clearly troubled by what procedures it should follow in considering whether to certify FSEIR 566 and to approve the Grading Application. At least four different sets of procedures were separately proposed and then withdrawn by County Counsel in trying to decide how the County should conduct the CEQA review process for FSEIR 566. In the end, however, a five-step procedure was proposed by County Counsel which was neither practical, nor legal, because it divorced (a) the certification of FSEIR 566 and the adoption of the Findings/Considerations from (b) the approval of the Grading Application.

27. Incredibly, after spending so much time formulating this five-step CEQA review process -- which was ultimately amended by the Board to include a sixth step -- the County did not even comply with the special procedures which the Board adopted (referred to collectively as the "Approval & Appeal Process for FSEIR 566") because the Board failed to meet the requirements in step nos. 3 and 4 of the process with respect to making a "determination" on the Society's appeal and issuing a "ratification" of the Planning

Commission's certification of FSEIR 566 The County's insistence, however, that FSEIR 566 has been officially certified, despite the County's failure to comply with the multi-step process it prescribed for itself, has left the Society with no choice but to file this lawsuit to obtain declaratory relief, a writ of mandate, and ancillary injunctive relief.

28. A more detailed statement of the Society's claims against the Defendants, including a summary of the many instances in which the County violated the provisions of CEQA and CEQA Guidelines in attempting to certify FSEIR 566 and to adopt the Findings/Considerations, is set forth below.

II. GENERAL ALLEGATIONS

A. The Parties.

29. The Society is now, and at all time herein mentioned was, a non-profit religious corporation formed, existing, and in good standing under the laws of the State of California and conducting operations in the County.

30. For nearly 50 years, the Society has owned and maintained the Ramakrishna Monastery (the "Monastery") on approximately 40 acres of real property located immediately adjacent to the southeast portion of the Property. The Society's operation and maintenance of the Monastery will be directly and materially affected by the development of the Project.

31. The County is now, and at all times herein mentioned was, a political subdivision of the State of California, created and existing under and by virtue of the laws of the State of California.

32. The Board is now, and at all times herein mentioned was, the duly elected legislative body of the County, organized and existing under the laws of the State of California.

33. The Planning Commission is now, and at all times herein mentioned was, the duly appointed planning subagency of the Board, organized and existing under the laws of the State of California.

34. Nees is now, and at all times herein mentioned was, the Manager of Building Inspection for the County, and the duly-appointed Building Official of the County as defined in the County's Grading and Excavation Code.

35. The true names and capacities, whether individual, corporate, or otherwise, of the Respondents sued herein as DOES 1 through 25, inclusive, are presently unknown to the Society, which therefore sues such Respondents by such fictitious names. The Society will seek leave of Court to amend this Complaint and Petition to show the true names and capacities of such Respondents when such information is ascertained.

36. Each of the Respondents sued herein as DOES 1 through 25, inclusive, performed, participated in, or abetted in some manner, the acts and omissions alleged herein, is responsible for the violations of law described hereinbelow, and is subject to the relief sought herein.

37. In performing the acts and omissions alleged herein, and at all time relevant hereto, each of the Respondents was the agent and employee of each of the other Respondents and was at all times acting within the course and scope of such agency and employment, and within the knowledge and approval of each of the other Respondents.

38. California Quartet is now, and at all times herein mentioned was, a limited partnership organized and existing under the laws of the State of California and doing business in the County. Since in or about 1993, California Quartet has been the record title owner of the Property.

39. Aradi, Ltd., is now, and at all times herein mentioned was, a limited partnership organized and existing under the laws of the State of Nevada and qualified to do business in California. Aradi, Ltd., is currently the general partner of California Quartet.

40. Aradi, Inc., is now, and at all times herein mentioned was, a corporation organized and existing under the laws of the State of Nevada and qualified to do business in California. Aradi, Inc., is currently the general partner of Aradi, Ltd.

41. The true names and capacities, whether individual, corporate, or otherwise, of the Real Parties sued herein as DOES 26 through 50, inclusive, are presently

unknown to the Society, which therefore sues such Real Parties by such fictitious names. The Society will seek leave of Court to amend this Complaint and Petition to show the true names and capacities of such Real Parties when such information is ascertained.

42. Each of the Real Parties has a direct, beneficial interest in the actions of Respondents to attempt to certify FSEIR 566 and each of these Parties will be directly affected by the relief sought herein.

B. **Factual Background.**

43. The Property, commonly known as "Saddleback Meadows," is comprised of approximately 222 acres of mostly hilly terrain located on the east side of El Toro Road approximately one-half mile south of the intersection of El Toro Road, Live Oak Canyon Road, and Santiago Canyon Road in Trabuco Canyon.

44. Since 1949, the Society has owned and maintained the Monastery on 40 acres immediately adjacent to the southeast portion of the Property. The other surrounding land uses include, but are not limited to, St. Michael's Abbey immediately to the northwest, and O'Neill Regional Park immediately to the south. The Cleveland National Forest is approximately one-half mile north of the Property.

45. In 1979, the County, at the request of one of the previous owners of the Property, approved Tentative Tract Map 10692 which allowed for the construction of more than 700 manufactured housing/mobilehome units on the Property. However, some nine years passed before Final Tract Map 10692 (referred to herein as the "Tract Map") was recorded in 1988.

46. On January 9, 1980, the Property was placed in the PC "Planned Community" District when the Planned Community District Regulations for Saddleback Meadows (the "District Regulations") were adopted by the Board to provide the zoning for the Property and to specify the development conditions and criteria which would apply to the Property. The District Regulations were amended by the Board on July 13, 1983, and again on June 13, 1984, pursuant to Ordinance No. 3468 (ZC84-3P) [hereinafter referred to as the "1984 Zoning Ordinance"].

47. The Property is located within the unincorporated area of the County which is covered by Foothill/Trabuco Specific Plan (the "Specific Plan"). The Specific Plan was adopted by the Board in December 1991 for the express purpose of preserving the rural character of the Trabuco Canyon area to serve as a buffer between urban development and the Cleveland National Forest, and to preserve the significant landform, biological, and scenic resources of the area. The Specific Plan, which refers to the Property as the "Bridlewood Residential District" and incorporates the 1984 Zoning Ordinance, exempts the Property from the regulations and guidelines of the Specific Plan and allows the Property to be developed in accordance with the Tract Map, notwithstanding the Board's express finding that development of the Property pursuant to the Tract Map is not consistent with the goals and objectives of the Specific Plan.

48. The Specific Plan states, in relevant part, that the exemption was provided because the then-current owner of the Property was in bankruptcy and the automatic stay arising from the bankruptcy prevented the Board from taking any action that would affect the value of the Property. However, in providing for this exemption, the Specific Plan specified two instances in which the exemption would not apply: (a) if any development proposal for the Property deviated from the Tract Map, then the Specific Plan would have to be amended to (i) determine an appropriate density cap for the Property, (ii) establish new development regulations for the Property, and (iii) require the development of the Property to be consistent with all provisions of the Specific Plan; and (b) if the landowner applied for a grading permit for the Property, all environmental analysis required by CEQA would have to be conducted.

49. In or about 1993, California Quartet purchased the Property at a public auction of the assets of a failed savings and loan association. Thereafter, in April 1994, California Quartet applied to the County for a grading permit to rough grade approximately 98.3 acres of the Property, which it referred to as Phase I of the Project. In August 1994, the County determined that a Subsequent EIR would have to be prepared before the requested grading permit could be issued.

50. California Quartet appealed this determination on August 11, 1994. However, on January 31, 1995, California Quartet withdrew its appeal and, pursuant to the request of the Planning Commission, began to develop a project to address the numerous environmental and other concerns that had been expressed by the public, the County staff, and the Planning Commission regarding the development of the Property.

51. As a result of this effort, a Zone Change and an Area Plan for a 318-unit single-family residential housing project (the "318-Unit Project") were submitted to the County by California Quartet on July 27, 1995. Environmental Impact Report No. 561 ("EIR 561") was then prepared to address the significant environmental impacts that would be caused by the construction of 318 single-family homes on the Property.

52. On July 30, 1996, the Planning Commission conducted a public hearing on the 318-Unit Project. At the conclusion of the hearing, the Planning Commission recommended that EIR 561 be certified by the Board, but also recommended that Zone Change 95-5 and Area Plan 95-7 for the 318-Unit Project be denied. On October 22, 1996, the Board conducted a public hearing regarding the 318-Unit Project and likewise voted to deny Zone Change 95-5 and Area Plan 95-7.

53. Following the Board's rejection of the 318-Unit Project, California Quartet renewed its efforts to develop the Property pursuant to the Tract Map.

54. On December 3, 1996, California Quartet submitted Grading Application No. GA960048 (referred to herein as the "Grading Application") to the County. The Grading Application requested (a) the approval of the Phase 1 grading plans for the Project and (b) the issuance of a grading permit to commence rough grading operations at the Property.

55. On December 16, 1996, the County's Environmental Management Agency, now known as the Planning & Development Services Department, determined that a Subsequent EIR needed to be prepared in order "to evaluate the effects of the grading application." (FSEIR 566 at pp.2-8 and 2-9.) By making this determination that a Subsequent EIR would have to be prepared and certified before the Grading Application could be approved, County EMA implicitly found that the Grading Application was a "discretionary

approval" under CEQA. If county EMA had found the Grading Application to be purely ministerial, CEQA would not have applied and no Subsequent EIR could have been required to be prepared.

56. On December 24, 1996, the County issued the Notice of Preparation for Draft Subsequent Environmental Impact Report No. 566 ("DSEIR 566" or the "DSEIR"), which solicited comments from all interested parties regarding the proposed content and scope of the DSEIR. The Notice of Preparation was re-issued by the County on February 6, 1997, to include a description of the commercial center California Quartet was proposing to construct as part of the Project.

57. The 45-day public review period for DSEIR 566 began on June 27, 1997, when the County distributed the DSEIR to various governmental agencies, surrounding property owners, and other interested parties for their review and comment. All comments on DSEIR 566 were to be submitted to the County no later than August 12, 1997.

58. The ability of the Society, as well as all other interested parties, to review and comment on the adequacy of the DSEIR was substantially impaired by the County's failure to make available for public review all documents and materials that were necessary to fully assess the adequacy of the DSEIR. In particular, the Phase 1 grading plans (the "Grading Plans"), which were the *sine qua non* of the Grading Application were not available for public review because the County had returned them to California Quartet to be revised. On August 1, 1997, the County informed the Society that, if it wished to review a copy of the Grading Plans it would have to arrange to purchase a copy from California Quartet. When the Society did finally receive a copy of the Grading Plans from California Quartet on or about August 6, 1997, the Society discovered that Grading Plans were preliminary in nature and only covered a small portion of the Project.

59. In addition, the in-depth review of the Grading Plans by the soils engineer of record (the "Grading Plan Review") had not yet been completed, and was therefore unavailable. Without access to the Grading Plan Review, it was not possible to fully understand or interpret the Grading Plans.

60. Because these critically important documents were unavailable to the public, the Society wrote to the County on August 6, 1997, to request that the County grant a 30-day extension of time for the Society to submit its comments on DSEIR 566, or, in the alternative, that the County re-notice the 45-day public review period once the Grading Plans and the Grading Plan Review were made available for public review. An extension of time was also requested in writing by Saundra F. Jacobs, by letter of August 5, 1997, and by St. Michael's Abbey, by letter of August 11, 1997, due to the unavailability of these important documents.

61. In its August 12, 1997 response to the Society, the County denied that access to the Grading Plans and the Grading Plan Review was necessary to comment on the adequacy of DSEIR 566 because, although the Grading Application was the "initiating activity" which triggered the preparation of the DSEIR, the County had prepared DSEIR 566 to analyze the general impacts of the entire Project. The County went on to state that the amount of detail provided by the Grading Plans and the Grading Plan Review was "premature" and was not required to be set forth in DSEIR 566 because the County had decided that the information to be incorporated in the DSEIR only needed to be specific enough for some undefined "planning decision."

62. Not only did the County fail to explain what "planning decision" it was referring to in its letter, but it also failed to explain why the scope of the environmental analysis set forth in DSEIR 566 was being arbitrarily limited to a "planning level of detail" when it was supposed to be analyzing the environmental effects of the Grading Application. At any rate, the County refused to re-notice the 45-day public review period, but, "in the spirit of cooperation," provided the Society and other interested parties with a 10-day extension of time within which to submit their comments on the DSEIR.

63. During the public review period, the County received numerous written comments on DSEIR 566 from various governmental agencies, municipalities, groups, and individuals. Included among the written comments on DSEIR 566 were letters from the Society, St. Michael's Abbey, the U.S. Fish & Wildlife Service and the California Department

of Fish & Game, Saundra F. Jacobs, the Southern California Association of Governments, and numerous other interested parties. (Copies of all letters commenting on DSEIR 566, which were received by the County between June 29, 1997, and August 22, 1997, are set forth in DSEIR 566 and are incorporated herein by reference.)

64. On October 10, 1997, the County (a) issued the "Response to Comments" for DSEIR 566 (the "Response to Comments") to address the numerous comments that were submitted regarding the DSEIR, and (b) announced that the Planning Commission would hold a public hearing on October 22, 1997, to consider the certification FSEIR 566.

65. On October 15 and 16, 1997, the Society submitted written objections to the County, taking issue with the Planning Commission's proposed review of FSEIR 566 on October 22, 1997. The principal objection lodged by the Society was that the Planning Commission was being asked to do something unlawful by certifying FSEIR 566 without simultaneously considering whether to approve the Grading Application, i.e., the discretionary project which the FSEIR was originally prepared to evaluate.

66. The Society's objections spawned a series of proposed procedures as to how the County should go about reviewing FSEIR 566 and the Grading Application. The County's first proposal, made on October 20, 1997, acknowledged that the County Building Official (the "Building Official") was the "decision-making body" which must ultimately approve or deny the Grading Application, and that the County's "Environmental Analysis Procedures" allowed the Planning Commission to make only a "recommendation" regarding the adequacy of an EIR when it was not the decision-making body, as that term is defined by CEQA. Accordingly, the County proposed the following procedure: (a) the Planning Commission would review the FSEIR and make a recommendation regarding its adequacy to the Building Official, (b) the Building Official would determine whether FSEIR 566 should be certified, and (c) if the Building Official certified the FSEIR, his determination could be appealed to the Board.

67. A second proposal was made by the County during the Planning Commission's October 22, 1997 public hearing. This proposal was very similar to the first,

except that it expressly provided for, *inter alia*, the Building Official to conduct a public hearing on the adequacy of FSEIR 566. However, the second proposal was unclear as to whether an appeal of the Building Official's determination regarding the FSEIR would be heard by the Board.

68. At the October 22, 1997 public hearing, the Planning Commission refused to render a decision on the FSEIR, principally because the Grading Plans had not been made available for the members of the Planning Commission to review. Instead, the Planning Commission scheduled another hearing for December 3, 1997, and requested that the Planning & Development Services Department make the Grading Plans and related soils reports available for public review. Although County staff complied with this request, the County neither re-noticed the 45-day public review period to solicit comments on this significant new information, nor did it incorporate these materials into the FSEIR and recirculate it to the public.

69. On October 24, 1997, the County made a third proposal regarding the process by which FSEIR 566 and the Grading Application would be reviewed. This third proposal simply clarified the details of the process that the County had suggested in its first two proposals. Written comments and objections to this proposal were submitted to the County by California Quartet and the Society, dated October 31, 1997, and November 3, 1997, respectively.

70. In response to these comments and objections, the County made a fourth, followed by a fifth, proposal -- the latter of which was ultimately submitted to the Board for its approval. This fifth proposal eliminated some of the features that the earlier proposals had incorporated, such as the Building Official determining the adequacy of the FSEIR and the right to appeal the Building Official's decision on the Grading Application. As finally submitted to the Board, the fifth proposal consisted to a five-step process which provided for (a) the Planning Commission to certify the adequacy of FSEIR 566, (b) the right to appeal that determination within fifteen days of the time it was made, (c) the Board to hear any such appeals, (d) the Building Official to render its decision on the Grading Application following

the expiration of the appeal period, or the denial of any appeal and the ratification of the Planning Commission's certification by the Board, and (e) a Notice of Determination to be filed when the grading permit was issued.

71. On November 25, 1997, in response to the Society's continued objections to the legality of the procedures being proposed by the County, the Board amended the five-step proposal by adding a sixth step to allow the issuance of any grading permit for the Project to be "appealed to be Board of Supervisors from the Planning Commission." The Board directed County staff to draft whatever ordinance was necessary to allow such an appeal to take place.

72. However, the ordinance which was drafted by the County staff was inconsistent with the Board's amendment because, instead of allowing for an appeal of the grading permit from the Planning Commission to the Board, it allowed the decision of the Building Official to be appealed to the Board. As drafted, therefore, the proposed ordinance drew strong opposition from the Building Industry Association and failed to receive the approval of a majority of the Board. In rejecting the proposed ordinance on December 16, 1997, the Board did not revisit or reconsider the six-step process it had adopted on November 25, 1997. Indeed, no action was taken at the December 16 hearing to repeal or modify the motion which was passed at the November 25 hearing.

73. By administrative fiat, however, County staff decided to ignore the desire so clearly expressed and voted on by the Board at the November 25 hearing to allow the grading permit for the Project to be "appealed to the Board from the Planning Commission." Without any formal action by the Board, County staff chose to override the Board's expressed intent and did not allow the Grading Application to be considered by the Planning Commission so that it might be appealed to the Board if approved.

74. As noted above, the Society submitted numerous letters to the County objecting to (a) the process by which the FSEIR and the Grading Application were to be reviewed and decided upon by the County, and (b) the sufficiency of the Response to Comments released by the County. These objections were set forth in the Society's letters,

dated October 15 and 16, 1997, November 3, 5, and 26, 1997, and December 1 and 2, 1997, each of which are incorporated herein by reference. Saundra F. Jacobs also submitted objections to the County's Response to Comments on December 2, 1997, which is also incorporated herein by reference.

75. Representatives of the Society, as well as other interested parties, appeared at the public hearings which were held regarding the certification of FSEIR 566 by the Planning Commission on October 22, 1997 and December 3, 1997, and the public hearing which was held regarding the adoption of the special CEQA review process for the FSEIR by the Board on November 25, 1997. During these public hearings representatives of the Society and the other interested parties presented numerous oral comments regarding FSEIR 566 and the process by which it was being reviewed.

76. The written and oral comments submitted to the County and the Planning Commission prior to its approval and certification of FSEIR 566 specifically informed the County and the Planning Commission about the serious deficiencies in the environmental compliance process relating to FSEIR 566 including, but not limited to, the following:

(a) the failure of FSEIR 566 to properly describe the discretionary "project" which it was prepared to evaluate;

(b) the failure of FSEIR 566 to contain the required level of specificity;

(c) the failure of FSEIR 566 to provide the required technical data;

(d) the County's failure to recirculate DSEIR 566 following the release of significant new information prior to certification, including, but not limited to, the Grading Plans and the Grading Plan Review;

(e) the purported approval and certification of FSEIR 566 pursuant to a specially-adopted CEQA review process which, *inter alia*, unlawfully separated the certification of the FSEIR and the decision on the discretionary approval, i.e., the Grading Application, for which the FSEIR was originally prepared;

(f) the failure of FSEIR 566 to adequately address all significant environmental impacts associated with the Project, including, but not limited to, soils and geology, water/hydrology, transportation/circulation, air quality, biological resources, cultural resources, and public services;

(g) the failure of FSEIR 566 to specify all feasible mitigation measures available to lessen the effects of the significant environmental impacts;

(h) the failure of FSEIR 566 to adequately address the cumulative impacts of the Project;

(i) the failure of FSEIR 566 to consider reasonable alternatives to the Project, including, but not limited to, alternative sites;

(j) the failure of FSEIR 566 to adequately address and respond to comments received on the DSEIR;

(k) the County's failure to adopt an adequate Mitigation Monitoring Program;

(l) the failure of the County to adopt adequate and proper findings; and

(m) the failure of the County to adopt an adequate and proper statement of overriding considerations.

77. Despite the numerous comments outlining the deficiencies in FSEIR 566, and the process by which it was brought to the Planning Commission for certification, the Planning Commission took action to approve and certify FSEIR 566 on December 3, 1997, without ever considering whether the Grading Application should be approved, denied, or modified to lessen the environmental impacts associated with the rough grading for the Project.

78. Nonetheless, pursuant to its Resolution of December 3, 1997, the Planning Commission purported (a) to make findings in support of the approval of the entire Project and (b) to adopt a statement of overriding considerations which stated that the benefits of the Project supposedly outweighed its unavoidable impacts.

79. On December 18, 1997, the Society timely appealed the Planning Commission's purported certification of FSEIR 566 by submitting a notice of appeal that outlined the grounds therefor. On February 24,.1998, the Board heard the Society's appeal and after public testimony had been received, Supervisor Steiner moved to deny the appeal. However this motion failed for lack of majority when the Board split 2-2 with Supervisor Silva having recused himself prior to the hearing. Following the Board's vote, County Counsel declared, without any legal or factual support, that the Society's appeal had failed and the Planning Commission's certification of the FSEIR had been upheld.

80. The Society has exhausted all of its administrative remedies, and has no plain, speedy, or adequate remedy in the ordinary course of law, other than the relief sought in this Complaint and Petition.

FIRST CAUSE OF ACTION

(Against All Defendants For Declaratory And Injunctive Relief Re Invalid And Ineffective Certification Of FSEIR 566)

81. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, as set forth above.

82. To the extent that the Defendants maintain that FSEIR 566 has been validly and officially certified by Respondents, an actual controversy has arisen and now exists between the Society and the Defendants regarding the validity of Respondents' purported certification of FSEIR 566 pursuant to the special CEQA review process which the Board purportedly adopted on November 25, 1997, in that the Society contends, and Defendants deny, ***inter alia***, that:

(a) The November 25 CEQA review process (i) requires that the Board "***make a determination*** whether to uphold [any] appeal [of the certification of the FSEIR] in whole or in part or to deny the appeal" and (ii) prohibits the Building Official from approving the Grading Application, or issuing a grading permit, until the "***denial*** of any appeal and ***ratification*** of the Planning Commission's certification" by the Board (emphasis added); and

(b) The Board's 2-to-2 vote on the Society's appeal did not result in a denial of the Society's appeal, nor did it constitute any Board action upholding or ratifying the Planning Commission's December 3 certification of the FSEIR.

83. Government Code section 25005 provides that no act of a county board of supervisors, such as the Board, is valid unless a majority of all members concur therein. As a five-member panel, the Board needs three votes in order to take any valid action. Unless the Board has three votes in favor of an action, the Board is held to have taken no action.

84. The Society contends, therefore, that the Board took no action on the Society's appeal because three votes were not cast in favor of granting or denying the appeal. The minutes of the public hearing held on February 24, 1998 support this contention and state that the motion to deny the Society's appeal failed for lack of a majority.

85. A further, actual controversy has arisen and now exists between the Society and the Defendants, in that the Society contends, and the Defendants deny, *inter alia*, that:

(a) When a Subsequent EIR is required to be prepared to evaluate the effects of a grading application, there is a conflict between (1) the County's Environmental Analysis Procedures, adopted by the Board on June 25, 1995, and (2) the Orange County Grading and Excavation Code, in that (i) the County's Environmental Analysis Procedures do *not* authorize any decision-making body other than the Board, the Planning Commission, or the Subdivision Committee to approve and certify an EIR and certainly do *not* contemplate that the Building Official under the Grading Code would ever certify an EIR and (ii) the County's Grading Code assumes that all grading permits will be issued by the Building Official, as opposed to the Planning Commission;

(b) In light of the above-described conflict between the County's Environmental Analysis Procedures and the Grading Code, there is no clear rule or procedure set forth in the County's ordinances which indicates how

the County is to proceed in reviewing a Subsequent EIR and the Grading Application for which the Subsequent EIR was prepared to evaluate.

(c) Under CEQA and the CEQA Guidelines, the Planning Commission was not, and is not, authorized by law to certify FSEIR 566 and to adopt findings and overriding considerations without simultaneously approving the Grading Application;

(d) Likewise, under CEQA and the CEQA Guidelines, the Building Official was not, and is not, authorized to approve the Grading Application or issue any grading permits to Real Parties relating to the Project without simultaneously certifying FSEIR 566 and adopting findings and overriding considerations; and

(e) The November 25 CEQA review process unlawfully separated the (i) the decision whether to certify FSEIR 566 and to adopt findings and overriding considerations from (ii) the decision whether to approve the Grading Application.

86. In light of the foregoing, a judicial declaration is necessary and appropriate under the circumstances to resolve the above-described disputes and controversies between the Society and the Defendants with respect to the purported certification of FSEIR 566 by Respondents and the proper procedures for taking action on the FSEIR and the Grading Application in the future. Specifically, the Society seeks a declaration from the Court that:

(a) No final or official certification of FSEIR 566 has occurred under the terms of the CEQA review process adopted by the County on November 25, 1997;

(b) The CEQA review process adopted by the Board on November 25, 1997, was unlawful and invalid and any action take pursuant thereto, or in accordance therewith, is a legal nullity;

(c) The proper process under CEQA, and the County's ordinances and regulations, for considering whether to certify FSEIR 566 and approve the Grading Application is for the Planning Commission and the Building Official to hold a joint public hearing and to take joint, simultaneous action to review the adequacy of FSEIR 566 and to take action on the merits of the Grading Application;

(d) If and when any joint determination is made by the Planning Commission and the Building Official regarding FSEIR 566 and the Grading Application, such action shall be appealable to the Board pursuant to the provisions of CEQA section 21151(c); and

(e) Pursuant to section 21168.9 of CEQA, Respondents must suspend any and all Project activities which are based upon or are undertaken pursuant to the purported certification of FSEIR 566 or the purported adoption of the Findings/Considerations, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to whether to certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

87. In addition, the Society is entitled to ancillary injunctive relief in the form of a temporary restraining order, preliminary injunction, and permanent injunction, enjoining and prohibiting:

(a) Respondents, their agents, employees and representatives, and all persons acting under, or in concert or participation with them, from taking any action to grant or approve the Grading Application or to issue any grading permits relating to the Project, to Real Parties, or their agents, successors or assigns, pending a hearing on the merits of this Complaint and Petition; and

(b) Real Parties, their agents, employees and representatives, and all persons acting under, or in concert or participation with them, from engaging in (i) any grading, clearing, brushing or grubbing on the natural or existing grade

of the Property or (ii) any other activities which could result in any adverse change or alteration to the physical environment of the Property, pending a hearing on the merits of this Complaint and Petition.

SECOND CAUSE OF ACTION

(Against All Defendants For Declaratory Relief Re Non-Existence of Vested Rights To Develop The Property)

88. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and 82 through 85, inclusive, as set forth above.

89. An actual controversy has arisen and now exists between and among the Society and the Defendants regarding the respective rights, duties, and obligations of the Defendants with respect to the development of the Property and ensuring that such development fully complies with CEQA and the Guidelines in that the Society contends, and the Defendants deny, *inter alia*, that:

(a) Real Parties possess *no vested rights* with respect to developing all or any portion of the Property, including, but not limited to, (i) any vested rights to maintain the benefits afforded under the exemption of the Property from the requirements of the Specific Plan, (ii) any vested rights to maintain the entitlements afforded under the 1984 Zoning Ordinance, or (iii) any vested rights to maintain the entitlements afforded under the Tract Map; and

(b) In considering whether to certify FSEIR 566, Respondents were free to, and were actually required to, consider all feasible mitigation measures, project alternatives, and other design features that would have lessened or avoided the environmental impacts associated with the Project, regardless of whether such measures, alternatives, or features would cause the design or intensity of the development authorized by the Tract Map.

90. A judicial declaration is necessary and appropriate under the circumstances to resolve the current between the Society and the Defendants. Specifically, the Society seeks a declaration from the Court that:

(a) Real Parties have *not* acquired any vested rights in, *inter alia*, (i) the exemption of the Property from the requirements of the Specific Plan, (ii) the current zoning for the Property as set forth in the 1984 Zoning Ordinance, or (iii) the current entitlements allowed under the Tract Map;

(b) Respondents have *not* issued any development permits to Real Parties upon which they have relied in good faith, and have performed substantial work and incurred substantial liabilities, so as to acquire any vested rights to develop the Property in accordance with such permits; and

(c) the mitigation measures, project alternatives, and other design features that Respondents were allowed to, and were actually required to, consider in deciding whether to certify FSEIR 566 and to adopt the Findings/Considerations *were not limited* to those measures, alternatives or design features which would not change or alter the physical design of the development authorized by the Tract Map.

THIRD CAUSE OF ACTION

(Against All Defendants For A Writ Of Mandate And Injunctive Relief Based On Violations Of CEQA And The CEQA Guidelines In Purporting To Certify FSEIR 566)

91. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, paragraphs 82 through 85, inclusive, and paragraph 90 as set forth above.

92. To the extent that the Board's purported action on February 24, 1998 resulted in any determination upholding the Planning Commission's certification of FSEIR 566, which the Society denies, the Society seeks a preemptory writ of mandate pursuant to Code of Civil Procedure section 1094.5, directing Respondents to vacate and set aside, *inter*

alia, the unlawful actions which they have taken, or may hereafter take, in (a) approving and certifying FSEIR 566, or (b) authorizing any other actions in reliance on such approval and certification, including, but not limited to, the approval of the Grading Application or the issuance of any grading permit(s) to Real Parties with respect to the Project. Such mandamus relief is being sought herein based on the numerous violations of CEQA and the CEQA Guidelines which are alleged hereinbelow.

A. **Failure To Properly Describe The Discretionary Project To Be Addressed By FSEIR 566.**

93. Respondents failed to proceed in the manner required by law and abused their discretion to the extent that they violated, *inter alia*, section 15124 of the Guidelines by failing to properly identify and describe the discretionary project approval which initiated and necessitated the preparation of FSEIR 566, i.e., the Grading Application.

94. As stated above, the Project consists of the development of 705 manufactured housing units and a commercial site, as authorized by the Tract Map. The Project was originally approved approximately 19 years ago when the County granted approval for Tentative Tract Map 10692. At the time that approval was issued, an EIR was prepared and certified by the County to address certain of the environmental impacts associated with the development of the Project.

95. In December 1996, Real Parties submitted the Grading Application to the County seeking the issuance of a grading permit to undertake a portion of the rough grading for the Project. As FSEIR 566 acknowledges, at pages 2-8 and 2-9, County EMA determined that the EIR certified in 1979 was no longer sufficient and that, before the County could approve the Grading Application, a Subsequent EIR needed to be prepared to "*evaluate the [environmental] effects of the grading application.*"

96. This determination by County EMA constituted an implicit finding that the Grading Application was the "next discretionary approval for the project," within the meaning of section 15162(c) of the CEQA Guidelines, which would provide the County with the occasion to require a Subsequent EIR to be prepared.

97. Consistent with this finding, FSEIR 566, at pages 3-15, identifies all County discretionary approvals for which it is to provide environmental analysis, as required by Guidelines section 15124(d)(1)(B). The only County approvals which FSEIR 566 identifies are the approval of a grading plan and the issuance of a grading permit, pursuant to the Grading Application. FSEIR 566 does not list the approval of the overall Project (i.e., the construction of 705 units of manufactured housing) as a discretionary approval for which it is to provide environmental analysis.

98. There can be no question, therefore, that the discretionary project approval which precipitated the preparation of FSEIR 566, and which was to be addressed and analyzed in the FSEIR, was the Grading Application. But for the Grading Application being submitted, there would have been no legal basis for the County to have directed that a Subsequent EIR be prepared because there would have been no new project approval which would have required CEQA compliance.

99. However, in calling for a Subsequent EIR to be prepared to update the environmental analysis set forth in the original EIR for the Project, the County inexplicably determined that the Subsequent EIR would only have to be specific enough to provide a "planning level of detail" for the Project in general, and would not have to address the construction-level impacts associated with the approval of the Grading Application.

100. In implementing this improper decision to address only the general "planning level" impacts of the entire Project, and to exclude an analysis of the specific impacts associated with the Grading Application, the County wrongfully described the "project" to be evaluated in the Draft SEIR in overly-broad terms as if it consisted of the overall development of the Project authorized by the Tract Map, but did not include the construction-level activities that would be unleashed by the approval of the Grading Application. The incomplete and overly-broad project description which was incorporated in the Draft SEIR necessarily skewed and improperly limited the environmental analysis set forth in FSEIR 566 in violation of CEQA and the CEQA Guidelines.

B. Failure To Provide The Required Level Of Specificity.

101. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to provide the level of specificity that CEQA and the Guidelines required of FSEIR 566.

102. Specifically, Guidelines section 15146 provides that:

"The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.

(a) an EIR on a construction level project will necessarily be *more detailed* in the *specific effects* of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the *effects of the construction* can be predicted with greater accuracy." (Emphasis added.)

103. Contrary to any previous statements by Respondents, FSEIR 566 is undeniably a construction-level EIR because, by Respondents' own admission, the document was prepared to analyze the environmental impacts of the Grading Application, which is the last discretionary approval Respondents will issue before the topography of the Property is permanently altered and the biological resources located at the site are forever destroyed.

104. FSEIR 566 does not comply with section 15146 because it postpones for future analysis the specific details of the very activity that it was supposedly prepared to address, i.e., the rough grading of the Property for the construction of 705 units of manufactured housing. As a Subsequent EIR prepared to analyze the effects of the rough grading of the Property, the FSEIR was required by section 15146 to possess a degree of specificity that corresponded to the level of technical detail that must necessarily be provided to the Building Official in order for him to approve the Grading Application.

105. In order to provide this degree of specificity, all technical materials to be reviewed by the Building Official before he approved the Grading Application -- which included, at a minimum, the Grading Plans and the Grading Plan Review -- should have been

made a part of FSEIR 566 so that all the detailed information that was available to the County when it considered the Grading Application was likewise made available to the public through the CEQA review process.

106. However, the level of specificity in FSEIR 566 fell far short of what would be required for properly evaluating the Grading Application because, *inter alia*, FSEIR 566 provided only a vague "conceptual plan" regarding how the rough grading of the Property was to be performed. By failing to include, *inter alia*, the Grading Plans and the Grading Plan Review, the FSEIR lacked the specificity required for a construction-level EIR, and clearly violated section 15146 of the CEQA Guidelines.

107. Respondents' failure to comply with the specificity provisions set forth in the CEQA Guidelines has, *inter alia*, unlawfully deprived the public and other interested public agencies of the right and opportunity to properly assess and comment on the impacts associated with the Grading Application as well as the mitigation measures proposed to reduce those impacts.

C. Failure To Provide The Requisite Technical Detail.

108. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to comply with the mandatory provisions of Guidelines section 15147, which requires that all technical data, maps, plans, diagrams, and similar information that are necessary to make a "full assessment" of the environmental impacts of the project being evaluated must be contained in the environmental impact report or in the appendices thereto. Section 15147 goes on to require that these materials be made "readily available for public examination" during the noticed public review period.

109. Because FSEIR 566 was prepared to evaluate the environmental effects of the Grading Application, section 15147 required that the Grading Plans and the Grading Plan Review, as well as any other materials required for the Grading Application, be made part of the DSEIR before it was circulated for public review. However, the Grading Plans and the Grading Plan Review were never made a part of DSEIR 566, nor were they made available for inspection or copying during the 45-day public review period.

110. The geotechnical reports and maps which were made a part of DSEIR 566 were entirely inadequate in that they either (a) discussed the rough grading for the 318 Unit Project that was earlier rejected by the Planning Commission and the Board, or (b) deferred any detailed analysis of the 705-unit Project until after FSEIR 566 had been certified.

111. This failure by Respondents to comply with the technical detail provisions of the CEQA Guidelines has, *inter alia*, unlawfully deprived the public and other interested public agencies of the right and opportunity to properly assess and comment on the impacts associated with the Grading Application as well as the mitigation measures proposed to reduce those impacts.

D. **Failure To Amend And Recirculate DSEIR 566 After Releasing Significant New Information Regarding The Grading Application.**

112. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to amend and recirculate DSEIR 566 following the release of significant new information regarding the rough grading of the Property.

113. Public review and comment is one of the most fundamental and important aspects of the CEQA review process. Both CEQA and the case law interpreting it have recognized that public review and comment is the strongest assurance of the adequacy of an EIR. For that very reason, CEQA section 21092.1 and CEQA Guidelines section 15088.5 require that if significant new information becomes available before an EIR has been certified, the EIR must be recirculated to allow the public sufficient time to review and comment on that new information. If significant new information becomes available after certification, CEQA and the Guidelines require the preparation of a new, subsequent EIR so that the public will have the opportunity to review and comment on that information.

114. In this case, following the close of the 45-day public review period and the Respondents' release of the Response to Comments for DSEIR 566, Respondents made the Grading Plans, Grading Plan Review, and various other reports and information relating to the rough grading of the Property available for public review. Although these materials still failed to provide important design details regarding the rough grading of the Project, they clearly

constituted significant new information because they supplied substantial additional data which was sorely lacking from the DSEIR when it was circulated for public review. However, in clear violation of, *inter alia*, sections 21092.1 and 15088.5, Respondents refused to (a) amend the DSEIR to incorporate and analyze this new data and (b) recirculate the DSEIR for public review and comment on this significant new information.

115. Respondents have run afoul of CEQA's policies and requirements regarding public participation in the review process. By releasing the Grading Plans and the Grading Plan Review -- each of which clearly contained significant new information -- at the eleventh hour before certifying FSEIR 566, Respondents deprived the public of their right to review and comment on such materials, and shirked their responsibility to provide a reasoned analysis in response to any public comments concerning them.

E. Failure To Certify FSEIR 566 And Adopt The Findings/Considerations In Conjunction With Deciding Whether To Approve The Grading Application.

116. Respondents further failed to proceed in the manner required by law and abused their discretion by allegedly certifying FSEIR 566 pursuant to a special CEQA review process which, *inter alia*, unlawfully separated the certification of FSEIR 566 from the approval, modification, or disapproval of the discretionary project, i.e., the Grading Application, for which the FSEIR was originally prepared.

117. CEQA and the CEQA Guidelines do not apply, and do not require the preparation of an EIR, unless there is some form of discretionary project approval which is being considered by a public agency. (*See, e.g.*, CEQA Guidelines §§15002(i), 15357.) The certification of an EIR, by itself, is not a "project" under CEQA; rather, an EIR is merely an informational document that is to be considered by the public agency at the time that it approves, modifies, or disapproves whatever discretionary project is before it.

118. In this case, since FSEIR 566 was expressly prepared to evaluate the environmental impacts of the Grading Application, Respondents could not legally certify the FSEIR without simultaneously reviewing the Grading Application for approval, disapproval, or modification under section 15002(h) of the CEQA Guidelines. Because Respondents

purported to certify FSEIR 566 without considering, or taking any action on, the Grading Application, they failed to proceed in the manner required by law and abused their discretion.

F. Failure To Adequately Address All Environmental Impacts Of The Project.

119. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to adequately identify and address all significant environmental impacts associated with the rough grading of the Property as required by, *inter alia*, section 15126 of the CEQA Guidelines.

120. Specifically, before approving and certifying FSEIR 566, Respondents were required, *inter alia*, to clearly identify and describe all direct and indirect significant effects of the Project on the environment, giving due consideration to both the short-term and long-term effects. Respondents failed to meet their obligations in this regard with respect to, *inter alia*, the following matters:

(1) Soils and Geology

121. FSEIR 566 fails to identify and discuss each of the numerous geotechnical impacts that will occur as a result of the rough grading of the Property's hilly terrain. The discussion of the geotechnical impacts that is set forth in the FSEIR is woefully inadequate because it provides nothing more than a cursory overview of the Property's unstable soils conditions which may lead to massive landsliding and slope failures when deep excavations are made as part of the rough grading operations to take place at the site. Rather than fully identifying and discussing the critical issues relating to the Property's soils and geology, FSEIR 566 simply promises that a detailed analysis of these issues will be conducted at some undetermined time in the future.

122. FSEIR 566 also fails to contain a discussion regarding the impact of the rough grading on the area's groundwater. The rough grading of the Property will be greatly complicated by the perched groundwater which is present on the Property, as well as the numerous groundwater tables that will be exposed during the vast amount of remedial grading to be performed in an effort to stabilize the Property's unstable slopes. These conditions will require extensive dewatering activities both during and after the rough grading is completed.

123. FSEIR 566 fails to adequately discuss the impact these dewatering activity will have on the numerous water wells that are located on adjacent properties and which rely on the groundwater tables for their very existence. Although there is a substantial likelihood that the dewatering activities will cause these wells to permanently dry up, FSEIR 566 contains no discussion of any such impacts. Moreover, there is no discussion of the effect the rough grading will have on the quality or composition of the groundwater throughout the area or the impact on the streams and waterways into which the dewatering activities will redirect the groundwater.

124. Finally, FSEIR 566 fails to adequately discuss the impact that the rough grading process will have on the stability of the surrounding properties. Many of the slopes on the Property support the slopes on the surrounding properties, and vice versa. FSEIR 566 simply states in a conclusory fashion that there will be no impact on the stability of the surrounding slopes once rough grading is *completed*. FSEIR 566 completely avoids, however, any discussion of how the slope stability of neighboring properties will be impacted *during* the extensive rough grading process.

(2) Water/Hydrology

125. FSEIR 566 also fails to adequately and accurately assess the impacts the rough grading will have upon the hydrology and drainage for the Property and surrounding area.

126. As described above, FSEIR 566 is almost completely devoid of any discussion regarding the impacts the rough grading will have on the area's groundwater. In actuality, these impacts are significant and numerous and should have been addressed in detail.

127. Additionally, FSEIR 566 fails to analyze the Property's drainage after the rough grading has been completed and 705 units of manufactured housing have been constructed thereon. There is no discussion regarding whether the improvements to the County storm drain system that have been proposed will be sufficient to handle the run-off from the Project and there is an inadequate discussion regarding the impact of such run-off in general.

128. Finally, the hydrology report which is included in FSEIR 566 appears to be for the much smaller 318 Unit Project that was previously proposed and rejected for the Property, rather than the 705 unit Project which is the subject of FSEIR 566.

(3) Transportation/Circulation

129. The analysis in FSEIR 566 of the Project's traffic impacts is inadequate because it is limited in its geographic scope and fails to address the adequacy of the parking for the Project.

130. The traffic section of FSEIR 566 unfairly limits its review of the Project's impact on the area's intersections to those intersections which are north of the intersection of El Toro Road and Santa Margarita Parkway. No explanation is given for this limitation and no discussion is provided regarding the Project's impact on the intersections along El Toro Road between Interstate 5 and Santa Margarita Parkway, or the impacts on the heavily used Interstate 5.

131. Moreover, FSEIR 566 fails to address the sufficiency of the parking which is provided for the 705 units of manufactured housing to be constructed on the Property and the adequacy of the access to the Project.

(4) Air Quality

132. FSEIR 566 also fails to contain an adequate discussion of the impacts of the rough grading as well as the Project itself on the air quality for the area. Apparently, in considering the impact of the traffic and vehicle trips from the Project on the area's air quality, FSEIR 566 utilizes the calculations that were performed as part of the previously proposed, and rejected, 318 Unit Project rather than the much larger 705-unit Project. Additionally, FSEIR 566 does not adequately address the impacts that the actual process of grading the Property and constructing the 705 units will have on the area's air quality.

(5) Biological Resources

133. FSEIR 566 is also deficient because it does not adequately describe the biological resources of the Property and surrounding area, and describes and analyzes the impacts of the Project in only a superficial manner. Moreover, FSEIR 566 completely or

partially ignores at least eight requested information items that the U.S. Fish & Wildlife Service and the California Department of Fish and Game requested in their response to the Notice of Preparation for DSEIR 566.

134. Many of the wildlife species that exist on the Property are not adequately identified and considered in FSEIR 566. The wildlife species for which analysis is lacking include, but are not limited to, the following: (1) Riverside fairy shrimp, a federally endangered species, (2) California gnatcatcher, a federally threatened species, (3) Quino checkerspot butterfly, a federally endangered species, (4) western spadefoot toad, a California species of concern, (5) cactus wren, a federal and California sensitive species, (6) cladocerans, (7) copepods, (8) seed shrimp, (9) clam shrimp, and (10) pacific treefrog.

135. Moreover, Respondents improperly certified FSEIR 566 without surveys having been conducted pursuant to the U.S. Fish & Wildlife Service protocol to determine the size of the California gnatcatcher and Quino checkerspot butterfly populations which exist on the Property. As with many of the previously discussed impacts of the rough grading, the FSEIR improperly defers these studies until some indeterminate future date.

136. The FSEIR's discussion regarding the Property's biological resources is also deficient because it fails to adequately identify and discuss the many habitats and plant species which exist on the Property, such as the ephemeral ponds, wetlands, coastal sage scrub, mulefat scrub, coast live oak, southern sycamore riparian woodlands, Catalina mariposa lily, and intermediate mariposa lily. For example, FSEIR 566 does not adequately discuss the origins and importance of the ephemeral ponds which exist on the Property, and there is no discussion of the Project's impacts on the surrounding ephemeral ponds which are not within the Project's footprint. FSEIR 566 also lacks a sufficient discussion of the invertebrates and other species that may be found in these ponds or wetlands.

137. Finally, FSEIR 566 fails to adequately address the Project's impacts on the integrity of the wildlife corridors which currently exist on the Property, as well as the species which use the corridors, including, but not limited to, the mountain lion, mule deer, and coyote. These corridors currently link the Central and Southern Natural Community

Conservation Planning Subregional preserves, but their potential destruction or substantial modification is not sufficiently addressed.

(6) Archeological/Cultural Resources

138. FSEIR 566 is also deficient because it fails to adequately identify the potential array of archeological and cultural resources which currently exist on the Property -- such as, for example, possible Native American burial sites -- and to fully address the significant impacts that the rough grading will have on those resources. CEQA section 21083.2 required Respondents to identify the archaeological resources on the Property and to analyze the impacts of the rough grading on such resources. Despite this requirement, several of the "mitigation measures" proposed in FSEIR 566 stated that a certified archaeologist would be retained to survey the Property for cultural resources *after* FSEIR 566 has been certified. Again, deferring analysis in this manner is not permitted by CEQA or the CEQA Guidelines.

(7) Public Services

139. While acknowledging that the area's schools are already overcrowded and that the Project will add approximately 399 additional students to these schools, FSEIR 566 fails to adequately discuss the impact the Project will have upon the school system for the area.

G. Failure To Provide Legally Adequate Mitigation Measures And To Adopt An Adequate Mitigation Monitoring Program.

140. Respondents further failed to proceed in the manner required by law and abused their discretion by (a) failing to identify and adopt feasible mitigation measures for the numerous and significant environmental impacts of the Project, including, but not limited to, the impacts discussed herein, (b) adopting improper mitigation measures which were Impermissibly vague and which deferred analysis until after certification of the FSEIR, and (c) adopting an inadequate Mitigation Monitoring Program.

141. Guidelines section 15126 requires an EIR to identify and fully discuss all measures which are available to mitigate each and every significant environmental impact of a

proposed project. A project cannot be approved as proposed if there are feasible alternatives and mitigation measures which would substantially lessen the significant environmental impacts of the proposed project, but have not been incorporated into its design. (*See, e.g.*, CEQA § 21002; CEQA Guidelines §§15021, 15041.)

142. FSEIR 566 violates these and other provisions of CEQA and the CEQA Guidelines, as well as the Federal Endangered Species Act, by unlawfully limiting the mitigation measures which it discusses, and which Respondents adopted, to only those measures which would not result in, or require physical change to, the design of the Project as depicted on the Tract Map. FSEIR 566 provides no discussion of any legal or factual basis for such a limitation.

143. FSEIR 566 also violates the above provisions of CEQA and the Guidelines by failing to make any attempt to identify or discuss mitigation measures for many of the environmental impacts that will be caused by the Project, including, but not limited to, the Project's impact on the area's groundwater and its impacts on surrounding land uses, including, but not limited to, the religious uses by the Society and St. Michael's Abbey.

144. The mitigation measures which FSEIR 566 does contain, and which were adopted by Respondents, are legally inadequate because they fail to meet the standards established by CEQA and the Guidelines. Specifically, in order for a mitigation measure to be legally adequate it must be set forth in specific and detailed terms and it must be capable of (a) avoiding the impacts all together, (b) minimizing the impacts by limiting the degree or magnitude of the action and its implementation, (c) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment, (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, or (e) compensating for the impact by replacing or providing substitute resources or environments.

145. Many of the FSEIR's mitigation measures fail to meet these standards because they are nothing more than vague and generic promises to develop the sort of specific and detailed mitigation measures required by CEQA at some future time *after* the FSEIR has been certified. By deferring the development of the form and content of many of its mitigation

measures, FSEIR 566 deprives the public of the opportunity to review the mitigation measures to determine whether they can in fact mitigate the environmental impacts to which they are directed and meet the above standards. The mitigation measures which possess these deficiencies include, but are not limited to, the thirty-eight examples set forth in Appendix A to the comments to DSEIR 566 which St. Michael's Abbey submitted on August 21, 1997, and which are incorporated herein by reference.

146. Finally, the Mitigation Monitoring Program which Respondents adopted is also inadequate to meet the requirements of CEQA, including, but not limited to section 21081.6, because the mitigation measures set forth therein possess the same defects and deficiencies that are discussed above. Moreover, at least some of the additional mitigation measures which the Response to Comments indicated would be incorporated into the FSEIR have not been carried forward into the Mitigation Monitoring Program. For example, in response to comment SFC.2-66, the Response to Comments indicated that "five years of resource mitigation monitoring is hereby incorporated into the DEIR." However, this measure was neither incorporated into the FSEIR nor was it set forth in the Mitigation Monitoring Program.

H. Failure To Address The Cumulative Impacts Of The Project.

147. Respondents have further failed to proceed in the manner required by law and abused their discretion by failing to comply with the mandatory provisions of CEQA Guideline section 15130, which required Respondents to discuss significant cumulative impacts in FSEIR 566.

148. Specifically, CEQA Guidelines section 15130 requires an EIR to discuss the cumulative impacts of the relevant project and all past, present, and reasonably foreseeable future projects producing related or cumulative impacts, including the severity of those impacts and their likelihood of occurrence. Section 15130 also requires that this discussion of cumulative impacts include a summary of other projects anticipated in the region or area, a summary of expected environmental effects of those projects, and a reasonable analysis of the

cumulative impacts of the relevant project. The discussion of cumulative impacts must also include feasible mitigation measures.

149. Respondents did not comply with CEQA Guidelines section 15130 in that, *inter alia*, they failed to discuss the cumulative effects of the reuse of El Toro Marine Air Station as a commercial airport. In particular, FSEIR 566 is inadequate because it fails to consider the impacts of a commercial airport when conducting its analysis of the traffic, noise, and air quality impacts of the Project.

L. Failure To Consider Project Alternatives.

150. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to comply with the provision of CEQA Guidelines section 15126(d), which required Respondents to describe a range of reasonable alternatives to the Project, including an alternative site for the Project, and to evaluate the comparative merits of the alternatives.

151. Respondents did not comply with CEQA Guidelines section 15126(d) in that, *inter alia*, they failed to discuss viable alternative sites for the Project or properly explain why there were no feasible alternative sites discussed.

152. Moreover, although FSEIR 566 discusses possible on-site alternatives to the Project, it nonetheless violates CEQA and the CEQA Guidelines because throughout FSEIR 566 it is erroneously stated that changes to the Project that would alter the features of the Tract Map cannot be made because Respondents are allegedly unable to deviate therefrom. Hence, without any factual or legal support, FSEIR 566 provides project alternatives, but states that none of them can be considered because they would deviate from the Tract Map.

J. Failure To Adequately Respond To Comments.

153. Respondents further failed to proceed in the manner required by law and abused their discretion by failing to comply with the mandatory provisions of CEQA section 21092.5 and CEQA Guidelines section 15088, which required that the Response to Comments provide a good faith, reasoned analysis of the issues presented by each comment. Conclusory statements unsupported by factual information are insufficient to meet this standard.

154. The Response to Comments which was prepared by Respondents failed to meet any aspect of this standard because it was not conducted in good faith and failed to provide any reasoned analysis of the comments that were submitted. Instead, Respondents simply (a) ignored comments, (b) referred the authors of the comments back to portions of the DSEIR which failed to address their concerns, or (c) stated that an analysis of the relevant issues will be conducted at some indeterminate time in the future.

155. For example, Respondents failed to respond to various legitimate concerns raised by the Society, St. Michael's Abbey, Saundra Jacobs, the U.S. Fish & Wildlife Service, and various other interested parties regarding, *inter alia*, the adequacy of the DSEIR's analysis of the geotechnical issues which exist on the Property, the Project's impacts on the Property's biological resources, and many of the other concerns regarding DSEIR 566 which are identified herein.

156. Moreover, Respondents have also refused to respond to the requests of the Society, St. Michael's Abbey, Saundra Jacobs, and other interested parties that Respondents recirculate DSEIR 566 after including the Grading Plans, Grading Plan Review and other important documents in the DSEIR.

* * *

157. As a result of Respondents' failure to comply with the requirements of CEQA and the CEQA Guidelines in approving and undertaking the actions alleged hereinabove, the Society is entitled to a peremptory writ of mandate which, *inter alia*:

(a) Directs Respondents to vacate and set aside the actions which they took on December 3, 1997, and February 24, 1998, in purporting to certify FSEIR 566; and

(b) Directs Defendants to suspend any and all Project activities which are based upon or are undertaken pursuant to the purported certification of FSEIR 566, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to whether to

certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

158. In addition, the Society is entitled to a stay pursuant to Code of Civil Procedure section 1094.5(g), or, alternatively, ancillary injunctive relief, prohibiting and enjoining Respondents and Real Parties from taking any actions in reliance upon, or pursuant to, Respondent's purported approval and certification of FSEIR 566.

FOURTH CAUSE OF ACTION

(Against All Defendants For A Writ of Mandate And Injunctive Relief Based On Violations Of CEQA And The Guidelines In Adopting Findings)

159. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and paragraphs 82 through 85, inclusive, paragraph 90, and paragraphs 93 through 156, inclusive, as set forth above.

160. To the extent that the Board's purported action on February 24, 1998, resulted in any determination upholding or adopting the findings (collectively, the "Findings") made by the Planning Commission in certifying FSEIR 566, which the Society expressly denies, the Society seeks a preemptory writ of mandate, pursuant to Code of Civil Procedures section 1094.5, directing Respondents to vacate and set aside, *inter alia*, the unlawful actions which they have taken or may hereafter take in (a) purportedly making the Findings, or (b) authorizing any other actions in reliance on, or pursuant to, such Findings.

161. Before an EIR is certified and a project is approved, CEQA section 21081 and CEQA Guidelines section 15091 require a public agency to make certain findings regarding each environmental impact associated with the project, and CEQA section 21081.5 and CEQA Guidelines section 15091(b) require that all such findings must be based upon substantial evidence in the record. Respondents failed to proceed in the manner required by law and abused their discretion by failing to make proper findings and by failing to support the findings that were made with substantial evidence in the record.

162. Specifically, CEQA and the Guidelines required Respondents, *inter alia*, to make one of two findings for each significant environmental impact identified in FSEIR 566

and to provide an explanation of the rationale for each finding they made. The two possible findings which Respondents could have made for each significant impact were that (a) the mitigation measures or project alternatives identified in the FSEIR would reduce the impact to a level of insignificance, or (b) the impact is unavoidable because one or more specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives which are identified in the FSEIR as relating to the impact in question. CEQA and the Guidelines required Respondents to make this later finding for each mitigation measure and project alternative that was identified by the FSEIR, but was not adopted by Respondents.

163. FSEIR 566 and each of the findings which Respondents made are based upon a fundamentally incorrect premise which renders Respondents' findings *per se* inadequate: i.e., that the Tract Map afforded Real Parties vested rights to develop the Project, such that Respondents were supposedly precluded from considering any mitigation measures or project alternatives which would cause the Project to deviate from the Tract Map. By arbitrarily limiting the wide array of mitigation measures and project alternatives that were available to reduce the impacts associated with the Project, Respondents necessarily adopted findings which were legally inadequate because they were based on a false premise regarding the vesting status of the Tract Map.

164. For example, paragraph 2.1 of the Findings expressly acknowledges that the Project, involving the construction of 705 units of manufactured housing, is incompatible with the adjacent wilderness regional park, St. Michael's Abbey, and the Society's Monastery. Nevertheless, the Findings state that this land use incompatibility is "unavoidable" because of "the recorded nature of the tract map."

165. In addition, the Findings are inadequate because they are conclusory, general, and not supported by substantial evidence in the record. For example, the Findings consider Alternative 3 to the Project as one which achieves all of the project objectives, yet rejects the alternative solely because the applicant for the Grading Permit had actually determined it to be economically infeasible. Respondents failed to cite to even one fact in support of this finding.

166. As a result of Respondents' failure to adopt adequate findings supported by substantial evidence as alleged hereinabove, the Society is entitled to a peremptory writ of mandate which, *inter alia*:

(a) Directs Respondents to vacate and set aside the actions which they took on December 3, 1997, and February 24, 1998, in purportedly making and adopting the Findings; and

(b) Directs Defendants to suspend any and all Project activities which are based upon or are undertaken pursuant to the purported adoption of the Findings, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to whether to certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

167. In addition, the Society is entitled to a stay pursuant to Code of Civil Procedure section 1094.5(g), or, alternatively, ancillary injunctive relief, prohibiting and enjoining Respondents and Real Parties from taking any actions in reliance upon, or pursuant to, Respondent's purported making and adoption of the Findings.

FIFTH CAUSE OF ACTION

(Against All Defendants For A Writ of Mandate And Injunctive Relief Based On Violations Of CEQA And The Guidelines In Adopting A Statement Of Overriding Considerations)

168. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and paragraphs 82 through 85, inclusive, paragraph 90, paragraphs 93 through 156, inclusive, and paragraphs 161 through 165, inclusive, as set forth above.

169. To the extent that the Board's purported action on February 24, 1998, resulted in any determination upholding the Planning Commission's adoption of a statement of overriding considerations (hereinafter referred to as the "Overriding Considerations"), which the Society expressly denies, the Society seeks a preemptory writ of mandate, pursuant to

Code of Civil Procedures section 1094.5, directing Respondents to vacate and set aside, *inter alia*, the unlawful actions which they have taken or may hereafter take in (a) purportedly adopting the Overriding Considerations, or (b) authorizing any other actions in reliance on, or pursuant to, such Overriding Considerations.

170. Section 15093 of the CEQA Guidelines provides that the body determining whether to approve the project which is the subject of CEQA review must balance the benefits of the proposed project against its unavoidable environmental risks. If the decision-making body determines that the benefits of a proposed project outweigh the unavoidable adverse environmental effects, the body approving the project must state in writing the specific reasons to support its approval of the project based on the final EIR and/or other information in the record. Such writing, called a statement of overriding considerations, is to be included in the record of the project approval.

171. Respondents failed to proceed in the manner required by law and abused their discretion by adopting the Overriding Considerations--justifying their decision to approve the "project"--without (a) placing project approval on any agenda, (b) considering whether to approve the Project, or (c) voting on project approval or denial. Accordingly, the adoption of the Overriding Considerations was meaningless and remains a nullity.

172. Respondents also failed to proceed in the manner required by law by including, as an overriding consideration the erroneous assumption that the Tract Map had acquired a "vesting status" which supposedly prevented the Planning Commission or the Board from exercising their statutory authority vested in them under the Specific Plan and under sections 15002(h) and 15141 of the CEQA Guidelines to change or modify the Project in order to mitigate the environmental impacts thereof. Specifically, paragraph 5.2.6 of the Overriding Considerations erroneously states that the Tract Map has a "vesting" status which "limits the ability of the applicant/lead agency to deviate from the physical design characteristics of the project to mitigate identified unavoidable adverse effects."

173. Moreover, the Overriding Considerations are inadequate under CEQA and the CEQA Guidelines because there is insufficient evidence in the record to establish that the

considerations upon which Respondents are relying do, in fact, override the numerous significant impacts of the Project. The principal Overriding Considerations which Respondents adopted were that (1) two-thirds of the 705 housing units to be constructed on the Property are to be sold as affordable housing units, and (2) the Project will stabilize existing unstable geotechnical conditions on the Property.

174. However, FSEIR 566 fails to contain any analysis or information that demonstrates that these overriding considerations will actually occur when the Project is completed. FSEIR 566 contains neither a financial analysis that demonstrates that two-thirds of the 705 housing units can be sold as affordable housing units without the developer losing money, nor does FSEIR 566 contain sufficient information to evaluate whether the proposed remedial grading will, in fact, stabilize the unstable geotechnical conditions which exist on the Property.

175. In light of the information that is available, it appears Respondents have made an unwarranted leap of faith because the achievement of these two overriding considerations is highly unlikely given the scope and severity of the geotechnical conditions which exist on the Property and the exorbitantly high costs of grading the Property due to those conditions.

176. As a result of the actions of Respondents in adopting the Overriding Considerations alleged above, the Society is entitled to a peremptory writ of mandate which, *inter alia*:

(a) Directs Respondents to vacate and set aside the actions which they took on December 3, 1997, and February 24, 1998, purportedly adopting the Overriding Considerations; and

(b) Directs Defendants to suspend any and all Project activities which are based upon or are undertaken pursuant to the purported adoption of the Overriding Considerations, to the extent that any such activities could result in any adverse change or alteration to the Property until the determination as to

whether to certify FSEIR 566 and to approve the Grading Application is brought into compliance with the provisions of CEQA and the CEQA Guidelines.

177. In addition, the Society is entitled to a stay pursuant to Code of Civil Procedure section 1094.5(g), or, alternatively, ancillary injunctive relief prohibiting and enjoining Respondents and Real Parties from taking any actions in reliance upon, or pursuant to, Respondent's Statement of Overriding Concerns.

SIXTH CAUSE OF ACTION

(Against All Defendants For Declaratory Relief Re Lack Of Grounds For Continuing To Exempt Property From The Specific Plan)

178. The Society realleges and incorporates herein by reference each and every allegation contained in paragraphs 1 through 80, inclusive, and paragraphs 82 through 85, inclusive, paragraph 90, paragraphs 93 through 156, inclusive, paragraphs 161 through 165, inclusive, and paragraphs 170 through 175, inclusive, as set forth above.

179. An actual controversy has arisen and now exists between the Society and the Defendants regarding whether any legal basis exists for continuing to exempt the Property from the regulations and guidelines of the Specific Plan in that the Society contends, and the Defendants deny, ***inter alia***, that:

(a) In adopting the Specific Plan, the Board expressly found that the Tract Map and the 1984 Zoning Ordinance were not consistent with the goals and objectives of the Specific Plan;

(b) The Board nonetheless exempted the Property from the regulations and guidelines of the Specific Plan, as long as the Property was developed in strict accordance with the Tract Map, because the Board believed that it could not take any action that would affect the value of the Property due to the fact that the then-current owner of the Property was in bankruptcy and a bankruptcy stay was in effect at the time the Board adopted the Specific Plan; and

(c) The grounds which supported the exemption when the Specific Plan was adopted in 1991 no longer exist because Real Parties, who are the current owners of the Property, are not in bankruptcy and there is no bankruptcy stay which prevents Respondents from changing the zoning and other land use regulations which currently apply to the Property.

180. In light of the circumstances alleged hereinabove, a judicial declaration is necessary and appropriate to resolve the above controversies between and among the Society and the Defendants, and to allow Respondents to pursue the land use goals and objectives of the Specific Plan. Respondents are no longer subject to any bankruptcy stay relating to the Property and thus are free to require the Specific Plan to be amended to impose its regulations and guidelines on any future development at the Property, prior to or in conjunction with the review and certification of any environmental documentation for the Grading Application.

WHEREFORE, the Society prays for relief and judgment as follows:

ON THE FIRST CAUSE OF ACTION

1. For declaratory and injunctive relief as prayed for hereinabove;

ON THE SECOND CAUSE OF ACTION

2. For declaratory relief as prayed for hereinabove;

ON THE THIRD CAUSE OF ACTION

3. For a peremptory writ of mandate pursuant to Code of Civil Procedure section 1094.5 as requested hereinabove, and for a stay, or, alternatively, ancillary injunctive relief, as prayed for hereinabove;

ON THE FOURTH CAUSE OF ACTION

4. For a peremptory writ of mandate pursuant to Code of Civil Procedure section 1094.5 as requested hereinabove, and for a stay, or, alternatively, ancillary injunctive relief, as prayed for hereinabove;

ON THE FIFTH CAUSE OF ACTION

5. For a peremptory writ of mandate pursuant to Code of Civil Procedure section 1094.5 as requested hereinabove, and for a stay, or, alternatively, ancillary injunctive relief, as prayed for hereinabove;

ON THE SIXTH CAUSE OF ACTION

6. For declaratory relief as prayed for hereinabove;

ON ALL CAUSES OF ACTION

7. For the Society's attorneys' fees pursuant to, *inter alia*, Code of Civil Procedure section 1021.5;

8. For the Society's cost of suit; and

9. For such other and further relief as the Court may deem just and proper.

DATED: March 5, 1998

EDMOND M. CONNOR
CRAIG L. GRIFFIN
DAVID J. HESSELTINE
CONNOR, CULVER, BLAKE & GRIFFIN LLP

By: _____
Edmond M. Connor
Attorneys for Petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA

VERIFICATION

I, William J. Fray, declare and say:

1. I am the President of the Board of Trustees of plaintiff and petitioner VEDANTA SOCIETY OF SOUTHERN CALIFORNIA, and I am authorized to make this verification on its behalf.

2. I have read the foregoing "**Complaint For Declaratory Relief and Petition For Writ Of Mandate**" and I hereby verify that the facts alleged therein are true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 5th day of March, 1998, at Irvine, California.

William J. Fray

EXHIBIT "G"

SFC Consultants

August 25, 1998

Mr. Ray Brantley
Orange County Planning and Development Services Department
Environmental and Project Planning Services Division
300 N. Flower, Room 321
Santa Ana, CA 92702-4048

Subject: Saddleback Meadows - Comments on Addendum PA980103 for Certified Final EIR 566 and Mitigation Monitoring Program;
Zone Change 98-3 and Area Plan 98-2;
299 Single-Family-Unit Project

Dear Mr. Brantley:

SFC Consultants (*SFC*) has hurriedly reviewed the Saddleback Meadows Addendum to Certified Final Subsequent EIR 566 for CEQA compliance and consistency, and provides the following comments for you and your Planning Commission's consideration at it's meeting of August 25, 1998. By submitting these comments on the Addendum, *SFC* does not intend to waive its objects to the many procedural irregularities relating to how this EIR is being processed by the County of Orange.

In fact, it is with great concern that I am submitting these comments at all since I was not notified of the availability of an Addendum to Saddleback Meadows SEIR 566, even though I have made a clear record of my continued interest in participating in, and being informed about, any CEQA review process relating to the Saddleback Meadows property. It was by pure luck that I happened to be at the County Clerk Recorder Office when I walked to the Administration building to review the Public Hearing notices. It was at this time that I noted the Addendum EIR and Planning Commission hearing scheduled for August 25, 1998.

With the considerable amount of time that I have spent to date in commenting on previous CEQA documents for the Saddleback Meadows project, I would expect to be included in all distributions of any subsequent documents. According to my conversation with Mr. Bill Grieman, the Addendum was distributed to selected private residents, homeowner associations, concerned legal entities and the surrounding religious organizations, totaling eleven Addendum recipients. It does not appear that even the City of Mission Viejo or other affected local agencies were notified of what is being referred to an the 299-unit "contingency plan."

In fact I contacted Ms. Karen Steele, Senior Planner at the City of Mission Viejo, in order to confirm their receipt of the Addendum. Ms. Steele indicated that the City was not aware of any Addendum,

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and if the City had been notified, a thorough review of the Addendum would have been undertaken by the City Planning and Transportation Departments. I believe the same would be true with respect to the City of Lake Forest. At any rate, for future reference, please add me to the mailing list of interested persons for all future land use matters relating to the development of the Saddleback Meadows property.

As an EIR preparer myself, it is clear that the applicant is once again trying to avoid full public disclosure and involvement by relying on an Addendum which does not require public circulation. Under CEQA Guidelines Sections 15162 and 15164, it is not proper to rely on the Addendum as the CEQA documentation for a 299-unit single family detached housing project that purports to exempt itself wholesale from the Foothill/Trabuco Specific Plan.

New information regarding project impacts, reasonable project alternatives, and available mitigation measures not previously considered clearly mandates the preparation and circulation of a new EIR for the decidedly different project.

Over one year ago, on August 22, 1997, *SFC* provided you and your Planning Commission with nineteen pages of comments on the Draft SEIR 566, which at that time was proposed for 705 units. Within that document, I highlighted numerous deficiencies in the SEIR which I felt required correction or supplementation prior to the SEIR being certified.

At the October 22, 1997 Planning Commission meeting, I presented major concerns about the inadequacy of the written responses to my comments, and I raised other questions regarding the adequacy of the SEIR which have not been answered to date. *SFC* acknowledges that, in the weeks following after the October 22 Planning Commission hearing, the County made additional reports, materials, and technical studies regarding the project, available for public review. With the additional information which was made available, the County's written responses to many of *SFC*'s comments from my August 22 letter were no longer valid. More importantly, the additional materials (e.g., mitigation monitoring program, grading plans and soils reports) which were made available, are the type of "significant new information" which would have required the Draft SEIR to be recirculated under section 15088.5 of the CEQA Guidelines.

On December 2, 1997, *SFC* provided the County with fifteen pages of comments, which addressed concerns that were not adequately addressed within the SEIR 566. Within my December 2, 1997 letter, I addressed those comments from my August 22 letter to which no substantive response had been provided. I am disappointed that, even in the recent Addendum, the County has still not responded to my comments, despite ample time to have done so.

In conclusion, I cannot believe that the County has sought to process the 299-unit project without full public disclosure and proper CEQA compliance. Relying on a previously prepared SEIR (which is itself deficient and is currently being litigated) without properly informing the public and responsible state and federal agencies, and trying to process a Zone Change and an Area Plan for 299 homes on the basis of an "Addendum" which is not circulated for public review and comment,

does not come close to complying with CEQA and the Guidelines. To protect the record, however, I have prepared the attached comments within the very little time which has been afforded to me.

Please call me at my office if you have any questions.

Sincerely,

SFC Consultants

Saundra F. Jacobs, REA
Principal

SFJ/sg

Attachment

SFC Consultants

COMMENTS TO ADDENDUM PA980103 FOR CERTIFIED FINAL SUBSEQUENT EIR 566

The following comments are listed in the same order as the Addendum EIR sections for convenience.

Section II, 3. Project Description

1) **Page 5-15, Project Description.** Nowhere in the project description does the proposed Zone Change (ZC98-3) or Area Plan (AP98-2) appear as a description or mitigation measure, yet the title of the Addendum indicates both a Zone Change and Area Plan. How can the title of the Addendum refer to two significant changes to the Saddleback Meadows project yet have no substantive discussion of these changes? One short sentence beginning at the end of Page 14 and continuing at the top of page 15 refers to the Zone Change, but that appears to be the only reference to it. What is inexplicably missing from the Project Description section is a detailed explanation that the Zone Change includes an amendment of the Foothill/Trabuco Specific Plan to *exempt* the 299-unit project from the development criteria and restrictions set forth in the Specific Plan. Since the Specific Plan expressly requires that any new project for the Saddleback Meadows property be "consistent" with the Specific Plan, the exemption subsumed within the Zone Change represents the type of "substantial changes" referred to in the Guidelines section 15162 (a) which necessitates the preparation of another EIR to address the numerous respects in which the 299-unit project would significantly deviate from the Specific Plan and subvert the overall goals, objectives and policies that Plan was designed to achieve.

2) **Page 12, Housing Element.** The original 705 unit project description within SEIR 566 indicated that the removal of the mandated Inclusionary Housing Program (IHP) requirements could undermine the Countywide calculations used to eliminate the affordable housing mandate. Yet no thorough discussion of housing issues, including the possibility of eliminating the need for affordable units was considered in the SEIR, nor was it considered in the response to comments on the SEIR. This section of the Addendum indicates that the 299-unit project would still be required to apply the IHP even though the County-mandated affordable housing requirements have since been rescinded. Yet page 15, top of page, indicates that the County of Orange would be required to implement a General Plan Amendment to modify project-related affordable housing requirements. Is the County planning to initiate a General Plan Amendment as part of this project application? And if so, will it include a thorough discussion of housing issues? This discussion of housing issues within the County and their applicability to the Saddleback Meadows project would constitute new information under CEQA Guidelines 15162 and would require a new EIR and public circulation thereof.

Section III, 1. Land Use Compatibility

3) **Page 17, Foothill-Trabuco Specific Plan.** This section is grossly misleading and false to the extent that it states that "the project is exempt from the provisions of the Specific Plan." In fact, just the opposite is true. As clearly stated on Page III-20 of the Specific Plan, the exemption that the 705-unit manufactured housing project currently enjoys is to be automatically revoked in the event a new project, such as a 299-unit project, is approved and the new project is to be "consistent" with the Specific Plan.

4) **Pages 17 and 18.** What is not being disclosed here is that Zone Change (ZC) 98-3 provides a *new* exemption for the 299-unit project to exclude it from coverage by the Specific Plan. Such an exemption is completely at odds with what the Board of Supervisors intended when it adopted the Specific Plan in December 1991 and expressly stated that any development proposal for the Saddleback Meadows property which deviated from Recorded Tract Map No. 10692 had to be brought into consistency with "all of the provisions of the Specific Plan." (FTSP at p. III-20, s 3.2 (b)(3).) The proposed *new* exemption provided for in Section 3.4c of ZC 98-3 is a blatant reversal of the Board's 1991 directive and thus represents a significant new change under CEQA Guidelines section 15162 which should be addressed as part of a new EIR to be circulated for public review and comment. The failure of the Addendum to quote the relevant portion of the Specific Plan imposing a "consistency" requirement on all new projects relating to Saddleback Meadows, and the failure to mention the new exemption provided for in ZC 98-03, are quite troubling and clearly inexcusable.

5) **Page 19, Mitigation Measures.** Attachment A of Appendix A at the back of the Addendum is the Saddleback Meadows Rural Character Statement. Yet the mitigation measures for the Addendum do not include provisions for the inclusion of these attached guidelines. *SFC*'s previous comments to SEIR 566 suggested that land use mitigation should include: Setback criteria, buffer zones of vegetation, pet restrictions, ridgeline protection, project phasing coupled with an Annual Monitoring Report under Zoning Code section 7-9-103.2(a)(12) to identify imbalances between development and infrastructure, etc. Notwithstanding the requirements of CEQA Guidelines section 15126(c), these new mitigations represent measures not previous introduced in SEIR 566, though identified pictorially in the site plan (buffer zone), and should be included in a revised draft Subsequent EIR and circulated for public review and input.

6) CEQA Guidelines Section 15131 (b) expressly recognizes that construction can adversely impact religious practices: "if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment". Although the Land Use Compatibility section of the Addendum indicates that the reduction

of residential units from 705 to 299 and the incorporation of the Saddleback Meadows "Rural Character Statement" responds to the project team's intent for a rural community as expressed by Saint Michael's Abbey and the Ramakrishna Monastery, these measures should be included as additional mitigation and should be addressed in a new EIR and be circulated for public and agency review. Without incorporation of these measures as mitigation, the current Addendum and mitigation is deficient, as SEIR 566 was, with no attempt to mitigate impacts on surrounding religious uses to any level at all.

Section III. 2. Soils and Geology

7) **Page 22, Geotechnical Conditions, last paragraph at bottom of page.** The Addendum briefly indicates that Pages 4-13 through 4-33 of SEIR 566 remain appropriate for the project. However, the Groundwater section of SEIR 566 was never properly addressed and remains deficient. The major areas of groundwater comments and concerns are located within pages 4-13 through 4-33 of the SEIR 566, precisely those pages that are not addressed in the Addendum.

> Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-16,*** *Ground Water: It appears from the State Water Resources Board map of wells in the area that there are at least five wells located northerly, westerly and southerly of the site and landslide areas. These wells depend on the groundwater supplies to remain in operation. During remedial grading, perched groundwater and saturated zones will be encountered (according to the geotechnical study). This excess groundwater will require pumping to a point to where the bottom layer of the 120-foot key cut will need to be cleaned out. The EIR does not discuss the high probability that this excessive pumping may impact groundwater and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact in CEQA Guidelines Appendix G(h) and (i). The EIR provides neither discussion of this important issue, nor any mitigation for potential impacts to these wells. While the EIR preparer, or the geotechnical engineer for the project, may speculate that the surrounding wells are being fed by Aliso Creek or "other groundwater", **there is no factual basis to support the conclusion that there will be "no significant groundwater impact" caused by project grading and development.** The Planning Commission must be provided with complete information on this issue before passing on the adequacy of DSEIR 566, and gathering groundwater information during remedial grading for future decisions, and complying with the water resource agencies, is not the proper way to proceed.*

The EIR preparer's response to my comments of SEIR 566 indicated that this comment is speculative and declines to deal with the very real concern about the impacts on surrounding water wells. Interestingly, the EIR itself includes speculative information that the surrounding wells are being fed by Aliso Creek or other groundwater (in addition to

other speculative statements in the SEIR which SFC has previously pointed out). My concern here is that the Planning Commission is about to rely on a previous SEIR that incorrectly states that there will be "no significant groundwater impact" caused by the project grading and development. The EIR preparer appears unwilling or unable to perform the analysis necessary to comment on the actual impacts to surrounding wells.

8)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-24**, last two paragraphs. These paragraphs state that "unfavorable conditions (i.e. "some ground water") can be mitigated by implementing corrective grading concepts". Yet the DSEIR only speculates on the mitigation necessary to truly lessen future impacts to the development from groundwater and postpones for future analysis whatever specific mitigation measures might eventually be proposed by the soils engineer for the project (see page 4-25). This is not in keeping with CEQA.*

Again, the concerns expressed above are still valid and should be addressed as part of a new EIR that is circulated for public and agency review.

9)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-31**, Mitigation Measure 2-34. Ironically, this so-called "mitigation measure" provides more detailed information regarding groundwater problems and dewatering than any discussion set forth in the text of DSEIR 566. Although page 4-24 of the text merely alludes to "some" groundwater that might be encountered during grading, this mitigation measure paints a far more graphic and alarming picture, **"Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher elevations as well as in cuts made late in the year."** As indicated above, groundwater wells are located adjacent to the site and landslide areas. Impacts to surrounding groundwater and groundwater wells from required pumping and dewatering are not even discussed in the text of the DSEIR, yet this mitigation measure appears to expect it. Again, the DSEIR does not, but certainly should, discuss the extreme likelihood that this excessive pumping may impact groundwater wells and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact under CEQA. The Planning Commission must be provided with enough factual information before it is asked to certify this EIR. Gathering groundwater information during remedial grading is not proper mitigation.*

My previous comment on groundwater, seepage, and impacts to down gradient wells should be addressed prior to approving any Addendum.

10)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-33, Section 4.2.7 of the DEIR should be changed to read "Implementation of this proposed project, with the mitigation measures outlined above will result in unavoidable adverse geotechnical impacts."*** *At a minimum, there are significant groundwater impacts and slope stability issues that have not been adequately discussed or mitigated in DSEIR 566 and revision and recirculation of the DSEIR is in order to allow public comment on these matters when they are completed.*

Again, the concerns expressed above are still valid and should be addressed as part of a new EIR that is circulated for public and agency review.

Section III. 3. Water/Hydrology

11) Page 22, Geotechnical Conditions, last paragraph at bottom of page. The Addendum briefly indicates that Pages 4-33 through 4-43 of SEIR 566 remain appropriate for the project. However, the true facts are that the Water/Hydrology section of SEIR 566 was never properly addressed and remains deficient. The major areas of water and hydrology comments and concerns are located within pages 4-33 through 4-43 of SEIR 566, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: ***Page 4-38*** *The EIR states that alterations of the rate of flow of groundwater or impacts to groundwater quality are considered to be insignificant. The geotechnical report indicates that groundwater and saturated zones will require dewatering during grading and excavation of the sheer key. Groundwater from these slide planes will require pumping for an undetermined period of times (as demonstrated in Mitigation Measure 2-34). At least five (5) groundwater wells are located near this project site, directly in the path of the groundwater flow. The geotechnical report has completely disregarded the impacts that may be incurred downstream during construction dewatering.* ***This EIR section should consider impacts to groundwater as significant, otherwise the Planning Commission should not certify this EIR with an incorrect impact finding.***

SEIR 566 incorrectly states that there will be no significant impacts to groundwater caused by the project grading and development, and the SEIR was certified with these incorrect findings. The SEIR should have stated that "significant impacts may occur to groundwater due to project grading and development." The Addendum which addresses this project cannot rely on a SEIR that was certified with incorrect findings.

SFC Consultants

12)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-42, Mitigation Measure 3-5. How and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and downstream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent? The mitigation measure is not enforceable and does not reduce impacts in any way. It should be deleted.*

The response to this comment to SEIR 566 was non-responsive and yet the SEIR 566 was still certified. Again, how and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and downstream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent?

13)

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-43, Section 4.3.7 indicates that implementation of the proposed mitigation measures would result in no unavoidable adverse impacts to groundwater hydrology, yet there is no information on impacts to downstream wells from excessive dewatering to support the less than significant impact. This conclusion should be changed to* ***potentially significant impacts will result after implementation of the mitigation measures.*** *In addition, the new information associated with the new finding will require recirculation of DSEIR 566.*

No information has yet been presented to support the SEIR's conclusion that unavoidable adverse impacts to groundwater hydrology will not occur. Since the SEIR has been certified with this incorrect finding, the Addendum is also deficient. The impact statement should be changed to state that "significant impacts may occur to groundwater due to project grading and development," then a new EIR should be circulated for public and agency comment.

Section III. 4. Transportation/Circulation

14) **Page 42, Second Paragraph.** The Addendum briefly indicates that Pages 4-44 through 4-83 of SEIR 566 remain appropriate for the 299-unit project, but the Transportation/Circulation section of SEIR 566 was never properly addressed and remains deficient. The major areas of traffic and circulation comments and concerns are located within pages 4-43 through 4-83 of the SEIR, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *The traffic section of the DSEIR unfairly limits its review of intersection*

> *impacts to El Toro Road/ Santa Margarita Parkway and north. No explanation is given in the DSEIR for this limiting factor, and no analysis is included for the intersections along El Toro south to the San Diego Freeway (I-5). The DSEIR should include all intersections that will be impacted by the 705-unit project.*

The EIR preparer for SEIR 566 had justified the lack of analysis south of Santa Margarita Parkway to "Distribution of project related traffic generation...has been reviewed and approved by the County of Orange, Traffic Engineering Division." Yet the response went on to say "... the majority of traffic will be oriented to the south/west of the site." I am disappointed that, even in the recent Addendum, the County has still not responded to my comment, despite ample time to have done so. Please clarify what the EIR preparer is trying to say and respond to the comment properly.

Section III. 6. Noise Analysis

15) **Page 66, First Paragraph.** The Addendum makes a poor and questionable attempt to actually respond to a comment from SEIR 566 relating to the noise impacts on adjacent religious facilities. The Addendum attempts to justify these impacts by indicating that "These facilities are already exposed to single event aircraft noise that is much louder than a distant barking dog, lawnmower or auto horn associated with project residential uses." The Addendum goes on to indicate that "intervening topography" and reduction in the number of units from 705 to 299 would offset such noise impacts. Such a conclusory response unsupported by a revised noise analysis for this Addendum is prohibited under CEQA Guideline Section 15088(b). Before the Addendum attempts to make conclusory statements such as this, a revised noise analysis should be prepared and discussed in a new EIR that is circulated for public and agency review.

16) **Page 66, Third Paragraph.** By means of a passing reference to Page 4-101 through 4-118 of SEIR 566, the Addendum suggests that the noise impacts of the 299-unit project are adequately addressed in the SEIR. The Noise section of SEIR 566 however, never properly addressed the impacts of noise on religious facilities and remains deficient. The major areas of noise comments and concerns are located within pages 4-101 through 4-118 of SEIR 566, precisely those pages that are not addressed in the Addendum.

> Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the noise impacts from the reuse of the El Toro Marine Corp Air Station as a commercial airport or the noise from traffic associated with the commercial airport. Once this information has been included in this DSEIR, this document should be recirculated for public review.*

Page 4-102, Baseline Noise Levels. The Noise section of the DSEIR provides a baseline discussion of the current impacts from the El Toro MCAS fly-overs which exist at present, but the impact section of the EIR fails to identify potential CNEL contours as a result of the base reuse plan as an active commercial airport.

Page 4-103, the first paragraph discusses an area of proposed open space as the project location where the 62 dB CNEL contour falls. This may have been true for the previous EIR 561, however, page 7 of the noise study provided in Appendix G states that the 62dB CNEL location is in an area of proposed commercial development. The proper location of the 62 dB CNEL should be verified prior to EIR certification.

Page 4-103, third paragraph, states "Depending upon future site re-use, aircraft noise may or may not be an important issue." ***The aircraft noise from a commercial airport at El Toro will be an important issue.*** *Nowhere else in the DSEIR is the El Toro MCAS reuse discussed or incorporated by reference. No commercial aircraft noise impact analysis is provided. The DSEIR should include project related noise impacts as a result of the El Toro reuse plan as a commercial airport and traffic related impacts. Once this information has been included in this DSEIR, the document should be recirculated for public review.*

Page 4-103, fourth paragraph indicates that individual fly-over events may be noise intrusive and mitigation has been provided. However, neither the baseline discussion, impact analysis nor the mitigation measures in the DSEIR include mitigation for a multiple fly-over commercial airport.

The EIR preparer for SEIR 566 made no attempt to respond to any of the issues concerning the future use of the El Toro MCAS. I am disappointed that, even in the recent Addendum, the County has still not responded to my comment, despite ample time to have done so. Please respond to the issues regarding the future use of the El Toro MCAS as a commercial airport.

Section III. 7. Biological Resources

17) **Page 73, First Paragraph.** The Addendum includes the same discussion of the NCCP as SEIR 566, however, a footnote has been added to this paragraph. Unfortunately, the actual text of the footnote has been omitted leaving the reader to guess at its significance. Please provide the text of this footnote.

18) **Page 77, First Paragraph.** The Addendum refers to a new analysis of biological issues that was recently prepared for the 299-unit project which is currently proposed. However, the body of the Addendum does not clearly refer the reader to Appendix G where a copy of this new analysis is located. The new biological report within Appendix G

contains new information which has never been publicly reviewed or commented upon. Notwithstanding the requirements of CEQA Guidelines section 15126(c), this new report represent information not previous discussed in SEIR 566, and should be included in a new EIR that is circulated for public review and input under.

18) **Page 79, Last paragraph at bottom of page.** The Addendum briefly indicates that Pages 4-118 through 4-154 of SEIR 566 remain appropriate for the 299-unit project. However, the true facts are that the Biological Resources section of SEIR 566 was never properly addressed and remains deficient. The major areas of biological resource comments and concerns are located within pages 4-118 through 4-154 of the SEIR, precisely those pages that are not addressed in the Addendum.

> Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-153, Mitigation Measures SC 7-1 through 7-7 and measures 7-11 through 7-14 would appear to be of no value in light of the note placed on the preliminary grading plans...this EIR does not adequately satisfy CEQA Guidelines Section 15126 (c) requirements at this time. Gathering further information and complying with resource agencies in the future is not proper mitigation. Biological mitigation for ACOE and CDFG coordination may change the development plan, which would then require a revised EIR.*

This comment was not adequately addressed in SEIR 566 and the Addendum likewise fails to address the issue raised by this comment. These important issues must be addressed before any further action is taken.

19) **Page 84, Mitigation Measure SC 7-8.**

> Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-155, Mitigation Measure 7-8, F, states that an experienced nursery or other landscape contractor shall care for the transplanted trees for only six (6) months. The biological report states on page 49, second paragraph, **"In order to ensure the success of mitigation, the Project proponent should enter into a five year secured agreement with the County of Orange to cover the projected cost to install, monitor, and report on the mitigation Project. This agreement will be in the form of a 100 percent bond."** This extremely important mitigation measure is found nowhere in the DSEIR. If the DSEIR does not reflect the recommendations of the expert biologist, then mitigation measure 7-8 F is ineffective and invalid. The DSEIR cannot be certified without amending this measure to reflect the biologist's recommendation.*

The EIR preparer for SEIR 566 stated in their response to this comment that "[t]he provision for five years of biological resource mitigation monitoring is hereby incorporated into the DEIR. However, rather than incorporate this mitigation measure, the Corrections

and Additions section of the SEIR 566 simply states: "Page 4-155, Mitigation Measure 7-8: the following mitigation measure is added to the draft EIR: *All biological resource mitigation measures shall be monitored for compliance with applicable resource agency requirements and established success criteria, to the satisfaction of the manager PDS/Subdivisions and the Administrator Planning and Zoning.*" Nowhere in the Corrections section is the five year mitigation monitoring mentioned. Moreover, neither the Addendum, nor the new biology report, located in Appendix G of the Addendum makes any reference whatsoever to this mitigation measure.

20) **Page 87, Mitigation Measure SC 7-11.** Although this mitigation measure requires a gnatcatcher survey to be conducted pursuant to the current USFWS protocol, and to the satisfaction of the USFWS and the County, it does not provide for sufficient mitigation in the event the gnatcatcher is found to exist on the Saddleback Meadows property. This mitigation measure was a good start, but it is inadequate for the real purpose of protecting endangered species. The measure should include provisions for mitigation of gnatcatcher habitat, including on- and off-site mitigation, if necessary.

21) **Page 88, Mitigation Measures.** The mitigation measure noted in the Response to Comments of SEIR 566, Section H, Corrections and Additions to the Draft EIR for Page 4-153, Paragraph 4 has not been incorporated into the Addendum, even though the County has had ample time to have done so.

Section III. 8. Aesthetics

22) **Page 94, Mitigation Measure PDF 8-4.** The mitigation measure noted in the Response to Comments of SEIR 566, Section H, Corrections and Additions to the Draft EIR for Page 4-174, Mitigation Measure 8-4, has not been incorporated into the Addendum, despite ample time for the County to have done so.

Section III. 9. Cultural/Scientific Resources

23) **Page 103, History.** The Addendum briefly indicates that Pages 4-173 through 4-192 of SEIR 566 remain appropriate for the project, but the Cultural Resources section of SEIR 566 never properly addressed the direct or indirect environmental impacts of the project on the religious or sacred uses within the potential impact area. The major areas of Cultural/Scientific Resources comments and concerns are located within pages 4-192 through 4-192 of the SEIR, precisely those pages that are not addressed in the Addendum.

Excerpted from SFC Consultants comments letter dated August 22, 1997 for SEIR 566: *Page 4-178. The DSEIR makes no attempt to analyze either the direct or indirect environmental impacts of the project on the religious or sacred uses within the potential impact area. In this case, the potential impact area extends outside*

of the property boundary. This important issue should be discussed in the DSEIR prior to certification.

The EIR preparer was non-responsive to this comment. This comment should be addressed as part of the Addendum.

Mitigation Monitoring Plan

As an EIR preparer, I believe that the mitigation monitoring program is the most important document that will come out of the final approval process for the Addendum or any future EIR. The Monitoring Program should be user friendly and a dynamic document, not something to file away on a shelf once approved. As indicated in my response to the County of Orange dated December 2, 1997:

A) The County should require that the applicant hire an independent mitigation monitor, as selected by the County, to assist the County in monitoring and verifying implementation of both the standard county mitigation measures and the additional mitigation measures. For example:

***Air Quality.** Most of the air quality mitigation measures are the responsibility of the applicant. The applicant, or the applicant's contractor, may not have specialized knowledge of mitigation monitoring, but a specialized mitigation monitor would.*

***Biological Resources.** The applicant is responsible for plant relocation. This should be delegated to a mitigation monitor to verify implementation.*

B) No where in the mitigation monitoring program does the USFWS, the CDFG, or the ACOE show up in the Responsible Person column. These agencies should be added as responsible parties.

C) None of the additional mitigation measures listed in the Response to Comments are reflected in the Mitigation Monitoring Program. The new mitigation should be reflected in the monitoring program prior to certification.

No Mitigation Monitoring Plan has yet been made available for the Addendum.

EXHIBIT "H"

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September 2, 1998

Mr. Raymond H.C. Brantley
Environmental & Project Planning
Services Division
County of Orange Planning & Development
Services Department
P.O. Box 4048
300 North Flower Street, Room 321
Santa Ana, CA 92702-4048

Re: *Saddleback Meadows: Zone Change 98-3/Area Plan 98-2*
Request for New EIR to Analyze Additional Impacts, Alternatives, and Mitigation Measures re 299-Unit Project

Dear Mr. Brantley:

Without waiving any of the objections set forth in my letter to the Planning Commission, dated August 25, 1998, including, but not limited to, the lack of adequate public notice under CEQA Guidelines section 15153(b)(2), but in the interest of ensuring that County staff, the Planning Commission, and responsible state and federal agencies, are afforded an opportunity to consider whether to require the preparation of a new EIR to analyze the additional impacts, alternatives, and mitigation measures associated with proposed Zone Change 98-3 and Area Plan 98-2 to permit development of a 299-unit single-family detached housing project (the "299-Unit Project") on the Saddleback Meadows property (the "Property"), please find enclosed the following:

(1) An 8-1/2x11" copy of a conceptual site plan (entitled and hereinafter referred to as the "65-Unit Alternative"), which was prepared by County staff on or about March 23, 1998, to show the proposed layout on the Property of 65 single-family detached dwelling units on approximately 8,000 sq. ft. estate-size lots, covering a development footprint of approximately 35 acres out of the 222 total acres which comprise the Property;

(2) A 3'x4' copy of a site plan (entitled and hereinafter referred to as the "127-Unit Alternative") which was prepared on or about July 13, 1998, by California Quartet's consultant, Michael Madden Associates, to show the proposed layout on the Property of 127 single-family detached dwelling units on approximately 5,000 to 6,000 sq. ft. lots, covering a development footprint of approximately 44 acres located in the same general vicinity as the 65-Unit Alternative; and

(3) An 18"x51" copy of a site plan (entitled and hereinafter referred to as the "120-Unit Alternative"), which was prepared on or about August 31, 1998, and was revised on September 2, 1998, by the consultant for Vedanta Society/St. Michael's Abbey, Warren W. Singleton, P.E., to show the proposed layout on the Property of 120 single-family detached dwelling units on basically the same development footprint covered by the 127-Unit Alternative, except for certain grading and fuel modification pull-backs for ridgeline protection and canyon preservation purposes. Also enclosed is a copy of a letter from Mr. Singleton, dated August 31, 1998, providing some explanatory notes regarding the 120-Unit Alternative.

Since the County is proposing to "use an EIR from an earlier project [i.e., FSEIR 566] as the EIR for a separate, later project [i.e., the 299-Unit Project]," then section 15153(b)(2)(D) provides that one of the "key issues" involving the use of the previously-certified EIR are "whether the EIR should be used for this project and whether there are any *additional, reasonable alternatives* for mitigation measures that should be considered as ways of avoiding or reducing the significant effects of the project." Of course, if additional reasonable alternatives exist which were not considered by the lead agency in certifying the EIR for the "earlier project," that earlier EIR should not be used as the environmental documentation for the "separate, later project."

Indeed, subsection (d) of section 15153 clearly states that "an EIR prepared for an earlier project shall *not* be used as the EIR for a later project if any of the conditions described in Section 15162 would require preparation of a subsequent or supplemental EIR." (Emphasis added.) Under CEQA Guidelines section 15162(a)(3)(D), a subsequent EIR must be prepared if "new information" shows that "alternatives which are considerably different from those analyzed in the previous EIR would *substantially reduce* one or more significant effects on the environment, but the project proponents decline to adopt the . . . alternative[s]." (Emphasis Added.)

Obviously, FSEIR 566 did not analyze the 65-Unit Alternative, the 120-Unit Alternative, or the 127-Unit Alternative. In differing degrees, each of these

Alternatives would *significantly* reduce the environmental impacts associated with the 299-unit project in that they would preserve virtually all of the oak woodlands, coastal sage scrub habitats, and vernal ponds on the Property, and would provide for an ample wildlife corridor over undisturbed terrain. Of course, only the 120-Unit Alternative would ensure that no grading or construction occurred in the biologically-sensitive canyon areas south of the east/west ridgeline on the Property which are to serve as part of the wildlife connectivity links between Whiting Ranch Wilderness Park and O'Neill Park.

The indisputable fact of the matter is that the 65-Unit, 120-Unit, and 127-Unit Alternatives would each avoid the substantial environmental devastation that would otherwise be wreaked upon the Property by the 299-Unit Project in connection with the mass grading of the proposed wildlife corridor, particularly in the lush canyons which presently link up with O'Neill Park. Accordingly, a new or subsequent EIR should be prepared to, among other things, analyze each of these three Alternatives from two different perspectives: (1) as stand-alone projects which would require California Quartet to dedicate all of the non-development areas of the Property (approximately 178 acres) as permanent open space and (2) projects which would involve California Quartet's sale of the same non-development acres to third parties, such as my clients and the County of Orange, for cash consideration.

As your Department has been made well aware, based on the extensive factual chronology presented by Mr. Frank Elfend at the August 25 session of the Planning Commission's hearing on the 299-Unit Project, and as a result of Mr. Elfend's earlier public presentations to the Board of Supervisors on June 23 and August 11, 1998, my clients and the County are currently involved in negotiations with California Quartet for the purchase of the approximately 178 acres which would be left undeveloped under the three Alternatives discussed above. Indeed, it is precisely because these negotiations are still ongoing that the 299-Unit Project has been dubbed a "Contingency Plan" which California Quartet intends to pursue in the event that the negotiations do not prove fruitful.

If, at the next-scheduled session of the Planning Commission's hearing on the 299-Unit Project – which, by stipulated court order of August 31, 1998, has been continued to October 7, 1998 – you determine that California Quartet, for whatever reason, has declined to proceed with any of the three Alternatives discussed above, I presume that your Department will order the preparation of a subsequent EIR under the terms of CEQA Guidelines section 15162(a)(3)(D). In the Staff Report, dated August 25, 1998, which the Environmental & Project Planning Services Division submitted to the Planning Commission in connection with its public hearing on the 299-Unit Project, it was stated that "none of the conditions described in Section 15162 calling for preparing a

Supplemental or Subsequent EIR have occurred. . . ." Of course, that statement would no longer be true if California Quartet proceeds to reject any of the Alternatives discussed above as of the next Planning Commission hearing scheduled for October 7, 1998. For example, if California Quartet were to refuse to accept the 120-Unit Alternative as of the October 7 hearing, then a subsequent EIR would be required to analyze this alternative under the provisions of section 15162(a)(3)(D) because no discussion of this alternative is to be found in FSEIR 566.

However, I do not believe it is necessary for your Department to wait until the October 7 Planning Commission hearing to make the determination that a *new* EIR should be prepared for the 299-Unit Project. As I explained at the August 25 hearing, my clients, the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC, do not necessarily agree with your Department's determination that section 15162 of the CEQA Guidelines applies in this case. The California courts have clearly held that CEQA section 21166, and its companion section 15162 of the Guidelines, only apply when the question is whether more than one EIR must be prepared for what is essentially the *same* project.

When the proposed new activity is a *separate* project – as it certainly is in this case – the "fair argument" test is the standard which applies in determining whether a new (as opposed to a subsequent or supplemental) EIR must be prepared to analyze the *separate* project. Under the "fair argument" test, a new EIR must be prepared whenever it can be fairly argued on the basis of substantial evidence that the proposed project may have a significant environmental impact.

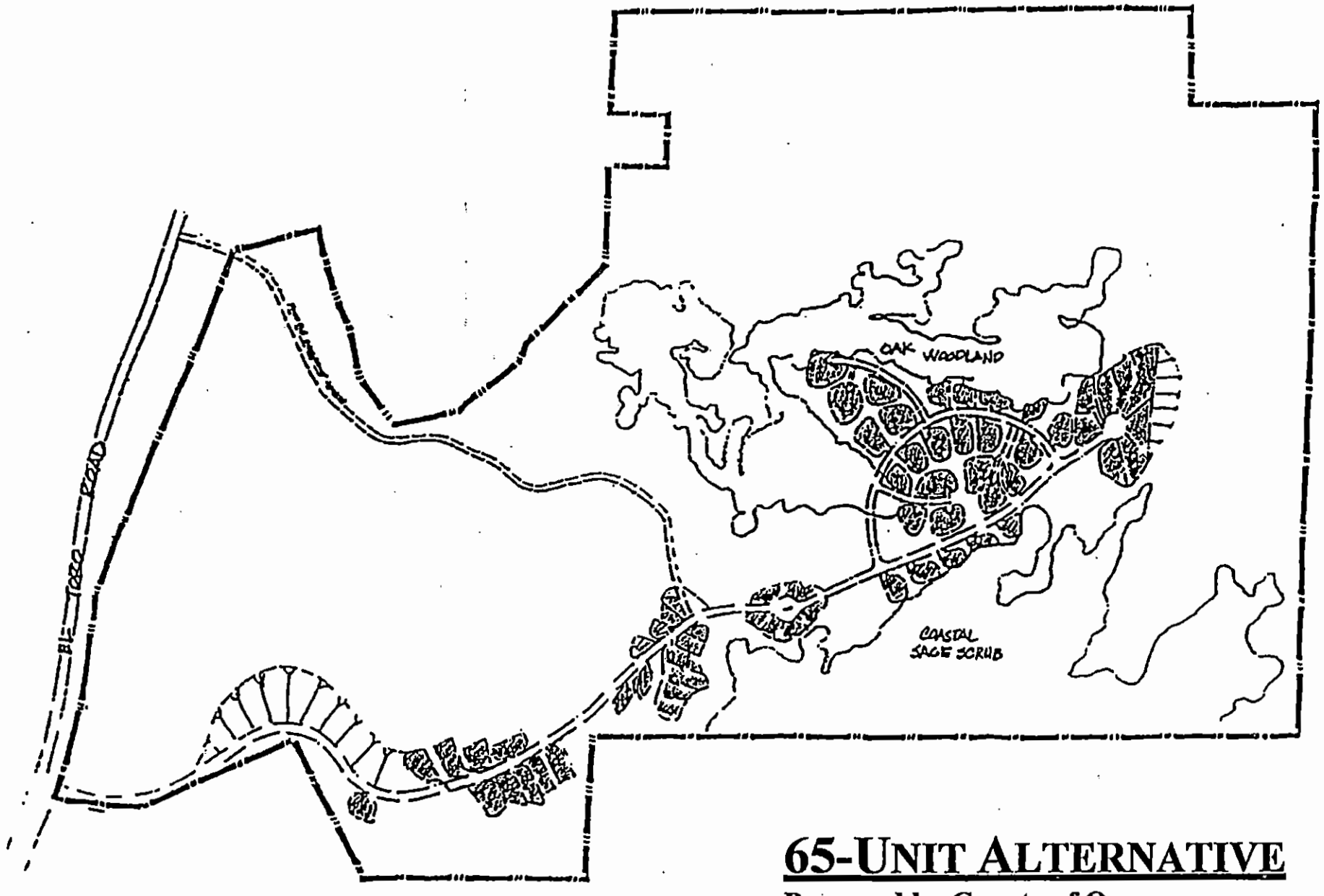
In light of the oral and written comments which were submitted by my firm, Royce Riggan, John Byerly, Warren Singleton, and Saundra Jacobs at the August 25 public hearing, there are numerous environmental impacts associated with the development of the 299-Unit Project which were not addressed in FSEIR 566 and which mandate the preparation of a new EIR under the "fair argument" test. Aside from the obvious impacts which will be caused by the fact that the 299-Unit Project pushes grading and development activities significantly closer to the Ramakrishna Monastery and raises unanswered questions regarding water runoff and drainage impacts that will be caused by the new houses to be built northeast of St. Michael's Abbey, there is no discussion in FSEIR 566 regarding (1) whether the wildlife corridor proposed for the 299-Unit Project would comport with the goals and objectives of the NCCP planning process and (2) whether it would preclude or in any way *jeopardize* finalization of the Southern Subregion component of the NCCP. Clearly, these impacts should be addressed in a new EIR and the public, as well as the appropriate federal and state wildlife agencies, should be allowed to comment on these important environmental matters.

In closing, my clients would request that the County immediately cease processing the 299-Unit Project unless and until the County complies with CEQA and sends out a Notice of Preparation for a new EIR to address the environmental impacts, reasonable project alternatives and feasible mitigation measures associated with the development of the 299-Unit Project.

Very truly yours,

Edmond M. Connor

cc Commissioner Richard Goacher
Commissioner Ben Nielsen
Commissioner Chuck McBurney
Commissioner Shirley Commons-Long
Commissioner Tom Moody
Tom Mathews
Ben de Mayo, Esq.
Frank McGill
Bill Tippets - CA Fish & Game
John Bradley - U.S. Fish & Wildlife
William D. Ross, Esq.



65-UNIT ALTERNATIVE

Prepared by County of Orange
Planning & Development Services Dept.
March 23, 1998

SADDLEBACK MEADOWS

WARREN W. SINGLETON, P.E.

CONSULTANT

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August 31,1998

Edmond M. Connor, Esq.
CONNOR, CULVER, BLAKE & GRIFFIN LLP
Attorneys At Law
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Irvine, CA 92612

Re: Saddleback Meadows Property, Alternate (120) Lot Study

Dear Mr. Connor:

Transmitted with this letter are six blackline copies of the Alternate (120) Lot Study which was presented at last Thursday's meeting. The map is a compilation of the three work sketches presented last week.

The lots and streets shown in solid lines are the revised layout. The lots and streets which are not changed are outlined with dashed lines. The revised total lot count is one hundred and twenty (120) units.

Comments regarding the design proposals:

- The grades on the main entry street were held per the proposed California Quartet Study (CQ).
- In order to provide lots in the upper eastern portion of the site grading, remedial grading and fuel modification were allowed to occur in the one hundred (100) foot setback zone which Vedanta originally proposed to be north of the ridgeline.
- The ridgeline has generally been protected in the upper portion of the site, from the second Cul-de Sac south of the spine road to the eastern limits. The moving of the spine road and lots north away from the ridgeline provides for the one hundred and fifty foot Fire Fuel Modification area and maintains the ridgeline. Although the cut slope is at the ridgeline or slightly beyond, the road or lots will likely not require remedial grading beyond the ridge and down into the bottom of the first or second canyon as all of the previous proposals have done.

- The first long Cul-de-sac south of the spine road impacts the lower ridgeline and some Coastal Sage Scrub. The Hidden Hill development south of this area has already disturbed a portion of this Coastal Sage area. This was not changed from the CQ study.
- The addition of the twelve lots on the lower portion of the spine road should be of benefit geotechnically. The proposed spine road was being cut deeply into the hill, up to ninety (90) feet. This removal of material should benefit the stability of the area. The addition of lots north of the spine road removes additional material and contours the remaining hill as previously proposed. If additional unloading is desirable the hill could be layed back further.
- The extension of the second Cul-de-Sac north of the spine road, adding eight (8) lots, was sloped down away from the spine road to minimize the fill depth and the limits of grading. This should not trigger extensive additional remedial grading since the same geologic features are involved.
- The second Cul-de-Sac south of the spine road was pulled back to accommodate Fire Fuel Modification. The lot count was reduced from six (6) to three (3). The ridgeline is being lowered in this area. The proposed grading creates a cut slope facing north and west away from the Monastery. The slope becomes small at the end of the Cul-de-Sac allowing some view of the homes on this street. The grading should not impact the Coastal Sage Scrub which is down slope to the south and east.

The California Quartet (127) Study and the Vedanta Alternate (120) Study are just that, studies. Once the features of the original and alternate studies are agreed upon a precise engineered site plan should be prepared. The fine tuning of horizontal and vertical alignments and lot layouts may result in the gaining of two or three lots. This precise design would be the next step and be used for a Tentative Map.

Please call me at (949) 240-5808 if you have any questions or require additional information.

Very truly yours,

Warren W. Singleton, P.E.

Attachments

2771

EXHIBIT "I"

2774

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September 23, 1998

Thomas B. Mathews, Director
Orange County Planning & Development
Services Department
300 North Flower Street, Room 321
Post Office Box 4048
Santa Ana, California 92702-4048

VIA OVERNITE EXPRESS

Re: Proposed Zone Change 98-3 and Area Plan 98-2 for
299-Unit Project -- Saddleback Meadows

Dear Tom:

As you witnessed at yesterday's negotiating session, the parties reached agreement on the contours of a 44-acre "Development Area" and a 178-acre "Conservation Area," as those terms are defined on page 3 of Mr. Ross's letter to me of July 17, 1998. The parties agreed that the boundaries of the 44-acre Development Area would be as depicted on the plan prepared by Michael Madden Associates, dated July 13, 1998, which I displayed on the wall at yesterday's meeting and highlighted in orange. I will endeavor to have reduced copies of that highlighted map prepared and circulated to all parties.

The parties also agreed at yesterday's meeting that the 178-acre Conservation Area would be subject to the terms of the Conservation Easement which Mr. Ross transmitted to Mr. Winton on August 28, 1998. As I noted at the meeting, the Conservation Easement provides that the 178-acre Conservation Area will, among other things, "be retained forever in its natural, undeveloped and unimproved, unspoiled scenic and open space condition." That language provides my clients with the assurance they need that the natural buffer zones surrounding their respective properties will remain the type of undisturbed open space which -- as I tried to explain at yesterday's meeting -- is so vital to their monastic way of life.

The one exception to the language of the Conservation Easement which was discussed at yesterday's meeting was that, unless the County agrees to take a portion of the 178-acre Conservation Area in fee and to annex it to O'Neill Park, the parties may have to

provide for some type of "low impact" recreational use for at least some portion of the 178-acre parcel in order to accommodate the conditions imposed by the State of California for the County to be able to access the $1.5 million of "Strawberry Field" funds which the County is planning on contributing towards the purchase price of the Conservation Area. Dan Winton and I spoke to Stella Oviedo and Ben de Mayo following yesterday's meeting and I think we should be able to work out language to accommodate the "recreational use" needs of the County. Also, since the parties have now agreed that the Development Area will be a total of 44 acres in size and that California Quartet will be free to develop as many single-family units as it would like within that Development Area, we have been assured by the representatives of California Quartet that all of the remaining "deal points" can easily be resolved.

Although the parties reached agreement on the two most important issues facing them: (1) the contours of the 44-acre Development Area and (2) the preservation of 178 acres of undisturbed open space in accordance with the terms of the Conservation Easement, the one troubling aspect about yesterday's meeting was that, despite the objections which Mr. Winton and I voiced to Mr. Elfend's suggestion that the County proceed with its processing of the 299-Unit Project, it was determined that the 299-Unit Project would continue to be processed as a "contingency plan" by the Planning Commission and the Board of Supervisors.

Of course, it was underscored at the meeting that my clients would preserve all of their rights to oppose the approval of the proposed Zone Change and Area Plan for the 299-Unit Project. As such, I am submitting this letter to register my clients' formal protest over the County's failure to comply with the very explicit procedural requirements of the Foothill/Trabuco Specific Plan (the "Specific Plan") with respect to the approval of discretionary permits, such as Area Plan 98-2.

Specifically, on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC, I object to the fact that, in violation of section III.G.2 of the Specific Plan, your Department has failed to forward California Quartet's application for approval of Zone Change 98-3 and Area Plan 98-2 to the Foothill/Trabuco Specific Plan Review Board (the "Review Board") for its review and recommendations prior to the Planning Commission's consideration of the application. As you know, the application must be sent to the Review Board for its consideration at least twenty-one (21) days prior to the time that the Planning Commission takes action on the application.

Considering the public controversy surrounding this project, there would appear to be no justification for not allowing the Review Board to hold a public meeting and to make appropriate recommendations to the Planning Commission regarding the proposed Zone Change and Area Plan before the Planning Commission takes any further

action on the 299-Unit Project. Indeed, more so in this case than in any other case, it would appear to be absolutely essential – and clearly beneficial – to obtain input from the Review Board regarding the 299-Unit Project because the proposed Zone Change and Area Plan are completely at odds with the provisions of the Specific Plan and cannot be approved unless an *exemption* from the Specific Plan is granted. Accordingly, before taking the drastic step of *exempting* the 299-Unit Project from compliance with the Specific Plan, the County should comply with its own ordinances and allow the Review Board to consider this highly-controversial project.

As you are aware, my clients have already objected to, among other things, (a) the County's failure to provide the requisite public notice regarding its decision to use FSEIR 566 as the EIR for the 299-Unit Project and (b) its refusal to prepare a new or subsequent EIR to address the new impacts, alternatives and mitigation measures associated with the 299-Unit Project. We would respectfully request, therefore, that the procedural improprieties which have already taken place not be further compounded by any unlawful acts which would prevent the Review Board from exercising its statutory right and duty to carefully weigh the pros and cons of the proposed Zone Change and Area Plan and to make recommendations to the Planning Commission regarding whether the 299-Unit Projects should be approved.

Very truly yours,

Edmond M. Connor

EMC/art

cc: Supervisor Todd Spitzer
Supervisor Tom Wilson
Paul Hernandez
Denis Bilodeau
Holly Veale
Frank McGill
Ray Brantley
Benjamin de Mayo, Esq.
Dan Winton, Esq.
William Ross, Esq.

EXHIBIT "J"

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October 7, 1998

Orange County Planning Commission
300 North Flower Street
Santa Ana, CA 92702-4048

Re: *Proposed Zone Change 98-3 and Area Plan 98-2/EIR*
Saddleback Meadows: 299-Unit Project

Dear Members of the Planning Commission:

As a supplement to my letters of August 25, September 2, and September 23, 1998, and without waiving any objections which have been stated to date on behalf of my clients, the Norbertine Fathers of Orange, the Saddleback Meadows Land Conservancy LLC, and the Vedanta Society of Southern California, I submit the following additional arguments in opposition to California Quartet's application for approval of Zone Change 98-3 ("ZC 98-3") and Area Plan 98-2 ("AP 98-2") for the development of a 299-unit, single-family detached residential housing project (the "299-Unit Project" or the "Project") at the Saddleback Meadows property (the "Property"):

A. Coastal California Gnatcatchers Have Recently Been Found on a Portion of The Property, Thereby Rendering the Developer's Prior Gnatcatcher Surveys Outdated and Invalid. A Formal Protocol Survey of the Entire Property Should Now Be Conducted as Part of a New or Subsequent EIR to Properly Assess the Impact of the Project on This Endangered Species.

The CEQA documentation relating to the presence of coastal California gnatcatchers on the Property is fatally flawed and must be corrected and recirculated for public review and comment -- particularly comments from the California Department of Fish & Game and the U.S. Fish & Wildlife Service.

determined that on-site coastal sage scrub habitat is *not* occupied by coastal California gnatcatchers . . . ." (Emphasis Added.) Likewise, on pages 4-130 and 4-139 of FSEIR 566, similar statements are made to the effect that no coastal California gnatcatchers were observed in connection with the surveys which California Quartet's consultants conducted four and five years ago in 1993 and 1994. However, a brief informal survey of but a small portion of the Property by my firm's consultant, Royce B. Riggan, has demonstrated that the prior gnatcatcher surveys are clearly outdated and incorrect because coastal California gnatcatchers *do* presently occupy the coastal sage scrub habitat at the Property.

At the August 25 session of the Planning Commission's hearing on ZC 98-3 and AP 98-2, my firm's consultant, Warren Singleton, pointed out that, in the southeast corner of the Property, the proposed rough grading operations for the 299-Unit Project would decimate a great many more acres of coastal sage scrub habitat than would otherwise be destroyed as part of the rough grading for the 705-unit manufactured housing/mobile home project (the "705-Unit Project") which was the subject of FSEIR 566. Mr. Singleton graphically demonstrated to the Planning Commission that, instead of reducing adverse environmental effects as claimed in the Addendum, the 299-Unit Project would actually have far worse impacts on (1) the biologically sensitive habitats and species found in the lush canyons located in the southeast corner of the Property because rough grading operations would be far more extensive at that location than under the 705-Unit Project; and (2) the Ramakrishna Monastery because a great many more residential units would be built much closer to the Monastery than would have occurred under the 705-Unit Project.

Following the August 25 Planning Commission hearing, I dispatched Royce Riggan – who holds Federal Permit PRT-780195 and thus is officially licensed to conduct gnatcatcher surveys -- to visit the Property and determine whether the new areas to be impacted by the 299-Unit Project in the southeastern corner of the Property were occupied by coastal California gnatcatchers. While on a tour of that portion of the Property which was conducted by California Quartet's consultants in July 1998, I had noted how extensive the coastal sage scrub habitat was and how verdant and secluded the adjacent canyons were, and I could not believe that FSEIR 566 and the Addendum were correct in stating that *no* coastal California gnatcatchers were to be found in those locations.

I was not surprised, therefore, when, on September 23, 1998, after only two and a half hours at the site, Mr. Riggan, and his associate, Lisa Seneca observed two coastal California gnatcatchers: a juvenile of the year and an adult male. A copy of the California Native Species Field Survey Form confirming the two gnatcatcher sightings, which Mr. Riggan dutifully submitted to the Natural Diversity Database maintained by the California Department of Fish & Game, is attached as Exhibit "A" hereto. Based on the two sightings documented by Mr. Riggan and his associate, there is no longer any justification for the County's highly questionable actions

in allowing California Quartet to delay completing the May 1997 gnatcatcher survey of the Property in accordance with the USFWS presence/absence protocol. Both FSEIR 566 and the Addendum *concede* that a formal protocol gnatcatcher survey of the Project has not been conducted in recent years, and this is nothing short of unconscionable since the County is now considering whether to allow California Quartet to *decimate* virtually *all* of the coastal sage scrub habitat on the Property without even knowing the number of endangered birds that might be affected.

In addition to a formal protocol survey being undertaken, a new or subsequent EIR must now be prepared to fully and properly assess the impacts on this federally-listed endangered species, the coastal California gnatcatcher. Indeed, as underscored in the case cited in the letter to the Planning Commission from California Quartet's attorney, dated September 30, 1998, *Fund for Environmental Defense v. County of Orange* (1998) 204 Cal.App.3d 1538, 1550, CEQA section 21166 requires the preparation of a subsequent EIR when a "new protected or rare habitat or species of flora or fauna" is discovered after an EIR has been prepared. As explained in the *Fund for Environmental Defense* case, such a discovery constitutes a type of "change in circumstances" and "new information" under section 21166 which mandates the preparation of a subsequent EIR.

Of course, my clients continue to maintain that ZC 98-3 and AP 98-2 constitute a *new* project which is not the *same* as the 705-Unit Project manufactured housing/mobile home project authorized under Tract Map 10692. Although County staff now maintains that the 299-Unit Project and the 207-Unit Project are actually the *same* project for purposes of CEQA compliance, the County took an entirely different position two years ago when it stated on page 3-1 of Draft EIR No. 561 that "the proposed project [i.e., the 318-unit project] represents the *complete revision and redesign* of previously approved and recorded Tract Map 10692." (Emphasis added.) If, as my clients contend, the 299-Unit Project is *not* the same as the 705-Unit Project, then a new EIR must be prepared, particularly in light of the mandatory finding of significance which must now be made under CEQA Guidelines section 15065(a) because of the potential impact which the 299-Unit Project will have on "an endangered, rare, or threatened species."

B. <u>The Drainage and Grading Impacts Associated With the 299-Unit Project Should Be Addressed in a New or Subsequent EIR.</u>

As explained in great detail in the letter prepared by our firm's consultant, Warren Singleton, dated October 7, 1998, a copy of which is attached as Exhibit "B" hereto, the critically important drainage impacts of the 299-Unit Project have essentially been ignored in the CEQA documentation prepared by the County for ZC 98-3 and AP 98-2. Nowhere in FSEIR 566 or in the Addendum is a concept drainage plan for the 299-Unit Project to be found. Incredibly,

County staff is asking the Planning Commission to approve the development of 299 homes without any information being provided to the Commission or to the public as to exactly *where* storm, irrigation, and urban runoff from these hundreds of homes will be discharged on the Property.

The Addendum admits that such runoff will be dumped into natural drainage courses on the site which is a *radical* change from the stormdrain system proposed for the 705-Unit Project. However, although this major project change will be allowed to occur and huge volumes of water will be dumped on site, no document has been provided or referenced in the Addendum which would indicate the locations of the respective storm drain outlets to be constructed on the Property.

One can only *speculate*, based on the concept drainage plan for the 318-Unit Project described in Draft EIR 561 that, on a *daily* basis, a huge increase in runoff will be discharged into the geologically-unstable canyon areas adjacent to St. Michael's Abbey and the Ramakrishna Monastery. This is a frightening prospect because no analysis has been undertaken as to whether the introduction of the steady flow of water in these unstable canyon areas will create new geotechnical hazards by activating the landslide conditions which are clearly known to exist in the very locations where the water will be discharged.

Obviously, the major change in the stormdrain system for the 299-Unit Project necessitates the preparation of a new or subsequent EIR to address what has always been one of the most important concerns on the part of the Abbey and the Monastery, i.e., the potential geotechnical hazards created by the 299-Unit Project which could seriously undermine the stability of their respective facilities -- which are already suffering the effects of soils movement. To date, the CEQA documentation which has been prepared for the 299-Unit Project has simply ignored the very serious impacts which will be caused when a constant flow of water is added to areas on the Property which are known to be seriously unstable and prone to landsliding. This deficiency should be corrected and a new document should be circulated for public review and comment.

C. <u>The "44-178 Alternative" Should Be Analyzed in A New Or Subsequent EIR.</u>

In my September 2 letter to the County, I submitted plans relating to three different project alternatives, the 65-Unit Alternative, the 120-Unit Alternative, and the 127-Unit Alternative. Strangely, in what can only be described in a *Twilight Zone* statement, County staff has taken the position that the three alternatives have *not* been "submitted" for their review and thus they are free to overlook them for purposes of CEQA compliance. This appears to be a

rather convenient way for County staff to avoid *ever* having to address any reasonable project alternatives proposed by members of the public.

Undaunted by the strange tactics being employed by County staff, I will venture to suggest another project alternative that should be analyzed in a new or subsequent EIR *before* the Planning Commission takes any further action on ZC 98-3 and AP 98-2. Attached as Exhibit "C" hereto is an 11x17" plan showing the 44-acre portion of the Property which has been outlined in orange. This plan represents what I will refer to as the "44/178 Alternative," and it represents a project alternative which would allow a 44-acre parcel of the Property to be developed with residential uses, with the balance of the Property, i.e., 178 acres, being dedicated by the developer free of charge to the County to be preserved as permanent, undisturbed, undeveloped, natural open space. The number of units to be developed within the 44-acre parcel could vary depending on the desire of the developer and could include a mix of condominium units, assisted living facilities, single-family detached homes, etc.

The reason that it is so important to analyze the 44/178 Alternative is because the 44-acre development parcel would be situated on what is perceived to be the most "stable" soil at the Property, relatively speaking, and, if development were confined within that 44-acre parcel, very few sensitive habitats or species on the Property would be adversely impacted. In addition, such an Alternative would facilitate approval of the Southern Subregion NCCP because it would provide the wildlife corridor contemplated by the NCCP. As stated in the August 11 letter which was sent to the Board of Supervisors by the California Department of Fish & Game and the U.S. Fish & Wildlife Service, the wildlife agencies are interested in analyzing the 44/178 Alternative because of the many environmental benefits it affords. Accordingly, this Alternative should be studied in detail in a new or subsequent EIR before ZC 98-3 and AP 98-2 are approved by the Planning Commission.

D. <u>The Planning Commission Is Unlawfully Proceeding to Take Final Action on AP 98-2 Without Affording the Foothill/Trabuco Specific Plan Review Board an Opportunity to Make Its Recommendations on the Project</u>.

As I stated in my September 23 letter to Tom Mathews, the Planning Commission will violate both the Foothill/Trabuco Specific Plan and the Orange County Zoning Code if it proceeds to take any further action on the discretionary permit application relating to AP 98-2 *before* the Foothill/Trabuco Specific Plan Review Board (the "Review Board") has been afforded at least twenty-one (21) days within which to consider the merits of AP 98-2 and to report its recommendations thereon to the Planning Commission. Clearly, the Planning Commission is the "approving authority" with respect to *all* applications for Area Plans submitted to the County. Indeed, if no appeal is taken from the Planning Commission's approval of any given Area Plan, that approval becomes *final*.

Moreover, the Review Board is supposed to make its recommendations to the Planning Commission, *not* to the Board of Supervisors. As the County noted at page 4-11 of Draft EIR 561, "[d]iscretionary actions within the Specific Plan area are reviewed by the Foothill-Trabuco Specific Plan Review Board, who function as an advisory body to the *County Planning Commission*." (Emphasis added.) Aside from common courtesy, the Planning Commission is required by law to refrain from even *considering* California Quartet's application for approval of AP 98-2 until after the Review Board has been given at least 21 days to forward its recommendations on whether that Area Plan should be approved or denied.

Since the Review Board is charged with implementing the Foothill/Trabuco Specific Plan, it would seem only logical, not to mention lawful, to allow the Review Board adequate time within which to consider the impacts that will flow from *exempting* the 299-Unit Project from complying with the provisions of the Specific Plan. The CEQA documentation relating to ZC 98-3 and AP 98-2 is obviously deficient in that it does not address these impacts.

However, since it appears inevitable that the Planning Commission will refuse to honor the request of the Review Board for at least a two-week continuance of the Planning Commission's October 7 hearing, my clients must now face the sad fact that this matter appears headed for litigation. Accordingly, please be advised that, in addition to the objections raised in letters previously submitted by my firm and its consultants, my clients hereby incorporate and restate in opposition to ZC 98-3 and AP 98-2 each and every procedural and substantive contention, objection, comment, or argument raised in the letters which are listed in Exhibit "D" attached hereto. In addition, my clients also incorporate and restate each of the objections raised, or comments or arguments made, by any of their respective attorneys, representatives, or consultants at the public hearings or meetings held by the Planning Commission or the Board of Supervisors in connection with the review of FSEIR 566, including, but not limited to, hearings and meetings held on October 22, November 25, and December 3, 1997, and on February 24, 1998.

Very truly yours,

Edmond M. Connor

cc John Buzas
Frank McGill
Ray Brantley

Vedanta\Aradi\Corres\Plng-C05

EXHIBIT A

2785

California Native Species Field Survey Form

Attachment F

Mail To:
Natural Diversity Data Base
California Dept. of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ # _____
Copy To _____ Map Index # _____

Date of field work: Sept (mo.) 23 (day) 1998 (year)

Scientific name: *Polioptila californica californica*

Species Found? [✓] yes [ ] no _____ If not, why?
Total # Individuals: Two Subsequent visit: [ ]yes [ ]no
Compared to your last visit: [ ]more [ ]same [ ]fewer
Is this an existing NDDB occurrence? [ ] Yes, Occ.# [ ] no [ ] unk
Collection? If yes: _____ number _____ Museum/Herbarium

Reporter: Royce B. Riggan, Jr.
Lisa A. Seneca
Address: RBRiggan and Associates
11228 Zapata Avenue
San Diego CA 92126
Phone: (619) 233-5454
Other knowledgeable individuals (name/address/phone):
N/A

Plant Information

Phenology: _____ % vegetative _____ %flowering _____ %fruiting

Animal Information

Age structure: One #adults One #juveniles _____ #unknown
Site Function [✓] breeding [✓] foraging [✓] wintering [✓] roosting [ ] burrow site [ ] other

Location (Please also attach or draw map on back)

Found on a portion of the Saddleback Meadows property, see attached map [note: the entire property was NOT surveyed].

County: Orange County
Landowner/Manager: California Quartet, Ltd.
c/o TPG Management, Inc.
44 Montgomery Street, Suite 1300
San Francisco CA 94194
Quad Name: Santiago Peak Quadrangle
Elevation: ±1,250 ft UTM _____
T 6 S. R 7 W. NE ¼ of SE ¼ Sec 4 T _____ R _____ _____ ¼ of _____ ¼ Sec _____

Habitat Description: (Plant communities, dominants, associates, substrate/soils, aspect/slope)

The southeastern corner of the Saddleback Meadows property is a well developed Venturan Sage Scrub with high shrub species diversity. Elements of a mixed chaparral are found on steeper north facing slopes. The property is a critical wildlife corridor between the south Orange NCCP area and the existing NCCP preserves to the west and northwest. Other areas of Coastal Sage Scrub occur on adjacent public lands to the south.

Other rare spp? Federally listed species of Anostraca are known to occur in natural and artificial ponds found on the property. Coastal Cactus Wrens are resident at several points within the property.

Site Information: Current/surrounding land use: The property is currently used for extensive cattle grazing. Properties to the north are generally vacant, properties to the south are sparsely developed as are properties to the east.

Visible disturbances, possible threats: The site is threatened by the current cattle grazing activity and by a pending land development plan. The latter would convert the site to urban level residential.

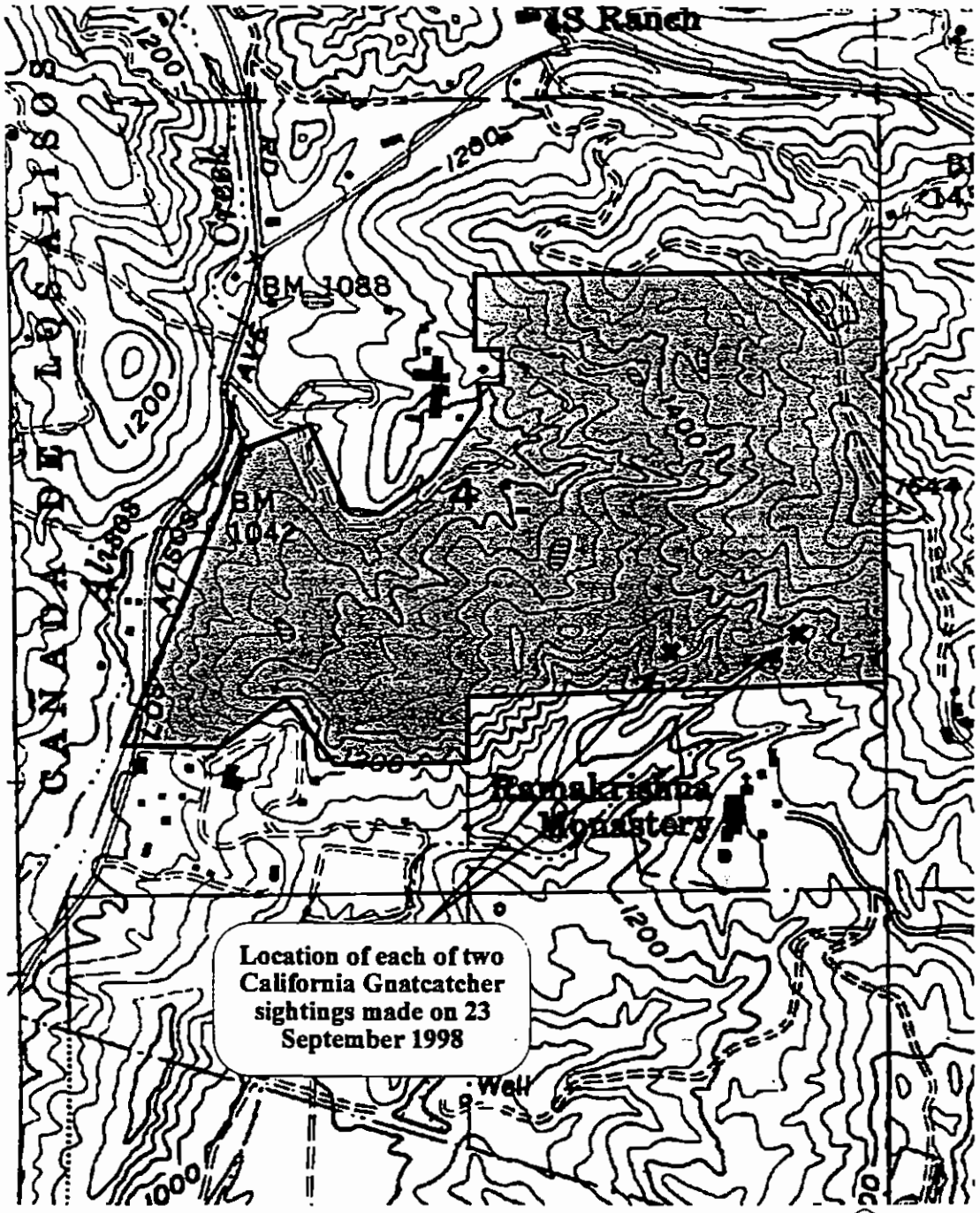
Overall site quality: [✓]Excellent [ ] Good [ ] Fair [ ] Poor **Comments:**
The habitats in the southeastern corner of the site are (despite cattle grazing) in excellent condition.

Determination: (Check one or more, fill in blanks)
_____ Keyed in a site reference: _____
_____ Compared with specimen housed at: _____
_____ Compared with photo/drawing in: _____
_____ By another person (name): _____
✓ Other: Riggan (and Seneca) hold Federal Permit PRT-780195.

Photographs: (check one or more)	Slide	Print
Plant/animal	___	___
Habitat	___	___
Diagnostic Feature	___	___
Other	___	___

May we obtain duplicates at our expense? [ ]yes [ ]no

2786



RBRiggan and Associates Job Number 1683.70A 20 June 1998

RBRiggan and Associates	Location of the Saddleback Meadows Property on a Scanned Portion of the U.S.G.S. 7½-minute Santiago Peak Quadrangle Map	Figure 1

EXHIBIT B

2788

WARREN W. SINGLETON, P.E.
CONSULTANT
32442 SPYGLASS COURT
SAN JUAN CAPISTRANO
CALIFORNIA 92675
TEL/FAX (714) 240-5808

October 6,1998

Edmond M. Connor, Esq.
CONNOR, CULVER, BLAKE & GRIFFIN LLP
Attorneys At Law
2600 Michelson Drive
Suite 1450
Irvine, CA 92612

Re: Saddleback Meadows Property: Drainage and Grading Impacts of Proposed 299-Unit Project; Zone Change 98-3 and Area Plan 98-2

Dear Mr. Connor:

A. Drainage Impacts Have Not Been Adequately Addressed.

At your request, I have reviewed the "Water/Hydrology" section of Addendum PA980103 (pp. 32-37) for the proposed 299-unit project to be undertaken by California Quartet pursuant to Zone Change 98-3 and Area Plan 98-2, and I have determined that the analysis set forth in that section is woefully inadequate to describe the drainage impacts of the 299-unit project.

The Addendum does not provide a concept drainage plan for the 299-unit project. Instead, it merely refers the reader to Exhibit 22 at page 4-40 of FSEIR 566 to review the "master drainage concept" for the 705-unit manufactured housing/mobilehome project. However, that drainage plain is radically different from the storm drain system that would have to be used for the 299-unit project because, under the latter project, storm, irrigation, and urban runoff would be discharged directly into natural drainage courses on the property instead of being confined in drainage pipes running to El Toro Road.

The impact of storm and nuisance water runoff from the houses and streets to be built in the hillside areas of the Saddleback Meadows property is an issue which is not adequately addressed in the Addendum. The collection of runoff from developed areas which subsequently outlets to a local non-regional natural drainage course is the concern.

Southern California is generally a dry semi-arid region with annual rainfall in the range of 15 to 20 inches per year. The small natural local drainage courses, drainage areas up to several hundred acres, do not experience daily flows and are generally dry the majority of the year. Development creates streets and houses with impervious surfaces, therefore generally increasing the runoff. Landscaped and irrigated slopes and lots will receive 35 to 50 inches per year or more in irrigation, far more than the natural condition.

Irrigation runoff creates two concerns. First, water contaminated with pesticides, fertilizers and other man-made chemicals will be introduced to these natural, sensitive habitat areas on a daily basis. Secondly, over an extended period of time, 5, 10, or 20 years, underground migration of a portion of this excess water will affect the ground water condition. The increase in ground water should be studied and mitigation methods installed to protect the proposed development and surrounding properties from geologic instabilities. The Abbey to the northwest and the Monastery to the south have recently experienced ground movement.

Storm runoff from development areas creates several problems. The character of the runoff is changed from the natural condition of carrying soil and debris and concentrating flow over longer time span to one of a clean flow carrying little soil and debris over a considerably shorter time. The outlet of this concentrated clean flow into the steep, natural canyon areas will cause severe erosion and geologic failures. The existing average grade in these natural drainage courses range from 3% to 35%. Grades in man-made channels are limited to 3% or less to minimize erosion.

What is most troubling about this matter is the drainage facility information in the Addendum is not consistent with either Exhibit 22 in FSEIR 566 or Exhibit 25 from the previously disapproved Draft EIR 561 for the 318-unit project. For example, Exhibit 25 from Draft EIR 561 indicates that the 318-unit project was slated for eight storm drain facilities A through H, but the Addendum states that the 299-unit project will only access storm drains A, B, E, and H, without any explanation as to what happened to drain lines C, D, F, and G. The reader is simply left to guess about what the storm drain system will look like and where water will be discharged on the property. Clearly, further CEQA documentation is required.

In addition to providing an adequate discussion of drainage impacts, new CEQA documentation should address the following mitigation measures to avoid the disastrous consequences of dumping substantially increased volumes of runoff into geologically unstable areas of the property:

1) All runoff from developed lots and streets is to be confined to a storm drain collection system within the development. No concentrated flows from the developed area will outlet to natural drainage courses except at the regional facilities at El Toro Road.

2) Require a study of the long term effects of irrigation infiltration on the geologic structures and methods to minimize its impact.

B. Grading Impacts Have Not Been Adequately Addressed.

I have reviewed the "Soils and Geology" section of Addendum PA980103 (pp. 20-32) and I have determined that the analysis set forth in that section is grossly deficient with respect to analyzing the grading impacts of the 299-unit project.

The addendum does not discuss the permanent impacts which the grading will have on the land to be used for the purported "wildlife corridor", nor does it discuss the impacts on the sensitive biological resources in the southeastern canyon areas which will be necessitated by the incredibly long equipment ramps which have to constructed to make the 100 to 120 foot deep removals of landslide debris and construction of the buttress keys. The nature and extent of the remedial grading and the hazards posed by such grading have not been adequately discussed.

The elimination of grading in the north central portion of the site creates the exact situation discussed in the previous drainage section. The remedial grading along the northwest property line abutting the Abbey property has been completely eliminated. The conceptual drainage plan, Exhibit 25 from Draft EIR 561, indicates storm drain lines A and B would outlet increased urban runoff from the development to the existing natural drainage course that follows the common property line. Also storm drain line C, on that same Exhibit, would dump water into the geologicly unstable canyons adjacent to the Ramakrishna Monastery. These are precisely the situations which will cause geologic failures and damage to adjacent properties.

The reduction in impacts to vegetation and habitat are marginal at best. The only significant reduction in impact is to the Oak Woodland, 97% to 59% destruction. The impact to the Ephemeral Ponds is unchanged. The impact to the Coastal Sage Scrub is virtually unchanged, 66% vs. 65%. This is due to the dramatic extension of the proposed 299-unit development in the southeast quadrant. Please refer to the Impacted Vegetation Map, Exhibit No. 42 from the Draft EIR 561 which shows the limit of remedial grading. Compare it to the Geotechnical Hazard Mitigation Plan, Exhibit No. 19 from FSEIR 566. The 299-unit proposal dramatically pushes deep into the coastal sage scrub area.

This is significant because this is a large contiguous area with the "Gifted Property" and O'Neill Regional Park to the south. This area also contains five (5) of the ten (10) Cactus Wren sites on the property. Recently, I have been informed that two Coastal California Gnatcatchers have been observed in this area.

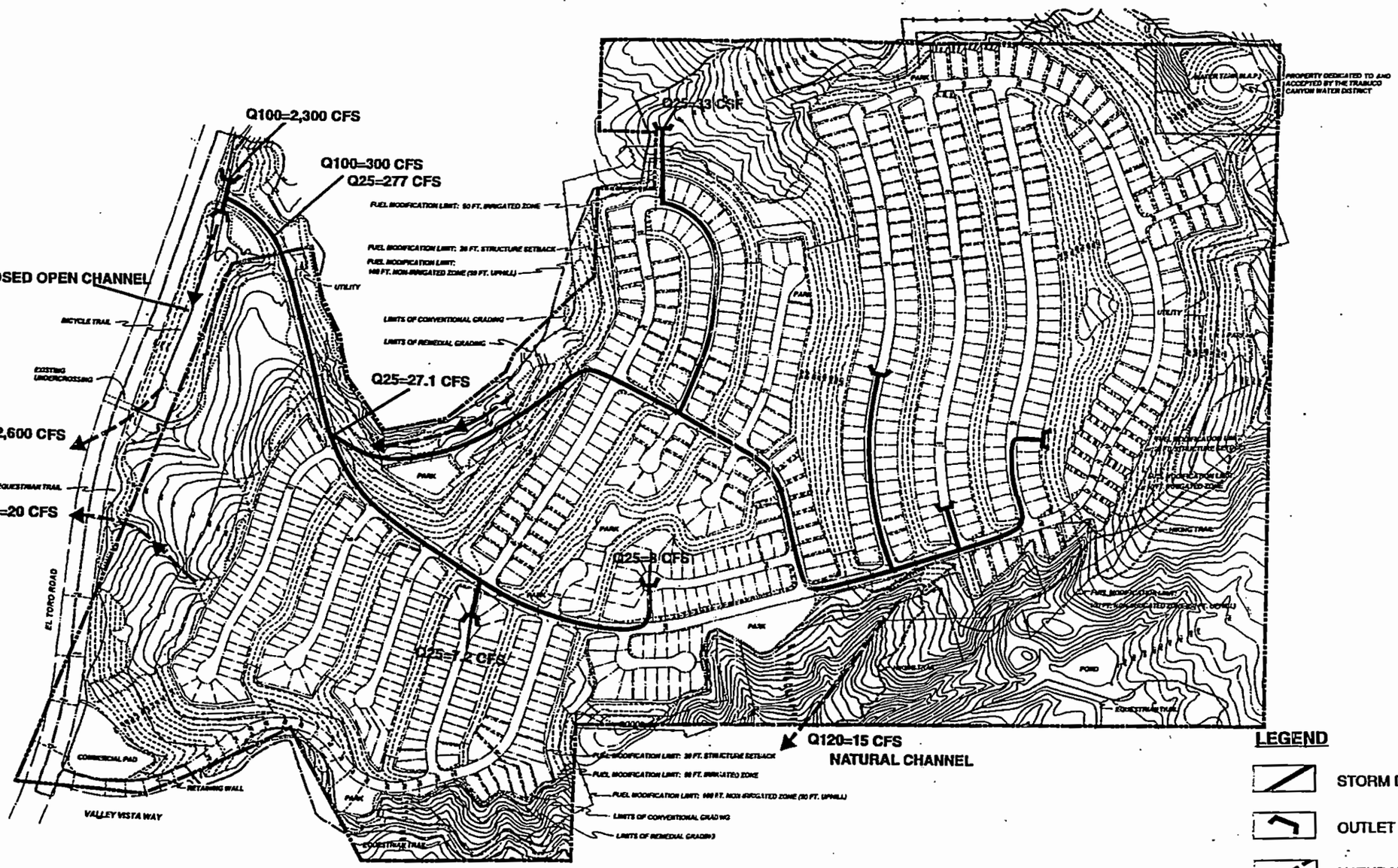
If you should have any questions or comments concerning the above, please call me at your convenience.

Very truly yours,

Warren W. Singleton, P.E.

WWS
Enclosure

2792



LEGEND

- STORM DRAIN
- OUTLET STRUCTURE
- NATURAL DRAINAGE COURSE

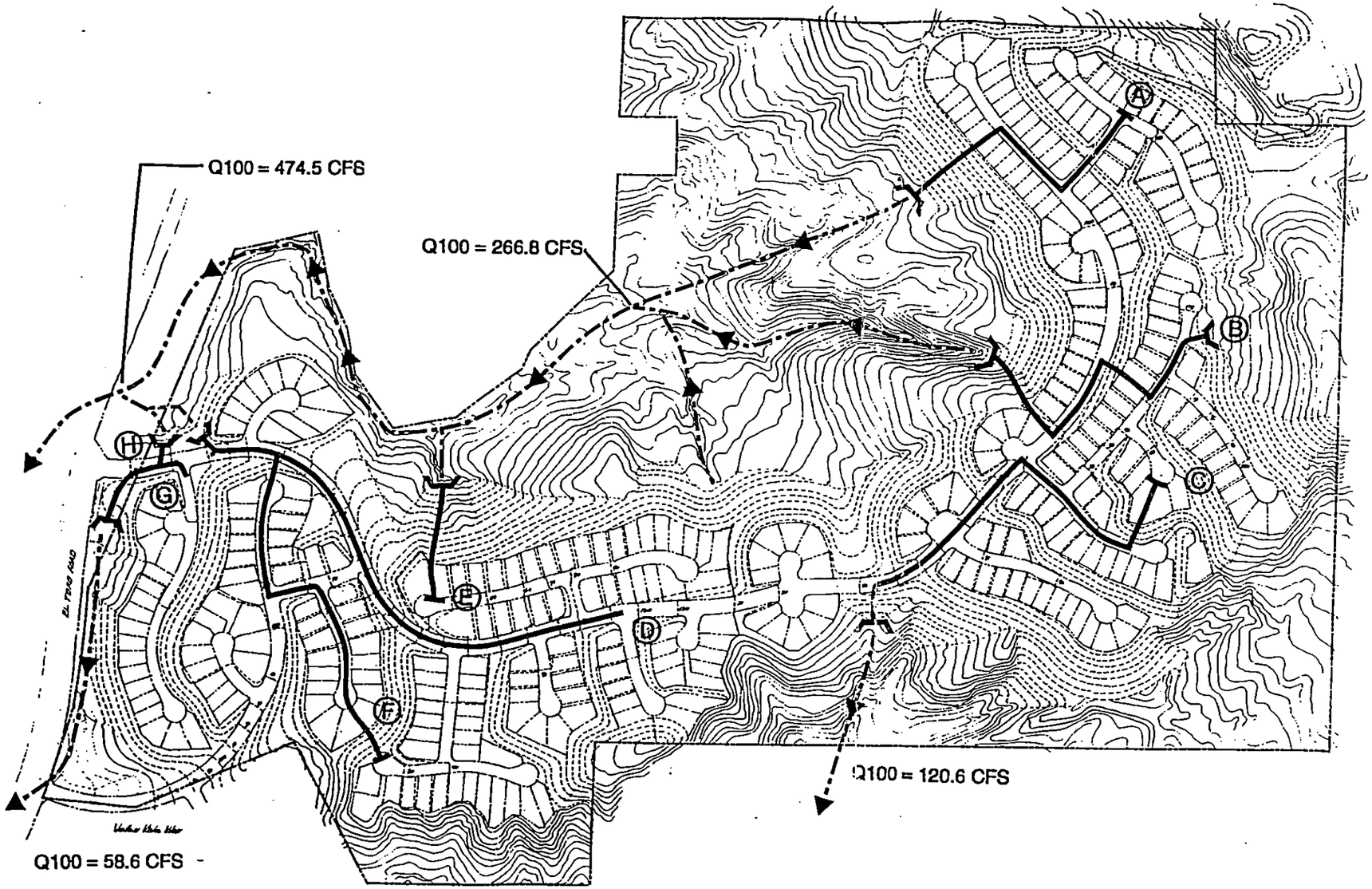
SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: 1"=400'
Source: Hunsaker & Associates

N

Conceptual Drainage Plan

EXHIBIT No. 22



DDLEBACK MEADOWS - VTTM 15230
AFT ENVIRONMENTAL IMPACT REPORT

▪ OCEMA

SCALE: 1" = 400'

SOURCE: Hunsaker & Associates

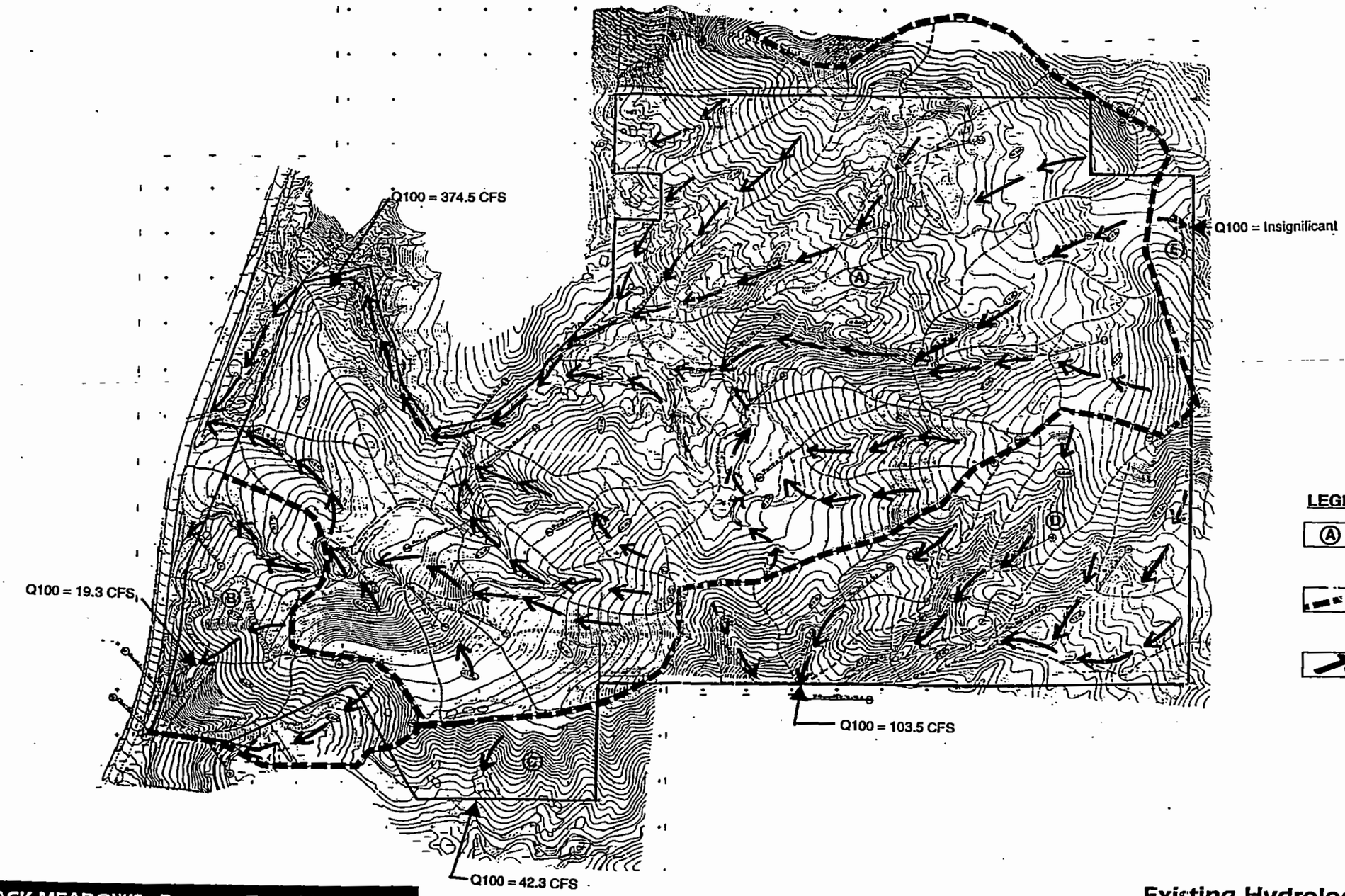
N

Conceptual Drainage Plan

EXHIBIT NO. 25

4-44

2794



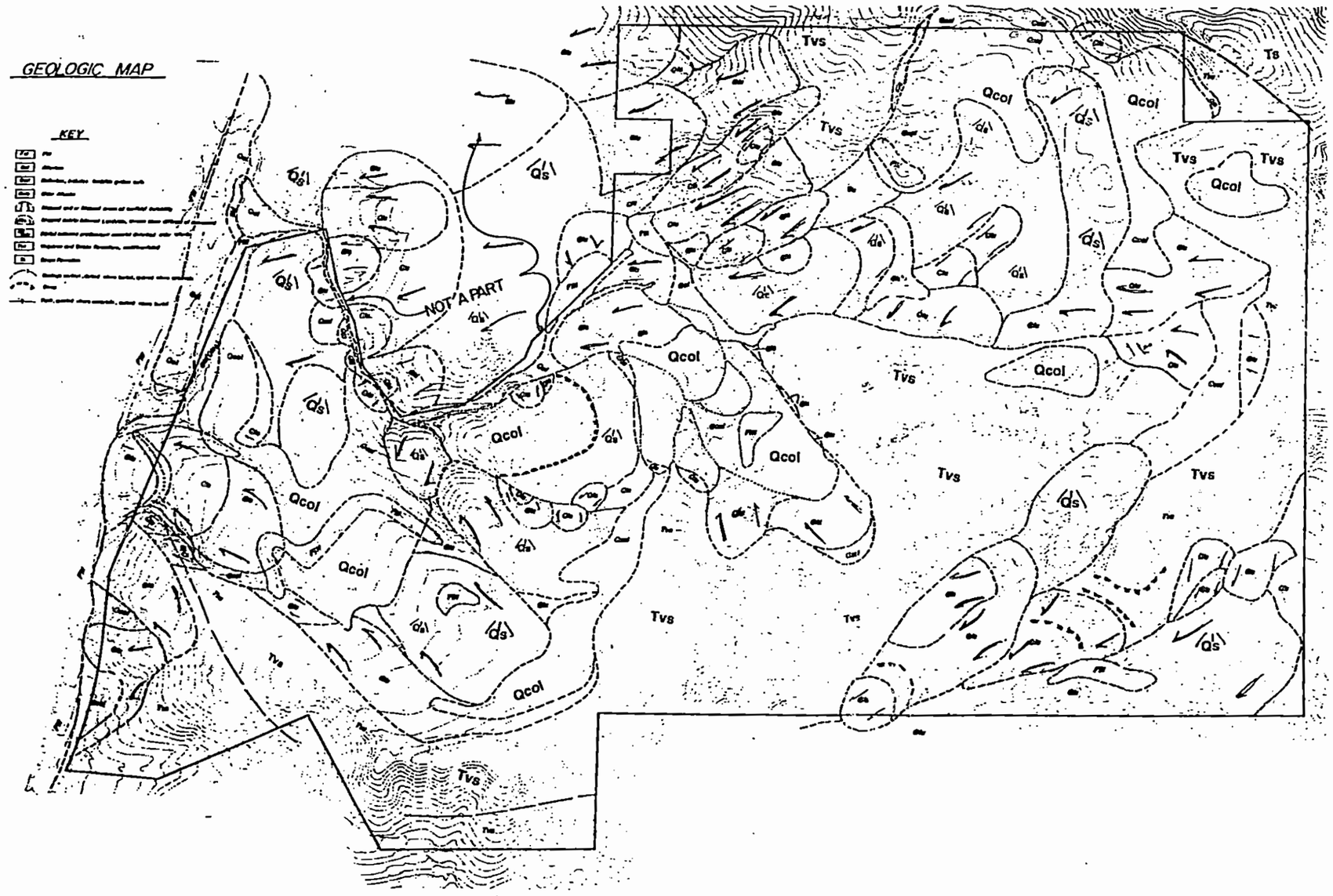
SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: 1"=400'
Source: Hunsaker & Associates

N

Existing Hydrology

EXHIBIT No. 21



LEGEND

- FILL — FILL
- Qal — ALLUVIUM
- Qoal — OLDER ALLLUVIUM
- Qcol — COLLUVIUM
- SURFICIAL INSTABILITY
- /Qls\ — LANDSLIDE
- Tvs — VAQUEROS AND SESPE FORMATION
- Ts — SESPE FORMATION
- GEOLOGIC CONTACT
- SCARP
- FAULT

ADDLEBACK MEADOWS - VTTM 15230
RAFT ENVIRONMENTAL IMPACT REPORT

■ OCEMA

SCALE: 1" = 400'

SOURCE: G. A. Nichol & Assoc.

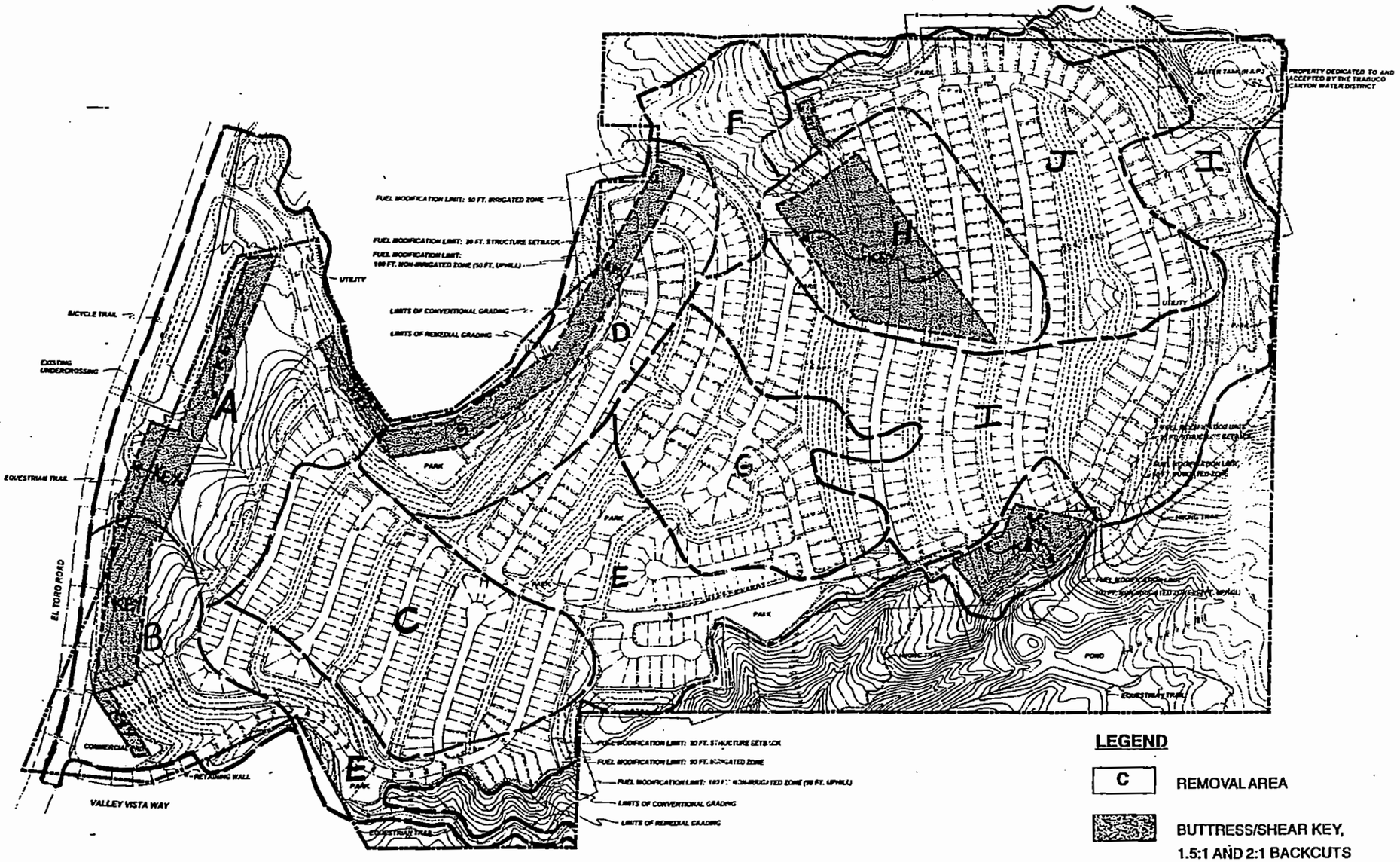
N

Geotechnical Resources

EXHIBIT NO. 19

4-22

2796



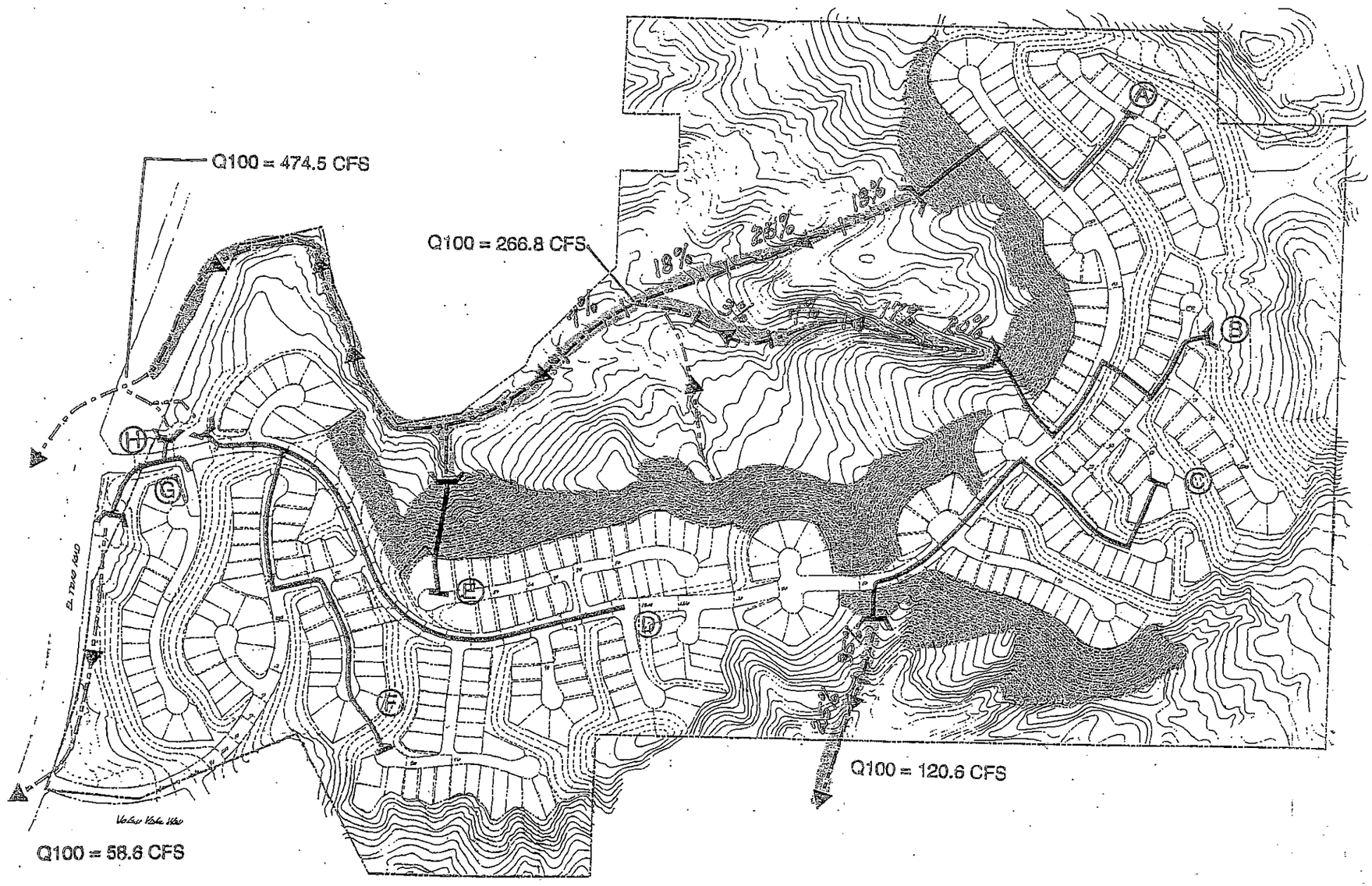
SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: 1"=400'
Source: G.A. Nicoll & Associates, Inc.

N

Geotechnical Hazard Mitigation Plan

EXHIBIT No. 19



SADDLEBACK MEADOWS - VTTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

OCEMA

SCALE: 1" = 400'

SOURCE: Hunsaker & Associates

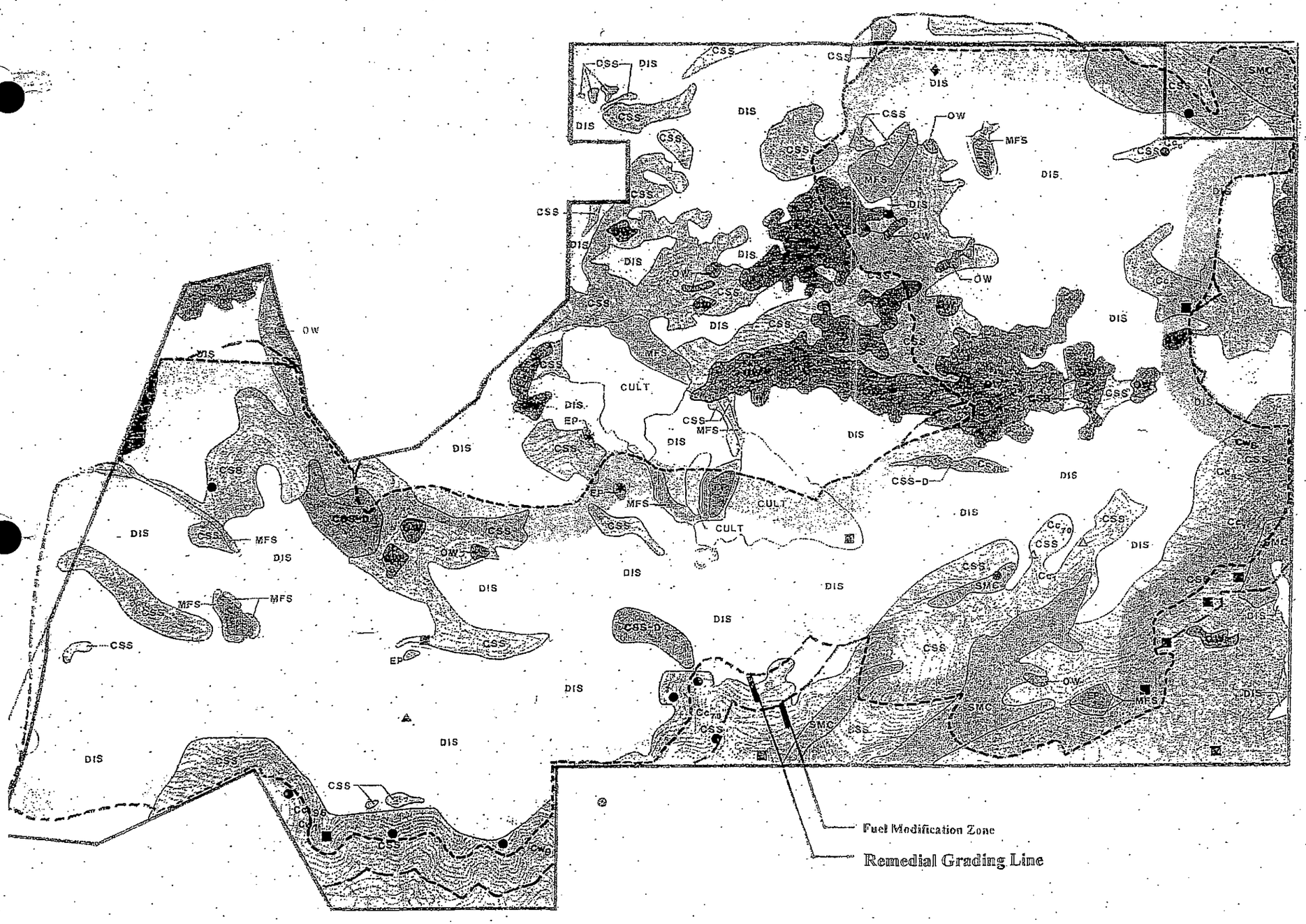
N

Conceptual Drainage Plan

EXHIBIT NO. 25

4-44

2798



LEGEND TO SENSITIVE RESOURCES

VEGETATION

- CSS — Venturan-Diegan Transitional Coastal Sage Scrub
- CSS-D — Venturan-Diegan Transitional Coastal Sage Scrub - Di
- OW — Coast Live Oak Woodland
- Southern Sycamore Riparian Woodland
- MFS — Mulefat Scrub
- SMC — Southern Mixed Chaparral
- Ephemeral Ponds
- DIS — Annual Grassland
- CULT — Agricultural

SENSITIVE PLANTS

- Cc — Catalina Mariposa Lily
  Calochortus catalinae
- Cw — Intermediate Mariposa Lily
  Calochortus weedii ssp. intermedius

SENSITIVE ANIMALS

- Riverside Fairy Shrimp
  Streptocephalus woottoni
- Coastal Whiptail
  Cnemidophorus tigris multiscutatus
- Cactus Wren
  Campylorhynchus brunneicapillus
- Southern California Rufous-Crowned Sparrow
  Aimophila ruficeps canescens
- Cooper's Hawk
  Accipiter cooperii
- Orangethroat Whiptail
  Cnemidophorus hyperythrus beldingi
- Loggerhead Shrike*
  Lanius ludovicianus

*Observed by PSBS in 1989 but not mapped.

SADDLEBACK MEADOWS - VTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

OCEMA

SCALE: 1" = 400'

SOURCE: Sweetwater Environmental Biologists, Inc.

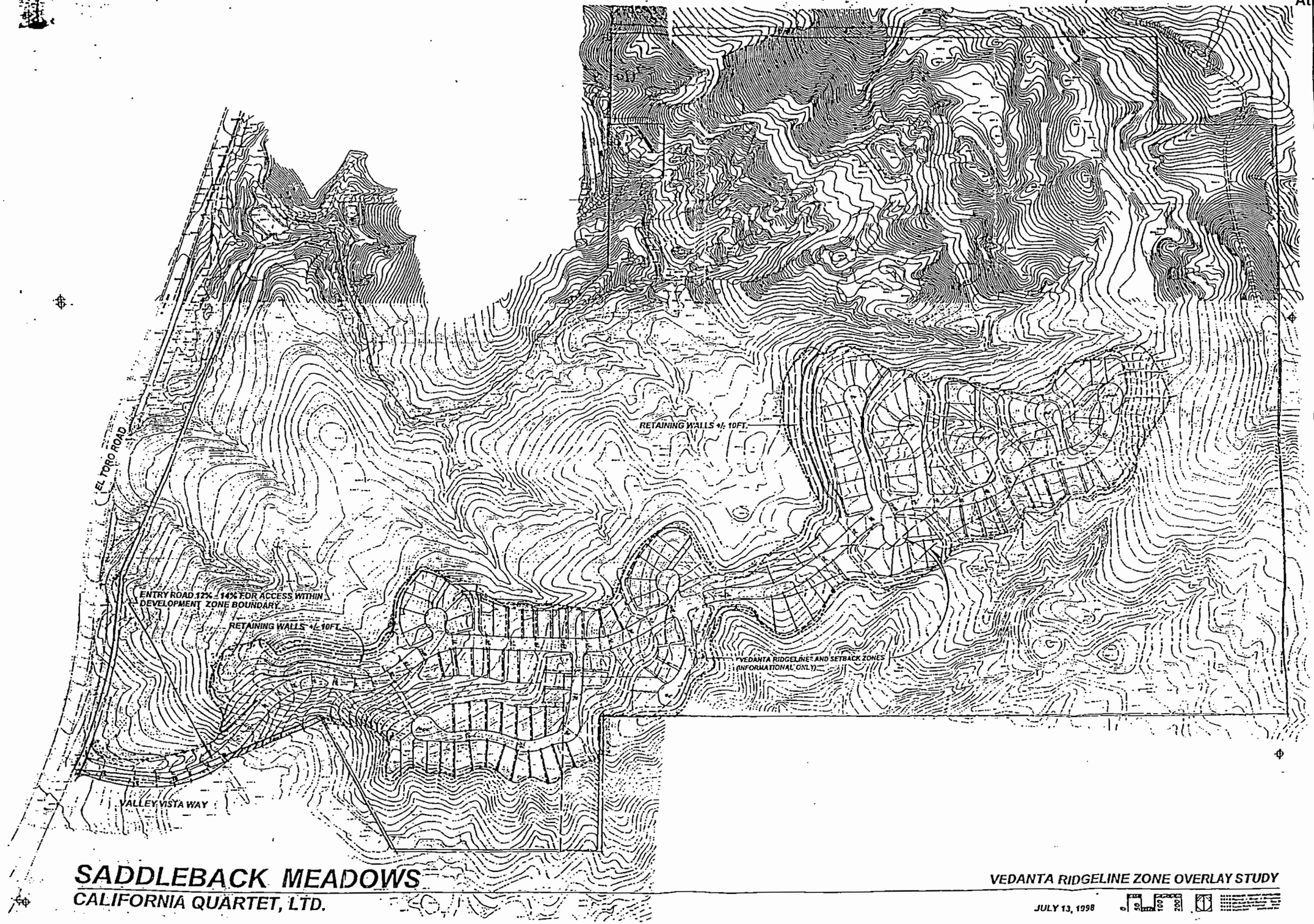
N

URBAN VISION

Impacted Vegetation Map

EXHIBIT C

2800



SADDLEBACK MEADOWS
CALIFORNIA QUARTET, LTD.

VEDANTA RIDGELINE ZONE OVERLAY STUDY
JULY 13, 1998

EXHIBIT D

2802

EXHIBIT "D"

LETTERS RE FSEIR 566

1. June 29, 1997, Robert A. Hamilton, Consulting Biologist, Conservation Chair, Orange County CNPS, to George Britton, County of Orange, Environmental & Project Planning Services Division;

2. August 5, 1997, Saundra F. Jacobs, REA, SFC Consultants, to Ray Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

3. August 6, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley and William Grieman, Environmental Planning Section, Orange County Planning & Development Services Department;

4. August 8, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Nicholas S. Chrisos, Esq., Office of County Counsel;

5. August 8, 1997, Gail C. Kobetich, U.S. Fish and Wildlife Service, and Ron Rempel, California Department of Fish and Game, to Raymond Brantley, Environmental & Project Planning Services;

6. August 11, 1997, Karen Steele Verlaan, City of Mission Viejo, to George Britton, Environmental & Project Planning Services;

7. August 11, 1997, Robert E. Anslow, Esq., Bowie, Arneson, Kadi, Wiles & Giannone, to George Britton, Manager, County of Orange, Planning & Development Services Department;

8. August 11, 1997, Kimberly A. Stocking to Planning and Development Services Department;

9. August 12, 1997, Wayne L. Brown to Manager, OCPDS/Environmental & Project Planning Services Division;

10. August 12, 1997, Amber Graves to Manager, OCPDS/Environmental & Project Planning Services Division;

11. August 12, 1997, Debra Moddelmog to Manager, OCPDS/Environmental & Project Planning Services Division;

12. August 12, 1997, Justin Watson to Manager, OCPDS/Environmental & Project Planning Services Division;

13. August 12, 1997, Kathy L. Graham, City of Lake Forest, to Raymond H.C. Brantley, Environmental Management Agency, Environmental & Project Planning;

14. August 12, 1997, J. David Stein, Southern California Association of Governments, to George Britton, Environmental & Project Planning Services;

15. August 13, 1997, Peter A. Hartman, Saddleback Valley Unified School District, to Ray Brantley, Environmental & Project Planning;

16. August 15, 1997, Bill Berry, State of California -- The Resources Agency, Department of Parks and Recreation, to Ray Brantley, County of Orange;

17. August 18, 1997, Ray Chandos, Rural Canyons Conservation Fund, to Raymond Brantley, Planning and Development Services Department;

18. August 21, 1997, David B. Cosgrove, Esq., Rutan & Tucker LLP, to Raymond Brantley, Orange County Planning & Development Services, Environmental & Project Planning Services Division;

19. August 22, 1997, Saundra F. Jacobs, REA, SFC Consultants, to Raymond Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

20. August 22, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, Environmental Planning Section, Orange County Planning & Development Services Department;

21. October 15, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, PDS/Environmental & Project Planning Service Division;

22. October 16, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

23. November 3, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

24. November 5, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

25. November 26, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

26. December 1, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Benjamin J. de Mayo, Esq., Office of County Counsel;

27. December 2, 1997, Saundra F. Jacobs, REA, SFC Consultants, to Raymond Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

28. December 2, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Orange County Planning Commission and George Britton and Raymond H.C. Brantley, PDS/Environmental & Project Planning Services;

29. December 18, 1997, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin P. de Mayo, Esq., Deputy County Counsel;

30. February 23, 1998, Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Honorable Members of Board of Supervisors of Orange County, Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin P. de Mayo, Esq., Deputy County Counsel; and

31. February 20, 1998, Royce B. Riggan, Jr., AICP, RBRiggan and Associates, to Honorable Members of Board of Supervisors of Orange County.

EXHIBIT "K"

MEMORANDUM OF UNDERSTANDING

1. PURPOSE OF MOU. The purpose of this Memorandum of Understanding (the "MOU") is to outline the primary business terms for the purchase of 178 Acres (the "Conservation Parcel") by the County of Orange (the "County") and Saddleback Meadows Land Conservancy, LLC, a California limited liability company (the "Conservancy," together with County, the "Buyer") from the California Quartet ("CQ"). This MOU is intended only to set forth our mutual current understanding of the key business terms for the potential sale, and shall not constitute a binding contract or bind the parties to purchase or sell the Property. Only a definitive Purchase Agreement shall bind the parties.

2. PURCHASE OF CONSERVATION PARCEL. County and Conservancy will purchase from CQ a 178 acre parcel as shown on attached Exhibit A, together with all rights and interests appurtenant to such parcel. The Conservation Parcel shall consist of the entire Saddleback Meadows property, except for the 44-acre development area (the "Development Parcel") which is outlined in orange on Exhibit A. CQ intends to develop the 44-acre Development Parcel for single-family residential use. The County will purchase that portion of the Conservation Parcel (the "County Portion") which has an appraised value of $1,500,000, and the Conservancy will purchase the balance (the "Conservancy Portion"). What portion of the Conservation Parcel shall be purchased by the County and what portion shall be purchased by the Conservancy will be decided between them before the close of escrow.

3. CONSERVATION EASEMENT. The entire Conservation Parcel shall be subject to a permanent Conservation Easement in the form of attached Exhibit B [this will be substantially the same form as that provided by William Ross by letter dated August 28, 1998], subject only to modification as necessary in order to allow the County to use the County Portion for passive recreation purposes. The Easement shall be in favor of CQ, the County and the Conservancy.

4. PURCHASE PRICE. $5,200,000, with the Conservancy paying $3,700,000 for its portion of the Conservation Parcel, and the County paying $1,500,000 for its portion of the Conservation Parcel.

5. PAYMENT OF PURCHASE PRICE.

5.1 Deposit. $1,000,000 to be deposited by Conservancy upon the opening of escrow. This deposit shall be applicable to the purchase price for the Conservancy Portion and shall serve as liquidated damages if Conservancy defaults in its obligations

under the purchase agreement. However, the deposit shall be fully refundable to the Conservancy if escrow does not close for any reason other than a default on the part of the Conservancy. The $1,000,000 shall be placed into an interest bearing account at the highest available interest rate, with all interest accruing to the Conservancy.

5.2 Payment of Balance of Purchase Price. $4,200,000, representing the balance of the Purchase Price, shall be deposited before the close of escrow and after County and Conservancy have been advised that escrow is in a position to close but for Buyer's deposit of the balance of the Purchase Price.

6. TERMS OF ESCROW.

6.1 Escrow Holder. Fidelity National Title Insurance Company, Santa Ana, California ("Fidelity National").

6.2 Closing. Escrow shall close within fourteen (14) days after the later of, (i) the County's issuance of a Grading Permit for the Development Parcel, or (ii) expiration of all statutory challenge periods for development entitlement, environmental documents and environmental permits, but in no event later than March 31, 1999.

6.3 Cancellation of Escrow. If Escrow does not close before March 31, 1999, any party not then in default under the Agreement may cancel escrow without any penalties.

7. CONDITIONS TO CLOSE.

7.1 Conditions for the Benefit of CQ.

7.1.1 Issuance of Grading Permit. The County's issuance of a grading permit for the Development Parcel.

7.1.2 Expiration of Appeal Periods. All statutory challenge periods for development entitlement, environmental documents and environmental permits for CQ's intended development on the Development Parcel shall have expired.

7.1.3 Evidence of Conservancy's Financial Ability to Perform. Conservancy shall deliver to CQ reasonable evidence that it has the ability to fund the remaining portion of the purchase price. This condition may be satisfied with a letter from a bank or other financial institution.

7.2 Conditions for the Benefit of Conservancy.

7.2.1 Deposit of County Funds. The County shall be in a position to deposit the $1,500,000 purchase price for its portion of the Conservancy Parcel.

7.2.2 **Approval of Geotechnical Studies.** Conservancy and its consultants will be allowed to review and approve all geotechnical studies submitted to the County by CQ in connection with the Grading Permit for the Development Parcel to ensure any geotechnical work on the Development Parcel will not create any potential geotechnical hazards which would endanger or adversely affect the safety, usability, or stability of either the parcel currently owned by the Norbertine Fathers of Orange or the parcel currently owned by the Vedanta Society of Southern California.

7.3 Conditions for Benefit of County.

7.3.1 **Approval of Appraisal.** Approval of an appraisal of the portion of the Conservancy Parcel by the Public Facilities and Resources Department supporting the $1,500,000 purchase price to be paid by County.

7.3.2 **Approval by State.** Approval of the use by the County of the $1,500,000 in funds by the California Department of Parks.

7.3.3 **Approval by County Board of Supervisors.** Approval of the Purchase Agreement by the County Board of Supervisors.

7.4 Conditions for Benefit of both County and Conservancy.

7.4.1 **Title Policy.** The commitment of Fidelity National to issue to County and to Conservancy its CLTA owner's title policy (the "Title Policy") insuring that both County and Conservancy have good and marketable fee simple title to their respective portions of the Conservancy Parcel subject only to the Conservation Easement and to those title matters approved by Buyer during the title review period.

7.4.2 **Assessment.** The Conservation Parcel is no longer subject to assessment for the bonds in favor of the Trabuco Canyon Water District.

7.4.3 **Title Review.** During a 30-day title review period beginning after review of all title documents, Buyer has approved a current preliminary title report for the Property, including without limitation, copies of all underlying documents and a map showing the location of all easements.

7.5 Closing Costs. CQ shall pay the cost of the Title Policy. All other costs shall be divided equally between CQ and Buyer.

8. ENTITLEMENT PROCESSING.

8.1 Responsibility of CQ. CQ will be responsible at its cost for the processing of all entitlements for the development of the Development Parcel, including without limitation, such approvals as necessary to create both the Conservation Parcel and the Development Parcel as separate legal parcels.

8.2 Expedited Processing. County will provide expedited processing for CQ's entitlements.

9. RESTRICTED USE OF DEVELOPMENT PARCEL. By means of a restrictive covenant to be recorded in favor of the Conservancy, the County, the Norbertines and Vedanta, the Development Parcel shall be restricted to residential uses and related landscape and recreational areas only.

10. INDEMNIFICATION AND RELEASES.

10.1 Release of CQ. Upon the purchase of the Conservation Parcel by the County and the Conservancy, CQ shall be released of all liability relating to the condition of the Conservation Parcel, except for any liability or claims which are based upon or arise out of any negligent acts or omissions on the part of CQ.

10.2 Indemnification by County. County agrees to indemnify CQ and Conservancy from any loss, damage or liability either of them may incur or suffer relating to the negligence of the County on the portion of the Conservation Parcel it purchases.

10.3 Indemnification by Conservancy. Conservancy agrees to indemnify CQ and County from any loss, damage or liability either of them may incur or suffer relating to the negligence of the Conservancy on the portion of the Conservation Parcel it purchases.

10.4 Indemnification by CQ. CQ agrees to indemnify Conservancy and County from any loss, damage or liability either of them may incur or suffer relating to the negligence of CQ on the Development Parcel.

11. SETTLEMENT AND RELEASE AGREEMENT. As consideration for entering into the Purchase Agreement, the parties to that Agreement, as well as the Norbertines and Vedanta, shall simultaneously enter into a separate "Settlement and Release Agreement" (the "Settlement Agreement"), the initial draft of which shall be prepared by counsel for the Norbertines and Vedanta. Among other things, the Settlement Agreement shall provide for mutual limited releases to be exchanged between and among the parties thereto and shall further provide that CQ's pending mandamus action and Vedanta's pending lawsuit shall (1) be stayed pending close of escrow and (2) be dismissed with prejudice after escrow actually closes. The Settlement Agreement will also incorporate other standard settlement and release provisions. In addition,

the Settlement Agreement shall provide for a covenant by the Conservancy, the Norbertines, Vedanta, and their respective successors, to refrain from opposing or otherwise challenging (except in accordance with paragraph 7.2.2 above) the efforts of CQ to obtain the necessary permits and entitlements to develop the Development Parcel, provided, however, that CQ is not in default of its covenants to the Conservancy.

12. MOU IS NOT INTENDED TO BE BINDING. This MOU is not intended to be binding as to either CQ or Buyer. The terms and conditions of this letter shall be incorporated into a definitive Purchase Agreement and escrow instructions to be signed by CQ and Buyer.

By executing this MOU, the undersigned parties acknowledge and agree they shall each be bound to bargain in good faith and to use their best efforts to negotiate, draft, and execute a written contract for the purchase and sale of the Conservation Parcel which incorporates the terms and conditions set forth above.

SADDLEBACK MEADOWS LAND CONSERVANCY LLC

Dated: October __, 1998

By: NORBERTINE FATHERS OF ORANGE
Managing Member

By: _____
The Rt. Rev. Eugene J. Hayes, Abbot

Dated: October __, 1998

By: _____
Kathryn Swiss
Managing Member

[ADDITIONAL SIGNATURES ON FOLLOWING PAGE]

CALIFORNIA QUARTET, LTD.,
A California Limited Partnership

By: ARADI, LTD., A Limited Partnership
Its General Partner

By: ARADI, INC., A Nevada Corporation,
Its General Partner

Dated: October __, 1998 By: _____
Amer Hammour

Title: _____

Dated: October __, 1998 By: _____
Nazar Mahmoud

Title: _____

EXHIBIT "L"

Metro

THE ORANGE COUNTY REGISTER, FRIDAY, OCT. 16, 1998

A BATTLEGROUND

ENVIRONMENT: Another county wildlife corridor is at odds with development.

By PAT BRENNAN
The Orange County Register

The land could hardly be called pristine.

It has been trampled by cattle and invaded by thistle; the wear has converted much of it to non-native grassland.

Still, the 222-acre Saddleback Meadows might be the last fully functioning corridor for wildlife between southern and central Orange County. And like at least three other such corridors in the county or on its fringes, it could be closed — or its function vastly reduced — by development.

So say federal wildlife officials, who haved sided with those who want to scale back a proposed 299-home development.

"We'd like to see a minimum of development on the thing," said John Bradley, a U.S. Fish and Wildlife Service biologist. "We've always been concerned about the wildlife corridor."

NEWS FOCUS

Local residents will gather tonight to give their views on the project; the county Board of Supervisors is scheduled to consider approving it Nov. 3.

Wildlife is not the most pressing concern for most of the project's opponents, including neighbors and solitude-loving monks at two nearby monasteries.

They fear the loss of the tranquil refuge they have so far defended as homes and businesses have pushed closer and closer over the years.

"This project will effectively destroy the monastic way of life of these two organizations," said Ed Connor, an attorney representing the monks at St. Michael's Abbey and the Ramakrishna Monastery.

But concerns about nature and open space must be balanced against the property owner's wishes.

Frank Elfend, who represents owner California Quartet Ltd., said the developer is willing to sell 178 acres to the Saddleback Meadows Land Conservancy LLC, a company set up by St. Michael's, and scale back to 130 homes. But, in case an agreement isn't reached, the county

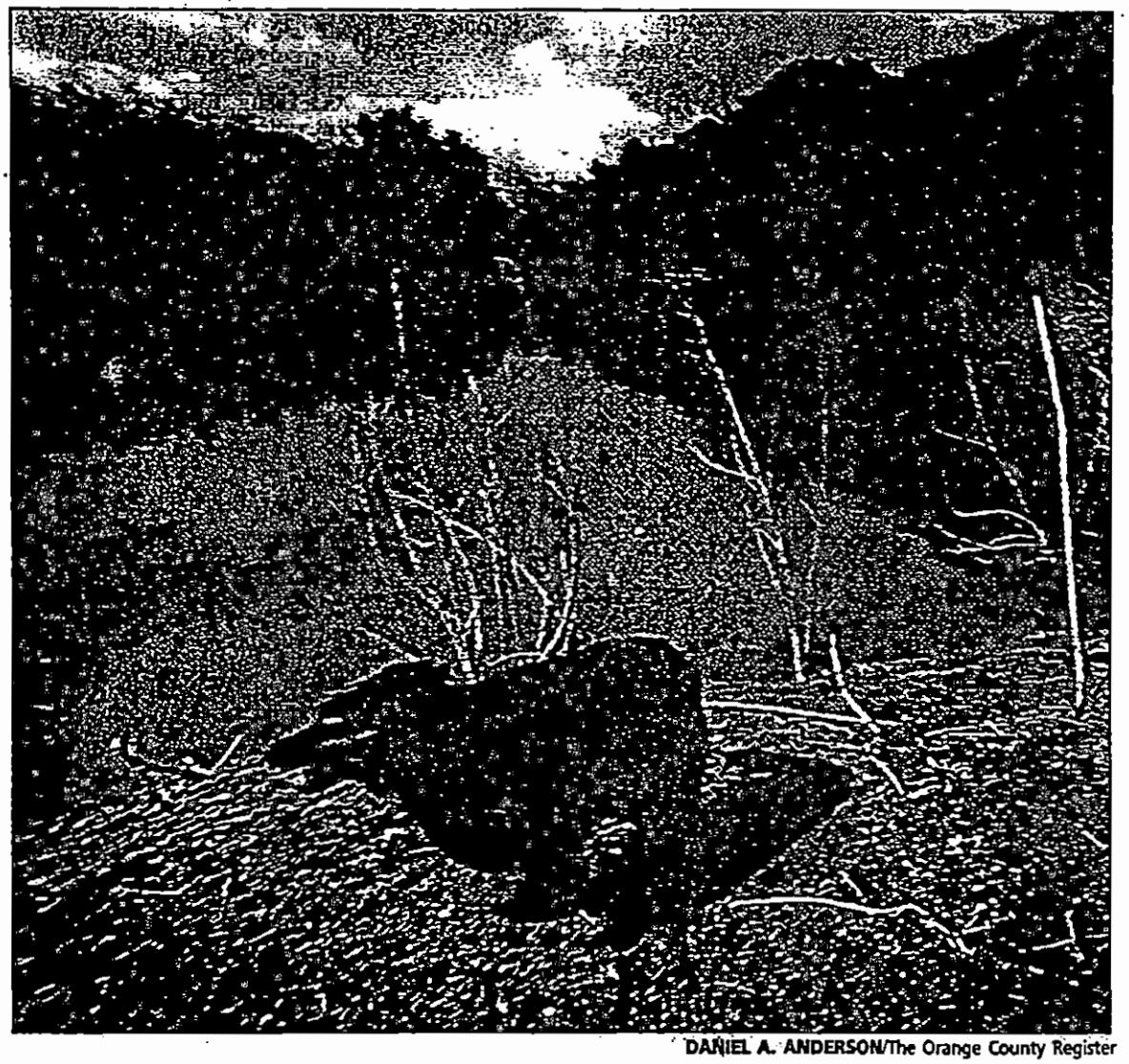
Please see WILDERNESS Page 7

CONTEMPLATING DEVELOPMENT

Monks in two monasteries are protesting a proposed 299-home development in the Saddleback Meadows, saying it would shatter the area's natural tranquility. Wildlife officials say it would also close off an important wildlife corridor.

The Orange County Register

PASTORAL PLACE



DANIEL A. ANDERSON/The Orange County Register

A pond in the proposed Saddleback Meadow development is home to the endangered Riverside fairy shrimp. And it's a fun place for dogs to play, too.

The Orange County Register **ORANGE COUNTY/OBITUARIES** Friday, Oct. 16, 1998

WILDERNESS: Monks' tranquillity in danger

FROM 1

and the developer are pressing ahead with the full 299-home plan.

"Right now there are two parallel processes, and both are moving forward," Elfend said.

The owners would like to see the disagreements resolved, he said. Homes are in demand, and it's a good time to build.

Controversy has haunted the property for as long as 20 years. Development proposals have come and gone. In June, it appeared the monks had reached an agreement to buy the entire property and preserve it, but the deal fell through.

Now, the best the monks can hope for is that the smaller development will win the day.

Richard Jennings, one of the Vedantic monks who live at the Ramakrishna Monastery, said even the scaled-back plan would place homes on a ridge overlooking the property.

The monastery donated most of its property in 1974 to become part of O'Neill Wilderness Park.

"We think it's very unfair," Jennings said. "We give 240 acres to the county for O'Neill park, then the county comes back a few years later to approve a mass-density development."

County planning officials say they, too, prefer the scaled-back plan, but that the property owner's hand cannot be forced.

Tim Neely, a county planner who spent years negotiating delicate agreements with property owners that have resulted in a 37,000-acre wildlife reserve under the Natural Communities Conservation Program, says compromise is the key to making the agreements work.

GIVE YOUR OPINION

A specific-plan review board meets at 7 tonight in the multipurpose room at O'Neill Wilderness Park, 30892 Trabuco Canyon Road. Board members will listen to public comments about a proposal to build homes on the 222-acre Saddleback Meadows property. County supervisors will consider the matter Nov. 3.

Participation in the program is voluntary; landowners must feel they have something to gain by taking part.

Complicating matters further is the nature of wildlife corridors. In this case, the corridor would connect the county's central wildlife reserve with one planned for southern Orange County.

But debates over wildlife corridors are far from black and white. Biologists' opinions can differ, as can the preferences of different types of animals.

Neely, for example, said biological consultants for the Natural Communities Conservation Program believe a 400-foot corridor that would be left in place if the 299-home development is built would be adequate. It would protect species that fall under the program's umbrella, including the threatened California gnatcatcher, he said, thus fulfilling the county's environmental obligations.

But such a narrow passage might not be enough for larger mammals, which are not included in the program's guidelines. Biologists are not sure whether large mammals use the area, but deer tracks were visible as Jennings walked the monastery property this week. Two months ago, he said, a mountain lion was spotted.

Large mammals are easily spooked by the lights and noise of civilization. They and other animals also will shy away from corridors that lack the cover of native vegetation.

State and federal wildlife officials suspect that the effects of a 400-foot corridor on wildlife would be severe. They also worry about choice habitat and protected species living on the property that would be developed.

There are 65 acres of coastal sage scrub that is home to the gnatcatcher, 14 acres of oak woodland and four acres of wetland — including vernal pools that are home to the endangered Riverside fairy shrimp.

Fish and Wildlife is taking a recount of gnatcatchers in south Orange County, made necessary because agency officials mistakenly issued too many permits to clear gnatcatcher habitat.

Until that is complete, Bradley said, new permits are unlikely.

OTHER CORRIDORS

Three other wildlife corridors in or near the county might be closed or diminished by development. Biologists say that without them, habitat areas become isolated, causing the gradual loss of species and weakening of ecosystems.

► **Serrano Creek:** Earlier this month, the U.S. Environmental Protection Agency called a temporary halt to the Irvine Co.'s Spectrum 5 development, saying the creek, near where the San Diego (I-405) and Santa Ana (I-5) freeways meet, would be sealed in concrete. The creek, which runs beneath the freeways, is the last connection for wildlife between two large wilderness reserves. An Army Corps of Engineers decision is pending.

► **La Habra Heights:** Last week, residents of La Habra Heights jammed a City Council meeting to protest the proposed Old Coach Estates development, which would severely restrict a corridor between Whittier and Puente Hills and Chino Hills. Several cities, including Brea, have worked to keep this area open; biologists say loss of the corridor could lead to loss of species on the western end of the 31-mile habitat area. A decision on the matter was postponed.

► **Coal Canyon:** Activists continue trying to raise money to purchase Coal Canyon, the last connection for wildlife between the Chino Hills and the Cleveland National Forest. The landowner wants to fill the canyon property with 1,550 homes. If the connection is lost, biologists say, mountain lions could disappear from the Chino Hills, and plant and animal diversity could plummet on both sides of the corridor.

EXHIBIT "M"

National Audubon Society
California

Starr Ranch Sanctuary
100 Bell Canyon Road
Trabuco Canyon, CA 92679
949-858-0309
949-858-1013 Fax
pdesimone@audubon.org
http//:www.uxo.com/~srsanct

National Audubon Society Chapters in California
Alameda
Buena Vista
Central Sierra
Conejo Valley
Eagle Lake
Eastern Sierra
El Dorado
Fresno
Golden Gate
Kern
Kingcrest
Laguna Hills
Lake Almanor
La Purisima
Los Angeles
Madrone
Marble Mountain
Marin
Mendocino Coast
Monterey Peninsula
Morro Coast
Mount Diablo
Mount Shasta Area
Napa-Solano
Chloe
Palomar
Palos Verde/South Bay
Pasadena
Peregrine
Pinnacles
Pomona Valley
Redbud
Redwood Region
Sacramento
San Bernardino Valley
San Diego
San Fernando Valley
San Joaquin
Santa Barbara
Santa Clara Valley
Santa Monica Bay
Sea and Sage
Sequoia
Sierra Foothills
South Coast
Stanislaus
Tulare County
Ventura
Whittier
Wintu
Yolo
Yosemite Area

Supervisor Todd Spitzer
Orange County Board of Supervisors
10 Civic Center Plaza
Santa Ana, CA 92701

VIA FAX # 834-2786
2 pages including this one

October 15, 1998

Re: Saddleback Meadows, AP98-2 and Abuse of Land Use Planning Process

Dear Supervisor Spitzer,

You said something at our meeting several weeks ago that impressed me very much. It was your statement that our land use *process* was a very serious issue for you. It is for me, too. You said this in the context of our discussion on the Goren project, mentioning how displeased you were with the poor advice you were given regarding the litigation. Orange County and the entire Board of Supervisors were literally in contempt of court because County staff and counsel chose to ignore a court order and continued to process the project illegally using specious justifications.

The outcome of the Planning Commission hearing on October 6, 1998 regarding the Saddleback Meadows project provides a more egregious example of the continuing disregard that some staff and all the Planning Commissioners, except for Tom Moody, have for the Foothill Trabuco Specific Plan (FTSP), as well as our overall planning and zoning ordinances. In fact, conduct of some individual staff members displays outright contempt for the process. Worst of all, the appearance of some County staff acting as the developer's advocate is sadly obvious. Where unbiased analysis in project processing is mandated, we see conduct more becoming a lobbyist.

Specifically, the following has occurred:

- The Planning Commission approved a 299 unit project for Saddleback Meadows without meeting the legal requirement of first having the FTSP Review Board look at the plans. County Counsel Mr. de Mayo's claim, in his October 6 memo to the Planning Commission, that the FTSP Review Board did not see the project because "a substantially similar proposal was [already] considered by the Review Board and there was no Review Board to review AP98-2..." is outrageous. First, how does not having a Review Board in place give a green light to circumventing its review responsibilities? The logical and legal response should have been to postpone the approval process until the Review Board was appointed and a 21 day notice was posted. Second, Mr. de Mayo must have forgotten that the Board of Supervisors *denied* the "substantially similar proposal"!

- The Planning Commission also approved an Area Plan for Saddleback Meadows. How can they legally approve an Area Plan *before* the associated general plan amendment and zone change is approved? The answer is: they cannot. Furthermore, Area Plans are required to first go before the FTSP Review Board. This one did not.

• Staff has already scheduled a subdivision hearing on this project, yet the Board of Supervisors have not held a hearing to consider approval of this project and the zone changes necessary for a valid subdivision. Adding insult to injury, the subdivision hearing is scheduled *before* the Board of Supervisors hearing on this project. Such action is in clear violation of the Subdivision Map Act. And again, the review of subdivision plans by the FTSP Review Board is mandated, yet has not occurred.

• Staff and the Planning Commission completely ignored new documentation of California gnatcatchers on the project site, which would call for additional CEQA analysis. Also, it is my understanding that staff testified that this project site did not figure in the wildlife corridor needs of the NCCP planning for the Southern Subregion. Such testimony is 180 degrees apart from the position specifically expressed by the US Fish and Wildlife Service and California Department of Fish and Game. Both these agencies have clearly stated the importance of Saddleback Meadows as a wildlife corridor. As a biologist and one who has participated in the NCCP process from day one, I can vouch for the agencies' position -- which has never changed.

Notwithstanding the procedural abuses described above, the project itself calls for grading that will encroach on O'Neill Park, thus triggering a contractual clause allowing the Ramakrishna Monastery to repossess approximately 250 acres of parkland.

In summary, County planning is so out of control that blatant disregard for the legal planning process has become the norm. And for Saddleback Meadows, for each day that this project is processed in the current manner, the County is placed in greater legal peril. Equally disturbing is that fact that just a few County staff members have decided to take it upon themselves to represent a few residents and developers in an orchestrated effort to not only circumvent, but overturn the FTSP. Your leadership is sorely needed to rein in this arrogant behavior. I request that you immediately pull this project from the November 3rd Board of Supervisors' hearing agenda until it can be brought in line with the legal planning process. Also, I recall that you demanded a full accounting from staff and County counsel regarding the Goren project. I submit that you demand the same and more regarding Saddleback Meadows. In doing so, I suspect that you will find even more evidence of illicit activity.

Regarding the amendments being proposed for the FTSP, I ask that you put an immediate stop to the process. You told me that the appointment of the FTSP Board would slow this process down so that it would meet the required review standards. I'm afraid that the opposite is occurring. County staff is overtly trying to ramrod changes to the FTSP as fast as they can. Again, the fact that there has been no official Board of Supervisor's direction on this matter presents serious legal implications.

Thank you for considering the above. I hope you find that I have provided you with information that will prompt your swift intervention. In my ten years of involvement with land use planning in Orange County, I have never experienced a situation that demanded such immediate attention.

Lastly, and unfortunately, I must formally request that you include this letter as part of the administrative record for this project.

Sincerely,

Pete DeSimone

Pete DeSimone
Manager
Starr Ranch Sanctuary

cc: Ray Chandos, Rural Canyons Conservation Fund
Richard O'Neill, Rancho Mission Viejo
Dan Silver, Endangered Habitats League
Scott Thomas, Sea and Sage Audubon

National Audubon Society
California

Starr Ranch Sanctuary
100 Bell Canyon Road
Trabuco Canyon, CA 92679
949-858-0309
949-858-1013 Fax
pdemimone@audubon.org
http://exo.com/~arsanct

National Audubon Society Chapters in California
Alacal
Buena Vista
Central Sierra
Conejo Valley
Eagle Lake
Eastern Sierra
El Dorado
Fresno
Golden Gate
Kern
Kerncrest
Laguna Hills
Lake Almanor
La Purisima
Los Angeles
Madrone
Martis Mountain
Marin
Mendocino Coast
Monterey Peninsula
Morro Coast
Mount Diablo
Mount Shasta Area
Napa-Solano
Ohlone
Palomar
Palos Verde/South Bay
Pasadena
Peregrine
Pluma
Pomona Valley
Redbud
Redwood Region
Sacramento
San Bernardino Valley
San Diego
San Fernando Valley
San Joaquin
Santa Barbara
Santa Clara Valley
Santa Monica Bay
Sea and Sage
Sequoia
Sierra Foothills
South Coast
Stanislaus
Tulare County
Ventura
Whittier
Wilau
Yolo
Yosemite Area

Mr. Bill Tippets
California Department of Fish and Game
4949 Viewridge Avenue
San Diego, CA 92123

Mr. John Bradley
U. S. Fish and Wildlife Service
2730 Loker Avenue West
Carlsbad, CA 92008

October 19, 1998

Dear Gentlemen,

You may already know that on October 7, 1998, the Orange County Planning Commission approved a 299 unit project for the Saddleback Meadows property. During the hearing, the U. S. Fish and Wildlife Service and the California Department of Fish and Game position on this project was described to the Commission by Tim Neely. Attached is a copy of his public testimony. On November 3, 1998 the Orange County Board of Supervisors is scheduled to vote on this project.

In comparing Mr. Neely's testimony to your collective letters regarding this same project, I am extremely concerned about how your position was represented. As a veteran of many Planning Commission hearings I can state, without a doubt, that the Commissioners took Mr. Neely's characterizations of your NCCP-related concerns as if they came directly from you. Unfortunately, I believe that you will find Mr. Neely's testimony differs considerably from what you have stated in letters and at meetings that I have attended on this project. And apparently the difference was enough to convince the Commissioners that, for example, wildlife corridor or gnatcatcher issues were not significant enough to merit concern. They must have felt this way since they approved the project despite your documented opposition to it.

Mr. Neely states that it is not appropriate to "speculate at this point about their [Resources Agency] future position", with regard to the 299 units. However, I would characterize everything Mr. Neely said prior to this statement as just that --speculative, or an inaccurate interpretation of what you have already stated in letters and at meetings.

2820

Whether or not you agree with my analysis of the testimony at this hearing is not really the issue. However, I would urge you to do the following two things:

1) In the future, send your respective representatives to hearings such as these so that there will be no question as to where you stand.

2) If you do agree that your position was not accurately represented at this hearing, please notify both the Planning Commissioners and the Board of Supervisors immediately. Again, I believe that the Planning Commissioners' perception of the wildlife issues played a significant role in whether or not they approved this project. I have attached the appropriate contact information.

Also enclosed is the *Orange County Register* article regarding this project. While we all know that the press is notorious for misrepresentation, I thought you should be aware of the quote attributed to Mr. Neely: "...biological consultants for the Natural Communities Conservation Program believe a 400-foot corridor that would be left in place if the 299-home development is built would be adequate." If this is indeed what Mr. Neely said, then who are these consultants? I do not recall Dudek and Associates talking any formal position on Saddleback Meadows and your position clearly does not support such a statement. In fact, you have said just the opposite.

Lastly, let no one misconstrue this letter as an attack on Mr. Neely. He may fully believe that what he testified to is accurate. I am just asking you to judge for yourself and to quickly set the record straight if you believe that you, or the NCCP process, were not accurately represented. A lot is a stake and both the Planning Commission and the Board of Supervisors must hear from you directly.

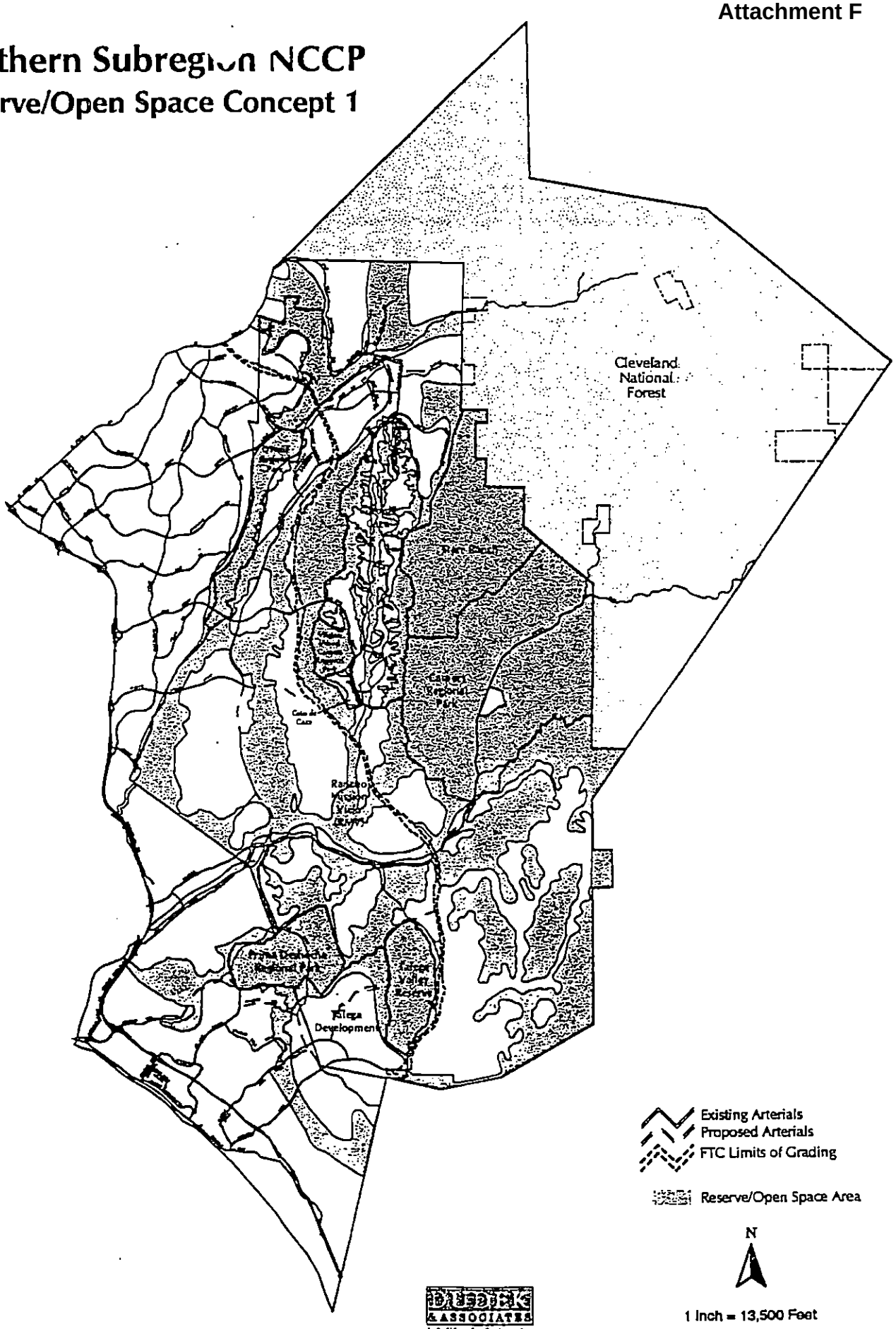
Sincerely,

Pete DeSimone
Manager
Starr Ranch Sanctuary

cc: Supervisor Todd Spitzer
Interested Parties

EXHIBIT "N"

Southern Subregion NCCP
Reserve/Open Space Concept 1



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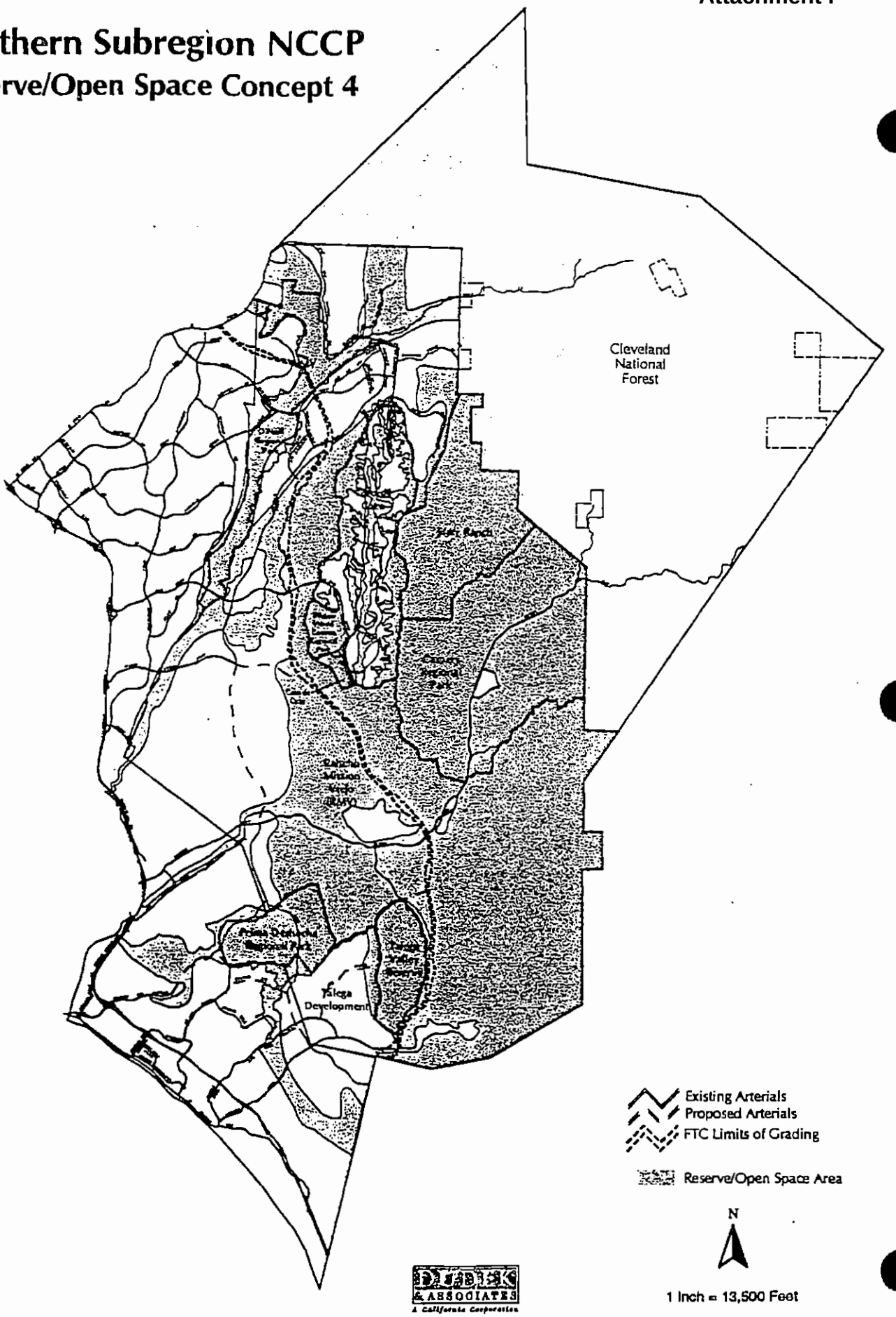
Southern Subregion NCCP
Reserve/Open Space Concept 4



DUDEK & ASSOCIATES
A California Corporation

2824

EXHIBIT "P"

GA 550-2.01, 2.11
Open Space Conservation Program

AGREEMENT

THIS AGREEMENT is made and entered into this 26th day of March, 1974, by and between the VEDANTA SOCIETY OF SOUTHERN CALIFORNIA, a California corporation, hereinafter referred to as "GRANTOR", and the ORANGE COUNTY HARBORS, BEACHES, AND PARKS DISTRICT, hereinafter referred to as "DISTRICT"

R E C I T A L S

1. GRANTOR owns approximately 286 acres of real property located in Live Oak Canyon, as shown on the map marked "Exhibit A", attached hereto and made a part hereof.

2. GRANTOR desires to quitclaim to DISTRICT all of its right, title, and interest in Parcel GA 550-2.01, as shown on Exhibit A, for preservation as perpetual open space.

3. GRANTOR desires to convey to DISTRICT an easement for road purposes designated as Parcel GA 550-2.11 on Exhibit A, to permit access.

4. GRANTOR desires to retain approximately 41 acres containing its existing Ramakrishna Monastery, together with a permanent road easement to permit access, as shown on Exhibit A.

5. Both GRANTOR and DISTRICT recognize that benefits will accrue mutually to GRANTOR'S remaining property and the general public as a result of the preservation of the subject property as perpetual open space.

6. GRANTOR has executed and delivered to M. J. Trujillo, Real Property Agent for DISTRICT, an easement for road purposes covering said Parcel GA 550-2.11, and a quitclaim deed, quitclaiming all of GRANTOR'S right, title, and interest in said Parcel GA 550-2.01 to DISTRICT.

NOW, THEREFORE, the parties hereto mutually agree as follows:

I. The GRANTOR shall:

A. Convey to DISTRICT and do all things necessary to vest in DISTRICT fee title to Parcel GA 550-2.01, free and clear of all liens, encumbrances, assessments, easements, leases (recorded or unrecorded, and taxes, except:

257-06
2.224

], Any installment of general and special County and City taxes, if any, that is not entirely earned at the time title is vested in or actual or physical possession is taken by DISTRICT, whichever first occurs, and all taxes subsequent thereto.

(However, grantors shall remain liable for payment of any earned taxes, pursuant to the provisions of Section 4986, California Revenue and Taxation Code, as amended, and DISTRICT is authorized to pay, from the amount shown in Clause IIA below, any earned delinquent taxes, together with penalties and interest thereon, delinquent or non-delinquent assessments or bonds.)

2. An easement for pole line purposes conveyed to Southern California Edison Company, as recorded in Book 3772, Page 344, of Official Records.

3. Easements for pipe lines and access purposes in favor of Santa Ana Mountains County Water District, recorded in Book 7767, Page 49], of Official Records.

B. Convey to DISTRICT and do all things necessary to vest in DISTRICT an easement for road purposes shown as Parcel GA 550-2.11 on Exhibit A.

C. Hereby warrants that there are no oral or written leases on all or any portion of the property exceeding a period of one month and GRANTOR agrees to hold DISTRICT harmless and reimburse DISTRICT for any or all of its losses and expenses occasioned by reason of any lease of said property held by any tenant of GRANTOR for a period exceeding one month.

II. The DISTRICT shall:

A. Pay to the order of the undersigned GRANTOR the sum of Twenty Thousand Eight Hundred Six and 21/100 Dollars ($20,806.21) within sixty (60) days after title to the subject property has vested in DISTRICT as specified in Clause IA and IB above.

B. Pay all of the following items: Recording fees and premium charged for title insurance, if such insurance is desired by DISTRICT

C. Construct and maintain a fence following the boundary separating the subject property from GRANTOR'S remaining property. Said fence shall be of a type and construction acceptable to both parties hereto.

D. Construct and maintain a fence surrounding GRANTOR'S existing well site shown on "Exhibit A". Said fence shall be of a type and construction acceptable to both parties hereto.

III. It is mutually understood and agreed that:

A. It is the desire of the parties hereto to preserve the subject property as perpetual open space. The use to which the subject property may be put is expressly limited to public hiking and equestrian trails only.

B. DISTRICT shall cooperate with GRANTOR as much as possible in the design and location of the proposed improvements on the subject property.

257-07
3.254

C. GRANTOR shall have the right to use and maintain its existing access road, shown on Exhibit A. GRANTOR shall also retain the right to collect fallen, dead wood from the subject property for firewood purposes and to utilize the subject property for hiking purposes.

D. DISTRICT shall have the right to construct, use and maintain service roads as reasonably necessary for the maintenance of the subject property.

E. The conveyance of the subject property by GRANTOR to DISTRICT is subject to the following conditions subsequent:

1. No improvements shall be erected, constructed or placed on the subject property other than those presently existing, except as reasonably necessary for the use of the subject property consistent with the terms and conditions contained herein.

2. The general topography of the subject property shall be maintained in its present condition and no excavation, grading or placing of sand, soil, gravel, rocks or other material shall be permitted, except as reasonably necessary for the use of the subject property consistent with the terms and conditions contained herein.

3. No trees, shrubs, or other natural growth shall be removed or destroyed, except as reasonably required for fire prevention or elimination of diseased growth.

4. No hunting camping, or trapping shall be permitted on the subject property.

5. No motor vehicles shall be permitted on the subject property except for emergency purposes; however, DISTRICT vehicle and other vehicles authorized in advance by DISTRICT may go upon the subject property for purposes consistent with the terms and conditions contained herein.

In the event of the breach by DISTRICT of any of said conditions hereinabove set forth, GRANTOR shall give written notice to DISTRICT setting forth the specific breach of said condition or conditions. DISTRICT shall have sixty (60) days from the date of receipt of said notice to correct or cease the actions which constitute said breach.

In the event said breach is not corrected or cured within said sixty (60) day period, title to the subject property herein conveyed shall revert to GRANTOR, and it shall be lawful for GRANTOR to re-enter and have and enjoy said subject property as of its former estate. Title to the subject property shall thereupon vest in GRANTOR and all right, title, and interest therein of DISTRICT shall terminate.

In the event it becomes necessary for GRANTOR to file a legal action to enforce any of its rights of reverter, as hereinabove set forth, it is mutually agreed between the parties hereto that the successful party in said legal action shall reimburse the non-successful party for all reasonable costs and expenses of said action, including reasonable attorney fees.

F. In the event GRANTOR is unable to deliver title in a reasonable time under the terms of this contract, DISTRICT may file an action in eminent domain to pursue the acquisition of this parcel, and this contract shall constitute a stipulation which may be filed in said proceedings as final and conclusive evidence of the total amount of damages for the taking, including all of the items listed in Section 1248 of the Code of Civil Procedure, regarding this parcel.

57-08
.224

G. It is mutually agreed that time is of the essence; and if this transaction is not consummated and the Quitclaim Deed recorded on or before March 31, 1974, this Agreement is null and void.

H. The parties have herein set forth the whole of their agreement. The performance of this agreement constitutes the entire consideration for said document and shall relieve DISTRICT of all further obligations or claims on this account, or on account of the location, grade, or construction of the proposed public improvement.

257-09
2.224

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

GRANTOR

VEDANTA SOCIETY OF SOUTHERN CALIFORNIA

By _____

By _____

By _____

APPROVED AS TO FORM:
Adrian Kuyper
County Counsel

By _____

RECOMMENDED FOR APPROVAL:

Kenneth Sampson, Director
Harbors, Beaches, and Parks District

By _____

Stanley E. Krause, Director
Dept. of Real Property Services

By _____
Real Property Agent

By _____
Assistant Director

ATTEST:

W. E. ST JOHN, County Clerk of the County of Orange and ex officio Clerk of the Board of Supervisors of Orange County

By _____
Deputy

DISTRICT

HARBORS, BEACHES, AND PARKS DISTRICT

By _____
Chairman, Board of Supervisors
as governing board of Harbors,
Beaches, and Parks District

(NO OBLIGATIONS OTHER THAN THOSE SET FORTH HEREIN WILL BE RECOGNIZED.)

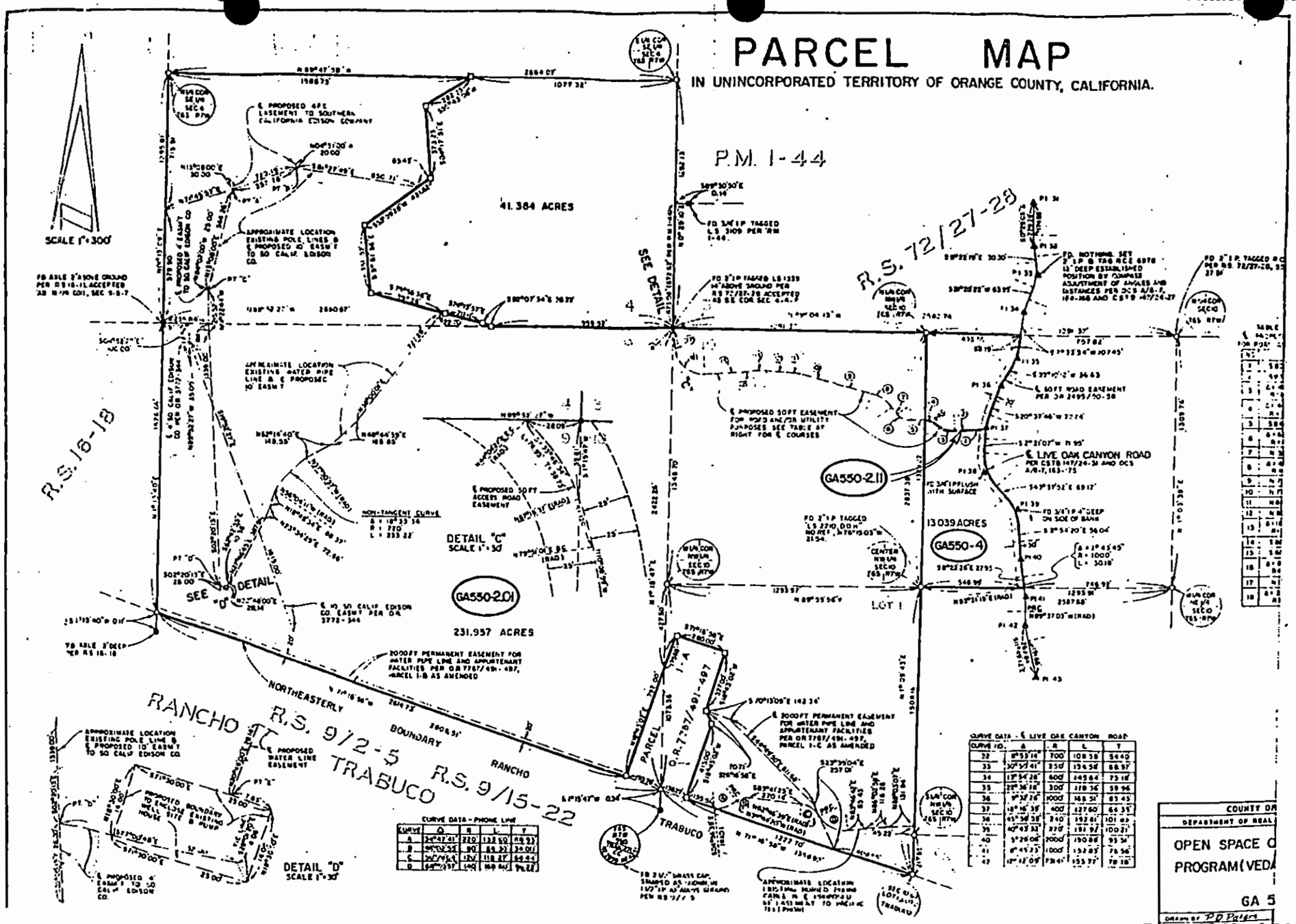
257-10

PARCEL MAP

IN UNINCORPORATED TERRITORY OF ORANGE COUNTY, CALIFORNIA.

EXHIBIT A

2831



INDEX OF ADMINISTRATIVE RECORD IN SUPPORT OF PETITIONERS' MOTIONS FOR SUMMARY ADJUDICATION OF ISSUES

Vedanta Society of Southern California v. County of Orange, et al.

(Consolidated Case No. 791309)

VOLUME 5 OF 5

(Tab Nos. 22 - 44; Pages 2832 - end)

22. October 27, 1998 Supplemental Transmittal from Thomas B. Mathews, Director, Planning and Development Services Department, to Board of Supervisors, re Saddleback Meadows Zone Change/Area Plan for November 3, 1998 Agenda;

    Attachment I: Appeal letter, dated October 22, 1998, from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin de Mayo, Esq., Deputy County Counsel, Office of County Counsel, County of Orange (and exhibit thereto);

    Attachment II: PDSD Responses to Appeal of Area Plan 98-2;

    Attachment III: Letter withdrawing appeal of California Quartet, Ltd., dated October 23, 1998, from H. Mike McKnight, TPG Management, Inc., to Thomas Mathews, Director, County of Orange Planning and Development Services Department;

23. October 29, 1998 Agenda Item Transmittal from Thomas B. Mathews, Director, Planning and Development Services Department, to Board of Supervisors re appeal of Saddleback Meadows Subdivision Maps;

    Attachment A: Appeal Letter, dated October 23, 1998, from H. Mike McKnight, TPG Management, Inc., to Thomas Mathews, Director, County of Orange Planning and Development Services Department;

    Attachment B: AIT of November 3, 1998 (Item # 55) [attachments omitted by County but found in this Limited Administrative Record at tab #16];

    Attachment C: Subdivision Committee Minutes of October 21, 1998 Meeting re TTM 15784 and VTTM 15230 (and attachments thereto);

    Attachment D: Final Subdivision Reports for TTM 15784 and VTTM 15230;

    Attachment E: Public Comments

    1. October 21, 1998 letter from Edmond M. Connor, Esq. Connor, Culver, Blake & Griffin LLP, to Pat Stanton, Chair, Subdivision Committee, County of Orange (exhibits omitted by County but found in this Limited Administrative Record at tab #21));

    2. October 21, 1998 statement by Ray Chandos to the Orange County Subdivision Committee re Tentative Tract Map Nos. 15230 and 15784;

3. October 2, 1998 letter from Ray Chandos, Rural Canyons Conservation Fund, to Patrick J. Stanton, Manager, Subdivision and Grading Services, County of Orange Planning and Development Services re Proposed TTM No. 15230;

4. October 2, 1998 letter from Ray Chandos, Rural Canyons Conservation Fund, to Patrick J. Stanton, Manager, Subdivision and Grading Services, County of Orange Planning and Development Services re Proposed TTM No. 15784;

5. October 17, 1998 letter from David A. Blum to Orange County Subdivision Committee, County of Orange Environmental Management Agency;

6. October 21, 1998 letter from National Audubon Society to Orange County Subdivision Committee (and attachments thereto);

Attachment F: Tentative Tract Map No. 15784;

Attachment G: Vesting Tentative Tract Map No. 15230;

24. October 30, 1998 Supplemental Transmittal from Thomas B. Mathews, Director, Planning & Development Services Department, to Clerk of the Board of Supervisors re Saddleback Meadows Zone Change/Area Plan For November 3, 1998 Agenda Item # 55;

Attachment (1): Manufactured Slopes Exhibit;

Attachment (2): Public Comments, dated October 12, 1998, from Sherry Lee Meddick;

25. Notice of November 3, 1998 public hearing by the Orange County Board of Supervisors re Zone Change 98-3 and Area Plan 98-2;

26. November 17, 1998 Supplemental Transmittal from Thomas B. Mathews, Director, County of Orange Planning & Development Services Department to Board of Supervisors, re Saddleback Meadows Subdivision Maps for November 24, 1998 Agenda;

Attachment I: Appeal letter, dated November 5, 1998, from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin de Mayo, Esq., Deputy County Counsel, Office of County Counsel, County of Orange (and exhibits thereto);

Attachment II: Staff Responses to Appeal of TTM 15784 and VTTM 15230;

Attachment III: Letter withdrawing appeal of California Quartet, Ltd., dated November 9, 1998, from H. Mike McKnight, TPG Management, Inc., to Thomas Mathews, Director, County of Orange Planning and Development Services Department;

27. November 24, 1998 Supplemental Transmittal from Thomas B. Mathews, Director, Planning & Development Services Department, to Board of Supervisors re Saddleback Meadows 299-Unit Project, Agenda Item Nos. 52 & 53, November 24, 1998 Agenda;

Attachment A: Draft Board of Supervisors Resolution re EIR Addendum;

Attachment B: Draft Ordinance for Zone Change 98-3;

Attachment C: Draft Board of Supervisors Resolution re Area Plan 98-2;

Attachment D: Draft Board of Supervisors Resolution re TTM 15784;

Attachment E: Draft Board of Supervisors Resolution re VTTM 15230;

28. November 24, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Board of Supervisors, County of Orange (and exhibits thereto);

29. Public Notice of November 24, 1998 Orange County Board of Supervisors Meeting re Appeal of TTM 15784 and VTTM 15230;

30. December 4, 1998 Supplemental Transmittal from Thomas B. Mathews, Director, County of Orange Planning & Development Services Department, to Board of Supervisors, re Saddleback Meadows 299-Unit Project, Agenda Item Nos. 75 and 76, December 8, 1998 Agenda;

    Attachment: Planning & Development Services Department Response to Issues Raised by Public Comment During November 24, 1998 Board of Supervisors Hearing;

31. December 8, 1998 Orange County Board of Supervisors Minute Order re Resolutions 98-466 through 98-467 and Ordinance 98-17;

32. Ordinance No 98-17, "An ordinance of the County of Orange, California adopted pursuant to the State Planning and Zoning Laws, amending the Foothill/Trabuco Specific Plan for Saddleback Meadows (ZC 98-3), adopted December 8, 1998

33. Orange County Board of Supervisors Resolution No, 98-466, dated December 8, 1998, re Addendum PA980103 to Final Subsequent Environmental Impact Report No. 566;

34. Orange County Board of Supervisors Resolution No, 98-467, dated December 8, 1998, re Saddleback Meadows Area Plan 98-2;

35. December 8, 1998 Orange County Board of Supervisors Minute Order re Resolutions 98-468 through 98-469;

36. Orange County Board of Supervisors Resolution No, 98-468, dated December 8, 1998, re Saddleback Meadows Tentative Tract Map No. 15784;

37. Orange County Board of Supervisors Resolution No, 98-469, dated December 8, 1998, re Saddleback Meadows Tentative Tract Map No. 15230;

38. Notice of Determination for Saddleback Meadows Contingency Plan Zone Change 98-3, Area Plan 98-2, Addendum PA980103, posted December 9, 1998;

Public Hearing Transcripts

39. Transcript of November 25, 1997 Board of Supervisors Meeting, Agenda Item No. 42, re procedures for review of Draft Subsequent Environmental Impact Report No. 566 for Saddleback Meadows;

40. Transcript of December 3, 1997 Planning Commission meeting re Final Subsequent Environmental Impact Report No. 566;

41. Transcript of February 24, 1998 Board of Supervisors Meeting, Agenda Item No. 1, re appeal of Vedanta Society of Southern California re the Planning Commission's certification of Final Subsequent EIR 566 for Saddleback Meadows project;

42. Transcript Of Planning Commission October 7, 1998 Public Hearing re Zone Change 98-3, Area Plan 98-2, and Addendum PA980103 to FSEIR 566;

43. Transcript of December 8, 1998 Orange County Board of Supervisors Meeting re Addendum PA980103 to FSEIR 566, Zone Change 98-3, Area Plan 98-2, TTM 15784, and VTTM 15230; and

44. Transcript of October 21, 1998 Subdivision Committee Hearing re TTM 15784 and VTTM 15230.

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4643
FAX # 834-2771

Supplemental Transmittal
Saddleback Meadows Zone Change/Area Plan
November 3, 1998 Agenda

DATE: October 27, 1998

TO: Board of Supervisors

FROM: Director, Planning and Development Services Department

SUBJECT: Appeal of Area Plan 98-2

Attached is an appeal filed by Edmond Connor of the Planning Commission's approval of Area Plan 98-2 (Attachment I). The appeal was filed on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC. Also attached is the staff response to that appeal (Attachment II).

On October 6, 1998, your Board directed staff to place the proposed Saddleback Meadows 299 dwelling unit project on the Board agenda for November 3, 1998. On October 7, 1998, the Planning Commission approved Saddleback Meadows Area Plan 98-2 and recommended that your Board approve related Zone Change 98-3. On October 8, 1998, the landowner, California Quartet, Ltd., filed an appeal of Area Plan 98-2 which would otherwise not be brought before your Board. Subsequently, staff scheduled a public hearing before your Board on Zone Change 98-3 and Area Plan 98-2 for November 3, 1998.

On October 22, 1998, the last day of the appeal period, Edmond Connor filed an additional appeal on behalf of several adjoining property owners, including the Vedanta Society, the Norbertine Fathers and Saddleback Meadows Land Conservancy (Attachment I) which is also to be considered by your Board on November 3, 1998. Staff have prepared an analysis of Mr. Connor's appeal (Attachment II).

Lastly, because of the appeal filed by Edmond Conner, California Quartet, Ltd. has now withdrawn their appeal (Attachment III).

No revision to the Recommended Action is necessary.

Respectfully submitted,

Thomas B. Mathews, Director

FM:sah

Attachments:

I. Appeal by Edmond Connor
II. Staff Response
III. Withdrawal of Appeal by California Quartet, Ltd.

cc: CEO
County Counsel
Clerk of the Board

ATTACHMENT I

APPEAL BY EDMOND CONNOR

CONNOR, CULVER, BLAKE & GRIFFIN LLP
ATTORNEYS AT LAW

EDMOND M. CONNOR
MARILYN MARTIN CULVER
LAURA LEE BLAKE
CRAIG L. GRIFFIN
DAVID J. HESSELTINE
ROSALEE L. RODDA

2600 Michelson Drive
SUITE 1450
IRVINE, CALIFORNIA 92612
TELEPHONE (949) 622-2600
TELEFACSIMILE (949) 622-2626
E-MAIL: ccbg@ocba.net
INTERNET: www.businesslit.com

October 22, 1998

Thomas B. Mathews, Director
Orange County Planning & Development
Services Department
300 North Flower Street, Room 321
Post Office Box 4048
Santa Ana, California 92702-4048

VIA HAND DELIVERY

Benjamin de Mayo, Esq.
Deputy County Counsel
Office of County Counsel
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92702

Re: Notice of Appeal of Planning Commission's Approval of Area Plan 98-2 for Saddleback Meadows

Dear Messrs. Mathews and de Mayo:

The Vedanta Society of Southern California ("Vedanta"), the Norbertine Fathers of Orange (the "Norbertines"), and the Saddleback Meadows Land Conservancy LLC (the "Conservancy") [hereinafter, Vedanta, the Norbertines, and the Conservancy shall collectively be referred to as the "Appellants"] hereby submit this notice of appeal regarding the Planning Commission's approval of Area Plan 98-2 ("AP 98-2") on October 7, 1998.

The Appellants' appeal to the Board of Supervisors (the "Board") of the Planning Commission's action on AP 98-2 (hereinafter referred to as the "Appeal") shall be based upon each and every procedural and substantive contention, objection, comment, or argument raised in the letters (collectively, the "Letters") which are listed in Exhibit "A" attached hereto and are incorporated herein as if set forth in full hereat. In addition, the Appeal shall also be based upon each of the objections raised, or comments or arguments made, by the Appellants' representatives or any other project opponent (hereinafter collectively referred to as the "Oral Comments") at the public hearings or meetings held by the Planning Commission or the Foothill/Trabuco Specific Plan Review Board in connection

with the 299-unit single family detached housing project (the "299-Unit Project") which is the subject of AP 98-2, including, but not limited to, the hearings and meetings held on August 25, September 29, October 7, and October 16, 1998. Finally, the Appeal shall also be based upon any oral or written statements made by Appellants' representatives regarding the 44/178 Alternative, including, but not limited to, any statements made at the Board meetings held on June 23, August 11, or October 6, 1998, or otherwise set forth in any correspondence between the Appellants, the County of Orange (the "County"), or California Quartet, Ltd., or any of their respective representatives, including, but not limited to, the letters identified in Exhibit "A" hereto.

The grounds for the Appeal shall include, but shall not be limited to, the following:

(1) By failing and refusing to provide the Foothill/Trabuco Specific Plan Review Board with a minimum of 21 days within which to review AP 98-2 and to report its findings and recommendations thereon before the Planning Commission took final action on AP 98-2, the Planning Commission violated both section 7-9-150.3(b) of the Orange County Zoning Code and section III.G.2.a of the Foothill/Trabuco Specific Plan (the "Specific Plan");

(2) AP 98-2 is inconsistent with the goals, objectives, components, regulations, and guidelines set forth in the Specific Plan, including (a) the goals and objectives relating to rural character and resource preservation; (b) the resources overlay component relating to wildlife corridors, oak woodlands, tree management/preservation, and streambeds; (c) the Bridlewood Residential District Regulations; (d) landscaping regulations; (e) grading standards relating to the maximum height of manufactured slopes and the 70% "natural open space" requirement; (f) area plan submittal requirements; (g) grading, drainage and site planning guidelines; and (h) architectural guidelines;

(3) In approving AP 98-2, the Planning Commission failed to make adequate findings supported by substantial evidence in the record as required by the Orange County Zoning Code, the California Code of Civil Procedure, the Government Code, and all other applicable land use laws and regulations;

(4) There is no justification for exempting AP 98-2 from complying with the Specific Plan, and such an exemption coming at the request of a landowner/developer would set a bad precedent and would seriously undermine the important goals and objectives of the Specific Plan;

(5) AP 98-2 involves unavoidable adverse environmental impacts which cannot be mitigated to acceptable levels and will destroy hundreds of acres of oak woodlands, vernal ponds, coastal sage scrub habitat, and other biotic communities teeming with sensitive, threatened, or endangered flora and fauna, including the coastal California gnatcatcher and the Riverside fairy shrimp. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

(6) AP 98-2 involves massive and unacceptable grading impacts which would subject the residents of the Trabuco Canyon area to several years of excessive noise, dust, and traffic delays associated with excavating and recompacting approximately nine million cubic yards of soil which will remain exposed to the wind during dry seasons and the rain during wet seasons over the course of several years before the rough grading is completed. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

(7) AP 98-2 poses unacceptable geotechnical hazards and risks which would endanger and adversely affect the safety, usability, or stability of the land holdings immediately adjacent to the Saddleback Meadows property (the "Property"), including St. Michael's Abbey and the Ramakrishna Monastery, both of which are currently experiencing structural damage due to soils subsidence and instability. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

(8) AP 98-2 will permanently alter and destroy the natural buffer zones which, for almost 50 years, have served as part of a monastic enclave for two religious groups: Vedanta which founded the Ramakrishna Monastery in the late 40's and the Norbertines which founded St. Michael's Abbey in the early 60's. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

(9) The proposed rough grading, fuel modification, and drainage activities associated with the development of the 299-Unit Project pose the risk of triggering the reverter clause in the March 1974 Agreement between Vedanta and the County of Orange (the "County"), thereby entitling Vedanta to regain title and possession of approximately 240 acres of O'Neill Park adjacent to the Ramakrishna Monastery. This is a highly unnecessary and unacceptable risk of losing valuable parkland and the impact of such a loss has not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

(10) AP 98-2 would jeopardize or destroy a critical habitat connection between the NCCP Central/Coastal and Southern Subregions of the County by providing an inadequate wildlife corridor to connect Whiting Ranch Wilderness Park and O'Neill Park. In addition, the proposed loss of coastal sage scrub habitat associated with the development of the 299-Unit Project would preclude connectivity between areas of high habitat value and, as a result, would preclude or delay the preparation and finalization of the Southern Subregion NCCP. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

(11) In violation of CEQA and the CEQA Guidelines, the California Department of Fish & Game and the U.S. Fish & Wildlife Service (collectively, the "Resource Agencies") were not properly and adequately notified and consulted by the County in connection with AP 98-2, particularly with respect to their input regarding an appropriate wildlife corridor and a possible clustered development on approximately 35-40 acres which would be compatible therewith;

(12) AP 98-2 constitutes a complete revision and redesign of the 705-unit mobilehome project authorized by Tract Map No. 10692 (the "705-Unit Project") and thus constitutes a new project which requires preparation of a new Environmental Impact Report ("EIR"). Alternatively, a Subsequent EIR should be prepared for AP 98-2 in light of (a) the major project changes associated with the 299-Unit Project, including the new wildlife corridor placement, on-site drainage of storm, irrigation, and urban runoff (including the daily discharge of toxic materials into pristine areas of O'Neill Park), and additional grading in the biologically-sensitive southeast canyon areas of the Property; (b) the newly-discovered presence of coastal California gnatcatchers on the Property and the outdated and incomplete nature of the gnatcatcher surveys of the Property which the Resource Agencies asked to be updated almost two years ago; (c) innovative project alternatives not previously considered in the prior CEQA documentation, including the 65-Unit Alternative and the 44/178 Alternative; and (d) feasible mitigation measures not previously considered, such as a 100% performance bond to cover the possibility of the developer's failure to complete all conventional and remedial grading operations;

(13) Final Subsequent Environmental Impact Report No. 566 ("FSEIR 566") and the Addendum thereto are seriously deficient and inadequate to serve as the CEQA documentation for AP 98-2 in that they fail to properly address the adverse impacts, reasonable project alternatives, and feasible mitigation measures associated with that Project and, to the extent that County staff seeks to rely on FSEIR 566 as the EIR for AP 98-2, the County has failed to provide adequate

public notice of its intended action to responsible state and federal agencies, including the Resource Agencies, and to the general public;

(14) In approving AP 98-2, the Planning Commission violated CEQA and the CEQA Guidelines by failing to (a) make adequate findings supported by substantial evidence in the record, (b) adopt an adequate mitigation monitoring program, and (c) adopt an adequate statement of overriding considerations with respect to AP 98-2; and

(15) Although the 299-Unit Project involves fewer residential units than the 705-Unit Project, it still involves massively destructive environmental impacts and, in certain respects, far worse impacts than the 705-Unit Project in terms of drainage, geotechnical hazards, and grading impacts on St. Michael's Abbey and the Ramakrishna Monastery. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2.

As soon as a date has been set on the Board's calendar for a hearing on the Appeal, please provide our office with notice of that hearing at your earliest convenience. Thank you.

Very truly yours,

Edmond M. Connor

encl.

cc: William Ross, Esq.
Frank McGill

EXHIBIT "A"

LETTERS AND MATERIALS RE AREA PLAN 98-2

1. January 30, 1997 letter from Gail C. Kobetich, Field Supervisor, U.S. Fish and Wildlife Service, and Ron Rempel, NCCP Program Manager, California Department of Fish and Game, to Raymond Brantley, EMA/Environmental & Project Planning;

2. August 24, 1998 letter from Royce B. Riggan, Jr., AICP, RBRiggan and Associates, to The Honorable Chairman and Members of the Planning Commission, Orange County;

3. August 25, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Honorable Members of the Planning Commission, Orange County Planning & Development Services Department;

4. August 25, 1998 letter from Saundra F. Jacobs, REA, SFC Consultants, to Ray Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

5. September 2, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, Environmental & Project Planning Services Division, County of Orange Planning & Development Services Department;

6. September 23, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department;

7. September 24, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to William D. Ross, Esq., Law Offices of William D. Ross;

8. September 29, 1998 Meeting Minutes of the Foothill Trabuco Specific Plan Review Board;

9. October 5, 1998 letter from Daniel K. Winton, Esq., Paone, Callahan, McHolm & Winton LLP, to Honorable Todd Spitzer, Honorable Thomas Wilson, Holly Veale, Paul Hernandez, Ben de Mayo, Tom Mathews, Denis Bilodeau, Kathryn Swiss, Ed Connor, H. Pike Oliver, William D. Ross, and Frank Elfend;

10. October 5, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Supervisor Todd Spitzer, Third Supervisorial District, Board of Supervisors, and Supervisor Tom Wilson, Fifth Supervisorial District, Board of Supervisors;

11. October 7, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Orange County Planning Commission;

12. October 16, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to H. Pike Oliver, TPG Management, Inc.;

13. October 16, 1998 Meeting Minutes of the Foothill Trabuco Specific Plan Review Board;

14. October 20, 1998 letter from Robert A. Wilks, Secretary of the Board, Foothill/Trabuco Specific Plan Review Board, to County of Orange, Planning and Development Services, Attn.: Thomas B. Mathews, Frank McGill, and John Buzas; and

15. March 26, 1974 Open Space Conservation Program Agreement between the Vedanta Society of Southern California and the Orange County Harbors, Beaches, and Parks District.

COUNTY OF ORANGE
PLANNING & DEVELOPMENT SERVICES DEPARTMENT
PUBLIC FACILITIES & RESOURCES DEPARTMENT
* REPRINTED * RECEIPT

10/22/98 15:37

Receipt Number: R9829364
Activity Number: PA980103
Payment Date: 10/22/1998

Payer: CALIFORNIA QUARTET, LTD
Address: SADDLEBACK MEADOWS/THE GROVE
44 MONTGOMERY ST. SUITE 1300
SAN FRANCISCO,CA OCFA#021338
94104
Phone #: 415 675-7830
Trust ID:

Applicant: TPG MANAGEMENT, INC.
Address: H. PIKE OLIVER
1601 DOVE ST. SUITE 105
NEWPORT BEACH, CA
92660
Phone #: 714 253-9595

Job Address: 19658 EL TORO RD TRAB
Parcel: FTHLT-PLNG- -
Additional Info: FOOTHILL/TRABUCO - PLANNING APPLICATIONS

ACCUMULATIVE CHARGES

Fee Item	Description	Charges	Coding
1024	PLANNING APPLICATIONS	1,520.00	10007142007380 03
1053	ZONE CHANGE DEPOSIT	2,000.00	300327 92000009
1066	ENV. ANALYSIS - IS TRUST	2,000.00	300327 92000010
8002	FIRE FEE-CEQA LARGE PROJ	418.00	113113 91100123
	Total Charges:	5,938.00	
	Total Payment:	5,938.00	

CURRENT PAYMENT

Method: 2277 Notation: CONNER,CULVER Operator: EARLC

Check/Cash: 760.00
Trust: .00 Account No.:

Total Paid: 760.00
Balance Due: .00

Appeal Payer:
Conner, Culver, Blake & Griffin LLP
2600 Michelson Dr., #1450
Irvine, CA 92612

2842

COUNTY OF ORANGE
PUBLIC FACILITIES AND RESOURCES
PLANNING AND DEVELOPMENT SERVICES

JOB CODE REQUEST FORM

FOR AGENCY USE ONLY

JOB CODE ASSIGNED:
E P55353
P P55353

PROGRAM: _____

JOB SUMMARY: 093

DATE ASSIGNED: _____

I. REQUEST TO

X ESTABLISH A NEW JOB CODE (GO TO SECTION II)
____ DELETE A JOB CODE (GO TO SECTION III)
____ CHANGE A JOB CODE DESCRIPTION (GO TO SECTION IV)

If you need assistance in completing this form, please call: Lien Bui at 834-6794

II. ESTABLISH A NEW JOB CODE

STARTING DATE: 10-22-98 ENDING DATE: _____

JOB TITLE: APPEAL OF PA980103 (30 character limit)

ADDITIONAL DESC/INFO: Area Plan 98-02 - Saddleback Meadows

LOCATION IN JOB CODE LIST: INFER 1:--PROGRAM _____ INFER 2:--JOB SUMMARY _____

FUNDING SOURCE: CHOOSE ONE OF THE FOLLOWING (A, B or C):

A. FUND FUND(S): _____ AGENCY: _____

B. INVOICED NON-COUNTY FUNDING: AGMT #, PO # OR OTHER AUTHORIZATION TO INVOICE: _____

INVOICEE NAME: Cannon, Cohen, Blake & Griffen LLP

MAILING ADDRESS: 2600 Michelson Dr., #1450
Irvine, CA 92612

C. OTHER COUNTY AGENCY OR DEPARTMENT ORANGE COUNTY CODING

FUND	AGENCY	OBJECT	SUB-OBJECT	ORGANIZATION	JOB CODE

III. DELETE A JOB CODE (Job Codes become invalid at midnight of the Ending Date)

JOB CODE: _____ ENDING DATE: _____

JOB TITLE: _____

IV. CHANGE A JOB CODE DESCRIPTION (Change Ending Date or Title)

JOB CODE: _____ NEW ENDING DATE: _____

NEW JOB TITLE: _____

V. CONTACT PERSON

NAME: Charles Shoemaker DIVISION: LUP CRC #: _____

PHONE: 834-5159 DATE: 10-22-98

VI. DIVISION APPROVAL: I hereby approve the above addition/change to the Job Code List as indicated.

APPROVED BY: _____ TITLE: _____ DATE: _____ PHONE: _____
(Authorized Manager or Supervisor)

ROUTE SIGNED/APPROVED FORM TO: MANAGEMENT SERVICES

MANAGEMENT SERVICES APPROVAL: _____

JOB CODE ASSIGNED BY: _____ CC: _____

2843

County of Orange

PLANNING AND DEVELOPMENT SERVICES

PLANNING APPLICATION

Application #: PA980103 **Date Filed:** 06/22/1998

Application Type: ZC98-3, AP98-2
Application Name: SADDLEBACK MEA. CONTINGENCY PLAN
Parcel(s):
FTHLTPLNG 00/00/00
Address(es):
19658 EL TORO RD TRAB
Location: 1/4 MILE S. OF EL TORO & LIVE OK
Project Area: 222.00 ACRE Public Project: N

Initial Study Required: Y IS Charge #: P53700 IS Summary #: 082
Application Charge #: P79108 Summary #: 094

Owner Information

Name: CALIFORNIA QUARTET, LTD.
Address: 1875 E. CENTURY PARK, #1880
LOS ANGELES, CA
Zip: 90067
Phone: 310 210-0500

Applicant/Agent Information

Name: TPG MANAGEMENT, INC.
Address: H. PIKE OLIVER
1601 DOVE ST. SUITE 105
NEWPORT BEACH, CA
Zip: 92660
Phone: 714 253-9595

Zoning: S / BWR - BRIDLEWOOD APN:
CAA: 59 Census Tract: 320.25 Supv District: 3 Coastl Zone: NO
LUE: 1B Comm Profile: 1.2 PC/SP: FOOTHILL/TRABUCO SPECIFIC PLAN

Previous Apprv: EIR'S 059, 203, 566; GPA 78-1, TR.10692, PA950151, PA970086

Project Proposal:

ZONE CHANGE ZC 98-3/AREA PLAN AP 98-2 TO SECTION III.D.3. BRIDLEWOOD RESIDENTIAL (BWR) DISTRICT OF THE FOOTHILL/TRABUCO SPECIFIC PLAN TO DEVELOP 299 SINGLE FAMILY DWELLING UNITS.
PROJECT WILL INCLUDE THE FILING OF A NEW TENTATIVE TRACT.
***
APPEAL FILED 10/08/1998 CHARGE NUMBER P55346
APPEAL FILED 10-22-98 CHARGE NUMBER P55353

DEPOSIT SUMMARY

Total Deposit:	5,938.00
Payments:	5,938.00
Balance Due:	.00

2844

ATTACHMENT II

PDSD Responses
to
Appeal of Area Plan 98-2

APPELLANTS

Vedanta Society of Southern California,
Norbertine Fathers of Orange
Saddleback Meadows Land Conservancy

Filed by Edmond Connor
October 22, 1998

2845

PDSD Responses to Appeal of Area Plan 98-2

Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy

Filed by Edmond Connor

The following discussion responds to the Appeal of Area Plan AP 98-2, submitted by Edmond Connor on October 22, 1998. Mr. Connor indicates that he is representing the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy. Each Appeal Issue, restated from the Appeal Letter, is followed by a response from the Planning & Development Services Department. The Letter of Appeal is attached to

References herein (e.g., Attachment K) are to attachments to the AIT for November 3, 1998 on this item unless otherwise noted.

(1) **Appeal Issue No. 1:**

By failing and refusing to provide the Foothill/Trabuco Specific Plan Review Board with a minimum of 21 days within which to review AP 98-2 and to report its findings and recommendations thereon before the Planning Commission took final action on AP 98-2, the Planning Commission violated both section 7-9-150.3(b) of the Orange County Zoning Code and Section III.G.2.a of the Foothill/Trabuco Specific Plan (the "Specific Plan").

PDSD Response:

On August 7, 1998, the project application and EIR Addendum were distributed for public review. At that time there were no members of the Foothill/Trabuco Specific Plan (F/TSP) Review Board. However, former members were sent this material. On September 22, 1998, F/TSP Review Board members were appointed and on September 25, 1998, they were each given a copy of this material. On October 16, 1998, the F/TSP Review Board made comments and recommendations regarding the proposed project. Those comments and recommendations were forwarded by staff to the Clerk of the Board on October 22, 1998 for the Board of Supervisors to consider prior to taking final action on Zone Change 98-3 and Area Plan 98-2. Therefore, we believe the spirit and intent of Zoning Code section 7-9-150.3(b) and F/TSP Section III.G.2.a. has been satisfied.

(2) **Appeal Issue No. 2:**

AP 98-2 is inconsistent with the goals, objectives, components, regulations and guidelines set forth in the Specific Plan, including (a) the goals and objectives relating to rural character and resource preservation; (b) the resources overlay component relating to wildlife corridors, oak woodlands, tree management/preservation, and streambeds; (c) the Bridlewood Residential District Regulations; (d) landscaping regulations; (e) grading standards relating to the maximum height of manufactured slopes and the 70% "natural open space" requirement; (f) area plan submittal

requirements; (g) grading, drainage and site planning guidelines; and (h) architectural guidelines.

PDSD Response:

AP 98-2 is subject to Zone Change (ZC) 98-3, an amendment to the F/TSP. ZC 98-3 includes the following provision:

"Any development shall be in compliance with every regulation of this District (BWR) and shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District."

Nonetheless, AIT Attachment F documents that the proposed project is consistent with all major elements of the F/TSP except for the limitations on the height of manufactured slopes. Overall, the proposed project is in substantial compliance with the existing F/TSP although, per ZC 98-3, it is not required to be.

(3) **Appeal Issue No. 3:**

In approving AP 98-2, the Planning Commission failed to make adequate findings supported by substantial evidence in the record as required by the Orange County Zoning Code, the California Code of Civil Procedure, the Government Code, and all other applicable land use laws and regulations.

PDSD Response:

In the Planning Commission Resolution (AIT Attachment I) and the draft Board of Supervisors Resolution (AIT Attachment K) all findings required by law are included regarding AP 98-2.

(4) **Appeal Issue No. 4:**

There is no justification for exempting AP 98-2 from complying with the Specific Plan, and such an exemption coming at the request of a landowner/developer would set a bad precedent and would seriously undermine the important goals and objectives of the Specific Plan.

PDSD Response:

This issue is discussed in AIT Attachment F. AP 98-2 will provide major public benefits in the form of a large addition to O'Neill Regional Park, public riding and hiking trails, and a critical NCCP wildlife corridor.

(5) **Appeal Issue No. 5:**

AP 98-2 involves unavoidable adverse environmental impacts which cannot be mitigated to acceptable levels and will destroy hundreds of acres of oak woodlands, vernal ponds, coastal sage scrub habitat, and fauna including the coastal California gnatcatcher and the Riverside fairy shrimp. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2.

PDSD Response:

The County concurs with Mr. Connor that the Saddleback Meadows project involves unavoidable adverse impacts which cannot be reduced to below a level of significance in the areas of vernal ponds and coastal sage scrub habitat. However, he fails to note that Addendum PA980103 is tiered from Certified Final Subsequent EIR 566, for which the Planning Commission made findings, statements in support of findings and a statement of overriding consideration regarding the impacts on the environment.

Condition Number 6 of the Planning Commission Resolution approving Area Plan AP 98-2 reads as follows:

> Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site, including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning Services Division.

Following is a brief summary of the discussion from the Addendum and Staff Reports from the Planning & Development Services Department regarding the areas noted by the Appellant:

- **Biological Resources**

  The Biological Resources section of the Addendum discusses the biological resource impacts associated with the proposed 299 unit project in comparison with the approved 705 unit project. A biological issues analysis (Helix, 2/20/98) was prepared for the proposed 299 unit project and is included in the Addendum as Appendix G. The results of the analysis are presented under the four categories of corridor analysis, vegetation impacts, oak tree impacts, and sensitive species impacts, paralleling the discussion in Certified SEIR 566, and are also discussed in the body of the Addendum.

- **Wildlife Corridor**

  Implementation of the approved 705 unit project would directly impact wildlife movement through the project site, as it contains no design features which seek to facilitate wildlife movement. It cannot be assumed that wildlife would be able to move through the project site as currently designed. The approved project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve, due to restricted wildlife movement.

  In comparison, the proposed 299 unit project features a 400 foot wide wildlife corridor which will increase the viability of wildlife connectivity through Saddleback Meadows. The corridor, as planned in the proposed project, is expected to be wide enough for wildlife movement. Topography on either side of the corridor is conducive to wildlife

movement because it coincides with an area of natural canyon topography. The revegetation within the corridor is expected to provide the necessary cover for wildlife to add to the corridor's viability. The 50-foot wide spine road crossing the corridor is not expected to inhibit wildlife movement due to the low traffic levels anticipated for this road. The wildlife corridor is expected to function adequately.

- NCCP

  Impacts to coastal sage scrub resulting from implementation of the proposed 299 unit project would be similar to those for the approved 705 unit project. Under the approved project, 50.3 acres of coastal sage scrub would be impacted, while 45.8 acres will be impacted under the proposed project. In accordance with the NCCP, the loss of 45.8 acres of Venturan-Diegan transitional coastal sage scrub due to project implementation is less than the allowable five percent loss of the total coastal sage scrub in the subregion. Accordingly, the proposed project is in compliance with the NCCP. Mitigation measures related to accounting and preservation of coastal sage scrub and compliance with the NCCP through the securing of appropriate Resource Agency permits have been carried forward in the Addendum from Certified Final SEIR 566.

- **Riparian Resources**

  The loss of riparian resources associated with the proposed project, which include 0.6 acres of ephemeral pond (all but two of the ponds), 0.21 acres of southern sycamore riparian woodland, and 2.01 acres of mule fat scrub, are similar to, although slightly less than, those resulting from implementation of the approved 705 unit project. Mitigation measures from Certified SEIR 566, which require the securing of appropriate permits from the Resource Agencies for the protection of riparian resources, have been carried forward in the Addendum.

- **Coast Live Oak Woodland**

  Implementation of the approve project would result in the loss of 14.0 acres (284 individual trees) of the total 14.5 acres (298 individual trees) of coast live oak woodland on the project site. However, the proposed 299 unit project would impact only 5.7 acres (175 individual trees). A total of 123 oak trees (approximately 41 percent) occur outside the remedial grading zone and are considered preserved. Mitigation measures related to preservation and enhancement of the impacted coast live oak woodland habitat have been carried forward from Certified SEIR 566 to the Addendum.

- **Riverside Fairy Shrimp**

  As stated under Riparian Resources above, all but two of the ephemeral ponds, habitat supporting the Riverside fairy shrimp, will be directly impacted by both the approved and the proposed projects. Mitigation measures relating to the relocation and establishment of a mitigation plan designed to mitigate impacts to Riverside fairy shrimp/pond habitat have been carried forward from Certified SEIR 566 to the Addendum.

- Coastal California Gnatcatcher

  Previous field surveys have determined that on-site coastal sage scrub habitat is not occupied by coastal California gnatcatchers, although current surveys have not been completed to USFWS presence/absence protocol. As such, on-site coastal sage scrub habitats must be considered occupied by coastal California gnatcatcher until proven otherwise. Mitigation measures relating to conducting adequate studies to determine the presence of the coastal California gnatcatcher have been carried forward from Certified SEIR 566 to the Addendum.

(6) Appeal Issue No. 6:

AP 98-2 involves massive and unacceptable grading impacts which would subjected the residents of the Trabuco Canyon area to several years of excessive noise, dust, and traffic delays associated with excavating and recompacting approximately nine million cubic yards of soil which will remain exposed to the wind during dry seasons and the rain during wet seasons over the course of several years before the rough grading is completed. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

PDSD Response:

The grading impacts of the proposed project have been exhaustively studied in both Proposed Final EIR 561 and Certified Final Subsequent EIR 566. In addition, a grading plan update has been prepared for the Addendum.

Grading for this proposed project is entirely on-site; i.e., no trucking of material on-site or off-site will be required. All grading shall be in compliance with the Grading Code, Grading Manual and conditions of approval of AP 98-2 and related Tentative Tract Map 15230. In addition to addressing this issue in AIT Attachments L, M, and N, an addition CEQA review is required before the issuance of any grading permits.

The conclusions of the Addendum are as follows:

Due to its larger scale and greater intensity, implementation of the approved project for 705 units would require 2.6 million cubic yards of conventional grading to achieve planned elevations and profiles and associated access roadways and 8.9 million cubic yards of remedial grading to stabilize the proposed slopes through the creation of buttresses, shear keys, and stabilization fills for a total grading quantity of 11.5 million cubic yards. In comparison, implementation of the proposed project for 299 units would require approximately 2.1 million cubic yards of conventional grading and 6.8 million cubic yards of remedial grading for a total grading quantity of 8.9 million cubic yards. Accordingly, the required grading for the proposed project would require 2.6 million cubic yards less than that required to implement the proposed project. Grading quantities decrease under the Contingency Plan as a result of the reduced earthwork required to create the landform grading along the visually prominent project edges.

In addition to the foregoing, prior to the development of the proposed project, the applicant must obtain the approval of a Use Permit by the Planning Commission, thereby triggering one additional environmental documentation.

(7) Appeal Issue No. 7:

AP 98-2 poses unacceptable geotechnical hazards and risks which would endanger and adversely affect the safety, usability, or stability of the land holdings immediately adjacent to the Saddleback Meadows property (the "Property"), including St. Michael's Abbey and the Ramakrishna Monastery, both of which are currently experiencing structural damage due to soils subsidence and instability. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP98-2;

PDSD Response:

Implementation of the proposed project would result in a positive impact regarding the geological stability of the adjacent St. Michael's Abbey site. The extensive remedial grading required on the subject site will stabilize and/or remove ancient landslides which currently threaten the Abbey site.

Extensive review has occurred regarding the geotechnical features and impacts of the proposed project site in conjunction with Proposed Final EIR 561 and Certified Final Subsequent EIR 566. In addition, a geotechnical update has been prepared as Appendix H to the Addendum. The conclusions of the Addendum are as follows:

- The proposed project will not result in the creation of new substantial impacts;
- The Contingency Plan will result in a reduction in geotechnical impacts; and
- The imposition of the 50 Soils/Geology/Grading Mitigation Measures will reduce impacts to below a level of significance.

(8) Appeal Issue No. 8:

AP 98-2 will permanently alter and destroy the natural buffer zones which, for almost 50 years have served as part of a monastic enclave for two religious groups: Vedanta which founded the Ramakrishna Monastery in the late 40's and the Norbertines which founded St. Michael's Abbey in the early 60's. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

PDSD Response:

Major consideration was devoted to analyzing the proposed project's impacts upon the Ramakrishna Monastery and St. Michael's Abbey. These fall primarily in two categories:

- Land Use Compatibility

  The land use compatibility impacts associated with the approved 705 unit project are significant, as demonstrated in Certified SEIR 566 and reiterated in the Addendum. This

is due to the approved project's high number of units and attending intensity-related impacts.

The subject site is designated 1B Suburban Residential in the Land Use Element (LUE) of the Orange County General Plan. Density allowable under Suburban Residential ranges from 0.5 units per acre to 18 units per acre.

In comparison, the proposed project will result in reduced land use compatibility impacts, largely a result of the substantially fewer number of units. Additionally, the proposed project provides additional buffering through site design utilizing landform berming and contour grading in concert with landscaping to further screen and filter views of the development edges. A major design feature of the proposed project for 299 units is the single loaded primary spine road (residential development south of the spine road and landform grading to the north), which is intended to screen off-site views of the on-site development area. The proposed project also features a cluster design concept, providing room for a wildlife movement corridor system and effectively providing visual relief through the apportionment of the development into three residential enclaves. Additional single-family residential dwellings were located within the north central portion of the project site in the approved project, as compared to the proposed project, which has undisturbed open space in the same area.

- **Aesthetics**

As with the approved project, the proposed project for 299 units would substantially alter the existing topography and visual character of the project site. The landform/contour grading, berming, and wildlife corridor system included in the proposed project would help to break up the long linear massing of housing which would result with implementation of the approved 705 unit project and create areas of housing separated by 150 to 500 foot stretches of open space.

Visual impacts to St. Michael's Abbey would be substantially reduced under the proposed project as compared to the approved project due to the relocation of residential lots north of the on-site spine road, extensive landform grading, and implementation of a trail head/staging area. View impacts of the project site from the Ramakrishna Monastery would be reduced as compared with the approved project by implementation of the berming/contour grading, the wildlife corridor system and associated open space areas, and through the elimination of several loffel walls which would reduce the height and intensity of adjacent manufactured slopes.

(9) Appeal Issue No. 9:

The proposed rough grading, fuel modification, and drainage activities associated with the development of the 299-Unit Project pose the risk of triggering the reverter clause in the March 1974 Agreement between Vedanta and the County of Orange (the "County"), thereby entitling Vedanta to regain title and possession of approximately 240 acres of O'Neill Park adjacent to the Ramakrishna Monastery. This is a highly unnecessary and unacceptable risk of losing valuable parkland and the impact of such

a loss has not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

PDSD Response:

This issue was investigated by County Counsel and Harbors, Beaches and Parks staff approximately two years ago. It was reported at that time that there is no significant possibility of a reversion occurring on the park site.

(10) **Appeal Issue No. 10:**

AP 98-2 would jeopardize or destroy a critical habitat connection between the NCCP Central/Coastal and Southern Subregions of the County by providing an inadequate wildlife corridor to connect Whiting Ranch Wilderness Park and O'Neill Park. In addition, the proposed loss of coastal sage scrub habit associated with the development of the 299-Unit Project would preclude connectivity between areas of high habitat value and, as a result, would preclude or delay the preparation and finalization of the Southern Subregion NCCP. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2;

PDSD Response:

The Corridor placement and design featured in the proposed Contingency Plan was also featured in Proposed Final EIR 561 and Certified Final Subsequent EIR (CFSEIR) 566. CFSEIR 566 was certified by the Planning Commission and was appealed to and upheld by the Board of Supervisors. Alternative 4 of CFSEIR 566 as well as Alternatives 8 and 9 of Proposed Final EIR 561 all reflect the placement of the corridor at this location. The design and dimensions of the Corridor were derived through previous consultation with the Resource Agencies during the environmental review process associated with these two previous EIRs.

In their correspondence to the County, the Resource Agencies did express a preference for the lower density Alternatives contained within the previous EIRs, notwithstanding their verbal concurrence with the basic design parameters of the 400 foot wide Corridor as featured in the proposed Contingency Plan, although they have expressed a preference for a much wider corridor. Accordingly, the Resource Agency's position regarding the Wildlife Corridor featured in the Contingency Plan remains the same in that their previous comments included consideration of an identical corridor.

With regard to the Southern Subregion, NCCP related comments have been evaluated in both Certified Final Subsequent EIR 566 and Proposed Final EIR 561. The 299-unit Contingency Plan has incorporated many of the concerns identified in the two (2) previous EIRs relative to the NCCP, including a central wildlife corridor, preservation of, or replacement measures to ensure the continued sustainability of, valuable biological resources.

(11) Appeal Issue No. 11:

In violation of CEQA and the CEQA Guidelines, the California Department of Fish & Game and the U.S. Fish & Wildlife Service (collectively, the "Resource Agencies") were not properly and adequately and consulted by the County in connection with AP 98-2, particularly with respect to the input regarding an appropriate wildlife corridor a possible clustered development on approximately 35-40 acres would be compatible therewith.

PDSD Response:

The Planning & Development Services Department reported to the Planning Commission and members of the public that the Addendum was not distributed to the U.S. Fish and Wildlife Service and the California Department of Fish and Game (Resource Agencies) prior to the August 25, 1998 hearing. Public testimony indicated that the concerns and position of the Resources Agencies had changed regarding the proposed project and site.

Based upon the foregoing, following the Planning Commission's August 25 hearing and over 30 days prior to its final decision on the Area Plan, on October 7, 1998, PDSD staff took two steps. First, it provided copies of the Addendum to the Resource Agencies; and second, PDSD staff met with representatives of the Agencies. The purpose of this meeting, held on August 31, 1998, was to discuss Addendum PA980103 and the CEQA process as it relates to the proposed Contingency Plan. This meeting was constructive in clarifying the process and alleviating their concerns regarding the relationship of the Contingency Plan to Certified Final Subsequent EIR 566.

As noted elsewhere in this Appeal Issues discussion, the Contingency Plan, as it relates to key issues of concern, has been previously reviewed by the Resources Agencies in conjunction with Proposed Final EIR 561 and Certified Final Subsequent EIR 566.

It should also be noted that Section 15164 of the CEQA Guidelines does not require circulation or response to comments received on an Addendum. However, it is County policy to fully inform all parties who have exhibited interest in a given project as to that project's latest status. Accordingly, in addition to sending all commentators on the Addendum a copy of the Response to Comments and staff reports, staff sent copies of staff reports to all commentators on Certified Final Subsequent EIR 566. In so doing, PDSD has gone beyond the requirements of CEQA, with regard to Addendum circulation, by informing all commentators on the parent document (CFSEIR 566) of the Addendum's status.

(12) Appeal Issue No. 12:

AP 98-2 constitutes a complete revision and redesign of the 705-Unit mobilehome project authorized by Tract Map No. 10692 (the "705-Unit Project") and thus constitutes a new project which requires preparation of a new Environmental Impact Report ("EIR"). Alternatively, a Subsequent EIR should be prepared for AP 98-2 in light of (a) the major project changes associated with the 299-Unit Project, Including the new wildlife corridor placement, on site drainage of storm ,irrigation, and urban runoff (including the daily discharge of toxic materials into pristine areas of O'Neill

Park), and additional grading in the biologically-sensitive southeast canyon areas of the Property; (b) the newly-discovered presence of coastal California gnatcatchers on the Property and the outdated and incomplete nature of the gnatcatcher surveys of the Property which the Resource Agencies asked to be updated almost two years ago; (c) innovative project alternatives not previously considered in the prior CEQA documentation, including the 65-Unit Alternative and the 44/178 Alternative; and (d) feasible mitigation measures not previously considered, such as a 100% performance bond to cover the possibility of the developer's failure to complete all conventional and remedial grading operations;

PDSD Response:

During the past four (4) years, the Saddleback Meadows site has received detailed environmental reviews for planning compliance with CEQA on two separate previous occasions:

- Proposed Final EIR 561 was prepared in 1995-96 for a 318-unit, conventional SFD development on lots averaging 5000 sq. ft. The application, which included a Zone Change, Area Plan and Tentative Tract Map, was not not approved by the Board of Supervisors; and

- Certified Final Subsequent EIR 566 was prepared in conjunction with Grading Permit Application GA960048 for recorded Tract 10692 for a 705-unit manufactured housing subdivison. This EIR was certified by the Planning Commission on December 3, 1997 and, upon appeal, the EIR certification was upheld by the Orange County Board of Supervisors on January 27, 1998.

The currently proposed Contingency Plan for 299 residential units was examined previously for this site in the form of alternatives contained in Proposed Final EIR 561 and Certified Subsequent EIR 566, although with slightly differing site plans. The alternatives contained in the Appendix of the Addendum are Alternative 4 from Certified SEIR 566 and Alternatives 8 and 9 from Proposed FEIR 561, which were previously evaluated. The Contingency Plan results from an extended evaluation by the applicant to address environmental concerns previously analyzed by reconfiguring the proposed project density, land use and location

The CEQA Guidelines provide guidance for use of previously certified EIRs with a subsequent activity. Specifically, where a previous EIR has been certified for a larger project, the later activity or project is examined in light of the previously certified EIR. The Guidelines also provide that a Tiered EIR may be incorporated into an Addendum to an EIR to address significant and cumulative program impacts analyzed and considered in the Tiered EIR (Section 15164).

1. **Explanation of a Subsequent EIR:** Guidelines Section 15162 specify where an EIR has been previously prepared, an EIR need not be prepared for subsequent actions unless any of the following conditions prevail:

- Subsequent changes are proposed in the project which will require important revisions of the previous EIR due to the involvement of new significant environmental impacts not considered in the previous EIR;
- Substantial changes occur with respect to circumstances under which the project is undertaken, or
- New information of substantial importance to the project becomes available.

2. **Explanation of an Addendum EIR:** According to CEQA Guidelines Section 15164 (a), the Lead Agency shall prepare an Addendum to an EIR if the following prevail:

   - None of the conditions described in Section 15162 calling for the preparation of a Subsequent EIR have occurred;
   - Only minor technical changes or additions are necessary to make the EIR under consideration adequate under CEQA;
   - The changes made by the Addendum do not raise important new issues about the significant effects on the environment.

None of the conditions described in Section 15162 calling for preparing a Supplemental or Subsequent EIR have occurred, and changes related to the proposed project are of a minor nature. The Planning & Development Services Department has determined that only minor technical changes to FEIR 566 are necessary in order to properly address the current Project, that FEIR 566 adequately analyzes all of the major impacts of the proposed project, that no major changes are proposed with respect to the circumstances surrounding this project, and that no new information of significance has become available that would substantially affect the validity of FEIR 566. Therefore, an Addendum is appropriate for the proposed project in order to provide project specific analysis, to provide clarification and address minor changes to FEIR 566.

(13) Appeal Issue No. 13:

Final Subsequent Environmental Impact Report No. 566 ("FSEIR 566") and the Addendum thereto are seriously deficient and inadequate to serve as the CEQA documentation for AP 98-2 in that they fail to properly address the adverse impacts, reasonable project alternatives, and feasible mitigation measures associated with that Project and, the extent that County staff seeks to rely on the FSEIR (566) as the EIR for AP 98-2, the County has failed to provide adequate public notice of its intended action to responsible state and federal agencies, including the Recourse Agencies, and to the general public;

PDSD Response:

Based upon public testimony from the Appellant, among others, the Planning Commission requested clarification on the connection between other Alternatives and the Contingency Plan, particularly alternatives associated with the negotiations that are taking place between St. Michaels Abbey, the Vedanta Society, the County and California Quartet. The Planning

Commission asked why such alternative were not included in the Addendum or brought forth in some other way to the Commission.

PDSD was presented with the Contingency Plan as a stand alone project. It has been analyzed as such. Proposed Final EIR 561 and Certified Final Subsequent EIR 566 analyzed a full range of alternatives, ranging from the No Project/No Development Alternative to the 705-unit manufactured housing project. No other alternative has been submitted to the County for environmental review.

An Addendum was determined to be the appropriate environmental documentation for the proposal based on CEQA Guidelines as discussed above and in the previous staff report. Should the identified alternatives be submitted to the County, they will be subjected to the same CEQA environmental documentation requirements as the proposed project.

(14) Appeal Issue No. 14:

In approving AP 98-2, the Planning Commission violated CEQA and the CEQA Guidelines by failing to (a) make adequate findings supported by substantial evidence in the record, (b) adopt an adequate mitigation monitoring program, and (c) adopt and adequate statement of overriding considerations with respect to AP 98-2;

PDSD Response:

In approving the Area Plan, the Planning Commission made a finding that the proposed project was covered by Addendum PA980103 and Certified Final Subsequent EIR 566. In so doing, it adopted the Mitigation Monitoring Program of EIR 566, the Findings and Facts in Support of the Findings and the Statement of Overriding Considerations.

(15) Appeal Issue No. 15:

Although the 299-Unit Project involves fewer residential units that the 750-Unit Project, it still involves massively destructive environmental impacts and, in certain respects, far worse impacts than the 705-Unit Project in terms of drainage geotechnical hazards, and grading impacts on St. Michael's Abbey and the Ramakrishna Monastery. Their impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP 98-2.

PDSD Response:

In accordance with Guidelines Section 15063, the Initial Study was completed to determine the possible impacts of the proposed Contingency Plan. Following is a listing of key documents, County Divisions, interest groups, and Resource Agencies utilized in the overall review process for Saddleback Meadows and incorporated into the Initial Study review process.

1. Documents - Certified Final Subsequent EIR 566, certified by the Orange County Planning Commission for a 705-unit manufactured single-family residential project for the same site; Proposed Final EIR 561, prepared for a 318-unit conventional single-family residential project for the same site; Foothill/Trabuco Specific Plan FEIR 531

and Specific Plan Land Use Regulations; Site Plan, Tentative Tract Maps and Plot Plans for the proposed project;

2. **Comments from Public Interest Groups** - Input received from the public and interested parties on the two previous projects on the subject site, including: Rural Canyon Residents Association; The Vedanta Society; Foothill/Trabuco Specific Plan Review Board; St. Michael's Abbey; Portola Hills HOA I and Portola Hills HOA II; Hidden Ridge HOA; Canyon View HOA; ETI Corral 357 Orange County Horsemen Assoc.; Serrano Creek Ranch Equestrian Center; the Gabrieleno Indians; Sierra Club; and National Audubon Society

3. **Comments from State and Federal Public Resources Agencies** - Input received from the Public Resources Agencies on the two previous projects proposed on the subject site, including: US Fish and Wildlife Service; CA Department of Fish & Game; and US Army Corps of Engineers.

4. **Comments from the Technical Divisions of the County** - Technical input from divisions of the County including: PDS: Subdivision & Grading Services Division, - Geotechnical & Grading Plan Check Section; NPDES Section; and Traffic Section; Current Planning Services Division - Orange County Natural Communities Conservation Program; Environmental & Project Planning Services Division - Advance Planning and Transportation Planning Sections; Building Permits Services Division - Acoustics Section; Public Facilities & Resources Department: HBP Division; Environmental Resources Division; Traffic Engineering Division; Orange County Fire Authority;

5. **Field checks** of proposed project site and the project vicinity; and

6. **CEQA** Checklist - A detailed analysis of the CEQA Environmental Checklist.

Based upon the above, the Planning & Development Services Department determined that an Addendum, combined with Certified Final Subsequent EIR 566, is the appropriate environmental documentation for the proposed Contingency Plan, Zone Change ZC98-3 and AP98-2.

After consideration of Addendum PA980103, the Staff Reports and presentations, public comments and issues raised at the Planning Commission hearings, the Orange County Planning Commission concurred with the determination of the Planning & Development Services Department.

ATTACHMENT III

WITHDRAWAL OF APPEAL BY CALIFORNIA QUARTET

TPG Management, Inc.
1601 Dove Street, #105
Newport Beach, CA 92660
949-253-9595 Telephone
949-955-1170 Facsimile

Via Hand Delivery

October 23, 1998

Mr. Thomas Mathews, Director
County of Orange
Planning and Development Services Department
300 North Flower Street,
3rd Floor, Room 315
Santa Ana, CA 92702-4048

Re: Saddleback Meadows - Withdrawl of Appeal of Planning Commission Approval of Area Plan 98-2

Dear Mr. Mathews:

On behalf of California Quartet, Ltd., we hereby formally withdraw our appeal of the Planning Commission's decision of October 7, 1998 on Area Plan 98-2 for Saddleback Meadows, which had been appealed pursuant to Orange County Code section 7-9-150.4 by a formal filing of appeal on October 8, 1998.

Should have any questions conceming this appeal, please contact me at (714) 253-2907.

Very truly yours,

H. Mike McKnight
TPG Management, Inc.

cc: Benjamin P. de Mayo, Esq. Deputy County Counsel
Edmond M. Connor, Esq.
William D. Ross, Esq.
H. Pike Oliver
David Brainerd
Frank Elfend

AGENDA ITEM TRANSMITTAL

AGENCY/DEPT. USE

CEO REVIEW

☐ Concur

☐ Do Not Concur

☐ Exempt

CLERK USE ONLY

CONSENT ☐

DISCUSSION ☐

PUBLIC HEARING ☒

TO: BOARD OF SUPERVISORS COUNTY OF ORANGE

FROM: Planning and Development Services Dept.

FILE:

CONTACT FOR INFORMATION	PHONE
Frank McGill	834-2099
Patrick Stanton	834-5516

MEETING DATE	SUBJECT	SUPV. DIST.
November 24, 1998	APPEAL OF SADDLEBACK MEADOWS SUBDIVISION MAPS TENTATIVE TRACT MAP 15784 AND VESTING TENTATIVE TRACT MAP 15230 OF CALIFORNIA QUARTET, LTD	3

SUMMARY OF REQUEST (Description for agenda)

Consider the appeal of Tentative Tract Map (TTM) 15784 and Vesting Tentative Tract Map (VTTM) 15230 and uphold the Subdivision Committee action approving TTM 15784 and VTTM 15230.

ADDITIONAL DATA:

On October 21, 1998, the Orange County Subdivision Committee conducted a public hearing and approved TTM 15784 for financing purposes only and VTTM 15230 to create 299 residential building sites. Both subdivision maps cover the entirety of Saddleback Meadows and both maps are directly related to Saddleback Meadows Zone Change 98-3 and Area Plan 98-2, discussed in your AIT for November 3, 1998. (Item #55)

On October 23, 1998, TTM 15784 and VTTM 15230 were appealed to your Board by California Quartet, LTD. (Attachment A)

(See Page Two)

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM: Minute Order November 3, 1998, Item 55

FUNDING SOURCE(S)	CURRENT YEAR COST	ANNUAL COST	BUDGETED? ☐ YES ☐ N
n/a	n/a	n/a	n/a

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?	CONSISTENT WITH BOARD POLICY?
☒ NO IF YES, STATE NUMBER PERMANENT LIMITED TERM	☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTION

1. Conduct Public Hearing

2. Deny the appeal and uphold the action of the Subdivision Committee approving Tentative Tract Map 15230 and Vesting Tentative Tract Map 15784.

CONCURRENCES (if applicable)	ATTACHMENTS
County Counsel	See Attached

10-29-98
DATE

Thomas B. Mathews, Director

2861

Additional data: (continued)

No new significant issues about these two subdivision maps have been raised that have not been discussed in your AIT package for November 3, 1998. (Item #55)

Attachments:

A. Appeal Letter
B. AIT of November 3, 1998 (Item #55)
C. Subdivision Committee Minutes
D. Final Subdivision Reports (2)
E. Public Comments
F. Tentative Tract Map (TTM) 15784
G. Vesting Tentative Tract Map (VTTM) 15230

ATTACHMENT A

APPEAL LETTER

TPG Management, Inc.
1601 Dove Street, #105
Newport Beach, CA 92660
949-253-9595 Telephone
949-955-1170 Facsimile

Via Hand Delivery

October 23, 1998

Mr. Thomas Mathews, Director
County of Orange
Planning and Development Services Department
300 North Flower Street,
3rd Floor, Room 315
Santa Ana, CA 92702-4048

Re: Saddleback Meadows - Appeal of Subdivision Committee's October 21, 1998 Actions on TTM 15784 (A Map) and VTTM 15230 (B Map)

Dear Mr. Mathews:

On behalf of California Quartet, Ltd., pursuant to Orange County Subdivision Code section 7-9-259(f), we hereby appeal the Subdivision Committee's decision of October 21, 1998 approving the following maps: Tentative Tract Map 15784 Saddleback Meadows (A Map) and Vesting Tentative Tract Map 15230 Saddleback Meadows (B Map); and that such appeal be forwarded to be heard directly by the Orange County Board of Supervisors.

Should you have any questions concerning this appeal, please contact me at (714) 253-2907.

Very truly yours,

H. Mike McKnight
TPG Management, Inc.

cc: Benjamin P. de Mayo, Esq. Deputy County Counsel
P. J. Stanton, Chairperson, Subdivision Committee
Edmond M. Connor, Esq.
William D. Ross, Esq.
H. Pike Oliver
David Brainerd

ATTACHMENT B

AIT OF NOVEMBER 3, 1998
(ITEM #55)

AGENDA ITEM TRANSMITTAL

CONSENT ☐
DISCUSSION ☐
PUBLIC HEARING ☒

CEO REVIEW
☐ Concur
☐ Do Not Concur
☐ Exempt

TO: BOARD OF SUPERVISORS COUNTY OF ORANGE

FROM: Planning and Development Services Dept.
FILE:

CONTACT FOR INFORMATION: Frank McGill — PHONE: 834-2099
John Buzas — 834-5906

MEETING DATE	SUBJECT	SUPV. DIST.
November 3, 1998	Saddleback Meadows Zone Change 98-3 and Area Plan 98-2 of California Quartet, Ltd.	3

SUMMARY OF REQUEST (Description for agenda)
Approve Zone Change (ZC) 98-3, consider the appeal of Area Plan (AP) 98-2, and uphold the Planning Commission action approving AP 98-2.

ADDITIONAL DATA:
See attached.

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:
Minute Order October 6, 1998, Item #100

FUNDING SOURCE(S)	CURRENT YEAR COST	ANNUAL COST	BUDGETED? ☐ YES ☐ NO
N/A	N/A	N/A	N/A

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?
☒ NO IF YES, STATE NUMBER PERMANENT LIMITED TERM

CONSISTENT WITH BOARD POLICY?
☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTION
1. Conduct Public Hearing
2. Adopt draft Resolution (Attachment M) approving EIR Addendum PA 980103
3. Adopt draft Ordinance (Attachment D) approving ZC 98-3
4. Adopt draft Resolution (Attachment K) approving AP 98-2

CONCURRENCES (If applicable)	ATTACHMENTS
County Counsel	See attached

10-13-98
DATE

Thomas B. Mathews, Director

2866

ADDITIONAL DATA:

BACKGROUND

Attachment C contains a detailed chronology of events from 1978 regarding Saddleback Meadows. In summary, the existing Saddleback Meadows Planned Community land use regulations were originally approved by the County of Orange in 1980. Saddleback Meadows Tract Map 10692 was recorded in 1988. When the Foothill/Trabuco Specific Plan (F/TSP) was adopted in 1991, the Saddleback Meadows Planned Community District Regulations and Recorded Tract Map 10692 were incorporated into the F/TSP. Per those regulations, the developer is only required to obtain an administratively approved grading permit and building permits in order to develop 705 manufactured homes.

In 1996, the Planning Commission and Board of Supervisors considered several development alternatives, but did not approve any of them. One of the alternatives, which was recommended by staff, was for 299 dwelling units. That alterative is similar to the applicant's current proposal called the "Contingency Plan". This plan is being processed in the event negotiations involving the Board of Supervisors and other parties to purchase Saddleback Meadows do not come to fruition.

On October 6, 1998, during your discussion of a possible purchase of Saddleback Meadows (Agenda Item #100) you directed that the landowner's application for 299 units be presented to your Board on this date. On October 7, 1998, the Planning Commission, by a vote of 4 to 1, recommended that your Board approve ZC 98-3 and EIR Addendum PA 980103. They also approved related AP 98-2. On October 8, 1998, AP 98-2 was appealed to your Board by California Quartet, Ltd. (Attachment A).

PROJECT DESCRIPTION

Location and Surrounding Land Uses

The Saddleback Meadows property (technically referred to as the Bridlewood Residential District) is located on the easterly side of El Toro Road and north of Valley Vista Way. North of the project site is St. Michael's Abbey, which operates a boarding school for boys. South of the project site is Hidden Hills/Hidden Ridge residential development, O'Neill Regional Park, and the Ramakrishna Monastery. West of the project site and El Toro Road is the Portola Hills residential development. East of the property over a major ridgeline is the Trabuco Canyon Residential District. (See Attachment B, Regional Map.)

Direction	Existing Use	Density	Zoning
Project Site	Agriculture	N/A	F/T Specific Plan
North	School/Abbey	N/A	F/T Specific Plan
South	Residential	3.1 du/ac.	Conventional Zoning
East	Open Space	N/A	F/T Specific Plan
West	Residential	3.2 du/ac.	Portola Hills PC

The land is presently used for grazing cattle and has been used for farming. There are many steep slopes and much erosion due to man's influence and naturally unstable geology. Most of the property rests on ancient landslides that remain unstable. Much of the site has been invaded by non-native plants.

Design Summary

- Total property: 222.2 acres
- 299 standard detached single-family homes
- Proposed open space dedication: 158.5 acres
- Density: 1.3 dwelling units per acre
- Average residential lot: 6,672 sq. ft.

Zone Change 98-3

The zone change (see Attachment D) would amend the F/TSP Bridlewood Residential District Regulations as follows:

1. Replace the reference to "Saddleback Meadows Planned Community" with "Residential Estates (Planned Development)"
2. Lower the maximum number of homes from 705 to 299.
3. Require a minimum of 155 acres of dedicated open space. (The Area Plan proposes 158.5 acres.)
4. Add the requirement for an approved area plan prior to any subdivision or grading activity.
5. Add the requirement for an approved use permit prior to issuance of building permits.
6. Require a performance bond prior to issuance of a grading permit.
7. Eliminate the requirement for 66 2/3 percent affordable housing.
8. Eliminate the requirement for a 1.7-acre neighborhood commercial site along El Toro Road.
9. Maintain the existing exemption from all the other regulations and guidelines in the F/TSP.

Area Plan 98-2

The applicant's proposed area plan (see Attachment E) consists of a text and four concept plans: (1) Development Plan, (2) Landscape and Re-vegetation, (3) Grading, and (4) Open Space/Trails. The area plan also includes a lengthy discussion of "rural character" with several illustrations.

PROJECT ANALYSIS

The analysis of planning issues is contained in Attachment F. The analysis of environmental and CEQA issues is contained in Attachment L. Public comments on this project received prior to October 30, 1998, will be transmitted to you.

F/TSP Review Board

This project was distributed for public review on August 7, 1998. However, no distribution was made to the F/TS Review Board at that time because there were no members. On September 22, 1998, the Board of Supervisors appointed five members to the Review Board. On September 24th each Review Board member was given a cop of the proposed project, the environmental documentation and staff reports. They conducted a public meeting o September 29th and continued it to October 16, 1998. Any comments/recommendations from the Review Board will be transmitted to you.

ATTACHMENTS:

A. Appeal Letter
B. Regional Map
C. Chronology of Events
D. Zone Change 98-3 (Draft Ordinance)
E. Area Plan 98-2
F. Analysis of Planning Issues
G. Existing Bridlewood Residential Draft Regulations
H. Manufactured Slopes Exhibit
I. Planning Commission Minutes, Resolutions, Staff Reports and Correspondence
J. Commissioner Moody's Memo
K. Draft Board of Supervisors Resolution re: AP 98-2
L. Analysis of Environmental/CEQA Issues
M. Draft Board of Supervisors Resolution re: EIR Addendum PA 980103
N. EIR Addendum PA 980103

ATTACHMENT C

SUBDIVISION COMMITTEE MINUTES

ORANGE COUNTY SUBDIVISION COMMITTEE MEETING

MINUTES OF OCTOBER 21, 1998

TAPE #: 32
DAT: 00:45:18 - 01:24:01

TAPE#: 33
DAT: 00:00:00 - 01:26:33

DRAFT

The meeting was called to order at 1:35 P.M.

MEMBERS IN ATTENDANCE:

Manager, PDS/Subdivision and Grading Services
Stanton

Manager, PDS/Environmental and Project Planning
Britton

Manager, PDS/Current Planning Services
by McGill

Director, Orange County Fire Authority
by Blaul

MEMBERS ABSENT:

Manager, PFRD/Program Development Division

OTHERS PRESENT:
Bellaschi, Subdivision and Grading Services
Collins, Subdivision and Grading Services
Anderson, Subdivision and Grading Services
Ray Chandos, Rural Canyons Conservation Fund
Pete DeSimone
Warren Singleton
Carl Ballard
Carol B. Sherman, Law Offices of William D. Ross
Pike Oliver, California Quartet
Michael McCollum, McCollum & Associates
Mike McKnight
Kris Weber, Hunsaker & Associates
Mari Schroeder, Chamber Group
Ed Connor, Connor, Culver, Blake & Griffin LLP

ITEM 1: PUBLIC HEARING - TENTATIVE TRACT MAP NO. 15784

Bellaschi reviewed the project noting receipt of two additional comments from civic groups - the Foothill/Trabuco Specific Plan Review Board and David Blum, a Trabuco Canyon resident. There were two changes to the findings, and no changes to the conditions.

McGill noted for the record that both maps were mailed to the Foothill/Trabuco Specific Plan Review Board on September 25, as verified by Bellaschi, which is within the 21-day notice period. He also noted that correspondence/comments were received from them requesting that we do not take action on any Saddleback Meadows project and that we do not approve the proposed Saddleback Meadows projects. McGill requested that both tracts be heard simutaneously and voted on separately.

Britton noted a change to finding 11 - "The development of this project will not preclude prevent the preparation of the Southern Subregion NCCP". This relates to Tim Neely's memo of October 19, which parallels his verbal presentation before the Planning Commission.

At the conclusion of the public hearing described under Item 2.

ITEM 2: PUBLIC HEARING - TENTATIVE TRACT MAP NO. 15230 (VESTING)

Bellaschi reviewed the project noting one change to the findings and a change to condition #9. A condition was added regarding Official Vehicular Road Access Easement.

Britton stated that the Mitigation Measures needed to be brought forward and added to the conditions of approval and the same information (as on the previous tract) regarding NCCP be included on this map.

McGill spoke about the Planning Commission's approval of related Zone Change 98-3 and Area Plan 98-2.

Kris Weber, Hunsaker & Associates, representing California Quartet, thanked staff members for all of their efforts and stated that he was in agreement with the conditions and changes as proposed, along with the revisions and amendments. He reserved the right to respond to any additional testimony.

Ray Chandos, Rural Canyons Conservation Fund, requested that the committee not approve this item.

Peter DeSimone, representing the National Audubon Society, and a resident of Trabuco Canyon, stated that he opposed the project.

Ed Connor, of Connors, Culver, Blake & Griffin, LLP, representing Norbertine Fathers of Orange, the Saddleback Meadows Land Conservatory LLC, and the Vedanta Society of Southern California stated that his clients oppose these projects and request an immediate halt to the proceedings.

Mr. Connor closed stressing his opposition to the project and requested the committee to wait to vote on this project.

Warren Singleton, Technical Advisor and Civil Engineer, testified.

Kris Weber stated that the drainage is more than adequate for this project; the grading plan has been reviewed by the grading contractor and he has assured us that 30,000 cubic yards per day is not unreasonable, within a 12- 14 month period; as to the performance bond, he stated that 30% is the standard, and this project should not require anything higher than the standard practice.

Mike McKnight, TPG Management, added that there would be off-site fuel modification on the northerly end of the project.

Pike Oliver stated that Chris Weber had taken care of the technical issues and in terms of the biological issues 12-13 surveys have been conducted since 1989. The biologists who conducted these surveys were independent and licensed, and formulated independent conclusions. As far as specific plan compliance, he stated that this was not an appropriate subject for discussion and that the staff reports prepared for this project are extensive and detailed.

Carol Sherman responded by saying that the forum for the issues raised today is the Planning Commission. The area plan and zone change are consistent with County policy, the standard NPDES plan for drainage will be required prior to grading, claims regarding critical habitat, the Gnatcatcher and Fairy Shrimp, are inadequate, and the 21-day notice period does not apply to the Subdivision Committee.

A motion was made by McGill to approve Tentative Tract Map 15784 as amended. The motion was seconded by Britton and unanimously approved.

A motion was made by Britton to approve Tentative Tract Map 15230 (Vesting) as amended. The motion was seconded by McGill and unanimously approved.

ITEM 3: PUBLIC COMMENTS

There were no public comments

ADJOURNMENT:

A motion was made by Bavan to adjourn the meeting at 3:20. The motion was seconded by the Chair and adjourned.

ATTACHMENT D

FINAL SUBDIVISION REPORTS (2)

2873

Attachment A

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4643
FAX # 834-2771

October 29, 1998

California Quartet, LTD
1875 East Century Park, Suite 1880
Los Angeles, California 90067

SUBJECT: TENTATIVE TRACT MAP NO. 15784

On October 21, 1998 the Orange County Subdivision Committee approved the above-referenced tentative tract, subject to the findings and conditions in the attached Orange County Subdivision Committee Final Report.

The Committee's action conditionally approving this tentative map is valid for a period of three (3) years and will expire on October 21, 2001. The expiration date may be extended for a maximum of five (5) additional years provided a written request is filed with the Director of Planning and Development Services, prior to the expiration date shown above.

You are hereby notified that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval, as well as the reports and actions accompanying this approval, and that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

To avoid unnecessary delays in the recording of this tract map, we suggest that you contact Moe Idris at 834-3470 regarding compliance with all conditions of approval, prior to the filing of the tract map with the County Surveyor.

Very truly yours,

Patrick Stanton

Patrick J. Stanton, Manager
Subdivision and Grading Services

PJS/mmc

Attachment: Final Report w/Map

cc: Hunsaker & Associates

2874

Attachment F

FINAL

TENTATIVE TRACT MAP REPORT

DATE: October 21, 1998

SUBJECT: Tentative Tract Map No. 15784

SUBDIVIDER: California Quartet, LTD

ENGINEER: Hunsaker & Associates

SUBDIVISION SECTION CONTACT: Vic Bellaschi 834-5045

LOCATION: On the easterly side of El Toro Road approximately 1,500 feet southerly of Live Oak Canyon Road in the Cooks Corner-Live Oak Canyon area.

ASSESSORS PARCEL NO. 856-011-portion 20; 856-071-01 thru 09; 856-081-01 thru 12; 856-091-01 thru 11.

PROJECT NO. EP/PP 69881

SUMMARY: Proposes a subdivision of approximately 222 acres of land into 7 lots for conveyance purposes only.

NOTE: See TT 15230 for the future development of the subject property.

NOTIFICATION:

All federal, state, and county departments, divisions and agencies having cognizance of the affected area, the Foothill/Trabuco Specific Plan Review Board, the Marine Corps Air Station, the Rural Canyons Conservation Fund, and all property owners within 300 feet of this property.

GENERAL PLAN CONSISTENCY/ZONING COMPLIANCE:

Land Use Element: 1B Suburban Residential (.5-18 du/ac)

Community Profile: 1.2 Low Density Residential

Specific Plan: Foothill/Trabuco Specific Plan
Bridlewood Residential (BWR) District

This project, as conditioned, is consistent with and in conformance with the General Plan and its implementing documents.

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT:

The proposed project is covered by Final EIR No. 566 previously certified on June 2, 1998 and Addendum PA 980103. Prior to project approval, the Subdivision Committee must assert that, together, they are adequate to satisfy the requirements of CEQA for the proposed project.

OFFICIAL COPY

EXISTING CONDITIONS:

The subject property is sloping undeveloped terrain.

DRAINAGE:

Master Plan of Drainage requirements will be a consideration in connection with the future development of the subject property.

SOUND CONSIDERATION:

This property area is impacted by intrusive noises. The extent of mitigation required can be determined in connection with the acoustical report which will be required when future development is proposed.

RECREATION AND OPEN SPACE:

Master Plan of Regional Recreation Facilities, Master Plan of Regional Riding and Hiking Trails, Master Plan of Local Parks (Local Park Code), Resources Element – Open Space Component and Master Plan of Countywide Bikeways will be considerations with the future development.

PUBLIC SERVICES AND UTILITIES:

In connection with the future development, schools, water service, sewer service, cable service, water quality control, fire protection and safety, and library services will be considerations.

CIRCULATION:

Regional and internal infrastructure requirements will be a consideration when any future development is proposed. This will include participation in the applicable Major Thoroughfare and Bridge Fee Programs.

COMMENTS FROM CIVIC GROUPS AND OTHERS NOTIFIED:

Comments were received from Ray Chandos – Secretary/Treasurer of the Rural Canyons Conservation Fund and the Foothill/Trabuco Specific Plan Review Board.

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SUBDIVISION COMMITTEE ACTION:

Tentative Tract No. 15784 is approved, and the approval includes the following 11 findings, and is subject to the 4 conditions which follow the findings:

Findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the Subdivision Committee has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

X. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XI. The development of this project will not preclude or prevent the preparation of the Southern Subregion NCCP.

2877

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Conditions:

Codes (for time of performance/type of condition)

(G)	Grading Permit	(S)	Standard Condition
(R)	Recordation	(SS)	Site Specific Condition
(NA)	Timing not Specified		

(G) 1. SG SG G GRADING RESTRICTION
(S) Notwithstanding any grading/elevations that are shown on the tentative tract map, or the provisions of Orange County Zoning Code Section 7-9-139 (Grading and Excavation), approval of this tentative tract map does not authorize the issuance of any grading permits.

(NA)2. SG NA NA INDEMNIFICATION
(S) Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents or employees to attack, set aside, void, or annul an approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

(R) 3. SG SG R CONVEYANCE MAP
(SS) Prior to the recordation of the final tract map, a note shall be placed on the final tract map stating, "This tract map is for conveyance purposes only and the lots created by this tract map are not legal building sites" in a manner meeting the approval of the Manager, Subdivision and Grading.

(SS)4. CP NOTIFICATION
This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval.

You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

I hereby certify that Tentative Tract Map No. 15784 was approved upon the foregoing conditions by the Orange County Subdivision Committee, on October 21, 1998, and will expire on October 21, 2001.

Patrick Stanton

P. J. Stanton, Manager
Subdivision and Grading Services
Chairperson, Subdivision Committee

PJS/VB:no[W]

OFFICIAL COPY
2878

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4643
FAX # 834-2771

October 29, 1998

California Quartet, LTD
1875 East Century Park, Suite 1880
Los Angeles, California 90067

SUBJECT: TENTATIVE TRACT MAP NO. 15230 (VESTING)

On October 21, 1998 the Orange County Subdivision Committee approved the above-referenced tentative tract, subject to the findings and conditions in the attached Orange County Subdivision Committee Final Report.

The Committee's action conditionally approving this tentative map is valid for a period of three (3) years and will expire on October 21, 2001. The expiration date may be extended for a maximum of five (5) additional years provided a written request is filed with the Director of Planning and Development Services, prior to the expiration date shown above.

You are hereby notified that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval, as well as the reports and actions accompanying this approval, and that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

To avoid unnecessary delays in the recording of this tract map, we suggest that you contact Moe Idris at 834-3470 regarding compliance with all conditions of approval, prior to the filing of the tract map with the County Surveyor.

Very truly yours,

Patrick Stanton

Patrick J. Stanton, Manager
Subdivision and Grading Services

PJS/mmc

Attachment: Final Report w/Map

cc: Hunsaker & Associates

 Attachment F

FINAL

TENTATIVE TRACT MAP REPORT

DATE: October 21, 1998

SUBJECT: Tentative Tract Map No. 15230 (Vesting)

SUBDIVIDER: California Quartet, LTD

ENGINEER: Hunsaker & Associates

SUBDIVISION SECTION CONTACT: Vic Bellaschi 834-5045

LOCATION: On the easterly side of El Toro Road approximately 1,500 feet southerly of Live Oak Canyon Road in the Cooks Corner-Live Oak Canyon area.

ASSESSORS PARCEL NO. 856-011-portion 20; 856-071-01 thru 09; 856-081-01 thru 12; 856-091-01 thru 11.

PROJECT NO. EP/PP 69873

SUMMARY: Proposes a subdivision of approximately 222 acres of land into 299 lots for single family residential development, 1 lot for a pump station, 1 lot for a gated entry, 2 lots for regional park purposes, 20 lots for landscaped slopes/open space and 17 lots for private streets.

Area Plan (AP) 98-2 and Zone Change (ZC) 98-3 were conditionally approved by the Planning Commission on October 7, 1998 and pertain to the development of subject Tentative Tract Map No. 15230

NOTIFICATION:

All federal, state, and county departments, divisions and agencies having cognizance of the affected area, the Foothill/Trabuco Specific Plan Review Board, the Marine Corps Air Station, the Rural Canyons Conservation Fund, and all property owners within 300 feet of this property.

GENERAL PLAN CONSISTENCY/ZONING COMPLIANCE:

Land Use Element: 1B Suburban Residential (.5-18 du/ac)

Community Profile: 1.2 Low Density Residential (.5-2 du/ac)

Specific Plan: Foothill/Trabuco Specific Plan
Bridlewood Residential (BWR) District

Proposed Density: 1.35 du/ac

This project, as conditioned, is consistent with and in conformance with the General Plan and its implementing documents.

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COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT:

The proposed project is covered by Final EIR No. 566 previously certified on June 2, 1998 and Addendum PA 980103. Prior to project approval, the Subdivision Committee must assert that, together, they are adequate to satisfy the requirements of CEQA for the proposed project.

EXISTING CONDITIONS:

The subject property is sloping undeveloped terrain.

DRAINAGE:

The subject property is located primarily within the Los Alisos Area Master Plan of Drainage (MPD). MPD Facility J01P09 is involved and requires construction. MPD fees of $550.00 per acre are required to be paid (within the portion of the project that is within the Los Alisos MPD).

SOUND CONSIDERATION:

This property area is impacted by intrusive noises. The extent of mitigation required can be determined in connection with an acoustical report which may be required when future development.

RECREATION AND OPEN SPACE:

Master Plan of Regional Recreation Facilities

Regional Park Dedication: The subdivider is required to dedicate in fee to the County of Orange Lots LL and MM for regional park purposes and an addition to the O'Neill Regional Park.

Master Plan of Regional Riding and Hiking Trails

Regional Trail Dedication:

The Live Oak Canyon Regional Riding and Hiking Trial, which is depicted within the Recreation Element of the General Plan, is aligned along the east side of and adjacent to El Toro Road and runs through a portion of Lot R. The subdivider is required to dedicate to the County of Orange a recreation easement for that portion of the subject Riding and Hiking Trail aligned through Lot R as well as improve said trail, both onsite and offsite, from the south property line near Valley Vista Way to the existing El Toro Road undercrossing located to the north.

Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated to the County of Orange within a recreation easement aligned east-west through the proposed project. A recreation easement for the local riding and hiking trail shall be dedicated to the County of Orange for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trail, both within and outside the future regional park, in addition to a connection from the staging area along the community spine road offsite to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers as well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area, shall be required.

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Trail Reroutes-Bikeway and Riding and Hiking Trails:

The Aliso Creek Class I Off-Road bikeway, the Live Oak Canyon Regional Riding and Hiking Trail and the El Toro Road Class II On-Road Bikeway will require re-routing plans during construction of the subject tentative tract. The subdivider is required to submit said re-route plans prior to the issuance of any grading permits.

Master Plan of Local Parks (Local Park Code)

The Local Park Code requirement for the subject tentative map is 2.392 net usable acres of park land based upon a proposal to build 299 dwelling units at a gross residential density of 1.35 du/ac (299 du x .008 ac/du).

The Local Park Code requirements for the subject tentative map will be satisfied through the payment of in-lieu fees prior to the issuance of building permits.

Resources Element – Open Space Component

Scenic Preservation Easements: The subdivider is required to dedicate to the County of Orange restricted scenic preservation easements over Lots R, CC, DD, EE, FF, GG, HH, II and JJ.

Landscape Plan: A landscape plan which includes the improvements and maintenance of the restricted scenic preservation easements will be required.

Urban Edge Treatment Plan/Viewshed Analysis: The subdivider is required to submit to the County of Orange for approval an urban edge treatment plan/viewshed analysis.

Master Plan of Countywide Bikeways

The Master Plan of Countywide Bikeways (MPCB) indicates a Class II On-Road Bikeway along the northbound lane of El Toro Road.

PUBLIC SERVICES AND UTILITIES:

Schools

This property is within the boundaries of the Saddleback Valley Unified School District. The developer is subject to the provisions of Assembly Bill AB 2926, or other mitigating measures designed to provide for school facilities and/or funding, such as community facilities districts.

Facilities Fee Programs

This project area is located in a facilities fee program area, as the program is defined in Section 7-9-702, Codified Ordinances of Orange County, for the funding of library service, fire station and sheriff substation facilities.

Water/Sewer

This project is within the boundaries of the Trabuco Canyon Water District. The District stated in their "will-serve" letter that the District will be capable of providing water and sewage disposal service to this development.

2882

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Water Quality Control

The Trabuco Canyon Water District operates in accordance with requirements prescribed by the California Regional Water Quality Control Board, San Diego Region.

Fire Protection and Safety

Existing and proposed fire protection services should be capable of providing an adequate level of fire protection services to this development.

This property is located in a very high fire hazard area due to wildland exposure.

County Service Area (CSA)

This property is within the boundaries of County Service Area No. 26.

CIRCULATION:

Scenic Highway Corridors

The Master Plan of Scenic Highways designates El Toro Road as a landscape/viewscape corridor.

Access/Highways/Streets/Roads

Access to the proposed development within the subject tentative tract map will be from El Toro Road, an unimproved major arterial highway, via Spine Street. Emergency access to the proposed development will be provided via Valley Vista Way.

Major Thoroughfare and Bridge Fee Program

This project lies within the area of benefit of the Foothill Circulation Phasing Program. The developer is required to pay fees in accordance with the adopted program.

This project lies within the area of benefit of the Foothill/Eastern Transportation Corridor. The developer is required to pay Foothill/Eastern Major Thoroughfare and Bridge fees in accordance with the adopted program.

This project lies within the proposed area of benefit of the Santiago Canyon Road Fee Program. The developer is required to pay Major Thoroughfare and Bridge fees in accordance with the adopted program.

This property lies within the area of benefit of the El Toro Road Fee Program. The subdivider is required to pay Major Thoroughfare and Bridge fees in accordance with the adopted program.

Off-Site Fee Program

This project will be responsible for participation in fee programs off-site which will involve expenditures in excess of $155,000.00. Accordingly, the provisions of Section 66452.6(a), Subdivision Map Act, do apply to this project.

2883
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COMMENTS FROM CIVIC GROUPS AND OTHERS NOTIFIED:

Comments were received from Ray Chandos-Secretary/Treasurer of the Rural Canyons Conservation Fund and the Foothill/Trabuco Specific Plan Review Board.

DEVIATIONS FROM STANDARDS OF DESIGN:

The subdivider may request deviations from County-approved standard design criteria in accordance with Section 7-9-291 of the Orange County Subdivision Code. In the absence of any approved deviation request or if there is a conflict between the tentative map and the County-approved standard design criteria, the County-approved standard design criteria will prevail.

Deviations Requested

1. Deviation from the Orange County Subdivision Code Section 7-9-283 (Man Made Slopes) to allow the Type "C" Slopes on certain lots to heights above the maximum permitted height of 20 feet.

2. Deviation from Standard Plan 1107 (Typical Sections) to allow an increase in the maximum permitted grade on "R" Street from 10% to 12%.

3. Deviation from Orange Count Subdivision Code Section 7-9-274 (Curved Local Street and Highway Radii) to allow for the reduction of the centerline radius to less than the required 250 feet as follows:

Street	Radius Requested (Feet)
"L"	215

2884

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SUBIVISION COMMITTEE ACTION:

Tentative Tract Map No. 15230 (Vesting) is approved, and the approval includes the listed deviations, the following 22 findings, and is subject to the 45 conditions which following the findings.

Findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the proposed subdivision, together with the provisions for its design and improvement, is in substantial compliance with the Foothill/Trabuco Specific Plan.

X. That the design and improvement of the proposed subdivision are suitable for the uses proposed, and the subdivision can be developed in compliance with the applicable zoning regulations pursuant to Section 7-9-254 of the Subdivision Code.

XI. That the tentative map is consistent with both Area Plan (AP) 98-2 and Zone Change (ZC) 98-3.

XII. That the Subdivision Committee has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

2885

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XIII. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XIV. The development of this project will not preclude or prevent the preparation of the Southern Subregion NCCP.

XV. That the discharge of waste from the proposed subdivision into the existing sewer system of the Trabuco Canyon Water District will not result in violations of existing requirements prescribed by the California Regional Water Quality Control Board, San Diego Region.

XVI. That the design of the subdivision and its improvements do provide, to the extent feasible, for future passive or natural heating or cooling opportunities as specified in Section 66473.1 of the Government Code (Subdivision Map Act).

XVII. That the following determinations apply to fees required by Sections 7-9-700 through 713, Codified Ordinances of Orange County:

A. Purpose of fees: Fire protection, paramedic, law enforcement, library, and general County services.

B. Use of fees: Construction of new fire station, sheriff substation, library, and general County facilities in newly developing areas which have inadequate service.

C. Relationship between use of fees and type of development: Dwelling units and commercial/industrial structures and their occupants require fire protection, paramedic, law enforcement, library, and general County services.

D. Relationship between need for facilities and type of project: Project is located in newly developing area which has inadequate fire protection, paramedic, library services, and sheriff substation and general County facilities.

E. Relationship between amount of fees and cost of the portion of the facilities attributable to the development: Fees represent project's pro rata share of the cost of the fire station, sheriff substation, library, and general County facilities.

XVIII. That because of participation in fee programs for off-site improvements, this project will qualify for consideration under Section 66452.6 of the Subdivision Map Act.

XIX. That the deviations from the standards of design set forth in the Subdivision Code Subdivision Committee Report were considered and found to be justified based upon the reasons set forth in the Subdivision Committee Report or special circumstances which apply.

XX. That the Local Park Code Requirement can be met by the payment of in-lieu fees.

2886

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XXI. That the monitoring requirements of Public Resources Code Section 21081.6 (AB 3180) will be considered as having been met in that the design of the subject project, the satisfaction of the requirements of the County's building, grading, fire, and other codes and ordinances and the satisfaction of the conditions of approval applied to the project will implement the mitigation measures contained in EIR No. 566 an Addendum PA 980103.

XXII. That the applicant is hereby provided notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval as well as the reports and actions accompanying this approval and that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun

Conditions:

Codes (for time of performance/type of condition)

(G)	Grading Permit	(S)	Standard Condition
(R)	Recordation	(SS)	Site Specific Condition
(B)	Building Permit		
(U)	Use and Occupancy		
(SL)	Sale, Lease, or Rental		
(NA)	Timing not Specified		

NOTE: Any improvements required prior to the recordation of a final map shall be completed or the subdivider shall enter into an agreement with the County of Orange guaranteeing the improvements. Said agreement shall be accompanied by financial security guaranteeing the installation of the improvements at the time stated in the agreement.

1. CP NA NA SPECIAL

Approval of Vesting TTM 15230 is subject to final approval of Zone Change 98-3 and Area Plan 98-2. Prior to recordation of VTTM 15230, the Manager, Current Planning shall determine that it is in substantial compliance with final approved Zone Change 98-3 and Area Plan 98-2. Otherwise, a revised tentative map approved by the Subdivision Committee shall be required.

2. Prior to the issuance of any grading permits, the applicant shall satisfy the following conditions from the draft Planning Commission Resolution for Area Plan 98-2.

4. Grading Review
5. Tree Preservation Plan
6. Federal Endangered Species
7. Geology Report
8. Drainage
9. Cross-Lot Drainage
10. Vector Control
11. Archaeo Observation & Salvage
12. Paleo Observation & Salvage
13. Grading Notes
14. Construction Noise
15. Performance Bond
16. Re-Routing Trails

2887

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3. Prior to the recordation of a subdivision map which creates residential building sites, the subdivider shall satisfy the following conditions from the draft Planning Commission Resolution for Area Plan 98-2:

17. Preliminary Grading Completed
18. Open Space Dedication
19. Recreational Trails
20. Ranch House Clean Up
21. Landscape Plan
22. Fire Station
23. Library
24. Sheriff Station
25. Off-Site Fuel Modification
26. Affordable Housing

4. SG SG G LOFFEL WALLS

Prior to the issuance of a grading permit, a letter of justification and design plans for the proposed loffel walls shall be presented to and approved by the Manager, Subdivision and Grading Services.

5. BP BP RGB RESIDENTIAL ACOUSTICAL REPORT

All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dba CNEL in all habitable rooms and a source specific exterior standard of 65 d.b.a. CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

A. Prior to the recordation of a subdivision map or prior to the issuance of grading permits, as determined by the Manager, Building Permits, the applicant shall submit an acoustical analysis report to the Manager, Building Permits, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report.

6. SG SG RG DRAINAGE STUDY

Prior to issuance of any grading permits, the following drainage studies shall be submitted to and approved by the Manager, Subdivision and Grading:

A. A drainage study of the subdivision including diversions, off-site areas that drain onto and/or through the subdivision, and justification of any diversions; and

B. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and

C. Detailed drainage studies indicating how the tract map grading, in conjunction with the drainage conveyance systems including applicable swales, channels street flows, catch basins, storm drains and flood water retarding, will allow building pads to be safe from inundation from rainfall runoff which may be expected from all storms up to and including the theoretical 100-year flood.

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7. SG SG RG DRAINAGE IMPROVEMENTS

A. Prior to the issuance of any grading permits, the applicant shall in a manner meeting the approval of the Manager, Subdivision and Grading:

1) Design provisions for surface drainage; and

2) Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

3) Dedicate the associated easements to the County of Orange, if determined necessary.

B. Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only) said improvements shall be constructed in a manner meeting the approval of the Manager, Construction.

8. SG SG R MPD PARTICIPATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only), the subdivider shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, Subdivision and Grading, including payment of fees and the construction of the necessary facilities.

9. SG SG R EASEMENT SUBORDINATION

Prior to the recordation of an subdivision map (except maps for financing and conveyance purposes only), the subdivider shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, for review and approval.

10. SG SG G GRADING DEVIATION

Prior to the issuance of any grading permits, if the applicant submits a grading plan and the Manager, Subdivision and Grading, determines that it shows a significant deviation from the grading on the approved tentative tract map and Area Plan 98-2, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative map and/or area plan application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required

11. CP HP R ACCESS

Prior to recordation of any subdivision map that creates residential building sites, a 400 foot wide access easement across Lot A (Spine Street) from Lot MM to Lot LL shall be dedicated to the County of Orange in a manner meeting the approval of the Manager, Harbors, Beaches & Parks in consultation with the Manager, Subdivision and Grading. The primary purpose of the access easement is to provide for continuity of the wildlife corridor and O'Neill Regional Park.

Signs identifying a wildlife crossing area shall be posted within 100 feet of each point where the street transverses the wildlife corridor.

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12. Master Plan of Regional Recreation Facilities:

Regional Park Dedication:

Lots LL and MM shall be dedicated to the County as an addition to O'Neill Regional Park, exclusive of manufactured slopes, which should be retained in separate lots. Regional park dedication shall be in done in compliance with the following conditions:

A. Prior to the recordation of the first subdivision map that creates residential building sites, the subdivider shall make an irrevocable offer of dedication in fee to the County of Orange, or its designee, of Lots LL and MM, exclusive of manufactured slopes, for regional park purposes in a form approved by the Chief, Harbors, Beaches and Parks, Program Management & Coordination suitable for recording. Said offer shall be free and clear of money and all other encumbrances, liens, leases, fees, easements (recorded and unrecorded), assessments and unpaid taxes, except those meeting the approval of the Chief, Harbors, Beaches and Parks, Program Management and Coordination. Until such time as the offer is accepted by the County or its designee, the subdivider or assigns and successors shall be responsible for maintenance and upkeep of the above-referenced lots.

B. Prior to the recordation of any subdivision map that creates residential building sites, the subdivider shall survey and monument all lots dedicated for regional park purposes, and stake the property line of the dedication area(s) with durable, long-lasting, high visibility markers at all angle points and line of sight obstructions to the satisfaction of the Manager, Harbors Beaches & Parks.

C. Prior to recordation of the regional park dedication, the existing old ranch house sited within future regional park land shall be demolished except for the rock work subject to the approval of the Chief, HBP/Program Management & Coordination.

13. Master Plan of Regional Riding and Hiking Trails/County Bikeways:

Regional Trail Dedication:

A. The Live Oak Canyon Regional Riding and Hiking Trail is depicted within the Recreation Element aligned through Lot R, adjacent El Toro Road, through the proposed project. A recreation easement for this riding and hiking trail shall be dedicated to the County which includes trail improvements, including trail improvements just offsite along El Toro Road, north to the intersection of El Toro Road and the community spine road, as well as north to the existing under crossing of El Toro Road, in compliance with the following conditions:

1. Prior to the recordation an applicable subdivision map that creates residential building site the subdivider shall:

a. Irrevocably offer a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. The subdivider shall not grant any easement(s) over the property subject to the recreation easement unless such easements are first reviewed and approved by the Chief, HBP/Program Management & Coordination.

b. Design the necessary improvements(both onsite and offsite) for the trail, including, but not limited to grading, erosion control, signage and fencing, as applicable, in manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Subdivision & Grading. Further, the subdivider shall enter into an agreement,

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accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

2. Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Chief, HBP/Program Management & Coordination, to ensure that the proposed grading provides for, will not interfere with, or preclude the installation of the riding and hiking trail in a location and in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to the issuance of final certificates of use and occupancy and the release of financial security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Construction.

B. Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated to the County within a recreation easement aligned east-west through the proposed project.

A recreation easement for the local riding and hiking trail shall be dedicated to the County for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trail, *both* within and outside the future regional park, in addition to a connection from the staging area along the community spine road *offsite* to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers as well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area shall be done in compliance with the above.

C. Trail Reroutes/Bikeway and Riding and Hiking Trails:

1. The Aliso Creek Class I, paved Off-Road Bikeway, as well as the Live Oak Canyon Regional Riding and Hiking Trail will require re-routing plans during construction of the proposed project. Therefore, the following condition shall apply:

   Prior to any grading and/or construction activities which precludes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted subject to the approval of the Chief, HBP/Program Management & Coordination.

2. The same condition shall also be applicable to the Class II On-Road Bikeway aligned along the north bound lane of El Toro Road contiguous the proposed project.

14. Master Plan Local Parks (Local Park Code):

The Local Park Code requirement is 2.392 acres of park land based upon a proposal to build 299 residential units at a gross density of 1.35 du/ac (299 x .008 ac/du).

Prior to issuance of building permits the Local Park Code requirement shall be met by *payment of in-lieu fees*.

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15. Resources Element (Open Space Component):

A. Dedicate Restricted Scenic Preservation Easement:

Fuel modification areas, manufactured slopes and remedial grading areas sited between the regional park dedication area and residential development, the fuel modification and native enhancement transition area contiguous El Toro Road, and northerly most fuel modification and native enhancement transition area, shall be placed within restricted scenic preservation easement areas. These areas include Lots R, CC, DD, EE, FF, GG, HH, II and JJ. *(NOTE: Manufactured slopes now depicted within Lots MM and LL the regional park, should be depicted within separate open space lots and restricted scenic preservation easements placed over them).* Restricted scenic preservation easements shall be dedicated to the County of Orange in compliance with the following conditions:

1. Prior to the recordation of any applicable final tract map which creates residential building sites, the subdivider shall make an irrevocable offer to dedicate an easement to the County of Orange or its designee over Lots R, CC, DD, EE, FF, GG, HH, II, and JJ, for restricted scenic preservation purposes in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. in consultation with the Manager, Current Planning. Maintenance, upkeep and liability for said easement area shall remain the responsibility of the subdivider or assigns and successors (i.e., homeowner's association) or current underlying owner(s) of said easement area and shall not be included in said dedication offer. The subdivider shall not grant any easement over any property subject to said easement unless such easements are made subordinate to said easement offer in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

2. The subdivider shall note limitations and restrictions for said easement by a reference on the final map to a previously recorded document or by the recordation of a separate document concurrent with the recordation of subject map in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to recordation of any applicable final tract map or as determined by the Chief, HBP Program Management & Coordination, the subdivider shall survey and monument all parcels of the land to be dedicated for restricted scenic preservation easement purposes, and submit plans showing how the development boundaries of the restricted scenic preservation easement parcel(s) is marked to be visible for monitoring purposes by Grantee to the satisfaction of the Chief, HBP/Coastal & Historical Facilities.

B. Public Area Landscaping:

The areas to be irrevocably offered to the County of Orange for restricted scenic preservation purposes shall be landscaped, equipped for irrigation, as applicable, and improved in accordance with an approved landscape plan as stated below:

1. Preliminary Plan

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Chief, HBP/Program Management &

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Coordination. Said plan shall take into account Area Plan 98-2, County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487(Water Conservation Measures), and Board Resolution 90-1341(Water Conservation Implementation Plan).

2. Detailed Plan

Prior to the issuance of any building permits, the applicant shall submit a detailed landscape plan for approval to the Manager, Subdivision & Grading, in consultation with the Chief, HBP/Program Management & Coordination. Detailed plans shall show the detailed irrigation and landscaping design.

3. Installation Certification

Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, the applicant shall install said improvements and have the installation certified by a licensed landscape architect or licensed landscape contractor, as having been installed in accordance with the approved detailed plans. The applicant shall furnish said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable to the Manager, Construction, and the Manager, Building Inspection, prior to the issuance of any certificates of use and occupancy.

C. Urban Edge Treatment Plan/Viewshed Analysis:

Prior to the approval of any use permits for residential structures, an urban edge treatment plan/viewshed analysis shall be submitted to the County subject to the approval of the Chief, HBP/Program Management & Coordination. The Urban edge treatment plan/viewshed analysis shall comply with the following criteria:

1. Establish building height and setback limits (i.e., Building Envelope Formula) and grading treatments to preserve views attained from within existing and proposed parks and open space areas as well as from along designated scenic highways (i.e., El Toro Road) as identified by the Master Plan of Regional Recreational Facilities (Recreation Element), Open Space Component (Resources Element) and Master Plan of Scenic Highways (Transportation Element) respectively. Moreover, views from St, Michaels Abbey, the Ramakrishna Monastery and neighboring Hidden Ridge Community shall also be addressed. Viewshed analysis cross sections should be provided as seen from these areas to proposed residential structures.

2. Eliminate and/or reduce to the greatest extent possible conflicts which may impact the existing and future recreational utility of a regional recreation recreational facility and open space areas.

3. Eliminate and/or reduce to the greatest extent possible potential operation and maintenance problems resulting from encroachment, unauthorized entry, private development fuel modification requirements, flood control facilities, and maintenance of privately landscaped manufactured slopes and maintenance roads as they relate to future and existing regional recreational facilities.

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4. Establish appropriate landscape/fuel modification treatments and wall and/or fence treatments including berms to provide appropriate transition from regional recreational facilities and open space areas to private development areas.

5. Establish smooth and gradual transition between graded slopes and existing slopes within the park and open space areas using variable slopes (2:1-4:1).

6. Obscure slope drainage structures with a variety of plant materials.

7. Incorporate architectural and design techniques into the project in order to enhance off-site views attained from within parks and significant open space.

8. All landscaping of manufactures slopes interfacing significant open space areas should be exclusively native, as applicable, to preserve the biological and scenic integrity of regional corridors, open space and park lands.

16. FF GBU FIRE HYDRANTS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit a fire hydrant location plan for the review and approval of the Fire Chief.

17. FF RBU AUTOMATIC FIRE SPRINKLERS

A. Prior to the recordation of a subdivision map, which creates residential building sites, a note shall be placed on the map stating that all structures shall be protected by an automatic fire sprinkler system, in a manner meeting the approval of the Fire Chief.

18. FF RG FIRE ACCESS ROADS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall obtain approval of the Fire Chief for all fire protection access easements and shall dedicate them to the County.

B. Prior to the issuance of any grading permits, the applicant shall submit and obtain approval of plans for all roads, streets and courts, public or private, from the Fire Chief in consultation with the Manager, Subdivision and Grading Services. The plans shall include the plan view, sectional view, and indicate the grade and width (28-ft. minimum) of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be approved by the Fire Chief and if needed, clearly marked when a dead-end street exceeds 150 feet or when otherwise required. Applicable CC&R's, or other approved documents, shall contain provisions which prohibit obstructions such as speed bumps/humps, control gates or other modifications within said easement or access road unless prior approval of the Fire Chief is granted. Grade shall not exceed 10%. Up to 15% is allowed when all structures served by the road are protected by automatic sprinklers.

C. Street signs. A note shall be placed on the fire protection access easement plan indicating that all street/road signs shall be designed and maintained to be either internally or externally illuminated in a manner meeting the approval of the Fire Chief.

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19. FF BU STREET MARKINGS

Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit plans and obtain approval from the Fire Chief for fire lanes on required fire access roads less than 36 feet in width. The plans shall indicate the locations of red curbing and signage. A drawing of the proposed signage with the height, stroke and coloring of lettering and the contrasting background color shall be submitted to and approved by the Fire Chief.

20. F F R TRAFFIC SIGNAL PREEMPTION

Prior to the recordation of the applicable subdivision map which creates residential building sites, as determined by the Fire Chief in consultation with the Manager, Subdivision and Grading Services, the subdivider shall enter into an agreement with the County for the installation of traffic signal preemption equipment for the surrounding controlled intersections. Said agreement shall be accompanied by financial security.

21. F F RRB FIRE HAZARD NOTIFICATION

A. A Special Fire Protection Area Notification. Prior to the recordation of any final tract map which creates residential building sites, the subdivider shall place a note on the map meeting the approval of the Fire Chief that the property is in a **"Special Fire Protection Area"** and must meet all requirements for development within the area or file for an exclusion with the Fire Chief.

B. Special Fire Protection Area Development. Prior to issuance of a building permit, the applicant shall meet all requirements for development and construction within a Special Fire Protection Area as identified in Orange County Ordinance 3960, including increased street widths, Class A roof assemblies, fire sprinklers, etc.

22. F F G FUEL MODIFICATION

A. Prior to the issuance of a preliminary grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services and Subdivision and Grading Services of a conceptual fuel modification plan and program.

B. Prior to the issuance of any precise grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services, and Subdivision and Grading Services of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to the structures by vegetation, the CC&R's, or other approved documents, shall contain provisions for maintaining the fuel modification zones including the removal of all dead and dying vegetation subject to triennial inspections.

23. F F G ACCESS GATES

Prior to the issuance of any grading permits, the applicant shall submit and obtain the Fire Chief's approval for the construction of any gate across required Fire Authority access roads/drives. Contact the Orange County Fire Authority at (714) 744-0403 for a copy of the "Guidelines for Fire Authority Emergency Access".

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24. SG SG B FOOTHILL/EASTERN TRANSPORTATION CORRIDOR

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fees Program for the Foothill/Eastern Transportation Corridor.

25. SG SG B FOOTHILL CIRCULATION PHASING

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for the Foothill Circulation Phasing Program.

26. SG SG B SANTIAGO CANYON ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for Santiago Canyon Road.

27. SG SG B EL TORO ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for El Toro Road.

28. SG SG B ARTERIAL RIGHT-OF-WAY

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall dedicate ultimate half-width road right-of-way to major arterial highway standards across the property frontage in a manner meeting the approval of the Manager, Subdivision and Grading Services.

29. SG SG R SANTIAGO CANYON ROAD

Prior to recordation of any subdivision map that creates residential building sites, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manager, Subdivision and Grading Services.

30. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall provide a cash deposit for the difference in cost of designing and constructing the roadway improvements proposed with the project along the property frontage as compared to the cost associated with the ultimate configuration of El Toro Road, as determined by PF&RD/Program Development Division, all in a manner meeting the approval of the Manager, Subdivision and Grading Services.

31. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall design and construct a northbound right turn lane and a southbound left turn lane on El Toro Road at the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading Services.

2896

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32. SG SG G TRAFFIC SIGNAL

Prior to recordation of a subdivision map that creates residential building site, the applicant shall design and construct a traffic signal at the intersection of El Toro and the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading in consultation with the Manager, Program Development Division.

33. SG SG G SIGHT DISTANCE

Prior to issuance of a grading permit, adequate sight distance shall be provided at all intersections per Standard Plan 1117, and at all driveways, in a manner meeting the approval of the Manager, Subdivision and Grading Services; this includes any necessary revisions to the plan to remove slopes and other encroachments from the Limited Use Area.

34. SG SG G "C" STREET

Prior to the issuance of a grading permit, the applicant shall design "C" Street 40' in width, curb to curb, with sidewalk on both sides.

35. SG SG G UTILITY EASEMENT

Prior to the issuance of a grading permit, the applicant shall design both sides of all of the private streets with a 3' public utility easement.

36. SG SG G GATED ENTRY

Prior to the issuance of a grading permit, the applicant shall design the gated entry area to facilitate vehicular turnaround movements prior to reaching the gate in a manner meeting the approval of the Manager, Subdivision and Grading Services.

37. SG SG R LOT 296

Prior to recordation of a final map, the applicant shall design Lot 296 with 20' minimum of property frontage.

38. SG SG G EMERGENCY ACCESS

Prior to the issuance of a grading permit, the applicant shall design the emergency only access between "B" Street and existing Valley Vista in a manner meeting the approval of the Manager, Subdivision and Grading Services.

39. SG SG R PVT STREET NOTIFICATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall place a note on the map that states:

"The private streets constructed within this map shall be owned, operated and maintained by the developer, successors or assigns. The County of Orange shall have no responsibility therefore unless pursuant to appropriate sections of the Streets and Highways Code of the State of California, the said private streets have been accepted into the County Road System by appropriate resolution of the Orange County Board of Supervisors."

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40. SG SG R STREET IMPROVEMENTS

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall design and construct the following improvements in accordance with plans and specifications meeting the approval of the Manager, Subdivision and Grading:

A. Streets, bus stops, on-road bicycle trails, street names, signs, striping and stenciling.

B. The water distribution system and appurtenances which shall also conform to the applicable laws and adopted regulations enforced by the County Fire Chief.

C. Underground utilities (including gas, cable, electrical and telephone), streetlights, and mailboxes.

41. HP HP R ACCESS EASEMENT

Prior to, or concurrent with the recordation of Tentative Tract 15230, an Official County Vehicular Road Access Easement shall be recorded by separate instrument which notes limitations and restrictions for this easement subject to the approval of the Chief, PFRD/Harbors, Beaches and Parks, Program Management & Coordination. It shall permit access over Spine Street (Lot A) of Official County vehicles for regional park management purposes.

42. The following Mitigation Measures from Addendum PA980103 are added as conditions of approval:

SC 2-4	SC 2-5	SC 2-6
SC 2-12	SC 2-13	SC 2-14
SC 7-2	SC 7-9	SC 9-2
SC 9-10	AM 8-15	

43. CP CP INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit or, in the alternative, the relinquishment of such permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

44. CP CP

Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents, or employees to attack, set aside, void, or annual approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

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45. CP NOTIFICATION

This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval. You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

I hereby certify that Tentative Tract Map No. 15230 (Vesting) was approved upon the foregoing conditions by the Orange County Subdivision Committee, on October 21, 1998, and will expire on October 21, 2001.

Patrick Stanton

P. J. Stanton, Manager
Subdivision and Grading Services
Chairperson, Subdivision Committee

PJS/VB:no[W]

RESOLUTION NO. 98-14
RESOLUTION OF THE PLANNING COMMISSION
OF ORANGE COUNTY, CALIFORNIA

On motion of Commissioner Goacher, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Planning Commission conducted public hearings on Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the area known as Saddleback Meadows (aka Bridlewood); and

WHEREAS, the Planning Commission has considered EIR Addendum PA980103 and, by separate Planning Commission Resolution, found that it satisfies the requirements of CEQA for this project.

NOW, THEREFORE, BE IT RESOLVED that this Commission makes the following findings:

1. ZC98-3/AP98-2 is consistent with the objectives, policies, general land uses and programs specified by the General Plan.

2. AP98-2 is consistent with the provisions of the Zoning Code.

3. The location, size, design and operating characteristics of AP98-2, as conditioned, will not create conditions or situations that may be incompatible with other permitted uses in the vicinity.

4. AP98-2 will not result in conditions or circumstances contrary to the public health and safety and the general welfare.

5. AP98-2, as conditioned, satisfies the requirements of section 7-9-711 regarding public facilitie

6. The RE (PD), "Residential Estates (Planned Development)," site development standards regarding building site areas, building site coverage, area per unit, and number of dwelling uni have been satisfied by AP98-2.

7. Condition of Approval No. 27 requires a use permit be approved which is consistent with AP98-2. A use permit may be approved for the entire project site or portions of the project sit

8. AP98-2, as conditioned, will provide significant public benefits in the form of major recreational trails, an important wildlife corridor for the Natural Communities Conservation Program and a large addition to O'Neill Regional Park.

BE IT FURTHER RESOLVED that this Commission recommends that the Board of Supervisors approve ZC98-3.

BE IT STILL FURTHER RESOLVED that this Commission approves AP98-2 subject to the following conditions:

1. CP NA NA TIME LIMIT
Approval of Area Plan 98-2 is subject to approval of Zone Change 98-3 by the Board of Supervisors. Upon such approval, Area Plan 98-2 is valid for a period of 48 months thereafte If the preliminary grading permit is not issued within such period of time, this approval shall b terminated and Area Plan 98-2 shall thereafter be null and void.

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2. CP CP NA REVOCATION
Failure to abide by and faithfully comply with any and all conditions attached to this approv action shall constitute grounds for the revocation of said action by the Orange County Planning Commission.

3. CP CP G TENTATIVE TRACT MAP
Prior to the issuance of any grading permits, Tentative Tract Map 15230 shall be approved by the Subdivision Committee after a public hearing. Said tentative tract map must be found consistent with Area Plan 98-2.

4. CP CP G GRADING REVIEW
Prior to the issuance of any grading permits, the Manager, Current Planning Services, shall determine that the grading plan is consistent with Area Plan 98-2 and the approved tree preservation plan.

5. HP HP G TREE PRESERVATION PLAN
Prior to the issuance of any preliminary grading permit, a tree preservation plan shall be prepared which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and on-half feet above ground level). The tree preservation plan shall be consistent with the Area Plan 98-2 and the Foothill/Trabuco Specific Plan and approved by the Manager, Harbors Beaches, and Parks. The plan shall be signed and certified by a biologist or arborist.

6. EP SG/EP G FED ENDGD SPEC ACT
Prior to the issuance of any preliminary grading permit, approval of any activity that involve removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, th applicant shall obtain written proof from the U.S. Fish and Wildlife Services that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning.

7. SG SG G GEOLOGY RPT
Prior to the issuance of any grading permits, the applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall include the information and be in a form as required by the Grading Manual.

8. SG SG G DRAINAGE
Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, provide:

A. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

B Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

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9. SG SG G CROSS-LOT DRAINAGE

Prior to the issuance of any grading permits, and if determined necessary by the Manager, Subdivision and Grading, a letter of consent, in a form approved by the Manager, Subdivision and Grading, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to the issuance of any grading permit. Acceptance of cross-lot drainage on lots within the tract map boundaries shall be noted on the recorded map.

10. SG SG G VECTOR CONTROL

Prior to the issuance of any preliminary grading permits, the subdivider shall provide evidence to the Manager, Subdivision and Grading, that the Vector Control District has surveyed the site to determine if vector control measures are necessary. If warranted, the developer shall conduc such measures in a manner meeting the approval of the Manager, Subdivision and Grading.

11. HP HP G ARCHAEO OBS & SALVAGE

Prior to the issuance of any preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified archeologis has been retained, shall be present al the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeologist shall submit a follow-up report to the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, an analysis of any artifacts fond and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigatic and disposition of the resources, shall be subject to the approval of the Manager, Harbors, Beaches & Parks.

12. HP HP G PALEO OBS & SALVAGE

Prior to the issuance of an preliminary grading permit, the project applicant shall provide writt evidence to the Manager, Subdivision and Grading, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered. the paleontologist shall determine appropriate actions, in cooperation with the project develop which ensure proper exploration and/or salvage. Excavated finds shall be offered to the Coun of Orange, or its designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossil These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, Harbors, Beaches & Parks.

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13. SG SG G GRADING NOTES

Prior to the issuance of any grading permits, the following guidelines shall be included in the "Notes Section" of the grading plans meeting the approval of the Manager, Subdivision and Grading.

A. During all grading and construction operations, all oak trees on the site, located adjacent to the approved limits of grading and identified in an approved Tree Management/Preservation Plan as trees to be preserved, shall be adequately fenced and protected from encroachment by grading and construction equipment. Grading, placement of fill, and storage of building materials and heavy equipment, shall be prohibited within the dripline of any tree identified for preservation as part of an approved Tree Management/Preservation Plan.

B. If required, retaining walls shall be used to protect the existing grades of oaks identified for preservation from surrounding cut and fill. However, these should not alter drainage from around the trees.

C. No type of surface, whether pervious or impervious, shall be placed within a six-foot radius of oak tree trunks. Where surfacing cannot be avoided, alternative types of paving should b utilized, such as gravel or porous brick with sand joints.

D. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

E. Natural drainage courses and natural grades outside the remedial grading impact area in proximity to and providing seasonal irrigation to oak trees shall not be altered.

F. In proximity to oak trees, only one trench should be dug to accommodate all utility lines. Where necessary, the impacted trees should be carefully pruned by an arborist in proportior to the total amount of root zone lost.

14. BP BP G CONSTRUCTION NOISE

A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits, that:

1. All construction vehicles or equipment, fixed or mobile, operated within 1000' of a dwelling shall be equipped with properly operating and maintained mufflers.

2. All operations shall comply with Orange County Codified Ordinance Division 6.(Noise Control).

3. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations c the front sheet of the grading plans, will be considered as adequate evidence of compliance with this condition.

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15. CP SG G PERFORMANCE BOND
Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, Subdivision and Grading.

16. HP HP G RE-ROUTING
Prior to the issuance of a preliminary grading permit, which includes the utilization of either th Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted by the applicant and approved by the Manager, Harbors, Beaches and Parks.

17. CP SG R
Prior to the recordation of any subdivision map which creates residential building sites, the preliminary grading activity for all of Area Plan 98-2 shall be completed to the satisfaction of the Manager, Subdivision and Grading.

18. HP HP R OPEN SPACE
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate to the County of Orange a minimum of seventy (70) percent of the project site as open space in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. The open space dedication shall be for: (1) regional park, and (2) restricted scenic preservation purposes. The Manager, Harbors, Beaches & Parks shall determine the final boundary between these open space acres.

Within the regional park area, the Manager, Harbors, Beaches & Parks shall determine what improvements, if any, shall be made. If determined appropriate by the Manager, Harbors, Beaches & Parks, the applicant shall be required to provide those improvements as shown and discussed in the Area Plan 09-2.

Within the restricted scenic preservation easement area, after dedication, no grading, structures (including stables and corrals), or commercial agriculture activities shall be permitted in this area. River rock walls not to exceed three feet, approved Loffel walls, and open fencing shall l permitted. An entry gate and identification sign shall be permitted subject to approval of a site development or use permit for such use. Future fuel modification, landscaping, and tree preservation shall be permitted subject to prior approvals granted by the Planning Commission

19. HP HP R RECREATIONAL TRAILS
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate a recreation easement for those bikeways and regional riding and hikir trails shown and discussed in Area Plan 98-2 in a manner meeting the approval of the Manage Harbors, Beaches & Parks. Also, the applicant shall design the necessary improvements and enter into an agreement, accompanied by financial security, with the County of Orange to install the necessary improvements in a manner meeting the approval of the Manager, Harbors Beaches & Parks.

20. HP HP R CLEANING UP
Prior to the recordation of any subdivision map that creates residential building sites, the existing old ranch house and all abandoned automobiles shall be removed in a manner meetin the approval of the Manager, Harbors, Beaches & Parks.

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21. HP HP R LANDSCAPE PLA

Prior to the recordation of any subdivision map which creates residential building sites, the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on preliminary landscape plan showing maj plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Manager, Harbors, Beaches & Parks. Said plan shall take in account the County Standard Plans for landscaped areas, adopted plant palette guides, applicable scenic and Foothill Trabuco Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

22 EP EP FIRE STATION FACILITY

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial securit

23. EP EP LIBRARY FACILITY

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shal be accompanied by financial security.

24. EP EP SHERIFF STATION

Prior to the recordation of an subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning.

25. EC F F FUEL MODIFICATION

Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall demonstrate to the satisfaction of the Fire Chief that necessary fuel modificatior in off-site locations will be maintained in perpetuity.

26. EP EP R AFFORDABLE HOUSING

Prior to the recordation of a subdivision map that creates residential building sites, the landowner shall provide a cash contribution to the County's General Plan Trust Fund. The specific methodology and amount of said contribution shall be subject to the approval of the Manager, Environmental & Project Planning. These funds shall be directed to support the County's overall efforts toward providing affordable housing, including but not limited to, future updates of the Orange County Housing Element and related programs for maintaining existing affordable housing and providing new affordable housing opportunities.

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27. CP CP B — USE PERMIT

Prior to the issuance of any building permits for residential structures, the applicant shall submi a use permit application for review by the Foothill/Trabuco Review Board and approval by the Planning Commission after a public hearing. Said use permit shall include, but not be limited to, the location of all structures and uses, precise landscaping plan, precise fuel modification plan and program, grading plan, and architectural plans for all structures. Said use permit must be found consistent with Area Plan 98-2.

28. F F GBU — FUEL MOD PLAN

Prior to the approval of the use permit to construct residential structures, the applicant shall obtain the Fire Chief's approval, in consultation with the Manager, Environmental and Project Planning, of a precise fuel modification plan and program. The plan shall indicate the propose means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of combustible vegetation and the planting of drought tolerant fire resistant plants. However, only the minimum necessary fuel modification shall be approved by the Fire Chief. All practical mitigation measures to minimize the need for fuel modification shall be recommended by the Fire Chief such as use of non-combustible construction materials, interior fire sprinkler system and double-glassed windows. The require fuel modification shall be performed in a manner to minimize impacts on the natural environment as much as possible. The fuel modification plan shall then become effective after the Planning Commission approves the use permit.

29. SG SG B — ROAD REE PROG

Prior to the issuance of building permits for residential construction, the applicant shall pay fee for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, Subdivision and Grading.

A. Foothill Circulation Phasing Program
B. Foothill/Eastern Transportation Corridor
C. El Toro Road
D. Santiago Canyon Road

30. HP HP R — LOCAL PARK FEES

Prior to the issuance of building permits for residential construction, the applicant shall pay in-lieu fees per the Local Park Code Requirements.

31. FTSP CP B — SCHOOL FEES

Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the Manager, Current Planning, that he has reached a mitigation agreement with the District for th subject project proposal.

32. CP NA NA — INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because issuance of this permit. Applicant will reimburse the County for any court costs and attorney fees which the County may be required by a court to pay as a result of such action. The Coun may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

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AYES: Commissioners Nielsen, Goacher, Long, McBurney

NOES: Commissioners Moody

ABSENT: Commissioners

I HEREBY CERTIFY that the foregoing Resolution No. 98-14 was adopted on October 7, 1998 by the Orange County Planning Commission.

ORANGE COUNTY PLANNING COMMISSION

by Thomas B. Mathews, Executive Officer

SADDLEBACK MEADOWS
ADDENDUM PA980103
Mitigation Measures

SOILS AND GEOLOGY

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, off-site grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the on-site material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation

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shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-13 Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-14 Prior to the issuance of any grading permits, the applicant shall provide, in accordance with criteria supply by PDS, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Monitoring Programs Division.

BIOLOGICAL RESOURCES

MITIGATION MEASURES

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement.

SC 7-9 Prior to the issuance of grading permits, the applicant shall prepare a habitat restoration plan for all areas proposed for revegetation of coastal scrub habitat to the satisfaction of the Administrator / Planning and Zoning. As part

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investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PFRD/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

Paleontology

SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pregrade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PFRD/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their present repository. This mitigation measure has been completed.

2910

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ATTACHMENT E

PUBLIC COMMENTS

2911

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October 21, 1998

Pat Stanton, Chair
Subdivision Committee
County of Orange
300 North Flower Street, Room 503
Santa Ana, California 92702

Re: *Saddleback Meadows: Public Hearing re Tentative Tract Map Nos. 15230 and 15784*

Dear Mr. Stanton:

On behalf of the Norbertine Fathers of Orange, the Saddleback Meadows Land Conservancy LLC, and the Vedanta Society of Southern California, we oppose the approval of Tentative Tract Map Nos. 15230 and 15784 (collectively, the "Tract Maps") on the basis of each of the previously-stated objections to Zone Change 98-3 and Area Plan 98-2 which are set forth in the letters attached hereto as Exhibits "E" through "J" inclusive. We believe that such objections apply with equal force to the Tract Maps and, accordingly, we incorporate them herein as if set forth in full hereat.

Tentative Tract Map No. 15230 ("TT 15230") would allow the Saddleback Meadows property to be developed as a 299-unit, single-family detached housing project (the "299-Unit Project" or the "Project"). In addition to the objections to the 299-Unit Project which we have already stated on behalf of our clients, we further object to proposed TT 15230 (and its companion financing map) on the grounds listed in Exhibit "A" attached hereto and on each of the following grounds:

A. <u>The Subdivision Committee Should Continue Its Hearing on the Tract Maps Until the FTSP Review Board Has Had an Opportunity to Submit Its Recommendations Thereon.</u>

The bylaws of the Foothill/Trabuco Specific Plan Review Board (the "FTSP Review Board"), which are set forth in Appendix D to the Foothill/Trabuco Specific Plan (the "Specific Plan"), specifically provide at page D-3 that the FTSP Review

Board is to review all "Subdivision Maps" covered by the Specific Plan and to report its findings thereon to the appropriate department of the County of Orange which, in this case, would be the Subdivision Committee. The bylaws also provide that the FTSP Review Board is to be afforded a minimum of twenty-one (21) days within which to complete its assigned task and to report its recommendations. Under the bylaws, only the FTSP Review Board is entitled to *waive* this 21-day requirement.

Less than 21 days ago, County staff apparently transmitted various materials relating to the Tract Maps to the members of the FTSP Review Board, and thus the Subdivision Committee is not authorized to proceed with its October 21 hearing on the Tract Maps because to do so would be a clear violation of the Specific Plan. As such, the Subdivision Committee should continue its hearing on the Tract Maps until the FTSP Review Board has been afforded adequate time to review and report back on the Maps. Indeed, since the Tract Maps are contingent upon the approval of Zone Change 98-3 which will not even be voted on by the Board of Supervisors until November 3 at the earliest, there is absolutely *no* reason that the Subdivision Committee's hearing on the Tract Maps must go forward on October 21 and cannot be postponed until after the November 3 Board hearing on Zone Change 98-3.

The accelerated pace at which the Tract Maps are being processed by the County is unseemly and unjustified. At the public meeting which it conducted last Friday night (October 16) to consider Zone Change 98-3 and Area Plan 98-2, the FTSP Review Board adopted a resolution, a copy of which is attached as Exhibit "B" hereto, demanding that the Tract Maps be removed from the agenda of the Subdivision Committee's October 21 meeting and be referred to the Review Board for its recommendations. Failure to heed the demand of the FTSP Review Board will violate both the letter and the spirit of the Specific Plan, and will constitute an affront to the residents of the Trabuco Canyon area.

B. <u>The CEQA Documentation for the Tract Maps Failed to Address Site-Specific and Cumulative Impacts to Coastal California Gnatcatchers Inhabiting the NCCP Southern Subregion</u>.

Now that the County has reached the "tract map" stage of the 299-Unit Project, there is no possible justification for continuing to ignore the recent discovery of coastal California gnatcatchers at the Property and failing to amend and recirculate the appropriate CEQA documentation to reflect this fact. Also, it is nothing short of a legal and environmental scandal that County staff has allowed California Quartet to delay completion of updated gnatcatcher surveys of the Property which the federal and state agencies started calling for almost *22 months ago*.

On January 30, 1997, the California Department of Fish & Game and the U.S. Fish & Wildlife Service (collectively, the "Resource Agencies") sent a letter to County staff, a copy of which is attached as Exhibit "C" hereto in which they noted that the 1993 and 1994 gnatcatcher surveys of the Property upon which Draft EIR 561 was based were no longer valid and, as such, "updated surveys" needed to be completed in connection with the preparation of Draft SEIR 566:

> "Available data in EIR No. 561 regarding coastal California gnatcatcher . . . surveys indicated that surveys were done in 1993 and 1994. The agencies accept survey results as valid for only 12 months. Gnatcatchers are known to occur adjacent to the proposed project area. *We suggest that updated surveys be done for this species.* This updated survey protocol includes a total of seven surveys in the breeding season or nine in the non-breeding season." (Emphasis added.)

Although almost *two years* have passed since the Resource Agencies made their proposal for updated gnatcatcher surveys of the Property, *such surveys have still not been completed.* This, of course, is inexcusable and renders FSEIR 566 and the Addendum thereto grossly deficient with respect to adequately assessing impacts to an endangered species present at the Property. Although the Addendum to FSEIR 566 *alludes* to gnatcatcher surveys having been commenced in May 1997, no explanation is given as to why these surveys were never completed and were never reported on in the CEQA documentation for TT 15230.

Of course, of even greater concern is the fact that, at the October 7 Planning Commission hearing on Zone Change 98-3 and Area Plan 98-2, the developer's representative, Mr. Pike Oliver, stated at the podium that approximately six gnatcatcher surveys of the Property were performed in April, May, and June of this year. This is a shocking revelation for at least two reasons. First, it is highly improper for the results of these surveys to have been *excluded* from the Addendum to FSEIR 566, even though the Addendum was prepared well *after* the surveys were purportedly completed. Secondly, the fact that California Quartet was still in the process of trying to complete the updated gnatcatcher surveys which the Resource Agencies had called for as far back as January 1997 should have been revealed by County staff because it would have proven that the CEQA documentation for the 299-Unit Project was and remains *incomplete* and that the County is *not* in a position to legally take action on Zone Change 98-3, Area Plan 98-2, and the Tract Maps.

To date, County staff has sought to excuse its failure to obtain updated gnatcatcher surveys of the Property from California Quartet on the grounds that one can just *assume* that the coastal sage scrub habitat at the Property is inhabited by gnatcatchers.

However, County staff has never indicated *how many* gnatcatchers it assumes are present and will be eradicated by the development of the 299-Unit Project. CEQA does not allow County staff the luxury of such an uninformed *assumption* at this late stage in the planning process about what exactly the impacts will be on an endangered species present at the project site. What County staff is essentially admitting is that it assumes there will be an impact on gnatcatchers inhabiting the approximately 50 acres of coastal sage scrub habitat which will be destroyed by the development of the 299-Unit Project, but the *extent* of that impact -- i.e., how many gnatcatchers will actually be killed at the site -- is completely *unknown* to the County as it prepares to approve TT 15230.

To suggest that County staff is engaging in *reckless* environmental planning with respect to gnatcatcher impacts at the Property would be an understatement. This is particularly true in light of a recent *L.A. Times* article, dated September 3, 1998, a copy of which is attached as Exhibit "D" hereto, in which it was reported that the Resource Agencies are gravely concerned that the prescribed limits for interim gnatcatcher "take" in the NCCP Southern Subregion have been exceeded and that no more 4(d) permits for interim "take" of gnatcatchers will be allowed in that Subregion until the NCCP plan for that area is completed sometime in the future.

In light of the information set forth in this article, it is clear that the CEQA documentation for TT 15230 does not adequately address the *cumulative* impacts which the 299-Unit Project will have on coastal California gnatcatchers present in the NCCP Southern Subregion. Moreover, the same CEQA documentation is based on the premise that California Quartet will be allowed to obtain a 4(d) permit to kill gnatcatchers at the Property. What is needed, therefore, is a new or subsequent EIR for TT 15230 which fully and properly assesses project impacts on gnatcatchers present in the NCCP Southern Subregion, both on a site-specific level and on a Subregional level.

C. <u>The Proposed Destruction of Almost 70% of the Property's Coastal Sage Scrub Habitat Will Prevent the County from Making the Findings Required Under the NCCP Conservation Guidelines</u>.

As stated on page 72 of the Addendum to FSEIR 566, the County must be in a position to make the following "NCCP Findings" prior to approving "coastal sage scrub impacts": (1) the habitat loss will not preclude connectivity between areas of high habitat values and (2) "the habitat loss will not preclude or prevent the preparation of the subregional NCCP." In light of (a) its failure to timely and adequately consult with the Resource Agencies regarding the sufficiency of the wildlife corridor proposed as part of TT 15230, (b) the loss of approximately 70% of the coastal sage scrub habitat at the Property which is contemplated by the 299-Unit Project, and (c) the numerous statements made to date by the Resource Agencies with respect to the critical importance of the

Property as constituting the last available link between the NCCP Central/Coastal and Southern Subregions, the County is simply not in a position to make any such findings at this point.

In the joint letter from the Resource Agencies, dated January 30, 1997, which was referred to earlier, the Agencies stated unequivocally that the proposed linkage between the NCCP Central/Coastal and Southern Subregions could be permanently destroyed by the development of the Property:

> "Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. The area of the proposed project is also the *only* linkage to the NCCP Central Subregion in Orange County. An improperly implemented project would *permanently destroy* the integrity of the linkage between the Subregion reserves." (Emphasis added.)

Likewise, in their joint letter to the Board of Supervisors, dated August 11, 1998, the Resource Agencies described the Property as a "critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans." In a recent article in the *Orange County Register*, a copy of which is attached hereto, John Bradley of the U.S. Fish & Wildlife Service clearly stated the Service's preference for a project alternative with less density than the proposed 299-Unit Project. However, County staff has failed to fully engage the representatives of the Resource Agencies to understand and accommodate their views on whether the 299-Unit Project provides the wildlife linkage which they hope to achieve. Moreover, County staff has also sought to minimize, and even misrepresent, the true views of the Resource Agencies with respect to the 299-Unit Project. (See attached letters from National Audubon Society, dated October 15 and 19, 1998.)

Because TT 15230 poses such an obvious risk of jeopardizing or precluding the approval of the Southern Subregion NCCP, the Subdivision Committee should require the preparation of a new or subsequent EIR for TT 15230 to properly assess this risk. Moreover, County staff should accept the invitation of the Resource Agencies, set forth in their August 11 letter to the Board of Supervisors, to work with California Quartet and all interested parties in reaching a workable development solution that would involve a clustered development and a substantial dedication of natural open space which would be sufficient to ensure adequate wildlife corridor/habitat linkage between the NCCP Central/Coastal and Southern Subregions. These discussions should focus initially on the feasibility of the 44/178 Alternative which has been the subject of recent negotiations between the parties or a similar alternative which would ensure that the 178 acres which are the subject of the 44/178 Alternative (see copy of draft

Memorandum of Understanding attached hereto) are permanently preserved as natural, undisturbed open space so as to protect the sensitive biological resources on the Property, while still allowing for approximately 44 acres of the Property to be developed for residential uses.

Without such input being obtained from comprehensive discussions with representatives of the Resource Agencies, the CEQA documentation for TT 15230 is obviously deficient with respect to reasonable project alternatives and with respect to the issues of whether the 299-Unit Project will preclude connectivity between areas of high habitat values and will also preclude preparation and finalization of the Southern Subregional NCCP.

D. The CEQA Documentation for TT 15230 Fails to Adequately Assess Potential Impacts on O'Neill Park Caused by Rough Grading, Fuel Modification, and Drainage Activities Relating to the 299-Unit Project.

Exhibit 6 in the Addendum to FSEIR 566 is noteworthy for what it does *not* show: it does not show whether the development of TT 15230 will impact areas of O'Neill Park in terms of rough grading or fuel modification activities associated with the 299-Unit Project. This particular Exhibit is simply deceptive because if the dotted lines relating to the limits of fuel modification and remedial grading were extended and linked as they should be along the southern boundary of the Property, it would be obvious that portions of O'Neill Park would be impacted by such activities.

The CEQA documentation for 15230 fails to address either the impacts or the risks associated with performing grading and fuel modification in portions of O'Neill Park adjacent to the southern boundary line of the Property. As set forth in the 1974 agreement between the Vedanta Society and the County, a copy of which is attached hereto, the consequences of disturbing those portions of O'Neill Park by activities which would alter or defoliate the topography in those areas would trigger a reverter clause which would allow the Vedanta Society to reclaim title to approximately 240 acres of O'Neill Park. The risk of losing such valuable parkland should be addressed in the CEQA documentation *before* TT 15230 is approved in its present form.

Also, TT 15230 should not be approved unless and until adequate CEQA documentation is prepared to discuss the impacts of discharging storm, irrigation, and urban runoff into pristine areas of O'Neill Park adjacent to the southern boundary of the Property. The Addendum to FSEIR 566 contains only general, boilerplate references to possible impacts to natural drainage courses caused by runoff originating from the hundreds of homes to be built as part of the 299-Unit Project. The CEQA documentation for TT 15230 concedes that urban runoff -- consisting of toxic materials such as "oil,

grease, cleaning products, herbicides, pesticides, and fertilizers" -- would be dumped into the natural drainage courses at the Property, but such documentation is devoid of any discussion of what impacts such toxic materials would have on the fragile ecosystem of those portions of O'Neill Park immediately adjacent to the southern boundary of the Property.

Although there is a reference on page 33 of the Addendum to FSEIR 566 that the urban runoff generated by the 299-Unit Project would be subject to a NPDES Permit, that is simply a reference to possible *mitigation* of an impact which is neither discussed nor disclosed in the Addendum. Moreover, since there is no discussion of the extent of the impacts of toxic materials, there is no basis for judging whether the proposed future mitigation would be adequate or even what the mitigation would be to somehow remove toxic waste from stormdrain runoff discharged into natural water course. Of course, trying to gain any reasonable understanding of how O'Neill Park will be affected by the daily flow of toxic waste is complicated by the fact that the CEQA documentation for TT 15230 contains *no* plan or diagram which shows what the proposed storm drain system is for the 299-Unit Project. Indeed, the Addendum to FSEIR 566 directs the reader to the concept drainage plan for the 705-Unit Project which obviously has no relevance to the design of the stormdrain system for the 299-Unit Project. On page 33 of the Addendum to FSEIR 566, the "proposed drainage facility summary" is set forth, but it only refers to *four* stormdrain lines for the 299-Unit Project, but this is entirely at odds with the *eight* stormdrain lines proposed for the 318-Unit Project as depicted on Exhibit 25 to Draft EIR 561.

Does this discrepancy mean that a *new* stormdrain system has been designed for TT 15230, but has not been disseminated for public review and comment? These questions should be answered by preparing and recirculating a new or subsequent EIR to address the critically-important drainage impacts associated with the development of the 299-Unit Project.

Very truly yours,

Edmond M. Connor

EUREKA CANYONS CONSERVATION FUND
PO BOX 556
TRABUCO CANYON, CA 92678

ORANGE COUNTY SUBDIVISION COMMITTEE
October 21, 1998

Statement of Ray Chandos Regarding Tentative Tract Maps 15784 and 15230

I request that you not approve the proposed subdivisions at this time for the following reasons.

1. VIOLATION OF THE FOOTHILL/TRABUCO SPECIFIC PLAN

Procedurally, the Foothill/Trabuco Specific Plan (Page III-86, and Bylaws, Exhibit A, II) requires that these subdivisions be forwarded to the Specific Plan Review Board at least 21 days prior to your acting on them. That would have meant they needed them on September 30. At last Friday's Review Board meeting, however, the secretary of the review board confirmed that he did not receive these maps until the week of the October 16th meeting. In fact, the Review Board passed a resolution on Friday recommending that you not take action today, and that you allow the Review the full 21 days provided by the Specific Plan.

2. VIOLATION OF CEQA

Since preparation of EIR 566 and the Addendum, significant new information has materialized in the form of a survey for California Gnatcatchers, a federally listed threatened species, on the site. Although the entire site was not surveyed, two Gnatcatchers were found. They were found in the southern region of the site in areas slated for future remedial grading.

Since neither the EIR addendum nor the addendum conceded any significant unavoidable impact on the Gnatcatcher, this new information now requires the County to prepare and circulate a supplemental EIR addressing this new information. So the EIR and addendum cannot be relied upon for approval of these subdivisions.

2. POSSIBLE INCONSISTENCY WITH ZONING AND AREA PLAN

I also notice that you are making a finding of consistency with Area Plan 98-2 and Zone Change 98-3. While the necessary rezoning to allow these subdivisions is in process, the Review Board has asked for the opportunity to consider that rezoning prior to further Planning Commission and Board of Supervisors action on it. If the Board of Supervisors ultimately approves the rezoning, it may modify that zoning in such a way that this 299-unit subdivision would not be consistent with it. For example, the Board may

require a wildlife corridor where residential are now proposed.

Also, the Area Plan has been appealed to the Board of Supervisors, and may also be modified or denied.

For these reason, subdivision approval today is premature. Why the rush to put the cart before the horse? If approved today, these subdivisions will be appealed to the Planning Commission and possibly also to the Board of Supervisors, delaying finality well beyond the 21 extra days the Review Board has requested.

Please include my statement in the official record of proceedings for these projects.

Thank you.

RURAL CANYONS CONSERVATION FUND
PO BOX 556
TRABUCO CANYON, CA 92678

October 2, 1998

Patrick J. Stanton, Manager
Subdivision and Grading Services
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: Proposed TTM No. 15230, Project No. EP/PP 69873

Dear Mr. Stanton:

The proposed subdivision cannot legally be approved:

1. It conflicts with the governing zoning ordinance, viz. the Foothill/Trabuco Specific Plan which requires a specific plan amendment prior to any development proposal other than recorded tract map number 10692. Under state law, all subdivisions must be consistent with any governing specific plan.

2. Under the Specific Plan (pages III-86, D-3), the proposal must be reviewed by the Foothill/Trabuco Specific Plan Review Board prior to any action by the County. This has not occurred.

3. EIR 566 no longer suffices as valid environmental documentation for this project under CEQA. A field survey conducted by R.B. Riggan and Associates on September 23, 1998 discovered two California gnatcatchers inhabiting the Saddleback Meadows site. Since the entire site was not surveyed, more gnatcatchers may be present there. The California gnatcatcher is currently protected as a threatened species by both federal and state endangered species acts.

The above constitutes new information about the proposed project's potentially significant environmental impacts. Therefore, a subsequent or supplemental EIR must now be prepared and circulated for review and comment.

Thank you for the opportunity to comment on the proposed subdivision.

Sincerely,

Ray Chandos

Ray Chandos
Secretary/Treasurer

2921

RURAL CANYONS CONSERVATION FUND
PO BOX 556
TRABUCO CANYON, CA 92678

October 2, 1998

Patrick J. Stanton, Manager
Subdivision and Grading Services
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: Proposed TTM No. 15784, Project No. EP/PP 69881

Dear Mr. Stanton:

The proposed subdivision cannot legally be approved:

1. It conflicts with the governing zoning ordinance, viz. the Foothill/Trabuco Specific Plan which requires a specific plan amendment prior to any development proposal other than recorded tract map number 10692. The attached "Project Proposal" says "This is an application for a *development* permit." Under state law, all subdivisions must be consistent with any governing specific plan.

2. Under the Specific Plan (pages III-86, D-3), the proposal must be reviewed by the Foothill/Trabuco Specific Plan Review Board prior to any action by the County. This has not occurred.

3. EIR 566 no longer suffices as valid environmental documentation for this project under CEQA. A field survey conducted by R.B. Riggan and Associates on September 23, 1998 discovered two California gnatcatchers inhabiting the Saddleback Meadows site. Since the entire site was not surveyed, more gnatcatchers may be present there. The California gnatcatcher is currently protected as a threatened species by both federal and state endangered species acts.

The above constitutes new information about the proposed project's potentially significant environmental impacts. Therefore, a subsequent or supplemental EIR must now be prepared and circulated for review and comment.

Thank you for the opportunity to comment on the proposed subdivision.

Sincerely,

Ray Chandos

2922

Ray Chandos
Secretary/Treasurer

Orange County Subdivision Committee
County of Orange Environmental Management Agency
P.O. Box 4048
Santa Ana, CA 92702-4048

October 17, 1998

Committee members,

I am writing regarding Tentative Tract Map No. 15230, California Quartet, Ltd.'s proposed subdivision in the Cook's Corner area east of El Toro Road. A previous family commitment out of state will not allow me to attend this meeting, so I thank you very much for accepting this written reply in lieu of a personal response. At my request, a gentleman with your agency kindly provided me with a map of the proposed development.

My family and I reside on eight acres at 19041 Live Oak Canyon Road, directly adjoining this site. If this development is approved, it will decrease the value of our home and property and alter our way of life due to the following:

- Proximity - This proposal would place 299 houses directly over a small hilltop behind our home. We settled in this location for its seclusion. We paid a substantial cost for the privacy and security this isolation provides, both of which would no longer exist if this subdivision is built as proposed. Currently, there is no easy access to the back of our home. This development would invite intrusion into our backyard and take away the privacy and security we purchased.
- Noise - I conduct my business out of a small office on our property. I currently must shut the windows to block construction noise coming from similar building projects down the road in the Portola Hills area. I cannot imagine conducting business as usual with months of earthmoving equipment and construction noise just beyond our backyard.
- Traffic safety - A segment of Live Oak Canyon Road lies across our property. The County of Orange has secured the rights to a portion of our property for maintenance and public use of this roadway. Live Oak Canyon Road was never intended to be the thoroughfare it has become. This is a hilly, winding road with a speed limit of 35 mph meant to provide access to homes in this canyon. In just the past two years, use of this roadway has increased substantially due to the dramatic increase in subdivision development in the area. Our driveway is just over the top of a blind hill. My family and I are in danger each day pulling out of our own driveway. Previously, traffic was light, and canyon residents respected the slow speed limit, aware of the dangerous nature of the placement of their neighbors' driveways. More and more, this roadway is being used as a main thoroughfare between subdivisions. Motorists from neighboring housing projects often do not respect the speed limit, as evidenced by the traffic accidents that are now occurring regularly on our property.
- Light pollution - No matter how a developer promises to contain light pollution with reflectors pointing streetlights downward, there is an inevitable glow that eminates from developments such as this. These lights, no matter how well shielded, would cast a glow over the area and our home.
- Wildlife - We share our property with coyotes, mountain lions, bobcats, oppossums, quail and many other animals. We respect their trails and dens and do as little as possible to impact their movements. Despite what any environmental impact surveys purchased by a developer may conclude, these animals will never use a manmade "wildlife corridor." Once this habitat is destroyed, it can never be reclaimed. This development would forever change the nature of wildlife living on our property and traveling through this area.
- Further development - A project of this magnitude will invite more development of gas stations and stores to accommodate the hundreds of new residents that will flood the area should this plan be approved. Trabuco Canyon, one of Orange County's last remaining rural areas, is rapidly being destroyed by development. This proposal is in direct violation of the Trabuco Foothills Specific Plan. We read this plan thoroughly when my family settled on this property, confident that this beautiful canyon would be protected by the County from development.

Thank you very much for hearing our opposition to this proposal. As just one family, we feel powerless against a large development company with its lawyers and money. However, we will do what we can through appeals and litigation to protect our safety, our privacy and the lifetime investment we have made in our home and property. At this point, all we can do is sincerely ask that you not to approve this proposed development. Thank you, again, for your consideration.

Respectfully,

David A. Blum
19041 Live Oak Canyon Road
Trabuco Canyon, CA 92679

2923

National Audubon Society
California

Starr Ranch Sanctuary
100 Bell Canyon Road
Trabuco Canyon, CA 92679
949-858-0309
949-858-1013 Fax
pdesimone@audubon.org

National Audubon Society Chapters in California
Alacal
Buena Vista
Central Sierra
Conejo Valley
Eagle Lake
Eastern Sierra
El Dorado
Fresno
Golden Gate
Kern
Kernerest
Laguna Hills
Lake Almanor
La Purisima
Los Angeles
Madrone
Marble Mountain
Marin
Mendocino Coast
Monterey Peninsula
Morro Coast
Mount Diablo
Mount Shasta Area
Napa-Solano
Ohlone
Palomar
Palos Verde/South Bay
Pasadena
Peregrine
Plumas
Pomona Valley
Redbud
Redwood Region
Sacramento
San Bernardino Valley
San Diego
San Fernando Valley
San Joaquin
Santa Barbara
Santa Clara Valley
Santa Monica Bay
Sea and Sage
Sequoia
Sierra Foothills
South Coast
Stanislaus
Tulare County
Ventura
Whittier
Wintu
Yolo
Yosemite Area

Orange County Subdivison Committee
Planning and Development Services
300 North Flower Street
Santa Ana, CA 92702-4048

October 21, 1998

RE: Saddleback Meadows Tentative Tract Map 15230

Dear Subdivision Committee,

By way of this letter I would like to formally include the attached August 11, 1998 letter from the U. S. Fish and Wildlife Service and the California Department of Fish and Game and the California Native Species Field Survey Form and Figure 1 prepared by RBRiggan as part of the administrative record for this project.

I would also like to formally object to any approval of this project in its current form, as well as the manner in which this project is being processed.

First, this project has not met the legal requirement of coming before the Foothill Trabuco Specific Plan Review Board.

Second, in their August 11, 1998 letter, the U. S. Fish and Wildlife Service and California Department of Fish and Game clearly stated that "[t]he 299-unit development posed a significant impact to the existing habitat connection from O'Neill Regional Park (Southern Subregion) to the Cleveland National Forest and other open space habitat in the Central/Coastal Subregion." Despite this assertion, you are considering approving this exact project. Such action not only is contrary to federal and state agency demands, but it also jeopardizes the integrity of the Natural Communities Conservation Program, to which the County of Orange has made unmistakable commitment.

Notwithstanding Natural Communities Conservation Program non-compliance, you have before you significant new evidence of California gnatcatchers on the project site, triggering additional CEQA analysis prior to any type of development approval. Your failure to acknowledge such new information as significant under CEQA places the County of Orange at legal risk and further subjects its tax payers to financial obligations over and above that which you have already caused through the inefficient and illegal manner in which this project has been processed.

Sincerely,

Pete DeSimone
Manager
Starr Ranch Sanctuary

cc: Supervisor Todd Spitzer
Interested Parties

2924

US Fish & Wildlife Service
Carlsbad Field Office
2730 Loker Avenue, West
Carlsbad, CA 92008
(760) 431-9440
FAX (760) 431-9624

CA Dept. of Fish & Game
1416 Ninth Street
PO Box 944209
Sacramento, CA 94244-2090
(916) 653-9767
FAX (916) 653-2588

August 11, 1998

Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92703

Saddleback Meadows Project
Orange County, California

Dear Board of Supervisors:

The California Department of Fish and Game and the U. S. Fish and Wildlife Service (collectively the Wildlife Agencies) recently learned about a Planning Application Hearing for the Saddleback Meadows project scheduled for the County Board of Supervisors on August 11, 1998. The applicant is proposing a 299 single-family dwelling unit project at Saddleback Meadows. The Wildlife Agencies and County have a lengthy history of communication concerning the project site and a variety of development proposal alternatives have been reviewed. The project site provides a critical habitat connection between the County of Orange's Central/Coastal and Southern Subregional Conservation Plans. In this letter we reiterate our position on the proposed Saddleback Meadows project and provide comments on a recent proposal that could affect the project.

The Wildlife Agencies, other Federal and State agencies, County of Orange, and local jurisdictions are participating in the Natural Community Conservation Planning (NCCP) program to conserve wildlife and habitat resources while accommodating economic growth and development. Our previous comments on Saddleback Meadows Project - Draft Environmental Impact Report (DEIR; No. 561 ,February 1996) and in our August 8, 1997, letter concerning the Saddleback Meadows Draft Subsequent Environmental Report No. 566 (DSEIR) (June 1997) identified significant biological issues related to the project site. These biological issues include habitat connectivity, wildlife corridors, sensitive habitats, and occupied wetlands with a federally listed animal. These sensitive habitats include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about 4 acres of wetland vegetation communities. The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified as "ephemeral ponds") spread throughout the site. Our letter

2925

evaluating the DSEIR identified Alternative '3' which proposed a clustered, lower density development, presented the least environmental impact, but would nonetheless substantially impact the wildlife corridor integrity. The 299-unit development posed a significant impact to the existing habitat connection from O'Neill Regional Park (Southern Subregion) to the Cleveland National Forest and other open space habitat in the central portion of the Central/Coastal Subregion. The Wildlife Agencies are willing to work with the project applicant to redesign a cluster development in order to preserve the wildlife corridor.

Other animal species considered sensitive by the Wildlife Agencies occur on or adjacent to the project site. The Wildlife Agencies documented rare and sensitive Cactus wren (*Campylorhynchus brunneicapillus*) on site. The coastal California gnatcatcher (*Polioptila californica californica*)(gnatcatcher), a federally threatened species, could utilize the site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. Both of these animals, as well as other wildlife, would utilize Saddleback Meadows as a wildlife corridor. County maps show that Saddleback Meadows is the only remaining wildlife corridor linkage to the NCCP Central/Coastal Subregion.

We have been informed by two interested parties, Saint Michael's Abbey and Vedanta Society of Southern California, that a new clustered development alternative proposal and purchase of significant open space on the site have been offered to the current property owner. The Wildlife Agencies are willing to work with the current landowners and all interested parties in reaching a workable development solution.

The Wildlife Agencies believe a workable solution exists to permit development, while maintaining an essential biological connection between the NCCP Central/Coastal and Southern Subregions. We request that the Board consider this alternative approach that may provide a solution acceptable to all parties. If you have any questions or comments, we are available to discuss this matter further. Please feel free to contact us at your earliest convenience.

Sincerely,

Jim A. Bartel
Assistant Field Supervisor
U. S. Fish and Wildlife Service

Gail Presley
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (G.Presley, B.Tippets)

U. S. Fish and Wildlife Service (J.Bradley)

d:\sdbisk.mcp

California Native Species Field Survey Form

Mail To:
Natural Diversity Data Base
California Dept. of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

For Office Use Only
Source Code ____ Quad Code ____
Elm Code ____ Occ # ____
Copy To ____ Map Index # ____

Date of field work: Sept (mo.) 23 (day) 1998 (year)

Scientific name: *Polioptila californica californica*

Species Found? [✓] yes [ ] no If not, why?
Total # Individuals: Two Subsequent visit: [ ]yes [ ]no
Compared to your last visit: [ ]more [ ]same [ ]fewer
Is this an existing NDDB occurrence? [ ] Yes, Occ.# [ ] no [ ] unk
Collection? If yes: ____ number ____ Museum/Herbarium

Reporter: Royce B. Riggan, Jr.
Lisa A. Seneca
Address: RBRiggan and Associates
11228 Zapata Avenue
San Diego. CA 92126
Phone: (619) 233-5454
Other knowledgeable individuals (name/address/phone):
N/A

Plant Information

Phenology: ____ % vegetative ____ %flowering ____ %fruiting

Animal Information

Age structure: One #adults One #juveniles #unknown
Site Function [✓] breeding [✓] foraging [✓] wintering [✓] roosting [ ] burrow site [ ] other

Location (Please also attach or draw map on back)
Found on a portion of the Saddleback Meadows property, see attached map [note: the entire property was NOT surveyed].

County: Orange County
Quad Name: Santiago Peak Quadrangle
Elevation: ±1,250 ft UTM

Landowner/Manager: California Quartet, Ltd.
c/o TPG Management, Inc.
44 Montgomery Street, Suite 1300
San Francisco CA 94194

T 6 S. R 7 W. NE ¼ of SE ¼ Sec 4 T ____ R ____ ¼ of ____ ¼ Sec ____

Habitat Description: (Plant communities, dominants, associates, substrate/soils, aspect/slope)

The southeastern corner of the Saddleback Meadows property is a well developed Venturan Sage Scrub with high shrub species diversity. Elements of a mixed chaparral are found on steeper north facing slopes. The property is a critical wildlife corridor between the south Orange NCCP area and the existing NCCP preserves to the west and northwest. Other areas of Coastal Sage Scrub occur on adjacent public lands to the south.

Other rare spp? Federally listed species of Anostraca are known to occur in natural and artificial ponds found on the property. Coastal Cactus Wrens are resident at several points within the property.

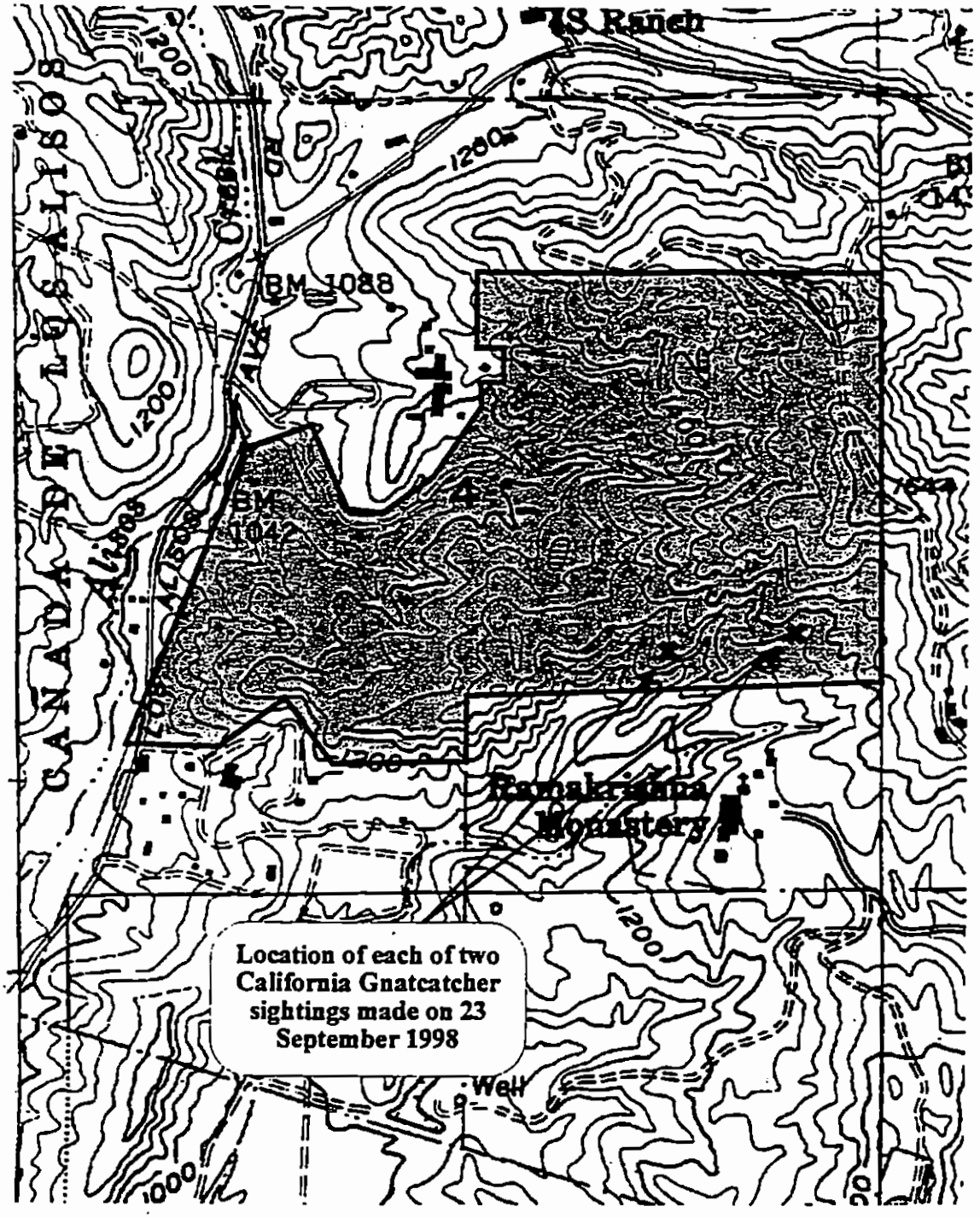
Site Information: Current/surrounding land use: The property is currently used for extensive cattle grazing. Properties to the north are generally vacant, properties to the south are sparsely developed as are properties to the east.

Visible disturbances, possible threats: The site is threatened by the current cattle grazing activity and by a pending land development plan. The latter would convert the site to urban level residential.

Overall site quality: [✓]Excellent [ ] Good [ ] Fair [ ] Poor Comments:
The habitats in the southeastern corner of the site are (despite cattle grazing) in excellent condition.

Determination: (Check one or more, fill in blanks)
____ Keyed in a site reference: ____
____ Compared with specimen housed at: ____
____ Compared with photo/drawing in: ____
____ By another person (name): ____
✓ Other: Riggan (and Seneca) hold Federal Permit PRT-780195.

Photographs: (check one or more) Slide Print
Plant/animal
Habitat 2927
Diagnostic Feature
Other
May we obtain duplicates at our expense? [ ]yes [ ]no



Scale: 1-inch = 1,000-feet

RBRiggan and Associates Job Number 1683.70A 20 June 1998

RBRiggan and Associates	Location of the Saddleback Meadows Property on a Scanned Portion of the U.S.G.S. 7½-minute Santiago Peak Quadrangle Map	Figure 1

2928

FOOTHILL/TRABUCO SPECIFIC PLAN REVIEW BOARD

Trabuco Canyon, California

October 20, 1998

County of Orange
Planning and Development Services
300 N. Flower St - 3rd Floor
Santa Ana, Calif 92702

Via Fax: 834-2771

Attn: Mr. Thomas B. Mathews
Attn: Mr. Frank McGill
Attn: Mr. John Buzas

Re: Meeting results October 16, 1998

Gentlemen:

On October 16th last, the Review Board held its second public meeting after posting notice of the meeting in accordance with the Brown act, and as explained to us by the county staff.

This communication is a report of actions by the review board concerning their agenda item # 2, "The Saddleback Meadows" application for 299 single family homes (alternative area plan and proposed zone change and their applications for certain tentative tract map approvals). The meeting was well attended by the public who had garnered information about the meeting and the proposed project from news accounts, the public posting and word of mouth.

After a lengthy public comment period in which many complaints about an absence of communication between the County, the property owners and the public were repeatedly expressed, and after consideration of a presentation by opponents of the proposed project, the Board took the following actions:

1.- In a five in favor and none against vote, resolved that:

A.- The Board strongly objects to the Planning Commission's October 7th actions, approving the area plan for the proposed Saddleback Meadows 299 alternative application, and recommending approval of the Zone Change on the basis that such action violates the review board process mandated by the specific plan;

B.- The Board strongly requests that the Board of Supervisors remove all consideration of the Saddleback Meadows project from its November 7th agenda and refer the project to this Board for review and recommendation to the Planning Commission in a manner which is consistent with the provisions of the Specific Plan;

C.- Demands that the County and staff immediately remove the Saddleback Meadows subdivision maps from consideration on the October 21st agenda of the Orange County Subdivision Committee and refer such subdivision maps to this Board for review and recommendation to the Planning Commission in a manner which is consistent with the provisions of the Specific Plan and the Zoning code;

2929

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2,- In a four in favor and one abstention vote, resolved:

A.- That based upon the information provided to the Board by the county staff, the proponents and the opponents of the project, and the absence of sufficient time to understand and form recommendations on the very complex issues related to the proposed project, and in consideration of the concerns of the public about the impact of the project both during and after construction/development of the property, we recommend against the 299 single family home alternative.

3.- In a five in favor none against vote, resolved:

A.- That the Board discerns a grave community concern about the proposed amendments to the Foothill/Trabuco Specific Plan and urges the Board of Supervisors to remove any action/consideration of the proposed amendments from their November 1998 agenda, and refer the matter of such proposed amendments to this Board for recommendations thereon to the Planning Commission prior to any final action by the Supervisors.

OTHER BUSINESS

For the attention of Mr. Frank McGill:

Enclosed is a copy of the minutes of the September 29th meeting, a copy of the September 29th notice of public hearing and agenda.

The Review Board has determined to hold its meetings on the second Friday of each month, at 7:00 A.M. in the multi-purpose room at O'Neill Regional Park.

The next meeting of the Review Board will be November 13th, at 7:00 P.M. That agenda will include a consideration of three of the thirteen proposed amendments to the Specific Plan.. As discussed today, I will recommend that the Board consider one or more special meetings to cover the proposed amendments in view of the Staff's intention to request continuance of their consideration by the Planning Commission until their December 9th meeting.

Minutes of the October 16th meeting will be available by noon-tomorrow October 21st. The above report contains the jest of the meeting minutes and correctly states the actions of the Board.

Sincerely,

Robert A. Wilks
Secretary of the Board

RAW/wm
cc: Members of the Board

2930

RECEIVED TIME OCT.20. 11:31AM PRINT TIME OCT.20. 11:33AM

MINUTES OF MEETING
FOOTHILL TRABUCO SPECIFIC PLAN REVIEW BOARD
O'NEILL REGIONAL PARK - MULTI PURPOSE ROOM
DATE: September 29,1998

Present at this meeting were: Ray Mills, Chairman, Bruce Conn Vice-chairman; Robert A. Wilks, Secretary; Jeanne Porter Member and Adam Smith, Member. Absent were none. Also present were members of the public, and representatives of California Quartet, landowner and project proponent; St. Michael's Abby; Ramakrishna Monestary project opponents, and other members of the public at large. The meeting was called to order by the Chairman at 7:10 P.M.

The agenda contained four items of business, to wit:

1,- The introduction of the Board Members to those present and to the public;

2.- A discussion of the SADDLEBACK MEADOWS ALTERNATIVE PLAN concerning the development of 299 single family residences;

3.- A general discussion of amendments to the Foothill Trabuco Specific Plan;

4.- Those certain administrative matters deemed necessary by the Board for its current and future administration.

Following the introductions of the members of the board, and the persons present in the hearing room, the meeting proceeded to a discussion of the SADDLEBACK MEADOWS ALTERNATIVE PLAN concerning 299 single residential homes sites, (the project). It was first brought to the attention of the Board that the Orange County Planning Commission was scheduled to hear and vote upon the approval of the project on October 7, 1998 at a regularly scheduled meeting of the commission.

A detailed "overview" presentation of the project was provided by representatives of California Quartet. This included a historical review which set forth how the current proposal for 299 SFR has reached its current position and what action is expected within the immediate foreseeable future.

Members of the Board made inquiry about certain particulars of the project, and answers were given by the proponent's representatives. At the conclusion of the proponents presentation, other persons present were given the floor.

Representatives of the St. Michael's Abby and the Ramakrishna Monestary suggested that this Board had been only very recently appointed and sworn, and that the public meeting for this Board to consider the SADDLEBACK MEADOWS ALTERNATIVE PLAN for 299 SFR had been hastily called and noticed, urged the Board to ask the Planning Commission for the statutory 21 days allowed by law for the Board to consider any project brought before it's deliberations. Upon the motion of Bruce Conn seconded by Adam Smith that the Board postpone any action upon the application of CALIFORNIA QUARTET regarding the SADDLEBACK MEADOWS ALTERNATIVE PLAN until the expiration of twenty one days, and after brief discussion among the Board, the motion was carried four in favor and Mr. Ray Mills abstaining.

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The Board determined to comply with the 21 day provision, and accordingly scheduled its next meeting for OCTOBER 16, 1998 in order to allow sufficient opportunity for the members to become familiar with and assimilate the provisions of the 299 SFR alternative for the project.

The next business coming before the Board concerned a general discussion of proposed amendments to the Foothill Trabuco Specific Plan. Upon the motion of Adam Smith which was duly seconded, that the Board postpone its discussion of such topic until a later meeting, and after brief discussion, the motion was carried unanimously, and the topic was continued until October 16, 1998.

The next business coming before the Board concerned the administrative matters. The Board resolved that the following general matters would be, until such time as they may be later amended, be the general policies of the Board, to wit:

A.- Meetings shall be held regularly on the second Friday of each month, commencing with October 16, 1998 commencing at 7:00 P.M. and scheduled for termination not later than 10:00 P.M.;

B.- Notice of such meetings containing an agenda shall be posted at three public places not less than seventy two (72) hours prior to such meetings at (1) the Emory General Store Bulletin Board; (2) the U.S. Postal Service General PostBox Area and (3) the Hamilton Trial Public Bulletin Board all of which sites are within Trabuco Canyon, California.

C.- Robert's Rules of Order shall control the proceedings of Board hearings; When motions shall be made and seconded, the matter of the motion shall proceed to discussion and vote;

D.- No pre-determined limitation upon time shall be set for presentation of proposed project(s) and no pre-determined limitations upon time for rebuttal thereof shall be set. The Chairman shall determine in his absolute discretion the allowable time for (1) presentations and rebuttals; (2) public comment in support or opposed and (3) expert explanation and rebuttal.

E.- The officer conducting the meeting shall notify the person speaking when the speaker has but three (3) minutes of time left, to conclude his/her presentation. Upon expiration of said three (3) minute warning, the meeting leader shall inform the speaker to terminate the presentation which may be by opening the topic to questions of the members of the Board. The chairman shall determine the time allowable for the conduct of questions from the Board allowing a reasonable opportunity for each member to inquire.

F.- Minutes of the meeting shall be prepared in writing and circulated to the members prior to the next regularly scheduled meeting. The first topic of each successive meeting shall be a review, amendment and approval of the minutes of the prior meeting.

G.- Such other and further administrative matters are reserved to the Board pending its action at any duly noticed meeting or agenda. Any member may request that an administrative matter be scheduled for discussion at any future meeting whereupon such matter shall become an agenda matter.

There being no further business coming before the board, and upon motion duly made and seconded, the meeting was adjourned.

Robert A. Wilks, Secretary

0932

RECEIVED TIME OCT.20. 11:39AM PRINT TIME OCT.20. 11:42AM

MINUTES OF MEETING
FOOTHILL TRABUCO SPECIFIC PLAN REVIEW BOARD
O'NEILL REGIONAL PARK - MULTI PURPOSE ROOM
DATE: October 16, 1998

Present at this meeting were: Ray Mills, Chairman, Bruce Conn Vice-chairman; Robert A. Wilks, Secretary; Jeanne Porter Member and Adam Smith, Member. Absent were none. Also present were members of the public, and representatives of California Quartet, landowner and project proponent; St. Michael's Abby; Ramakrishna Monestary project opponents, and other members of the public at large. The meeting was called to order by the Chairman at 7:05 P.M.

The agenda contained three items of business, to wit:

1.- A review and action upon the minutes of the Board's prior meeting;

2.- A discussion of the SADDLEBACK MEADOWS ALTERNATIVE PLAN concerning the development of 299 single family residences and action thereon;

3.- A general discussion of amendments to the Foothill Trabuco Specific Plan;

The first order of business coming before the Board concerned the minutes from the September 29, 1998 meeting. Members had received copies of such proposed minutes and had the opportunity to review same prior to the commencement of the October 16th meeting. The topic of the minutes was opened for discussion, and after brief discussion, and upon motion duly made and seconded, the minutes of the meeting of September 29, 1998 were approved without amendment, deletion or addition.

The next order of business coming before the Board concerned a discussion of the SADDLEBACK MEADOWS ALTERNATIVE DEVELOPMENT PROPOSAL for 299 homes (the proposal). Members of the community stated their various opinions and positions about the proposal, raised numerous questions about the extent of grading required by the project, stated concerns about the wildlife corridor, water drainage, and other aspects of the proposed development. Many members of the public stated their surprise and anger that the project would be moving ahead without their knowledge or their ability to have community participation with many aspects of the project and generally expressed displeasure and frustration about the lack of communication between the community at large and the County and/or the property owners.

It was also pointed out during this discussion that there is a possibility that should the project be approved by the Supervisors, that the 240 acres of "gift" lands transferred by the Ramakrishna Society to the O'Neill Regional Park would/could be revoked under the reversion clause contained in the 1974 agreement between the society and the County of Orange.

The meeting then proceeded to a presentation of technical aspects of the proposed grading element and the ground water runoff aspect. This was offered by opponents of the project and was presented by Mr. Singleton an experienced Civil Engineer. It was pointed out that in the opinion of Mr. Singleton, that the remedial grading would be three (3) time "mass-x" and that this much grading is seldom considered economically feasible and would take up to as much as three or three and one-half

years just to complete the grading. It was suggested that a condition to any permit should be a very high public works bond to assure the community and the County ample funds to mitigate and render safe the property should the owners abandon the project or otherwise be unable to complete the grading of the property.

Mr. Singleton also presented information about the current project plans for disposal of urban water runoff. It was pointed out that much of the water runoff is directed into existing canyons where there are known landslides, and that the addition of water into these slopes will only render them more likely to break and slide. That such is particularly likely considering that the subject canyons are presently only subject to seasonal rain water, but will, under the project proposal, be saturated with consistent urban water runoff, and when presented with heavy rains, may more likely slide, causing extensive damage and expense to the homeowners association or the governing authority.

Mr. Singleton presented information about the Oak Woodland aspects of the project as related to the FTSP, tree removal and mitigation provisions. Currently the FTSP tree removal and mitigation provisions require a five to one mitigation reforestation. That is, to replant five Live Oak or other species of tree, for each one tree removed during property development. It was pointed out that there are currently 298 "protected" trees on the project property and that the project proposes to remove 59% of the Oak Woodlands. That reforestation under the FTSP would require the planting of 1,400 new trees to accomplish mitigation. Mr. Singleton pointed out that there is insufficient property in the project to achieve the planting of 1,400 new trees, consequently the current proposed project does not meet the provisions of the FTSP concerning tree removal and mitigation.

Mr. Singleton also presented information about the FTSP requirement for "natural open space". The Plan currently requires that 70% of the project lands remain as "natural open space". It should be noted that the current provisions of the FTSP do NOT consider manufactured slopes as "Natural Open Space". However, under certain proposed amendments to the FTSP, manufactured slopes could be considered as "Natural Open Space" and that county staff has informed the proponents of the project that their proposed manufactured slopes do or will comply with the FTSP so as to meet the requirement of 70% "natural open space". The opponents contend that the manufactured slope exception under current provisions of the FTSP render the project out of compliance regarding the open space requirement.

Mr. Singleton also presented information about the project's use of manufactured slopes beyond the limits established by the current provisions of the FTSP. Specifically, the FTSP now limits the height of any manufactured slope to 30 feet. Whereas the project plans call for the manufacture of several slopes in excess of thirty feet, and a few as much as eighty (80) feet tall. Opponents of the Project contend that there is no viable reason to exempt the property or project from the provisions of the FTSP and thus conclude that the current project proposal of manufactured slopes in excess of thirty feet violate the Specific Plan and should not be permitted.

Upon the conclusion of the presentation by Mr. Singleton, questions were taken from the public and from the Board. Mr. Singleton concluded his presentation and was followed by Mr. Riggan, a licensed and experienced Biologist who addressed the meeting concerning the proposed wildlife corridor (the corridor).

Mr. Riggan pointed out that many wildlife studies have determined that to be effective, a wildlife

corridor must be a minimum of 1000 feet wide. That the corridor in the project is set at 600 feet and will diminish to 400 feet or less when impacted by the fuel modification requirements of the Fire Marshall.

Mr. Riggan also pointed out that studies have clearly shown that the preferred configuration of a corridor is in a stright line so that wildlife are not presented a route with left or right turns or angles, but that the project corridor has both left and right turns at angles of 90 degrees or less.

Mr. Riggan also pointed out that the property of SADDLEBACK MEADOWS has consistently been seen by Federal and State wildlife authorities, as a total wildlife corridor. That is that 100 % of the project land should be set aside and dedicated as a corridor without development of any kind.

Mr. Riggan concluded that based upon the failure of the project to adequately address the wildlife issues that this Board should recommend a wildlife consultation/resolution aspect for the project with Federal and State wildlife authorities as a condition to a favorable recommendation.

Upon the conclusion of the presentation by Mr. Riggan, questions were taken from the public and from the Board. Mr. Riggan concluded his presentation and was followed by Mr. Ross, a representative for the property owner, California Quarret.

Mr. Ross pointed out that the project has been previously reviewed by this Board and that the Planning Commission has approved the project, that the County planing staff has recommended approval of the project and that with respect to the development issues raised by both Mr. Singleton and Mr. Riggan, that those concerns would be adequately addressed in future decisions with the appropriate agencies as they might arise. Mr. Ross addressed the question of the public works bonding and pointed out that the approving authority has the ability to require increases in the bond amount as the project progresses.

Those present were allowed a final five minutes to speak to the issues, and upon conclusion of the public comments, the board began deliberations. During the period of public comment, it was suggested that this Board should strenuously object to the actions of the Planning Commission taken October 7, 1998 and ask the Board of Supervisors to remove consideration of the project from their November agenda, and demand that the County Subdivision Committee take no action upon the proposed tentative tract map application on October 21, 1998.

1. A motion was made and seconded that:

A.- "The Board strongly objects to the Planning Commission's October 7th actions, approving the area plan for the proposed Saddleback Meadows 299 alternative application, and recommending approval of the Zone Change on the basis that such action violates the review board process mandated by the specific plan;

B.- The Board strongly requests that the Board of Supervisors remove all consideration of the Saddleback Meadows project from its November 7th agenda and refer the project to this Board for review and recommendation to the Planning Commission in a manner which is consistent with the provisions of the Specific Plan;

C.- Demands that the County and staff immediately remove the Saddleback

Meadows subdivision maps from consideration on the October 21st agenda of the Orange County Subdivision Committee and refer such subdivision maps to this Board for review and recommendation to the Planning Commission in a manner which is consistent with the provisions of the Specific Plan and the Zoning code";

After discussion the Chairman called for a vote and upon a five in favor and none against vote, the resolution was passed.

2.- A motion was made and seconded:

"That based upon the information provided to the Board by the county staff, the proponents and the opponents of the project, and the absence of sufficient time to understand and form recommendations on the very complex issues related to the proposed project, and in consideration of the concerns of the public about the impact of the project both during and after conversion/development of the property, we recommend against the 299 single family home alternative."

After discussion the Chairman called for a vote and upon a four in favor and one abstention vote, the resolution was passed.

OTHER ACTION BY THE BOARD:

The Board then proceeded to a discussion of the third agenda item, a general discussion of the proposed amendments to the Foothill/Trabuco Specific Plan. In that only a short time remained in the scheduled meeting time, it was determined that insufficient considerations had been given to the proposed amendments and that the community appeared to be gravely concerned about the scope of some or most of the proposed amendments. It was pointed out that the Board of Supervisors has scheduled a public meeting to consider the amendments on November 3, 1998. In consideration of the forgoing, a motion was made and seconded:

"That the Board discerns a grave community concern about the proposed amendments to the Foothill/Trabuco Specific Plan and urges the Board of Supervisors to remove any action/consideration of the proposed amendments from their November 1998 agenda, and refer the matter of such proposed amendments to this Board for recommendations thereon to the Planning Commission prior to any final action by the Supervisors."

After discussion the Chairman called for a vote and upon a five in favor and none against vote, the resolution was passed.

The Board then determined to place on the next agenda three elements of the proposed amendments to the FTSP for their next meeting November 13, 1998. The three elements are: (1) The 66 percent Dedication of Open space; (2) Tree removal and mitigation reforestation and (3) Additional uses in open space.

Upon motion duly made and seconded, a motion for adjournment was made and unanimously passed, whereupon the meeting was adjourned.

Robert A. Wilks
Secretary of the Board

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4645
FAX # 834-2771

County of Orange
Planning & Development Services Department

Supplemental Transmittal
Saddleback Meadows Zone Change/Area Plan
November 3, 1998, Agenda Item #55

DATE: October 30, 1998

TO: Clerk of the Board of Supervisors

FROM: Director, Planning & Development Services Department

SUBJECT: Public Comments and Corrected Exhibit

Attached are public comments we have received since the AIT was prepared. Also attached is a corrected exhibit illustrating manufactured slope height for the proposed project. Please replace the one in AIT Attachment H with the one attached herein.

No revision to Recommended Action is necessary.

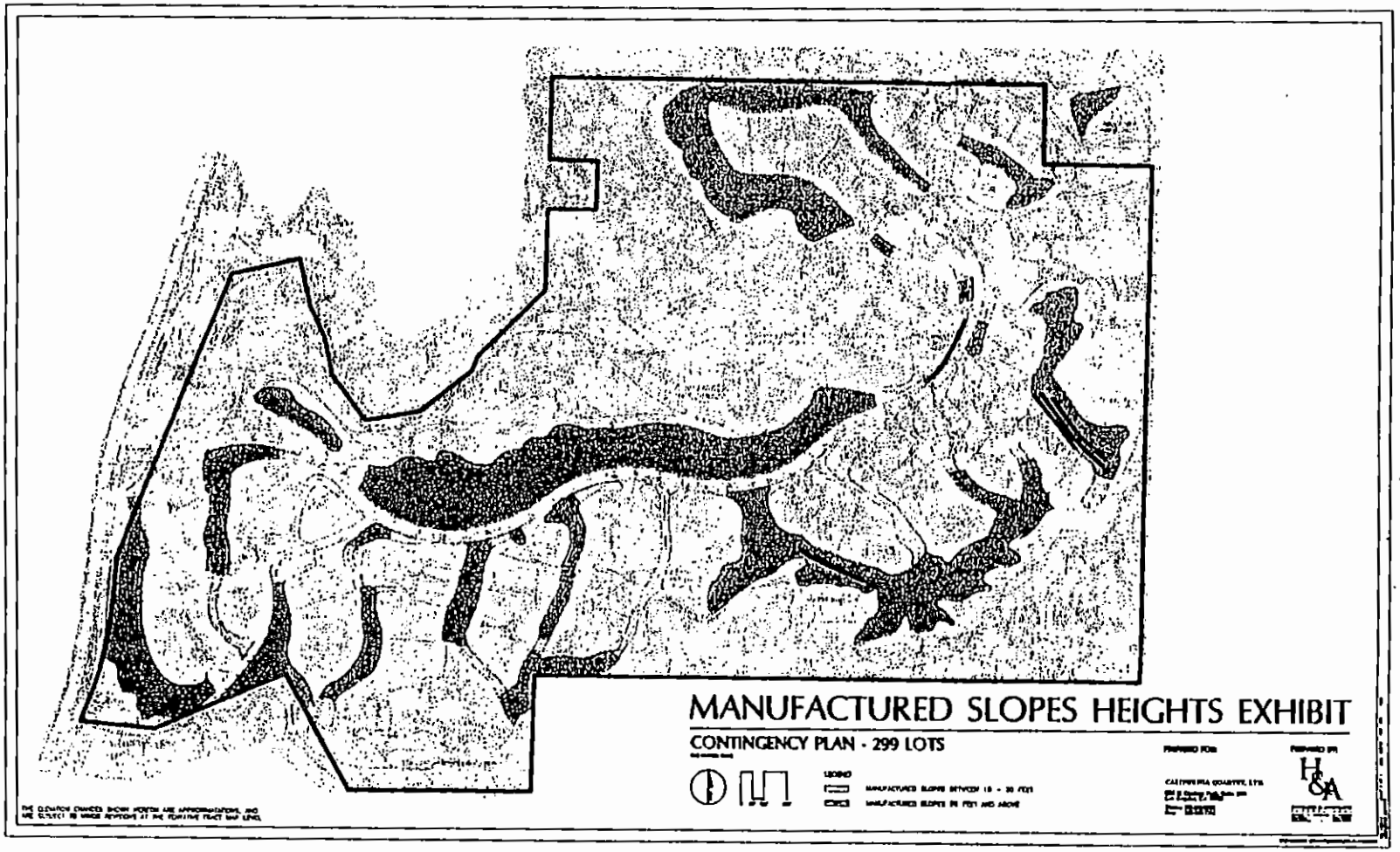
Respectfully submitted,

Thomas B. Mathews, Director

FMc:sjk/81028

Attachments: 1) Manufactured Slopes Exhibit
2) Public Comments

cc: Board of Supervisors
CEO
County Counsel
Grand Jury


MANUFACTURED SLOPES HEIGHTS EXHIBIT
CONTINGENCY PLAN - 299 LOTS
H&A

2940

October 12, 1998

The Honorable Todd Spitzer
Third District Supervisor
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92702

RE: Saddleback Meadows; FTSP Amendments; Code Enforcement Issues; Goren

Dear Supervisor Spitzer:

I am writing on a few subjects of importance and hope you will take the time to review this letter carefully.

SADDLEBACK MEADOWS

In a word or two, the Planning Department is again getting you and your fellow Board members into hot water. Not only have they disregarded CEQA in failing to address the recent discovery of two gnatcatchers on the Saddleback Meadows site [they must, under law, rewrite and recirculate the CEQA document], they have failed to send the issue to the Foothill Trabuco Review as required by law. Both issues, along with others, are litigable and these are the court's favorite issues; issues of procedure.

If it is your desire to send this thing to court, you are definitely on the right path, as is planning and the Planning Commission.

It is Frank McGill in planning, with the blessing of Tom Mathews, that is pushing this through. Then, YOUR Planning Commissioner, Rick Goacher, headed up the move to approve the 299-unit plan. I would like an explanation as to why you retain Goacher when he continues to rub your nose, and our lives, in such rubbish. The man is out of touch and is not representing the community. Why didn't he address the CEQA issues? Why didn't he address the endangered species issues? Whether he agrees or not with the law is not the point. The law is the law and his refusal to obey it is infuriating. Why do you allow him to force the public to sue every time we turn around? Why shouldn't the onus be on the developer, not the public? Do you really believe this is the best way to deal with problems?

McGill lied to the Commission in saying residents support the 299 plan. They don't, and he either knows it, or is incredibly out of touch. Either way, he lied. McGill and Mathews are directly and personally responsible for misrepresenting the issues, and I expect that you will take them to task for this.

Every time the county does something like this, especially when the law is clear and the court must deal with procedural issues, the taxpayers pick up the tab for County Counsel, private counsel, and the costs of litigation which, in this case, will undoubtedly include a multiple number of groups *proper* and otherwise. It's an insulting waste of hundreds of thousands of dollars and this type of thing must stop. In fact, I am preparing a review of the costs of needless litigation just in the canyons which may surprise you. I'm sure we have all kinds of places (like code enforcement officers) where $500K+ would be more valuable and productive when compared to needless litigation. This prodevelopment cycle has always worked this way and always will until someone (you?) stops it. And it's a great taxpayer issue. Enforce the law and stay the spending. That's it in a nutshell.

FTSP AMENDMENTS

The above Saddleback Meadows issue aside, now consider what Frank McGill told the Planning Commission in reference to the proposed FTSP: that the [Foothill Trabuco] Specific Plan would soon be amended to allow other projects similar to Saddleback Meadows. What gall. This is exactly what we know they have been focusing on for some time, and your support of the Amendments process has added fuel to this fire. Is this really want you want? Do you believe this is what your constituents want?

And, by the way, did you know that you appointment to the FTSP Review Board at least two individuals (Mills and Porter) who support a complete revision if not wipe out of the FTSP? If you did know, shame on you! If you didn't know, then perhaps you need to ask the appropriate staffer why you didn't know and why they didn't bother to find this out. Clearly, the community does not support the proposed revisions. So to appoint three members to the FTSP Review Board hostile to the FTSP was inappropriate. If you didn't know, I don't blame you personally. But the staffer dealing with this deserves a stern lecture. All this comes down to you, and this doesn't help.

When you commented to me, when we took the illegal grading tour, that Beazer didn't fit, I wanted to shout, "DUH"! So as you consider the amendments, remember every single day what you saw and how you felt. That is a mere shadow of how we feel.

I hope that you will make time, someday, to explain to me exactly what you mean when you say you are a land rights advocate. I hope you understand what that means not only legally, but in the real world.

CODE ENFORCEMENT ISSUES

As you know, and as Paul Hernandez knows, I was furious with the proposed make-up of the Code Enforcement Task Force. I just received, without attachments, the first Meeting Minutes of the Task Force, dated September 24, 1998.

Three things:

1. Who is our "community representative"? Please provide to me the name of the person serving our area where this issue was started.

2. Under Section III(B) you will note that Canyon grading violations are addressed by writing, "This issue is being addressed through a separate effort by Planning and Development Services". What does this mean?

3. Why are these meetings being held during the day when those of us who work--and I have worked on this issue hard and long for over 10 years--cannot attend the meetings? I am insulted and angry that these issues are being relegated to business times as usual so the public, and/or their representatives, cannot attend. Why was I never notified about the meeting times or consulted about who would be "representing" us? Exactly who do you believe can represent us if not one of us? It is no secret that Mathews hates me. But his dislike of me should not stop you, or your staff, from making sure that we are included. I would like to know who on your staff was responsible for staffing this Task Force for the Third District.

GOREN

As you remember, when Goren was approved it came out that Goren (who admitted they did not pay their permit fees at the Board Hearing) did not pay fees. You asked for an accounting of all fees paid since September 16, 1997 to the date of your Board Approval (later overturned by the court, as we predicted). Where is that information? — we got it

If Mathews has not provided it to you, I would request that you force him to do so immediately. I would like an explanation as to why every time he is in hot water (code enforcement, etc.) that he gets away with not providing information, not responding to requests, etc.

I am tonight sending a California Open Records Act Request for the information, and I better not have any difficulty with it, and better not be required to pay a fee. I've had it

with Mathews. Anyone and everyone who does not hold him accountable and ask questions is allowing him to get away with illegalities, etc., on a constant basis that, deminimus, cost us precious dollars, and time (dollars), and expands the power of his position from Director to Czar. Mathews has exhibited a pattern of behavior over the last 13 years which borders, and may, indeed, cross the line of malfeasance, at minimum. His part in many issues, whether the airport or land use, is extremely significant. As a department head, his behavior is akin to a butcher dressed as a barber. In the end, his razor is positioned at both your and our necks. Is this really how we should be pinned by a county employee? Held hostage by the irrational whimsy of one singular man?

I ask that you research these issues and schedule with me a call to address them. Our situation is not getting better, it is getting worse, and I need to know why. So do you.

With best wishes,

Sherry Lee Meddick

Sherry Lee Meddick
P.O. Box 771
Silverado, CA 92676
714/649-2641 tel
714/649-2349 fax

cc: Ray Chandos, RCCF

NOTICE OF PUBLIC HEARING

BY THE ORANGE COUNTY BOARD OF SUPERVISORS

SUBJECT: Zone Change 98-3 and Area Plan 98-2

LOCATION: Saddleback Meadows (east of El Toro Road and north of Valley Vista Way)

PROPOSAL: 299 single-family detached homes with 155+ acres of dedicated open space

Environmental Documentation: EIR Addendum PA 980103
Applicant: California Quartet, Ltd.
Hearing Date: November 3, 1998
Hearing Time: 9:30 A.M.
Hearing Location: Hall of Administration
10 Civic Center Plaza
Santa Ana, CA

The applicant and all persons either favoring or opposing this proposal and supporting documents are invited to present their views at the hearing. It is requested that any written response be submitted to the Planning & Development Services Dept. prior to the hearing date. If you challenge the action taken on this proposal in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the Planning & Development Services Dept. prior to the public hearing.

For further information please call Frank McGill at (714) 834-2099 or come to the Development Processing Center at the address indicated below.

Planning & Development
Services Dept.
P.O. Box 4048
300 North Flower Street
Santa Ana, CA 92702-4048

By order of the Board of
Supervisors of Orange
County, California
Darlene J. Bloom

_____
Clerk of the Board

2945

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4643
FAX # 834-2771

County of Orange
Planning & Development Services Department

Supplemental Transmittal
Saddleback Meadows Subdivision Maps
November 24, 1998, Agenda

DATE: November 17, 1998

TO: Board of Supervisors

FROM: Director, Planning & Development Services Department

SUBJECT: Appeal of Saddleback Meadows Subdivision Maps Tentative Tract Map 15784 and Vesting Tentative Tract Map 15230

Attached is an appeal by Edmond Connor of the Orange County Subdivision Committee's approval of Saddleback Meadows subdivision maps Tentative Tract Map (TTM) 15784 and Vesting Tentative Tract Map (VTTM) 15230 (Attachment I). The appeal was filed on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC. Also attached is the staff response to that appeal (Attachment II).

On November 3, 1998, your Board continued the proposed Saddleback Meadows 299-unit project (i.e., Zone Change 98-3 and Area Plan 98-2) to November 24, 1998. TTM 15784 and VTTM 15230 are directly related to the proposed 299-unit project and subject to the approval of Zone Change 98-3 and Area Plan 98-2.

On October 23, 1998, the landowner, California Quartet, Ltd., filed an appeal of TTM 15784 and VTTM 15230 which would otherwise not be brought before your Board. Because of the appeal filed by Edmond Connor, California Quartet, Ltd. has now withdrawn their appeal (Attachment III), but the previously submitted AIT and Attachments are still germane.

No revision to the Recommended Action is necessary.

Respectfully submitted,

Thomas B. Mathews, Director

FMc:sjk/81110

Attachments: 1) Appeal by Edmond Connor
2) Staff Response
3) Withdrawal of Appeal by California Quartet, Ltd.

cc: CEO
County Counsel
Clerk of the Board
Grand Jury

ATTACHMENT I

APPEAL FILED BY EDMOND CONNER

CONNOR, CULVER, BLAKE & GRIFFIN LLP

ATTORNEYS AT LAW

EDMOND M. CONNOR
MARILYN MARTIN CULVER
LAURA LEE BLAKE
CRAIG L. GRIFFIN
DAVID J. HESSELTINE
ROSALEE L. RODDA

2600 MICHELSON DRIVE
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E-MAIL: ccbg@ocba.net
INTERNET: www.businesslit.com

November 5, 1998

Thomas B. Mathews, Director
Orange County Planning & Development
Services Department
300 North Flower Street, Room 321
Post Office Box 4048
Santa Ana, California 92702-4048

VIA HAND DELIVERY

Benjamin de Mayo, Esq.
Deputy County Counsel
Office of County Counsel
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92702

Re: Notice of Appeal of Subdivision Committee's Approval of Tentative Tract Map Nos. 15784 (A Map) and 15230 (B Map) for Saddleback Meadows

Dear Messrs. Mathews and de Mayo:

The Vedanta Society of Southern California ("Vedanta"), the Norbertine Fathers of Orange (the "Norbertines"), and the Saddleback Meadows Land Conservancy LLC (the "Conservancy") [hereinafter, Vedanta, the Norbertines, and the Conservancy shall collectively be referred to as the "Appellants"] hereby submit this notice of appeal regarding the Subdivision Committee's approval of Tentative Tract Map Nos. 15230 and 15784 (collectively, the "Tract Maps") on October 21, 1998.

The Appellants' appeal of the Subdivision Committee's action on the Tract Maps (hereinafter referred to as the "Appeal") shall be based upon each and every procedural and substantive contention, objection, comment, or argument, whether written or oral, which are made, referenced, or otherwise incorporated into the letters (collectively, the "Letters") which are listed in Exhibit "A" attached hereto and are incorporated herein as if set forth in full hereat. In addition, the Appeal shall also be based upon each of the objections raised, or comments or arguments made, by the Appellants' representatives or

any other project opponent (hereinafter collectively referred to as the "Oral Comments") at the public hearings or meetings held by the Subdivision Committee, the Planning Commission, or the Foothill/Trabuco Specific Plan Review Board in connection with the 299-unit single family detached housing project (the "299-Unit Project") which is the subject of the Tract Maps, including, but not limited to, the hearings and meetings held on August 25, September 29, October 7, October 16, and October 21, 1998. Finally, the Appeal shall also be based upon any oral or written statements (the "Statements") made by Appellants' representatives regarding the 44/178 Alternative, including, but not limited to, any statements made at the Board meetings held on June 23, August 11, or October 6, 1998, or otherwise set forth in any correspondence between the Appellants, the County of Orange, or California Quartet, Ltd., or any of their respective representatives, including, but not limited to, the letters identified in Exhibit "A" hereto.

In addition to the contentions, objections, comments, or arguments made, referenced, or incorporated in the Letters, the Oral Comments, and the Statements -- which in the interest of administrative economy are being incorporated by reference as if set forth in full hereat -- the Appeal shall also be based on the following grounds:

(1) To the extent that the Subdivision Committee adopted a finding that the development of the 299-Unit Project will not preclude or prevent the preparation of the Southern Subregion NCCP, such a finding is belied and contradicted by the contents of the October 29, 1998 letter from the U.S. Fish & Wildlife Service ("USFWS") and the California Department of Fish & Game to the Orange County Board of Supervisors, a true and correct copy of which is attached hereto as Exhibit "B" and is incorporated herein by reference. Also attached hereto as Exhibit "C" and incorporated herein by reference is a copy of the November 2, 1998 news article from the *Los Angeles Times* which contains information from USFWS which does not support the Subdivision Committee's finding;

(2) In approving the Tract Maps, the Subdivision Committee failed to make adequate findings supported by substantial evidence in the record as required by the Orange County Zoning Code and Subdivision Code, the California Code of Civil Procedure, the Government Code, and all other applicable land use laws and regulations;

(3) In approving the Tract Maps, the Subdivision Committee violated CEQA and the State CEQA Guidelines by failing to (a) make adequate findings supported by substantial evidence in the record, (b) adopt an adequate mitigation monitoring program, and (c) adopt an adequate statement of overriding considerations with respect to the Tract Maps;

(4) As noted in prior letters submitted on behalf of the Appellants, the drainage impacts associated with the 299-Unit Project have not been properly analyzed or mitigated. The National Pollutant Discharge Elimination System Construction Stormwater Discharge Permit which has been referenced as a mitigation measure only applies to construction stormwater, it has no application to any discharge of storm, irrigation, or urban runoff occurring after construction has been completed. Although a Water Quality Management Plan has been required for the 299-Unit Project as an additional mitigation measure, the preparation of the Plan has been improperly deferred until the grading permit stage of development which will preclude any public review or comment on the Plan. Moreover, even if a WQMP is prepared in connection with the Tract Maps, it will not adequately mitigate the harmful effects of dumping toxic materials (e.g., oil, grease, cleaning products, herbicides, pesticides, and fertilizers) into biologically-sensitive areas of O'Neill Park on a daily basis. The "Drainage Area Management Plan" administered by the County of Orange does *not* impose *any* structural BMP requirements on WQMP's for single family residential projects and thus there is no legal basis in place for requiring the developer of the Tract Maps to install facilities to attempt to detoxify the urban runoff that will flow daily into O'Neill Park.

(5) Tentative Tract Map No. 15230 was improperly approved on October 21, 1998 as a vesting tentative tract map because (a) the public notice regarding such map did not refer to it as a vesting tentative tract map (a true and correct copy of the public notice is attached hereto as Exhibit "D"), and (b) in violation of, *inter alia*, section 7-9-236 of the County of Orange Subdivision Code, the submittal for such map did not identify it as a vesting tentative tract map (a true and correct copy of the "Planning Application" is attached hereto as Exhibit "E").

Accordingly, in light of the contentions, objections, comments, and arguments set forth herein, as well as those which are made, referenced, or incorporated into the Letters, Oral Comments, and Statements, the Appellants recommend that the approval of the Tract Maps by the Subdivision Committee be invalidated.

Very truly yours,

Edmond M. Connor

encl.

Vedanta\Aradi\Corresp\Apl-Maps.Ltr

2950

cc: William Ross, Esq.
Frank McGill

EXHIBIT "A"

LETTERS RE TENTATIVE TRACT MAP NOS. 15230 AND 15784

1. October 21, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Pat Stanton, Chair, Subdivision Committee, County of Orange; and

2. October 22, 1998 letter from Edmond M. Connor, Esq. Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin de Mayo, Esq., Deputy County Counsel, Office of County Counsel, County or Orange.

EXHIBIT B

US Fish & Wildlife Service
Carlsbad Field Office
2730 Loker Avenue West
Carlsbad, CA 92008
(760) 431-9440
FAX (760) 431-9624

CA Dept. of Fish & Game
4949 Viewridge Avenue
San Diego, CA 92123
(619) 467-4251
FAX (619) 467-4235

October 29, 1998

Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92703

Saddleback Meadows Project Zone Change 98-3, Area Plan 98-2
and Tentative Tract Maps 15230 and 15784

Dear Board of Supervisors:

The California Department of Fish and Game (Department) and U.S. Fish and Wildlife Service (Service), collectively the wildlife agencies, request that the following information regarding the referenced project actions be included into the hearing record that is the basis for the Board of Supervisors' November 3, 1998 hearing and decision. The hearing item involves land use approvals for a 299-dwelling unit (DU) Contingency Plan development on the 222-acre parcel that is known as Saddleback Meadows. Our comments reflect the wildlife agencies' position on the proposed project that has been developed during 4 years of meetings and environmental document reviews which have preceded this hearing. As described below, the wildlife agencies do not concur that the 299 DU Contingency Plan adequately addresses two critical biological impact issues that have been raised previously by our agencies.

The wildlife agencies, County of Orange, local jurisdictions, major landowners and environmental community are participating in the Natural Communities Conservation Planning (NCCP) program to conserve wildlife and habitat resources while accommodating compatible economic growth and development. Orange County's Central-Coastal NCCP and reserve design was the first major jurisdictional plan approved under the NCCP. That plan identified a limited number of locations at which the habitat that is assured of conservation in the Central NCCP reserve could connect with habitat that is currently undeveloped in the Southern Orange County NCCP planning area. Saddleback Meadows supports significant habitat that was identified as one of the key connection points. Although reserve design concepts and linkages to the Central NCCP reserve are only now being prepared for public review for the Southern NCCP planning area, this site provides a critical habitat connection between Central and Southern Orange County.

Previous letters provided by the wildlife agencies (individually or jointly) on the Draft Environmental Impact Report No. 561 and Draft Supplemental EIR No. 566 identified significant biological impacts associated with the preferred projects and many of the alternatives (including a previous 299 DU alternative) that we concluded were not mitigated to below a level of significance) pursuant to the California Environmental Quality Act (CEQA). The two most critical impacts were the diminished value of the wildlife corridor/linkage (particularly for large mammals) and impacts to wetlands that contain the federally-listed endangered Riverside fairy shrimp *(Streptocephalus wootoni)*. In addition to the CEQA concerns, the proposed projects and alternatives appeared to preclude the opportunity to ensure the linkage between the Central and Southern NCCP reserve lands. The proposed project (299 DU Contingency Plan) that is the subject of this hearing would result in the same inadequately mitigated impacts that the wildlife agencies have previously concluded were not acceptable.

Recent information provided by the County staff at the October 7, 1998 Orange County Planning Commission hearing and in the November 3, 1998 hearing information package has misinterpreted our position on the wildlife corridor, stating that we had concurred with the corridor design as presented in the Contingency Plan. This is not a correct representation of our position.

The Saddleback Meadows property provides the corridor/linkage, although natural habitat areas of the adjacent parcels also have wildlife habitat value. To retain this critical corridor/linkage, the critical factors are the amount, configuration, and topography of the habitat that remain on Saddleback Meadows after development. We believe that the development "bubbles" on the eastern and northern portions of the property essentially eliminate the corridor. The wildlife agencies would concur with a project alternative that provides sufficient habitat at the appropriate locations within the site, even if this included a point of constriction that still allowed for adequate animal movement. The wildlife agencies have provided written responses to the County during each project environmental review stage the wildlife corridor issue had not been adequately addressed in those project documents. Our biologists' professional opinion is that neither of the two previously submitted preferred projects (318 DU and 705 DU) nor the 299 DU Contingency Plan retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows. As currently proposed, the 299 DU Contingency Plan development "footprint" would severely constrain wildlife movement from O'Neill Regional Park (i.e., southern NCCP planning area) to the Central NCCP reserve and Cleveland National Forest and is not acceptable.

In addition, the previously submitted preferred projects and the Contingency Plan alternative cause significant impacts to the wetland areas that support the Riverside fairy shrimp. This is the most significant population of Riverside fairy shrimp in the Southern NCCP area, and no acceptable mitigation proposals have been presented in any of the project plans.

Our primary biological impact concerns could be addressed by a project redesign that removed development from the eastern and northern ridgelines, focussing development on the western portion of the property. This would retain the function of the wildlife corridor and conserve the most significant wetland

areas that support Riverside fairy shrimp. With these changes, the project would likely be able to mitigate its impacts to below a level of significance.

The wildlife agencies' staffs remain available to work with the project's representatives and County staff to address our concerns about the wildlife corridor/linkage and fairy shrimp. We remain optimistic that a solution will be found that provides an acceptable development project while retaining and conserving the wildlife corridor/linkage and species-specific resources.

Thank you for the opportunity to clarify the position of the wildlife agencies on the Saddleback Meadows Project.

Sincerely,

Jim A. Bartel
Assistant Field Supervisor
U.S. Fish and Wildlife Service

for Ronald D. Rempel
South Coast Regional Manager
California Department of Fish and Game

cc: Department of Fish and Game
Gail Presley
Bill Tippets
Liam Davis

U.S. Fish and Wildlife Service
John Bradley
Fred Roberts

ossadle.bt

EXHIBIT C

ORANGE COUNTY
METRO
Los Angeles Times

MONDAY
NOVEMBER 2, 1998

Open Space in Project Criticized

■ **Land use:** Regulators wonder if Saddleback Meadows' 'wildlife corridors' are big enough.

By DEBORAH SCHOCH
TIMES STAFF WRITER

At first glance, Saddleback Meadows looks like a cookie-cutter version of many other projects springing up in the Orange County foothills. It's to be a gated community of single-family homes grouped around cul-de-sacs in the Trabuco Canyon area, with price tags of $300,000 and up.

But a unique and highly contentious feature can be found in one corner of the project map: a 500-foot gap between house lots labeled a "wildlife corridor," through which rare birds and other wild creatures would travel.

AL SCHABEN / Los Angeles Times

Richard Jennings, a monk at the nearby Ramakrishna monastery, looks over the site of the proposed Saddleback Meadows.

And on the eve of a vote Tuesday on the project by the Board of Supervisors, concerns have escalated as to whether that corridor is wide enough to serve as the crucial link for a much-hailed county network of wildlife preserves.

While county planners appear satisfied, state and federal regulators continue to raise concerns that the corridor is flawed. In fact, the state Department of Fish and Game plans to provide information to supervisors Tuesday, said department official Bill Tippets.

"It's a big deal. It's a critical linkage area," added biologist John Bradley of the U.S. Fish and Wildlife Service.

In fact, Saddleback Meadows promises to be a litmus test of a nationally touted program intended to help stave off extinction

Please see PROJECT, B5

PROJECT

Continued from B1

for Orange County's rare plants and animals. That program, launched by Gov. Pete Wilson with the support of U.S. Interior Secretary Bruce Babbitt, has already produced a sprawling, 37,000-acre preserve in the county's central and coastal areas, and a second preserve in South County is planned.

A key link between the two reserves: the picturesque wilds of Saddleback Meadows, flanked by two religious centers and hills rich with native plants and animals. And with supervisors poised to approve the housing project on 222 acres, some state and federal regulators worry that it will block the flow of wildlife.

Some regulators and environmentalists fear that if rare songbirds and other animals cannot travel between the two reserves, the costly and complex Natural Community Conservation Plan reserve program blessed by Babbitt and Wilson could be derailed. Instead of a network of reserves, the county could have two reserve "islands," with encroaching suburbanization threatening the future of rare wildlife.

County planning administrator Tim Neely defends the proposed link.

"Obviously a wider corridor would be preferable, but this project has a long and complicated history. And, in light of that history, I'm not sure that this proposed corridor is unreasonable," Neely said.

"It's hard for me to imagine this is so terrible in light of all the work we've done," said Pike Oliver, a principal with Newport Beach-based TPG Management Inc., which is managing the project for landowner California Quartet. As for the concerns of state and federal regulators, Oliver said: "I've never seen an agency that hasn't asked for more."

The debate over Saddleback Meadows stretches back two decades, with plans taking many forms, from a 318-home project to a cluster of 705 mobile homes.

Opponents include environmental groups and the neighboring St. Michael's Abbey and the Ramakrishna monastery. The abbey is owned by the Norbertine Fathers of Orange, a Catholic religious order, while the Ramakrishnas are an independent faith tied to Hinduism.

The two religious centers have retained attorney Edmond Connor, who heads the county Bar Assn., and have spent months attempting to craft a compromise. One plan calls for a conservancy to buy 178 acres of the California Quartet property to preserve it for open space.

The purchase would be financed with $1.5 million from the county and $3.7 million from the Saddleback Meadows Land Conservancy, formed by the Norbertine fathers and benefactor Kathryn Swiss, Connor said. The developer could then build homes on the remaining 44 acres.

But the negotiations, assisted by Supervisor Todd Spitzer, apparently ran aground, although talks reportedly will continue today. The 299-home project, meanwhile, was approved 4-1 on Oct. 7 by the county Planning Commission.

"The story here is that the county is processing this thing at breakneck speed," Connor said.

A local review board, in fact, has asked the supervisors to postpone action because it lacked time to study it properly. Based on the information at hand, the Foothill Trabuco Specific Plan Review Board voted 4 to 0 with one abstention to oppose the project.

But others say the county has had ample time for study.

"It's time for the county to decide what it wants—to at least decide the outside of what's going to happen on this property," said Oliver with the firm managing the project.

"I believe we've done what we can do within the limits of our discretion to advance an alternative that our biologist has advised us satisfies reserve design requirements," said Neely at the county.

Yet, state and federal officials have failed to reconcile their differences with the county over the project's effects on wildlife.

In a joint Aug. 11 letter to county supervisors, the U.S. Fish and Wildlife Service and the state Department of Fish and Game outline what they term "significant biological issues related to the project site."

For instance, the federally endangered Riverside fairy shrimp can be found in at least seven wetlands on the property, the letter states. The rare cactus wren has been found on site, with the threatened California gnatcatcher found nearby.

A 299-home project poses "a significant threat" to the existing habitat connection, the letter states. It asks the board to consider an alternative that would allow development "while maintaining an essential biological connection" between the two reserve areas.

But in an Oct. 19 memorandum, Neely reported that a biologist with Dudek and Associates, which works for the county and South County landowners, had concluded that with proper replanting of vegetation, the proposed corridor would allow movement of birds and small mammals. Neely recommends the county conclude that the project "will not preclude or prevent the preparation" of a South County preserve.

That conclusion is "premature," said Bradley at Fish and Wildlife. "We haven't gotten far enough along on the analysis of reserve designs." And environmentalist Pete DeSimone goes even further.

"If the 299 homes go in, and the wildlife movement area is impacted to the extent we expect," DeSimone said, "then our ability to come up with a viable [South County preserve] is severely compromised, if not impossible."

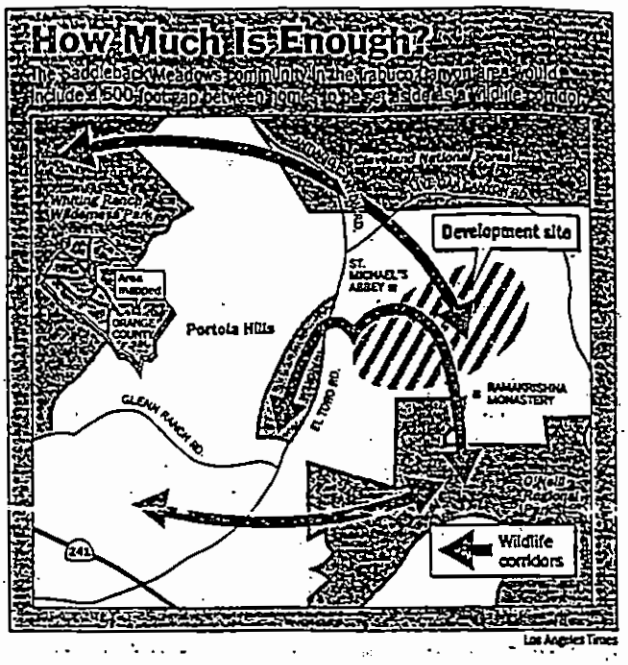

EXHIBIT D

PUBLIC NOTICE

of a public meeting to be held by the Orange County Subdivision Committee

DATE OF MEETING: October 21, 1998

TIME OF MEETING: 1:30 P.M. or as soon thereafter as possible

LOCATION: H. George Osborne Building, Room 903, 300 N. Flower Street, Santa Ana, California

PROJECT: TENTATIVE TRACT MAP NO. 15230

FILED BY: CALIFORNIA QUARTET, LTD.

LOCATED: ON THE EASTERLY SIDE OF EL TORO ROAD APPROXIMATELY 1,500 FEET SOUTHERLY OF LIVE OAK CANYON ROAD IN THE COOKS CORNER-LIVE OAK CANYON AREA.

PROPOSING: THE SUBDIVISION OF APPROXIMATELY 222 ACRES OF LAND INTO 269 LOTS FOR SINGLE FAMILY RESIDENTIAL DEVELOPMENT, 1 LOT FOR A PUMP STATION, 1 LOT FOR A GATED ENTRY, 2 LOTS FOR REGIONAL PARK PURPOSES, 20 LOTS FOR LANDSCAPED SLOPES/OPEN SPACE AND 17 LOTS FOR PRIVATE STREETS.

WILL BE CONSIDERED AT THIS MEETING: All persons either favoring or opposing this proposal are invited to present their view at this meeting. It is requested that any written response be submitted to the Planning and Development Services Department (PDS) prior to the meeting date. At the hearing, the proposal may be approved, conditionally approved, continued to another date or withdrawn. If you challenge the action taken on this project in court, you may be limited to raising only those issues you or someone else raised at the public meeting described in this notice, or in written correspondence delivered to the Planning and Development Services Department prior to the public meeting.

FOR FURTHER INFORMATION: Telephone 834-6045 or call at the Subdivision Section Office, 300 North Flower Street, Development Processing Center, Santa Ana, California, or write to Planning and Development Services, P.O. Box 4048, Santa Ana, California 92702-4048. To facilitate response, refer to Tentative Tract Map No. 15230.

ENVIRONMENTAL INFORMATION: THE REQUIREMENTS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT HAVE BEEN MET BY EMA'S DETERMINATION THAT THE PROJECT IS WITHIN THE SCOPE OF PREVIOUSLY FINALIZED EIR 566.

APPEAL PROCEDURE. Any interested person may appeal a decision of the Subdivision Committee on this project to the Planning Commission within ten (10) calendar days upon submittal of required documents and the payment of a fee of $385.00. The appeal must be filed at the Development Processing Center, Subdivision Section, 300 North Flower Street, Santa Ana, California.

2961

EXHIBIT E

ENVIRONMENTAL MANAGEMENT AGENCY

PLANNING APPLICATION

(SEE FILING INSTRUCTIONS BEFORE COMPLETING. FORM MUST BE TYPED.)

PROJECT NAME: TT 15230

LOCATION: Easterly side El Toro Rd southerly Live Oak Canyon Rd (Cooks Corner)

ACREAGE/SQ. OF THE SITE: 222.0 Ac

OWNER: California Quartet, Ltd

ADDRESS: 1875 E. Century Park, Suite 1880
Los Angeles, CA 90067

PHONE: (310) 210-0500

APPLICANT/AGENT (IF NOT OWNER): Kris Weber - Hunsaker & Assoc.

FIRM: Hunsaker & Associates Irvine Inc.

ADDRESS: Three Hughes
Irvine CA 92718

PHONE: (949) 583-1010

LUE: 1B Suburban Residential CP: 1.2 Low Density Residential

ZONE: Specific Plan

P.C./S.P.: Foothill/Trabuco Specific Plan

SUPV. DIST.: 3RD CSTL. ZONE ☐

✓	APPLICATION FOR PERMIT	CASE NUMBER	DATE	INITIAL
	INITIAL STUDY			
	REQUEST TO SCHEDULE GPA			
	GENERAL PLAN AMENDMENT			
	COMM. PROFILE AMENDMENT			
	ZONE CHANGE			
	FEATURE PLAN			
	AREA PLAN			
x	T. TRACT MAP	TT 15230	8-25-98	VB
	PARCEL MAP			
	USE PERMIT			
	SITE DEV. PERMIT			
	VARIANCE			
	COASTAL DEV.			
	DETAIL PLAN			

PROJECT PROPOSAL:
This is an application for a development permit.
This application is for a subdivision of 222 acres into 299 single-family residential lots, lot 300 for pump station purposes, lot 301 for a gated entry, lots A-O and lot DD for open space, lots P-V for scenic preservation, lots W-CC for a regional park, and lots EE-TT for private streets. This project is located in the Foothill/Trabuco Specific Plan. The main cross street is El Toro Road.

The following deviation is requested on this Tentative Tract Map:

1. Type "C" slope heights over 20' as shown on map.
2. Centerline radius less than 250' on "L" Street.
3. 12% grade on "R" Street.

EXISTING SITE CONDITIONS:
The site is vacant.

PREVIOUS GOVERNMENT APPROVALS:
Foothill/Trabuco Specific Plan, EIR No. 561, and Tract 10692

F0250-670 (7/87)

2963

ATTACHMENT II

STAFF RESPONSE TO APPEAL OF TTM 15784 AND VTTM 15230

FILED BY EDWARD CONNOR

1. **APPEAL ISSUE**

To the extent that the Subdivision Committee adopted a finding that the development of the 299-Unit Project will not preclude or prevent the preparation of the Southern Subregion NCCP, such a finding is belied and contradicted by the contents of the October 29, 1998 letter from the U.S. Fish & Wildlife Service ("USGWS") and the California Department of Fish & Game to the Orange County Board of Supervisors, a true and correct copy of which is attached hereto as Exhibit "B" and is incorporated herein by reference. Also attached hereto as Exhibit "C" and incorporated herein is a copy of the November 2, 1998 news article from the *Los Angeles Times* which contains information from USFWS, which does not support the Subdivision Committee's finding,

STAFF RESPONSE

The Subdivision Committee adopted a finding that the Contingency Plan will not preclude or prevent the preparation of the Southern Subregion NCCP upon recommendation from the Environmental & Project Planning Services Division in consultation with the Administrator, Planning and Zoning. The determination was based upon mitigation measures required in conjunction with Addendum PA980103 to Certified Final Subsequent EIR 566. The Addendum indicated that the design of the Contingency Plan reduced the impacts to the NCCP by providing a viable corridor, which when combined with the mitigation measures, would not preclude or prevent the preparation of the Southern Subregion NCCP Program.

2. **APPEAL ISSUE**

In approving the Tract Maps, the Subdivision Committee failed to make adequate findings supported by substantial evidence in the record as required by the Orange County Zoning Code and Subdivision Code, the California Code of Civil Procedure, the Government Code, and all other applicable land use laws and regulations;

STAFF RESPONSE

All findings required by the State Subdivision Map Act and the Orange County Subdivision Code were made. Such findings are supported by substantial evidence in the record, which includes Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA 980103.

3. **APPEAL ISSUE**

In approving the Tract Maps, the Subdivision Committee violated CEQA and the State CEQA Guidelines by failing to (a) make adequate findings supported by substantial evidence in the record, (b) adopt an adequate mitigation monitoring program, and (c) adopt an adequate statement of overriding considerations with respect to the Tract Maps;

STAFF RESPONSE

The adequacy of the environmental documentation on the subject project has been previously raised by the appellant and is the subject of litigation on the project. The County has determined that the Subdivision Committee did not violate CEQA and the State CEQA Guidelines.

- The findings made by the Subdivision Committee reflect the most accurate information known and made available at the time of the decision.

- In certifying Final Subsequent EIR 566, the Planning Commission adopted, and upon appeal, the Board of Supervisors upheld a Mitigation Monitoring Program in compliance with Section 21081.6 of the Public Resources Code. The action by the Subdivision Committee was a later action of the original approval and reflected mitigation measures from the Mitigation Monitoring Program. No new mitigation-monitoring program is required.

- In certifying Final Subsequent EIR 566, the Planning Commission adopted, and upon appeal, the Board of Supervisors upheld a Statement of Overriding Considerations in compliance with Section 15093 of the State CEQA Guidelines. The Subdivision Committee was not required to adopt a new Statement of Overriding Considerations.

4. **APPEAL ISSUE**

As noted in prior letters submitted on behalf of the Appellants, the drainage impacts associated with the 299-Unit Project have not been properly analyzed or mitigated. The National Pollutant Discharge Elimination System Construction Stormwater Discharge Permit which was referenced as a mitigation measure only applies to construction stormwater, it has no application to any discharge of storm, irrigation, or urban runoff occurring after construction has been completed. Although a Water Quality Management Plan has been required for the 299-Unit Project as an additional mitigation measure, the preparation of the Plan has been improperly deferred until the grading permit stage of development which will preclude any public review or comment on the Plan. Moreover, even if a WQMP is prepared in connection with the Tract Maps, it will not adequately mitigate the harmful effects of dumping toxic materials (e.g., oil, grease, cleaning products, herbicides, pesticides, and fertilizers) into biologically-sensitive areas of O'Neill Park on a daily basis. The "Drainage Area Management Plan" administered by the County of Orange does not impose any structural BMP requirements on WQMP's for single family residence projects and thus there is no legal basis in place for requiring the developer of the Tract Maps to install facilities to attempt to detoxify the urban runoff that will flow daily into O'Neill Park.

STAFF RESPONSE

The preparation of a Water Quality Management Plan will identify best management practices to control the discharge of pollution. The County's State issued NPDES Permit includes a Drainage Area Management Plan (DAMP), which identifies the structural and nonstructural best management practices, which are to be used to control non-point source pollutant runoff from residential development and minimize the introduction of pollutants into the drainage system. Since the measures to be used in the Water Quality Management Plan are already identified in the DAMP, the timing of the official submittal will not change the nature of the measures proposed. The implementation of these features will control the discharge of pollutants from the development.

5. **APPEAL ISSUE**

Tentative Tract Map No. 15230 was improperly approved on October 21, 1998 as a vesting tentative tract map because (a) the public notice regarding such map did not refer to it as a vesting tentative tract map (a true and correct copy of the public notice is attached hereto as Exhibit "D"), and (b) in violation of, inter alia, Section 7-9-236 of the County of Orange Subdivision Code, the submittal for such map did not identify it as a vesting tentative tract map (a true and correct copy of the "Planning Application" is attached hereto as Exhibit "E").

STAFF RESPONSE

The State Subdivision Map Act requires notice of a hearing be given pursuant to the State Government Code Sections 65090 and 65091, which in turn requires the information of such notice comply with the State Government Code Section 65094:

> ". . . . notice that includes the date, time and place of a public hearing, the identity of the hearing body or office, a general explanation of the matter to be considered, and a general description, in text or diagram, of the location of the real property, if any, that is subject to the hearing".

The public notice for the Subdivision Committee hearing complies with this requirement. The public notice for the Board of Supervisors hearing clearly identifies TTM15230 as a "vesting subdivision map". Furthermore, TTM 15230, which was distributed for public review, which was before the Subdivision Committee, and which is now before the Board of Supervisors, is clearly and boldly labeled "Vesting".

EXHIBITS

1. Notice of Public Hearing

FM/mmc

NOTICE OF PUBLIC HEARING

BY THE ORANGE COUNTY BOARD OF SUPERVISORS

SUBJECT: Appeal of TTM 15784 and VTTM 15230

LOCATION: Saddleback Meadows (along El Toro Road and north of Valley Vista Way)

PROPOSAL: A subdivision map for financing purposes only (TTM 15734) and a vesting subdivision map to create 299 residential building sites (VTTM 15230)

Environmental Documentation: EIR Addendum PA 980103
Applicant: California Quartet, Ltd.
Hearing Date: November 24, 1998
Hearing Time: 6:00 P.M.
Hearing Location: Hall of Administration
10 Civic Center Plaza
Santa Ana, CA

The applicant and all persons either favoring or opposing this proposal and supporting documents are invited to present their views at the hearing. It is requested that any written response be submitted to the Planning & Development Services Dept. prior to the hearing date. If you challenge the action taken on this proposal in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the Planning & Development Services Dept. prior to the public hearing.

For further information please call Frank McGill at (714) 834-2099 or come to the Development Processing Center at the address indicated below.

Planning & Development
Services Dept.
P.O. Box 4048
300 North Flower Street
Santa Ana, CA 92702-4048

By order of the Board of
Supervisors of Orange
County, California
Darlene J. Bloom,
Clerk of the Board

2968

ATTACHMENT III

WITHDRAWAL OF APPEAL BY CALIFORNIA QUARTET, LTD.

TPG Management, Inc.
1601 Dove Street, #105
Newport Beach, CA 92660
949-253-9595 Telephone
949-955-1170 Facsimile

VIA FACSIMILE

November 9, 1998

Mr. Thomas Mathews, Director
County of Orange
Planning and Development Services Department
300 North Flower Street,
3rd Floor, Room 315
Santa Ana, CA 92702-4048

Re: Saddleback Meadows - Withdrawal of Appeal of Subdivision Committee's October 21, 1998 Actions on TTM 15784 (A Map) and VTTM 15230 (B Map)

Dear Mr. Mathews:

On behalf of California Quartet, Ltd., we hereby formally withdraw our appeal of the Subdivision Committee's decision of October 21, 1998 approving the following maps: Tentative Tract Map 15784 Saddleback Meadows (A Map) and Vesting Tentative Tract Map 15230 Saddleback Meadows (B Map); which had been appealed pursuant to the Orange County Subdivision Code section 7-9-259(f) by a formal filing of appeal on October 23, 1998.

Should you have any questions concerning the withdrawal of our appeal, please contact me at (714) 253-2907.

Very truly yours,

H. Mike McKnight
TPG Management, Inc.

cc: Benjamin P. de Mayo, Esq. Deputy County Counsel
P. J. Stanton, Chairperson, Subdivision Committee
Frank McGill
Edmond M. Connor, Esq.
William D. Ross, Esq.
H. Pike Oliver
Frank Elfend

2970

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4643
FAX # 834-2771

Supplemental Transmittal
Saddleback Meadows 299 Unit Project
Agenda Item Nos. 52 & 53
November 24, 1998, Agenda

DATE: November 24, 1998

TO: Board of Supervisors

FROM: Director, Planning & Development Services Department

SUBJECT: Ordinance and Resolutions for Final Action

The Saddleback Meadows 299 dwelling unit project (aka Contingency Plan) on your Agenda for November 24, 1998 consists of the following elements:

(1) EIR Addendum PA 980103 to satisfy the requirements of CEQA.

(2) Zone Change 98-3 to amend the Foothill/Trabuco Specific Plan.

(3) Area Plan 98-2 to establish a conceptual plan of development for 299 dwelling units.

(4) Tentative Tract Map 15784, a subdivision map which is for financing purposes only and creates no building sites.

(5) Vesting Tentative Tract Map 15230 to create 299 legal residential building sites.

Attached are documents prepared in consultation with County Counsel for your Board to take final action on all the above elements. We suggest that you receive the staff presentation and conduct the public hearing for Agenda Item Nos. 52 and 53 simultaneously. After you close the public hearing, we recommend that you act on each element as stated below.

RECOMMENDED ACTION:

1. Adopt the draft Resolution (Attachment A) which approves EIR Addendum PA 980103.
2. Adopt the draft Ordinance (Attachment B) which approves Zone Change 98-3.
3. Adopt the draft Resolution (Attachment C) which approves Area Plan 98-2.

4. Adopt the draft Resolution (Attachment D) which approves Tentative Tract Map 15784.
5. Adopt the draft Resolution (Attachment E) which approves Vesting Tentative Tract Map 15230.

Respectfully submitted,

Thomas B. Mathews, Director

FMc:sjk/81110

Attachments:

A. Draft Resolution - EIR Addendum
B. Draft Ordinance - Zone Change
C. Draft Resolution - Area Plan
D. Draft Resolution - TTM
E. Draft Resolution - VTTM

cc: CEO
County Counsel
Clerk of the Board
Grand Jury

ATTACHMENT A

DRAFT RESOLUTION - EIR ADDENDUM

RESOLUTION OF THE BOARD OF SUPERVISORS

ADDENDUM PA980103 to FEIR 566

SADDLEBACK MEADOWS CONTINGENCY PLAN
Zone Change ZC98-3, Area Plan 98-2 & Tentative Tracts 15230 and 15784

ORANGE COUNTY, CALIFORNIA

_____, 1998

On the motion of Supervisor _____, duly seconded and carried, the following Resolution was adopted.

WHEREAS, on December 10, 1991, this Board certified Final EIR 531 for the Foothill/Trabuco Specific Plan, which designated the Saddleback Meadows site as a residential site in the Upper Aliso District; and

WHEREAS, Grading Permit application GA940031 was submitted to the County in April 1994, for Phase I of Tract 10692, a 705-unit manufactured single family residential project, for which the County required the preparation of an EIR, which was subsequently appealed in August 1994; and

WHEREAS, the applicant set aside the appeal on January 31, 1995, whereupon the Planning Commission directed the applicant to revise the project for one more compatible with surrounding land use; and

WHEREAS, after discussions with nearby residents, the applicant submitted a revised, 318-unit, conventional single-family residential project, including zone change, area plan and tentative tract map for which EIR 561was prepared; and

WHEREAS, the Board of Supervisors denied the revised project zone change and area plan on October 22, 1996; and

WHEREAS, applicant submitted Grading Permit application GA960048 for the entirety of recorded Tract 10692, consisting of 705 manufactured housing lots, for which the County required the preparation of EIR 566; and

WHEREAS, the Orange County Planning Commission reviewed all documentation comprising proposed Final SEIR 566 for the proposed project, as of December 3, 1997, certifying Final SEIR 566 as complete and adequate and in compliance with all requirements of the CEQA Statutes, the State CEQA Guidelines and County of Orange procedures; and

WHEREAS, the Board of Supervisors upheld the certification of Final Subsequent EIR 566 on February 24, 1998; and

WHEREAS, following negotiations between the County and private parties concerning the possible purchase of all and/or portions of the Saddleback Meadows site, the applicant submitted a Zone Change and Area Plan application for the subject 299-unit Contingency Plan, for which the Planning & Development Services Department required the preparation of Addendum PA980103; and

WHEREAS, Addendum PA980103 incorporated Certified Final Subsequent EIR 566, including its Mitigation Monitoring and Reporting Program, its STATEMENT OF FINDINGS, FACTS IN SUPPORT OF FINDINGS and the STATEMENT OF OVERRIDING CONSIDERATIONS; and

WHEREAS, on October 7, 1998, the Planning Commission concurred with the recommendation of the Planning & Development Services Department for the Contingency Plan to be found within the scope of Certified Final Subsequent EIR 566, and approved Addendum PA980103 as the appropriate environmental documentation for the Zone Change and Area Plan; and

WHEREAS, the Planning Commission considered the comments and concerns of all reviewers and commentators on Addendum PA980103, including the US Fish & Wildlife Service and the California

Department of Fish & Game and the organizations that later appealed the Area Plan and Subdivision Map approvals, and concurred in the recommendation of the Planning & Development Services Department that the noted concerns be found to be adequately addressed in the Addendum and Certified Final SEIR 566; and

WHEREAS, the Orange County Subdivision Committee approved Tentative Tract Map Nos. 15230 and 15784 on October 21, 1998, finding Addendum PA980103 as the appropriate environmental documentation for the subdivision maps in compliance with the Subdivision Map Act; and

WHEREAS, the Board has reviewed the Appeal of the Planning Commission's approval of Area Plan 98-2, dated October 22, 1998, and filed by Edmond Connor on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange and the Saddleback Meadows Land Conservancy, LLC, as it relates to the claims that the environmental documentation for the project is inadequate; and

WHEREAS, the Board has reviewed the Appeal of the Subdivision Committee's approval of Tentative Tract Map Nos. 15230 and 15784, dated November 5, 1998, and filed by Edmond Connor on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange and the Saddleback Meadows Land Conservancy, LLC, as it relates to the claims that the environmental documentation for the project is inadequate; and

WHEREAS, the Board has reviewed and considered correspondence from the California Department of Fish & Game and US Fish & Wildlife Service expressing concern regarding the Saddleback Meadows Contingency Plan.

NOW THEREFORE, based upon Addendum PA980103 and Certified FSEIR 566, this Board makes the following findings:

1. The Board finds that Certified Final Subsequent EIR 566 identified all significant environmental effects of the Contingency Plan, as set forth in the STATEMENT OF FINDINGS, FACTS IN SUPPORT

OF FINDINGS AND STATEMENT OF OVERRIDING CONSIDERATIONS, in the certification of the Final Subsequent EIR.

2. The Board finds that, per the criteria of Section 21081.6 of the Public Resources Code, the mitigation monitoring responsibilities of the County as the Lead Agency for the Contingency Plan have been met, as exemplified by the incorporation of appropriate mitigation measures from Certified Final Subsequent EIR 566 into conditions of approvals on the Zone Change, the Area Plan and the Tentative Tract Maps.

3. The Board finds that, per the criteria set forth in Section 15162 of the CEQA Guidelines, the proposed Contingency Plan does not trigger the preparation of a subsequent EIR.

4. The Board finds that, per Section 15164 of the CEQA Guidelines, the proposed Contingency Plan meets all the criteria which would allow the preparation of an Addendum to Certifed FSEIR 566.

5. The Board finds that, based upon the administrative record of the project, including the report of the Planning and Development Services Department, as put forth in Attachment II to Item 52, Supplemental to Agenda Item Transmittal dated November 3, 1998 and postponed to November 24, 1998, the Appeal of the Area Plan approval has no merit.

6. The Board finds that, based upon the administrative record of the project, including the report of the Planning and Development Services Department, as put forth in Attachment II to Item 53, Supplemental to Agenda Item Transmittal dated November 24, 1998, the Appeal of the approval of Tentative Tract Map Nos. 15230 and 15784 has no merit.

7. The Board finds that, together, Addendum PA980103 and Certified FSEIR 566, satisfy all requirements of the State CEQA Statutes and Guidelines and County of Orange procedures for the Saddleback Meadows Contingency Plan.

8. The Board finds that, pursuant to Section 711.4 of the California Fish and Game Code, although there is evidence that the proposed Contingency Plan has a potential for adverse effects on wildlife

resources, and thereby is subject to F&G fees, the fees for the proposed project site have been previously paid in conjunction with Certified Final SEIR 566.

9. The Board finds that, although the proposed project will have a significant impact upon Coastal Sage Scrub habitat, because of proposed mitigation measures imposed on the project and project design features, the project will not preclude the ability to prepare an effective Subregional Natural Communities Conservation Planning (NCCP) Program.

_____
Chairman of the Board of Supervisors

SIGNED AND CERTIFIED THAT A COPY
OF THIS DOCUMENT HAS BEEN DELIVERED
TO THE CHAIRMAN OF THE BOARD

_____

DARLENE J. BLOOM
Clerk of the Board of Supervisors
County of Orange, California

AYES: SUPERVISORS

NOES: SUPERVISORS

ABSENT: SUPERVISORS

STATE OF CALIFORNIA)
)
COUNTY OF ORANGE)

I, DARLENE J. BLOOM, Clerk of the Board of Supervisors of Orange County, California, hereby certify that the above and foregoing Resolution was duly and regularly adopted by the said Board at a regular meeting thereof held on the _____ day of _____, 1998, and passed by a _____ vote of said Board members present.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this _____ day of _____, 1998.

_____

DARLENE J. BLOOM
Clerk of the Board of Supervisors
of Orange County, California

ATTACHMENT B

DRAFT ORDINANCE - ZONE CHANGE

ATTACHMENT B

ORDINANCE NO. ____

AN ORDINANCE OF THE COUNTY OF ORANGE, CALIFORNIA ADOPTED PURSUANT TO THE STATE PLANNING AND ZONING LAWS, AMENDING THE FOOTHILL/TRABUCO SPECIFIC PLAN FOR SADDLEBACK MEADOWS (ZC98-3)

The Board of Supervisors of the County of Orange, California, does ordain as follows:

SECTION 1. Ordinance Nos. 3177, 3398, and 3468, which established regulations for the Saddleback Meadows (a.k.a. Bridlewood) Planned Community, are hereby repealed.

SECTION 2. The Foothill/Trabuco Specific Plan Section III.D.3, "Bridlewood Residential District," is hereby amended per Zone Change 98-3 as shown in Exhibit 1.

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EXHIBIT 1

3.0 Bridlewood Residential (BWR) District

3.1 Purpose and Intent

The Bridlewood Residential District is established to provide for the development and maintenance of low density detached single-family residential neighborhoods in steep hillside areas in such a manner that generous open space areas are featured.

3.2 Uses Permitted

Per the Residential Estates (Planned Development) District Regulations: Zoning Code sections 7-9-68 and 7-9-110.

3.3 Site Development Standards

Per the Residential Estates (Planned Development) District Regulations: Zoning Code sections 7-9-68 and 7-9-110.

3.4 Special Provisions

a. The maximum number of dwelling units for this District shall be 299.

b. The minimum amount of open space shall be 70% (155 acres). Such open space shall be defined as follows: The open space area remaining after approved development is completed that has a natural appearance and will remain undisturbed thereafter except for possible approved fuel modification. Such areas may include, depending on design and landscaping, parks, manufactured slopes, and recreation trails.

c. Any development shall be in compliance with every regulation of this District (BWR) and shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.

d. Prior to the approval of any tentative subdivision map, an area plan addressing the entire District shall be approved.

e. A preliminary grading permit may be issued in compliance with the Grading & Excavation Code subsequent to the approval of an area plan and tentative tract map which creates residential building sites. The Grading Official shall require a performance bond prior to the issuance of the grading permit.

f. Prior to the issuance of any building permits for residential structures, a use permit shall be approved by the Planning Commission per Zoning Code section 7-9-150.

ATTACHMENT C

DRAFT RESOLUTION - AREA PLAN

Revised 11/18/1998

RESOLUTION OF THE BOARD OF SUPERVISORS OF ORANGE COUNTY, CALIFORNIA

On motion of Supervisor _____, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Planning Commission conducted public hearings on Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the area known as Saddleback Meadows (aka Bridlewood); and

WHEREAS, the Planning Commission has considered EIR Addendum PA980103 and found that it satisfies the requirements of CEQA for this project.

WHEREAS, the Planning Commission approved AP98-2 subject to 32 conditions and recommended that this Board approve ZC98-3; and

WHEREAS, the Planning Commission's action on AP98-2 was appealed to this Board; and

WHEREAS, this Board has conducted a noticed public hearing on ZC98-3 and AP98-2; and

WHEREAS, this Board has reviewed and considered the action of the Foothill/Trabuco Specific Plan Review Board; and

WHEREAS, this Board has considered EIR Addendum PA980103 and, by separate Resolution, found that it satisfies the requirements of CEQA for this project; and

WHEREAS, this Board, by separate Ordinance, has approved ZC98-3.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

1. AP98-2 is consistent with the objectives, policies, general land uses and programs specified by the General Plan.
2. AP98-2 is in substantial compliance with, the Foothill/Trabuco Specific Plan.
3. AP98-2 is consistent with the provisions of the Zoning Code.
4. The location, size, design and operating characteristics of AP98-2, as conditioned, will not create conditions or situations that may be incompatible with other permitted uses in the vicinity.
5. AP98-2 will not result in conditions or circumstances contrary to the public health and safety and the general welfare.
6. AP98-2, as conditioned, satisfies the requirements of section 7-9-711 regarding public facilities.
7. The RE (PD), "Residential Estates (Planned Development)," site development standards regarding building site areas, building site coverage, area per unit, and number of dwelling units have been satisfied by AP98-2.
8. Condition of Approval No. 27 requires a use permit be approved which is consistent with AP98-2. A use permit may be approved for the entire project site or portions of the project site.

9. AP98-2, as conditioned, will provide significant public benefits in the form of major recreational trails, an important wildlife corridor for the Natural Communities Conservation Program and a large addition to O'Neill Regional Park.

10. That the issues raised in the appeal letter by Edmond Connor dated October 22, 1998 have been adequately addressed in the supplemental staff report dated October 7, 1998. Those responses are hereby incorporated by this reference.

BE IT FURTHER RESOLVED that this Board denies the appeal and upholds the action of the Planning Commission approving AP98-2 subject to the following conditions:

1. CP NA NA TIME LIMIT
Area Plan 98-2 is valid for a period of 48 months beginning with the effective date for ZC98-3. If the preliminary grading permit is not issued within such period of time, this approval shall be terminated and Area Plan 98-2 shall thereafter be null and void.

2. CP CP NA REVOCATION
Failure to abide by and faithfully comply with any and all conditions attached to this approving action shall constitute grounds for the revocation of said action by the Orange County Planning Commission.

3. CP CP G TENTATIVE TRACT MAP
Prior to the issuance of any grading permits, Tentative Tract Map 15230 shall be approved by the Subdivision Committee after a public hearing. Said tentative tract map must be found consistent with Area Plan 98-2.

4. CP CP G GRADING REVIEW
Prior to the issuance of any grading permits, the Manager, Current Planning Services, shall determine that the grading plan is consistent with Area Plan 98-2 and the approved tree preservation plan.

5. HP HP G TREE PRESERVATION PLAN
Prior to the issuance of any preliminary grading permit, a tree preservation plan shall be prepared which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and on-half feet above ground level). The tree preservation plan shall be consistent with the Area Plan 98-2 and the Foothill/Trabuco Specific Plan and approved by the Manager, Harbors Beaches, and Parks. The plan shall be signed and certified by a biologist or arborist.

6. EP SG/EP G FED ENDGD SPEC ACT
Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio or at such greater ratio as may be required by the U.S. Fish and Wildlife Service. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning.

7. SG SG G GEOLOGY RPT
Prior to the issuance of any grading permits, the applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall include the information and be in a form as required by the Grading Manual.

8. SG SG G DRAINAGE
Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, provide:

A. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

B Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

9. SG SG G CROSS-LOT DRAINAGE
Prior to the issuance of any grading permits, and if determined necessary by the Manager, Subdivision and Grading, a letter of consent, in a form approved by the Manager, Subdivision and Grading, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to the issuance of any grading permit. Acceptance of cross-lot drainage on lots within the tract map boundaries shall be noted on the recorded map.

10. SG SG G VECTOR CONTROL
Prior to the issuance of any preliminary grading permits, the subdivider shall provide evidence to the Manager, Subdivision and Grading, that the Vector Control District has surveyed the site to determine if vector control measures are necessary. If warranted, the developer shall conduct such measures in a manner meeting the approval of the Manager, Subdivision and Grading.

11. HP HP G ARCHAEO OBS & SALVAGE
Prior to the issuance of any preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified archeologist has been retained, shall be present al the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeologist shall submit a follow-up report to the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, an analysis of any artifacts fond and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, Harbors, Beaches & Parks.

12. HP HP G PALEO OBS & SALVAGE
Prior to the issuance of an preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer,

which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, Harbors, Beaches & Parks.

13. SG SG G GRADING NOTES

Prior to the issuance of any grading permits, the following guidelines shall be included in the "Notes Section" of the grading plans meeting the approval of the Manager, Subdivision and Grading.

A. During all grading and construction operations, all oak trees on the site, located adjacent to the approved limits of grading and identified in an approved Tree Management/Preservation Plan as trees to be preserved, shall be adequately fenced and protected from encroachment by grading and construction equipment. Grading, placement of fill, and storage of building materials and heavy equipment, shall be prohibited within the dripline of any tree identified for preservation as part of an approved Tree Management/Preservation Plan.

B. If required, retaining walls shall be used to protect the existing grades of oaks identified for preservation from surrounding cut and fill. However, these should not alter drainage from around the trees.

C. No type of surface, whether pervious or impervious, shall be placed within a six-foot radius of oak tree trunks. Where surfacing cannot be avoided, alternative types of paving should be utilized, such as gravel or porous brick with sand joints.

D. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

E. Natural drainage courses and natural grades outside the remedial grading impact area in proximity to and providing seasonal irrigation to oak trees shall not be altered.

F. In proximity to oak trees, only one trench should be dug to accommodate all utility lines. Where necessary, the impacted trees should be carefully pruned by an arborist in proportion to the total amount of root zone lost.

14. BP BP G CONSTRUCTION NOISE

A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits, that:

1. All construction vehicles or equipment, fixed or mobile, operated within 1000' of a dwelling shall be equipped with properly operating and maintained mufflers.

2. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

3. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the grading plans, will be considered as adequate evidence of compliance with this condition.

15. CP SG G PERFORMANCE BOND
Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, Subdivision and Grading.

16. HP HP G RE-ROUTING
Prior to the issuance of a preliminary grading permit, which includes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted by the applicant and approved by the Manager, Harbors, Beaches and Parks.

17. CP SG R
Prior to the recordation of any subdivision map which creates residential building sites, the preliminary grading activity for all of Area Plan 98-2 shall be completed to the satisfaction of the Manager, Subdivision and Grading.

18. HP HP R OPEN SPACE
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate to the County of Orange a minimum of seventy (70) percent of the project site as open space in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. The open space dedication shall be for: (1) regional park, and (2) restricted scenic preservation purposes. The Manager, Harbors, Beaches & Parks shall determine the final boundary between these open space areas.

Within the regional park area, the Manager, Harbors, Beaches & Parks shall determine what improvements, if any, shall be made. If determined appropriate by the Manager, Harbors, Beaches & Parks, the applicant shall be required to provide those improvements as shown and discussed in the Area Plan 98-2.

Within the restricted scenic preservation easement area, after dedication, no grading, structures (including stables and corrals), or commercial agriculture activities shall be permitted in this area. River rock walls not to exceed three feet, approved Loffel walls, and open fencing shall be permitted. An entry gate and identification sign shall be permitted subject to approval of a site development or use permit for such use. Future fuel modification, landscaping, and tree preservation shall be permitted if consistent with Area Plan 98-2 and conditions of approval No. 28 (fuel modification), No. 21 (landscaping), and No. 5 (tree preservation).

19. HP HP R RECREATIONAL TRAILS
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate a recreation easement for those bikeways and regional riding and hiking trails shown and discussed in Area Plan 98-2 in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. Also, the applicant shall design the necessary improvements and enter into an agreement, accompanied by financial security, with the County of Orange to install the necessary improvements in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

20. HP HP R CLEANING UP
Prior to the recordation of any subdivision map that creates residential building sites, the existing old ranch house and all abandoned automobiles shall be removed in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

21. HP HP R LANDSCAPE PLAN
Prior to the recordation of any subdivision map which creates residential building sites, the subdivider shall enter into an agreement and post financial security guaranteeing landscape

improvements and the maintenance thereof based on preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Manager, Harbors, Beaches & Parks. Said plan shall take into account the County Standard Plans for landscaped areas, adopted plant palette guides, applicable scenic and Foothill Trabuco Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

22. EP EP FIRE STATION FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

23. EP EP LIBRARY FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

24. EP EP SHERIFF STATION
Prior to the recordation of an subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning.

25. EC F F FUEL MODIFICATION
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall demonstrate to the satisfaction of the Fire Chief that necessary fuel modification in off-site locations will be maintained in perpetuity.

26. EP EP R AFFORDABLE HOUSING
Prior to the recordation of a subdivision map that creates residential building sites, the landowner shall provide a cash contribution to the County's General Plan Trust Fund. The specific methodology and amount of said contribution shall be subject to the approval of the Manager, Environmental & Project Planning. These funds shall be directed to support the County's overall efforts toward providing affordable housing, including but not limited to, future updates of the Orange County Housing Element and related programs for maintaining existing affordable housing and providing new affordable housing opportunities.

27. CP CP B USE PERMIT
Prior to the issuance of any building permits for residential structures, the applicant shall submit a use permit application for review by the Foothill/Trabuco Review Board and approval by the Planning Commission after a public hearing. Said use permit shall include, but not be limited to, the location of all structures and uses, precise landscaping plan, precise fuel modification plan and program, grading plan, and architectural plans for all structures. Said use permit must be found consistent with Area Plan 98-2.

28. F F GBU FUEL MOD PLAN
Prior to the approval of the use permit to construct residential structures, the applicant shall obtain the Fire Chief's approval, in consultation with the Manager, Environmental and Project Planning, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of combustible vegetation and the planting of drought tolerant fire resistant plants. However, only the minimum necessary fuel modification shall be approved by the Fire Chief. All practical mitigation measures to minimize the need for fuel modification shall be recommended by the Fire Chief such as use of non-combustible construction materials, interior fire sprinkler system and double-glassed windows. The required fuel modification shall be performed in a manner to minimize impacts on the natural environment as much as possible. The fuel modification plan shall then become effective after the Planning Commission approves the use permit.

29. SG SG B ROAD REE PROG
Prior to the issuance of building permits for residential construction, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, Subdivision and Grading.

A. Foothill Circulation Phasing Program
B. Foothill/Eastern Transportation Corridor
C. El Toro Road
D. Santiago Canyon Road

30. HP HP R LOCAL PARK FEES
Prior to the issuance of building permits for residential construction, the applicant shall pay in-lieu fees per the Local Park Code Requirements.

31. FTSP CP B SCHOOL FEES
Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the Manager, Current Planning, that he has reached a mitigation agreement with the District for the subject project proposal.

32. CP NA NA INDEMNIFICATION
Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may be required by a court to pay as a result of such action. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

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ATTACHMENT D

DRAFT RESOLUTION - TTM

(Draft November 24)

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA

On motion of Supervisor _____, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Orange County Subdivision Committee conducted a noticed public hearing and approved Saddleback Meadows Tentative Tract Map (TTM) 15784 which creates no building sites; and

WHEREAS, the action of the Subdivision Committee on TTM 15784 was appealed to the Board of Supervisors; and

WHEREAS, this Board, by two separate Resolutions and an Ordinance, has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA 980103; and

WHEREAS, this Board has conducted a noticed public hearing on TTM 15784.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the Board of Supervisors has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

X. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XI. That the development of this project will not preclude or prevent the preparation of the Southern Subregion NCCP.

XII. That the issues raised in the appeal letter by Edward Connor dated November 5, 1998 have been adequately addressed in the supplemental staff report dated November 17, 1998. Those responses are hereby incorporated by this reference.

XIII. That the Board, by two separate Resolutions and an Ordinance has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA980103, the findings from which are incorporated herein by reference.

BE IT FURTHER RESOLVED that this Board denies the appeal and upholds the Subdivision Committee action on TTM 15230 subject to the following conditions:

(G) 1. SG SG G GRADING RESTRICTION
(S) Notwithstanding any grading/elevations that are shown on the tentative tract map, or the provisions of Orange County Zoning Code Section 7-9-139 (Grading and Excavation), approval of this tentative tract map does not authorize the issuance of any grading permits.

(NA)2. SG NA NA INDEMNIFICATION
(S) Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents or employees to attack, set aside, void, or annul an approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

(R) 3. SG SG R CONVEYANCE MAP
(SS) Prior to the recordation of the final tract map, a note shall be placed on the final tract map stating, "This tract map is for conveyance purposes only and the lots created by this tract map are not legal building sites" in a manner meeting the approval of the Manager, Subdivision and Grading.

(SS) 4. CP NOTIFICATION
This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval.

You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

FM:no[W]

ATTACHMENT E

DRAFT RESOLUTION - VTTM

(Draft November 24)

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA

On motion of Supervisor _____, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Orange County Subdivision Committee conducted a noticed public hearing and approved Saddleback Meadows Vesting Tentative Tract Map (VTTM) 15230 to create 299 residential building sites; and

WHEREAS, the action of the Subdivision Committee on VTTM 15230 was appealed to the Board of Supervisors; and

WHEREAS, this Board, by two separate Resolutions and an Ordinance, has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA 980103; and

WHEREAS, this Board has conducted a noticed public hearing on VTTM 15230.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the proposed subdivision, together with the provisions for its design and improvement, is in substantial compliance with the Foothill/Trabuco Specific Plan.

X. That the design and improvement of the proposed subdivision are suitable for the uses proposed, and the subdivision can be developed in compliance with the applicable zoning regulations pursuant to Section 7-9-254 of the Subdivision Code.

XI. That the tentative map is consistent with both Area Plan (AP) 98-2 and Zone Change (ZC) 98-3.

XII. That the Board of Supervisors has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

XIII. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XIV. That the development of this project will not preclude or prevent the preparation of the Southern Subregion NCCP.

XV. That the discharge of waste from the proposed subdivision into the existing sewer system of the Trabuco Canyon Water District will not result in violations of existing requirements prescribed by the California Regional Water Quality Control Board, San Diego Region.

XVI. That the design of the subdivision and its improvements do provide, to the extent feasible, for future passive or natural heating or cooling opportunities as specified in Section 66473.1 of the Government Code (Subdivision Map Act).

XVII. That the following determinations apply to fees required by Sections 7-9-700 through 713, Codified Ordinances of Orange County:

A. Purpose of fees: Fire protection, paramedic, law enforcement, library, and general County services.

B. Use of fees: Construction of new fire station, sheriff substation, library, and general County facilities in newly developing areas which have inadequate service.

C. Relationship between use of fees and type of development: Dwelling units and commercial/industrial structures and their occupants require fire protection, paramedic, law enforcement, library, and general County services.

D. Relationship between need for facilities and type of project: Project is located in newly developing area which has inadequate fire protection, paramedic, library services, and sheriff substation and general County facilities.

E. Relationship between amount of fees and cost of the portion of the facilities attributable to the development: Fees represent project's pro rata share of the cost of the fire station, sheriff substation, library, and general County facilities.

XVIII. That because of participation in fee programs for off-site improvements, this project will qualify for consideration under Section 66452.6 of the Subdivision Map Act.

XIX. That the deviations from the standards of design set forth in the Subdivision Code Subdivision Committee Report were considered and found to be justified based upon the reasons set forth in the Subdivision Committee Report or special circumstances which apply.

XX. That the Local Park Code Requirement can be met by the payment of in-lieu fees.

XXI. That the monitoring requirements of Public Resources Code Section 21081.6 (AB 3180) will be considered as having been met in that the design of the subject project, the satisfaction of the requirements of the County's building, grading, fire, and other codes and ordinances and the satisfaction of the conditions of approval applied to the project will implement the mitigation measures contained in EIR No. 566 an Addendum PA 980103.

XXII. That the applicant is hereby provided notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval as well as the reports and actions accompanying this approval and that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun

XXIII. That the issues raised in the appeal letter by Edward Connor dated November 5, 1998 have been adequately addressed in the supplemental staff report dated November 17, 1998. Those responses are hereby incorporated by this reference.

XXIV. That the Board, by two separate Resolutions and an Ordinance has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA980103, the findings from which are incorporated herein by reference.

BE IT FURTHER RESOLVED that this Board denies the appeal and upholds the action of the Subdivision Committee subject to the following conditions:

1. CP NA NA SPECIAL

Approval of Vesting TTM 15230 is subject to final approval of Zone Change 98-3 and Area Plan 98-2. Prior to recordation of VTTM 15230, the Manager, Current Planning shall determine that it is in substantial compliance with final approved Zone Change 98-3 and Area Plan 98-2. Otherwise, a revised tentative map approved by the Subdivision Committee shall be required.

2. Prior to the issuance of any grading permits, the applicant shall satisfy the following conditions from the Board of Supervisors Resolution for Area Plan 98-2.

4. Grading Review
5. Tree Preservation Plan
6. Federal Endangered Species
7. Geology Report
8. Drainage
9. Cross-Lot Drainage
10. Vector Control
11. Archaeo Observation & Salvage
12. Paleo Observation & Salvage
13. Grading Notes
14. Construction Noise
15. Performance Bond
16. Re-Routing Trails

3. Prior to the recordation of a subdivision map which creates residential building sites, the subdivider shall satisfy the following conditions from the Board of Supervisors Resolution for Area Plan 98-2:

17. Preliminary Grading Completed
18. Open Space Dedication
19. Recreational Trails
20. Ranch House Clean Up
21. Landscape Plan
22. Fire Station
23. Library
24. Sheriff Station
25. Off-Site Fuel Modification
26. Affordable Housing

4. SG SG G LOFFEL WALLS

Prior to the issuance of a grading permit, a letter of justification and design plans for the proposed loffel walls shall be presented to and approved by the Manager, Subdivision and Grading Services.

5. BP BP RGB RESIDENTIAL ACOUSTICAL REPORT

All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dba CNEL in all habitable rooms and a source specific exterior standard of 65 d.b.a. CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

A. Prior to the recordation of a subdivision map or prior to the issuance of grading permits, as determined by the Manager, Building Permits, the applicant shall submit an acoustical analysis report to the Manager, Building Permits, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report.

6. SG SG RG DRAINAGE STUDY

Prior to issuance of any grading permits, the following drainage studies shall be submitted to and approved by the Manager, Subdivision and Grading:

A. A drainage study of the subdivision including diversions, off-site areas that drain onto and/or through the subdivision, and justification of any diversions; and

B. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and

C. Detailed drainage studies indicating how the tract map grading, in conjunction with the drainage conveyance systems including applicable swales, channels street flows, catch basins, storm drains and flood water retarding, will allow building pads to be safe from inundation from rainfall runoff which may be expected from all storms up to and including the theoretical 100-year flood.

7. SG SG RG DRAINAGE IMPROVEMENTS

A. Prior to the issuance of any grading permits, the applicant shall in a manner meeting the approval of the Manager, Subdivision and Grading:

1) Design provisions for surface drainage; and

2) Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

3) Dedicate the associated easements to the County of Orange, if determined necessary.

B. Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only) said improvements shall be constructed in a manner meeting the approval of the Manager, Construction.

8. SG SG R MPD PARTICIPATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only), the subdivider shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, Subdivision and Grading, including payment of fees and the construction of the necessary facilities.

9. SG SG R EASEMENT SUBORDINATION

Prior to the recordation of an subdivision map (except maps for financing and conveyance purposes only), the subdivider shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, for review and approval.

10. SG SG G GRADING DEVIATION

Prior to the issuance of any grading permits, if the applicant submits a grading plan and the Manager, Subdivision and Grading, determines that it shows a significant deviation from the grading on the approved tentative tract map and Area Plan 98-2, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative map and/or area plan application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required

11. CP HP R ACCESS

Prior to recordation of any subdivision map that creates residential building sites, a 400 foot wide access easement across Lot A (Spine Street) from Lot MM to Lot LL shall be dedicated to the County of Orange in a manner meeting the approval of the Manager; Harbors, Beaches & Parks in consultation with the Manager, Subdivision and Grading. The primary purpose of the access easement is to provide for continuity of the wildlife corridor and O'Neill Regional Park.

Signs identifying a wildlife crossing area shall be posted within 100 feet of each point where the street transverses the wildlife corridor.

12. Master Plan of Regional Recreation Facilities:

Regional Park Dedication:

Lots LL and MM shall be dedicated to the County as an addition to O'Neill Regional Park, exclusive of manufactured slopes, which should be retained in separate lots. Regional park dedication shall be in done in compliance with the following conditions:

A. Prior to the recordation of the first subdivision map that creates residential building sites, the subdivider shall make an irrevocable offer of dedication in fee to the County of Orange, or its

designee, of Lots LL and MM, exclusive of manufactured slopes, for regional park purposes in a form approved by the Chief, Harbors, Beaches and Parks, Program Management & Coordination suitable for recording. Said offer shall be free and clear of money and all other encumbrances, liens, leases, fees, easements (recorded and unrecorded), assessments and unpaid taxes, except those meeting the approval of the Chief, Harbors, Beaches and Parks, Program Management and Coordination. Until such time as the offer is accepted by the County or its designee, the subdivider or assigns and successors shall be responsible for maintenance and upkeep of the above-referenced lots.

B. Prior to the recordation of any subdivision map that creates residential building sites, the subdivider shall survey and monument all lots dedicated for regional park purposes, and stake the property line of the dedication area(s) with durable, long-lasting, high visibility markers at all angle points and line of sight obstructions to the satisfaction of the Manager, Harbors Beaches & Parks.

C. Prior to recordation of the regional park dedication, the existing old ranch house sited within future regional park land shall be demolished except for the rock work subject to the approval of the Chief, HBP/Program Management & Coordination.

13. Master Plan of Regional Riding and Hiking Trails/County Bikeways:

Regional Trail Dedication:

A. The Live Oak Canyon Regional Riding and Hiking Trail is depicted within the Recreation Element aligned through Lot R, adjacent El Toro Road, through the proposed project. A recreation easement for this riding and hiking trail shall be dedicated to the County which includes trail improvements, including trail improvements just offsite along El Toro Road, north to the intersection of El Toro Road and the community spine road, as well as north to the existing under crossing of El Toro Road, in compliance with the following conditions:

1. Prior to the recordation an applicable subdivision map that creates residential building site the subdivider shall:

   a. Irrevocably offer a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. The subdivider shall not grant any easement(s) over the property subject to the recreation easement unless such easements are first reviewed and approved by the Chief, HBP/Program Management & Coordination.

   b. Design the necessary improvements(both onsite and offsite) for the trail, including, but not limited to grading, erosion control, signage and fencing, as applicable, in manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Subdivision & Grading. Further, the subdivider shall enter into an agreement, accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

2. Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Chief, HBP/Program Management & Coordination, to ensure that the proposed grading provides for, will not interfere with, or preclude the installation of the riding and hiking trail in a location and in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to the issuance of final certificates of use and occupancy and the release of financial security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Construction.

B. Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated to the County within a recreation easement aligned east-west through the proposed project.

A recreation easement for the local riding and hiking trail shall be dedicated to the County for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trail, *both* within and outside the future regional park, in addition to a connection from the staging area along the community spine road *offsite* to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers as well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area shall be done in compliance with the above.

C. Trail Reroutes/Bikeway and Riding and Hiking Trails:

1. The Aliso Creek Class I, paved Off-Road Bikeway, as well as the Live Oak Canyon Regional Riding and Hiking Trail will require re-routing plans during construction of the proposed project. Therefore, the following condition shall apply:

   Prior to any grading and/or construction activities which precludes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted subject to the approval of the Chief, HBP/Program Management & Coordination.

2. The same condition shall also be applicable to the Class II On-Road Bikeway aligned along the north bound lane of El Toro Road contiguous the proposed project.

14. Master Plan Local Parks (Local Park Code):

The Local Park Code requirement is 2.392 acres of park land based upon a proposal to build 299 residential units at a gross density of 1.35 du/ac (299 x .008 ac/du).

Prior to issuance of building permits the Local Park Code requirement shall be met by *payment of in-lieu fees.*

15. Resources Element (Open Space Component):

A. Dedicate Restricted Scenic Preservation Easement:

Fuel modification areas, manufactured slopes and remedial grading areas sited between the regional park dedication area and residential development, the fuel modification and native enhancement transition area contiguous El Toro Road, and northerly most fuel modification and native enhancement transition area, shall be placed within restricted scenic preservation easement areas. These areas include Lots R, CC, DD, EE, FF, GG, HH, II and JJ. *(NOTE: Manufactured slopes now depicted within Lots MM and LL the regional park, should be depicted within separate open space lots and restricted scenic preservation easements placed over them).* Restricted scenic preservation easements shall be dedicated to the County of Orange in compliance with the following conditions:

1. Prior to the recordation of any applicable final tract map which creates residential building sites, the subdivider shall make an irrevocable offer to dedicate an easement to the County of Orange or its designee over Lots R, CC, DD, EE, FF, GG, HH, II, and JJ, for restricted scenic preservation purposes in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. in consultation with the Manager, Current Planning.

Maintenance, upkeep and liability for said easement area shall remain the responsibility of the subdivider or assigns and successors (i.e., homeowner's association) or current underlying owner(s) of said easement area and shall not be included in said dedication offer. The subdivider shall not grant any easement over any property subject to said easement unless such easements are made subordinate to said easement offer in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

2. The subdivider shall note limitations and restrictions for said easement by a reference on the final map to a previously recorded document or by the recordation of a separate document concurrent with the recordation of subject map in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to recordation of any applicable final tract map or as determined by the Chief, HBP Program Management & Coordination, the subdivider shall survey and monument all parcels of the land to be dedicated for restricted scenic preservation easement purposes, and submit plans showing how the development boundaries of the restricted scenic preservation easement parcel(s) is marked to be visible for monitoring purposes by Grantee to the satisfaction of the Chief, HBP/Coastal & Historical Facilities.

B. Public Area Landscaping:

The areas to be irrevocably offered to the County of Orange for restricted scenic preservation purposes shall be landscaped, equipped for irrigation, as applicable, and improved in accordance with an approved landscape plan as stated below:

1. Preliminary Plan

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Chief, HBP/Program Management & Coordination. Said plan shall take into account Area Plan 98-2, County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487(Water Conservation Measures), and Board Resolution 90-1341(Water Conservation Implementation Plan).

2. Detailed Plan

Prior to the issuance of any building permits, the applicant shall submit a detailed landscape plan for approval to the Manager, Subdivision & Grading, in consultation with the Chief, HBP/Program Management & Coordination. Detailed plans shall show the detailed irrigation and landscaping design.

3. Installation Certification

Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, the applicant shall install said improvements and have the installation certified by a licensed landscape architect or licensed landscape contractor, as having been installed in accordance with the approved detailed plans. The applicant shall furnish said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report

determined applicable to the Manager, Construction, and the Manager, Building Inspection, prior to the issuance of any certificates of use and occupancy.

C. Urban Edge Treatment Plan/Viewshed Analysis:

Prior to the approval of any use permits for residential structures, an urban edge treatment plan/viewshed analysis shall be submitted to the County subject to the approval of the Chief, HBP/Program Management & Coordination. The Urban edge treatment plan/viewshed analysis shall comply with the following criteria:

1. Establish building height and setback limits (i.e., Building Envelope Formula) and grading treatments to preserve views attained from within existing and proposed parks and open space areas as well as from along designated scenic highways (i.e., El Toro Road) as identified by the Master Plan of Regional Recreational Facilities (Recreation Element), Open Space Component (Resources Element) and Master Plan of Scenic Highways (Transportation Element) respectively. Moreover, views from St, Michaels Abbey, the Ramakrishna Monastery and neighboring Hidden Ridge Community shall also be addressed. Viewshed analysis cross sections should be provided as seen from these areas to proposed residential structures.

2. Eliminate and/or reduce to the greatest extent possible conflicts which may impact the existing and future recreational utility of a regional recreation recreational facility and open space areas.

3. Eliminate and/or reduce to the greatest extent possible potential operation and maintenance problems resulting from encroachment, unauthorized entry, private development fuel modification requirements, flood control facilities, and maintenance of privately landscaped manufactured slopes and maintenance roads as they relate to future and existing regional recreational facilities.

4. Establish appropriate landscape/fuel modification treatments and wall and/or fence treatments including berms to provide appropriate transition from regional recreational facilities and open space areas to private development areas.

5. Establish smooth and gradual transition between graded slopes and existing slopes within the park and open space areas using variable slopes (2:1-4:1).

6. Obscure slope drainage structures with a variety of plant materials.

7. Incorporate architectural and design techniques into the project in order to enhance off-site views attained from within parks and significant open space.

8. All landscaping of manufactures slopes interfacing significant open space areas should be exclusively native, as applicable, to preserve the biological and scenic integrity of regional corridors, open space and park lands.

16. FF GBU FIRE HYDRANTS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit a fire hydrant location plan for the review and approval of the Fire Chief.

17. FF RBU AUTOMATIC FIRE SPRINKLERS

A. Prior to the recordation of a subdivision map, which creates residential building sites, a note shall be placed on the map stating that all structures shall be protected by an automatic fire sprinkler system, in a manner meeting the approval of the Fire Chief.

18. FF RG FIRE ACCESS ROADS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall obtain approval of the Fire Chief for all fire protection access easements and shall dedicate them to the County.

B. Prior to the issuance of any grading permits, the applicant shall submit and obtain approval of plans for all roads, streets and courts, public or private, from the Fire Chief in consultation with the Manager, Subdivision and Grading Services. The plans shall include the plan view, sectional view, and indicate the grade and width (28-ft. minimum) of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be approved by the Fire Chief and if needed, clearly marked when a dead-end street exceeds 150 feet or when otherwise required. Applicable CC&R's, or other approved documents, shall contain provisions which prohibit obstructions such as speed bumps/humps, control gates or other modifications within said easement or access road unless prior approval of the Fire Chief is granted. Grade shall not exceed 10%. Up to 15% is allowed when all structures served by the road are protected by automatic sprinklers.

C. Street signs. A note shall be placed on the fire protection access easement plan indicating that all street/road signs shall be designed and maintained to be either internally or externally illuminated in a manner meeting the approval of the Fire Chief.

19. FF BU STREET MARKINGS

Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit plans and obtain approval from the Fire Chief for fire lanes on required fire access roads less than 36 feet in width. The plans shall indicate the locations of red curbing and signage. A drawing of the proposed signage with the height, stroke and coloring of lettering and the contrasting background color shall be submitted to and approved by the Fire Chief.

20. F F R TRAFFIC SIGNAL PREEMPTION

Prior to the recordation of the applicable subdivision map which creates residential building sites, as determined by the Fire Chief in consultation with the Manager, Subdivision and Grading Services, the subdivider shall enter into an agreement with the County for the installation of traffic signal preemption equipment for the surrounding controlled intersections. Said agreement shall be accompanied by financial security.

21. F F RRB FIRE HAZARD NOTIFICATION

A. A Special Fire Protection Area Notification. Prior to the recordation of any final tract map which creates residential building sites, the subdivider shall place a note on the map meeting the approval of the Fire Chief that the property is in a **"Special Fire Protection Area"** and must meet all requirements for development within the area or file for an exclusion with the Fire Chief.

B. Special Fire Protection Area Development. Prior to issuance of a building permit, the applicant shall meet all requirements for development and construction within a Special Fire Protection Area as identified in Orange County Ordinance 3960, including increased street widths, Class A roof assemblies, fire sprinklers, etc.

22. F F G FUEL MODIFICATION

A. Prior to the issuance of a preliminary grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services and Subdivision and Grading Services of a conceptual fuel modification plan and program.

B. Prior to the issuance of any precise grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services, and Subdivision and Grading Services of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to the structures by vegetation, the CC&R's, or other approved documents, shall contain provisions for maintaining the fuel modification zones including the removal of all dead and dying vegetation subject to triennial inspections.

23. F F G ACCESS GATES

Prior to the issuance of any grading permits, the applicant shall submit and obtain the Fire Chief's approval for the construction of any gate across required Fire Authority access roads/drives. Contact the Orange County Fire Authority at (714) 744-0403 for a copy of the "Guidelines for Fire Authority Emergency Access".

24. SG SG B FOOTHILL/EASTERN TRANSPORTATION CORRIDOR

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fees Program for the Foothill/Eastern Transportation Corridor.

25. SG SG B FOOTHILL CIRCULATION PHASING

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for the Foothill Circulation Phasing Program.

26. SG SG B SANTIAGO CANYON ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for Santiago Canyon Road.

27. SG SG B EL TORO ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for El Toro Road.

28. SG SG B ARTERIAL RIGHT-OF-WAY

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall dedicate ultimate half-width road right-of-way to major arterial highway standards across the property frontage in a manner meeting the approval of the Manager, Subdivision and Grading Services.

29. SG SG R SANTIAGO CANYON ROAD

Prior to recordation of any subdivision map that creates residential building sites, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manager, Subdivision and Grading Services.

30. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall design and construct a northbound right turn lane and a southbound left turn lane on El Toro Road at the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading Services.

31. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall provide a cash deposit to pay the cost of designing and constructing the ultimate configuration of El Toro Road as determined by PFRD/Program Development Division, all in a manner meeting the approval of the Manger, Subdivision and Grading Services.

32. SG SG G TRAFFIC SIGNAL

Prior to recordation of a subdivision map that creates residential building site, the applicant shall design and construct a traffic signal at the intersection of El Toro and the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading in consultation with the Manager, Program Development Division.

33. SG SG G SIGHT DISTANCE

Prior to issuance of a grading permit, adequate sight distance shall be provided at all intersections per Standard Plan 1117, and at all driveways, in a manner meeting the approval of the Manager, Subdivision and Grading Services; this includes any necessary revisions to the plan to remove slopes and other encroachments from the Limited Use Area.

34. SG SG G "C" STREET

Prior to the issuance of a grading permit, the applicant shall design "C" Street 40' in width, curb to curb, with sidewalk on both sides.

35. SG SG G UTILITY EASEMENT

Prior to the issuance of a grading permit, the applicant shall design both sides of all of the private streets with a 3' public utility easement.

36. SG SG G — GATED ENTRY

Prior to the issuance of a grading permit, the applicant shall design the gated entry area to facilitate vehicular turnaround movements prior to reaching the gate in a manner meeting the approval of the Manager, Subdivision and Grading Services.

37. SG SG R — LOT 296

Prior to recordation of a final map, the applicant shall design Lot 296 with 20' minimum of property frontage.

38. SG SG G — EMERGENCY ACCESS

Prior to the issuance of a grading permit, the applicant shall design the emergency only access between "B" Street and existing Valley Vista in a manner meeting the approval of the Manager, Subdivision and Grading Services.

39. SG SG R — PVT STREET NOTIFICATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall place a note on the map that states:

"The private streets constructed within this map shall be owned, operated and maintained by the developer, successors or assigns. The County of Orange shall have no responsibility therefore unless pursuant to appropriate sections of the Streets and Highways Code of the State of California, the said private streets have been accepted into the County Road System by appropriate resolution of the Orange County Board of Supervisors."

40. SG SG R — STREET IMPROVEMENTS

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall design and construct the following improvements in accordance with plans and specifications meeting the approval of the Manager, Subdivision and Grading:

A. Streets, bus stops, on-road bicycle trails, street names, signs, striping and stenciling.

B. The water distribution system and appurtenances which shall also conform to the applicable laws and adopted regulations enforced by the County Fire Chief.

C. Underground utilities (including gas, cable, electrical and telephone), streetlights, and mailboxes.

41. HP HP R — ACCESS EASEMENT

Prior to, or concurrent with the recordation of Tentative Tract 15230, an Official County Vehicular Road Access Easement shall be recorded by separate instrument which notes limitations and restrictions for this easement subject to the approval of the Chief, PFRD/Harbors, Beaches and Parks, Program Management & Coordination. It shall permit access over Spine Street (Lot A) of Official County vehicles for regional park management purposes.

42. The following Mitigation Measures from Addendum PA980103 are added as conditions of approval:

SC 2-4	SC 2-5	SC 2-6
SC 2-12	SC 2-13	SC 2-14
SC 7-2	SC 7-9	SC 9-2
SC 9-10	AM 8-15	

43. CP CP INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit or, in the alternative, the relinquishment of such permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

44. CP CP

Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents, or employees to attack, set aside, void, or annual approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

45. CP NOTIFICATION

This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval. You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

FMG:no[W]

ATTACHMENT 1

BOARD OF SUPERVISORS

RESOLUTION ON AREA PLAN 98-2

(PLACEHOLDER)

SADDLEBACK MEADOWS
ADDENDUM PA980103
Mitigation Measures

SOILS AND GEOLOGY

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, off-site grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the on-site material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation

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shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-13 Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-14 Prior to the issuance of any grading permits, the applicant shall provide, in accordance with criteria supply by PDS, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Monitoring Programs Division.

BIOLOGICAL RESOURCES

MITIGATION MEASURES

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement.

SC 7-9 Prior to the issuance of grading permits, the applicant shall prepare a habitat restoration plan for all areas proposed for revegetation of coastal scrub habitat to the satisfaction of the Administrator / Planning and Zoning. As part

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investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PFRD/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

Paleontology

SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pregrade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PFRD/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their present repository. This mitigation measure has been completed.

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ATTACHMENT E

DRAFT RESOLUTION - VTTM

(Draft November 24)

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA

On motion of Supervisor _____, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Orange County Subdivision Committee conducted a noticed public hearing and approved Saddleback Meadows Vesting Tentative Tract Map (VTTM) 15230 to create 299 residential building sites; and

WHEREAS, the action of the Subdivision Committee on VTTM 15230 was appealed to the Board of Supervisors; and

WHEREAS, this Board, by two separate Resolutions and an Ordinance, has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA 980103; and

WHEREAS, this Board has conducted a noticed public hearing on VTTM 15230.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the proposed subdivision, together with the provisions for its design and improvement, is in substantial compliance with the Foothill/Trabuco Specific Plan.

X. That the design and improvement of the proposed subdivision are suitable for the uses proposed, and the subdivision can be developed in compliance with the applicable zoning regulations pursuant to Section 7-9-254 of the Subdivision Code.

XI. That the tentative map is consistent with both Area Plan (AP) 98-2 and Zone Change (ZC) 98-3.

XII. That the Board of Supervisors has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

XIII. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XIV. That the development of this project will not preclude or prevent the preparation of the Southern Subregion NCCP.

XV. That the discharge of waste from the proposed subdivision into the existing sewer system of the Trabuco Canyon Water District will not result in violations of existing requirements prescribed by the California Regional Water Quality Control Board, San Diego Region.

XVI. That the design of the subdivision and its improvements do provide, to the extent feasible, for future passive or natural heating or cooling opportunities as specified in Section 66473.1 of the Government Code (Subdivision Map Act).

XVII. That the following determinations apply to fees required by Sections 7-9-700 through 713, Codified Ordinances of Orange County:

A. Purpose of fees: Fire protection, paramedic, law enforcement, library, and general County services.

B. Use of fees: Construction of new fire station, sheriff substation, library, and general County facilities in newly developing areas which have inadequate service.

C. Relationship between use of fees and type of development: Dwelling units and commercial/industrial structures and their occupants require fire protection, paramedic, law enforcement, library, and general County services.

D. Relationship between need for facilities and type of project: Project is located in newly developing area which has inadequate fire protection, paramedic, library services, and sheriff substation and general County facilities.

E. Relationship between amount of fees and cost of the portion of the facilities attributable to the development: Fees represent project's pro rata share of the cost of the fire station, sheriff substation, library, and general County facilities.

XVIII. That because of participation in fee programs for off-site improvements, this project will qualify for consideration under Section 66452.6 of the Subdivision Map Act.

XIX. That the deviations from the standards of design set forth in the Subdivision Code Subdivision Committee Report were considered and found to be justified based upon the reasons set forth in the Subdivision Committee Report or special circumstances which apply.

XX. That the Local Park Code Requirement can be met by the payment of in-lieu fees.

XXI. That the monitoring requirements of Public Resources Code Section 21081.6 (AB 3180) will be considered as having been met in that the design of the subject project, the satisfaction of the requirements of the County's building, grading, fire, and other codes and ordinances and the satisfaction of the conditions of approval applied to the project will implement the mitigation measures contained in EIR No. 566 an Addendum PA 980103.

XXII. That the applicant is hereby provided notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval as well as the reports and actions accompanying this approval and that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun

XXIII. That the issues raised in the appeal letter by Edward Connor dated November 5, 1998 have been adequately addressed in the supplemental staff report dated November 17, 1998. Those responses are hereby incorporated by this reference.

XXIV. That the Board, by two separate Resolutions and an Ordinance has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA980103, the findings from which are incorporated herein by reference.

BE IT FURTHER RESOLVED that this Board denies the appeal and upholds the action of the Subdivision Committee subject to the following conditions:

1. CP NA NA SPECIAL

Approval of Vesting TTM 15230 is subject to final approval of Zone Change 98-3 and Area Plan 98-2. Prior to recordation of VTTM 15230, the Manager, Current Planning shall determine that it is in substantial compliance with final approved Zone Change 98-3 and Area Plan 98-2. Otherwise, a revised tentative map approved by the Subdivision Committee shall be required.

2. Prior to the issuance of any grading permits, the applicant shall satisfy the following conditions from the Board of Supervisors Resolution for Area Plan 98-2.

4. Grading Review
5. Tree Preservation Plan
6. Federal Endangered Species
7. Geology Report
8. Drainage
9. Cross-Lot Drainage
10. Vector Control
11. Archaeo Observation & Salvage
12. Paleo Observation & Salvage
13. Grading Notes
14. Construction Noise
15. Performance Bond
16. Re-Routing Trails

3. Prior to the recordation of a subdivision map which creates residential building sites, the subdivider shall satisfy the following conditions from the Board of Supervisors Resolution for Area Plan 98-2:

17. Preliminary Grading Completed
18. Open Space Dedication
19. Recreational Trails
20. Ranch House Clean Up
21. Landscape Plan
22. Fire Station
23. Library
24. Sheriff Station
25. Off-Site Fuel Modification
26. Affordable Housing

4. SG SG G LOFFEL WALLS

Prior to the issuance of a grading permit, a letter of justification and design plans for the proposed loffel walls shall be presented to and approved by the Manager, Subdivision and Grading Services.

5. BP BP RGB RESIDENTIAL ACOUSTICAL REPORT

All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dba CNEL in all habitable rooms and a source specific exterior standard of 65 d.b.a. CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

A. Prior to the recordation of a subdivision map or prior to the issuance of grading permits, as determined by the Manager, Building Permits, the applicant shall submit an acoustical analysis report to the Manager, Building Permits, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report.

6. SG SG RG DRAINAGE STUDY

Prior to issuance of any grading permits, the following drainage studies shall be submitted to and approved by the Manager, Subdivision and Grading:

A. A drainage study of the subdivision including diversions, off-site areas that drain onto and/or through the subdivision, and justification of any diversions; and

B. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and

C. Detailed drainage studies indicating how the tract map grading, in conjunction with the drainage conveyance systems including applicable swales, channels street flows, catch basins, storm drains and flood water retarding, will allow building pads to be safe from inundation from rainfall runoff which may be expected from all storms up to and including the theoretical 100-year flood.

7. SG SG RG DRAINAGE IMPROVEMENTS

A. Prior to the issuance of any grading permits, the applicant shall in a manner meeting the approval of the Manager, Subdivision and Grading:

1) Design provisions for surface drainage; and

2) Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

3) Dedicate the associated easements to the County of Orange, if determined necessary.

B. Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only) said improvements shall be constructed in a manner meeting the approval of the Manager, Construction.

8. SG SG R MPD PARTICIPATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only), the subdivider shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, Subdivision and Grading, including payment of fees and the construction of the necessary facilities.

9. SG SG R EASEMENT SUBORDINATION

Prior to the recordation of an subdivision map (except maps for financing and conveyance purposes only), the subdivider shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, for review and approval.

10. SG SG G GRADING DEVIATION

Prior to the issuance of any grading permits, if the applicant submits a grading plan and the Manager, Subdivision and Grading, determines that it shows a significant deviation from the grading on the approved tentative tract map and Area Plan 98-2, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative map and/or area plan application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required

11. CP HP R ACCESS

Prior to recordation of any subdivision map that creates residential building sites, a 400 foot wide access easement across Lot A (Spine Street) from Lot MM to Lot LL shall be dedicated to the County of Orange in a manner meeting the approval of the Manager, Harbors, Beaches & Parks in consultation with the Manager, Subdivision and Grading. The primary purpose of the access easement is to provide for continuity of the wildlife corridor and O'Neill Regional Park.

Signs identifying a wildlife crossing area shall be posted within 100 feet of each point where the street transverses the wildlife corridor.

12. Master Plan of Regional Recreation Facilities:

Regional Park Dedication:

Lots LL and MM shall be dedicated to the County as an addition to O'Neill Regional Park, exclusive of manufactured slopes, which should be retained in separate lots. Regional park dedication shall be in done in compliance with the following conditions:

A. Prior to the recordation of the first subdivision map that creates residential building sites, the subdivider shall make an irrevocable offer of dedication in fee to the County of Orange, or its

designee, of Lots LL and MM, exclusive of manufactured slopes, for regional park purposes in a form approved by the Chief, Harbors, Beaches and Parks, Program Management & Coordination suitable for recording. Said offer shall be free and clear of money and all other encumbrances, liens, leases, fees, easements (recorded and unrecorded), assessments and unpaid taxes, except those meeting the approval of the Chief, Harbors, Beaches and Parks, Program Management and Coordination. Until such time as the offer is accepted by the County or its designee, the subdivider or assigns and successors shall be responsible for maintenance and upkeep of the above-referenced lots.

B. Prior to the recordation of any subdivision map that creates residential building sites, the subdivider shall survey and monument all lots dedicated for regional park purposes, and stake the property line of the dedication area(s) with durable, long-lasting, high visibility markers at all angle points and line of sight obstructions to the satisfaction of the Manager, Harbors Beaches & Parks.

C. Prior to recordation of the regional park dedication, the existing old ranch house sited within future regional park land shall be demolished except for the rock work subject to the approval of the Chief, HBP/Program Management & Coordination.

13. Master Plan of Regional Riding and Hiking Trails/County Bikeways:

Regional Trail Dedication:

A. The Live Oak Canyon Regional Riding and Hiking Trail is depicted within the Recreation Element aligned through Lot R, adjacent El Toro Road, through the proposed project. A recreation easement for this riding and hiking trail shall be dedicated to the County which includes trail improvements, including trail improvements just offsite along El Toro Road, north to the intersection of El Toro Road and the community spine road, as well as north to the existing under crossing of El Toro Road, in compliance with the following conditions:

1. Prior to the recordation an applicable subdivision map that creates residential building site the subdivider shall:

   a. Irrevocably offer a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. The subdivider shall not grant any easement(s) over the property subject to the recreation easement unless such easements are first reviewed and approved by the Chief, HBP/Program Management & Coordination.

   b. Design the necessary improvements(both onsite and offsite) for the trail, including, but not limited to grading, erosion control, signage and fencing, as applicable, in manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Subdivision & Grading. Further, the subdivider shall enter into an agreement, accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

2. Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Chief, HBP/Program Management & Coordination, to ensure that the proposed grading provides for, will not interfere with, or preclude the installation of the riding and hiking trail in a location and in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to the issuance of final certificates of use and occupancy and the release of financial security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Construction.

B. Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated to the County within a recreation easement aligned east-west through the proposed project.

A recreation easement for the local riding and hiking trail shall be dedicated to the County for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trail, *both* within and outside the future regional park, in addition to a connection from the staging area along the community spine road *offsite* to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers as well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area shall be done in compliance with the above.

C. Trail Reroutes/Bikeway and Riding and Hiking Trails:

1. The Aliso Creek Class I, paved Off-Road Bikeway, as well as the Live Oak Canyon Regional Riding and Hiking Trail will require re-routing plans during construction of the proposed project. Therefore, the following condition shall apply:

   Prior to any grading and/or construction activities which precludes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted subject to the approval of the Chief, HBP/Program Management & Coordination.

2. The same condition shall also be applicable to the Class II On-Road Bikeway aligned along the north bound lane of El Toro Road contiguous the proposed project.

14. Master Plan Local Parks (Local Park Code):

The Local Park Code requirement is 2.392 acres of park land based upon a proposal to build 299 residential units at a gross density of 1.35 du/ac (299 x .008 ac/du).

Prior to issuance of building permits the Local Park Code requirement shall be met by *payment of in-lieu fees*.

15. Resources Element (Open Space Component):

A. Dedicate Restricted Scenic Preservation Easement:

Fuel modification areas, manufactured slopes and remedial grading areas sited between the regional park dedication area and residential development, the fuel modification and native enhancement transition area contiguous El Toro Road, and northerly most fuel modification and native enhancement transition area, shall be placed within restricted scenic preservation easement areas. These areas include Lots R, CC, DD, EE, FF, GG, HH, II and JJ. *(NOTE: Manufactured slopes now depicted within Lots MM and LL the regional park, should be depicted within separate open space lots and restricted scenic preservation easements placed over them).* Restricted scenic preservation easements shall be dedicated to the County of Orange in compliance with the following conditions:

1. Prior to the recordation of any applicable final tract map which creates residential building sites, the subdivider shall make an irrevocable offer to dedicate an easement to the County of Orange or its designee over Lots R, CC, DD, EE, FF, GG, HH, II, and JJ, for restricted scenic preservation purposes in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. in consultation with the Manager, Current Planning.

Maintenance, upkeep and liability for said easement area shall remain the responsibility of the subdivider or assigns and successors (i.e., homeowner's association) or current underlying owner(s) of said easement area and shall not be included in said dedication offer. The subdivider shall not grant any easement over any property subject to said easement unless such easements are made subordinate to said easement offer in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

2. The subdivider shall note limitations and restrictions for said easement by a reference on the final map to a previously recorded document or by the recordation of a separate document concurrent with the recordation of subject map in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to recordation of any applicable final tract map or as determined by the Chief, HBP Program Management & Coordination, the subdivider shall survey and monument all parcels of the land to be dedicated for restricted scenic preservation easement purposes, and submit plans showing how the development boundaries of the restricted scenic preservation easement parcel(s) is marked to be visible for monitoring purposes by Grantee to the satisfaction of the Chief, HBP/Coastal & Historical Facilities.

B. Public Area Landscaping:

The areas to be irrevocably offered to the County of Orange for restricted scenic preservation purposes shall be landscaped, equipped for irrigation, as applicable, and improved in accordance with an approved landscape plan as stated below:

1. Preliminary Plan

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Chief, HBP/Program Management & Coordination. Said plan shall take into account Area Plan 98-2, County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487(Water Conservation Measures), and Board Resolution 90-1341(Water Conservation Implementation Plan).

2. Detailed Plan

Prior to the issuance of any building permits, the applicant shall submit a detailed landscape plan for approval to the Manager, Subdivision & Grading, in consultation with the Chief, HBP/Program Management & Coordination. Detailed plans shall show the detailed irrigation and landscaping design.

3. Installation Certification

Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, the applicant shall install said improvements and have the installation certified by a licensed landscape architect or licensed landscape contractor, as having been installed in accordance with the approved detailed plans. The applicant shall furnish said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report

determined applicable to the Manager, Construction, and the Manager, Building Inspection, prior to the issuance of any certificates of use and occupancy.

C. Urban Edge Treatment Plan/Viewshed Analysis:

Prior to the approval of any use permits for residential structures, an urban edge treatment plan/viewshed analysis shall be submitted to the County subject to the approval of the Chief, HBP/Program Management & Coordination. The Urban edge treatment plan/viewshed analysis shall comply with the following criteria:

1. Establish building height and setback limits (i.e., Building Envelope Formula) and grading treatments to preserve views attained from within existing and proposed parks and open space areas as well as from along designated scenic highways (i.e., El Toro Road) as identified by the Master Plan of Regional Recreational Facilities (Recreation Element), Open Space Component (Resources Element) and Master Plan of Scenic Highways (Transportation Element) respectively. Moreover, views from St, Michaels Abbey, the Ramakrishna Monastery and neighboring Hidden Ridge Community shall also be addressed. Viewshed analysis cross sections should be provided as seen from these areas to proposed residential structures.

2. Eliminate and/or reduce to the greatest extent possible conflicts which may impact the existing and future recreational utility of a regional recreation recreational facility and open space areas.

3. Eliminate and/or reduce to the greatest extent possible potential operation and maintenance problems resulting from encroachment, unauthorized entry, private development fuel modification requirements, flood control facilities, and maintenance of privately landscaped manufactured slopes and maintenance roads as they relate to future and existing regional recreational facilities.

4. Establish appropriate landscape/fuel modification treatments and wall and/or fence treatments including berms to provide appropriate transition from regional recreational facilities and open space areas to private development areas.

5. Establish smooth and gradual transition between graded slopes and existing slopes within the park and open space areas using variable slopes (2:1-4:1).

6. Obscure slope drainage structures with a variety of plant materials.

7. Incorporate architectural and design techniques into the project in order to enhance off-site views attained from within parks and significant open space.

8. All landscaping of manufactures slopes interfacing significant open space areas should be exclusively native, as applicable, to preserve the biological and scenic integrity of regional corridors, open space and park lands.

16. FF GBU FIRE HYDRANTS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit a fire hydrant location plan for the review and approval of the Fire Chief.

17. FF RBU AUTOMATIC FIRE SPRINKLERS

A. Prior to the recordation of a subdivision map, which creates residential building sites, a note shall be placed on the map stating that all structures shall be protected by an automatic fire sprinkler system, in a manner meeting the approval of the Fire Chief.

18. FF RG FIRE ACCESS ROADS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall obtain approval of the Fire Chief for all fire protection access easements and shall dedicate them to the County.

B. Prior to the issuance of any grading permits, the applicant shall submit and obtain approval of plans for all roads, streets and courts, public or private, from the Fire Chief in consultation with the Manager, Subdivision and Grading Services. The plans shall include the plan view, sectional view, and indicate the grade and width (28-ft. minimum) of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be approved by the Fire Chief and if needed, clearly marked when a dead-end street exceeds 150 feet or when otherwise required. Applicable CC&R's, or other approved documents, shall contain provisions which prohibit obstructions such as speed bumps/humps, control gates or other modifications within said easement or access road unless prior approval of the Fire Chief is granted. Grade shall not exceed 10%. Up to 15% is allowed when all structures served by the road are protected by automatic sprinklers.

C. Street signs. A note shall be placed on the fire protection access easement plan indicating that all street/road signs shall be designed and maintained to be either internally or externally illuminated in a manner meeting the approval of the Fire Chief.

19. FF BU STREET MARKINGS

Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit plans and obtain approval from the Fire Chief for fire lanes on required fire access roads less than 36 feet in width. The plans shall indicate the locations of red curbing and signage. A drawing of the proposed signage with the height, stroke and coloring of lettering and the contrasting background color shall be submitted to and approved by the Fire Chief.

20. F F R TRAFFIC SIGNAL PREEMPTION

Prior to the recordation of the applicable subdivision map which creates residential building sites, as determined by the Fire Chief in consultation with the Manager, Subdivision and Grading Services, the subdivider shall enter into an agreement with the County for the installation of traffic signal preemption equipment for the surrounding controlled intersections. Said agreement shall be accompanied by financial security.

21. F F RRB FIRE HAZARD NOTIFICATION

A. A Special Fire Protection Area Notification. Prior to the recordation of any final tract map which creates residential building sites, the subdivider shall place a note on the map meeting the approval of the Fire Chief that the property is in a "Special Fire Protection Area" and must meet all requirements for development within the area or file for an exclusion with the Fire Chief.

B. Special Fire Protection Area Development. Prior to issuance of a building permit, the applicant shall meet all requirements for development and construction within a Special Fire Protection Area as identified in Orange County Ordinance 3960, including increased street widths, Class A roof assemblies, fire sprinklers, etc.

22. F F G FUEL MODIFICATION

A. Prior to the issuance of a preliminary grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services and Subdivision and Grading Services of a conceptual fuel modification plan and program.

B. Prior to the issuance of any precise grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services, and Subdivision and Grading Services of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to the structures by vegetation, the CC&R's, or other approved documents, shall contain provisions for maintaining the fuel modification zones including the removal of all dead and dying vegetation subject to triennial inspections.

23. F F G ACCESS GATES

Prior to the issuance of any grading permits, the applicant shall submit and obtain the Fire Chief's approval for the construction of any gate across required Fire Authority access roads/drives. Contact the Orange County Fire Authority at (714) 744-0403 for a copy of the "Guidelines for Fire Authority Emergency Access".

24. SG SG B FOOTHILL/EASTERN TRANSPORTATION CORRIDOR

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fees Program for the Foothill/Eastern Transportation Corridor.

25. SG SG B FOOTHILL CIRCULATION PHASING

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for the Foothill Circulation Phasing Program.

26. SG SG B SANTIAGO CANYON ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for Santiago Canyon Road.

27. SG SG B EL TORO ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for El Toro Road.

28. SG SG B ARTERIAL RIGHT-OF-WAY

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall dedicate ultimate half-width road right-of-way to major arterial highway standards across the property frontage in a manner meeting the approval of the Manager, Subdivision and Grading Services.

29. SG SG R SANTIAGO CANYON ROAD

Prior to recordation of any subdivision map that creates residential building sites, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manager, Subdivision and Grading Services.

30. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall design and construct a northbound right turn lane and a southbound left turn lane on El Toro Road at the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading Services.

31. SG SG B EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall provide a cash deposit to pay the cost of designing and constructing the ultimate configuration of El Toro Road as determined by PFRD/Program Development Division, all in a manner meeting the approval of the Manger, Subdivision and Grading Services.

32. SG SG G TRAFFIC SIGNAL

Prior to recordation of a subdivision map that creates residential building site, the applicant shall design and construct a traffic signal at the intersection of El Toro and the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading in consultation with the Manager, Program Development Division.

33. SG SG G SIGHT DISTANCE

Prior to issuance of a grading permit, adequate sight distance shall be provided at all intersections per Standard Plan 1117, and at all driveways, in a manner meeting the approval of the Manager, Subdivision and Grading Services; this includes any necessary revisions to the plan to remove slopes and other encroachments from the Limited Use Area.

34. SG SG G "C" STREET

Prior to the issuance of a grading permit, the applicant shall design "C" Street 40' in width, curb to curb, with sidewalk on both sides.

35. SG SG G UTILITY EASEMENT

Prior to the issuance of a grading permit, the applicant shall design both sides of all of the private streets with a 3' public utility easement.

36. SG SG G — GATED ENTRY

Prior to the issuance of a grading permit, the applicant shall design the gated entry area to facilitate vehicular turnaround movements prior to reaching the gate in a manner meeting the approval of the Manager, Subdivision and Grading Services.

37. SG SG R — LOT 296

Prior to recordation of a final map, the applicant shall design Lot 296 with 20' minimum of property frontage.

38. SG SG G — EMERGENCY ACCESS

Prior to the issuance of a grading permit, the applicant shall design the emergency only access between "B" Street and existing Valley Vista in a manner meeting the approval of the Manager, Subdivision and Grading Services.

39. SG SG R — PVT STREET NOTIFICATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall place a note on the map that states:

"The private streets constructed within this map shall be owned, operated and maintained by the developer, successors or assigns. The County of Orange shall have no responsibility therefore unless pursuant to appropriate sections of the Streets and Highways Code of the State of California, the said private streets have been accepted into the County Road System by appropriate resolution of the Orange County Board of Supervisors."

40. SG SG R — STREET IMPROVEMENTS

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall design and construct the following improvements in accordance with plans and specifications meeting the approval of the Manager, Subdivision and Grading:

A. Streets, bus stops, on-road bicycle trails, street names, signs, striping and stenciling.

B. The water distribution system and appurtenances which shall also conform to the applicable laws and adopted regulations enforced by the County Fire Chief.

C. Underground utilities (including gas, cable, electrical and telephone), streetlights, and mailboxes.

41. HP HP R — ACCESS EASEMENT

Prior to, or concurrent with the recordation of Tentative Tract 15230, an Official County Vehicular Road Access Easement shall be recorded by separate instrument which notes limitations and restrictions for this easement subject to the approval of the Chief, PFRD/Harbors, Beaches and Parks, Program Management & Coordination. It shall permit access over Spine Street (Lot A) of Official County vehicles for regional park management purposes.

42. The following Mitigation Measures from Addendum PA980103 are added as conditions of approval:

SC 2-4	SC 2-5	SC 2-6
SC 2-12	SC 2-13	SC 2-14
SC 7-2	SC 7-9	SC 9-2
SC 9-10	AM 8-15	

43. CP CP INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit or, in the alternative, the relinquishment of such permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

44. CP CP

Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents, or employees to attack, set aside, void, or annual approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

45. CP NOTIFICATION

This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval. You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

FMG:no[W]

ATTACHMENT 1

BOARD OF SUPERVISORS

RESOLUTION ON AREA PLAN 98-2

(PLACEHOLDER)

SADDLEBACK MEADOWS
ADDENDUM PA980103

Mitigation measures

SOILS AND GEOLOGY

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, off-site grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the on-site material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be

raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-13 Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-14 Prior to the issuance of any grading permits, the applicant shall provide, in accordance with criteria supply by PDS, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Monitoring Programs Division.

BIOLOGICAL RESOURCES

MITIGATION MEASURES

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in

accord with the requirements of an approved Streambed Alteration Agreement.

SC 7-9 Prior to the issuance of grading permits, the applicant shall prepare a habitat restoration plan for all areas proposed for revegetation of coastal scrub habitat to the satisfaction of the Administrator / Planning and Zoning. As part of the restoration plan, the subdivider shall enter into an agreement and post financial security guaranteeing installation of restored habitat and on-going maintenance thereof. The agreement shall also identify the entity responsible for the long-term maintenance and operation of these restoration areas and include provisions that allow the County to cite the entity for non-compliance with the restoration plan. If the management entity should fail to respond to correct a work order for a performance deficiency, the agreement shall include provisions that authorize the County and/or firm under contract to the County to enter the restoration area, remedy the deficiency and demand payment in full for all costs within 30 days of receipt of request for payment. A lien on all properties will be initiated within 60 days in the event of non-payment of these remedies.

AESTHETICS

MITIGATION MEASURES

Light and Glare

AM 8-15 Prior to map recordation, issuance of any building permit or issuance of any certificate of use and/or occupancy, as determined by the Manager, Subdivision & Grading Services Division, the potentially adverse impact of night lighting on surrounding land use shall be mitigated to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division by the following measures:

a) Street lights shall only be installed at intersections and as required to insure public safety.

b) Low intensity halogen street lamps shall be used.

b) Street lights shall be shielded to direct the light beam downward and to avoid direct glare into open space areas and adjacent property.

CULTURAL / SCIENTIFIC RESOURCES

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

Archaeology

SC 9-2 Prior to issuance of any grading permit, a county-certified archaeologist shall be retained by the applicant to perform a subsurface test level investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PFRD/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

Paleontology

SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pregrade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PFRD/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their present repository. This mitigation measure has been completed.

CONNOR, CULVER, BLAKE & GRIFFIN LLP

ATTORNEYS AT LAW

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DIRECT E-MAIL: ECONNOR@BUSINESSLIT.COM

November 24, 1998

Board of Supervisors
County of Orange
10 Civic Center Plaza
5th Floor
Santa Ana, California 92701-4061

VIA HAND DELIVERY

Re: *Public Hearing re Zone Change 98-3, Appeal of Area Plan 98-2, and Appeal of Tract Map Nos. 15230 and 15784*

Honorable Members of the Board:

On behalf of the Vedanta Society of Southern California ("Vedanta"), the Norbertine Fathers of Orange (the "Norbertines"), and the Saddleback Meadows Land Conservancy LLC (the "Conservancy") [hereinafter, Vedanta, the Norbertines, and the Conservancy shall collectively be referred to as the "Project Opponents"], we respectfully submit this letter in opposition to California Quartet's proposal for the construction of a 299-unit single family detached housing project (the "299-Unit Project") on the Saddleback Meadows property. Specifically, this letter is submitted (1) in opposition to California Quartet's application for approval of Zone Change 98-3 ("ZC 98-3") and (2) in support of the appeals previously filed by the Project Opponents regarding (a) the approval of Area Plan 98-2 ("AP 98-2") by the Orange County Planning Commission (the "Planning Commission") and (b) the approval of Tentative Tract Map Nos. 15230 and 15784 (collectively, the "Maps") by the Orange County Subdivision Committee (the "Subdivision Committee").

The Project Opponents' opposition to ZC 98-3, and their appeals regarding AP 98-2 and the Maps (hereinafter referred to as the "Opposition"), is based upon each and every procedural and substantive contention, objection, comment, or argument, whether written or oral, which are made, referenced, or otherwise incorporated into the letters (collectively, the "Letters") which are listed in Exhibit "A" attached hereto and are incorporated herein as if set forth in full hereat. In addition, the Opposition is based upon each of the objections raised, or comments or arguments made, by the Project Opponents' representatives or any other project opponent (hereinafter collectively referred to as the "Oral Comments") at the public hearings or meetings held by the Planning Commission, the

Subdivision Committee, or the Foothill/Trabuco Specific Plan Review Board in connection with the 299-Unit Project, including, but not limited to, the hearings and meetings held on August 25, September 29, October 7, October 16, and October 21, 1998. Finally, the Opposition is also based upon any oral or written statements (the "Statements") made by the Project Opponents' representatives regarding the 44/178 Alternative, including, but not limited to, any statements made at the Orange County Board of Supervisors meetings held on June 23, August 11, or October 6, 1998, or otherwise set forth in any correspondence between the Appellants, the County of Orange, or California Quartet, Ltd., or any of their respective representatives, including, but not limited to, any correspondence referenced or incorporated into the Letters identified in Exhibit "A" hereto.

In the interest of administrative economy, the contentions, objections, comments, or arguments which the Project Opponents have previously made, referenced, or incorporated in the Letters, the Oral Comments, and the Statements, will not be repeated and restated in this letter; rather, they will be incorporated herein by reference as if set forth in full hereat in opposition to ZC 98-3, AP 98-2, and the Maps.

In addition to all points being incorporated herein by reference, the Opposition will also be based on the following grounds:

On November 23, 1998, Thomas B. Mathews, the Director of the Planning & Development Services Department of the County of Orange, sent a memorandum to Supervisor Todd Spitzer setting forth Mr. Mathews' comments regarding a conceptual remedial grading plan prepared in connection with what Mr. Mathews referred to in his memo as the "Saddleback Meadows 44-Acre Reduced Development Plan." A copy of Mr. Mathews' memo to Supervisor Spitzer is attached as Exhibit "B" hereto and is incorporated herein by reference. The "Reduced Development Plan," which is referenced in Mr. Mathews' memo, is a project alternative which contemplates the development of 130 single-family homes on a 44-acre development parcel, with approximately 30 additional acres of land surrounding the development parcel being subjected to remedial grading and fuel modification activities. Although this alternative has been studied by County staff, the CEQA documentation for ZC 98-3, AP 98-2 and the Maps contains no discussion whatsoever of this alternative and is therefore patently deficient and in violation of CEQA and the CEQA Guidelines because this alternative would obviously result in substantially reduced impacts on the sensitive biological resources present at the Saddleback Meadows property and should be fully and properly analyzed by the County and circulated for public review and comment before any approvals are given for ZC 98-3, AP 98-2, or the Maps.

Of course, in addition to failing to address the "Reduced Development Plan" referenced in Mr. Mathews' memo of November 23, 1998, the CEQA documentation for the 299-Unit Project also fails to address another reasonable project alternative, known as

the "44/178 Alternative," which would confine development to a 44-acre development area in order to avoid any adverse impacts on the oak trees, vernal ponds, and coastal sage scrub habitat present at Saddleback Meadows property. In order to comply with CEQA and the CEQA Guidelines, the Board of Supervisors should direct staff to prepare a new or subsequent EIR to address these two project alternatives which County staff has clearly been made aware of as of this date.

Very truly yours,

Edmond M. Connor

cc: William Ross, Esq.
Frank McGill

bc: William Fray
Richard Jennings
Charles Mitchell
Kathryn Swiss

EXHIBIT "A"

LETTERS RE ZONE CHANGE 98-3, AREA PLAN 98-2, AND TENTATIVE TRACT MAP NOS. 15230 AND 15784

1. August 24, 1998 letter from Royce B. Riggan, Jr., AICP, RBRiggan and Associates, to The Honorable Chairman and Members of the Planning Commission, Orange County;

2. August 25, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Honorable Members of the Planning Commission, Orange County Planning & Development Services Department;

3. August 25, 1998 letter from Saundra F. Jacobs, REA, SFC Consultants, to Ray Brantley, Orange County Planning and Development Services Department, Environmental and Project Planning Services Division;

4. September 2, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Raymond H.C. Brantley, Environmental & Project Planning Services Division, County of Orange Planning & Development Services Department;

5. September 23, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department;

6. October 7, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Orange County Planning Commission;

7. October 21, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Pat Stanton, Chair, Subdivision Committee, County of Orange;

8. October 22, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin de Mayo, Esq., Deputy County Counsel, Office of County Counsel, County of Orange; and

9. November 5, 1998 letter from Edmond M. Connor, Esq., Connor, Culver, Blake & Griffin LLP, to Thomas B. Mathews, Director, Orange County Planning & Development Services Department, and Benjamin de Mayo, Esq., Deputy County Counsel, Office of County Counsel, County of Orange.

EXHIBIT "B"

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4543
FAX # 834-2771

DATE: November 23, 1998

TO: Supervisor Todd Spitzer, District 3

FROM: Director, Planning & Development Services Department

SUBJECT: Saddleback Meadows 44-acre Reduced Development Plan - Conceptual Remedial Grading Plan dated November 17, 1998

On October 30, 1998 at the conclusion of discussions relating to the subject reduced development alternative, it was decided that the project applicant would compose a grading concept for review by the adjacent property owners and by technical staff of this department. On November 17, 1998 a grading concept was submitted and we have the following comments:

1. The remedial grading limits line on the south and east side of the project appears to be justified.
2. The remedial grading line on the north and west side of the project would appear to be more appropriately located along the identified fuel modification line where it extends beyond the remedial grading line.
3. The conceptual remedial grading plan does not contain sufficient information upon which to issue a grading permit.

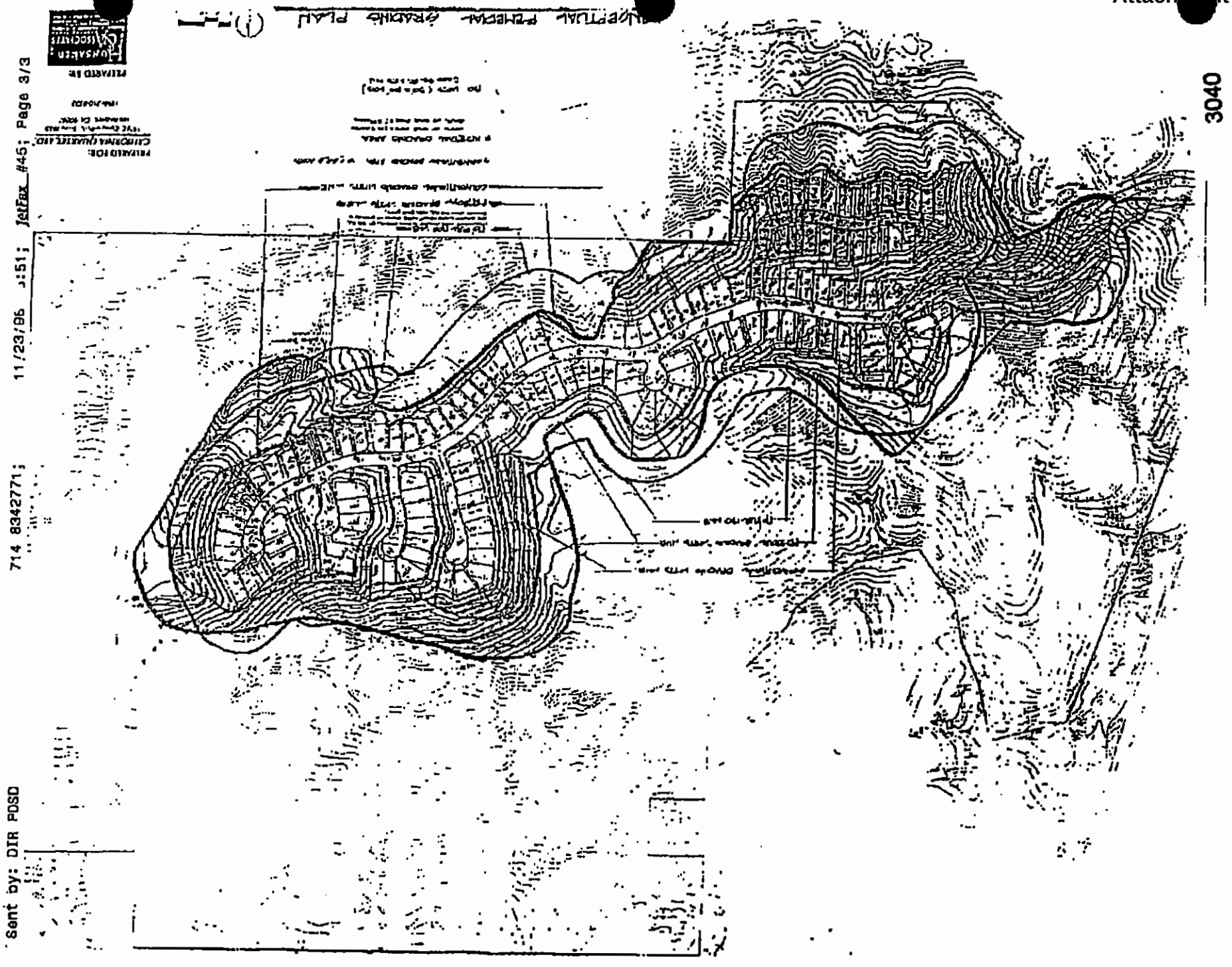
Thomas B. Mathews

TBM:cjt/81123

Attachment

cc: Board Offices
Jan Mittermeier, CEO
Ed Connor
Bill Ross
Pike Oliver
Dan Winton

3039



11/23/96 9:51; JetFax #45; Page 3/3
714 8342771;
Sent by: DIR PDSD

NOTICE OF PUBLIC HEARING

BY THE ORANGE COUNTY BOARD OF SUPERVISORS

SUBJECT: Appeal of TTM 15784 and VTTM 15230

LOCATION: Saddleback Meadows (along El Toro Road and north of Valley Vista Way)

PROPOSAL: A subdivision map for financing purposes only (TTM 15784) and a vesting subdivision map to create 299 residential building sites (VTTM 15230)

Environmental Documentation: EIR Addendum PA 980103
Applicant: California Quartet, Ltd.
Hearing Date: November 24, 1998
Hearing Time: 6:00 P.M.
Hearing Location: Hall of Administration
10 Civic Center Plaza
Santa Ana, CA

The applicant and all persons either favoring or opposing this proposal and supporting documents are invited to present their views at the hearing. It is requested that any written response be submitted to the Planning & Development Services Dept. prior to the hearing date. If you challenge the action taken on this proposal in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the Planning & Development Services Dept. prior to the public hearing.

For further information please call Frank McGill at (714) 834-2099 or come to the Development Processing Center at the address indicated below.

Planning & Development
Services Dept.
P.O. Box 4048
300 North Flower Street
Santa Ana, CA 92702-4048

By order of the Board of
Supervisors of Orange
County, California
Darlene J. Bloom,
Clerk of the Board

3041

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

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County of Orange
Planning & Development Services Department

Supplemental Transmittal
Saddleback Meadows 299 Unit Project
Agenda Item Nos. 75 and 76
December 8, 1998, Agenda

DATE: December 4, 1998

TO: Board of Supervisors

FROM: Director, Planning & Development Services Department

SUBJECT: Responses to Public Comments

On November 24, 1998, your Board conducted a public hearing on the proposed Saddleback Meadows 299 dwelling unit project. The public hearing was then closed and further Board consideration of the proposed project was continued to December 8, 1998. Attached are staff responses to public comments made at the public hearing on November 24th.

There is no change to the Recommended Action from my letter to you dated November 24, 1998.

Respectfully submitted,

Thomas B. Mathews, Director

FMc:sjk/81201

Attachment

cc: CEO
County Counsel
Clerk of the Board
Grand Jury

Planning & Development Services Department
Responses to Issues Raised

This report addresses several issues which were highlighted at the Board of Supervisors hearing on November 24, 1998, in oral testimony or written submittals. These are not new issues. The Planning Commission and the Subdivision Committee considered these ideas in their deliberations that led to those bodies taking positive action on the items which are now before the Board of Supervisors. Nevertheless, as a means of ensuring that the Planning and Development Services Department's position on the issues is clear, information is provided on these issues.

1. **ISSUE - CONSISTENCY WITH GENERAL PLAN**

   The proposed project is not consistent with the General Plan, specifically the Land Use Element and the Growth Management Element

   PDSD RESPONSE:

   This issue was previously discussed before the Planning Commission and Subdivision Committee. The Land Use Element designates the project site as "Suburban Residential " which allows a density up to 18 dwelling units per acre. The proposed project has a density well below that standard. Also, the proposed project of 299 units constitutes a reduction of 58 percent from the approved zoning, which allows a total of 705 manufactured, single-family dwelling units. The Ramakrishna Monastery and St. Michael's Abbey, which border the proposed project, are both designated "Rural Residential" by the Land Use Element and zoned "Public/Quasi-Public" by the Foothill/Trabuco Specific Plan. There is nothing inherently incompatible about this juxtaposition and many similar relationships exist in other parts of the unincorporated area of Orange County.

   The purpose of the Growth Management Element is to provide necessary traffic improvements and public facilities related to new development. Normally, the appropriate time during the development process to implement the policies of the Growth Management Element is prior to the issuance of building permits. The zoning regulations and area plan for the proposed project require that prior to the issuance of any building permits, the Planning Commission must approve a detailed use permit. That would normally be the appropriate time to apply conditions of approval to ensure compliance with the Growth Management Element.

   Area Plan AP98-2 and Vesting Tentative Tract Map TT15230 include the following conditions of approval for the proposed project to ensure necessary public facilities are provided:

- ***FIRE STATION FACILITY***
  Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning Services Division. Said agreement shall be accompanied by financial security.

- ***LIBRARY FACILITY***
  Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning Services Division. Said agreement shall be accompanied by financial security.

- ***SHERIFF STATION***
  Prior to the recordation of any subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to the approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning Services Division. -

- ***LOCAL PARK FEES***
  Prior to the issuance of any building permits for residential construction, the applicant shall pay in lieu fees per the Local Park Code Requirements.

- ***SCHOOL FEES***
  Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the Manager, Current Planning Services Division, that he has reached a mitigation agreement with the District for the subject project proposal.

With regard to traffic issues, adetailed traffic analysis was prepared for the proposed Saddleback Meadows project. The study was prepared consistent with the County's Growth Management Plan (GMP) Element as reflected in the Transportation Implementation Manual. The GMP defines the County's Level of Services (LOS) Policies and traffic study methodology, as applicable to all Master Plan of Arterial Highways (MPAH) intersections and Santiago Canyon Road which are under the sole control of the County. The GMP establishes LOS"D" at intersections and LOS "C" for Santiago Canyon Road as thresholds to be attained within the near term (3-5 years) implementation of the project. The GMP also requires a LOS analysis on Santiago Canyon Road if a project increases the existing critical movement by one percentage or more during the AM or PM peak period on Santiago Canyon Road.

The traffic study prepared for the proposed Saddleback Meadows Contingency Plan not only meets all the provisions of the GMP, but also includes a General Plan build-out analysis. All significant traffic impacts of the project are mitigated through conditions of development approval. Consistent with the County's Growth Management Plan these mitigations will be implemented within the 3-5 years time frame.

The following traffic related conditions of approval/mitigation measures have been applied to Area Plan AP98-2 and VTTM 15280:

- ***ROAD REE PROGRAM***
  Prior to the issuance of any building permits for residential construction, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

  Foothill Circulation Phasing Program
  Foothill/Eastern Transportation Corridor
  El Toro Road
  Santiago Canyon Road

- ***ARTERIAL RIGHT-OF-WAY***
  Prior to recordation of a subdivision map that creates any residential building sites, the applicant shall dedicate ultimate half-width road right-of-way to major arterial highway standards across the property frontage in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

- ***SANTIAGO CANYON ROAD***
  Prior to recordation of any subdivision map that creates any residential building sites, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

- ***EL TORO ROAD***
  Prior to recordation of any subdivision map that creates any residential building sites, the applicant shall design and construct a northbound right turn land and a southbound left turn lane on El Toro Road at the project entrance in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division

- ***EL TORO ROAD***
  Prior to recordation of any subdivision map that creates any residential building sites, the applicant shall provide a cash deposit to pay the cost of designing and constructing the ultimate configuration of El Toro Road as determined by PFRD/Program Development Division, all in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

- *TRAFFIC SIGNAL*
  Prior to recordation of any subdivision map that creates any residential building site, the applicant shall design and construct a traffic signal at the intersection of El Toro and the project entrance in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division *in consultation with the Manager, Program Development Division.*

2. ISSUE - SPECIFIC PLAN REVIEW BOARD

Comments were made that the following requirement of the Foothill/Trabuco Specific Plan was not satisfied:

> "EMA **(changed to PDSD)** shall forward all discretionary permit applications to the FTSPRB for their review and recommendation at least 21 days prior to Planning Commission consideration of the application."

PDSD RESPONSE:

This issue was previously discussed before the Planning Commission.

As stated in previous PDSD Reports to the Planning Commission and the Board of Supervisors, the Contingency Plan is not an unfamiliar project to the Foothill/Trabuco Specific Plan Review Board. Prior to the appointment of the new Board, the previous Boards had reviewed the project in conjunction with two previous reviews:

- Planning Application PA950151, consisting of Zone Change ZC95-5, Area Plan AP95-7, and Tentative Tract TT15230 and related EIR 561 (Alternatives 8 and 9); and
- Alternative 4 in Certified EIR 566, prepared for recorded Tract 10692.

With regard to the Saddleback Meadows Contingency Plan Zone Change ZC98-3 and Area Plan AP98-2 were distributed for public review on August 7, 1998. However, no distribution was made to the Foothill/Trabuco Specific Plan Review Board at that time because the Review Board had not been appointed.

On September 22, 1998 the Board of Supervisors appointed five members to the Review Board. On September 24, 1998, the new Review Board members were provided with copies of the proposed project, the environmental documentation, and staff reports. The Review Board conducted a public meeting on September 29,1 998 to discuss this project. After discussion, the Board voted to continue the meeting to October 16, 1998 and also requested that the Planning Commission postpone taking final action on the Contingency Plan until after that date.

On October 6, 1998, the Board of Supervisors directed that the 299 unit project be placed on the Board of Supervisors Agenda for November 3, 1998. On October 7, 1998, the Planning Commission took its final action on Zone Change ZC98-3, thereby

recommending that the Board approve the Zone Change. The Planning Commission also approved Area Plan AP98-2, subject to the finalization of the Zone Change.

On October 20, 1998, PDSD received the minutes of the Foothill/Trabuco Specific Plan Review Board action on the proposed project and immediately forwarded them via supplemental transmittal to the Board of Supervisors.

Based upon the foregoing, the Planning and Development Services Department has determined that the Review Board has been duly consulted on the proposed project.

3. ISSUE - IMPACTS ON BIOLOGICAL RESOURCES

Comments have been made that the proposed Contingency Plan will severely impact biological resources, including the destruction of coastal sage scrub habitat, oak woodland habitat, vernal ponds, and fauna, including the coastal California gnatcatcher and the Riverside fairy shrimp. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP98-2.

PDSD RESPONSE:

Issues related to the proposed plan's impacts on biological resources have been consistently raised regarding the project site in conjunction with Proposed Final EIR 561, Certified Final Subsequent EIR 566 and Addendum PA980103. Impacts to biological resources have been previously addressed in written reports and oral presentations to the Planning Commission, the Subdivision Committee and the Board of Supervisors.

The Planning & Development Services Department has always maintained that the Saddleback Meadows project would result in unavoidable adverse impacts to biological resources. Even with the 13 mitigation measures placed on the project during the CEQA process, these impacts cannot be reduced to below a level of significance. In the case of the Saddleback Meadows Contingency Plan, it must be noted that Addendum PA980103 is tiered from Certified Final Subsequent EIR 566, for which the Planning Commission adopted Facts and Findings and Statements in Support of Facts and Findings and a Statement of Overriding Considerations. Upon the appeal of the EIR certification, the Board of Supervisors upheld the action of the Planning Commission. The following four (4) significant impacts to biological resource were addressed in the Statement of Overriding Consideration:

Coastal sage scrub habitat and the NCCP;
Coast live oak woodland;
Ephemeral ponds/endangered species;
Wildlife movement.

It is important to note that Condition Number 6 of the Planning Commission Resolution approving Area Plan AP 98-2 for the Contingency Plan provides for mitigation of impacted biological resources. The condition reads as follows:

Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site, including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio or at such greater ratio as may be required by the U.S. Fish and Wildlife Service. This evidence shall be submitted to the Manager, PDS/Subdivision and Grading Services Division, for review and approval, in consultation with the Manager, Environmental & Project Planning Services Division.

The Biological Resources section of the Addendum discusses the biological resource impacts associated with the proposed 299 unit project in comparison with the approved 705 unit project. A biological issues analysis (Helix, 2/20/98) was prepared for the proposed 299 unit project and is included in the Addendum as Appendix G. The results of the analysis are presented under the four categories of corridor analysis, vegetation impacts, oak tree impacts, and sensitive species impacts, paralleling the discussion in Certified SEIR 566, and are also discussed in the body of the Addendum. Following is a brief summary of the discussion from the Addendum and Staff Reports from the Planning & Development Services Department regarding biological resources:

A. **Wildlife Corridor:** Implementation of the approved 705 unit project would directly impact wildlife movement through the project site, as it contains no design features which seek to facilitate wildlife movement. It cannot be assumed that wildlife would be able to move through the project site as currently designed. The approved project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve, due to restricted wildlife movement. In comparison, the proposed 299 unit project features a 400 foot wide wildlife corridor which will increase the viability of wildlife connectivity through Saddleback Meadows. The corridor, as planned in the proposed project, is expected to be wide enough for wildlife movement. Topography on either side of the corridor is conducive to wildlife movement because it coincides with an area of natural canyon topography. The revegetation within the corridor is expected to provide the necessary cover for wildlife to add to the corridor's viability. The 50-foot wide spine road crossing the corridor is not expected to inhibit wildlife movement due to the low traffic levels anticipated for this road. The wildlife corridor is expected to function adequately.

   The County's NCCP consulting biologist, Phil Behrends, confirmed that the wildlife corridor proposed in conjunction with the 299 unit alternative is adequate to provide for reserve design functions. This means that the corridor will accommodate gnatcatcher connectivity as well as small mammal linkages. The corridor will not provide for large mammal movement. However, there is no evidence that the site was ever used for large mammal movement and the NCCP biologist believes that an adequate reserve design can be established with only a small mammal linkage. With this conclusion from the NCCP biologist, the County could make an affirmative

finding that the proposed project will not preclude the preparation of an adequate NCCP reserve design. However, the recommendation of the County's NCCP biologist regarding the adequacy of the wildlife corridor has been contested by the Wildlife Agencies who, in a joint letter to the Board of Supervisors dated October 29, 1998, state that the proposed project appeared to preclude the opportunity to ensure the linkage between the Central and Southern NCCP reserve lands.

B. **NCCP:** NCCP impacts to coastal sage scrub resulting from implementation of the proposed 299 unit project would be similar to those for the approved 705 unit project. Under the approved project, 50.3 acres of coastal sage scrub would be impacted, while 45.8 acres will be impacted under the proposed project. In accordance with the NCCP, the loss of 45.8 acres of Venturan-Diegan transitional coastal sage scrub due to project implementation is less than the allowable five percent loss of the total coastal sage scrub in the subregion. Accordingly, the proposed project is in compliance with the NCCP. Mitigation measures related to accounting and preservation of coastal sage scrub and compliance with the NCCP through the securing of appropriate Resource Agency permits have been carried forward in the Addendum from Certified Final SEIR 566.

C. **Riparian Resources:** The loss of riparian resources associated with the proposed project, which include 0.6 acres of ephemeral pond (all but two of the ponds), 0.21 acres of southern sycamore riparian woodland, and 2.01 acres of mule fat scrub, are similar to, although slightly less than, those resulting from implementation of the approved 705 unit project. Mitigation measures from Certified SEIR 566, which require the securing of appropriate permits from the Wildlife Agencies for the protection of riparian resources, have been carried forward in the Addendum.

D. **Coast Live Oak Woodland:** Implementation of the approved project would result in the loss of 14.0 acres (284 individual trees) of the total 14.5 acres (298 individual trees) of coast live oak woodland on the project site. However, the proposed 299 unit project would impact only 5.7 acres (175 individual trees). A total of 123 oak trees (approximately 41 percent) occur outside the remedial grading zone and are considered preserved. Mitigation measures related to preservation and enhancement of the impacted coast live oak woodland habitat have been carried forward from Certified SEIR 566 to the Addendum.

E. **Riverside Fairy Shrimp:** As stated under Riparian Resources above, all but two of the ephemeral ponds, habitat supporting the Riverside fairy shrimp, will be directly impacted by both the approved and the proposed projects. Mitigation measures relating to the relocation and establishment of a mitigation plan designed to mitigate impacts to Riverside fairy shrimp/pond habitat have been carried forward from Certified SEIR 566 to the Addendum.

F. **Coastal California Gnatcatcher:** Previous field surveys have determined that on-site coastal sage scrub habitat is not occupied by coastal California gnatcatchers.. However, on-site coastal sage scrub habitats must be considered occupied by coastal California gnatcatcher until proven otherwise. Mitigation measures relating to

conducting adequate studies to determine the presence of the coastal California gnatcatcher have been carried forward from Certified SEIR 566 to the Addendum.

The applicant submitted a recent Gnatcatcher Survey report from the Chambers Group that claims that the site is not occupied. However, the NCCP biologist forwarded a report from another biologist (RB Riggens), working for the monastery, that indicates that the site is occupied by two gnatcatchers in the southeast corner of the property. USFWS and CDFG are most likely in possession of this report and probably accept it as evidence that the site is occupied.
USFWS is about to publish a new biological opinion for the Interim 4(d) take authorization process that concludes that the amount of gnatcatcher take available within the southern subregion has increased slightly due to new data that shows the base population of gnatcatchers as somewhat larger than previously thought. However, that increase in authorized bird take is negligible and may be used up by other projects that have already been filed with USFWS and CDFG. Consequently, this project has not been processed by the County as an Interim 4(d) take permit.

The following Mitigation Measures have been included in the Addendum to ensure that impacts to biological resources are reduced:

- ***FISH & GAME CODE***
  SC 7-1 Pursuant to Section 711.4 of the Fish and Game Code, the applicant shall comply with the requirements of AB 3158, prior to the filing of the Notice of Determination for the project, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services Division.

- ***STREAMBED ALTERATION***
  SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement.

- ***WETLAND MITIGATION***
  SC 7-3 Prior to the issuance of any grading permits, the applicant shall obtain the necessary individual or nationwide permit (pursuant to Section 404 of the Federal Clean Water Act) covering all affected wetland areas from the U.S. Army Corps of Engineers, Los Angeles District. All wetland areas shall be subject to the specifications of the 404 permit as determined by the Corps of Engineers. A copy of the 404 permit shall be submitted with the first grading permit application for the proposed project to the Manager, PDS/Subdivision and Grading Services Division.

- ***NCCP AGREEMENT***
  SC 7-4 Prior to the issuance of a grading permit, as required by participation in the Natural Community Conservation Planning/Coastal Sage Scrub (NCCP)

agreement signed by the County on May 1, 1992, the project applicant shall provide an accounting summary, in acres or portions thereof, of coastal sage scrub scheduled to be impacted by removal through grading in a manner meeting the approval of the Administrator, Planning & Zoning. (See Section 4.7.3.)

- *COASTAL SAGE SCRUB HABITAT*
  SC 7-5 Prior to the issuance of a grading permit, the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the U.S. Fish and Wildlife Service, in a manner meeting the approval of the Administrator, Planning & Zoning and Manager, PDS/Grading Services Division, in consultation with the Administrator, Planning & Zoning.

- *NCCP ENROLLMENT AREA*
  SC 7-6 Notwithstanding the tentative map, no grading shall occur within the Natural Community Conservation Plan (NCCP) enrolled area except as in a manner meeting the approval of the Administrator, Planning and Zoning.

- *NATIVE VEGETATION*
  SC 7-7 Prior to the issuance of any grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. This evidence shall be submitted to the Manager, PDS/Subdivision and Grading Services Division, for review and approval, in consultation with the Administrator, Planning and Zoning.

- *TREE PRESERVATION PLAN*
  SC 7-8 Prior to the issuance of grading permits the applicant shall submit a landscape and tree preservation plan to the Manager, PFRD/Harbors Beaches and Parks Division, for review and approval in accordance with the following guidelines:

  A. To the maximum extent feasible, all existing native and exotic trees and other significant vegetation shall be preserved in conjunction with any development activity.

  B. A tree preservation plan shall be prepared by a landscape architect for all development projects which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and one-half feet above ground level) and shrubs having a trunk or branch diameter of 3 inches or greater. The plan shall show which plants are proposed for removal and where transplanted and/or replacement plants will be located. Tree preservation plans shall be approved prior to issuance of grading permits, or where grading permits are not required, prior to issuance of building permits.

C. Trees removed in accordance with an approved tree preservation plan shall be replaced by a combination of transplanting to another location on the subject property and/or replacement by a combination of 1 and 15-gallon plants at a minimum ratio of 5:1.

The following sliding scale shall also be used for trees to determine if more than the minimum number of replacement trees are required.

Tree Replacement Scale

Trunk Diameter (inches) of Tree Removed At 4½ Feet Above Ground Level	*Total Number of Replacements*
5 to 11	*5(1-15 gal / 4-1 gal)*
12 to 17	*7(1-15 gal / 6-1 gal)*
18 to 23	*10(2-15 gal / 8-1 gal)*
24 to 35	*12(2-15 gal / 10-1 gal*

Any oak exceeding 35 inches in diameter should be preserved, transplanted or replaced in accordance with the provisions outlined in Section E of the mitigation measure. In the event that all required replacement trees will not fit on the property, increase in container size will be considered in conjunction with reductions in replacement quality.

D. Significant shrubs removed in accordance with an approved tree preservation plan should be replaced by a combination of transplanting to another location on the subject property and/or replacement by 5-gallon plants at a minimum ration of 3:1.

E. All other plants not specified in Guidelines C and D above that are removed in accordance with an approved tree preservation plan should be either transplanted to another location on the subject property or replaced by 15-gallon plants for trees and 5-gallon plants for shrubs at a minimum ration of 1:1. The two 35" + oak trees impacted by project implementation, will be mitigated by an enhanced replacement ratio (5-15 gal/10-1 gal) to the satisfaction of the Manager, PFRD/Harbors Beaches and Parks Division.

F. All transplanting of trees shall be performed by an experienced nursery or other landscape contractor, who shall care for the trees for at least six months after transplanting.

G. Prior to issuance of final certificates of use and occupancy, all transplanted or replacement trees and shrubs shall be installed in accordance with the tree preservation plan.

H. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

I. Natural drainage courses and natural grades in proximity of, and providing seasonal irrigation to oak trees shall not be altered.

J. Grading, placement of fill, storage of building materials and heavy equipment, structural development, and hardscape (e.g., roads, sidewalks, patio slabs and pool decks) shall be prohibited within the drip line (outer edge of branches) of any tree. During grading and construction operations, all trees shall be temporarily fenced off with chain link fencing to protect such areas.

K. Use of pre-emergent weed killers shall be prohibited within 10 feet of the drip line of any individual tree and within any natural drainage course which seasonally irrigates trees.

L. Use of soil sterilizes shall be prohibited because they kill everything in the soil.

- ***RESOURCE PRESERVATION***

SC 7-9 *Specify areas/lots to be dedicated or irrevocably offered to the County in fee or easement for landscape maintenance purposes, scenic or resource preservation purposes or resource replacement shall be landscaped, equipped for irrigation, and improved in accordance with an approved plan as stated below:*

Preliminary Plan -An agreement shall be entered into and financial security posed guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, with a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFR/Harbors Beaches and Parks Division. Said plan shall take into account the previously approved landscape plan for AP 95-7, the EMA Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

- ***PRIVATE LANDSCAPING***

SC 7-10 *Prior to the issuance of precise grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan. The plan shall be certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan (if any), EMA Standard Plans, area plan 95-7, scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures) and Board Resolution 90-1341 (Water Conservation Implementation Plan). Said plan*

shall be reviewed by the future homeowners association and be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division.

- ***COASTAL SAGE SCRUB***
  SC 7-11 *Prior to the issuance of grading permits, the applicant shall provide additional evidence that the on-site coastal sage scrub habitat is not occupied by California gnatcatchers, in accordance with current USFWS protocol (7 in season/9 out of season pass surveys) to the satisfaction of the USFWS and the Administrator, Planning and Zoning. Should occupied coastal sage scrub habitat be identified on-site by the surveys consultation shall be initiated with the USFWS, and a coastal sage scrub/gnatcatcher mitigation plan shall be developed to the satisfaction of the USFWS and the Administrator, Planning and Zoning prior to the issuance of grading permits.*

- ***NCCP PARTICIPATION***
  SC 7-12 *Prior to the issuance of grading permits, the applicant shall provide assurances to the satisfaction of the County NCCP coordinator and the Administrator, Planning and Zoning, that the proposed project will participate in the NCCP planning process and not preclude the finalization of the Southern Subregional reserve component of the NCCP.*

- ***RIVERSIDE FAIRY SHRIMP RELOCATION PLAN***
  SC 7-13 *Prior to the issuance of grading permits, the applicant shall prepare a relocation and establishment mitigation plan, designed to mitigate impacts to Riverside fairy shrimp/pond habitat, wetlands, and southern sycamore woodland, to the satisfaction of the Administrator, Planning and Zoning, consistent with any permits issued by USFWS, ACOE and CDFG. Mitigation shall consider on-site as well as off-site mitigation options, as well as, established fee programs.*

4. ISSUE - COUNTY'S INTERFACE WITH WILDLIFE AGENCIES

The issue has been raised that in violation of CEQA and the CEQA Guidelines, the California Department of Fish & Game and the U.S. Fish & Wildlife Service (collectively, the "Wildlife Agencies") were not properly and adequately consulted by the County in connection with the Saddleback Meadows Contingency Plan. Furthermore, comments have been made that the PDSD Department has disregarded the comments of the Wildlife Agencies, particularly with respect to an appropriate wildlife corridor.

PDSD RESPONSE:

This issue has been previously addressed in written and oral PDSD Reports to the Planning Commission, the Subdivision Committee and the Board of Supervisors.

On August 25, 1998, the PDSD Department reported to the Planning Commission that the Addendum had not been distributed to the U.S. Fish and Wildlife Service and the California Department of Fish and Game (Wildlife Agencies) prior to that hearing. Public testimony indicated that the concerns and position of the Resources Agencies had

changed regarding the proposed project and site. Following the Planning Commission's hearing and over 30 days prior to its final decision on the Area Plan, on October 7, 1998, PDSD staff took two steps to ensure that the concerns of the Wildlife Agencies were identified and disclosed. First, copies of the Addendum were provided to the Wildlife Agencies; and second, PDSD staff met with representatives of the Agencies. The purpose of the meeting, held on August 31, 1998, was to discuss Addendum PA980103 and the CEQA process as it relates to the proposed Contingency Plan. This meeting was constructive in clarifying the process and alleviating their concerns regarding the relationship of the Contingency Plan to Certified Final Subsequent EIR 566.

As noted elsewhere in this discussion, the Contingency Plan, as it relates to key issues of concern, has been previously reviewed by the Wildlife Agencies in conjunction with Proposed Final EIR 561 and Certified Final Subsequent EIR 566.

Although based on the advice of the County's NCCP biologist, the County is of the opinion that the proposed project will not preclude adequate NCCP reserve design, the mitigation offered by the applicant is still considered inadequate. Further, the County cannot support the mitigation package currently offered by the applicant. The relevant mitigation measures and conditions of approval placed on the Area Plan AP98-2 and Tentative Tract Map TT15230 stipulates that the applicant must obtain clearance from U.S. Fish and Wildlife Service and California Department of Fish and Game prior to the issuance of grading permits. Under this condition, the applicant would use either the 10(a) permit or Section 7 consultation process with USFWS to obtain their endangered species clearance. The County would not need to process the CSS take authorization through a 4(d) permit.

In their correspondence to the County, the Wildlife Agencies have always expressed a preference for the lower density Alternatives contained within the previous EIRs. And notwithstanding their verbal concurrence with the basic design parameters of the 400 foot wide Corridor as featured in the proposed Contingency Plan, the Wildlife Agencies have expressed a preference for a much wider corridor. The Corridor placement and design featured in the proposed Contingency Plan was also featured in Proposed Final EIR 561 and Certified Final Subsequent EIR (CFSEIR) 566. Alternative 4 of CFSEIR 566 as well as Alternatives 8 and 9 of Proposed Final EIR 561 all reflect the placement of the corridor at this location. The design and dimensions of the Corridor were derived through previous consultation with the Wildlife Agencies during the environmental review process associated with these two previous EIRs.

Accordingly, the Wildlife Agencies' position regarding the Wildlife Corridor featured in the Contingency Plan remains the same in that their previous comments included consideration of an identical corridor. With regard to the Southern Subregion, NCCP related comments have been evaluated in both Certified Final Subsequent EIR 566 and Proposed Final EIR 561. The 299-unit Contingency Plan has incorporated many of the concern identified in the two previous EIRs relative to the NCCP, including a central wildlife corridor, preservation of, or replacement measures to ensure the continued sustainability of, valuable biological resources.

In summary, the proposed project will not proceed without appropriate state and federal permits. All relevant information necessary for the Board of Supervisors to act pursuant to the requirements of CEQA is available, and the impacts of the project have been disclosed and, to the extent possible, mitigated.

5. ISSUE - CEQA CONSISTENCY

The issue has been raised that the proposed Contingency Plan is not in conformance with CEQA Statutes and the CEQA Guidelines.

PDSD RESPONSE:

Between 1994 and 1998, the Saddleback Meadows site has undergone detailed environmental reviews for planning compliance with CEQA on two separate previous occasions:

- Proposed Final EIR 561 was prepared in 1995-96 for a 318-unit, conventional SFD development on lots averaging 5000 sq. ft. The application, which included a Zone Change, Area Plan and Tentative Tract Map, was not approved by the Board of Supervisors; and

- Certified Final Subsequent EIR 566 was prepared in conjunction with Grading Permit Application GA960048 for recorded Tract 10692 for a 705-unit manufactured housing subdivision. This EIR was certified by the Planning Commission on December 3, 1997 and, upon appeal, the EIR certification was upheld by the Orange County Board of Supervisors on January 27, 1998.

The currently proposed Contingency Plan for 299 residential units was examined previously for this site in the form of alternatives contained in Proposed Final EIR 561 and Certified Subsequent EIR 566, although with slightly differing site plans. The alternatives contained in the Appendix of the Addendum are Alternative 4 from Certified SEIR 566 and Alternatives 8 and 9 from Proposed FEIR 561, which were previously evaluated. The Contingency Plan results from an extensive evaluation to address environmental concerns previously analyzed by reconfiguring the proposed project density, land use and location.

The CEQA Guidelines provide guidance for use of previously certified EIRs with a subsequent activity. Specifically, where a previous EIR has been certified for a larger project, the later activity or project is examined in light of the previously certified EIR. The Guidelines also provide that a Tiered EIR may be incorporated into an Addendum to an EIR to address significant and cumulative program impacts analyzed and considered in the Tiered EIR (Section 15164). None of the conditions described in Section 15162 calling for preparing a Supplemental or Subsequent EIR have occurred, and changes related to the proposed project are of a minor nature.

The PDSD Department has determined that only minor technical changes to FEIR 566 are necessary in order to properly address the current Project, that FEIR 566 adequately

analyzes all of the major impacts of the proposed project, that no major changes are proposed with respect to the circumstances surrounding this project, and that no new information of significance has become available that would substantially affect the validity of FEIR 566. Therefore, an Addendum is appropriate for the proposed project in order to provide project specific analysis, to provide clarification, and address minor changes to FEIR 566.

In approving the proposed project's Area Plan and Tentative Tract Maps, the Planning Commission and the Subdivision Committee, respectively, each made a finding that the proposed project was covered by Addendum PA980103 and Certified Final Subsequent EIR 566. In so doing, both approval bodies adopted the Mitigation Monitoring Program of EIR 566, the Findings and Facts in Support of the Findings and the Statement of Overriding Considerations.

It should also be noted that Section 15164 of the CEQA Guidelines does not require circulation or response to comments received on an Addendum. However, it is the County's policy to fully inform all parties who have expressed interest in a given project. Accordingly, in addition to sending all commentators on the Addendum a copy of the Response to Comments and staff reports, PDSD has gone beyond the requirements of CEQA, with regard to Addendum circulation, by informing all commentators on the parent document (CFSEIR 566) of the Addendum's status.

6. **ISSUE - GRADING IMPACTS**

The issue has been raised that the Contingency Plan involves massive and unacceptable grading impacts, which would subject the residents of the Trabuco Canyon area to several years of excessive noise, dust, and traffic delays associated with excavating and recompacting approximately nine million cubic yards of soil. This soil will remain exposed to the wind during dry seasons and the rain during wet seasons over the course of several years before the rough grading is completed.

According to the commentators, the Contingency Plan poses unacceptable geotechnical hazards and risks which would endanger and adversely affect the safety, usability, or stability of the land holdings immediately adjacent to the Saddleback Meadows property (the "Property"), including St. Michael's Abbey and the Ramakrishna Monastery, both of which are currently experiencing structural damage due to soils subsidence and instability. These impacts have not been adequately addressed and mitigated in the CEQA documentation prepared for AP98-2.

PDSD RESPONSE:

Grading impacts and geological concerns related to the Saddleback Meadows site have been addressed in numerous reports to the Planning Commission in conjunction with both Proposed Final EIR 561 and Certified Final Subsequent EIR 566. The grading impacts of the proposed project site have been exhaustively studied and reported.

With regard to the Saddleback Meadows Contingency Plan, a grading plan update has been prepared for Addendum PA980103. Grading for the proposed project is entirely on-site; i.e., no trucking of material on-site or off-site will be required. All grading for the proposed project is required to be in compliance with the Orange County Grading and Excavation Code, Grading Manual and conditions of approval of AP 98-2 and related Tentative Tract Map. In addition to addressing this issue in AIT Attachments L, M, and N, an additional review for CEQA compliance will be required before the issuance of any grading permits.

The conclusions of the Addendum are as follows:

- Due to its larger scale and greater intensity, implementation of the previously approved project for 705 units would require 2.6 million cubic yards of conventional grading to achieve planned elevations and profiles and associated access roadways and 8.9 million cubic yards of remedial grading to stabilize the proposed slopes through the creation of buttresses, shear keys, and stabilization fills for a total grading quantity of 11.5 million cubic yards.

- In comparison, implementation of the proposed project for 299 units would require approximately 2.1 million cubic yards of conventional grading and 6.8 million cubic yards of remedial grading for a total grading quantity of 8.9 million cubic yards. Accordingly, the required grading for the proposed project would require 2.6 million cubic yards less than that required to implement the proposed project.

- Grading quantities decrease under the Contingency Plan as a result of the reduced earthwork required to create the landform grading along the visually prominent project edges. In addition to the foregoing, prior to the development of the proposed project, the applicant must obtain the approval of a Use Permit by the Planning Commission, thereby triggering additional environmental analysis.

Implementation of the proposed project would result in a positive impact regarding the geological stability of the adjacent St. Michael's Abbey site. The extensive remedial grading required on the subject site will stabilize and/or remove ancient landslides which currently threaten the Abbey site.

Extensive review has occurred regarding the geotechnical features and impacts of the proposed project site in conjunction with Proposed Final EIR 561 and Certified Final Subsequent EIR 566. In addition, a geotechnical update has been prepared as Appendix H to the Addendum.

The conclusions of the geotechnical update are as follows:

- The proposed Contingency Plan will not result in the creation of new substantial impacts, not previously considered or analyzed;

- The Contingency Plan will result in a reduction in geotechnical impacts from those identified in conjunction with the 705-unit manufactured housing project analyzed in Certified Final Subsequent EIR 566; and

- The imposition of Mitigation Measures will reduce impacts to below a level of significance.

The following Mitigation Measures contained in the Addendum have been carried forward from Certified Final Subsequent EIR 566 and placed on the proposed project:

- ***GEOTECHNICAL REPORT***
  SC 2-2 *Prior to the issuance of a grading permit, the applicant shall submit a geotechnical report to the Manager, PDS/Subdivision and Grading Services Division for approval. The report shall include the information and be in a form as required by the Grading Manual.*

- ***GRADING COMPLIANCE***
  SC 2-3 *Prior to the issuance of any grading permits, the Manager, PDS/Subdivision and Grading Services Division, shall determine if the proposed grading complies with the grading illustrated in the plans approved by the decision-maker with regard to grading concepts, slope heights, slope ratios, and pad elevations and configuration. Significant deviations shall be reviewed by the decision-maker for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised application per Orange County Zoning Code Section 7-9-139 and 7-9-150.*

- ***OFF-SITE GRADING/DRAINAGE***
  SC 2-5 *Prior to the issuance of any grading permit, off-site grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.*

- ***GRADING CERTIFICATION***
  SC 2-6 *Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:*

  a. Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

  b. For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the on-site material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.

c. *Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.*

- ***SEISMIC SAFETY***
  SC 2-7 *Conformance with the Uniform Building Code and Orange County codes will insure that seismic considerations are incorporated into the structural designs. All recommendations of the geotechnical report shall be incorporated and utilized in the final construction plans for the parcels in a manner meeting the approval of the Manager, PDS/Building Permit Services Division. Larger buildings, structures with extraordinary architectural configurations, or those of tilt-up construction may require seismic analysis.*

- ***GEOLOGIC INSPECTIONS***
  SC 2-9 *Geologic inspections shall be required during site grading for each parcel to confirm the absence of major faults in the local area in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.*

- ***SUBSTANTIAL COMPLIANCE***
  SC 2-10 *Prior to the issuance of any grading permits, if review of the grading plan for this property by the Manager, PDS/Subdivision and Grading Services Division, indicates significant deviation from the proposed grading illustrated on the approved tentative tract map, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative tract map; or, if a final tract/parcel map has been recorded, a new tentative tract/parcel map or a site development permit application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required. to the issuance of any grading permit, whichever comes first.*

- ***WATER QUALITY MANAGEMENT***
  SC 2-13 *Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.*

- ***NATURALIZED GRADING***
  AM 8-9 *Prior to issuance of any grading permit, the project proponent shall provide evidence to the Manager, PDS/Subdivision and Grading Services Division*

indicating that graded areas will be compatible with natural landform characteristics to the greatest extent possible. Criteria to achieve the desired effect shall include:

a) Recontouring the existing landforms to provide a smooth and gradual transition between graded slopes and existing grade while preserving the basic topographic character of the site.

b) Variation and combination of slopes 2:1, 3:1 and 4:1 to create a more natural character wherever possible within the graded areas.

c) Attempting to balance cut and fill within the overall project area to eliminate off-site and import/export related grading operations.

d) Obscuring slope drainage structures with a variety of plant materials.

e) Preservation of visual opportunities from hillsides by providing for panoramic views from selected locations (e.g., view corridors, sensitive landscape placement).

Notwithstanding the rigorous standards and procedures inherent in the County's normal system for permitting and inspecting grading activities, the Planning Commission added a special requirement to this project to provide a higher-than-normal degree of certainty that, once started on the Saddleback Meadows site, grading activities would be completed. Specifically, Condition of Approval No. 15 reads as follows:

- ***PERFORMANCE BOND***
  Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division.

7. **ISSUE - CONSIDERATION OF ALTERNATIVES**

The issue was raised that two alternatives which reduce the proposed development area should have been identified and analyzed in Addendum PA980103 as alternative to the 299-unit contingency plan zone change, area plan and tentative tract maps. These consist of the "44-acre, Reduced Development Plan", referenced in Tom Mathews memo to Supervisor Spitzer, dated November 23, 1998, and the "44/178 Alternative" noted in Mr. Connor's letter to the Board of Supervisors dated November 24, 1998.

PDSD RESPONSE:

This issue has been previously addressed in written and oral PDSD Reports to the Planning Commission and the Board of Supervisors. The Contingency Plan has been presented as a stand alone project. It has been analyzed as such. Proposed Final EIR 561 and Certified Final Subsequent EIR 566 analyzed a full range of alternatives, ranging from the No Project/No Development Alternative to the 705-unit manufactured housing project. No other alternative has been submitted to the County for environmental review.

An Addendum was determined to be the appropriate environmental documentation for the proposal based on CEQA Guidelines as discussed above and in the previous submittals to the Board of Supervisors. Should the identified alternatives be submitted for consideration by the the County, they will be subjected to the same CEQA environmental documentation requirements as the proposed project.

8. ISSUE - COMPLIANCE WITH CEQA GUIDELINES CHANGES

The December 1, 1998 letter from Connor, Culver, Blake & Griffen, LLP, Counsel for the Vedanta Society of Southern California, the Norbertine Fathers of Orange, and the Saddleback Meadows Land Conservancy LLC, indicates that opposition and objections to the Contingency Plan incorporates sections of the CEQAGuidelines Revisions dated October 26, 1998.

PDSD RESPONSE:

As an ongoing project in process at the time the New and/or Revised CEQA Guidelines became effective on October 26, 1998, the Saddleback Meadows Contingency Plan is not currently affected by the changes noted by Mr. Connor. In accordance with the CEQA Statutes, lead agencies are not required to comply with the referenced Sections, some of which are revisions and some, new Sections of the Guidelines, until February 23, 1999. During the interim period, lead agencies may voluntary implement the amendments.

In summary, the Planning and Development Services Department is confident that no issues were raised which alter the recommendations that are before the Board of Supervisors. The requirements of State and County Zoning and Development Laws and Ordinances and CEQA have been met.

ORANGE COUNTY BOARD OF SUPERVISORS

MINUTE ORDER

The following is action taken by the Board of Supervisors on December 8, 1998

APPROVED AS RECOMMENDED ☐ OTHER ■

APPROVED AS RECOMMENDED (RA 1-3) IN MEMO DATED 11/24/98 FROM THOMAS MATHEWS, DIRECTOR, PLANNING & DEVELOPMENT DEPT.

Unanimous ☐ (1) Smith **Y** (2)Silva **X** (3)Spitzer **Y** (4)Steiner **Y** (5)Wilson **N**

Vote Key: Y=Yes;N=No;A=Abstain;X=Excused;B.O.=Board Order

Documents accompanying this matter:

■ Resolution(s) 98-466 thru 98-467
■ Ordinances(s) 98-17
☐ Contract(s)

Submitting Agency/Department: *PLANNING AND DEVELOPMENT SERVICES*

Public Hearing to consider Zone Change 98-32 and appeal filed by Edmond Connor of the Planning Commission's approval of Area Plan 98-2, proposing to allow 299 single-family detached homes in the Saddleback Meadows area; consider adopting "An Ordinance of the County of Orange, California adopted pursuant to the State planning and zoning laws, amending the Foothill/Trabucco Specific Plan for Saddleback Meadows (ZC98-3)" and adopting a resolution approving Environmental Impact Report Addendum PA 980103 - District 3 (Continued from 11/3/98, Item 55 and 11/24/98, Item 52)

Item No. 75
File 192260
Special Notes:

I certify that the foregoing is a true and correct copy of the Minute Order adopted by the Board of Supervisors, Orange County, State of California.
DARLENE J. BLOOM, Clerk of the Board

By: Sandy Champerie
Deputy

Copies sent to:
CEO
Plan. & Dev.
Auditor
12/22/98

3063

ORDINANCE NO. 98-17

AN ORDINANCE OF THE COUNTY OF ORANGE, CALIFORNIA ADOPTED PURSUANT TO THE STATE PLANNING AND ZONING LAWS, AMENDING THE FOOTHILL/TRABUCO SPECIFIC PLAN FOR SADDLEBACK MEADOWS (ZC98-3)

The Board of Supervisors of the County of Orange, California, does ordain as follows:

SECTION 1. Ordinance Nos. 3177, 3398, and 3468, which established regulations for the Saddleback Meadows (a.k.a. Bridlewood) Planned Community, are hereby repealed.

SECTION 2. The Foothill/Trabuco Specific Plan Section III.D.3, "Bridlewood Residential District," is hereby amended per Zone Change 98-3 as shown in Exhibit 1.

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EXHIBIT 1

3.0 Bridlewood Residential (BWR) District

3.1 Purpose and Intent

The Bridlewood Residential District is established to provide for the development and maintenance o low density detached single-family residential neighborhoods in steep hillside areas in such a manner that generous open space areas are featured.

3.2 Uses Permitted

Per the Residential Estates (Planned Development) District Regulations: Zoning Code sections 7-9-68 and 7-9-110.

3.3 Site Development Standards

Per the Residential Estates (Planned Development) District Regulations: Zoning Code sections 7-9-68 and 7-9-110.

3.4 Special Provisions

a. The maximum number of dwelling units for this District shall be 299.

b. The minimum amount of open space shall be 70% (155 acres). Such open space shall be defined as follows: The open space area remaining after approved development is completed that has a natural appearance and will remain undisturbed thereafter except for possible approved fuel modification. Such areas may include, depending on design and landscaping, parks, manufactured slopes, and recreation trails.

c. Any development shall be in compliance with every regulation of this District (BWR) and shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.

d. Prior to the approval of any tentative subdivision map, an area plan addressing the entire District shall be approved.

e. A preliminary grading permit may be issued in compliance with the Grading & Excavation Code subsequent to the approval of an area plan and tentative tract map which creates residential building sites. The Grading Official shall require a performance bond prior to the issuance of the grading permit.

f. Prior to the issuance of any building permits for residential structures, a use permit shall be approved by the Planning Commission per Zoning Code section 7-9-150.

This ordinance shall take effect and be in full force thirty (30) days from and after its passage and before the expiration of fifteen (15) days after the passage thereof, shall be published once in an adjudicated newspaper in the County of Orange.

The foregoing was passed and adopted by the following vote of the Orange County Board of Supervisors on December 8, 1998, to wit:

AYES: Supervisors: TODD SPITZER, WILLIAM G. STEINER, CHARLES V. SMITH

NOES: THOMAS W. WILSON

EXCUSED: JAMES W. SILVA

ABSTAINED:

VICE-CHAIRMAN, Orange County Board of Supervisors

STATE OF CALIFORNIA)
) ss:
COUNTY OF ORANGE)

I, DARLENE J. BLOOM, Clerk of the Board of Supervisors of Orange County, California, hereby certify that a copy of this document has been delivered to the Chairman of the Board and that the above and foregoing Ordinance was duly and regularly adopted by the Orange County Board of Supervisors.

IN WITNESS WHEREOF, I have hereto set my hand and seal.

12-8-98
Date

DARLENE J. BLOOM
Clerk of the Board of Supervisors
County of Orange, State of California

Ordinance No: 98-17
Agenda Date: 12/08/1998
Item No. 75

I certify that the foregoing is a true and correct copy of the Ordinance adopted by the Board of Supervisors, Orange County, State of California.

DARLENE J. BLOOM, Clerk of the Board of Supervisors

By: Sandy Champine
Deputy

RESOLUTION OF THE BOARD OF SUPERVISORS OF

ORANGE COUNTY, CALIFORNIA

December 8, 1998

On the motion of Supervisor Spitzer. duly seconded and carried. the following Resolution was adopted.

WHEREAS, on December 10, 1991, this Board certified Final EIR 531 for the Foothill/Trabuco Specific Plan, which designated the Saddleback Meadows site as a residential site in the Upper Aliso District; and

WHEREAS, Grading Permit application GA940031 was submitted to the County in April 1994. for Phase I of Tract 10692, a 705-unit manufactured single family residential project. for which the County required the preparation of an EIR, which was subsequently appealed in August 1994; and

WHEREAS, the applicant set aside the appeal on January 31, 1995, whereupon the Planning Commission directed the applicant to revise the project for one more compatible with surrounding land use; and

WHEREAS, after discussions with nearby residents, the applicant submitted a revised, 318-unit, conventional single-family residential project, including zone change, area plan and tentative tract map for which EIR 561was prepared; and

WHEREAS, the Board of Supervisors denied the revised project zone change and area plan on October 22, 1996; and

WHEREAS, applicant submitted Grading Permit application GA960048 for the entirety of recorded Tract 10692, consisting of 705 manufactured housing lots, for which the County required the preparation of EIR 566; and

WHEREAS, the Orange County Planning Commission reviewed all documentation comprising proposed Final SEIR 566 for the proposed project, as of December 3, 1997, certifying Final SEIR 566 as complete and adequate and in compliance with all requirements of the CEQA Statutes, the State CEQA Guidelines and County of Orange procedures; and

WHEREAS, the Board of Supervisors upheld the certification of Final Subsequent EIR 566 on February 24, 1998; and

WHEREAS, following negotiations between the County and private parties concerning the possible purchase of all and/or portions of the Saddleback Meadows site, the applicant submitted a Zone Change and Area Plan application for the subject 299-unit Contingency Plan, for which the Planning & Development Services Department required the preparation of Addendum PA980103; and

WHEREAS, Addendum PA980103 incorporated Certified Final Subsequent EIR 566, including its Mitigation Monitoring and Reporting Program, its STATEMENT OF FINDINGS, FACTS IN SUPPORT OF FINDINGS and the STATEMENT OF OVERRIDING CONSIDERATIONS; and

WHEREAS, on October 7, 1998, the Planning Commission concurred with the recommendation of the Planning & Development Services Department for the Contingency Plan to be found within the scope of Certified Final Subsequent EIR 566, and approved Addendum PA980103 as the appropriate environmental documentation for the Zone Change and Area Plan; and

WHEREAS, the Planning Commission considered the comments and concerns of all reviewers and commentators on Addendum PA980103, including the US Fish & Wildlife Service and the California Department of Fish & Game and the organizations that later appealed the Area Plan and Subdivision Map approvals, and concurred in the recommendation of the Planning & Development Services Department that the noted concerns be found to be adequately addressed in the Addendum and Certified Final SEIR 566; and

WHEREAS, the Orange County Subdivision Committee approved Tentative Tract Map Nos. 15230 and 15784 on October 21, 1998, finding Addendum PA980103 as the appropriate environmental documentation for the subdivision maps in compliance with the Subdivision Map Act; and

WHEREAS, the Board has reviewed the Appeal of the Planning Commission's approval of Area Plan 98-2, dated October 22, 1998, and filed by Edmond Connor on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange and the Saddleback Meadows Land Conservancy, LLC, as it relates to the claims that the environmental documentation for the project is inadequate; and

WHEREAS, the Board has reviewed the Appeal of the Subdivision Committee's approval of Tentative Tract Map Nos. 15230 and 15784, dated November 5, 1998, and filed by Edmond Connor on behalf of the Vedanta Society of Southern California, the Norbertine Fathers of Orange and the Saddleback Meadows Land Conservancy, LLC, as it relates to the claims that the environmental documentation for the project is inadequate; and

WHEREAS, the Board has reviewed and considered correspondence from the California Department of Fish & Game and US Fish & Wildlife Service expressing concern regarding the Saddleback Meadows Contingency Plan.

NOW THEREFORE, based upon Addendum PA980103 and Certified FSEIR 566, this Board makes the following findings:

1. The Board finds that Certified Final Subsequent EIR 566 identified all significant environmental effects of the Contingency Plan, as set forth in the STATEMENT OF FINDINGS, FACTS IN SUPPORT OF FINDINGS AND STATEMENT OF OVERRIDING CONSIDERATIONS, in the certification of the Final Subsequent EIR.

2. The Board finds that, per the criteria of Section 21081.6 of the Public Resources Code, the mitigation monitoring responsibilities of the County as the Lead Agency for the Contingency Plan have been met, as exemplified by the incorporation of appropriate mitigation measures from Certified Final Subsequent EIR

566 into conditions of approvals on the Zone Change, the Area Plan and the Tentative Tract Maps.

3. The Board finds that, per the criteria set forth in Section 15162 of the CEQA Guidelines, the proposed Contingency Plan does not trigger the preparation of a subsequent EIR.

4. The Board finds that, per Section 15164 of the CEQA Guidelines, the proposed Contingency Plan meets all the criteria which would allow the preparation of an Addendum to Certifed FSEIR 566.

5. The Board finds that, based upon the administrative record of the project, including the report of the Planning and Development Services Department, as put forth in Attachment II to Item 52, Supplemental to Agenda Item Transmittal dated November 3, 1998 and postponed to November 24, 1998, the Appeal of the Area Plan approval has no merit.

6. The Board finds that, based upon the administrative record of the project, including the report of the Planning and Development Services Department, as put forth in Attachment II to Item 53, Supplemental to Agenda Item Transmittal dated November 24, 1998, the Appeal of the approval of Tentative Tract Map Nos. 15230 and 15784 has no merit.

7. The Board finds that, together, Addendum PA980103 and Certified FSEIR 566, satisfy all requirements of the State CEQA Statutes and Guidelines and County of Orange procedures for the Saddleback Meadows Contingency Plan.

8. The Board finds that, pursuant to Section 711.4 of the California Fish and Game Code, although there is evidence that the proposed Contingency Plan has a potential for adverse effects on wildlife resources, and thereby is subject to F&G fees, the fees for the proposed project site have been previously paid in conjunction with Certified Final SEIR 566.

9. The Board finds that, although the proposed project will have a significant impact upon Coastal Sage Scrub habitat, because of proposed mitigation measures imposed on the project and project design features, the project will not preclude the ability to prepare an effective Subregional Natural Communities Conservation Planning (NCCP) Program.

The foregoing was passed and adopted by the following vote of the Orange County Board of Supervisors on December 8, 1998, to wit:

AYES: Supervisors: TODD SPITZER, WILLIAM G. STEINER, CHARLES V. SMITH

NOES: THOMAS W. WILSON

EXCUSED: JAMES W. SILVA

ABSTAINED:

VICE CHAIRMAN, Orange County Board of Supervisors

STATE OF CALIFORNIA)
) ss:
COUNTY OF ORANGE)

I, DARLENE J. BLOOM, Clerk of the Board of Supervisors of Orange County, California, hereby certify that a copy of this document has been delivered to the Chairman of the Board and that the above and foregoing Resolution was duly and regularly adopted by the Orange County Board of Supervisors.

IN WITNESS WHEREOF, I have hereto set my hand and seal.

DEC 08 1998
Date

DARLENE J. BLOOM
Clerk of the Board of Supervisors
County of Orange, State of California

Resolution No: 98-466,
Agenda Date: 12/08/1998
Item No. 75

I certify that the foregoing is a true and correct copy of the Resolution adopted by the Board of Supervisors, Orange County, State of California.

DARLENE J. BLOOM, Clerk of the Board of Supervisors

By: Deputy

3071

RESOLUTION OF THE BOARD OF SUPERVISORS OF ORANGE COUNTY, CALIFORNIA

December 8, 1998

On motion of Supervisor Spitzer, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Planning Commission conducted public hearings on Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the area known as Saddleback Meadows (aka Bridlewood); and

WHEREAS, the Planning Commission has considered EIR Addendum PA980103 and found that it satisfies the requirements of CEQA for this project.

WHEREAS, the Planning Commission approved AP98-2 subject to 32 conditions and recommended that this Board approve ZC98-3; and

WHEREAS, the Planning Commission's action on AP98-2 was appealed to this Board; and

WHEREAS, this Board has conducted a noticed public hearing on ZC98-3 and AP98-2; and

WHEREAS, this Board has reviewed and considered the action of the Foothill/Trabuco Specific Plan Review Board; and

WHEREAS, this Board has considered EIR Addendum PA980103 and, by separate Resolution, found that it satisfies the requirements of CEQA for this project; and

WHEREAS, this Board, by separate Ordinance, has approved ZC98-3.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

1. AP98-2 is consistent with the objectives, policies, general land uses and programs specified by the General Plan.
2. AP98-2 is in substantial compliance with, the Foothill/Trabuco Specific Plan.
3. AP98-2 is consistent with the provisions of the Zoning Code.
4. The location, size, design and operating characteristics of AP98-2, as conditioned, will not create conditions or situations that may be incompatible with other permitted uses in the vicinity.
5. AP98-2 will not result in conditions or circumstances contrary to the public health and safety and the general welfare.
6. AP98-2, as conditioned, satisfies the requirements of section 7-9-711 regarding public facilities.
7. The RE (PD), "Residential Estates (Planned Development)," site development standards regarding building site areas, building site coverage, area per unit, and number of dwelling units have been satisfied by AP98-2.
8. Condition of Approval No. 27 requires a use permit be approved which is consistent with AP98-2. A use permit may be approved for the entire project site or portions of the project site.

9. AP98-2, as conditioned, will provide significant public benefits in the form of major recreational trails, an important wildlife corridor for the Natural Communities Conservation Program and a large addition to O'Neill Regional Park.

10. That the issues raised in the appeal letter by Edmond Connor dated October 22, 1998 have been adequately addressed in the supplemental staff report dated October 7, 1998. Those responses are hereby incorporated by this reference.

BE IT FURTHER RESOLVED that this Board denies the appeal and upholds the action of the Planning Commission approving AP98-2 subject to the following conditions:

1. CP NA NA TIME LIMIT
Area Plan 98-2 is valid for a period of 48 months beginning with the effective date for ZC98-3. If the preliminary grading permit is not issued within such period of time, this approval shall be terminated and Area Plan 98-2 shall thereafter be null and void.

2. CP CP NA REVOCATION
Failure to abide by and faithfully comply with any and all conditions attached to this approving action shall constitute grounds for the revocation of said action by the Orange County Planning Commission.

3. CP CP G TENTATIVE TRACT MAP
Prior to the issuance of any grading permits, Tentative Tract Map 15230 shall be approved by the Subdivision Committee after a public hearing. Said tentative tract map must be found consistent with Area Plan 98-2.

4. CP CP G GRADING REVIEW
Prior to the issuance of any grading permits, the Manager, Current Planning Services, shall determine that the grading plan is consistent with Area Plan 98-2 and the approved tree preservation plan.

5. HP HP G TREE PRESERVATION PLAN
Prior to the issuance of any preliminary grading permit, a tree preservation plan shall be prepared which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and on-half feet above ground level). The tree preservation plan shall be consistent with the Area Plan 98-2 and the Foothill/Trabuco Specific Plan and approved by the Manager, Harbors Beaches, and Parks. The plan shall be signed and certified by a biologist or arborist.

6. EP SG/EP G FED ENDGD SPEC ACT
Prior to the issuance of any preliminary grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. Additionally, the applicant shall obtain approval of a mitigation plan to replace lost ephemeral ponds at a 2 to 1 ratio or at such greater ratio as may be required by the U.S. Fish and Wildlife Service. This evidence shall be submitted to the Manager, Subdivision and Grading, for review and approval, in consultation with the Manager, Environmental & Project Planning.

7. SG SG G GEOLOGY RPT
Prior to the issuance of any grading permits, the applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall include the information and be in a form as required by the Grading Manual.

8. SG SG G DRAINAGE
Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, provide:

A. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

B Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

9. SG SG G CROSS-LOT DRAINAGE
Prior to the issuance of any grading permits, and if determined necessary by the Manager, Subdivision and Grading, a letter of consent, in a form approved by the Manager, Subdivision and Grading, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to the issuance of any grading permit. Acceptance of cross-lot drainage on lots within the tract map boundaries shall be noted on the recorded map.

10. SG SG G VECTOR CONTROL
Prior to the issuance of any preliminary grading permits, the subdivider shall provide evidence to the Manager, Subdivision and Grading, that the Vector Control District has surveyed the site to determine if vector control measures are necessary. If warranted, the developer shall conduct such measures in a manner meeting the approval of the Manager, Subdivision and Grading.

11. HP HP G ARCHAEO OBS & SALVAGE
Prior to the issuance of any preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified archeologist has been retained, shall be present al the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeologist shall submit a follow-up report to the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, an analysis of any artifacts fond and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, Harbors, Beaches & Parks.

12. HP HP G PALEO OBS & SALVAGE
Prior to the issuance of an preliminary grading permit, the project applicant shall provide written evidence to the Manager, Subdivision and Grading, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer.

which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, Harbors, Beaches & Parks, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, Harbors, Beaches & Parks.

13. SG SG G GRADING NOTES

Prior to the issuance of any grading permits, the following guidelines shall be included in the "Notes Section" of the grading plans meeting the approval of the Manager, Subdivision and Grading.

A. During all grading and construction operations, all oak trees on the site, located adjacent to the approved limits of grading and identified in an approved Tree Management/Preservation Plan as trees to be preserved, shall be adequately fenced and protected from encroachment by grading and construction equipment. Grading, placement of fill, and storage of building materials and heavy equipment, shall be prohibited within the dripline of any tree identified for preservation as part of an approved Tree Management/Preservation Plan.

B. If required, retaining walls shall be used to protect the existing grades of oaks identified for preservation from surrounding cut and fill. However, these should not alter drainage from around the trees.

C. No type of surface, whether pervious or impervious, shall be placed within a six-foot radius of oak tree trunks. Where surfacing cannot be avoided, alternative types of paving should be utilized, such as gravel or porous brick with sand joints.

D. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

E. Natural drainage courses and natural grades outside the remedial grading impact area in proximity to and providing seasonal irrigation to oak trees shall not be altered.

F. In proximity to oak trees, only one trench should be dug to accommodate all utility lines. Where necessary, the impacted trees should be carefully pruned by an arborist in proportion to the total amount of root zone lost.

14. BP BP G CONSTRUCTION NOISE

A. Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits, that:

1. All construction vehicles or equipment, fixed or mobile, operated within 1000' of a dwelling shall be equipped with properly operating and maintained mufflers.

2. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

3. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the grading plans, will be considered as adequate evidence of compliance with this condition.

15. CP SG G PERFORMANCE BOND
Prior to the issuance of a preliminary grading permit, the applicant shall provide a performance bond and related agreement to the satisfaction of the Manager, Subdivision and Grading.

16. HP HP G RE-ROUTING
Prior to the issuance of a preliminary grading permit, which includes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted by the applicant and approved by the Manager, Harbors, Beaches and Parks.

17. CP SG R
Prior to the recordation of any subdivision map which creates residential building sites, the preliminary grading activity for all of Area Plan 98-2 shall be completed to the satisfaction of the Manager, Subdivision and Grading.

18. HP HP R OPEN SPACE
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate to the County of Orange a minimum of seventy (70) percent of the project site as open space in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. The open space dedication shall be for: (1) regional park, and (2) restricted scenic preservation purposes. The Manager, Harbors, Beaches & Parks shall determine the final boundary between these open space areas.

Within the regional park area, the Manager, Harbors, Beaches & Parks shall determine what improvements, if any, shall be made. If determined appropriate by the Manager, Harbors, Beaches & Parks, the applicant shall be required to provide those improvements as shown and discussed in the Area Plan 98-2.

Within the restricted scenic preservation easement area, after dedication, no grading, structures (including stables and corrals), or commercial agriculture activities shall be permitted in this area. River rock walls not to exceed three feet, approved Loffel walls, and open fencing shall be permitted. An entry gate and identification sign shall be permitted subject to approval of a site development or use permit for such use. Future fuel modification, landscaping, and tree preservation shall be permitted if consistent with Area Plan 98-2 and conditions of approval No. 28 (fuel modification), No. 21 (landscaping), and No. 5 (tree preservation).

19. HP HP R RECREATIONAL TRAILS
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall dedicate a recreation easement for those bikeways and regional riding and hiking trails shown and discussed in Area Plan 98-2 in a manner meeting the approval of the Manager, Harbors, Beaches & Parks. Also, the applicant shall design the necessary improvements and enter into an agreement, accompanied by financial security, with the County of Orange to install the necessary improvements in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

20. HP HP R CLEANING UP
Prior to the recordation of any subdivision map that creates residential building sites, the existing old ranch house and all abandoned automobiles shall be removed in a manner meeting the approval of the Manager, Harbors, Beaches & Parks.

21. HP HP R LANDSCAPE PLAN
Prior to the recordation of any subdivision map which creates residential building sites, the subdivider shall enter into an agreement and post financial security guaranteeing landscape

improvements and the maintenance thereof based on preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Manager, Harbors, Beaches & Parks. Said plan shall take into account the County Standard Plans for landscaped areas, adopted plant palette guides, applicable scenic and Foothill Trabuco Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

22. EP EP FIRE STATION FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the Orange County Fire Authority to pay pro-rata capital facility fees for Fire Station No. 42 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

23. EP EP LIBRARY FACILITY
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall enter into an agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution 87-1684 in a manner meeting the approval of the Manager, Environmental & Project Planning. Said agreement shall be accompanied by financial security.

24. EP EP SHERIFF STATION
Prior to the recordation of an subdivision map that creates residential building sites, the project proponent shall enter into a secured agreement with the County of Orange, subject to approval of the Sheriff-Coroner, to participate on a pro rata basis in funding (a) Sheriff substation facilities and (b) the initial costs of providing additional patrols plus support necessary to serve the project in a manner meeting the approval of the Manager, Environmental & Project Planning.

25. EC F F FUEL MODIFICATION
Prior to the recordation of any subdivision map that creates residential building sites, the applicant shall demonstrate to the satisfaction of the Fire Chief that necessary fuel modification in off-site locations will be maintained in perpetuity.

26. EP EP R AFFORDABLE HOUSING
Prior to the recordation of a subdivision map that creates residential building sites, the landowner shall provide a cash contribution to the County's General Plan Trust Fund. The specific methodology and amount of said contribution shall be subject to the approval of the Manager, Environmental & Project Planning. These funds shall be directed to support the County's overall efforts toward providing affordable housing, including but not limited to, future updates of the Orange County Housing Element and related programs for maintaining existing affordable housing and providing new affordable housing opportunities.

27. CP CP B USE PERMIT
Prior to the issuance of any building permits for residential structures, the applicant shall submit a use permit application for review by the Foothill/Trabuco Review Board and approval by the Planning Commission after a public hearing. Said use permit shall include, but not be limited to, the location of all structures and uses, precise landscaping plan, precise fuel modification plan and program, grading plan, and architectural plans for all structures. Said use permit must be found consistent with Area Plan 98-2.

28. F F GBU FUEL MOD PLAN
Prior to the approval of the use permit to construct residential structures, the applicant shall obtain the Fire Chief's approval, in consultation with the Manager, Environmental and Project Planning, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of combustible vegetation and the planting of drought tolerant fire resistant plants. However, only the minimum necessary fuel modification shall be approved by the Fire Chief. All practical mitigation measures to minimize the need for fuel modification shall be recommended by the Fire Chief such as use of non-combustible construction materials, interior fire sprinkler system and double-glassed windows. The required fuel modification shall be performed in a manner to minimize impacts on the natural environment as much as possible. The fuel modification plan shall then become effective after the Planning Commission approves the use permit.

29. SG SG B ROAD REE PROG
Prior to the issuance of building permits for residential construction, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, Subdivision and Grading.

A. Foothill Circulation Phasing Program
B. Foothill/Eastern Transportation Corridor
C. El Toro Road
D. Santiago Canyon Road

30. HP HP R LOCAL PARK FEES
Prior to the issuance of building permits for residential construction, the applicant shall pay in-lieu fees per the Local Park Code Requirements.

31. FTSP CP B SCHOOL FEES
Prior to the issuance of any building permits for residential construction, the applicant shall provide written verification from the School District, in a manner meeting the approval of the Manager, Current Planning, that he has reached a mitigation agreement with the District for the subject project proposal.

32. CP NA NA INDEMNIFICATION
Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may be required by a court to pay as a result of such action. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

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The foregoing was passed and adopted by the following vote of the Orange County Board of Supervisors on December 8, 1998, to wit:

AYES: Supervisors: TODD SPITZER, WILLIAM G. STEINER, CHARLES V. SMITH

NOES: THOMAS W. WILSON

EXCUSED: JAMES W. SILVA

ABSTAINED:

Thomas W. Wilson
VICE-CHAIRMAN, Orange County Board of Supervisors

STATE OF CALIFORNIA)
) ss:
COUNTY OF ORANGE)

I, DARLENE J. BLOOM, Clerk of the Board of Supervisors of Orange County, California, hereby certify that a copy of this document has been delivered to the Chairman of the Board and that the above and foregoing Resolution was duly and regularly adopted by the Orange County Board of Supervisors.

IN WITNESS WHEREOF, I have hereto set my hand and seal.

DEC 0 8 1998
Date

Darlene J. Bloom
DARLENE J. BLOOM
Clerk of the Board of Supervisors
County of Orange, State of California

Resolution No: 98-467
Agenda Date: 12/08/1998
Item No. 75

I certify that the foregoing is a true and correct copy of the Resolution adopted by the Board of Supervisors, Orange County, State of California.

DARLENE J. BLOOM, Clerk of the Board of Supervisors

By: Sandy Champene
Deputy

3079

ORANGE COUNTY BOARD OF SUPERVISORS

MINUTE ORDER

The following is action taken by the Board of Supervisors on December 8, 1998

APPROVED AS RECOMMENDED ☐ OTHER ■

APPROVED AS RECOMMENDED (RA 4 & 5) IN MEMO DATED 11/24/98 FROM THOMAS MATHEWS, DIRECTOR, PLANNING & DEVELOPMENT DEPT.

Unanimous ☐ (1) Smith **Y** (2)Silva **X** (3)Spitzer **Y** (4)Steiner **Y** (5)Wilson **N**

Vote Key: Y=Yes;N=No;A=Abstain;X=Excused;B.O.=Board Order

Documents accompanying this matter:

■ Resolution(s) 98-468 thru 98-469
☐ Ordinances(s)
☐ Contract(s)

Submitting Agency/Department: *PLANNING AND DEVELOPMENT SERVICES*

Public Hearing to consider denying appeal filed by Edmond Connor and uphold the decision of the Subdivision Committee to approve Tentative Tract 15230 and vesting Tentative Tract 15784 for Saddleback Meadows - District 3 (Continued from 11/24/98, Item 53)

Item No. 76
File 19330
Special Notes:

I certify that the foregoing is a true and correct copy of the Minute Order adopted by the Board of Supervisors, Orange County, State of California.
DARLENE J. BLOOM, Clerk of the Board

By: Lindy Champeau
Deputy

Copies sent to:
CEO
Plan. & Dev.
Auditor
12/2/98

3080

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA

December 8, 1998

On motion of Supervisor Spitzer, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Orange County Subdivision Committee conducted a noticed public hearing and approved Saddleback Meadows Tentative Tract Map (TTM) 15784 which creates no building sites; and

WHEREAS, the action of the Subdivision Committee on TTM 15784 was appealed to the Board of Supervisors; and

WHEREAS, this Board, by two separate Resolutions and an Ordinance, has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA 980103; and

WHEREAS, this Board has conducted a noticed public hearing on TTM 15784.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the Board of Supervisors has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

X. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XI. That the development of this project will not preclude or prevent the preparation of the Southern Subregion NCCP.

XII. That the issues raised in the appeal letter by Edward Connor dated November 5, 1998 have been adequately addressed in the supplemental staff report dated November 17, 1998. Those responses are hereby incorporated by this reference.

XIII. That the Board, by two separate Resolutions and an Ordinance has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA980103, the findings from which are incorporated herein by reference.

BE IT FURTHER RESOLVED that this Board denies the appeal and upholds the Subdivision Committee action on TTM 15230 subject to the following conditions:

(G) 1. SG SG G — GRADING RESTRICTION
(S) Notwithstanding any grading/elevations that are shown on the tentative tract map, or the provisions of Orange County Zoning Code Section 7-9-139 (Grading and Excavation), approval of this tentative tract map does not authorize the issuance of any grading permits.

(NA)2. SG NA NA — INDEMNIFICATION
(S) Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents or employees to attack, set aside, void, or annul an approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

(R) 3. SG SG R — CONVEYANCE MAP
(SS) Prior to the recordation of the final tract map, a note shall be placed on the final tract map stating, "This tract map is for conveyance purposes only and the lots created by this tract map are not legal building sites" in a manner meeting the approval of the Manager, Subdivision and Grading.

(SS) 4. CP — NOTIFICATION
This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval.

You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

3082

The foregoing was p. ed and adopted by the follo. ng vote of the Orange County Board of Supervisors on December 8, 1998, to wit:

AYES: Supervisors: TODD SPITZER, CHARLES V. SMITH, WILLIAM G. STEINER

NOES: THOMAS W. WILSON

EXCUSED: JAMES W. SILVA

ABSTAINED:

VICE- CHAIRMAN, Orange County Board of Supervisors

STATE OF CALIFORNIA)
) ss:
COUNTY OF ORANGE)

I, DARLENE J. BLOOM, Clerk of the Board of Supervisors of Orange County, California, hereby certify that a copy of this document has been delivered to the Chairman of the Board and that the above and foregoing Resolution was duly and regularly adopted by the Orange County Board of Supervisors.

IN WITNESS WHEREOF, I have hereto set my hand and seal.

DEC 08 1998
Date

DARLENE J. BLOOM
Clerk of the Board of Supervisors
County of Orange, State of California

Resolution No: 98-468
Agenda Date: 12/08/1998
Item No. 76

I certify that the foregoing is a true and correct copy of the Resolution adopted by the Board of Supervisors, Orange County, State of California.

DARLENE J. BLOOM, Clerk of the Board of Supervisors

By: Sandy Champine
Deputy

3083

RESOLUTION OF THE BOARD OF SUPERVISORS
ORANGE COUNTY, CALIFORNIA

December 8, 1998

On motion of Supervisor Spitzer, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the Orange County Subdivision Committee conducted a noticed public hearing and approved Saddleback Meadows Vesting Tentative Tract Map (VTTM) 15230 to create 299 residential building sites; and

WHEREAS, the action of the Subdivision Committee on VTTM 15230 was appealed to the Board of Supervisors; and

WHEREAS, this Board, by two separate Resolutions and an Ordinance, has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA 980103; and

WHEREAS, this Board has conducted a noticed public hearing on VTTM 15230.

NOW, THEREFORE, BE IT RESOLVED that this Board makes the following findings:

I. That the proposed map is consistent with the Orange County General Plan.

II. That the design and improvement of the proposed subdivision are consistent with the Orange County General Plan.

III. That the proposed site is physically suitable for the proposed type of development.

IV. That the proposed site is physically suitable for the proposed density of development.

V. That the design of the subdivision or the proposed improvements are not likely to cause substantial environmental damage or substantial and avoidable injury to fish or wildlife or their habitat.

VI. That the design of the subdivision and the type of improvements proposed are not likely to cause serious public health problems.

VII. That the design of the subdivision and the type of improvements proposed will not conflict with easements of record or established by court judgment acquired by the public-at-large for access through or use of property within the proposed subdivision.

VIII. That the proposed subdivision complies with the requirements set forth in the Orange County Subdivision Code and the Orange County Zoning Code.

IX. That the proposed subdivision, together with the provisions for its design and improvement, is in substantial compliance with the Foothill/Trabuco Specific Plan.

X. That the design and improvement of the proposed subdivision are suitable for the uses proposed, and the subdivision can be developed in compliance with the applicable zoning regulations pursuant to Section 7-9-254 of the Subdivision Code.

XI. That the tentative map is consistent with both Area Plan (AP) 98-2 and Zone Change (ZC) 98-3.

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

XII. That the Board of Supervisors has considered Final EIR 566, previously certified on 6/2/98, and Addendum PA 980103 prior to project approval. Together they are approved for the proposed project based upon the following findings:

1. Together, these documents are adequate to satisfy the requirements of CEQA by the decision-maker;

2. The additions, clarifications, and/or changes to the original document caused by the Addendum do not raise new significant issues which were not addressed by the EIR; and

3. The approval of the EIR and Addendum for the proposed project reflect the independent judgment of the Subdivision Committee.

XIII. That pursuant to Section 711.4 of the California Fish and Game Code, this project is not exempt from the required fees as it has been determined that adverse impacts to wildlife resources will result from the project. The required fees will need to be paid.

XIV. That the development of this project will not preclude or prevent the preparation of the Southern Subregion NCCP.

XV. That the discharge of waste from the proposed subdivision into the existing sewer system of the Trabuco Canyon Water District will not result in violations of existing requirements prescribed by the California Regional Water Quality Control Board, San Diego Region.

XVI. That the design of the subdivision and its improvements do provide, to the extent feasible, for future passive or natural heating or cooling opportunities as specified in Section 66473.1 of the Government Code (Subdivision Map Act).

XVII. That the following determinations apply to fees required by Sections 7-9-700 through 713, Codified Ordinances of Orange County:

A. Purpose of fees: Fire protection, paramedic, law enforcement, library, and general County services.

B. Use of fees: Construction of new fire station, sheriff substation, library, and general County facilities in newly developing areas which have inadequate service.

C. Relationship between use of fees and type of development: Dwelling units and commercial/industrial structures and their occupants require fire protection, paramedic, law enforcement, library, and general County services.

D. Relationship between need for facilities and type of project: Project is located in newly developing area which has inadequate fire protection, paramedic, library services, and sheriff substation and general County facilities.

E. Relationship between amount of fees and cost of the portion of the facilities attributable to the development: Fees represent project's pro rata share of the cost of the fire station, sheriff substation, library, and general County facilities.

XVIII. That because of participation in fee programs for off-site improvements, this project will qualify for consideration under Section 66452.6 of the Subdivision Map Act.

OFFICE COUNTY COUNSEL ORANGE COUNTY

F0192-210.(5/77)

3085

XIX. That the deviations from the standards of design set forth in the Subdivision Code Subdivision Committee Report were considered and found to be justified based upon the reasons set forth in the Subdivision Committee Report or special circumstances which apply.

XX. That the Local Park Code Requirement can be met by the payment of in-lieu fees.

XXI. That the monitoring requirements of Public Resources Code Section 21081.6 (AB 3180) will be considered as having been met in that the design of the subject project, the satisfaction of the requirements of the County's building, grading, fire, and other codes and ordinances and the satisfaction of the conditions of approval applied to the project will implement the mitigation measures contained in EIR No. 566 an Addendum PA 980103.

XXII. That the applicant is hereby provided notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval as well as the reports and actions accompanying this approval and that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun

XXIII. That the issues raised in the appeal letter by Edward Connor dated November 5, 1998 have been adequately addressed in the supplemental staff report dated November 17, 1998. Those responses are hereby incorporated by this reference.

XXIV. That the Board, by two separate Resolutions and an Ordinance has approved related Zone Change 98-3, Area Plan 98-2, and EIR Addendum PA980103, the findings from which are incorporated herein by reference.

BE IT FURTHER RESOLVED that this Board denies the appeal and upholds the action of the Subdivision Committee subject to the following conditions:

1. CP NA NA SPECIAL

Approval of Vesting TTM 15230 is subject to final approval of Zone Change 98-3 and Area Plan 98-2. Prior to recordation of VTTM 15230, the Manager, Current Planning shall determine that it is in substantial compliance with final approved Zone Change 98-3 and Area Plan 98-2. Otherwise, a revised tentative map approved by the Subdivision Committee shall be required.

2. Prior to the issuance of any grading permits, the applicant shall satisfy the following conditions from the Board of Supervisors Resolution for Area Plan 98-2.

4. Grading Review
5. Tree Preservation Plan
6. Federal Endangered Species
7. Geology Report
8. Drainage
9. Cross-Lot Drainage
10. Vector Control
11. Archaeo Observation & Salvage
12. Paleo Observation & Salvage
13. Grading Notes
14. Construction Noise
15. Performance Bond
16. Re-Routing Trails

3. Prior to the recordation of a subdivision map which creates residential building sites, the subdivider shall satisfy the following conditions from the Board of Supervisors Resolution for Area Plan 98-2:

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

17. Preliminary Grading Completed
18. Open Space Dedication
19. Recreational Trails
20. Ranch House Clean Up
21. Landscape Plan
22. Fire Station
23. Library
24. Sheriff Station
25. Off-Site Fuel Modification
26. Affordable Housing

4. SG SG G — LOFFEL WALLS

Prior to the issuance of a grading permit, a letter of justification and design plans for the proposed loffel walls shall be presented to and approved by the Manager, Subdivision and Grading Services.

5. BP BP RGB — RESIDENTIAL ACOUSTICAL REPORT

All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dba CNEL in all habitable rooms and a source specific exterior standard of 65 d.b.a. CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

A. Prior to the recordation of a subdivision map or prior to the issuance of grading permits, as determined by the Manager, Building Permits, the applicant shall submit an acoustical analysis report to the Manager, Building Permits, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report.

6. SG SG RG — DRAINAGE STUDY

Prior to issuance of any grading permits, the following drainage studies shall be submitted to and approved by the Manager, Subdivision and Grading:

A. A drainage study of the subdivision including diversions, off-site areas that drain onto and/or through the subdivision, and justification of any diversions; and

B. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and

C. Detailed drainage studies indicating how the tract map grading, in conjunction with the drainage conveyance systems including applicable swales, channels street flows, catch basins, storm drains and flood water retarding, will allow building pads to be safe from inundation from rainfall runoff which may be expected from all storms up to and including the theoretical 100-year flood.

7. SG SG RG — DRAINAGE IMPROVEMENTS

A. Prior to the issuance of any grading permits, the applicant shall in a manner meeting the approval of the Manager, Subdivision and Grading:

1) Design provisions for surface drainage; and

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

2) Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

3) Dedicate the associated easements to the County of Orange, if determined necessary.

B. Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only) said improvements shall be constructed in a manner meeting the approval of the Manager, Construction.

8. SG SG R MPD PARTICIPATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance purposes only), the subdivider shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, Subdivision and Grading, including payment of fees and the construction of the necessary facilities.

9. SG SG R EASEMENT SUBORDINATION

Prior to the recordation of an subdivision map (except maps for financing and conveyance purposes only), the subdivider shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, for review and approval.

10. SG SG G GRADING DEVIATION

Prior to the issuance of any grading permits, if the applicant submits a grading plan and the Manager, Subdivision and Grading, determines that it shows a significant deviation from the grading on the approved tentative tract map and Area Plan 98-2, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative map and/or area plan application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required

11. CP HP R ACCESS

Prior to recordation of any subdivision map that creates residential building sites, a 400 foot wide access easement across Lot A (Spine Street) from Lot MM to Lot LL shall be dedicated to the County of Orange in a manner meeting the approval of the Manager, Harbors, Beaches & Parks in consultation with the Manager, Subdivision and Grading. The primary purpose of the access easement is to provide for continuity of the wildlife corridor and O'Neill Regional Park.

Signs identifying a wildlife crossing area shall be posted within 100 feet of each point where the street transverses the wildlife corridor.

12. Master Plan of Regional Recreation Facilities:

Regional Park Dedication:

Lots LL and MM shall be dedicated to the County as an addition to O'Neill Regional Park, exclusive of manufactured slopes, which should be retained in separate lots. Regional park dedication shall be in done in compliance with the following conditions:

A. Prior to the recordation of the first subdivision map that creates residential building sites, the subdivider shall make an irrevocable offer of dedication in fee to the County of Orange, or its

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

designee, of Lots LL and MM, exclusive of manufactured slopes, for regional park purposes in a form approved by the Chief, Harbors, Beaches and Parks, Program Management & Coordination suitable for recording. Said offer shall be free and clear of money and all other encumbrances, liens, leases, fees, easements (recorded and unrecorded), assessments and unpaid taxes, except those meeting the approval of the Chief, Harbors, Beaches and Parks, Program Management and Coordination. Until such time as the offer is accepted by the County or its designee, the subdivider or assigns and successors shall be responsible for maintenance and upkeep of the above-referenced lots.

B. Prior to the recordation of any subdivision map that creates residential building sites, the subdivider shall survey and monument all lots dedicated for regional park purposes, and stake the property line of the dedication area(s) with durable, long-lasting, high visibility markers at all angle points and line of sight obstructions to the satisfaction of the Manager, Harbors Beaches & Parks.

C. Prior to recordation of the regional park dedication, the existing old ranch house sited within future regional park land shall be demolished except for the rock work subject to the approval of the Chief, HBP/Program Management & Coordination.

13. Master Plan of Regional Riding and Hiking Trails/County Bikeways:

Regional Trail Dedication:

A. The Live Oak Canyon Regional Riding and Hiking Trail is depicted within the Recreation Element aligned through Lot R, adjacent El Toro Road, through the proposed project. A recreation easement for this riding and hiking trail shall be dedicated to the County which includes trail improvements, including trail improvements just offsite along El Toro Road, north to the intersection of El Toro Road and the community spine road, as well as north to the existing under crossing of El Toro Road, in compliance with the following conditions:

1. Prior to the recordation an applicable subdivision map that creates residential building site the subdivider shall:

   a. Irrevocably offer a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. The subdivider shall not grant any easement(s) over the property subject to the recreation easement unless such easements are first reviewed and approved by the Chief, HBP/Program Management & Coordination.

   b. Design the necessary improvements(both onsite and offsite) for the trail, including, but not limited to grading, erosion control, signage and fencing, as applicable, in manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Subdivision & Grading. Further, the subdivider shall enter into an agreement, accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

2. Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Chief, HBP/Program Management & Coordination, to ensure that the proposed grading provides for, will not interfere with, or preclude the installation of the riding and hiking trail in a location and in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to the issuance of final certificates of use and occupancy and the release of financial security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Chief, HBP/Program Management & Coordination, in consultation with the Manager, Construction.

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

B. Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated to the County within a recreation easement aligned east-west through the proposed project.

A recreation easement for the local riding and hiking trail shall be dedicated to the County for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trail, *both* within and outside the future regional park, in addition to a connection from the staging area along the community spine road *offsite* to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers as well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area shall be done in compliance with the above.

C. Trail Reroutes/Bikeway and Riding and Hiking Trails:

1. The Aliso Creek Class I, paved Off-Road Bikeway, as well as the Live Oak Canyon Regional Riding and Hiking Trail will require re-routing plans during construction of the proposed project. Therefore, the following condition shall apply:

   Prior to any grading and/or construction activities which precludes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted subject to the approval of the Chief, HBP/Program Management & Coordination.

2. The same condition shall also be applicable to the Class II On-Road Bikeway aligned along the north bound lane of El Toro Road contiguous the proposed project.

14. Master Plan Local Parks (Local Park Code):

The Local Park Code requirement is 2.392 acres of park land based upon a proposal to build 299 residential units at a gross density of 1.35 du/ac (299 x .008 ac/du).

Prior to issuance of building permits the Local Park Code requirement shall be met by *payment of in-lieu fees*.

15. Resources Element (Open Space Component):

A. Dedicate Restricted Scenic Preservation Easement:

Fuel modification areas, manufactured slopes and remedial grading areas sited between the regional park dedication area and residential development, the fuel modification and native enhancement transition area contiguous El Toro Road, and northerly most fuel modification and native enhancement transition area, shall be placed within restricted scenic preservation easement areas. These areas include Lots R, CC, DD, EE, FF, GG, HH, II and JJ. *(NOTE: Manufactured slopes now depicted within Lots MM and LL the regional park, should be depicted within separate open space lots and restricted scenic preservation easements placed over them).* Restricted scenic preservation easements shall be dedicated to the County of Orange in compliance with the following conditions:

1. Prior to the recordation of any applicable final tract map which creates residential building sites, the subdivider shall make an irrevocable offer to dedicate an easement to the County of Orange or its designee over Lots R, CC, DD, EE, FF, GG, HH, II, and JJ, for restricted scenic preservation purposes in a manner meeting the approval of the Chief, HBP/Program Management & Coordination. in consultation with the Manager, Current Planning.

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

Maintenance, upkeep and liability for said easement area shall remain the responsibility of the subdivider or assigns and successors (i.e., homeowner's association) or current underlying owner(s) of said easement area and shall not be included in said dedication offer. The subdivider shall not grant any easement over any property subject to said easement unless such easements are made subordinate to said easement offer in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

2. The subdivider shall note limitations and restrictions for said easement by a reference on the final map to a previously recorded document or by the recordation of a separate document concurrent with the recordation of subject map in a manner meeting the approval of the Chief, HBP/Program Management & Coordination.

3. Prior to recordation of any applicable final tract map or as determined by the Chief, HBP Program Management & Coordination, the subdivider shall survey and monument all parcels of the land to be dedicated for restricted scenic preservation easement purposes, and submit plans showing how the development boundaries of the restricted scenic preservation easement parcel(s) is marked to be visible for monitoring purposes by Grantee to the satisfaction of the Chief, HBP/Coastal & Historical Facilities.

B. Public Area Landscaping:

The areas to be irrevocably offered to the County of Orange for restricted scenic preservation purposes shall be landscaped, equipped for irrigation, as applicable, and improved in accordance with an approved landscape plan as stated below:

1. Preliminary Plan

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, Subdivision and Grading, in consultation with the Chief, HBP/Program Management & Coordination. Said plan shall take into account Area Plan 98-2, County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487(Water Conservation Measures), and Board Resolution 90-1341(Water Conservation Implementation Plan).

2. Detailed Plan

Prior to the issuance of any building permits, the applicant shall submit a detailed landscape plan for approval to the Manager, Subdivision & Grading, in consultation with the Chief, HBP/Program Management & Coordination. Detailed plans shall show the detailed irrigation and landscaping design.

3. Installation Certification

Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, the applicant shall install said improvements and have the installation certified by a licensed landscape architect or licensed landscape contractor, as having been installed in accordance with the approved detailed plans. The applicant shall furnish said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report

OFFICE OF COUNTY COUNSEL, ORANGE COUNTY
F0192-210 (5/77)

3091

determined applicable to the Manager, Construction, and the Manager, Building Inspection, prior to the issuance of any certificates of use and occupancy.

C. Urban Edge Treatment Plan/Viewshed Analysis:

Prior to the approval of any use permits for residential structures, an urban edge treatment plan/viewshed analysis shall be submitted to the County subject to the approval of the Chief, HBP/Program Management & Coordination. The Urban edge treatment plan/viewshed analysis shall comply with the following criteria:

1. Establish building height and setback limits (i.e., Building Envelope Formula) and grading treatments to preserve views attained from within existing and proposed parks and open space areas as well as from along designated scenic highways (i.e., El Toro Road) as identified by the Master Plan of Regional Recreational Facilities (Recreation Element), Open Space Component (Resources Element) and Master Plan of Scenic Highways (Transportation Element) respectively. Moreover, views from St, Michaels Abbey, the Ramakrishna Monastery and neighboring Hidden Ridge Community shall also be addressed. Viewshed analysis cross sections should be provided as seen from these areas to proposed residential structures.

2. Eliminate and/or reduce to the greatest extent possible conflicts which may impact the existing and future recreational utility of a regional recreation recreational facility and open space areas.

3. Eliminate and/or reduce to the greatest extent possible potential operation and maintenance problems resulting from encroachment, unauthorized entry, private development fuel modification requirements, flood control facilities, and maintenance of privately landscaped manufactured slopes and maintenance roads as they relate to future and existing regional recreational facilities.

4. Establish appropriate landscape/fuel modification treatments and wall and/or fence treatments including berms to provide appropriate transition from regional recreational facilities and open space areas to private development areas.

5. Establish smooth and gradual transition between graded slopes and existing slopes within the park and open space areas using variable slopes (2:1-4:1).

6. Obscure slope drainage structures with a variety of plant materials.

7. Incorporate architectural and design techniques into the project in order to enhance off-site views attained from within parks and significant open space.

8. All landscaping of manufactures slopes interfacing significant open space areas should be exclusively native, as applicable, to preserve the biological and scenic integrity of regional corridors, open space and park lands.

16. FF GBU FIRE HYDRANTS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit a fire hydrant location plan for the review and approval of the Fire Chief.

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

3092

17. FF RBU AUTOMATIC FIRE SPRINKLERS

A. Prior to the recordation of a subdivision map, which creates residential building sites, a note shall be placed on the map stating that all structures shall be protected by an automatic fire sprinkler system, in a manner meeting the approval of the Fire Chief.

18. FF RG FIRE ACCESS ROADS

A. Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall obtain approval of the Fire Chief for all fire protection access easements and shall dedicate them to the County.

B. Prior to the issuance of any grading permits, the applicant shall submit and obtain approval of plans for all roads, streets and courts, public or private, from the Fire Chief in consultation with the Manager, Subdivision and Grading Services. The plans shall include the plan view, sectional view, and indicate the grade and width (28-ft. minimum) of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be approved by the Fire Chief and if needed, clearly marked when a dead-end street exceeds 150 feet or when otherwise required. Applicable CC&R's, or other approved documents, shall contain provisions which prohibit obstructions such as speed bumps/humps, control gates or other modifications within said easement or access road unless prior approval of the Fire Chief is granted. Grade shall not exceed 10%. Up to 15% is allowed when all structures served by the road are protected by automatic sprinklers.

C. Street signs. A note shall be placed on the fire protection access easement plan indicating that all street/road signs shall be designed and maintained to be either internally or externally illuminated in a manner meeting the approval of the Fire Chief.

19. FF BU STREET MARKINGS

Prior to the recordation of a subdivision map which creates residential building sites, the applicant shall submit plans and obtain approval from the Fire Chief for fire lanes on required fire access roads less than 36 feet in width. The plans shall indicate the locations of red curbing and signage. A drawing of the proposed signage with the height, stroke and coloring of lettering and the contrasting background color shall be submitted to and approved by the Fire Chief.

20. F F R TRAFFIC SIGNAL PREEMPTION

Prior to the recordation of the applicable subdivision map which creates residential building sites, as determined by the Fire Chief in consultation with the Manager, Subdivision and Grading Services, the subdivider shall enter into an agreement with the County for the installation of traffic signal preemption equipment for the surrounding controlled intersections. Said agreement shall be accompanied by financial security.

21. F F RRB FIRE HAZARD NOTIFICATION

A. A Special Fire Protection Area Notification. Prior to the recordation of any final tract map which creates residential building sites, the subdivider shall place a note on the map meeting the approval of the Fire Chief that the property is in a **"Special Fire Protection Area"** and must meet all requirements for development within the area or file for an exclusion with the Fire Chief.

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

B. Special Fire Protection Area Development. Prior to issuance of a building permit, the applicant shall meet all requirements for development and construction within a Special Fire Protection Area as identified in Orange County Ordinance 3960, including increased street widths, Class A roof assemblies, fire sprinklers, etc.

22. F F G — FUEL MODIFICATION

A. Prior to the issuance of a preliminary grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services and Subdivision and Grading Services of a conceptual fuel modification plan and program.

B. Prior to the issuance of any precise grading permit, the applicant shall obtain the approval of the Fire Chief, in consultation with the Managers, Environmental and Project Planning Services, Current Planning Services, and Subdivision and Grading Services of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to the structures by vegetation, the CC&R's, or other approved documents, shall contain provisions for maintaining the fuel modification zones including the removal of all dead and dying vegetation subject to triennial inspections.

23. F F G — ACCESS GATES

Prior to the issuance of any grading permits, the applicant shall submit and obtain the Fire Chief's approval for the construction of any gate across required Fire Authority access roads/drives. Contact the Orange County Fire Authority at (714) 744-0403 for a copy of the "Guidelines for Fire Authority Emergency Access".

24. SG SG B — FOOTHILL/EASTERN TRANSPORTATION CORRIDOR

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fees Program for the Foothill/Eastern Transportation Corridor.

25. SG SG B — FOOTHILL CIRCULATION PHASING

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for the Foothill Circulation Phasing Program.

26. SG SG B — SANTIAGO CANYON ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for Santiago Canyon Road.

27. SG SG B — EL TORO ROAD

Prior to the issuance of each building permit, payment of fees will be required as prescribed in the Major Thoroughfare and Bridge Fee Program for El Toro Road.

OFFICE OF COUNTY COUNSEL ORANGE COUNTY

F0192-210 (5/77)

28. SG SG B — ARTERIAL RIGHT-OF-WAY

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall dedicate ultimate half-width road right-of-way to major arterial highway standards across the property frontage in a manner meeting the approval of the Manager, Subdivision and Grading Services.

29. SG SG R — SANTIAGO CANYON ROAD

Prior to recordation of any subdivision map that creates residential building sites, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manager, Subdivision and Grading Services.

30. SG SG B — EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall design and construct a northbound right turn lane and a southbound left turn lane on El Toro Road at the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading Services.

31. SG SG B — EL TORO ROAD

Prior to recordation of a subdivision map that creates residential building sites, the applicant shall provide a cash deposit to pay the cost of designing and constructing the ultimate configuration of El Toro Road as determined by PFRD/Program Development Division, all in a manner meeting the approval of the Manger, Subdivision and Grading Services.

32. SG SG G — TRAFFIC SIGNAL

Prior to recordation of a subdivision map that creates residential building site, the applicant shall design and construct a traffic signal at the intersection of El Toro and the project entrance in a manner meeting the approval of the Manager, Subdivision and Grading in consultation with the Manager, Program Development Division.

33. SG SG G — SIGHT DISTANCE

Prior to issuance of a grading permit, adequate sight distance shall be provided at all intersections per Standard Plan 1117, and at all driveways, in a manner meeting the approval of the Manager, Subdivision and Grading Services; this includes any necessary revisions to the plan to remove slopes and other encroachments from the Limited Use Area.

34. SG SG G — "C" STREET

Prior to the issuance of a grading permit, the applicant shall design "C" Street 40' in width, curb to curb, with sidewalk on both sides.

35. SG SG G — UTILITY EASEMENT

Prior to the issuance of a grading permit, the applicant shall design both sides of all of the private streets with a 3' public utility easement.

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F0192-210 (5/77)

36. SG SG G — GATED ENTRY

Prior to the issuance of a grading permit, the applicant shall design the gated entry area to facilitate vehicular turnaround movements prior to reaching the gate in a manner meeting the approval of the Manager, Subdivision and Grading Services.

37. SG SG R — LOT 296

Prior to recordation of a final map, the applicant shall design Lot 296 with 20' minimum of property frontage.

38. SG SG G — EMERGENCY ACCESS

Prior to the issuance of a grading permit, the applicant shall design the emergency only access between "B" Street and existing Valley Vista in a manner meeting the approval of the Manager, Subdivision and Grading Services.

39. SG SG R — PVT STREET NOTIFICATION

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall place a note on the map that states:

"The private streets constructed within this map shall be owned, operated and maintained by the developer, successors or assigns. The County of Orange shall have no responsibility therefore unless pursuant to appropriate sections of the Streets and Highways Code of the State of California, the said private streets have been accepted into the County Road System by appropriate resolution of the Orange County Board of Supervisors."

40. SG SG R — STREET IMPROVEMENTS

Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall design and construct the following improvements in accordance with plans and specifications meeting the approval of the Manager, Subdivision and Grading:

A. Streets, bus stops, on-road bicycle trails, street names, signs, striping and stenciling.

B. The water distribution system and appurtenances which shall also conform to the applicable laws and adopted regulations enforced by the County Fire Chief.

C. Underground utilities (including gas, cable, electrical and telephone), streetlights, and mailboxes.

41. HP HP R — ACCESS EASEMENT

Prior to, or concurrent with the recordation of Tentative Tract 15230, an Official County Vehicular Road Access Easement shall be recorded by separate instrument which notes limitations and restrictions for this easement subject to the approval of the Chief, PFRD/Harbors, Beaches and Parks, Program Management & Coordination. It shall permit access over Spine Street (Lot A) of Official County vehicles for regional park management purposes.

42. The following Mitigation Measures from Addendum PA980103 are added as conditions of approval:

SC 2-4	SC 2-5	SC 2-6
SC 2-12	SC 2-13	SC 2-14
SC 7-2	SC 7-9	SC 9-2
SC 9-10	AM 8-15	

3096

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F0192-210 (5/77)

43. CP CP INDEMNIFICATION

Applicant shall defend at his/her sole expense any action brought against the County because of issuance of this permit or, in the alternative, the relinquishment of such permit. Applicant will reimburse the County for any court costs and attorney's fees which the County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve applicant of his/her obligations under this condition.

44. CP CP

Subdivider shall defend, indemnify, and hold harmless the County of Orange, its officers, agents and employees from any claim, action or proceeding against the County, its officers, agents, or employees to attack, set aside, void, or annual approval of the Board of Supervisors, Planning Commission, Zoning Administrator, or Subdivision Committee concerning this subdivision, which action is brought within the time period provided for in Government Code Section 66499.37. The County shall promptly notify the subdivider of any such claim, action or proceeding and shall cooperate fully in the defense. This condition is imposed pursuant to Government Code Section 66474.9(b).

45. CP NOTIFICATION

This condition of approval is intended to give you notice that the fees, dedications, reservations or other exactions imposed on this project are as described in this approval and the reports and actions accompanying this approval. You are also on notice that the 90-day approval period in which the applicant may protest pursuant to Government Code Section 66020 has begun.

OFFICE OF
COUNTY COUNSEL
ORANGE COUNTY

F0192-210 (5/77)

The foregoing was passed and adopted by the following vote of the Orange County Board of Supervisors on December 8, 1998, to wit:

AYES: Supervisors: TODD SPITZER, CHARLES V. SMITH, WILLIAM G. STEINER

NOES: THOMAS W. WILSON

EXCUSED: JAMES W. SILVA

ABSTAINED:

VICE CHAIRMAN, Orange County Board of Supervisors

STATE OF CALIFORNIA)
) ss:
COUNTY OF ORANGE)

I, DARLENE J. BLOOM, Clerk of the Board of Supervisors of Orange County, California, hereby certify that a copy of this document has been delivered to the Chairman of the Board and that the above and foregoing Resolution was duly and regularly adopted by the Orange County Board of Supervisors.

IN WITNESS WHEREOF, I have hereto set my hand and seal.

DEC 0 8 1998
Date

DARLENE J. BLOOM
Clerk of the Board of Supervisors
County of Orange, State of California

Resolution No: 98-469
Agenda Date: 12/08/1998
Item No. 76

I certify that the foregoing is a true and correct copy of the Resoultion adopted by the Board of Supervisors, Orange County, State of California.

DARLENE J. BLOOM, Clerk of the Board of Supervisors

By: Deputy

3098

SADDLEBACK MEADOWS
ADDENDUM PA980103

Mitigation measures

SOILS AND GEOLOGY

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, off-site grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the on-site material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be

raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-13 Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-14 Prior to the issuance of any grading permits, the applicant shall provide, in accordance with criteria supply by PDS, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Monitoring Programs Division.

BIOLOGICAL RESOURCES

MITIGATION MEASURES

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in

CULTURAL / SCIENTIFIC RESOURCES

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

Archaeology

SC 9-2 Prior to issuance of any grading permit, a county-certified archaeologist shall be retained by the applicant to perform a subsurface test level investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PFRD/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

Paleontology

SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pregrade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PFRD/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their present repository. This mitigation measure has been completed.

County of Orange
NOTICE OF DETERMINATION

Project Charge No. PP53700

TO: Office of Planning Research, State of California

FROM: Planning and Development Services Department

POSTED

DEC 0 [illegible]

GARY L. GRANVILLE, Clerk-Recorder

DEPUTY

SUBJECT: Filing of Notice of Determination in Compliance with Section 21108 or 21152 of the Public Resources Code

Project Title: Saddleback Meadows Contingency Plan Zone Change 98-3, Area Plan 98-2, Addendum PA980103	Type of Document Addendum to FEIR
State Clearinghouse Number: 96121072	Previously certified or adopted? If yes, provide document number and certification date :Addendum to FEIR No. 566, certified on February 24, 1998.
Contact Persons: Project Manager - Frank McGill CEQA Project Manager - Bill Grieman	**Telephone:** (714)834-2089 (714)834-5175
Project Location: Easterly side of El Toro Road, approximately one-half mile south of the El Toro Road/Live Oak Canyon Road intersection, in east-central unincorporated Orange County.	
Project Description: Development of 289 single-family detached dwelling units on a 222.23 acre site. Average lot size for the project is approximately 6,872 square feet, with a minimum lot size of 5,000 square feet. Project features a wildlife movement corridor, an extension of O'Neill Regional Park and riding and hiking trail connections. Total project open space exceeds approximately 70%.	

Notice is hereby given that the County of Orange as lead agency, Site Planning Section , has made the following determination on the above-described project:

1. The project was approved by Board of Supervisors on 12/8/98
2. The project will have a significant effect on the environment.
   - ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   - ☐ A Negative Declaration was prepared fore this project pursuant to the provisions of CEQA.
3. Mitigation Measures were incorporated into the project through conditions of approval and project design.
4. For this project a Statement of Overriding considerations was adopted.
5. Findings were made pursuant to CEQA Guidelines 15091 (Statement of Facts and Findings).
6. A copy of the EIR and the record of the project approval is on file and be examined at:

Planning & Development Services Department,
Environmental & Project Planning Services Division,
300 N. Flower, Room 321
Santa Ana, California 92702-4048.
(714) 834-5550.

Filed in the County of Orange, California
Gary L. Granville, Clerk/Recorder
19980581343 2:14pm 12/09/98
856 81 09135 06 09
281 1 38.00
CASHIER'S COPY 38.00

Signature: Raymond KC Brannigan

Date: Dec. 9, 1998

Title: Chief, Env. Planning

Fish & Game Fee Finding: De Minimus

Previously Paid Receipt No. (See Attached): 70776

RECEIVED TIME DEC. 9. 4:14PM PRINT TIME DEC. 9. 4:48PM

3102

STATE OF CALIFORNIA-THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME
ENVIRONMENTAL FILING FEE CASH RECEIPT
DFG 753.5a (Rev. 8/97)

70776

Lead Agency: [illegible] Date: [illegible]
County/State Agency of Filing: [illegible] Document No.: [illegible]
Project Title: [illegible]
Project Applicant Name: [illegible] Phone Number: [illegible]
Project Applicant Address: [illegible]
Project Applicant (check appropriate box): Local Public Agency ☐ School District ☐ Other Special District ☐
State Agency ☐ Private Entity ☒

CHECK APPLICABLE FEES:

( )	Environmental Impact Report	$850.00	$ [illegible]
(X)	Negative Declaration	$1,250.00	$ [illegible]
( )	Application Fee Water Diversion (State Water Resources Control Board Only)	$850.00	$
( )	Projects Subject to Certified Regulatory Programs	$850.00	$
(X)	County Administrative Fee	$25.00	$ [illegible]
( )	Project that is exempt from fees		
	TOTAL RECEIVED		$ [illegible]

Signature and title of person receiving payment: [illegible]

FIRST COPY-PROJECT APPLICANT SECOND COPY-DFG/FASB THIRD COPY-LEAD AGENCY FOURTH COPY-COUNTY/STATE AGENCY OF FILING

STATE OF CALIFORNIA-THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME
ENVIRONMENTAL FILING FEE CASH RECEIPT
DFG 753.5a (Rev. 8/97)

001 6180135 06 09 12/09/98 35:08
201 EIR Administrative Fee

83508

Lead Agency: Planning & Development
County/State Agency of Filing: S.B. Clerk-Recorder
Project Title: 98-3 PF 98-2 Addendum PR980103
Project Applicant Name: Saddleback Meadows
Project Applicant Address:
Project Applicant (check appropriate box): Local Public Agency ☐ School District ☐ Other Special District ☐
State Agency ☐ Private Entity ☒

CHECK APPLICABLE FEES:

(X)	Environmental Impact Report	Refer to 12/9/97 97-1147	$ EXEMPT
(X)	Negative Declaration	$1,250.00	$
( )	Application Fee Water Diversion (State Water Resources Control Board Only)	$850.00	$
( )	Projects Subject to Certified Regulatory Programs	$850.00	$
(X)	County Administrative Fee	$25.00	$ 38.00
( )	Project that is exempt from fees	Charge PR980100	
	TOTAL RECEIVED		$ 38.00

Signature and title of person receiving payment:

FIRST COPY-PROJECT APPLICANT SECOND COPY-DFG/FASB THIRD COPY-LEAD AGENCY FOURTH COPY-COUNTY/STATE AGENCY OF FILING

3103

RECEIVED TIME DEC. 9. 4:14PM PRINT TIME DEC. 9. 4:49PM

Received: 20.Feb.01 03:51 PM From: 2139552416 To: 6302147567
02/20/2001 13:46 213-955-2416 WM ROSS LA OFFICE
Powered by eFax.com Page: 2 of 2
PAGE 02
714 955 1170 P.02/02

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
DIRECTOR

300 N. FLOWER ST.
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS:
P.O. BOX 4048
SANTA ANA, CA 92702-4048

TELEPHONE:
(714) 834-4460
FAX # 834-2771

December 17, 1997

Members, Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92702

Dear Board Members:

During hearings on October 22 and December 3, 1997, this Commission has considered the environmental documentation required for implementation of the project known as Saddleback Meadows (Subsequent Environment Impact Report (SEIR) No. 566). As you know, this project involves the implementation of a previously-approved subdivision allowing 705 units of manufactured housing as well as a small commercial site.

The property in question is one of the most difficult sites with which this Commission has ever dealt. The site's geology is complex; biology sensitive; and compatibility with the adjoining land uses (St. Michaels Abbey and the Ramakrishna Monastery) is extremely problematic.

After exhaustive (and exhausting) testimony and deliberations on the topic, our Commission certified SEIR No. 566. We concluded that the document has merit and that it conforms with the California Environmental Quality Act. We did not conclude that the project addressed in the SEIR has merit, however.

As a result of our efforts to review land use issues associated with this project, we as a Commission would like to recommend in the strongest possible terms that your Board revisit an alternative zoning designation for Saddleback Meadows. Specifically, a majority of this Planning Commission feels that Alternative 4, as portrayed in SEIR No. 566, has far fewer negative environmental impacts.[1] Commissioner Moody, while not supportive of that particular alternative, does agree that the 705-unit development is an inappropriate land use for this location.

Our understanding, based on advice from County Counsel and planning staff, is that our options to deviate from the project as described in SEIR No. 566 were limited to modifications solely within the CEQA frame work. Further, we believe that your Board has the authority to reconsider the previously-denied zone change. We urge you to do so.

Very truly yours,

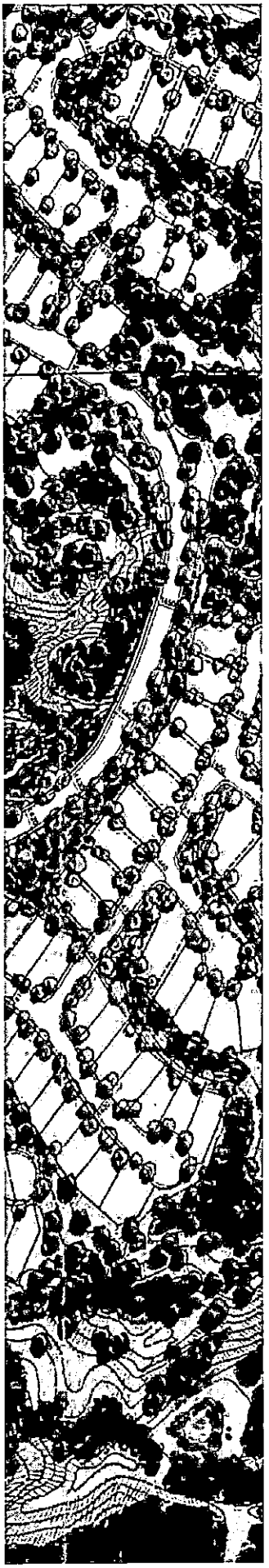
Shirley Common Long

Shirley Commons Long, Chair
Orange County Planning Commission

cc: Members, Planning Commission
Tom Mathews, Director P&DSD

[1] Please note that this is the alternative which was recommended to your Board on October 22, 1996, by the Planning & Development Services Department and was more fully addressed in Proposed Final EIR No. 561. The zoning associated with that alternative was denied at that point and that EIR was not certified.

TOTAL P.02



FINAL REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

RESPONSE TO COMMENTS

EIR 566
State Clearinghouse No. 1996121072

Saddleback Meadows

Planning Application 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

Prepared For :
County of Orange
Planning and Development Services Department

Prepared By :

HDR
201 South Lake Avenue, Suite 705
Pasadena, California 91101

August 2002

FINAL REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566
RESPONSE TO COMMENTS
State Clearing House No. 1996121072

for

SADDLEBACK MEADOWS

Planning Application 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

Prepared for Lead Agency:
County of Orange
Planning and Development Services Department
Environmental Planning Services Division

Tim Neely, Division Manager
Chuck Shoemaker, Chief, Environmental Planning Section
Bill Grieman, Project Manager

Prepared by:

HDR
201 South Lake Avenue, Suite 705
Pasadena, CA 91101
Contact: Deanna Hansen

August 2002
11353-001-043

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1

1.1 INTRODUCTION / SUMMARY 1-1

2.0 CORRECTIONS AND ADDITIONS 2-1

3.0 RESPONSE TO WRITTEN COMMENTS 3-1

3.1 INTRODUCTION 3-1
3.2 AGENCY COMMENT LETTERS 3-3
3.3 ORGANIZATIONS/BUSINESS LETTERS 3-49
3.4 INDIVIDUAL COMMENT LETTERS 3-131

4.0 REFERENCES 4-1

LIST OF TABLES

Table 3.1 – List of Commenters 3-2
Table 3.2 – Mitigation Measure (M 5-5) Fair Share Calculations 3-40

REVISED TABLES/FIGURES FROM DRAFT REVISED SUBSEQUENT EIR

Table 3.1 – Related Projects 2-1
Table 4.5.1 – Existing Intersection Capacity Utilization (ICU) and Level of Service 2-2
Table 4.5.8 – 2005 Intersection ICU and LOS With the Project 2-3
Table 4.5.9 – 2005 Intersection ICU and LOS Without the Project 2.4
Table 4.12.1 – Fire Station Locations 2.5
Table 5.7 – Comparison of Proposed Project and Alternative Impacts 2.8
Figure 4.12.1 – Fuel Modification Plan 2.9

LIST OF APPENDICES

APPENDIX A – DRAFT REVISED SUBSEQUENT EIR DISTRIBUTION/COMMENT LETTERS
A.1 - PUBLIC NOTICE / DISTRIBUTION LIST
A.2 – COMMENT LETTERS
APPENDIX B – STREAMBED ALTERATION AGREEMENT
APPENDIX C – LETTER FROM DENNIS MURPHY
APPENDIX D – CONCEPTUAL WATER QUALITY MANAGEMENT PLAN

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

1.1 INTRODUCTION / SUMMARY

This Response to Comments document has been prepared in accordance with the California Environmental Quality Act (CEQA) as amended (Public Resources Code Section 21000 *et seq.*), and *CEQA Guidelines* (California Administrative Code Section 15000 *et seq.*). The Final EIR contains the following components:

- Final Revised Subsequent EIR including Response to Comments (June 2002) (SCH No. 1996121072)
- Incorporated revisions and minor additions into the Draft Revised Subsequent EIR based upon public and agency comments
- Draft Revised Subsequent Environmental Impact Report (April 2002) (SCH No. 1996121072)

The above outlined documents are incorporated by reference into the Final EIR and are available for review at the Orange County Planning and Development Services Department and the following Orange County Public Libraries:

Orange County Library - Rancho Santa Margarita Branch
30902 La Pramera
Rancho Santa Margarita, California 92688

Orange County Library – El Toro Branch
24672 Raymond Avenue
El Toro, California 92630

Orange County Library – Silverado Branch
281922 Silverado Canyon Road
Silverado, California 92676

Orange County Library – Mission Viejo Branch
25209 Marguerite Parkway
Mission Viejo, California 92691

California State University, Fullerton
Library Documents Section

UC Irvine
Main Library – Government Publications/Microforms Department

The above outlined CEQA documents are collectively referred to as the Final EIR. Environmental Findings have been prepared for the Final EIR in accordance with Section 15091 of the *CEQA Guidelines*, and are contained in a separate document.

The Draft EIR was distributed to various public agencies, citizen groups and interested individuals on April 26, 2002 for a period of 45 days (see Appendix A.1 for a distribution list). The comment period closed June 10, 2002. However, the comment review period was extended an additional two-weeks per requests from California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS) (see Appendix A.1). Thus, the comment review period closed on June 24, 2002. Orange County Planning and Development Services Department received a total of 27 letters from responsible agencies and special interest groups (see Appendix A.2). This Response to Comments document contains responses to comments received on the Draft Revised Subsequent EIR during the public review period.

Comments have been retyped, numbered in sequential order, and are followed by responses. Copies of all comment letters are included in Appendix A.2 of this document.

In accordance with Public Resources Code 21092.5 of the *CEQA Guidelines*, this Response to Comments document will be provided to commenting public agencies, organizations, and individuals for a minimum of ten days prior to certification of the EIR.

SECTION 2.0

CORRECTIONS AND ADDITIONS

2.0 CORRECTIONS AND ADDITIONS

This section contains revisions to information included in the Draft Revised Subsequent EIR based upon: (1) additional or revised information required to prepare a response to a specific comment, (2) updated information which has become out-of-date as a result of the passage of time, and/or (3) typographical errors.

1. Page 1-4, Section 1.4.2 "Draft Revised Subsequent EIR": Add the following text to the second paragraph: "*The Initial Study identifies "Hazards" as a potentially significant impact which may result from project implementation. However, issues surrounding "Hazards" involve fire hazards, emergency response plans, as identification of unavoidable and cumulative hazard impacts. These issues are discussed and analyzed under Section 4.12 Fire Protection and Section 4.13 Police Protection rather than a separate section exclusive to Hazards.*"

2. Page 2-16, Section 2.3.2 "Project Phasing": Change "*However, project grading would be completed in one phase and require approximately 13 months to complete.*" to read "*However, project grading would be completed in one phase and require approximately 15 months to complete.*"

3. Page 3-5, Table 3.1: The following table reflects current information and shall replace "Table 3.1 – Related Projects" as found in the Draft Revised Subsequent EIR:

Table 3.1
Related Projects

Project	Type of Development	Size	Status
1. Saddle Creek/Saddle Crest	Single-family residential	200 du	Pending
2. Live Oak Plaza	Commercial center	41,900 sf	Approved
3. Gateway Commercial Center	Athletic Club Medical/Commercial Gas Station Nursery/Garden Center	83,000 sf	Approved
4. Mammoth Equities Office	Office	49,000 sf	Approved
5. Painted Trails Residential	Single-family residential; private parks	578 du	Approved
6. Country Suites Hotel	Hotel	118 rooms	Approved
7. Shea Properties	Multi-family residential; apartments	230 apartments	Approved
8. Rancho Protero Leadership Academy	Juvenile facility	90 beds	Approved

du - dwelling units; sf - square feet

Source: County of Orange, 2002 and City of Lake Forest 2002.

4. Page 4.2-18, M 2-14 under Section 4.2.6 "Mitigation Measures": Change "*Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal off-site*" to read "*Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas.*"

5. Page 4.2-18, M 2-15 under Section 4.2.6 "Mitigation Measures": Delete mitigation measure M 2-15.

6. Page 4.2-21, Section 4.2.6 "Mitigation Measures": Add new mitigation measure M 2-37:

M 2-37 *In the geotechnical report submitted per SC 2-1, the applicant shall provide evidence to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division that existing landslides in the undisturbed areas of the property will not be impacted by the discharge of project dry weather flows or storm water runoff and that new instability problems will not be created by rising ground water levels due to infiltration of irrigation and other new sources of water.*

7. Page 4.5-6, Table 4.5.1: The following table reflects current information and shall replace "Table 4.5.1 - Existing Intersection Capacity Utilization (ICU) and Level of Service (LOS)" as found in the Draft Revised Subsequent EIR:

Table 4.5.1
Existing Intersection Capacity Utilization (ICU) and Level of Service (LOS)

Intersection	Peak Hour ICU		Peak Hour LOS	
	A.M.	P.M.	A.M.	P.M.
Santiago Canyon Road (NS) at:				
Modjeska Canyon Road (EW)	0.33	0.22	A	A
Ridgeline Road (EW)	0.29	0.22	A	A
El Toro Road (NS) at:				
Live Oak Canyon Road (EW)	0.30	0.30	A	A
Ridgeline Road (EW)	0.38	0.32	A	A
Valley Vista Way (EW)	0.36	0.37	A	A
Glenn Ranch Road (EW)	0.37	0.40	A	A
Saddleback Ranch Road (NS) at:				
Glenn Ranch Road (EW)	0.41	0.56	A	A
Marguerite Parkway (NS) at:				
El Toro Road (EW)	0.27	0.40	A	A
Portola Parkway (NS) at:				
Glenn Ranch Road (EW)	0.62	0.50	B	A
Foothill Transportation Corridor (EW)	0.54	0.79	A	C
El Toro Road (EW)	0.75	0.65	C	B

Source: Urban Crossroads, Inc., 2002.

8. Page 4.5-21, Table 4.5.8: The following table reflects current information and shall replace "Table 4.5.8 - 2005 Intersection ICU and LOS With the Project" as found in the Draft Revised Subsequent EIR:

Table 4.5.8
2005 Intersection ICU and LOS With the Project

Intersection	With Project/Without Improvements				With Project/With Improvements			
	Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Santiago Canyon Road (NS) at:								
Modjeska Canyon Road (EW)	0.40	0.31	A	A	0.40	0.31	A	A
Ridgeline Road (EW)	0.38	0.36	A	A	0.38	0.36	A	A
El Toro Road (NS) at:								
Live Oak Canyon Road (EW)	0.42	0.52	A	A	0.42	0.52	A	A
Ridgeline Road (EW)	0.52	0.51	A	A	0.52	0.51	A	A
Project Entrance (EW)	0.52	0.55	A	A	0.52	0.55	A	A
Valley Vista Way (EW)	0.54	0.62	A	B	0.54	0.62	A	B
Glenn Ranch Road (EW)	0.48	0.60	A	A	0.48	0.60	A	A
Saddleback Ranch Road (NS) at:								
Glenn Ranch Road (EW)	0.48	0.63	A	B	0.48	0.63	A	A
Marguerite Parkway (NS) at:								
El Toro Road (EW)	0.31	0.44	A	A	0.31	0.44	A	A
Portola Parkway (NS) at:								
Glenn Ranch Road (EW)	0.73	0.62	C	B	0.73	0.62	C	B
Foothill Transportation Corridor (EW)	0.61	0.94	B	E	0.54	0.68	A	B
El Toro Road (EW)	0.87	0.73	D	C	0.87	0.73	D	C

Source: Urban Crossroads, Inc., 2003.

9. Page 4.5-21, Table 4.5.9: The following table reflects current information and shall replace "Table 4.5.9 – 2025 Intersections ICU and LOS Without the Project" as found in the Draft Revised Subsequent EIR:

Table 4.5.9
2025 Intersection ICU and LOS Without the Project

Intersection	Peak Hour ICU		Peak Hour LOS	
	A.M.	P.M.	A.M.	P.M.
Santiago Canyon Road (NS) at:				
Modjeska Canyon Road (EW)	0.69	0.61	B	B
Ridgeline Road (EW)	0.63	0.61	B	B
El Toro Road (NS) at:				
Live Oak Canyon Road (EW)	0.73	0.75	C	C
Ridgeline Road (EW)	1.06	0.79	F	C
Valley Vista Way (EW)	1.10	0.85	F	E
Glenn Ranch Road (EW)	0.72	0.91	C	E
Saddleback Ranch Road (NS) at:				
Glenn Ranch Road (EW)	0.80	0.82	C	D
Marguerite Parkway (NS) at:				
El Toro Road (EW)	0.46	0.58	A	A
Portola Parkway (NS) at:				
Glenn Ranch Road (EW)	0.93	1.03	E	F
Foothill Transportation Corridor (EW)	0.77	1.05	C	F
El Toro Road (EW)	1.14	0.95	F	E

Source: Urban Crossroads, Inc., 2002.

10. Page 4.5-30, M 5-5 under Section 4.5.6 "Mitigation Measures": Add the following sentence: "*The fair share funding amount agreed to by the TCA must be submitted prior to the issuance of any building permits for the project.*"

11. Page 4.8-15, Section 4.8.1 under "Habitat Connectivity/Wildlife Corridor": Change "*Wildlife corridors in and around the project site are shown on Figure 4.8.4. As shown, the primary wildlife movement corridors are located east and north of the project site, providing for connectivity between the Cleveland National Forest and O'Neill Regional Park.*" to read "*Local wildlife corridors in and around the project site are shown on Figure 4.8.4. As shown, the local wildlife movement corridors are located within the project area, with corridors located east, south, and north of the project site that providing for connectivity between the Cleveland National Forest, Whiting Ranch Wilderness Park, and O'Neill Regional Park.*"

12. Page 4.8-22, Section 4.8.2, second paragraph under "Indirect Impacts": Change "*The project has been designed to allow for a primary wildlife movement corridor adjacent to the east side of the property (Figure 4.8.4). This would maintain connectivity of the Aliso Creek Greenway to Cleveland National Forest. The project also provides an east-west corridor through the main central drainage to provide connectivity from the Aliso Creek Greenbelt to the open space east of the property.*" to read "*The project has been designed to allow for a wildlife movement corridor adjacent to the east side of the property (Figure*

4.8.4). This would maintain connectivity of the Aliso Creek Greenway to Cleveland National Forest. The project also provides an east-west local corridor through the main central drainage to provide connectivity from the Aliso Creek Greenbelt to the open space east of the property."

13. Page 4.8-26, Section 4.8.4, third paragraph under "Upland Mitigation": Change "*Details of mitigation for coast live oak woodlands are presented in the Coastal Sage Scrub Restoration Plan for Saddleback Meadows (Appendix I.3).*" to read "*Details of mitigation for coast live oak woodlands are presented in the Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas (Appendix I.2).*"

14. Page 4.8-32, Section 4.8.6 "Mitigation Measures": Add new mitigation measure M 8-4:

"*M 8-4* *Prior to grading, all Plummer's mariposa lily bulbs shall be salvaged. The bulbs shall be stored at a qualified native plant nursery prior to transplanting them for on-site habitat enhancement. All transplanted bulbs shall be maintained, including weed control. Monitoring and reporting shall be conducted. A qualified biologist/botanist shall oversee all aspects of this mitigation plan including bulb collection and transplanting, per the recommendations of the project biologist. The Plummer's mariposa lily mitigation plan shall be reviewed and approved by the Planning and Development Services Department, prior to issuance of grading permits.*"

15. Page 4.10-14, second paragraph under "Project Impacts": Change "*Data recovery would occur prior to ground disturbing activities.*" to read "*Additional mitigation would need to be accomplished if development plans change and the site is to be disturbed.*"

16. Page 4.12-1, second paragraph under Section 4.12.1: Change *"61 fire stations"* to read *"59 fire stations.*

17. Page 4.12-1, third paragraph, second bullet under Section 4.12: Remove *"only available from a medic van"* from the sentence and add the following sentence to the end of the bullet. *"OCFA provides paramedic service both paramedic assessment and full paramedic services through a number of configurations in addition to the medic vans."*

18. Page 4.12-2, Table 4.12.1 - Fire Station Locations: The following table reflects current information and shall replace "Table 4.12.1 – Fire Station Locations" as found in the Draft Revised Subsequent EIR.

Table 4.12.1
Fire Station Locations

Station No.	Staffing and Equipment	Response Distance (miles)[a]	Response Time (maximum, minutes: seconds)[b]
Fire Station No. 42: 19150 Ridgeline Drive Trabuco Canyon, CA 92679, Portola Hills	Paramedic Assessment Unit/Brush Engine, 3 Firefighters	0.3	4
Fire Station No. 18: O'Neill Park, Trabuco Canyon Road, Trabuco Canyon, CA 92679	Paramedic Assessment Unit/Brush Engine, 3 Firefighters	4.2	8:40
Fire Station No. 16: 28891 Modjeska Canyon Road Modjeska Canyon, CA 92676	Paramedic Assessment Unit/Brush Engine, 3 Firefighters	3.5	9:30
Fire Station No. 45: 30131 Adventura, Rancho Santa Margarita, CA 92688	Paramedic Assessment Unit, Truck, 1 Battalion Chief, 8 Firefighters	5.3	10:30
Fire Station No. 54 19811 Pauling Avenue Lake Forest, CA 92610	Paramedic Assessment Unit Engine, 3 Firefighters	2.8	6:20
Fire Station No. 31 22426 Olympiad Road Mission Viejo, CA 92692	Paramedic Assessment Unit Engine (closest one to the project site), Basic Life Support Engine, 3 Firefighters	3.7	7:50

[a] *Response distance is an approximate.*
[b] *Response time is an approximate based upon an average of 35 mph and 90 seconds of call processing and turnout time with the exception of Fire Station 16 which incorporates a two minute time period added for the volunteer personnel to get to the fire station (Fire Station* 16 *does not have full time firefighters, only volunteer firefighters).*

Sources: Service Letter from Battalion Chief Michael S. Rohde, Advance Planning, OCFA, July 13, 2001; Telephone communication with Battalion Chief Michael S. Rohde, Advance Planning, OCFA, August 29, 2001; Letter from Gene F. Begnell, Battalion Chief, Strategic Services, OFCA, June 6, 2002.

19. Page 4.12-2, third paragraph: Change *"average response time of six minutes"* to read *"average response time of nine minutes."*

20. Page 4.12-2, fourth paragraph: Replace the last sentence *"At this location three firefighters are on duty staffing either a paramedic assessment unit or a brush engine."* to read *"At this location, 20 volunteer firefighters staff the engine when called upon to do so."*

21. Page 4.12-3, first paragraph, last sentence: Change "*eight firefighters*" to read "*seven firefighters.*"

22. Page 4.12-9, under Section 4.12.4 "Project Design Features and Standard County Conditions": Add new Standard County Condition SC 12-16:

"*SC 12-16* *Secured Fire Protection Agreement: Prior to grading, the applicant shall enter into a Secured Fire Protection Agreement with the OCFA.*"

23. Page 4.12-5, Figure 4.12.1 – Fuel Modification Plan: Please refer to the revised Figure 4.12.1 – Fuel Modification Plan as found at the end of Section 2.0 of this Response to Comments document.

24. Page 4.12-4, under Section 4.12.3 "Cumulative Impact", second paragraph: Delete the second sentence and replace with: *"Additional staffing and/or equipment may be needed to meet this demand. This issue will be addressed within the Secured Fire Protection Agreement and as with the proposed project, the related projects would be individually subject to protection and safety measures to adequately mitigate fire protection."*

25. Page 4.16-6, under Section 4.16.6 "Mitigation Measures": Add new mitigation measure: M 16-2:

    "M 16-2 Prior to undertaking construction of the project, the applicant shall enter into an improvement agreement with TCWD to provide for the design, construction, installation, dedication and funding of all necessary master plan and in tract storage facilities or alternatively pay TCWD's in lieu water storage fees."

26. Page 5-37, Alternative 6 – 44/178 Alternative "Public Services – Fire Protection and Police Protection": Replace text after first sentence with the following: *"However, the layout of the "Development Area" under this alternative would not allow for secondary access for emergency vehicles and may require the acquisition of additional easements or other mitigation measures to ensure that adequate access to the project is provided. As with the proposed project, this alternative would require a fuel modification plan to minimize or retard the spread of dry brush and wildfire into the area.*

    Fire protection impacts would be greater with implementation of Alternative 6, compared to those associated with the proposed project."

27. Page 5-47, under Section 5.5 "Environmentally Superior Alternative": Replace last sentence *"Alternative 8, the reduced residential alternative would be the environmentally superior alternative among the non no project alternatives."* To read *"Alternative 4, the Foothill Trabuco Specific Plan EIR 531 Staff alternative would be the environmentally superior alternative among the non-no project alternatives. Although Alternative 4 is environmentally superior, it would be economically infeasible to develop. Land acquisition, engineering, construction, and implementation of mitigation measures could not be amortized over 100 single-family units. These costs combined with mitigation costs, such as those associated with stabilizing the geotechnical hazards would exceed project revenues."*

28. Page 5-48, Table 5.7: A revised Table 5.7 reflects current information and shall replace "Table 5.7 – Comparison of Proposed Project and Alternative Impacts" as found in the

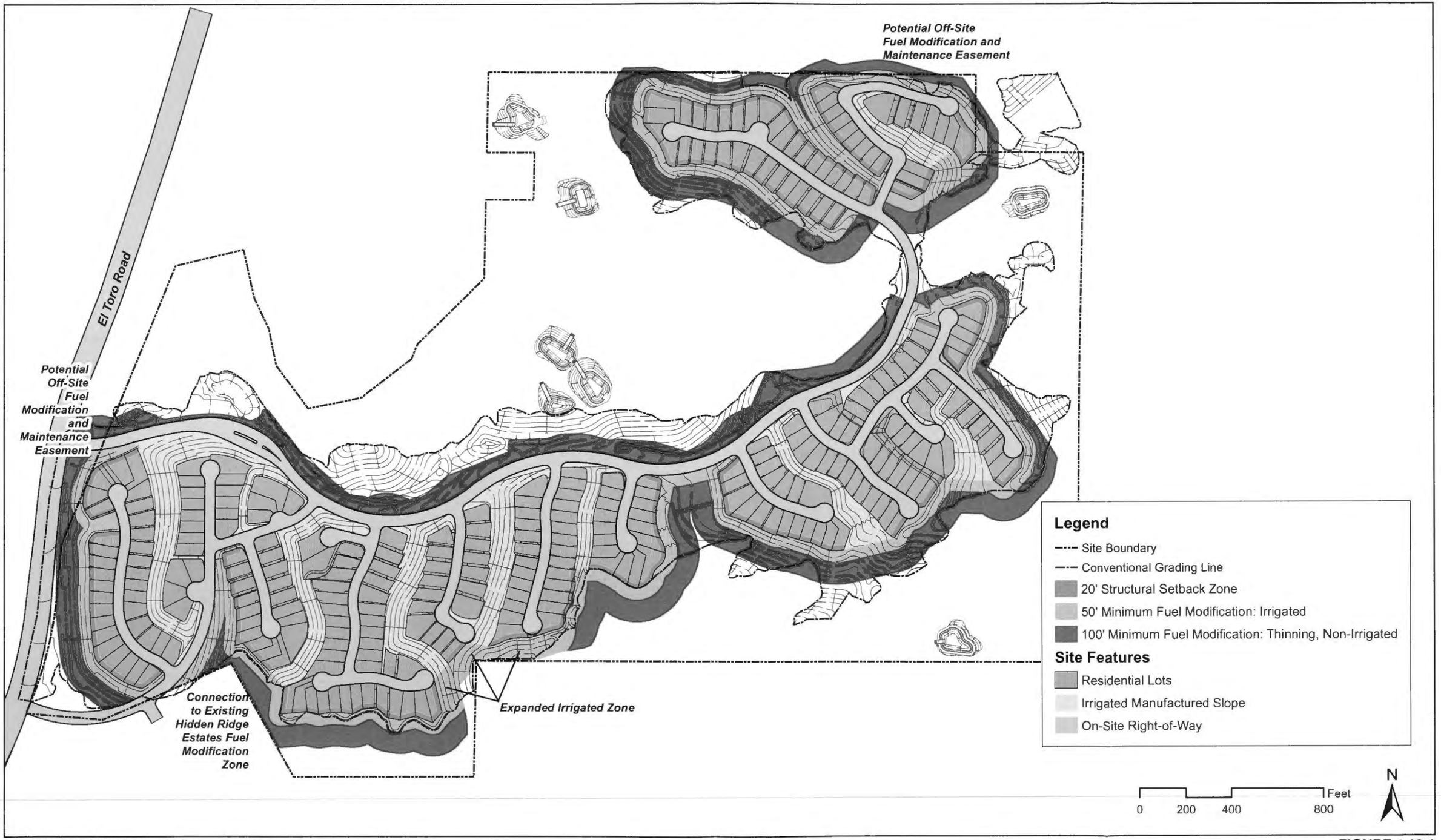
Draft Revised Subsequent EIR. The revised table is included at the end of Section 2.0 of this Response to Comments document.

Table 5.7
Comparison of Proposed Project and Alternative Impacts

Issue Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Meet Project Objectives?	No	No	No	Yes	Yes	Yes	No	Yes
Land Use and Planning	-	+	+	-	+	-	-	S
Geophysical Resources	+	+	+	-	S	-	+	S
Hydrology	-	+	+	-	S	-	-	S
Water Quality	-	+	+	-	S	-	-	S
Transportation/Traffic	-	+	-	-	-	-	-	-
Air Quality								
Construction	-	+	+	-	-	-	-	S
Operations	-	+	-	-	-	-	-	-
Noise	-	S	S	-	S	S	-	S
Biological Resources	-	+	+	-	-	-	-	-
Aesthetics/Visual Resources	-	+	+	-	S	-	-	S
Cultural Resources	-	+	+	-	-	-	-	S
Recreation	-	+	S	S	+	+	-	S
Public Services								
Fire Protection	-	+	-	-	+	+	-	-
Police Protection	-	+	-	-	+	-	-	-
Schools	-	+	-	-	+	-	-	-
Library	-	+	-	-	+	-	-	-
Utilities/Service Systems								
Water Supply	-	+	-	-	-	-	-	-
Wastewater	-	+	-	-	-	-	-	-
Solid Waste	-	+	-	-	-	-	-	-
Electricity	-	+	-	-	-	-	-	-
Natural Gas	-	+	-	-	-	-	-	-

S: Impacts would be similar to those of the proposed project.
(-): Impacts would be less than the proposed project.
(+): Impacts would be greater that the proposed project.

Source: HDR, 2002.



Source : Hunsaker & Associates / HDR Engineering; 2001

HDR

FIGURE 4.12.1
Fuel Modification Plan
Saddleback Meadows
Draft Revised Subsequent EIR 566

SECTION 3.0

RESPONSE TO WRITTEN COMMENTS

3.0 RESPONSE TO WRITTEN COMMENTS

3.1 INTRODUCTION

In order to comprehensively respond to all letters received on the Draft Revised Subsequent EIR and address each CEQA issue raised, a summary matrix has been developed which lists the commenter and the corresponding issues raised. The matrix contains the names of all commenters, and has been apportioned into 25 major comment categories, outlined as follows:

1. Land Use
2. Geophysical Resources
3. Hydrology
4. Water Quality
5. Transportation/Traffic
6. Air Quality
7. Noise
8. Biological Resources
9. Aesthetics/Visual
10. Cultural/Paleontological Resources
11. Recreation
12. Fire Protection
13. Police Protection
14. Schools
15. Libraries
16. Water Supply
17. Wastewater
18. Solid Waste
19. Electricity
20. Natural Gas
21. Procedural Issues
22. Mitigation Issues
23. Alternatives
24. Other Concerns/Issues
25. No Comment/No Response Required

All comment letters have been reviewed and placed into one or more of the above-outlined comment categories. Each original comment letter can be found in Appendix A.1 of this document. In total 27 comment letters were received during the comment period. Each comment letter has been retyped and divided into individual specific numbered comments. Each numbered comment is followed by a response.

All written comments are summarized in Table 3.1 and organized as follows:

- Draft EIR Public Agency Comment Letters (12 letters)
- Draft EIR Organization/Businesses Comment Letters (11 letters)
- Draft EIR Individual Comment Letters (4 letters)

Table 3.1
List of Commenters

Comment Section	Commenter	Comment Category
3.2	**Agency Comments**	
3.2.1	U.S. Fish and Wildlife Service / State of California, Department of Fish and Game	2, 3, 8, 23
3.2.2	State of California, Governor's Office of Planning and Research – State Clearinghouse	25
3.2.3	State of California, Business, Transportation, and Housing Agency – Department of Transportation	5, 6
3.2.4	California State University, Los Angeles - Anthropology	10
3.2.5	South Coast Air Quality Management District	6, 24, 25
3.2.6	Southern California Association of Governments	25
3.2.7	Transportation Corridor Agencies	5
3.2.8	Orange County Fire Authority	12, 23, 24, 25
3.2.9	Trabuco Canyon Water District	16, 17, 21, 22, 24, 25
3.2.10	City of Lake Forest	3, 4, 5, 8, 11, 24, 25
3.2.11	City of Mission Viejo	5
3.2.12	City of Rancho Santa Margarita	2, 25
3.3	**Organization/Business Comments**	
3.3.1	The Center for Biological Diversity	24
3.3.2	Connor, Blake & Griffin	1, 2, 3, 4, 8, 9, 10, 23, 24
3.3.3	The Gas Company	20, 25
3.3.4	Jauneno Band of Mission Indians	10
3.3.5	Mark R. McGuire	8
3.3.6	Orange County Regional Recreational Trails Advisory Committee	11
3.3.7	Rural Canyon Conservation Fund	1, 24
3.3.8	Saddleback Canyons Conservancy	1, 4, 8, 16, 24, 25
3.3.9	Sierra Club	21, 24
3.3.10	Trails 4 All	11
3.3.11	Terrell Watt	1, 2, 3, 4, 5, 6, 8, 9, 12, 22, 23, 24
3.4	**Individuals**	
3.4.1	Richard & Patti Gomez	1, 3, 4, 24
3.4.2	Mr. & Mrs. Michael Hodges	1
3.4.3	Kathleen Stockwell	1, 3, 4, 8, 22, 24
3.4.4	Andy Wing	5, 6

**See Sections 3.5.1-3.5.8 for a Complete Listing of Commenters*

3.2 AGENCY COMMENT LETTERS

The following agencies commented on the Draft Revised Subsequent EIR:

- U.S. Fish and Wildlife Service/State of California, Department of Fish and Game
- State of California, Governor's Office of Planning and Research - State Clearinghouse
- State of California, Department of Transportation
- California State University, Los Angeles
- South Coast Air Quality Management District
- Southern California Association of Governments
- Transportation Corridor Agencies
- Orange County Fire Authority
- Trabuco Canyon Water District
- City of Lake Forest
- City of Mission Viejo
- City of Rancho Santa Margarita

3.2.1 U.S. Fish and Wildlife Service / California Department of Fish and Game

Karen A. Evans, June 26, 2002

William E. Tippets, June 26, 2002

USFWS/CDFG 1 – Comment

The U.S. Fish and Wildlife Service (Service) and the California Department of Fish and Game (Department), hereafter referred to as the Wildlife Agencies, have reviewed the Draft Revised Subsequent Environmental Impact Report (DEIR) for the construction of the Saddleback Meadows Project, in the County of Orange, California. The project proposed development of 299 single-family houses on a 229.2-acre site in the lower foothills of the Santa Ana Mountains in southern Orange County. The proposed project also includes two new paved access roads off of El Toro road and an adjacent offsite 1.4 million-gallon water reservoir. The Wildlife Agencies have commented on various development proposals and environmental documents for this project since 1994. As we have stated in our previous comments, the proposed project poses significant unmitigated impacts to future Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) reserve design for the Southern Subregion of Orange County.

The Department is identified as a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) section 15386 and is responsible for the conservation, protection, and management of the State's biological resources. The Department is also responsible, pursuant to the California Endangered Species Act, California Fish and Game code 2050 et seq., *for the protection of species listed by the State as endangered or threatened or identified as species of concern, and the habitats they require. The Department also manages the NCCP Program (California Fish and Game Code 2800* et seq.*), a regional conservation planning effort, that includes Southern Orange County.*

The Service's primary mission is to work "with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American People." The Service has legal responsibility for the welfare of migratory birds, anadromous fish, and endangered animals and plants occurring in the United States. Specifically, we administer the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.*), and work in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401 as amended, 16 U.S.C. 661* et seq.*). Section 7 of the Act requires Federal Agencies to consult with the Service should it be determined that their actions may affect federally listed threatened or endangered species. Take incidental to otherwise lawful activities can be permitted under the provisions of Section 7 (Federal consultations) or 10 (permits) of the Act.*

USFWS/CDFG 1 – Response

This comment presents an overview of the project and discusses the role of U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). No response is required.

USFWS/CDFG 2 – Comment

As noted in the DEIR, the Service has completed formal consultation with the U.S. Army Corps of Engineers (Corps) and issued a biological opinion (FWS-OR-1023.8) on the Saddleback Meadows Project's effects on the federally endangered Riverside fairy shrimp (Streptocephalus woottoni, "fairy shrimp") and its designated critical habitat and designated critical habitat for the threatened coastal California gnatcatcher (Polioptila californica californica, "gnatcatcher"), in accordance with Section 7 of the Act. To clarify, however, our biological opinion evaluated the 283-unit alternative, not the proposed 299-unit alternative discussed in the DEIR. If the 299-unit Alternative is pursued, reinitiation of consultation with the Corps would be required. Although impacts to federally listed species and their designated critical habitat have been addressed in the cited biological opinion for the Saddleback Meadows project, evaluation of impacts to wildlife movement for non-listed species in relation to development of an NCCP/HCP is outside the purview of Section 7 of the Act.

USFWS/CDFG 2 – Response

Comment noted. Although the development footprint and related biological resources mitigation program associated with the 299 unit project presented in the Revised Draft Subsequent EIR is similar to the 283 plan evaluated by the USFWS and contained in the Biological Opinion, it is acknowledged that if the Section 7 is processed for the proposed 299-unit project, additional review and a revised opinion would be required.

USFWS/CDFG 3 – Comment

Relationship of the Project to Regional Conservation Planning Efforts

The NCCP Act was approved in 1991 and established a program to provide for regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. The program provides an alternative to "single-species" conservation via the formulation of regional, natural community-based habitat protection programs. The first NCCP/HCP projects in California focused on providing adequate conservation and mitigation for impacts to coastal sage scrub vegetation, the preferred plant community of the gnatcatcher.

Following the Federal listing of the gnatcatcher in 1993, the Service adopted a Special Rule for the gnatcatcher pursuant to section 4(d) of the Act incorporating the conservation and process guidelines established by the State under the NCCP Act. The guidelines set forth procedures for the creation of regional and subregional conservation plans. In accordance with the guidelines, jurisdictions enrolled in the NCCP planning program can authorize a limited amount of interim loss of coastal sage scrub during the planning period subject to six interim habitat loss provisions[1]. However, the interim habitat loss provisions are only applicable until the adoption of a regional or subregional conservation plan. In summary, per the NCCP program, conservation planning within enrolled jurisdictions may be governed by an adopted regional or subregional conservation plan, or is subject to the interim habitat loss provisions of the Special 4(d) Rule.

As an enrolled jurisdiction in the NCCP program, the County of Orange (County) has both an adopted subregional conservation plan that applies to its Central and Coastal subregions (the Orange County Central-Coastal NCCP/HCP) and is participating in development of the Southern Subregion NCCP/HCP. The County has committed to work with the Wildlife Agencies to ensure that projects within its jurisdiction do not prevent connectivity between areas of high habitat values or preclude reserve design options for the Southern Subregion NCCP/HCP.

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[1]*The following mandatory findings must be met for a project to be approved pursuant to the interim habitat loss provisions of the Special 4(d) Rule: 1) The habitat loss does not cumulatively exceed the 5% guideline; 2) The habitat loss will not preclude connectivity between areas of high habitat values; 3) The habitat loss will not preclude or prevent the preparation of the subregional Natural Community Conservation Plan; 4) The habitat loss has been minimized and mitigated to the maximum extent practicable un accordance with the Conservation Guidelines; 5) The habitat loss will not appreciably reduce the likelihood of the survival recovery of listed species in the wild; and 6) The habitat loss is incidental to otherwise lawful activities.*

USFWS/CDFG 3 – Response

The County has committed to work with the Wildlife Agencies to ensure that projects within its jurisdiction do not prevent connectivity between areas of high habitat values or preclude reserve design options for the Southern Subregion NCCP/HCP. Although the original Saddleback Meadows project was conceived and approved long before the inception of the NCCP, the project applicant nevertheless committed to work with the Wildlife Agencies during project redesign to minimize impacts to coastal sage scrub and provide for significant on-site preservation and off-site acquisition. As a result of the coastal sage scrub restoration efforts on-site, there will be no net loss of coastal sage scrub on-site, and the quality of the habitat would be enhanced over the long-term. Additionally, 14.8 acres of coastal sage scrub is proposed to be acquired off-site (see Table 4.8.3 of the Draft Revised Subsequent EIR).

USFWS/CDFG 4 – Comment

Reserve Design Inconsistency

Our primary concern with the proposed project is the significant impact it poses to the major lower elevation wildlife movement corridor/linkage along the Santa Ana Mountain foothills of southern Orange County. Saddleback Meadows, together with the adjacent Saddle Creek and Live Oak properties, represents the only remaining unobstructed low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP/HCP planning areas. To highlight its importance, Orange County's Central-Coastal NCCP/HCP identifies this area as a key corridor/linkage between the subregions. The proposed development on Saddleback Meadows along the eastern and northern portions of the site as shown in Alternative 2 (the No Project, "Existing Entitlement" Alternative), Alternative 3 (the F/TSP EIR 531 Staff Alternative A), Alternative 5 (the Cluster/Single-Family/Multi-Family Residential Alternative), or Alternative 8 (the Reduced Residential Alternative) of the DEIR could substantially eliminate this corridor/linkage and thereby, severely constrain movement

of mule deer, coyote, mountain lion and other large mammals from O'Neill Regional Park in the Southern Subregion of the Central Subregion NCCP/HCP reserve. We raised similar concerns regarding the proposed development on the Saddle creek property in our comments on the recently circulated DEIR- State Clearinghouse No. 199111120 (FWS-OR-1309.1).

Pursuant to the CEQA Guidelines (Section 15130), a revised DEIR should discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable and should review the impacts in light of past, present and future probably projects that could result in related impacts, including those outside of the control of the lead agency. However, this current, revised DEIR does not adequately address cumulative impacts to the low-elevation wildlife corridor/linkage through the Saddleback Meadows, Saddle Creek and Live Oak properties. Also, it appears that a comprehensive plan for maintaining a viable corridor/linkage through these properties has not been completed. For example, the Saddleback Meadows DEIR shows a northern wildlife corridor extending from Saddleback Meadows through the adjacent Saddle Creek property. However, the Saddle Creek DEIR does not show this corridor, which could be blocked by the residential development proposed in the DEIR. In addition, development on the Live Oak property could further limit wildlife movement between the subregions. Therefore, the Saddleback Meadows DEIR should evaluate cumulative impacts to wildlife movement in consideration of past development, the proposed development on the Saddle Creek and Live Oak properties and other probable developments, and demonstrate that the Saddleback Meadows project will not preclude the retention of a viable low-elevation wildlife corridor/linkage connecting the Central and Southern Subregions through all three properties. We wish to work with the County and property owners to develop a comprehensive plan to accomplish this vital component of the Southern Subregion NCCP/HCP.

USFWS/CDFG 4 – Response

After the close of the public review period of the Draft Revised Subsequent EIR, the County and the Wildlife Agencies released the draft Planning Guidelines for the Southern Subregion NCCP/HCP on July 30, 2002. These Guidelines have not been approved by the resource agencies or the County; however, they do represent a milestone in the continuing efforts by the County, resource agencies, the public, and the landowners to form the NCCP/HCP in the Southern Subregion. These draft Planning Guidelines, are they presently exist, include discussion of wildlife movement corridors and habitat linkages in the Southern Subregion in the following general terms:

> *"General Policy 2. Site and design new development to accommodate wildlife movement and dispersal via wildlife corridors and habitat linkages.*
>
> *The planning area provides important wildlife movement corridors and habitat linkages for a variety of wildlife species. These corridors and linkages facilitate dispersal by smaller, less mobile species and frequent movement (e.g., daily, weekly, etc.) by large mammal species such as mountain lion, mule deer, coyote and bobcat. The species identified below only highlight a much broader suite of species served by the habitat linkages and corridors. Accordingly, the species identified should not be interpreted as the only species that benefit from the linkages and corridors. It can be reasonably assumed that habitat linkages and corridors that function for large mammals (except coyote) also function for many other species.*

For purposes of this discussion, a distinction is drawn between wildlife corridors and habitat linkages.

- *Habitat linkages: These are areas of natural habitat that function to join two larger parches of habitat. They serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation by providing a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as "live-in" habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages may be represented by continuous habitat or by closely-spaced habitat "islands" that function as stepping stones for dispersal and movement (especially for birds and flying insects).*
- *Wildlife corridors: Corridors tend to be linear features that connect large patches of natural open space and provide avenues for frequent movement, dispersal or migration of larger animals. As defined here, wildlife corridors generally serve a more limited function than habitat linkages because the corridors primarily are used for transit of larger species rather than as live-in habitat for a broader suite of species. Also, functional wildlife corridors often include man-made structures such as culverts and flood control channels that large animals can quickly transit to access more suitable habitat areas.*

Known and likely key wildlife movement corridors and habitat linkages in the planning area include the following:

- *The Saddleback Meadows (R) area provides a lower elevation habitat linkage between the Southern Subregion planning area and the Central Subarea component of the Central and Coastal Subregion NCCP/HCP reserve system.*
- *The area north of Oso Reservior (S), including O'Neill Regional Park and the nursery provides a lower elevation "stepping stone" habitat linkage between the Southern Subregion planning area and the Central Subarea component of the Central and Coastal Subregion NCCP/HCP reserve system. With habitat restoration, this linkage would be suitable for the California gnatcatcher.*
- *Live Oak Canyon (T) provides a north-south wildlife corridor for large mammals from Arroyo Trabuco and O'Neill Regional Park to the Cleveland National Forest and a habitat linkage for dispersal of the cactus wren, possibly the California gnatcatcher and other smaller species."*

Section 4.8 of the Draft Revised Subsequent EIR identifies the project site as a primary wildlife corridor based on the evidence reviewed and collected at the time. Based on the draft Planning Guidelines, this has been revised (please see Section 2.0 of this Response to Comments document). It is the project biologist's contention that the primary wildlife linkages for the gnatcatcher occurs at the lower elevations in the vicinity of the project identified in the Guidelines as Habitat Linkage (S) northerly of Upper Oso Reservoir crossing El Toro Road to Whiting Ranch Wilderness Park. The project biologist further contends that wildlife corridors for larger mammals occur in and around the adjacent foothills consistent with corridors depicted on the F/TSP and that the proposed project conforms to the F/TSP corridor requirements.

Further confirmation of this view is contained in a letter received by the County after distribution of the Draft Revised Subsequent EIR. The letter from Dr. Dennis Murphy, a professor and Program Director at the University of Nevada, Reno, who was the chief architect of the original guidelines for the NCCP outlines his professional opinion that local wildlife would not be dependent on engineered habitat pathways within a suburban development, but instead on O'Neill Regional Park, Whiting Ranch Wilderness Park and through the numerous east-west corridor connections along the Cleveland National Forest (please see Appendix C of this Response to Comments document). These connections are also identified on the F/TSP. Dr. Murphy notes that mule deer, mountain lion, and other large mammals are far more likely to use these areas to the east and north of the site, even without project development. Further, mountain lions should hardly be encouraged into small natural spaces in already suburbanized Orange County.

At the request of the Wildlife Agencies during the project design process, the design of the current project evolved through numerous modifications and has resulted in the retention of an existing local corridor that allows for mammal movement through and around the property. Furthermore, the project includes an extensive revegetation effort to enhance large parcels of currently disturbed potential habitat, and an additional mitigation component off-site (see Section 4.8.4 and Appendix I of the Draft Revised Subsequent EIR). The proposed local corridor and habitat enhancement plan was developed after numerous consultations and site visits with the Wildlife Agencies. The preservation of the local wildlife corridor and the habitat restoration effort appears to comply with both the letter and spirit of the draft NCCP Planning Guidelines' intent to improve wildlife residency and movement, and in this case due to its degraded state, beyond that presently available to wildlife.

Cumulative impacts to wildlife movement corridors are evaluated qualitatively within an approximately one mile radius of the project site. Evaluation of cumulative impacts beyond this distance is not appropriate. The original natural topography of the adjacent areas that have been developed including Portola hills, Hidden Ridge, Cook's Corner, St. Michael's Abbey, El Toro Road, the private nursery, Painted Trails, and Upper Oso Reservoir suggest that all would have been more favorable as wildlife corridors compared to the adverse topography of the Saddleback Meadows project site. Access to areas to the north could have occurred along the corridor now defined by Aliso Creek and El Toro Road. Access to the east could have crossed the areas now covered by the reservoir, Painted Trails, the private nursery, and the Hidden Ridge development. Regional access to the north as a primary corridor has been forclosed by the proximity of the mass grading and non-native vegetation of Portola Hills and the development of El Toro Road and St. Michael's Abbey. What was once a borad expanse is now a very narrow corridor where mammals are confined to a narrow drainage channel and an undercrossing of El Toro Road via a man-made culvert. The culvert has a paved invert and is also used by equestrians and hikers.

These development patterns reduce the effectiveness of a wildlife corridor through the proposed project site. This is consistent with the findings of the F/TSP, approved in 1991, which designates wildlife corridors to the south and to the east to accommodate regional wildlife movement. Corridors that are still viable based on past and proposed development.

Regional access to the east via a wildlife corridor south of the proposed project site has been preserved for small mammals, birds and insects to transverse the existing private nursery between Hidden Ridge and the reservoir/Painted Trails. On a regional basis, there is also opportunity for access to areas east of the project site (e.g., Live Oak Canyon) via Arroyo Trabuco and Trabuco Canyon.

Adjacent projects including Live Oak Plaza (as approved) and Saddle Creek (as currently proposed) are consistent with the findings of the F/TSP and revegetation of the disturbed portions of Live Oak Plaza would further facilitate the use of the corridors.

USFWS/CDFG 5 – Comment

To address our concerns for Saddleback Meadows, the Wildlife Agencies recommend further consideration of Alternative 4 (F/TSP EIR 531 Staff Alternative B) of the DEIR as it would allow continued movement of wildlife through the area while still meeting the project's objective of "develop(ing) a single-family, rural community that balances residential development with protection of on-site sensitive resources and values of the surrounding community." Alternative 6 (the 44/178 Alternative) may be able to mitigate significant impacts to wildlife movement if remedial grading requirements can be limited within the corridor/linkage area.

USFWS/CDFG 5 – Response

Please see Section 3.3.2 (Connor 30 – Response) of this Response to Comments document regarding the feasibility of Alternatives 4 and 6.

USFWS/CDFG 6 – Comment

Geotechnical

According to the DEIR, the site is characterized by several unfavorable geothechnical conditions including unstable landslides and presence of ground water that could compromise the site's ability to support the project. Mitigation would include the construction of canyon subdrains and back drains to minimize or eliminate the effects of ground water. The Final EIR (FEIR) should discuss how these changes would affect groundwater availability and timing for use by riparian vegetation in upper Aliso Creek.

USFWS/CDFG 6 – Response

As discussed in Section 4.2.2 and Appendix C of the Draft Revised Subsequent EIR, the proposed remedial grading related subdrains have been proposed to prevent a buildup in groundwater pressure, which could potentially affect post grading on-site geotechnical conditions. Any groundwater intercepted by the proposed subdrains would ultimately discharge into Aliso Creek at the western edge of the project site, resulting in no net adverse effect to groundwater availability or timing for use by Aliso Creek vegetation.

USFWS/CDFG 7 – Comment

Hydrology/Beneficial Uses

The Santa Ana Regional Water Quality Control board has designated the existing biological beneficial uses of "warm freshwater habitat," "wildlife habitat," and "rare, threatened, or endangered species" for portions of Aliso Creek, including the reach downstream from the Saddleback Meadows project. The Wildlife Agencies are concerned about the onsite and downstream effects the project-related changes in the surface flows may have on these beneficial uses and on the habitats and biological resources supported by Aliso Creek. In addition to modifications in peak flows resulting from an increase in impervious surface, we are concerned about changes on the velocity, volume, duration, and frequency of dry-weather and non-peak wet-weather flows. Even small changes in the flow regime often effect changes in the stream community that, over time, can seriously damage stream habitats. Increases in flows from impervious surfaces associated with urbanization can result in: 1) stream bed scouring and habitat degradation; 2) shoreline erosion and stream bank widening; 3) loss of aquatic species; and 4) decreased baseflow (USEPA 1999). Downstream sections of Aliso Creek are known to be sediment-deficient and have already been adversely affected by scour, erosion and subsequent habitat degradation. The Wildlife Agencies recommend that every effort be made to integrate measures to ensure full protection of the beneficial uses and biological resources of Aliso Creek. The development design and construction operations should minimize the modifications of dry and wet-weather flows and integrate onsite best management practices (BMPs) that would attenuate the flows to reduce impacts on the stream morphology and habitats onsite and downstream. Examples of BMPs to consider include appropriately sized grassy swales and vegetated detention basins. Proper design of structural BMPs will require analyses of the sediment transport and hydrological regime of the headwaters of Aliso Creek. The project is located within Reach 1 of the Aliso Creek Watershed Management Feasibility Study, Orange County, California *prepared by the Corps. We recommend this study be consulted to determine possible effects of the project on the Aliso Creek watershed.*

USFWS/CDFG 7 – Response

The proposed project will comply with the requirements of Section 401 of the Clean Water Act (Water Quality Certification) as administered by the California Regional Water Quality Control Board (RWQCB). The concerns raised by the resource agencies regarding changes to surface flow and peak flow are addressed in Section 4.4 of the Draft Revised Subsequent EIR. The project design includes a drainage system which recreates existing flow regimes to the maximum extent

practicable, in conjunction with stormwater management requirements. A comprehensive set of Best Management Practices (BMPs) have been proposed to minimize the effects of project-related urban runoff on Aliso Creek, including a riverine system of grassy swales and detention basins. All impacts to water quality and downstream surface flow impacts have been mitigated to less than significant levels.

USFWS/CDFG 8 – Comment

Significance Criteria for Biological Resources

The thresholds of significance for biological resources provided in section 4.8.2 of the DEIR do not appear to be consistent with the CEQA definition of rare, threatened, and endangered species (see CEQA Guidelines, § 15380). In addition, the Department recommends that the significance criteria in the body of the DEIR be revised to be consistent with CEQA Sections 15064.7 and 15065, and Appendix G of the CEQA Guidelines.

USFWS/CDFG 8 – Response

As stated in Section 15064.7 of the *CEQA Guidelines*, each public agency is encouraged to develop thresholds of significance. The significant thresholds related to biological resources contained in the Draft Revised Subsequent EIR are derived from Public Resources Code Section 21001(c) and criteria established by the County and resource agencies. These thresholds, although not verbatim, include issues contained in Appendix G of the *CEQA Guidelines*, and adequately define potentially significant impacts.

USFWS/CDFG 9 – Comment

Annual Grasslands

The project proposes that mitigation requirements for cumulative impacts to raptor foraging habitat (consisting primarily of coastal sage scrub and grasslands) will be met in conjunction with the proposed coastal sage scrub mitigation. The Department recommends mitigation measures be incorporated specifically for impacts to annual grassland. These areas provide foraging areas for raptors and small mammals and proposed impacts to a total of 103.7 acres on-and offsite should be considered significant. Appendix I.1 of the DEIR indicated that raptor species including Cooper's hawk (Accipiter cooperii), a state species of special concern (CSC), sharp-shinned hawk (A. striatus, CSC), red tailed hawk (Buteo jamaicensis) red shouldered hawk (B. striatus), and American kestrel (Falco sparverius) were observed during the surveys of the project site, and other species including northern harrier (Circus cyaneus, CSC) and loggerhead shrike (Lanius ludovicianus, CSC) have at least a moderate potential of using the grasslands onsite for foraging. We therefore recommend that annual grassland mitigation at a 0.5:1 preservation-to-impact ratio in an offsite area with long-term conservation potential to be included in the FEIR.

USFWS/CDFG 9 – Response

As stated on page 4.8-11 of the Draft Revised Subsequent EIR, much of the annual grasslands on-site have been heavily disturbed by historic cattle ranching operations, and support significant amounts of cardoon (*Cynara cardunculus*), an artichoke-like plant that grows in areas where soils have been highly disturbed and compacted. This is an aggressive plant species that often dominates areas that have been heavily grazed. The raptor species noted as occurring on-site will benefit from the sage scrub restoration effort, as well as from off-site preservation of sage scrub and off-site restoration of riparian and oak woodland habitat. As stated in Section 4.4.2 of the Draft Revised Subsequent EIR, impacts to annuals grasslands would not be significant and no additional mitigation is proposed. Given the heavily disturbed condition of the annual grasslands mitigation of project impacts is not warranted. The development of the coastal sage scrub mitigation plan with USFWS favored the replacement of the disturbed annual grasslands with coastal sage scrub habitat.

USFWS/CDFG 10 – Comment

Intermediate Mariposa Lily

The DEIR states that impacts to intermediate mariposa lily (Calochortus weeddii var. intermedius) would not be significant. This species is listed by the California Native Plant Society as a "1B" plant (Plants rare threatened, or endangered In California and elsewhere). Species included on List 1B must be fully considered under CEQA. The Department recommends that the FEIR include mitigation for impacts to this species (for example, see Rancho Protrero Leadership Academy EIR, County of Orange, 2001).

USFWS/CDFG 10 – Response

Although impacts to this sensitive species were not assessed in the Draft Revised Subsequent EIR as being significant, due to the limited number of individuals impacted, an additional mitigation requirement has been added in response to this and other comments. The applicant has agreed to transplant potentially impacted bulbs of this species to appropriate open space areas on-site. Please see Section 2.0 of this Final Revised Subsequent EIR, which includes additional mitigation for the intermediate mariposa lily (new mitigation measure M 8-4).

USFWS/CDFG 11 – Comment

Cactus Wren

According to the DEIR, impacts to the cactus wren (Campylorhynchus brunneicapillus cousei) are not considered significant. As proposed in Appendix I.3 to the DEIR, the coastal sage scrub mitigation plan does not specifically include salvage or container stock planting of prickly-pear (Opuntia spp.) required for cactus wren nesting and foraging. By providing suitable replacement habitat, a potentially significant impact to cactus wren may be mitigated.

To provide replacement habitat for cactus wren impacted by implementation of the project, we recommend that the coastal sage scrub palette is revised to include a substantial amount of prickly-pear. This may be achieved by salvage of existing plant material followed by direct replanting within the mitigation area or by collecting pads prior to impact and rooting them in containers. In addition, we recommend that reference sites are currently reporting cactus wren be chosen to provide an adequate baseline for comparison.

USFWS/CDFG 11 – Response

Comment noted. The salvage of prickly pear cactus will be incorporated into the final sage scrub restoration plan.

USFWS/CDFG 12 – Comment

Oak Woodland Mitigation Plan

Mitigation for oak woodland impacts is described on page 4.8-26 of the DEIR and we concur with the restoration approach in concept. However, unlike the coastal sage scrub mitigation plan, details of the oak woodland mitigation strategy are not adequately described in Appendix I.3 such that the impacts can be shown to be mitigated below a level of significance. For example, the proposed locations for oak woodland restoration should be depicted and described. In addition, container sizes, understory species, and maintenance activities specific to the oak woodland restoration should be detailed.

USFWS/CDFG 12 – Response

The commenter is correct in noting that page 4.8-26 of the Draft Revised Subsequent EIR incorrectly cites Appendix I.3 for details for coast live oak woodland mitigation. Details of mitigation for coast live oak woodlands are included in the *Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas* in Appendix I.2 of the Draft Revised Subsequent EIR. Please see Section 2.0 of this Response to Comments document for a correction.

Figure 4.8.7 of the Draft Revised Subsequent EIR identifies the proposed oak woodland restoration areas on-site. Restoration of oak woodland within CDFG jurisdictional areas is described in Appendix I.2 of the Draft Revised Subsequent EIR and was developed in coordination with CFDG resulting in the issuance of a 1603 Streambed Alteration Agreement (see Appendix B of this Response to Comments document). SC 8-6 summarizes the size and number of container stock required for oak restoration (see Section 4.8.4 of the Draft Revised Subsequent EIR). The details included in Section 4.8 and Appendix I.2 of the Draft Revised Subsequent EIR demonstrates that the impacts can be mitigated to below a level of significance.

USFWS/CDFG 13 – Comment

The Wildlife Agencies appreciate the opportunity to review and comment on the DEIR. If you have any questions please contact Mr. David Zoutendyk of the Service at (760) 431-9440 or Mr. Brad Henderson of the Department at (310) 214-9950.

USFWSCDFG 13 – Response

Comment noted.

3.2.2 State of California, Governor's Office of Planning and Research – State Clearinghouse

Tal Finney, May 9, 2002

Terry Roberts, June 11, 2002

State Clearinghouse 1 – Comment

This is to acknowledge that the State Clearinghouse has received your environmental document for state review. The review period assigned by the State Clearinghouse is:

Review Start Date: *April 26, 2002*

Review End Date: *June 10, 2002*

We have distributed your document to the following agencies and departments:

California highway Patrol
Caltrans, District 12
Department of Conservation
Department of Fish and Game, Region 5
Department of Forestry and Fire Protection
Department of Housing and Community Development
Department of Parks and Recreation
Department of Water Resources
Native American Heritage Commission
Office of Historic Preservation
Regional water Quality Control Board, Region 9
Resources Agency
State Lands Commission

The State Clearinghouse will provide a closing letter with any state agency comments to your attention on the date following the close of the review period.

Thank you for your participation in the State Clearinghouse review process.

State Clearinghouse 1 – Response

The comment has been received and noted. No response is required.

State Clearinghouse 2 – Comment

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 10, 2002, and the comments from the responding agency (ies) is (are) enclosed. If

this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the Project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please not that Section 21104(c) of the California Public Resources Code states that:

> *"A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."*

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

State Clearinghouse 2 – Response

The comment has been received and noted. No response is required.

3.2.3 State of California, Department of Transportation

Robert F. Joseph, May 28, 2002

Caltrans 1 – Comment

Thank you for the opportunity to review and comment on the Draft EIR dated April 2002 for Saddleback Meadows. The project is located on the eastern side of El Toro Road, one half mile from the Santiago Canyon/Live Oak Canyon Road junction.

The project consists of the development of 299 detached single family residences on 66.9 acres out of a total 222-acre site. The nearest State Routes are SR-241 and I-5.

Caltrans District 12 status is a reviewing agency on this project and has the following comments:

As indicated in the report, the proposed project will generate 3690 trips per day that mostly use El Toro Road. This report has not yet included west/south of El Toro beyond Santa Margarita Parkway towards I-5 interchange in the Traffic study section. We have concerns that this development will ultimately contribute to the cumulative impacts at El Toro Road/I-5.

Caltrans 1 – Response

By comparing the ICU values in Tables 2-2 and 4-1 of the traffic analysis (Appendix F of the Draft Revised Subsequent EIR), project-related changes at intersections can be determined. At the Portola Parkway/El Toro Road intersection, no change in the P.M. peak hour ICU occurs. During the A.M. peak hour, only a one percent change occurs. This condition defines the outer edge of measurable traffic impacts based upon County of Orange GMP criteria.

Caltrans 2 – Comment

We recommend that the project proponents work to coordinate their efforts with the City of Lake Forest and their project "The Arbor on El Toro Specific Plan" in terms of project phasing, filing a traffic management plan during construction, and avoiding impacts to El Toro Road and ultimately the I-5 during traffic peak periods.

Caltrans 2 – Response

As stated in Section 4.5.2 of the Draft Revised Subsequent EIR, impacts from construction activities would have short-term, but not significant impacts on vehicular traffic along streets adjacent to the project site during the grading and excavation phase. No significant impacts would occur to El Toro Road or Interstate 5 during these phases.

Caltrans 3 – Comment

Other than identifying the County Bikeway network, this project doesn't evaluate or stipulate the use of alternative modes of transportation, such as buses, to be incorporated into the development. Such alternatives would work to reduce future congestion in the region while at the same time help to improve the overall air quality.

Caltrans 3 – Response

As stated in Section 4.5.1 of the Draft Revised Subsequent EIR, the nearest bus route with a stop near the intersection of Glenn Ranch Road and Portola Parkway is located approximately 1.5 miles southwest of the project site. The traffic analysis included in the Draft Revised Subsequent EIR was prepared to evaluate the worst-case traffic impacts on the area circulation system. The use of alternative modes of transportation would reduce vehicle impacts. The Orange County Transportation Authority (OCTA) provides local transit service in the project area and is responsible for determining the need for additional transit facilities.

Caltrans 4 – Comment

The project proponents will insure that during construction all loads will be contained that may use state routes and that no net runoff increase will flow over, into or under State Right of Way.

Caltrans 5 – Response

As stated in Section 4.6.6 of the Draft Revised Subsequent EIR (mitigation measure 6-7), dirt hauled off-site shall be wet down or covered to ensure "spill-over" is minimized.

Caltrans 6 – Comment

Please continue to keep us informed of this project and other future developments, which could potentially impact our transportation facilities.

Caltrans 6 – Response

Comment noted.

3.2.4 California State University, Los Angeles

Patricia Martz, June 10, 2002

California State University, Los Angeles 1 – Comment

I have reviewed the cultural resources section of the DEIR and have the following comments:

The cultural resources section of the EIR does not accurately reflect the findings and recommendations provided in the cultural resources appendix. In some cases there are serious contradictions

California State University, Los Angeles 1 – Response

Although there may be some minor discrepancies between the Section 4.10 (cultural resources) of the Draft Revised Subsequent EIR and the findings and recommendations provided in Appendix J, due to summarizing all the information, the mitigation measures recommended in both documents are essentially equivalent. As in the Appendix J, CA-ORA-710 and CA-ORA-711 are the only two sites recommended eligible for listing on the National Register of Historic Places and/or the California Register of Historical Resources. CA-ORA-710 would remain undisturbed in dedicated open space and CA-ORA-711 would be subjected to data recovery excavation prior to disturbance.

California State University, Los Angeles 2 – Comment

The cultural resources appendix indicates that this project is subject to a Corps of Engineers 404 permit and therefore the cultural resources are subject to the provisions of Section 106 of the National Historic Preservation Act. The EIR does not indicate this and the treatment of the archaeological sites is not in compliance with the Act as amended in 1999.

California State University, Los Angeles 2 – Response

While Section 4.10 of the Draft Revised Subsequent EIR may not specifically indicate that a 404 permit was required and that the cultural resources portion of the project was subject to Section 106 of NHPA, it is not correct that the archaeological sites were not treated in compliance with the Act. The U.S. Army Corps of Engineers (USACE) claimed jurisdiction of seven of the sites on the Saddleback Meadows property (CA-ORA-710, -711, -713, -715, -1255, -1256, and CA-ORA-1435H). In accordance with stipulations in Section 106, test excavations at these (and the remainder) of the sites on the property, and subsequent consultation with the USACE, Native American groups, and the State Historic Preservation Officer (SHPO) established that only two of the sites (CA-ORA-710 and CA-ORA-711) were eligible for listing on the National Register. Consultation continued with a treatment plan being developed and circulated to guide mitigation of the adverse effects of the project via regional background research and data recovery excavation of CA-ORA-711.

California State University, Los Angeles 3 – Comment

The investigations to determine the significance/importance of the archaeological sites are inadequate. The excavation of three 1 x 1 meter units in CA-ORA-713 is not sufficient to determine the depth, nature, condition and extent of a site of this size. Since the site appears to be dispersed over a large area, remote sensing and/or geomorphological studies should be conducted to locate areas of the site that contain buried cultural deposits and features. The discovery of buried cultural deposits and features or human burials should not be done by bulldozer.

California State University, Los Angeles 3 – Response

The commenter is incorrect that the archaeological investigations are inadequate. Every site on the property underwent a test excavation program of a sufficient number of units to characterize the subsurface. As for CA-ORA-713, a surface collection, discing followed by a second surface collection and the excavation of three 1x1 meter units was undertaken at the site. Because these methods produced small numbers of artifacts relative to the size of the area studied and the subsurface investigation produced no artifactual material, the site was deemed not eligible for listing, because it is unlikely to yield important information. The USACE and SHPO agreed with this finding. Since minimal numbers of artifacts were scattered over a large area, it is possible that CA-ORA-713 actually represents a series of small, unrelated camps.

California State University, Los Angeles 4 – Comment

Likewise the determination that CA-ORA-715 is based on the excavation of four 1 X 1 meter units. This is not sufficient to determine the depth, nature, condition, and extent of this site and to determine that it is not "significant/important."

California State University, Los Angeles 4 – Response

The test excavation was sufficient to characterize the site. The excavation of four 1x1 meter units to a depth of 30 centimeters produced only four flakes. It appears that the site is confined to the surface. All the exposed surface artifacts were collected, and there are unlikely to be any additional significant resources within the site area. The USACE and SHPO agreed and the site was determined to be not significant.

California State University, Los Angeles 5 – Comment

Pg. 4.10-12 of the EIR states that a final test excavation of site CA-ORA-1437 was undertaken in November 2001, but does not indicate the methods used or the results. There is no information to support the determination that the site is not "significant/important."

California State University, Los Angeles 5 – Response

While the EIR indeed does not include the CA-ORA-1437 test excavation document, the site was tested near the end of 2001 and found to be not significant. The report on the excavation (including methods and results) is nearing completion. It will subsequently be filed with the South Central Coastal Information Center, California State University, Fullerton (SCCIC), the Los Angeles District, USACE, with the project applicant, and the County of Orange.

California State University, Los Angeles 6 – Comment

Pg. 4.10-14 – Project Impacts: The statements regarding CA-ORA-710 are contradictory and raise doubts regarding whether the site is going to be preserved. If the sit [sic] *is to be protected through the site burial and preserved within a biological mitigation area, then why does the EIR state that data recovery would occur prior to ground disturbing activities. If the site is to be protected, why should there be ground-disturbing activities? In addition, site burial has to be done very carefully to ensure that the site will be protected. The standards/specifications for covering the site should be indicated.*

California State University, Los Angeles 6 – Response

The Draft Revised Subsequent EIR correctly states that the site is to be protected through site burial and preserved within a biological mitigation area (page 4.10-14). The statement, "data recovery would occur prior to ground disturbing activities," is not correct if it refers to CA-ORA-710 and may be better understood if it reads, "Additional mitigation would need to be accomplished if development plans change and the site is to be disturbed" (please see Section 2.0 of this Response to Comments document for this clarification). However, the site would be preserved. Burial of the site will be done "very carefully" and according to accepted archaeological standards and practices.

California State University, Los Angeles 7 – Comment

CA-ORA-1257 has not been subsurface tested and should not be graded without further investigation.

California State University, Los Angeles 7 – Response

The site was originally recorded as a sandstone bedrock feature. The 1995 investigation revisited the site and determined that the sandstone rock was made of a very soft stone, most ineffective as a grinding implement. The site area was also carefully examined for the presence of artifacts. None were found. The lack of any obvious cultural resources, caused researchers to recommended that the site be considered not significant.

California State University, Los Angeles 8 – Comment

CA-ORA-711 is considered to be significant/important. According to the DEIR, only a small fraction of the total site area was tested. Grading with monitoring, as stated on pg. 4.10-14 is not adequate mitigation for the destruction of the site.

California State University, Los Angeles 8 – Response

The comment on page 4.10-14 of the Draft Revised Subsequent EIR is incorrect, but could be read as accurate if it is combined with the previous sentence: "Data recovery would occur prior to ground disturbing activities. If grading operations at CA-ORA-711 uncover additional material . . . *further* (emphasis added) data recovery work may be required." A more accurate statement related to mitigation measures, was included in Section 4.10.5 of the Draft Revised Subsequent EIR, "Level of Significance Before Mitigation" (page 4.10-19). Under the heading "Archaeological/Historical Resources." Here it states, "The project area may have a significant impact on archaeological site CA-ORA-711 unless data recovery excavation is performed."

California State University, Los Angeles 9 – Comment

Pg. 4.10-20: The DEIR makes the assumption that the completion of a data recovery excavation program, (or even worse, monitoring during grading) constitutes a no adverse effect. This is not the case. The implementing regulations for Section 106 of the National Historic Preservation Act (36 CFR 800.5(a)(2)(iii) along with 800.5(a)(2)(I), as amended May 1999, acknowledge the reality that destruction of a site and recovery of its information and artifacts is adverse and no longer consider data recovery as sufficient mitigation to reduce the impacts to a level of insignificance.

Even if this project were not under the jurisdiction of the federal government, CEQA was patterned after the National Environmental Policy Act and the pertinent federal regulations. Therefore, to ignore the reality that the destruction of an archaeological site, including the destructive process of archaeological excavations, is a significant impact seems counter to the spirit and intent of CEQA.

California State University, Los Angeles 9 – Response

The commenter is correct in noting that a reasonable and good faith effort should be made to protect and preserve sites, but is incorrect to say that the significant impact of data recovery excavation was ignored. A reasonable and good faith effort was made to prevent the destruction of significant sites on the property (e.g., CA-ORA-710 will be preserved by capping), but it was deemed infeasible to save CA-ORA-711. As stated in Section 21083.2 (c) of CEQA, "*to the extent that unique archaeological resources are not preserved in place or are not left in an undisturbed state, mitigation measures shall be required...*" Further, CEQA allows excavation as mitigation for archaeological resources per Section 21083.2 (d). As stated in the Draft Revised Subsequent EIR, impacts to archaeological site CA-ORA-711 will be mitigated through data recovery and therefore impacts would not be significant. The remainder of the sites on the property were considered not significant, but a qualified archaeologist will still monitor grading of those sites (see M 10-4 on page 4.10-19 of the Draft Revised Subsequent EIR).

All data recovery work at the site will be guided by a research design that follows the Office of Historic Preservation (OHP) Guidelines for Archaeological Research Designs, and is approved by the USACE and SHPO. The subsequent report documenting the excavation will follow the OHP Archaeological Resource Management Reports (ARMR) guidelines.

California State University, Los Angeles 10 – Comment

According to CEQA: When archaeological resources are involved, avoidance, or preservation in an undisturbed state is the preferable course of action. Section 21083.2 then provides that preservation may include:

a. Planning construction to avoid archaeological sites
b. Deeding sites into permanent conservation easements
c. Capping or covering sites with a layer of soil before building on the sites.
d. Planning parks, greenspace, or other open space to incorporate archaeological sites.

When avoidance is possible, then data recovery excavation may be the only feasible mitigation measure.

California State University, Los Angeles 10 – Response

Please see Section 3.2.4 (California State University, Los Angeles 9 – Response) of this Response to Comments document.

California State University, Los Angeles 11 – Comment

According to CEQA, data recovery is the last resort after the lead agency considers all of the above preservation methods and determines that they are not possible or feasible. With the exception of CA-ORA-710 (but the EIR also implies that the site may be impacted – see above) the only mitigation measures that have been considered for the remaining sites to be impacted by the proposed project are data recovery excavation, or worse yet, grading with monitoring.

California State University, Los Angeles 11 – Response

Please see Section 3.2.4 (California State University, Los Angeles 9 – Response) of this Response to Comments document.

California State University, Los Angeles 12 – Comment

Based on the above comments, the DEIR is inadequate in that (1) There is not sufficient information to support the determinations that all of the sites to be impacted by the project (except two) are not significant/important. (2) The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of six of the seven archaeological sites to be impacted by the proposed project have been considered. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. If the determination is that none of the preservation measures are possible or feasible, the justification for this determination and documentation that serious consideration was given to preservation methods should be included in the EIR, (3) Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

If it is determined that data recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

California State University, Los Angeles 12 – Response

Please see Section 3.2.4 (California State University, Los Angeles 9 – Response) of this Response to Comments document.

3.2.5 South Coast Air Quality Management District

Mike A. Nazemi, June 7, 2002

SCAQMD 1 – Comment

The South Coast Air quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The following comments are meant as guidance for the Lead Agency and should be incorporated into the Final Environmental Impact Report.

Pursuant to Public Resources Code Section 21092.5, please provide the AQMD with written responses to all comments contained herein prior to the certification of the Final Environmental Impact Report. The AQMD would be happy to work with the Lead Agency to address these issues and any other questions that may arise. Please contact Charles Blankson, PhD., Transportation Specialist – CEQA Section, at (909) 396-3304 if you have any questions regarding these comments.

SCAQMD 1 – Response

Comment noted. The South Coast Air Quality Management District (SCAQMD) has been provided with a copy of this Response to Comments document.

SCAQMD 2 – Comment

Project Size: In the Public Notice announcing the availability of the DRSEIR, it is stated that the proposed project will occupy an area measuring 229.2 acres and approximately 71 percent of this, or 158.6 acres will be devoted to open space. In the Project Summary in the DRSEIR on page 1-3, it is stated that the proposed project will occupy 222 acres and 70 percent or 155.1 acres will be devoted to open space. It is not clear from the above statements whether the project area is 229.2 acres or 222 acres? Please provide accurate information on the size of the project area since it has implications for grading emissions and subsequently air quality.

SCAQMD 2 – Response

The project size stated in the Draft Revised Subsequent EIR of 222 acres is correct. The Public Notice incorrectly stated the project as 229.2 acres.

SCAQMD 3 – Comment

Emissions Inventory: In table 4.6.2 on page 4.6-7 of the DRSEIR, emissions data are provided for the years 2000 and 2010. While the 2010 forecasts are the same as those reported in the SCAQMD Final 1997 AQMP, the 2000 data is different. See Table B-6 on page III-B of Appendix III of the SCAQMD Final 1997 AQMP. Please correct the discrepancy.

SCAQMD 3 – Response

The year 2000 data in Table 4.6.2 represent an update of those reported in the 1997 AQMP. The year 2000 data represent "actual" emissions reported by the California Air Resources Board for the air basin in the most recent "2000 California Air Quality Almanac." The updated almanac emissions inventory was believed to be more accurate than the AQMP forecasts prepared several years previously.

SCAQMD 4 – Comment

URBEMIS2001: It is reported in Appendix G of the DSEIR that the lead agency used URBEMIS7G to calculate project emissions. There are two points to be noted about this. The first is that both Appendix G and the SDEIR limit the discussion on the construction activity impacts to the fugitive dust and PM_{10} emissions. PM_{10} emissions are reported to be less than the PM_{10} significance threshold. However, as noted on page 4.6-12 of the DRSEIR, construction also entails the use of internal combustion engines and on-road and off-road mobile, semi-mobile and other diesel-powered equipment which generate emissions of NO_x, CO and also PM_{10}. There are also ROG emissions from paints and other architectural coatings. The lead agency fails to mention that the URBEMIS7G output table shows very large ROG construction emissions. At 1,171.19 pounds per day during the Summer, these are very significant emissions. The lead agency needs to address these high ROG emissions and propose measures to reduce them to less than the significance threshold in the Final SEIR. The second point is that URBEMIS2001 is currently available on ARB Webpage and has replaced URBEMIS7G as the model of choice and should be used to estimate project emissions. The lead agency is therefore encouraged to use URBEMIS200 [sic] *which uses current emission factors and therefore reflects project emissions more accurately. In discussing the proposed project's air quality impacts, construction and operational emissions as well as the corresponding significance thresholds should be presented in the main text of the Final SEIR. If construction ROG emissions still exceed the significance threshold, the lead agency should propose mitigation measures accordingly.*

SCAQMD 4 – Response

The algorithm that calculates ROG emissions from paints and coatings in the URBEMIS7G model has a "bug" that grossly distorts the likely daily emissions. The current VOC limit for architectural coatings is 100 grams/liter, or about 0.8 pounds/ gallon. The model estimate of 1,171.19 lbs/day would suggest that there is a daily application of almost 1,500 gallons of paint. Painting 299 homes in the project would occur over many days or even months. Extrapolation of this daily estimate over an extended project phasing would predict the use of tens of thousands of gallons of paint (hundreds of gallons per home). This model output clearly is incorrect. At 0.8 lbs/gallon, the application of 93.75 gallons of paint would create 75 lbs/day of VOC emissions, (SCAQMD threshold) or the paint needed for one to two homes per day is consistent with the probable phasing of the proposed development. VOCs from the application of paint may approach, but not likely exceed, the construction activity emissions significance threshold.

The URBEMIS2001 version of the model was not available when the calculations were initially performed. The result from the "new" model are reasonably identical from the older version. Because of a higher percentage of SUVs in the travel fleet than previously estimated, and because the emissions standards are less stringent on these vehicles, the project-related emissions increase, but remain at less than significant as follows (lbs/day):

	ROG	NOx	CO	PM-10	SOx
URBEMIS7G (Ver 5.1.0)	38.3	41.0	278.0	25.7	0.0
URBEMIS2001° (Ver 6.2.2)	50.0	45.4	504.2	26.4	0.0
SCAQMD Threshold	55	55	550	150	150

° = 75% auto, 10% light truck/SUV, 10% heavy SUV, 2% med-truck, 1% lite-heavy truck, 1% bus, 1% motorcycle; Year = 2003.

Source: Giroux & Associates, 2002

The updated calculations above do not change any conclusions regarding impact (in)significance of the proposed project.

SCAQMD 5 – Comment

Screening Tables: The lead agency used the Screening Table in the SCAQMD 193 CEQA Air Quality Handbook (Table 6-2) to determine that construction-related equipment combustion emissions from the project will not be significant. See discussion on page 4.6-12 of the DRSEIR. Please note that although the screening tables were developed by the AQMD, the AQMD no longer supports the use of these tables in determining the significance of project emissions. This is because the mobile source emission factors used in computing the tables are from an old version of the California Air Resources Board EMFAC model.

SCAQMD 5 – Response

The construction-related equipment combustion emissions procedures have not changed from when the SCAQMD Handbook Screening Tables for Construction (Table 6-2) were developed. If anything, equipment and on-road vehicles are "cleaner" now than in 1993 when the tables were developed. If the tables were accurate for Conditions in 1993, and if the proposed project is determined to be less than significant under 1993 conditions, the project will be less than significant under current criteria with an even larger margin of safety.

3.2.6 Southern California Association of Governments

Jeffrey M. Smith, May 7, 2002

SCAG 1 – Comment

Thank you for submitting the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows to SCAG for review and comment. As areawide [sic] *clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.*

We have reviewed the Saddleback Meadows, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15208). The proposed project is not a residential development of more than 500 units. Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's April 30, 2002 Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1867. Thank you.

SCAG 1 – Response

The comment has been received and noted. No response is required.

3.2.7 Transportation Corridor Agencies

Macie Cleary-Milan, June 10, 2002

Transportation Corridor Agencies 1 – Comment

Thank you for forwarding the Draft Environmental Impact Report No. 566 for the proposed Saddleback Meadows Project. The Transportation Corridor Agencies (TCA) has reviewed the above-subject draft environmental document and would like to make the following comment for your review:

The DEIR identifies the intersection of Portola Parkway and the FTC-N as being impacted. The DEIR states, "The addition of one southbound left turn lane at the intersection of Portola Parkway (NS) at Foothill Transportation Corridor (EW) would be required for 2005 condition." Mitigation measure M 5-5 specifies that the project shall pay its fair share funding of this improvement. The fair share funding amount agreed to by the TCA must be submitted prior to the issuance of any building permits for the project.

Transportation Corridor Agencies 1 – Response

Comment noted. The mitigation measure M 5-5 has been amended to reflect this comment. Please see Section 2.0 of this Response to Comments document.

3.2.8 Orange County Fire Authority

Gene F. Begnell, June 6, 2002

OCFA 1 – Comment

Thank you for the opportunity to comment on the Draft EIR for the Saddleback Meadows project. In response to our review, we would like to offer the following:

Page 4.12-1, Section 4.12.1, Second paragraph. "61 fire stations" should read "59 fire stations.

Page 4.12-1, Section 4.12.1, Third paragraph, Third bullet. Remove "only available from a medic van" from the sentence. OCFA provides paramedic service both paramedic assessment and full paramedic services through a number of configurations in addition to the medic vans.

Page 4.12-2, Table 4.12.1, Fire Station Locations. Several things are wrong with this table.

- *Fire Station 18 is 4.2 miles from the project, not 1.5. The response time to the project for FS18 would be calculated at 8 minutes and 40 second using an average of 35 mph and 90 seconds of call processing and turnout time.*
- *Fire Station 16 is located 3.5 miles from the project and would calculate at 9 minutes and 30 seconds using the same formula as above with a two minute time period added for the volunteer personnel to get to the fire station. This station does NOT have paramedics or full time firefighters. It is staffed with volunteer firefighters only.*
- *Fire Station 45 is located 5.3 miles away with a response time calculation of 10 minutes and 30 seconds.*
- *Additionally, Fire Station 54 is located 2.8 miles from the project, with a response time calculation of 6 minutes and 20 seconds.*
- *Fire Station 31 is located 3.7 miles away with a response time of 7 minutes and 50 seconds. This is the closest paramedic unit to the project.*

Page 4.12-2, Third paragraph. Change "average response time of 6 minutes" to "average response time of nine minutes".

Page 4.12-2, Forth [sic] *paragraph. Replace the last sentence, "At this location three firefighters are on duty staffing either a paramedci* [sic] *assessment unit or a brush engine." With "At this location, 20 volunteer firefighters staff the engine when called upon to do so."*

Page 4.12-3. First paragraph, last sentence. Should read 7 firefighters rather than 8 firefighters.

OCFA 1 – Response

Comments noted. Section 4.12 of the Draft Revised Subsequent EIR has been amended to reflect these comments. Please see Section 2.0 of this Response to Comments document.

OCFA 2 – Comment

Page 4.12-9. Add new condition SC12-16. Secured Fire Protection Agreement. "Prior to grading, the applicant shall enter into a Secured Fire Protection Agreement with the OCFA. The reason for the timing this agreement is that the service needs for the project increases at the point of grading and continues to increase as the project is built. Service agreements will need to be in place at this time.

OCFA 2 – Response

Comment noted. An additional Standard County Condition has been added to reflect this comment. Please see Section 2.0 of this Response to Comments document.

OCFA 3 – Comment

As noted in Section 4.12.3, Cumulative Impact, the seven related projects in this area may have an effect on the service delivery within the area. Additional staffing and/or equipment may be needed to meet this demand. This issue will be addressed within the Secured Fire Protection Agreement.

OCFA 3 – Response

Comment noted. Section 4.12.3 has been amended to reflect this comment. Please see Section 2.0 of this Response to Comments document. However, this would not change the conclusions included in the Draft Revised Subsequent EIR that as related projects would be individually subject to protection and safety measures as required by the Orange County Fire Authority, no cumulative impacts would occur.

OCFA 4 – Comment

Page 5-9, Alternatives, Alternative 2 – No Project Alternative, this project would have many issues with fuel modification both "onsite" and "offsite."

OCFA 4 – Response

Comment noted. As stated in Section 5.4.2 of the Draft Revised Subsequent EIR, Alternative 2 – No Project Alternative would result in greater fire protection impacts as compared to the proposed project.

OCFA 5 – Comment

Page 5-38 [sic], *Alternatives, Alternative 6 – 44/178 Alternative. It should be noted that the layout of the "Development Area" does not allow for secondary access for emergency vehicles and may require the project to acquire additional easements or other mitigation measures to insure that adequate access to the project is provided.*

OCFA 5 – Response

Comment noted. Section 5.4.6 and Table 5.7 has been amended to reflect this comment. Please see Section 2.0 of this Response to Comments document.

OCFA 6 – Comment

The project area is within the designated Special Fire Protection Area and is as a result a significant wildfire risk. These risks will require special mitigation measures in accordance with OCFA standards. All other standard conditions of development including access will also be applicable to the proposed project.

OCFA 6 – Response

Comment noted. The Draft Revised Subsequent EIR includes Project Design Features, Standard County Conditions, and a mitigation measure to ensure impacts from the potential wildfire risk would be less than significant.

3.2.9 Trabuco Canyon Water District

Bruce Boner, May 8, 2002

TCWD 1 – Comment

Trabuco Canyon Water District (District) is in receipt of the Draft Revised Subsequent Environmental Impact Report No. 566 (DEIR 566) for the above captioned project (Project). Based upon our review of the document, the following comments are being submitted to the County of Orange (County) with regard to the project and the environmental proceedings being undertaken by the County with respect to the Project. Please note that the District reserves the right to provide or submit additional or supplemental comments relative to the DEIR566 and other or further documents provided or furnished by the County with respect to the Project or the environmental proceedings undertaken by the County with respect to the Project during the review and/or public hearing process for this matter.

TCWD 1 – Response

Comment noted. No additional response is required.

TCWD 2 – Comment

Request for Notices

Pursuant to the provisions of the California Environmental Quality Act (CEQA) and Public Resources Code Section 21091.1, the District hereby requests that copies of all notices and other documents mailed in relation to the above-referenced Project be furnished to the District. If there are any fees and charges required for the provision of such notices, please provide us with an invoice for such costs, and we will reimburse the appropriate County department. This request for notice specifically includes, but is not necessarily limited to, notices of all hearings, proposed actions to be taken with regard to the developmental process and, in particular, any Notice of Determination prepared, furnished or filed with regard to this Project.

TCWD 2 – Response

Comment noted. The Trabuco Canyon Water District has been provided with a copy of this Response to Comments document and will be provided with any additional notices with regard to the proposed project.

TCWD 3 – Comment

Background Information

Our general legal counsel, Bowie, Arneson, Wiled & Giannone, provided written comments on behalf of the District on August 11, 1997 and supplemental comments on October 17, 1997, photocopies of which are attached hereto.

We request that these letters be included as part of the record of proceedings for the environmental review of the Project, Including DEIR566.

TCWD 3 – Response

The above referenced letters were responded to in the Response to Comment for Subsequent EIR No. 566 (1997) and are included in Appendix A of this Response to Comments document.

TCWD 4 – Comment

As stated in the October 17, 1997 letter, there remains a "significant question as to whether the mitigation measure referenced includes and covers necessary master plan and in-tract wastewater facilities." We again request that mitigation monitoring language, as required by Public Resources Code Section 21081(a)(1) and Section 21081.6, be incorporated within the final environmental impact report prepared for the Project.

Trabuco Canyon Water District further states that the District's Rules and Regulations require improvement agreements to be entered into in order for the District to approve tract maps and for the District to provide water and wastewater service to any property within its boundaries. The District previously requested of California Quartet to undertake negotiations relative to entering new improvement agreements relative to the Project. No response has been received by the District.

TCWD 4 – Response

Comment noted. Please see Section 2.0 of this Response to Comments document regarding the additional mitigation measures.

TCWD 6 – Comment

In addition to the above, a Sub-Area Master Plan must be prepared and financed by the developer to define needed facility improvements which include:

> *Water: Pump stations, reservoir, pressure reducing valves and pipelines.*
> *Sewer: Local collection lines only. The project has already purchased regional wastewater collection, treatment and capacity.*

All fees and capacity charges must be reevaluated following completion of the Sub-Area Master Plan.

TCWD 6 – Response

See mitigation measures M 16-1 (Section 4.16) and M 17-1 (Section 4.17) included in the Draft Revised Subsequent EIR.

3.2.10 City of Lake Forest

Gayle Ackerman, May 29, 2002

City of Lake Forest 1 – Comment

The City of Lake Forest has received the Draft Environmental Impact Report for the Saddleback Meadows development. Public Works staff has reviewed the Water Quality Technical Report, Appendix E and Traffic Study, Appendix F of the EIR and offers the attached comments. Development Services staff has reviewed the body of the EIR and offers the following comments;

City of Lake Forest 1 – Response

Comment noted. No additional response is required.

City of Lake Forest 2 – Comment

Section 3.7 and Table 3-1 discuss related projects. Please confirm project 3, Los Angeles Athletic Club is the name of the self-storage facility located on the corner of Marguerite Parkway and El Toro Road. In addition, the Gateway Commercial Center Project located on the corner of Portola Parkway and El Toro Road, within the City of Lake Forest, should be considered in the EIR. Please see City staff for information on the approved project.

City of Lake Forest 2– Response

Comment noted. Please see Section 2.0 of this Response to Comments document for clarifications to Table 3.1. However, these revisions did not change any conclusions included in the Draft Revised Subsequent EIR.

City of Lake Forest 3 – Comment

The applicant should be advised that the City of Lake Forest does not permit any off-site signage. Therefore, there shall be no advertising or directional signage placed within the city of Lake Forest or along streets within the City's jurisdiction.

City of Lake Forest 3 – Response

Comment noted. No off-site signage for the proposed project is proposed within the City of Lake Forest.

City of Lake Forest 4 – Comment

We would like to continue to receive information and documents on the project. Please send all further correspondence to myself, Ms. Gayle Ackerman, AICP, Director of Development Services at 2361 Lake Center Drive, Suite 100, Lake Forest, CA 92630, telephone number (949) 461-3460.

City of Lake Forest 4 – Response

Comment noted. The City of Lake Forest will receive all future environmental documents and notices pertaining to the proposed project. No additional response is required.

City of Lake Forest 5 – Comment

I have reviewed the Conceptual Water Quality Management section of Saddleback Meadows EIR. The following are comments for the subject document.

In the Developed Conditions section of the Report, page 6, it states that "The permanent open space will be dedicated to the County of Orange as a regional park and will be maintained by the County or a third-party conservation group." The report indicated that this open space area is 88.2 acres.

- *Has the County of Orange agreed to accept the open space area and the maintenance responsibility associated with it?*
- *What impacts will this dedication have on the City if and when this area is annexed to the City of Lake Forest?*
- *Will the public have access to this regional park?*

Please respond to these questions and provide additional information to clarify this item and its impact on the City of Lake Forest.

City of Lake Forest 5 – Response

Section 2.3 of the Draft Revised Subsequent EIR described the details of the proposed open space, which includes approximately 83.25 acres as a natural resource protection area. This area would provide an opportunity to expand O'Neill Regional Park (page 2-16 of the Draft Revised Subsequent EIR).

The proposed project site is not within the City of Lake Forest's sphere of influence and there are no plans at this time to annex any portion of the site to the City. It would therefore be speculative to assume annexation and discuss potential impacts to the City.

City of Lake Forest 6 – Comment

In the Developed Conditions section of the Report, Page 6, states that "Only lots 1 through 37 connect directly to an existing storm drain facility in El Toro Road". Please provide all required Hydrology and Hydraulic backup information to show that the existing facility has enough capacity to accommodate this portion of the development. Furthermore, provide detail information on the watershed that contributes to this existing facility on El Toro Road and the down stream impacts of this development.

City of Lake Forest 6 – Response

Project watershed drainage was discussed in Section 4.3 and Appendix D of the Draft Revised Subsequent EIR, which include all necessary hydrologic data for the proposed project. The water quality analysis was included in Section 4.4 and Appendix E of the Draft Revised Subsequent EIR.

City of Lake Forest 7– Comment

Section 7 entitled "Monitoring, Inspection and Maintenance, page 12, Subsection (g) entitled "Common Area Catch Basin Inspection", the inspection and power wash of the screen for the stormceptor should be performed more than once per year. In fact, the first few years after completion of this project, the inspection rate should be 3-4 times per year, or after a sizeable rainstorm. This rate of inspection will be needed until such time as the newly planted vegetation/ landscaping begin to contribute to the reduction of erosion. After that, the rate may be reduced to 2-3 times per year to allow for continuous and proper clean screens for all stormceptors.

City of Lake Forest 7 – Response

As stated in PDF 4-16 included in the Draft Revised Subsequent EIR, structural BMPs (such as the stormceptors) will be maintained for effectiveness and a detailed plan for maintenance, inspection and for assessing effectiveness will be included in the project's final SWPPP and the WQMP (PDF 4-17). These plans will be prepared and approved by the applicable County departments and regional jurisdictions.

City of Lake Forest 8 – Comment

Same section as stated in item 3 above, page 12, subsection (h) entitled "Street Sweeping Private Streets and Parking Lots". Please be more specific in regards to statement "This procedure will be intensified around October 15th of each year…" In other words, is the street sweeping required twice a week or more? The term "intensified" needs to be clearly defined.

City of Lake Forest 8 – Response

"Intensified" is defined to mean an increase above the weekly basis, dependent on site conditions. As stated above, a detailed plan for maintenance will be included in the project's final SWPPP and WQMP.

City of Lake Forest 9 – Comment

75% of this area ultimately drains to Aliso Creek, which is an impaired water body and is under an enforcement action (California Water Code Section 13225) from the San Diego Regional Water Quality Control Board. What specific measures are to be undertaken by this development to eliminate pollutant runoff from entering the curb and gutter as required by the NPDES permit and in support of the enforcement action.

City of Lake Forest 9 – Response

Please see Section 4.4 of the Draft Revised Subsequent EIR for a discussion of detailed stormwater water quality runoff mitigation measures, including by not limited to the following: PDF 4-1, PDF 4-2 PDF 4-3, PDF 4-13, PDF 4-14, PDF 4-16, PDF 4-17, SC 4-1, SC 4-2, SC 4-3, SC 4-4. Please also see Section 3.3.8 (Saddleback Canyons Conservancy 4 – Response) of this Response to Comments document.

City of Lake Forest 10 – Comment

We have reviewed the Saddleback Meadows Traffic Report prepared by Urban Crossroads for the County of Orange. The following comments are for the subject document.

The following intersections are STOP sign controlled and should be analyzed utilizing the 2000 HCM: Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline Rd. and Santiago Canyon Rd./Live Oak Canyon Rd. The intersection analyses Tables should be updated to reflect the delay/LOS for each of these intersections under each scenario which was analyzed.

City of Lake Forest 10 – Response

Use of the 2000 HCM is used as a general guidance for traffic analysis. All intersections in the Saddleback Meadows Traffic Study were analyzed using the required Intersection Capacity Utilization (ICU) methodology, based on the County of Orange guidelines. The ICU approach is a planning methodology that expresses the volume of traffic as a percentage of the overall intersection capacity and a more appropriate model to analyze traffic impacts associated with the proposed project. To compare the operations at these study area intersections for Year 2005 with and without project conditions, as well as Year 2025 with and without project conditions, the same intersection methodology was utilized. This approach enables the analyst to provide a comparison of intersection peak volume-to-capacity relationships for different conditions. In effect, this methodology assumes that traffic signals will be installed when warranted as the area develops.

City of Lake Forest 11 – Comment

Although the intersection of El Toro Rd./Live Oak Canyon Rd. does not meet a warrant for signalization under existing conditions, the HCM worksheets indicate that this intersection is currently operating at acceptable Levels of Service B during both the AM and PM peak hours. Therefore, further analyses should be completed to determine if signalization is needed based upon other factors such as accident data or safety concerns.

City of Lake Forest 11 – Response

The project traffic analysis completed for the proposed project indicates that a signal is warranted under existing conditions based on the existing peak hour intersection turning movements.

Additional warrant issues should be explored by the County of Orange and City of Lake Forest prior to programming this location for installation of a traffic signal.

City of Lake Forest 12 – Comment

The volumes provided in the count data found in Appendix B do not match the northbound and southbound through volumes at the intersection of Portola Parkway and the Foothill Transportation Corridor Ramps under existing conditions as shown in Figures 2E and 2F. A discussion should be added on how the northbound and southbound existing through volumes were derived for the AM and PM peak hours.

City of Lake Forest 12 – Response

The intersection of Portola Parkway and the Foothill Transportation Corridor is considered an urban interchange. In effect, an urban interchange combines the movements of two intersection locations (the northbound and southbound ramps) into one intersection. The movements presented in Appendix F of the Draft Revised Subsequent EIR do in fact reflect the volumes presented on Exhibit 2-E and 2-F. Due to the configuration of the intersection, some counts actually include multiple movements. For example, the A.M. peak hour northbound through movement count volumes of 1,548 vehicles actually includes the northbound left turn movement of 478 vehicles. The actual A.M. peak hour northbound through movement is 1,070 (1548-478). Exhibits 2-E and 2-F present the actual turning movement counts.

City of Lake Forest 13 – Comment

On Table 2-2. the Level of Service at Portola Parkway/Glenn Ranch Road should be "B" and not "A."

City of Lake Forest 13 – Response

The peak hour Intersection Capacity Utilization (ICU) value of 0.62 presented on Table 2-2 (and Table 4.5.1) is consistent with results presented in Appendix F of the Draft Revised Subsequent EIR. The commenter is correct that this value should have been listed on Table 2-2 (and Table 4.5.1) with Level of Service of "B." The intersection would continue to operate at an acceptable level of service (LOS). Please see Section 2.0 of this Response to Comments document.

City of Lake Forest 14 – Comment

The peak hour project volumes for the AM inbound and PM outbound movements at the project access point on El Toro Road, as shown in Exhibits 3-C and 3-D, do not equate to the projected trip generation provided in Table 3-2. The Figures and intersection analyses worksheets should be revised to reflect the current numbers.

City of Lake Forest 14 – Response

The trip generation values presented in Table 3-2 in Appendix F of the Draft Revised Subsequent EIR are consistent with the project trip generation results shown on Exhibits 3-C and 3-D. For presentation purposes, the trip generation values included in Table 3-2 were rounded to the nearest 5 for all peak hour trips and the nearest 10 for all daily trips. This rounding explains the variation between Table 3-2 and Exhibits 3-C and 3-E.

City of Lake Forest 15 – Comment

Table 3-5 should be revised to reflect the Level of Service on each road segment based upon the roadway capacity values found in Table 2-1.

City of Lake Forest 15 – Response

Table 3-5 in Appendix F of the Draft Revised Subsequent EIR is not intended to provide a roadway capacity analysis. As noted on page 3-22 of Appendix F, Table 3-5 presents a summary of the average daily traffic volumes on Santiago Canyon Road.

City of Lake Forest 16 – Comment

On Table 4-4 the following Levels of Service should be corrected to reflect to following Levels of Service:

El Toro/Valley Vista Way – PM peak hour – LOS B
Saddleback Ranch/Glenn Ranch – PM peak hour – LOS B
Portola Parkway/El Toro – AM peak hour – LOS D
Portola Parkway/El Toro – PM peak hour – LOS C

City of Lake Forest 16 – Response

Comment noted. Please see Section 2.0 of this Response to Comments document for an updated Table 4-4 (Table 4.5.8), which has been corrected for three of these four items. The Saddleback Ranch/Glenn Ranch intersection was reported correctly as LOS A. The analysis conclusions remain unchanged.

City of Lake Forest 17 – Comment

It is unclear as to who is responsible for the Year 2005 improvement (Southbound Left Turn Lane) required at the study intersection of Portola Parkway/Foothill Transportation Corridor. This should be indicated in the study.

City of Lake Forest 17 – Response

This improvement is already accommodated by the overall physical design of the interchange. Project participation in the improvement is addressed in the following mitigation measure included in Section 4.5 of the Draft Revised Subsequent EIR:

M 5-5 The project shall pay its fair share of the improvement of the following intersections: Portola Parkway at Glenn Ranch Road, Portola Parkway at Foothill Transportation Corridor (FTC), and the Portola Parkway at El Toro Road.

The project traffic analysis indicates that the following improvements are needed to serve long-range future (Year 2025) traffic conditions with or without the proposed project:

- Portola Parkway (NS) at Glenn Ranch Road (EW):
  - Signal modification to provide northbound right turn overlap phase
- Portola Parkway (NS) at Foothill Transportation Corridor (EW):
  - Add one northbound through travel lane
  - Add one southbound left turn lane
  - Add one southbound through travel lane
- Portola Parkway (NS) at El Toro Road (EW):
  - Add one southbound through travel lane
  - Add one eastbound left turn lane
  - Signal modification to provide southbound right turn overlap phase

City of Lake Forest 18 – Comment

Table 4-6 should be corrected. The study intersection of El Toro Rd./Valley Vista Way should have a LOS value of E instead of D.

City of Lake Forest 18 – Response

Comment noted. Please see Section 2.0 of this Response to Comments document, for an updated Table 4-6 (Table 4.5.9), which has been corrected. The analysis conclusions remain unchanged.

City of Lake Forest 19 – Comment

A discussion/table should be added to the traffic study regarding the project's impacts at each study intersection where the Level of Service is unacceptable and the project increases the ICU value, and where the intersection's operation is degraded to an unacceptable operation with the project. In addition, the proposed improvements, which would mitigate

the project's impacts, should be shown along with additional improvements which are needed without the project for Year 2025 conditions. Responsibility of the improvements should also be provided.

City of Lake Forest 19 – Response

The County of Orange utilizes a procedure for determination of the project contribution, which focuses on changes in the Intersection Capacity Utilization (ICU) between existing conditions, future no-project conditions, and future with-project conditions. The distinction between new and existing traffic performance is a key point in this analysis. Table 3.2, below summarizes the fair share calculations for 2025 conditions.

Table 3.2
Mitigation Measure (M 5-5) Fair Share Calculations

Intersection Location	Peak Hour	Existing ICU	2025 No Project ICU	2025 With Project ICU	2025 With Project Mitigation ICU	Baseline (ICU)	Total Future Traffic Share (ICU)	Project Traffic Share (ICU)	Project Fair Share (%)
Portola Pkwy. (NS) at:									
• Glenn Ranch Rd. (EW)	A.M.	0.62	0.93	0.96	0.80	0.62	0.34	0.03	**8.8%**
	P.M.	0.50	1.03	1.07	0.85	0.50	0.57	0.04	7.0%
• Foothill Trans. Corridor (EW)	A.M.	0.54	0.77	0.77	0.67	0.54	0.23	-	0.0%
	P.M.	0.79	1.05	1.06	0.64	0.79	0.27	0.01	**3.7%**
• El Toro Rd. (EW)	A.M.	0.75	1.14	1.15	0.88	0.75	0.40	0.01	**2.5%**
	P.M.	0.65	0.95	0.95	0.70	0.65	0.30	-	0.0%

Source: Urban Crossroads, 2002

The baseline traffic share is a function of the existing ICU, the future with project ICU, and the ICU after mitigation. If the ICU after mitigation is acceptable, then all future (new) traffic should contribute equally to the improvement. This is the case for the three intersections shown on Table 3.2, above.

The project contributions to future improvement needs at these intersections range from 2.5 percent at Portola Parkway/El Toro Road to 8.8 percent at Portola Parkway/Glenn Ranch Road.

City of Lake Forest 20 – Comment

Peak hour traffic volumes for some improvements under the Year 2025 without the project scenario are decreasing when compared to volumes under the Year 2025 without the project scenario. The following intersections should be reviewed and changes made to the Figures and ICU worksheets or an explanation provided on why volumes are decreasing in the year 2025.

Santiago Canyon/Modjeska Canyon
El Toro/Live Oak Canyon
El Toro/Valley Vista
Saddleback Ranch/Glenn Ranch
Portola Pkwy/Glenn Ranch
Portola Pkwy/El Toro
Santiago Canyon/Ridgeline
El Toro/Ridgeline
El Toro/Glenn Ranch
Marguerite Parkway/El Toro
Portola Pkwy/Trans. Corr.

City of Lake Forest 20 – Response

As discussed in the Traffic Study (Appendix F of the Draft Revised Subsequent EIR), the 2005 traffic conditions were developed based on an annual background growth rate of three percent over a four-year time period (2001 to 2005). The 2005 traffic conditions also include all known project development such as Live Oak Plaza and the Saddle Creek/Saddle Crest development. Future 2025 traffic conditions were developed based on the latest OCTA traffic model forecasts contained in the Orange County Transportation Analysis Model (OCTAM 3.1) and the Irvine Transportation Analysis Model (ITAM 3.01).

In all cases the overall intersection traffic volumes show a substantial traffic volume increase for future 2025 conditions over 2005 conditions. However, individual turning movements may be lower in the projections for 2025 in some cases. This can occur as land uses change and additional network segments are improved in the circulation system.

City of Lake Forest 21 – Comment

Appendix J contains traffic signal warrants for the intersections of Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline and El Toro Rd./Live Oak Canyon Road under a variety of analyses and conditions. The body of the report does not discuss why traffic signal warrants were applied or when (under what time-frame) the signal may be required.

City of Lake Forest 21 – Response

Based on the County of Orange guidelines for traffic analysis, all intersections in the Saddleback Meadows Traffic Study were analyzed using the required Intersection Capacity Utilization (ICU) methodology. The ICU approach is a planning methodology that expresses the volume of traffic as

a percentage of the overall intersection capacity. To compare the operations at these study area intersections for Year 2005 with and without project conditions, as well as Year 2025 with and without project conditions, the same intersection methodology was utilized. This approach enables the analyst to provide a comparison of intersection peak volume-to-capacity relationships for different conditions. In effect, this methodology assumes that traffic signals will be installed when warranted as the area develops.

City of Lake Forest 22 – Comment

There is an existing bike path/trail, which runs along the eastside and parallel with El Toro Road. The main project access will intersect this bike path/trail. Provisions should be provided for signing the bike path/trail with the proper controls.

City of Lake Forest 22 – Response

Section 4.5.4 of the Draft Revised Subsequent EIR included a Standard County Condition to ensure that the bike lane along El Toro Road in the project area would meet County requirements (see SC 5-5).

City of Lake Forest 23 – Comment

There is a discrepancy in the trip generation provided in a letter dated October 17, 2001 to Mr. Pike Oliver, California Quarter LTD, from Mr. Bill Lawson, Urban Crossroads, Inc. regarding "Alternative Development Scenarios" for the Saddleback Meadows Alternatives. This letter should be revised so the trip generation data provided in the letter reflects the trip generation information indicated in Table 2 of the aforementioned letter.

City of Lake Forest 23 – Response

The trip generation rates contained in the Draft Revised Subsequent EIR, Appendix F (Traffic Study) are correct.

3.2.11 City of Mission Viejo

Charles E. Wilson, May 30, 2002

City of Mission Viejo 1 – Comment

Thank you for the opportunity to review and comment on Zone Change ZC98-3 and Area Plan AP98-2 for Saddleback Meadows (aka Bridlewood) in the County of Orange. Of particular interest to the City of Mission Viejo are the transportation-related components of the Draft Revised Subsequent Environmental Impact Report (EIR 566) for the Saddleback Meadows project filed with the County of Orange. The City's comments are as follows:

1. *Project Trip Generation:*

   The project traffic study identifies a residential trip distribution assumption wherein twenty-five percent of the daily traffic would enter/leave the project site, using El Toro road north of the project entrance, and with twenty five percent continuing along Santiago Canyon Road. Page 3-5 of the project traffic study states that "trip distribution patterns for this study are consistent with previous traffic studies and were reviewed by the County staff prior to completion of this traffic analysis." The City of Mission Viejo continues to believe that the 25% assignment of traffic to El Toro Road, north of the project access, is high. The City of Mission Viejo recommends that the Draft EIR provide narrative discussion which explains the land uses or destinations that exist or are proposed north of the project site, which would cause one-quarter of the project's daily trips to use this segment of El Toro Road, versus using El Toro Road south of the project site to access freeways, major highways, and public facilities. The assumptions used in the project trip distribution would have a resultant impact on analyzed intersections south of the project entrance to El Toro Road, and, in particular, would increase Intersection Capacity Utilization (ICU) calculations if a greater percentage of project trips were assigned southerly along El Toro Road.

City of Mission Viejo 1 – Response

The project distribution pattern is logical and consistent with other project traffic studies in the area. For example, the project trip distribution for Saddle Creek/Saddle Crest also indicates that 25 percent of the project traffic would be assigned north of El Toro Road.

Exhibit 2-D (Figure 4.5.3) included in the Draft Revised Subsequent EIR, indicates that the existing daily traffic volumes on El Toro Road north of Live Oak Canyon Road range from 5,300 to 5,700 vehicles per day. Existing average daily traffic volumes on El Toro Road south of the proposed project range from 8,400 to 28,700 daily vehicles. The traffic volumes on Santiago Canyon Road north of Live Oak Canyon Road represent approximately 18 percent to 63 percent of the daily traffic volumes on El Toro Road south of the proposed project site. The project traffic distribution pattern is therefore consistent with the relative magnitude of existing traffic activity in the Trabuco Canyon area.

North of the project site, El Toro Road becomes Santiago Canyon Road and continues to an interchange with the Eastern Transportation Corridor (SR-241). Santiago Canyon Road also extends into the City of Orange where it becomes Chapman Avenue. Chapman Avenue connects with the Costa Mesa Freeway (SR-55) and continues westerly to the City of Garden Grove. East of the Costa Mesa Freeway, the Santiago Canyon Road/Chapman Avenue corridor provides direct access from the project to Santiago Canyon College, Irvine Regional Park, numerous City of Orange commercial centers, and the Chapman Medical Center. The Santiago Canyon Road/Chapman Avenue corridor therefore provides access to many destinations, freeways, major highways, and public facilities without toll charges. Utilization of this corridor by at least 20 percent of the project traffic is to be expected.

The County apologizes for the miscommunication regarding the commenter's request for a copy of the Draft Revised Subsequent EIR. However, it should be noted that copies of the document were available at area libraries (see Section 1.0 of this Response to Comments document) and at the County of Orange. It should be noted that no comments were presented at the Planning Commission hearing on July 16, 2002 and furthermore, no comments were received as of August 8, 2002. The Center for Biodiversity will still have the opportunity to submit comments on the project at the scheduled Planning Commission hearing on August 28, 2002.

City of Mission Viejo 2 – Comment

2. *El Toro/Glenn Ranch Road Intersection:*

   The El Toro/Glenn Ranch Road intersection is a Measure M intersection that is fully assigned to the City of Mission Viejo. In compliance with countywide Measure M requirements, the City of Mission Viejo must maintain this intersection at a Level of service "D" or better.

The project traffic study identifies that the El Toro/Glenn Ranch Road intersection will maintain a Level of service A through project buildout in Year 2005, but that the intersection is projected to operate at a Level of Service "E" in the pm peak period in Year 2025 buildout, with or without the project. The project traffic study further identifies that the completion of additional El Toro Road improvements, specifically, the addition of through lanes that increases El Toro Road's lane capacity from a two-lane to a four-lane facility, will allow this intersection to operate at a Level of Service "C" in the pm peak period, thus maintaining consistency with Measure M Growth Management Program level of service standards.

The City of Mission Viejo recognizes that the implementation of additional El Toro Road improvements is not necessitated by the Saddleback Meadows project, since project buildout, and associated levels of service standards, can be maintained at the El Toro/Glen Ranch Road intersection with existing improvements. In conjunction with Measure M Interjurisdictional Planning Forums, the City of Mission Viejo will monitor the operation of El Toro Road and will work with the County of Orange, to allow for the implementation of the additional El Toro Road lane improvements in advance of any failing intersection performance at the El Toro/Glenn Ranch Road intersection.

On behalf of the City of Mission Viejo, I thank you for your consideration of our comments. If you have any questions, please feel free to call Elaine Lister or me at (949) 470-3053.

City of Mission Viejo 2 – Response

As discussed above, future level-of-service issues at this intersection are projected to occur with or without the project. The project traffic contribution would be mitigated (please see Section 4.5 mitigation measure M 5-5, of the Draft Revised Subsequent EIR).

3.2.12 City of Rancho Santa Margarita

Kathleen Haton, May 16, 2002

City of RSM 1 – Comment

Thank you for the opportunity to review and comment on the Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the proposed Saddleback Meadows development. It is our understanding that the existing zoning allows for 705 manufactured homes, 1.7 acres of commercial, and 130 acres of open space. The proposed development will include 299 single-family detached dwelling units and 155 acres of open space.

The City of Rancho Santa Margarita has reviewed the Zone Change and Area Plan and has the following comments:

1. *Saddleback Meadows Rural Character Statement Page 6 (graphics): It is not clear from which direction the views from offsite are from.*

City of RSM 1 – Response

The comment refers to the Area Plan for the Saddleback Meadows project and does not pertain to the EIR. However, the illustrations are intended to be conceptual and are not from a specific location.

City of RSM 2 – Comment

Page 6-1: Grading Concept: Contour grading is discussed but there are not any graphics that show where cut and fill areas will occur.

City of RSM 2 – Response

The level of detail requested by the commenter is not required and the comment refers to the Area Plan for the Saddleback Meadows project. However, the extensive amount of remedial grading required will result in cut operations to stabilize existing landslide areas. Fill operations would be associated with the upper limits of areas. Please see Section 4.2 and Appendix C of the Draft Revised Subsequent EIR for a more detailed discussion of grading/landform alteration proposed for the site.

City of RSM 3 – Comment

Please include the City of Rancho Santa Margarita on your mailing list for review of any documents related to this project.

If you have any questions or concerns about our comments, please call me at (949) 635-1800.

City of RSM 3 – Response

Comment noted.

3.3 ORGANIZATIONS/BUSINESS LETTERS

The following organizations/business commented on the Draft Revised Subsequent EIR:

- The Center for Biological Diversity
- Connor, Blake & Griffin, LLP (representing the Vedanta Society of Southern California)
- The Gas Company
- Juaneno Band of Mission Indians
- Mark R. McGuire
- Orange County Regional Recreational Trails Advisory Committee
- Rural Canyon Conservation Fund
- Saddleback Canyons Conservancy
- Sierra Club
- Trails 4 All
- Terrell Watt, AICP (representing National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund)

3.3.1 The Center for Biological Diversity

Kassie Siegel, June 24, 2002

TCBD 1 – Comment

These comments are submitted on behalf of the Center for Biological Diversity ("Center"), a non-profit public interest membership organization dedicated to the preservation of native species and their habitats. On June 11, 2001 our Legal Assistant Susie Roe called the County of Orange Environmental Planning and Services Division requesting a copy of the EIR for the Saddleback Meadows Project, SCH No. 1996121072. Ms. Roe was told by staff that the EIR could only be sent via the authority of Mr. Bill Grieman, then on vacation. Ms. Roe left a voicemail for Mr. Grieman, who never returned the call. Today. June 24th, Ms Roe called Mr. Grieman to check on the status of the request for the EIR, and was told that he was unsure when and if it could be sent because the comment period is now over. This is outrageous. First, the comment period is not "over" as it is not yet the close of business. Second, the Center has a right to review the EIR regardless of whether the comment period is "over" or not. Third, the County of Orange Environmental Planning and Services Division should not be incapable of sending out a copy of an EIR while one staff member is on vacation. The actions of the County staff have deprived the Center, our members and staff, and members of the public with an interest in protecting the biological resources of the Saddleback Meadows project site with an opportunity to comment on this project.

From reviewing the comments of the Sierra Club and others, it seems apparent that the Draft Supplemental EIR is deeply flawed, the environmental impacts of this project are unacceptable, and the mitigation proposed is entirely inadequate. The Center will submit further comments once we have received the EIR. The Center requests that the comment period be extended due to the County's failure to timely release a copy of the EIR upon request. Should the deadline not be extended, the Center will submit comments and strongly urges the county to consider them and respond fully in the final EIR. As you know, the CEQA Amendments of 1994 make it clear that an organization exhausts its administrative remedies (and therefore preserves its rights to judicial review of the project approval) by submitting comments at any time prior to the certification of the EIR. Pub. Resources Code § 2177(a)(b); Galante Vineyards v. Monterey Peninsula Water Management District (6th Dist. 1997), 60 Cal. App.4th 1117-1121.

Thank you for your consideration of these comments. Please contact me at (909) 659-6053 x. 302 should you have any questions.

TCBD 1 – Response

The County apologizes for the miscommunication regarding the commenter's request for a copy of the Draft Revised Subsequent EIR. However, it should also be noted that copies of the document were available at area libraries (see Section 1.0 of this Response to Comments document) and at the County of Orange Planning and Development Services Department. In addition, the commenter will have the opportunity to submit verbal and written comments and raise concerns or issues at the scheduled Planning Commission hearings (July 16 and August 28, 2002). Please see Section 3.3.9 of this Response to Comments document for responses to comments from the Sierra Club.

3.3.2 Connor, Blake & Griffin, LLP (representing the Vedanta Society of Southern California)

Edward M. Connor, June 9, 2002

Connor 1 – Comment

On behalf of the Vedanta Society of Southern California ("Vedanta"), we hereby submit our comments on "Draft Revised Subsequent Environmental Impact Report No. 566" ("DRSEIR 566" or the "DRSEIR") for the 299-unit single family housing project (the 299-Unit Project") proposed for the Saddleback Meadows property (the "Property"). Vedanta's specific comments on DRSEIR 566 are set forth in Exhibit "A" attached hereto and are incorporated herein by reference. We request that each of the comments set forth in Exhibit "A" receives full and complete response pursuant to section 15099 of the State CEQA Guidelines.

Connor 1 – Response

Comment noted, all written comments submitted on the Draft Revised Subsequent EIR are included in this Response to Comments document.

Connor 2 – Comment

We are particularly disappointed that, after having described the "44/178 Alternative" in detail in the letter which we sent you on August 31, 2001, in response to the Notice of Preparation DRSEIR 566, California Quartet's Consultant, HDR, has chosen to address a radically different alternative under the guise of the "44/178 Alternative." In our letter, we clearly described the "44/178 Alternative" as dividing the Property into a 44-acre "Development Parcel" and a 178-acre "Conservation Parcel." We stressed that the "Conservation Parcel" was to be permanently preserved in its natural condition as undeveloped and undisturbed open space, and that no development activities (e.g., remedial grading) were to be permitted outside of the 44-acres of the "Development Parcel." However, in the DRSEIR, the "44/178 Alternative" is inexplicably preserved as a 127-unit single family housing project.

As was disclosed by California Quartet's representatives during Vedanta's settlement negotiations with them and various County officials in 1998, a 127-unit alternative would require a development area of at least 75 acres and would entail massive remedial grading and a 50-foot loeffel wall that would destroy virtually all of the vernal ponds, oak trees, and sensitive habitat areas that would otherwise be preserved by the 44-acre development footprint that is the hallmark of the "44/178 Alternative" proposed by Vedanta.

We consider the unfair and distorted presentation of the "44/178 Alternative" that is contained in DRSEIR 566 to be so deceptive and misleading that it requires the DRSEIR to be redrafted and recirculated. Section 15088.5(a)(3) of the State CEQA Guidelines has clearly been triggered in this regard. Moreover, given the conclusory and deficient nature of many of the other sections of DRSEIR 566, recirculation is also required under section 15088.5(a)(4) of the State CEQA Guidelines.

What is required is a fair and honest evaluation of the merits of the "44/178 Alternative." As the County's own staff members proved in developing the 65-unit "Mathews Alternative" in April 1998, the "44/178 Alternative" would provide California Quartet with a feasible – albeit lower density – housing project which would preserve and protect the environmentally-sensitive resources on this unique "wildlife corridor" property. Regrettably, the County has so far allowed California Quartet's consultant to evade the state law requirements which mandate that this project alternative be adequately analyzed and reported on in the DRSEIR. We cannot believe the County has allowed this blatant misconduct to occur and we hope that you will rectify this immediately.

In the interest of providing the decision-makers of the County if Orange and the members of the public with a complete and non-deceptive evaluation of the project alternatives, environmental impacts, and feasible mitigation measures associated with the 299-Unit Project, we respectfully request that DRSEIR 566 be revised and recirculated before any public hearings are scheduled on this matter.

Connor 2 – Response

As stated in Section 5.1 of the Draft Revised Subsequent EIR, the range of alternatives required within an EIR is governed by the "rule of reason" which requires an EIR to include only those alternatives necessary to permit a reasoned choice. The alternative analysis included in the Draft Revised Subsequent EIR discussed eight alternatives to the proposed project. These alternatives were based on criteria pursuant to CEQA including the potential to reduce or eliminate significant impacts, and attain most of the project objectives. Further, the discussion of alternatives need not be exhaustive, and there is no requirement within CEQA that specific alternatives advocated by an individual or interest group be included. As stated in the *CEQA Guidelines* Section 15126.6(a) "An EIR need not consider every conceivable alternative to a project."

Nevertheless, Alternative 6 (44/178 Alternative) as described in the Draft Revised Subsequent EIR reflects the Memorandum of Understanding executed by the applicant and the Saddleback Lands Conservancy on November 3, 1998. The 65-unit alternative as suggested by the commenter was found by County staff in 1998 to not be economically feasible due to remedial grading requirements and was therefore, not included in the EIR. The remedial grading and fuel modification requirements of this alternative would extend into the area to be encompassed within the 178-acre conservation parcel regardless of whether 65 or 127 lots were included within the 44-acre development parcel.

The alternative analysis included in the Draft Revised Subsequent EIR meets the requirements of CEQA; therefore no revisions or re-circulation of the Draft Revised Subsequent EIR is required.

Connor 3 – Comment

1. *Draft Revised Subsequent Environmental Impact Report No. 566 ("DRSEIR 566" or the "DRSEIR") fails to identify, analyze, and mitigate the impacts associated with the failure of the 299-unit single family*

housing project (the 299-Unit Project") to comply and be consistent with the goals, objectives, components, regulations, and guidelines of the Foothill/Trabuco Specific Plan (the "FTSP"). At page 4.1-12, the DRSEIR simply concludes that the 299-Unit Project "would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692" and, therefore, as a result of the fact that the 705-unit manufactured housing project (the "705-Unit Project") described in Recorded Map 10692 was exempted – due to bankruptcy code concerns – from compliance with the FTSP, the 299-Unit Project should likewise be exempted. However, the DRSEIR fails to provide any legal or factual support for this conclusion. The FTSP provides an exemption for the development of the Saddleback Meadows property (the "Property") only if it is developed in accordance with the Recorded Map 10692 – i.e., if the 705-Unit Project is developed. If any proposed development "deviates" from the Recorded Map 10692, an amendment to the FTSP is required to "(1) determine an appropriate density cap for the property; (2) establish new development regulations for the Bridlewood Residential District; and (3) be consistent with all of the provisions of the Specific Plan." (FTSP at page III-20, para. 3.2(b).) By seeking to create an entirely new exemption from the FTSP for the Property, and by submitting an entirely new subdivision map for the Property, the developer has acknowledged that the 299-Unit Project deviates from Recorded Map 10692 and is not covered by the exemption from the FTSP provided for the 705-Unit Project. DRSEIR 566 incorrectly concludes that the 299-Unit Project is exempt from the FTSP because it "would be in substantial compliance with or consistent with previously approved and Recorded Map 10692." If the DRSEIR seeks to rely on this patently false conclusion, some attempt must be made to support it by providing a good faith comparison to the 705-Unit Project and the 299-Unit Project to prove that they are the same project. If they are essentially the same project, then the environmental analysis set forth in the DRSEIR is fatally flawed because the 299-Unit Project is portrayed as involving far fewer impacts.

Connor 3 – Response

The F/TSP established a specific "residential district" for the Saddleback Meadows property. The principal that either the approved map moves forward or an alternative is considered. The F/TSP never ruled out consideration of an alternative to the 705-lot plan, particularly that which would represent a lessening of environmental impact as compared to the recorded map. Section 3.2 "Special Provisions" of the F/TSP states: "Any development proposal which deviates from the approved Saddleback Meadows Planned Community zoning and Recorded Tract 10692 *and which cannot be found to be in substantial compliance* with these approvals shall require a Specific Plan amendment" (emphasis added). As stated in Section 4.1.2 of the Draft Revised Subsequent EIR, the proposed project would be in substantial compliance with the recorded map with respect to residential gross density and providing for the provision of a substantial increase in open space and the presence of a wildlife corridor as outlined in the F/TSP. Therefore the proposed project is in compliance with the residential district provisions of the F/TSP. Substantial compliance does not require that the proposed project (299 residential units) result in the same impacts as the recorded map (705 units). Many of the impacts associated with the 705-unit project were eliminated or substantially reduced due to compliance with the conditions of the Biological Opinion (BO)

(included as Appendix I.4 of the Draft Revised Subsequent EIR), changes in the existing environment, and reduction of trip generation and other impacts directly correlated with the number of residential units.

Connor 4 – Comment

2. *DRSEIR fails to identify, analyze, and mitigate the impacts – including the adverse precedent – associated with the creation of an entirely new exemption for the Property from the goals, objectives, components, regulations, and guidelines of the FTSP. If a new exemption is to be created, the DRSEIR should (a) identify all other projects, if any, which have received a similar exemption from the FTSP and (b) identify each of the goals, objectives, components, regulations, and guidelines of the FTSP with which the 299-Unit Project is inconsistent, but will nonetheless be exempted from, including, but are not limited to, (a) the goals and objectives relating to rural character and resource preservation; (b) the resources overlay component relating to wildlife corridors, oak woodlands, tree management/preservation, and streambeds; (c) Bridlewood Residential District Regulations; (d) landscaping regulations; (e) grading standards relating to the maximum height of manufactured slopes and the 70% "natural open space" requirement; (f) area plan submittal requirements; (g) grading, drainage and site planning guidelines; and (h) architectural guidelines.*

Connor 4 – Response

As stated in Section 3.3.2 (Connor 3 – Response) above, the proposed project is in substantial compliance with the approved map does not propose development beyond the boundaries of the previously approved impact area, and would not result in the " . . . creation of an entirely new exemption for the property from the goals, objectives, components, regulations and guidelines of the F/TSP." The proposed project is not an exemption from the Bridlewood Residential District. The proposed zone change would amend the F/TSP Bridlewood District.

Connor 5 – Comment

3. *DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on the Ramakrishna Monastery and St. Michael's Abbey. At page 4.1-13, under the heading "Level of Significance Before Mitigation," DRSEIR 566 concludes that "due to a natural space buffer, implementation of the proposed project would not result in significant land use compatibility impacts to the Rama Krishna Monastery or St. Michael's Abbey." However, at page 19, under the heading "Significant Impacts of the Project Prior to Mitigation," "Addendum PA980103 to Certified Final Subsequent Environmental Impact Report 566" ("Addendum No. 1") earlier concluded that the 299-Unit Project "would result in significant land use compatibility impacts to O'Neill Regional Park, the Ramakrishna Monastery, St. Michael's Abbey, and surrounding residential communities." Moreover, despite the incorporation of the identical "Project Design Features" which are proposed under DRSEIR 566, "Draft Environmental Impact Report No. 561" ("DEIR 561") concluded that the very similar 318-unit single family housing project which it analyzed would have a significant, unavoidable, adverse impact on land use*

compatibility with O'Neill Regional Park, the Ramakrishna Monastery, and St. Michael's Abbey. (DEIR 561 at page 8-1.) The DRSEIR fails to explain or reconcile these clearly inconsistent and contradictory conclusions.

Connor 5 – Response

It should be noted that Draft EIR 561 was not certified and therefore, its preliminary findings are subject to revision based on refined and/or updated analysis. As stated in Section 9.0 of the Draft Revised Subsequent EIR, as a result of changes in project design and the construction of other developments within the F/TSP, all unavoidable adverse impacts (with the exception of cumulative air quality) included in previous documentation have been eliminated. The proposed project includes additional buffer space between the Abbey and the development (from a 300-foot natural open space buffer to a 1,200-foot buffer). This refinement was in response to specific suggestions from the Abbey.

In addition, the current proposed project includes a 2,000-foot natural open space buffer between the project development and the Rama Krishna Monastery. Although, the dimension of this buffer is the same as for the project evaluated in the previous environmental document (Subsequent EIR No. 566), the impact is no longer significant due to the reduction of units in the project and average lot sizes that are more than twice as large as those included in the project evaluated in the previous environmental document[1] (from 705 manufactured residential units to 299 single-family units). Therefore, no impacts with regard to land use would occur.

Connor 6 – Comment

4. *DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on O'Neill Regional Park. At page 4.1-11, the DRSEIR concludes that the 299-Unit Project is "not incompatible" with O'Neill Regional Park. This conclusion is reached based on the fact that a portion of the Property is to be dedicated to the County of Orange (the "County") for incorporation into O'Neill Regional Park and that portion of the Property purportedly would cause O'Neill Regional Park to be "substantially buffered from the development by natural undisturbed, open space and topography." However, a comparison of the Open Space Plan for the 299-Unit Project (Figure 2.11) and any map or diagram indicating the surrounding property boundaries (e.g., Figure 4.1.2, 2.3, or 2.6) reveals that the 299-Unit Project abuts a significant portion of the property boundary shared by the Property and O'Neill Regional Park. Indeed, the 299-Unit Project will require grading and fuel modification activities to be conducted in a portion of O'Neill Regional Park. (See, e.g., Figure 4.2.5 (grading cannot conveniently stop at property boundary as indicated in Removal Area "C") and 4.12.1.) Hence, not only does the DRSEIR fail to provide any factual support for its conclusion that the 299-Unit Project is "not incompatible" with*

[1] *Residential units have been reduced from 705 to 299 and average lot sizes have increased from 3,900 square feet to about 7,000 square feet.*

O'Neill Regional Park, but it actually provides information demonstrating that this conclusion is obviously incorrect. Moreover, as noted in the previous paragraph, earlier environmental documents regarding the 299-Unit Project and the similar 318-Unit Project concluded that such projects did have significant land use compatibility impacts on O'Neill Regional Park, but DRSEIR 566 has not explained or reconciled these inconsistencies.

Connor 6 – Response

Land use compatibility is based on the long-term relationship between the proposed project and O'Neill Regional Park. Temporary construction impacts caused by grading are not considered a land use compatibility issue. Under existing conditions, a portion of the park abuts residential lots in the Hidden Ridge, Painted Trail and Rancho Santa Margarita residential projects (please refer to Figures 3.1 and 4.1.1 of the Draft Revised Subsequent EIR). This exposes park users to existing vistas of residential development. In addition, a portion of the park is operated as a private nursery.

The proposed project includes offsetting residential lots by 320 to 750 feet from the existing park boundary. Some lots are located at approximately 65 feet from the park boundary, but are 25 or more feet below a ridge and thus visually shielded from the park. Therefore, the proposed project would not be incompatible with the adjacent O'Neill Regional Park and no significant impacts would occur. No grading will occur in O'Neill Regional Park.

Please see Section 3.3.2 (Connor 8 – Response) of this Response to Comments document regarding fuel modification and potential grading encroachment.

Connor 7 – Comment

5. *DRSEIR 566 fails to properly identify, analyze, and mitigate any of the environmental impacts which would result if title and possession of a significant portion of O'Neill Regional Park were to revert back to Vedanta due to any construction or other activities associated with the 299-Unit Project. In 1974, Vedanta granted the approximately 245 acres located immediately to the south of the Property, and the west and southwest of the Monastery, to the County so that the land could be made a part of O'Neill Regional Park and be permanently maintained as open space. The grant of this land included several conditions subsequent pursuant to which the land would revert back to Vedanta in the event of a breach of any of those conditions. The conditions expressly prohibit any grading activities, the placement of any soils, and the removal of any trees, shrubs, or natural growth from the land gifted to the County. All of the grading maps in the DRSEIR attempt to show that no grading will be conducted in O'Neill Regional Park. For example, Figure 4.2.5 shows that when the limits of remedial grading—which generally trace the contours of the land and the outline of the geotechnical conditions which purportedly are to be remedied—reach the property line between the Property and O'Neill Regional Park, the limits of remedial grading miraculously make a sharp turn and follow precisely along the property line in order to stay out of O'Neill Regional Park. Clearly, this is not possible and, as currently designed, the 299-Unit Project requires certain grading – and also fuel-*

modification activities – to be conducted within the portion of O'Neill Regional Park which Vedanta gave to the County. Moreover, the 299-Unit Project provides for a storm drain to discharge into the natural drainage course which runs directly into O'Neill Regional Park. (See Figure 4.3.2.) Each of these constitutes a breach of the conditions subsequent to Vedanta's gift of land to the County and would cause such land to revert back to Vedanta. DRSEIR 566 should acknowledge his fact and identify, analyze, and mitigate the environmental impacts which would result therefrom. If the DRSEIR is going to continue to insist that no grading or other activities will be conducted within the O'Neill Regional Park, then DRSEIR 566 should provide an explanation of how grading and all other activities will be excluded from O'Neill Regional Park.

Connor 7 – Response

While the comment related to the remedial grading line for the proposed project is generally correct, the comment does not consider the opportunity to adjust the remedial grading line in response to site specific conditions. The remedial grading line shown in Figure 4.2.5 is located at the top of a back-cut into the development area. As such, the back-cut can be adjusted for short stretches in order to control its precise location and stay away from sensitive areas, such as O'Neill Regional Park. Adjacency to the area in question in the comment is an example of such a site-specific design.

The commenter is also correct regarding Figure 4.12.1 of the Draft Revised Subsequent EIR, which depicts off-site fuel modification. Figure 4.12.1 depicted the standard fuel modification of the Orange County Fire Authority (OCFA). However, the OCFA also allows alternate methods in response to site-specific conditions. A revised Figure 4.12.1 is included in Section 2.0 of this Response to Comments document and depicts the use of an alternative method (i.e., expansion of the 50-foot irrigated wet zone) to confine the fuel modification to the limits of the property.

As shown in Figure 4.3.1 in the Draft Revised Subsequent EIR, the project site currently drains towards O'Neill Regional Park. Post development hydrology would be in substantial conformance with existing hydrologic conditions and thus not result in a significant impact under CEQA. However, this would not constitute a breach of the conditions regarding gifting the land to the County, as it would not change the existing drainage conditions.

Connor 8 – Comment

6. *DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on all surrounding residential areas. At page 4.1-10, the DRSEIR states that the 299-Unit Project "has a lower gross density than the surrounding area projects." However, in reaching this conclusion, the DRSEIR 566 relies solely upon two nearby projects which are located outside the FTSP – i.e., Portola Hills and Hidden Hills/Hidden Ridge – while ignoring two nearby residential projects that are within the FTSP. (See Table 4.1.2.) DRSEIR 566 fails to acknowledge or analyze the fact that the "gross density" for the 299-Unit Project (1.3 dwelling units/acre) is double that of Santiago Canyon Estates (gross density*

of 0.66 dwelling units/acre) and four times that of the proposed Saddle Creek/Saddle Crest (gross density 0.33 dwelling units/acre.)

Connor 8 – Response

The commenter is correct in that gross density for that of Santiago Canyon Estates and the proposed Saddle Creek/Saddle Crest would be lower than that for the proposed project. As stated in Section 4.1.1 of the Draft Revised Subsequent EIR, density comparisons were made with two developments adjacent and closest to the proposed project: Hidden Hills/Hidden Ridge (which abuts the project site to the south) and Portola Hills (which is located west of the project site across El Toro Road). The existing density for the neighboring properties Portola Hills and Hidden Hills/Hidden Ridge, if applied to this site, would allow 666 dwelling units for the proposed project. The F/TSP zoning for the Upper Aliso Residential District to the north would allow 222 dwelling units, while the F/TSP zoning for the Trabuco Canyon Residential District to the east would allow 111 dwelling units.

The General Plan designates Saddleback Meadows and neighboring sites to the south and west as "Suburban Residential." Density allowed under this category ranges from 0.5 dwelling units/acre (du/ac) to 18 du/ac. The proposed project includes 1.4 du/ac. Neighboring property to the north and east are designated as "Rural Residential." Saddleback Meadows may be regarded as a rural transition area because of its location along a heavily traveled road (El Toro Road) and at the western edge of the F/TSP area. Thus, 299 units is a reasonable density for this location.

Connor 9 – Comment

7. *DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts associated with the inconsistency between the 299-Unit Project and the Aliso Creek Corridor Specific Plan. At page 4.1-12, the DRSEIR concludes that the 299-Unit Project "would be in conformance with the Aliso Creek Corridor Specific Plan" and, therefore, makes no attempt to mitigate the impact of any inconsistency with such Specific Plan. However, at page 19, Addendum No. 1 concludes that the 299-Unit Project "would also conflict with policies of the Aliso Creek Corridor Specific Plan." DRSEIR 566 fails to explain or reconcile these inconsistent and contradictory conclusions.*

Connor 9 – Response

As stated in Section 4.1.2 of the Draft Revised Subsequent EIR, the Aliso Creek Corridor Specific Plan pre-dates both the F/TSP and Recorded Tract Map 10692 and sets land use goals, objectives and policies for a large regional planning area from the Cleveland National Forest to the Pacific Ocean. The F/TSP further refines these goals, objectives and policies to guide future development in the Foothill-Trabuco area. The proposed project would incorporate several aspects of the Aliso Creek Corridor Specific Plan (i.e., riparian preservation and habitat conductivity, Section 4.8) and

have also been included to reduce impacts to Aliso Creek and the surrounding area (i.e., proposed drain system to reduce sediment transport, Section 4.3).

Connor 10 – Comment

8. *DRSEIR 566 fails to identify, analyze, and mitigate the grading and other geophysical impacts associated with the 299-Unit Project. The impacts and mitigation measures which DRSEIR 566 fails to address, include, but are not limited to, the following:*

   a *The impacts which the grading activities for the 299-Unit Project will have on the Trabuco Canyon area and its residents based on how long it will take to complete the proposed grading. Although all previous environmental impact reports the County has prepared for the Property have likewise failed to fully address these impacts, they did, at least, concede in the "Geophysical Resources" subsection that, depending on the project, grading would take between 10 and 18 months to complete, based on an average daily grading quantity of 30,000 cubic yards. (See Addendum No. 1 at p. 21; "Final Subsequent Environmental Impact Report No. 566" ("FSEIR 566") at p. 4-22; DEIR 561 at p. 4-28.) The "Geophysical Resources" subsection of the DRSEIR, however, is strangely silent on this issue and the "Project Description" section (p. 2-16) now simply contains a single sentence and footnote stating that grading will require approximately 13 months to complete based on an average of 30,000 cubic yards per day and 21-work days per month. Not only is this estimate incorrect using the County's own numbers (a total of 9.25 million cubic yards of grading at an average of 30,000 cubic yard per day and 21-work days per month translates to 14.68 months of grading), but, as Vedanta and its consultants have repeatedly stated in connection with all previously proposed projects, an average of 30,000 cubic yards per day – especially for the remedial grading – is very unrealistic. Although 30,000 cubic yards per say may possibly be achieved for the 2.45 million cubic yards of conventional grading, a figure of 1,000 cubic yards per day is a much more reasonable assumption for the 6.8 million cubic yards of remedial grading that is proposed. Using these figures (and DRSEIR 566's estimate of 21-work days per month), grading would take longer than 36 months or 3 years to complete. The DRSEIR fails to justify its estimate regarding how long grading for the 299-Unit Project will take, and it also fails to address the impacts that conducting grading activities for that amount of time would have on Trabuco Canyon and its residents – including, but not limited to, the excessive noise, dust, and traffic delays associated with excavating and recompacting more than nine million cubic yards of soil which will remain exposed to the wind during dry seasons, and the rain during wet seasons, over the course of the several years it will take to complete all of the proposed rough grading.*

Connor 10 – Response

The commenter is correct, the grading is projected to take about 15 months, not the 13 months stated on page 2-16 of the Draft Revised Subsequent EIR. Please see Section 2.0 of this Response to Comments document. The *average* grading rate of 30,000 cubic yards per day is based on the geotechnical engineer's experience of similar projects and has been confirmed by a local grading firm

based on their experience on similar projects. No traffic delays are projected due to the grading operations. Actual grading production on any given day will vary over the course of the project; however, the average grading rate of 30,000 cubic yards per days can be sustained over the course of the project. Dust and noise issues were analyzed in Sections 4.6 and 4.7, respectively, of the Draft Revised Subsequent EIR.

Connor 11 – Comment

b *The impacts associated with the heavy ground water seepage into the excavations at the site which DRSEIR 566 anticipates will occur (p. 4.2-18 mitigation measure M 2-20), including, but not limited to (i) the impact of the discharge of collected groundwater seepage, (ii) the impact of the interruption in subsurface ground water flow on downstream wells, and (iii) the impacts of the presence of the deep water shear keys for buttress fills on the final groundwater conditions. The DRSEIR also fails to address whether there is a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill.*

Connor 11 – Response

The comment is referred to the full discussion of mitigation (mitigation measure M 2-20) in Section 4.2 of the Draft Revised Subsequent EIR; which indicates that seepage will reach "...maximum discharge in two to five days...decreasing in volume with time... being less at higher site elevations as well as in cuts made in late in the year." Therefore, the discharge of collected groundwater seepage is expected to be minor over the course of the grading effort.

Connor 12 – Comment

c *The impact of buttress backcut failures. DRSEIR 566 projects a buttress backcut failure rate of 10 percent (See DRSEIR 566 at p. 4.2-20, mitigation measure M 2-34.) However, due to the subsurface conditions typified by landslides within landslides, this 10 percent estimate is overly optimistic. Moreover, the effect of backcut failures on upstream and asjacent properties, regardless of the percentage of failures, are not addressed.*

Connor 12 – Response

As noted in mitigation measure M 2-34 (page 4.2-20 of the Draft Revised Subsequent EIR), the ten percent back cut failure rate is a statistical probability and not site specific. The mitigation measure includes industry standards that would be employed to effectively reduce the risk of back cut failures and confine such failures to minor "pop outs" within the limits of grading.

Connor 13 – Comment

d *The impact of new soil stability problems which will be created by increasing the amount of water that is discharged into the Property's natural drainage courses and the ground water table. (As stated in the "Hydrology" and "Water Quality" subsections of DRSEIR 566 daily nuisance and storm water runoff will be discharged into the Property's natural drainage courses.) In particular, (i) the increased erosion that will occur in the Property's natural drainage courses during storm flows due to the fact that the weak alluvial soils which are present in those courses will have been softened by the daily nuisance runoff that will be discharged into such drainage courses, (ii) the weakened support for existing landslides which will also result from the discharge of daily nuisance runoff and increased storm water runoff into the Property's natural drainage courses, and (iii) the new instability problems which will be created by the ground water levels being raised by the infiltration of irrigation and other new sources of water.*

Connor 13 – Response

As noted in Section 4.3 of the Draft Revised Subsequent EIR, the property is currently subject to erosion as can be seen in the highly incised drainage courses that now characterize the property. The revegetation of the open space areas and the natural drainage courses as outlined in Section 4.8 Draft Revised Subsequent EIR would reduce or eliminate most of this erosion. The other two issues raised by the commenter have been considered by the geotechnical consultant and will be further analyzed in the final geotechnical report (Standard County Condition SC 2-1). However, to ensure compliance with these important issues an additional mitigation measures has been added. Please see Section 2.0 of this Response to Comments document.

Connor 14 – Comment

e *The special grading requirements which are necessary to perform the extremely deep fill that are proposed. Although the DRSEIR acknowledges that fill depths will exceed 50 feet and settlement associated with those fills of 4 to 6 inches can be expected (p. 4.2-20) mitigation measure M 2-33), fill depths of up to 130 feet will actually be required to construct the proposed shear keys for the buttress fills. Fills of such great depths require, inter alia, (i) additional evaluation that may necessitate compaction criteria well in excess of code minimums, (ii) special moisture conditioning of fill during compaction, and (iii) long-term settlement monitoring prior to building construction.*

Connor 14 – Response

Comment noted. Standard County Condition SC 2-1 in Section 4.2.4 of the Draft Revised Subsequent EIR requires the preparation of a final geotechnical report prior to issuance of grading permits, which would ensure compliance with the County's Grading Manual, soil compaction requirements. Additionally, mitigation measure M 2-16 specifies compaction requirements, and mitigation measure M 2-27 requires on-going testing and observation during construction.

Connor 15 – Comment

f *Imposing a 100 percent performance bond to cover the possibility of the developer's failure to complete the extremely large amount of conventional and remedial grading required for the 299-Unit Project.*

Connor 15 – Response

A 100 percent performance bond is a standard condition of obtaining a Grading Permit from the County of Orange. The bond would cover both remedial and mass grading for the proposed project.

Connor 16 – Comment

9. *DRSEIR 566 fails to properly identify, analyze, and mitigate the hydrology impacts associated with the 299-Unit Project. The impacts which the DRSEIR fails to address, include, but are not limited to, the impacts of discharging daily nuisance water runoff and increased storm water runoff into the natural drainage courses of the Property. The natural drainage courses of the Property are dry for a majority of the year (only receiving water during storms). However, the daily nuisance water runoff from the 299-Unit Project will cause the drainage courses to be wet year-round and, therefore, more susceptible to, inter alia, erosion. Moreover, the character of the water being dumped into the natural drainage courses will change from slower-moving water carrying soil and debris to faster-moving water that has less soil and debris and, therefore, is prone to picking up soil and debris. DRSEIR 566 acknowledges that, by increasing the flows in the Property's natural drainage courses, the 299-Unit Project will have erosion and sedimentation impacts, but the DRSEIR fails to address any of these impacts. Instead, any analysis of this issue is improperly deferred until after the certification of DRSEIR 566 – i.e., until a point in the approval process where the public is not permitted an opportunity to review and comment on that analysis, and the County is not required to respond to any public comments.*

Connor 16 – Response

Hydrology impacts have been addressed in both Sections 4.3 and 4.8 of the Draft Revised Subsequent EIR. The biological mitigation measures take into account the addition of nuisance flows and provides for a riparian habitat designed to thrive under the potentially year round flows, thus reducing the potential for increased erosion. In addition, the re-vegetation of the degraded portions of the property (which will remain in open space) will also result in reduced flows over that currently experienced on the project site. The project has been designed to provide more storm drain outlets than typically found in residential subdivisions. This will distribute flows to most of the natural drainages rather than concentrate runoff from the project in one or two of the natural drainages.

Connor 17 – Comment

10. *DRSEIR 566 fails to identify, analyze, or mitigate any of the water quality impacts associated with the 299-Unit Project because the entire "Water Quality" subsection of the DRSEIR is based upon a conceptual water quality management plan for a different project. At page 4.4-1, the DRSEIR states that its "Water Quality" subsection "summarizes the findings and conclusions of the Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230 County of Orange, California" which is included in the DRSEIR as Appendix "E." However, as its complete title indicates, the "Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230, Development Alternative for 283 Residential Home sites, County of Orange, CA" which is found in Appendix "E" was prepared to address a different project – i.e., the 283-unit single unit family housing project which is Alternative No. 8 in the DRSEIR. As such, the entire "Water Quality" subsection must be revised to correctly identify, analyze, and mitigate the water quality impacts of the 299-Unit Project as opposed to the 283-Unit Project which it currently addresses.*

Connor 17 – Response

The commenter is correct that the Conceptual Water Quality Management Plan included as Appendix E of the Draft Revised Subsequent EIR was for one of the project alternatives. The correct plan has been included as Appendix D of this Response to Comment document. However, Section 4.4 of the Draft Revised Subsequent EIR was developed based on a Water Quality Management Plan developed for the 299 proposed project.

Connor 18 – Comment

11. *Assuming arguendo that the "Water Quality" subsection of DRSEIR 566 did address the 299-Unit Project, such subsection nonetheless fails to fully and properly identify, analyze and mitigate the water quality impacts associated with the 299-Unit Project because, inter alia, it fails to fully describe how pollutants will be filtered from the daily nuisance and storm water runoff from the 299-Unit Project and what the impacts will be of discharging polluted runoff into the Property's natural drainage courses and O'Neill Regional Park, and the area's groundwater. The DRSEIR claims that a riverine system will be used to filter pollutants from the daily nuisance and storm water runoff from approximately 80 percent of the 299-Unit Project. (See, e.g., p. 4.4-13 at PDF 4-1.) In reliance on the riverine system, stormceptor filters will be installed on the storm drains serving the 20 percent of the Project which is located in the northeastern quadrant of the Property only. However, nowhere is it depicted or explained in DRSEIR 566 how flows from the 299-Unit Project will be directed into the riverine system. Indeed, Figure 4.3.2, entitled Proposed Drainage Improvements, shows that all of the runoff from the 299-Unit Project will be directed into the storm drain system and discharged into the Property's natural drainage courses, but the storm drains serving a majority of the 299-Unit Project will not have filters to reduce the amount of pollution and runoff. The DRSEIR also acknowledges that the riverine system is designed to accommodate low flows only, but it fails to explain how any flows that exceed the capacity of the riverine system will be filtered for pollutants given that*

the storm drains collecting runoff from 80 percent of the Project will not have filters installed due to the existence of the riverine system. Moreover, the DRSEIR acknowledges that the filters that will be installed will not trap bacterial indicators or toxic constituents. (DRSEIR 566 at p. 4.4-11.) Instead the DRSEIR relies upon 3,300 lineal feet of the Property's natural drainage courses to filter these pollutants. However, the DRSEIR does not in any way address the impacts that these pollutants will have on the Property's natural drainage courses – some of which flow into O'Neill Regional Park – and the area's groundwater.

Connor 18 – Response

Figure 4.3.2 of the Draft Revised Subsequent EIR depicts graphical representations of the storm drain system and is not intended to depict actual storm drain locations. As noted, the design of the riverine system is designed to accommodate low flows since it is the nuisance flows and the first flows of the rainy season that carry the predominant urban pollutants. High stage flows are generally free from pollutants and can bypass the riverine system. As stated in Section 4.3 of the Draft Revised Subsequent EIR, use of the riverine system and the stormceptors would remove the urban pollutants and result in less than significant impacts. Detailed design of the storm drain and water quality components will be accomplished as noted in the Standard County Conditions (SC 3-2 and SC 4-2).

Connor 19 – Comment

12. *DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts the 299-Unit Project would have on the Natural Communities Conservation Plan ("NCCP") program and the County's ability to complete its Southern NCCP Subregion and to link the Southern and Central/Coastal NCCP Subregions. Previous environmental impact reports for the Property included four or more pages of text addressing the NCCP and the impacts of the proposed projects on the NCCP. (See, e.g., FSEIR 566 at pp. 4-127 – 4-130, 4-144; DEIR 561 at 99. 4-123 – 4-126, 4-139 – 4-140.) The DRSEIR, however, contains less than one page of very cursory discussion regarding the NCCP and it fails in any way to address the impacts of the 299-Unit Project on the NCCP and the County's NCCP planning efforts. Moreover, DRSEIR 566 fails to, inter alia, (i) acknowledge that the United States Fish and Wildlife Service and the California Department of Fish and Game (collectively, the "Wildlife Agencies") have repeatedly informed the County that the Property provides a critical habitat corridor/linkage necessary for the completion of the NCCP Southern Subregion and (ii) identify the findings which the NCCP requires to be made with respect to the impacts of the 299-Unit Project will have on the coastal sage scrub habitat located on the Property. The DRSEIR should be revised to include an appropriate and complete discussion of the impacts of the 299-Unit Project on the NCCP.*

Connor 19 – Response

Section 4.8 of the Draft Revised Subsequent EIR discusses the key issues of wildlife connectivity and preservation of significant resources (i.e., Riverside fairy shrimp, wetlands, coastal sage scrub and coast live oak woodland). The goals of the Natural Community Conservation Planning Program (NCCP) are discussed in Section 4.8.1. Please see Section 3.2.1 (USFWS/CDFG 4 – Response) of this Response to Comments document.

Connor 20 – Comment

13. *DRSEIR 566 fails to properly identify, analyze, and mitigate the impact of the 299-Unit Project on wildlife movement on the Property and throughout the NCCP Southern and Central/Coastal Subregions. The DRSEIR touts that the 299-Unit Project has been designed to incorporate a wildlife movement corridor that will permit wildlife to continue to travel safely across the Property. (See, e.g., DRSEIR 566 at p. 4.8-27.) However, the DRSEIR fails to acknowledge that the Wildlife Agencies have previously informed the County that the wildlife corridor proposed as part of the 299-Unit Project does not "retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows." (October 29, 1998 Letter from the Wildlife Agencies to the Orange County Board of Supervisors.) As such, the DRSEIR needs to be revised to contain an analysis of the adequacy of the proposed wildlife movement corridor/linkage and the impact of failing to provide an adequate corridor/linkage.*

Connor 20 – Response

Please see Section 3.2.1 (USFWS/CDFG 4 – Response) of this Response to Comments document.

Connor 21 – Comment

14. *DRSEIR 566 fails to identify, analyze, and mitigate the biological resources impacts associated with the 299-Unit Project because, inter alia:*

    a *The DRSEIR fails to properly identify the sensitivity of the intermediate mariposa lily (calochortus weedii var intermedous) and based thereon erroneously concludes that there will be no significant impact of it requiring any mitigation. (See DRSEIR 566 at p. 4.8-21 and Appendix I.1 at p. 17). In Appendix I.1, the DRSEIR erroneously identifies the sensitivity of the intermediate mariposa lily as California Native Plant Society ("CNPS") List 4. (See Appendix I.1 at p. 9.) In the text, the DRSEIR correctly lists the intermediate mariposa lily as CNPS List 1B, but then proceeds to conclude that, due to its low sensitivity status, the impact of destroying all plants found on the Property is not significant. (See DRSEIR 566 at pp. 4.8-13, 4.8-21.) However, as explained in Appendix "C" to Appendix I..1 of the DRSEIR, the presence of intermediate mariposa lily on the CNPS List 1B means that it is "rare, threatened, or endangered in California and elsewhere and is eligible for state*

listing." Indeed, the only higher listing under the CNPS system is List 1A which includes only those plants that are presumed to be extinct. DRSEIR 566 needs to be revised to correct the inconsistency between its text and Appendix I.1 and, if it is going to maintain its conclusion that there will be no significant impacts on the intermediate mariposa lily, it need to provide facts to support such conclusion because, contrary to how the DRSEIR currently reads, the intermediate mariposa lily does not have a low sensitivity status.

Connor 21 – Response

Section 4.8 and Appendix I of the Draft Revised Subsequent EIR correctly identify the intermediate Mariposa lily as a CNPS list 1B species. However, the commenter is correct regarding an inconsistency as Table 2 of Appendix I.1 incorrectly identifies the species as a list 4 species.

Under CEQA, the Final EIR (which consists of the Draft EIR and the Response to Comments) is the primary document considered during approval or rejection of a project by the lead agency. Although impacts to this sensitive species were not assessed in the Draft EIR as being significant, due to the limited number of individuals impacted, an additional mitigation requirement has been added to the project in response to this and other comments. The applicant has agreed to transplant the potentially impacted bulbs of this species to appropriate open space areas on-site. Please see Section 2.0 of this Response to Comments document.

Connor 22 – Comment

b *The DRSEIR erroneously concludes that the 299-Unit Project will not have a significant impact on the federally-listed endangered Riverside fairy shrimp because the impacts to it will be mitigated to a level of insignificance by the creation of several ephemeral ponds on the Property. However, as the Biological Opinion on the Saddleback Meadows Residential Development Project found in Appendix I.4 states, at pages 19-20, creation of such ponds is experimental and has never been done successfully, especially with respect to the conditions found on the Property.*

Connor 22 – Response

The mitigation for the Riverside fairy shrimp was developed through extensive discussions with USFWS. Additionally, the biological consultant for the project has constructed several restoration sites in San Diego County that currently support Riverside fairy shrimp populations. Many of the known locations of Riverside fairy shrimp, including ponds on-site, occur in man-made ponds. The proposed mitigation basins will be designed to provide appropriate hydrological conditions necessary for the shrimp to persist. The ponds are being created at a greater than 2:1 mitigation ratio, resulting in a net long-term increase in fairy shrimp on-site. The proposed project also provides for a detailed ten-year monitoring program, as well as permanent management of open space on-site including existing ponds proposed for preservation. At the conclusion of the ten-year

monitoring period, the ponds as well as the open space will be managed and maintained by a third-party conservation group. Under existing conditions, that is with no active monitoring or maintenance, two of the ponds have been lost due to siltation or breaching with a third under constant repair by the rancher.

Connor 23 – Comment

c *Although one of the technical reports found in the appendices to the DRSEIR 566 acknowledges that the Property has been designated as critical habitat for the Riverside fairy shrimp and the coastal California gnatcatcher pursuant to the U.S. Endangered Species Act, the text of the DRSEIR fails to acknowledge this fact. Neither the text of DRSEIR 566, nor any of the appendices thereto, address in any way the significance of the designation.*

Connor 23 – Response

The Biological Opinion (BO) referenced and included as Appendix I.4 in the Draft Revised Subsequent EIR specifically addresses critical habitat for both the Riverside fairy shrimp and the coastal California gnatcatcher. As noted in Standard County Conditions SC 8-5 in Section 4.8.4 of the Draft Revised Subsequent EIR, the applicant is required to provide written proof that the activity complies with the Federal Endangered Species Act. SC 8-5 specifically states, "A BO issued by the USFWS shall be considered written proof." The BO issued for the proposed project provides that written proof.

Connor 24 – Comment

d *The DRSEIR fails to properly and adequately mitigate the impacts the 299-Unit Project will have by destroying the hundreds of acres of oak woodlands, vernal ponds, coastal sage scrub habitat, and other biotic communities on the Property which are home to sensitive, threatened, or endangered flora and fauna. The mitigation DRSEIR 566 offers regarding these impacts fall far below that which is required by law, inter alia, the FTSP, the NCCP, the state and federal endanger* [sic] *species legislation.*

Connor 24 – Response

The biological resources and impacts to those resources were discussed in Section 4.8 and detailed technical reports included as Appendix I of the Draft Revised Subsequent EIR. The proposed project has been subject to review of the regulatory agencies including CDFG, which issued a draft Streambed Alteration Agreement (1603) for the applicant's signature in December 2001; USFWS, which issued a final BO in October 2001; and the U.S. Army Corps of Engineers (USACE) as part of their processing of an Individual 404 Permit. The draft 1603 Permit is included in Appendix B of this Response to Comments document.

See also Section 3.2.1 (USFWS/CDFG comments/responses) of this Response to Comments document.

Connor 25 – Comment

15. *DRSEIR 566 fails to properly identify, analyze and mitigate the "Aesthetic/Visual" impacts associated with the 299-Unit Project. At page 4.9-22 through 4.9-23, the DRSEIR concludes that the 299-Unit Project will not have a significant aesthetic or visual impact prior to mitigation. However, at page 4-192, DEIR 561 concludes that, despite the use of many of the same contoured grading and viewshed screening techniques which are proposed for the 299-Unit Project, the 318-unit single family housing project which was the subject of DEIR 561 would nonetheless have unavoidable significant aesthetic and visual impacts (including night glare impacts) on the Ramakarishna Monastery, St. Michael's Abbey, and O'Neill Regional Park. DRSEIR 566 fails to explain and reconcile these inconsistent and conflicting conclusions.*

Connor 25 – Response

As noted above (Connor 5 – Response), Draft EIR 561 was not certified and therefore its preliminary findings are subject to revision based on refined and/or updated analysis. The state of the art of computer modeling has allowed a more sophisticated analysis of visual impact than was possible at the time Draft EIR 561 was prepared. The commenter is referred to Section 4.9 of the Draft Revised Subsequent EIR for the updated visual analysis provided for the proposed project.

Connor 26 – Comment

16. *DRSEIR 566 fails to fully and properly identify and analyze the importance of the archaeological sites found on the Property. At page 4.10-19, the DRSEIR concludes that archaeological site CA-ORA-711 is the only site on the Property which is deemed to be important or significant. However, at page 104, Addendum No. 1 concludes that there are a total of four archaeological sites on the Property which are deemed to be important or significant. Those sites are CA-ORA-710, CA-ORA-713, CA-ORA-715, and CA-ORA-1435H. DRSEIR 566 should have an analysis explaining and reconciling these inconsistent conclusions regarding the important of certain of the archaeological sites found on the Property.*

Connor 26 – Response

As stated in Appendix J of the Draft Revised Subsequent EIR, CA-ORA-1435H was deemed not eligible for testing per guidelines of the National Registrar of Historic Places, and CA-ORA-713 and CA-ORA-715 were determined to not be significant (see letter dated August 6, 2001 in Appendix J).

Site CA-ORA-710 will be covered and protected as part of a biological mitigation area within the project site (please see Project Design Feature PDF 10-1 on pages 4.10-15/4.10-16 of the Draft Revised Subsequent EIR).

Connor 27 – Comment

17. *DRSEIR 566 fails to identify, analyze, and mitigate the impacts associated with project "Hazards" as both the Initial Study and the Introduction to the DRSEIR (see [page I-4) indicated that it would. Indeed, the Initial Study identifies "Hazards" as one of six areas of potentially significant impacts which might result from the 299-Unit Project, but DRSEIR 566 fails to contain a section identifying and analyzing such impacts. All previous environmental documentation for the Property contained a separate section in which "Hazards" such as wildfire, emergency access, and wildlife interaction were all identified and analyzed. (See Addendum No. 1 at pp. 4-219 – 4-228.) Although the DRSEIR does address certain wildfire hazards and fuel modification requirements under the "Public Services – Fire Protection" subsection, it does not address any other hazards, such as the fact that the Project has only one main access road, which Addendum No. 1 identifies as an area of concern and which the Orange County Fire Authority proposed mitigation measures to specifically address. An analysis of the "Hazards" analyzed in the previous environmental documents for the Property should be conducted with respect to the 299-Unit Project.*

Connor 27 – Response

Section 4.12 of the Draft Revised Subsequent EIR includes an analysis of the appropriate hazards relevant to the proposed project, in the context of existing conditions. The Initial Study identified wildland fire as the only hazard for the proposed project (see Appendix A of the Draft Revised Subsequent EIR). The inconsistency in Section 1.4.2 of the Draft Revision Subsequent EIR is acknowledged. Please see Section 2.0 of this Response to Comments document regarding a revision to page 1-4 of the Draft Revised Subsequent EIR.

Connor 28 – Comment

18. *DRSEIR 566 fails to properly describe the "44/178 Alternative" as initially proposed by Vedanta in October 1998 and again in the comments Vedanta submitted regarding the Notice of Preparation (the "NOP") for the DRSEIR. As proposed by Vedanta, although the developer would be free to develop the project of its choice on the 44-acre "Development Parcel," the 178-acre "Conservation Parcel" would be left in its undisturbed natural state – i.e., no development activities of any kind would be conducted on such parcel, including, but not limited to, grading of any kind. However, as described in the DRSEIR, the "44/178 Alternative" allows for the development of 127 single-family housing units on the "Development Parcel" which, as Vedanta indicated in its comments on the NOP, can only be developed on such Parcel if a substantial amount of remedial grading and other construction activities are conducted on the "Conservation Parcel." Indeed, shortly after Vedanta proposed the "44/178 Alternative" in October 1998, the developer conceded that, in order to develop 127 single-family housing units on the "Development Parcel" – which is not contemplated under the "44/178 Alternative" as proposed by Vedanta. Therefore, a new analysis of the "44/178 Alternative" should be conducted based upon a proper description of the alternative which identifies a range of units which can safely be accommodated within the "Development Parcel." This analysis should include, inter alia, an analysis of the geotechnical conditions to determine the greatest number of units*

that can be developed on the 44-acre "Development Parcel" with the least amount of rough grading. The grading study is of critical importance because it will not only address the economic feasibility of the "44/178 Alternative," but also determines the nature and extent of the environmental resources which can be spared from the bulldozer's blade. As requested in Vedanta's comments on the NOP, this analysis should consider two versions of the "44/178 Alternative," one in which the developer is required to dedicate the 178-acre "Conservation Parcel" to the County (which has been the County's standard practice on all other major development projects approved during the past 25 years) and another in which the "Conservation Parcel" is purchased by a governmental entity (such as the United States Fish and Wildlife Service and the California Department of Fish and Game), a private entity, private person (s), or any combination thereof.

Connor 28 – Response

Please see Section 3.3.2 (Connor 2 – Response) of this Response to Comments document regarding alternatives.

Connor 29 – Comment

19. *DRSEIR 566 fails to provide sufficient factual information about each of the proposed alternatives to allow for meaningful evaluation, analysis, and comparison with the 299-Unit Project. The DRSEIR provides very little factual information regarding the proposed alternatives and their environmental impacts. Instead, DRSEIR 566 simply makes very general and conclusory statements regarding whether each impact will be greater or less than the 299-Unit Project and each of the other alternatives. Very little factual information is provided which permits differential impacts to be quantified and meaningfully analyzed. For example, no information is provided to allow the number of acres of oak trees, vernal ponds, coastal sage scrub, or any of the other biological resources which are affected under each alternative to be compared with the 299-Unit Project. Similarly, the extent to which each of the alternatives comply with the various goals, objectives, components, regulations, and guidelines of the FTSP is not provided so as to allow a comparison of the alternatives with the 299-Unit Project. Indeed, the alternatives analysis in DRSEIR 566 is almost entirely devoid of any factual information which would support its conclusions regarding the relative impacts of the 299-Unit Project and each of the alternatives. Accordingly, an entirely new analysis of each of the alternatives is necessary to provide the factual information required to conduct a meaningful evaluation, analysis, and comparison of the alternatives with the 299-Unit Project. (Note: Although the DRSEIR provides grading quantities for many of the alternatives, it curiously fails to state a remedial grading quantity for the "44/178 Alternative" while nonetheless conceding that remedial grading will be required for that alternative.)*

Connor 29 – Response

The discussion of alternatives need not be exhaustive. As stated in the *CEQA Guidelines* Section 15126.6(d), "the EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major

characteristics and significant environmental effects of each alternative may be used to summarize the comparison." The alternative analysis included in Section 5.0 of the Draft Revised Subsequent EIR included the appropriate level of detail per the requirements of CEQA; therefore no revisions or new alternative analysis would be required.

Connor 30 – Comment

20. *DRSEIR 566 fails to provide any factual information which supports its conclusion that, except for the "No Project Alternative," Alternative No. 8 is the environmentally superior alternative. Alternative 8 is a "reduced density alternative" which simply lowers the number of single family dwelling units by 16 units – i.e., from 299 down to 283. In reaching this conclusion, the DRSEIR provides absolutely no explanation or factual support for how a 283-unit single family housing project – which has virtually the identical environmental impacts as a 299-Unit Project – could possibly be an environmentally superior alternative to Alternative 4 (a 100-unit single family housing project which leaves 85% of the Property as natural open space), Alternative 6 (the "44/178 Alternative") or Alternative 7 (the "Acquisition Alternative" in which the entire property is purchased by a governmental entity, private entity, or private person (s) for preservation as permanent open space).*

Connor 30 – Response

As stated in Section 5.1 of the Draft Revised Subsequent EIR, the *CEQA Guidelines* require an EIR to "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (*CEQA Guidelines* Section 15126.6(a)).

As noted by the commenter, Alternative 4 (Foothill Trabuco Specific Plan EIR 531 Staff Alternative B) is the development alternative that is most environmentally superior to the proposed project. This is correctly summarized in a review of each impact by alternative in Table 5.7 of the Draft Subsequent Revised EIR. Further, as correctly identified by the commenter, although Alternative No. 8 is environmentally superior to the proposed project, Alternative 4 is environmentally superior to Alternative 8. This clarification has been made in Section 2.0 of this Final EIR.

However, it should be noted that economic feasibility is inherent to any project and the *CEQA Guidelines* state, "Among factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, . . . " (Section 15126.6(f)(1)). Although Alternative 4 is environmentally superior, it would be economically infeasible to develop. Land acquisition, engineering, construction, and implementation of mitigation measures could not be amortized over 100 single-family units. These costs combined with mitigation costs such as those associated with stabilizing the geotechnical hazards would exceed project revenues.

Similarly, Alternatives 6 (44/178 Alternative) and 7 (Acquisition Alternative) would not be feasible. Alternative 6 would meet the project objectives, but would result in an increase in impacts to recreation resources and fire protection as compared to the proposed project (see Section 5.4.6 of the Draft Revised Subsequent EIR and Section 2.0 of this Response to Comments document). In addition, it should be noted that full property acquisition is necessary for Alternative No. 7 and partial acquisition of the "Conservation Parcel" is integral to the feasibility of Alternative 6. No party with the resources and willingness to consummate a transaction has materialized, in spite of intensive exploration regarding this issue in late 1996, early 1997, early 1998 and from late spring through fall 1998.

Connor 31 – Comment

21. *DRSEIR 566 fails to consider a residential housing alternative which complies with the goals, objectives, components, regulations, and guidelines of the FTSP, nor does it explain why such an alternative would be unacceptable. In its comments on the NOP, Vedanta specifically requested that the DRSEIR identify and analyze at least one reduced-density alternative which complies with all of the goals, objectives, components, regulations, and guidelines of the FTSP. Instead, in Alternative No, 8, the DRSEIR identifies and analyzes a reduced-density alternative that eliminates only 16 out of 299 dwelling units and which complies with virtually none of the goals, objectives, components, regulations, and guidelines of the FTSP. Indeed, DRSEIR 566 fails to provide any explanation for why an FTSP-compliant alternative was not considered.*

Connor 31 – Response

Please see Section 3.3.2 (Connor 2 – Response) regarding the range of alternatives required for an EIR. The commenter is incorrect in indicating that no alternatives were discussed in the Draft Revised Subsequent EIR that would meet the goals, objectives, components, regulations and guidelines of the F/TSP. Alternative 4 would meet the requirements of the F/TSP. In addition, Alternative 2 would also meet the F/TSP goals, as the Bridlewood Residential District was established to recognize the existing zoning and tract map approvals for the Bridlewood (Saddleback Meadows) property.

3.3.3 The Gas Company

Robert S. Warth, May 16, 2002

The Gas Company 1 – Comment

This letter is not to be interpreted as a contractual commitment to serve the proposed project but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served without any significant impact on the environment. Gas facility additions for the expansion would be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Estimates of gas usage for non-residential and residential projects are developed on an individual basis and are obtained from the Commercial-Industrial/Residential Market Services Staff by calling (800) 427-2000. We have developed several programs, which are available upon request to provide assistance in selecting the most energy efficient appliances or systems for a particular project. If you desire further information on any of our energy conservation programs, please contact this office for assistance.

The Gas Company 1 – Response

Section 4.20 of the Draft Revised Subsequent EIR includes an evaluation of the impact of the proposed project on existing natural gas utilities and service systems. The ability of The Gas Company to serve the proposed project, without any significant impact on the environment is noted.

3.3.4 Juaneño Band of Mission Indians, Acjachemen Nation

Damien Shilo, June 10, 2002

Juaneño Band of Mission Indians 1 – Comment

After review of the cultural resources section of the DEIR, we, the Juaneño Band of Mission Indians ("tribe") are concerned about the protection of this land regarding both archaeological and anthropological impact. We feel that there has been an inadequate investigation into the significance/importance of the archaeological sites. The report indicates that there were three 1 x 1 meter units used to determine the archaeological significance/importance. This is an inadequate sampling of the area to make a determination for the size of this project. Also, we feel that the monitors should be from the local tribe. The practice of finding out of area monitors who do not understand the cultural significance of the local area needs to be corrected. There is also a concern for the wildlife corridor and endangered species, neither of which are adequately addressed.

Juaneño Band of Mission Indians 1 – Response

Please see Section 3.2.4 (California State University, Los Angeles 2 – Response, and California State University, Los Angeles 3 – Response) of this Response to Comments document.

Juaneño Band of Mission Indians 2 – Comment

There is not sufficient information to support the determinations made. The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of archaeological sites be impacted. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

Juaneño Band of Mission Indians 2 – Response

Prior to the commencement of the current study, a Native American Contacts List and Sacred Lands File Search was requested from Rob Wood of the Native American Heritage Commission. Any Native American monitor hired for the project will be selected from this list.

Juaneño Band of Mission Indians 3 – Comment

If it is determined that date recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Preservation Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

Juaneño Band of Mission Indians 3 – Response

Please see Section 3.2.4 (California State University, Los Angeles 10 – Response) of this Response to Comments document.

3.3.5 Mark R. McGuire

June 25, 2002

McGuire 1 – Comment

I represent the Rutter Development Corporation in connection with its entitlement and natural resources permitting efforts for the Saddle Crest and Saddle Creek residential development projects near the Saddleback Meadows project site. The southern boundary of the Saddle Creek project constitutes the northern border of the Saddleback Meadows project. Rutter Development supports the current proposed project and certainly sees it as preferable to the massive mobilehome [sic] park previously approved for the site. However, Rutter Development takes exception to Figures 4.8.2 and 4.8.4 in the Biological Resources section of the SEIR.

Figure 4.8.2 is labeled "Proposed NCCP Southern Subregional Planning Area," but it does more than simply delineate the subregional boundaries. The "reserve area" overlay on this exhibit has no basis in any approved or even proposed plan. Consequently, this exhibit should be replaced with one that simply shows the boundaries of the southern subregional planning are and overlays the project's boundaries. Similarly, Figure 4.8.4 is labeled "Proposed Regional Wildlife Movement Corridors" but there is no discussion regarding who is "proposing" the establishment of these corridors or for what species they are proposed to function as corridors. The "proposed" corridors in the exhibit do not correspond to the wildlife corridors shown in the adopted Foothill Trabuco Specific Plan or any other formally adopted or even proposed plan. Therefore, this exhibit should also be deleted, replaced or modified in the Final SEIR.

McGuire 1 – Response

Please refer to Section 3.2.1 (USFWS/CDFG 4 - Response) of this Response to Comments document. The wildlife corridor locations shown in Figures 4.8.2 and 4.8.4 are conceptual and are intended to depict local small mammal wildlife movement between localized areas. Regional wildlife movement corridors are located to the east and north within and adjacent to the Cleveland National Forest. The depicted wildlife movement corridors have been the subject of numerous meeting with both USFWS and CDFG and the exhibits depict the conceptual locations of these corridors.

Figure 4.8.2 shows the proposed boundary of the NCCP Southern Subregional Planning Area and depicts the draft NCCP proposal which was in place at the time of Draft Revised Subsequent EIR circulation.

McGuire 2 – Comment

Thank you for the opportunity to comment on the draft SEIR for the Saddleback Meadows project. Please feel free to call if you have any questions or wish to discuss this matter.

McGuire 2 – Response

Comment noted.

3.3.6 Orange County Regional Recreational Trails Advisory Committee

Alice Sorenson, May 31, 2002

RRTAC 1 – Comment

As you know, the Regional Recreational Trails Advisory Committee (RRTAC) is a Board-appointed committee composed of equestrians, mountain bicyclists, and hikers. Recently, the RRTAC approved a motion to provide an additional riding and hiking trail through the proposed Saddleback Meadows project site.

The Committee was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route we suggest an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would then connect with the proposed Live Oak Plaza project site and connect to the Live Oak Canyon Regional Trail. We also request an additional link from Trail B to the proposed Saddle Creek project at the north edge of the Saddleback Meadows project near the connection to Live Oak Plaza. Mr. Jeff Dickman, County's Chief of Trail Planning, concurred with this concept.

The RRTAC hereby expresses its support for the additional local trail through the proposed Saddleback Meadows project ("Trail B"). We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

RRTAC 1 – Response

Recreational impacts associated with implementation of the proposed project have been mitigated to less than significant and therefore, no further mitigation (such as the additional trail suggested by the commenter) is required. However, the commenter's suggestion will be forwarded on to the decision makers.

3.3.7 Rural Canyons Conservation Fund

Ray Chandos, May 28, 2002

Rural Canyons 1 – Comment

The Rural Canyons Conservation Fund, founded in 1983, advocates for the preservation of Orange County's unique inland rural canyon areas through a program of public education and participation in land use decisions affecting the area's unique scenic natural resources.

We comment as follows on the above referenced proposals:

1. *The area plan application is incomplete.*

The Foothill Trabuco Specific Plan (FTSP) lists certain informational items that must be provided when a proposed area plan is submitted. Several such items are missing from the subject proposal, including:

- *a site-specific resources assessment by a qualified field biologist;*
- *a site-specific oak woodlands analysis;*
- *a site-specific wildlife corridor analysis;*
- *a hydrological analysis;*
- *detailed mapping of areas within 50 vertical feet or 200 horizontal feet of designated major ridgelines or rock outcroppings;*
- *a detailed viewshed analysis of the proposed development as viewed from scenic highways;*
- *a conceptual grading plan at a minimum scale of 1:40 clearly delineating existing and proposed contour elevations, the location and elevation of all building pads, access roads, driveways, slope percentages, heights of manufactured slopes, the total area of disturbance, area of the flat graded pad on each parcel, and the location of retaining and crib walls;*
- *clear delineation of the building lines for assessing setbacks;*
- *a consistency report evaluating the project's consistency with each of the regulations and guidelines contained in the FTSP; and*
- *three-dimensional models of the site before and after proposed grading.*

(FTSP III G.2.0(e), pages III-90 through III-93.)

Because key information is missing from the application we received, we cannot fully assess the extent of non-compliance with the FTSP at this time, and therefore reserve the right to comment further if and when complete information becomes available.

Rural Canyons 1 – Response

The comments refer to the Area Plan for the Saddleback Meadows project and do not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA. No additional response is required. However, the commenter is directed to additional information regarding the project included in Tentative Tract Map 15230 and the Draft Revised Subsequent EIR. See also Section 3.3.2 (Connor 3 – Response) of this Response to Comments document regarding consistency with the F/TSP.

Rural Canyons 2 – Comment

2. *The proposed spot amendment of the Foothill Trabuco Specific Plan improperly renders the FTSP internally inconsistent and inequitable, and is therefore invalid in its face.*

State law requires that general and specific plans maintain internal consistency. However, the FTSP amendment proposed as part of this project renders the FTSP internally inconsistent. This inconsistency arises from the following language contained in the proposed spot amendment:

> *"Any development shall be in compliance with every regulation of this District (BWR) and* shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District." (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4 (c) italics added.)

This spot amendment conflicts with other general language within the FTSP:

> *"This specific plan is adopted pursuant to regulations contained in the Orange County Zoning Code. It is specifically intended by such adoption that the development standards and provisions contained herein shall regulate* all development *within the Specific Plan area." (FTSP III.C.3.0, page II-29, emphasis added.)*

> *"It is uncertain whether this development cap can be achieved* since all development is required to be consistent with the Specific Plan regulations and guidelines." *(FTSP II.D.3.0(b), page II-29, emphasis added.)*

> *"All development within the Specific Plan Area shall be required to be phased in a manner, which is consistent with the requirements of the Growth Management Plan (GMP) Element." (FTSP II.F.1.0(a), page II-43.)*

> *"For all development projects, a minimum of 50 percent of all shrubs to be planted should be native species." (FTSP IV.G.1.0(a), page IV-16.)*

Moreover, as will be shown below, the proposed development which the above spot amendment attempts to legitimize actually conflicts with and undermines the overarching goals and objectives for the Specific Plan area at the expense of the Specific Plan's integrity.

The proposed "wildcard" zoning also creates a class of unwarranted special privileges for this project's applicant, effectively denying other persons subject to the FTSP the equal protection of the law, in violation of the state and federal constitutions.
The proposed spot zoning amendment, therefore, is invalid on its face and thereby subject to nullification by the courts.

Rural Canyons 2 – Response

This comment does not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA.

Rural Canyons 3 – Comment

3. *The proposed spot amendment of the FTSP is barred by the FTSP itself.*

The FTSP explicitly provides how the Specific Plan may be amended to allow for development, as is now being proposed, that deviates from the recorded tract map for the Saddleback Meadows site:

> *"If a development proposal on the aforementioned [Bridlewood, Lyon Ranch, Santiago Ranch, and Zadeh] sites deviates from these approvals and cannot be found to be in substantial compliance with these approvals, a Specific Plan Amendment shall be required for the individual site. Said Specific Plan Amendment* shall *1) determine an appropriate density cap for the property; 2) establish new Land Use District Regulations for the site; and 3) be consistent with all of the provisions of the Specific Plan, as amended." (FTSP III.C.10.0(d), page III-4.)*

> *"Any development proposal, which deviates from the approved Saddleback Meadows Planned Community zoning and Recorded Tract 10692 and which cannot be found in substantial compliance with these approvals shall require a Specific Plan Amendment which* shall: *1) determine an appropriate density cap for the property; 2) establish new development regulations for the Bridlewood Residential District; and 3) be consistent with all the provisions of the Specific Plan." (FTSP III.D.3.2.(b), page III-20, italics added.)*

The proposed spot amendment exempting Saddleback Meadows from all but the revised district regulations clearly conflicts with the above requirements of the FTSP, which unequivocally mandate that the amended zoning regulations for Saddleback Meadows must be consistent with all *of the provisions of the FTSP. Thus the proposed spot amendment is facially invalid, and, as will be shown below, the proposed area plan is in actual conflict with numerous of the FTSP's substantive requirements.*

Rural Canyons 3 – Response

This comment does not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA.

Rural Canyons Conservation Fund 4 – Comment

4. *A site development or use permit is required prior to any grading.*

The proposed spot amendment explicitly allows issuance of a "preliminary grading permit" prior to approval of a site development or use permit. (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4(d).) This flies directly in the face of the following general regulation of the FTSP:

> *"Grading: Grading shall be permitted within the Specific Plan Area only upon approval of a site development permit or use permit by the Planning Commission. No grading permits shall be issued without the approval of a precise plan of development, i.e., site development permit or use permit." (FTSP III.C.6.1, page III-2.)*

Rural Canyons 4 – Response

This comment does not raise a direct or indirect significant physical environmental issue or other issue pursuant to CEQA.

Rural Canyons Conservation Fund 5 – Comment

5. *Development depicted on the proposed area plan improperly conflicts with the FTSP.*

Since, as shown above, the proposed wildcard exemption from all of the FTSP's general substantive and procedural requirements is invalid, all of the FTSP's general provisions apply to this project. Unfortunately, the proposed development violates numerous of these provisions, including:

- *"Rural Character/Forest Buffer: To preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." (FTSP I.C.1.0(a)," Goals and Objectives," page I-5.)*

By any measure of the term, the proposed development, due to its extreme intensity and scale, is anything but "rural" in character. On the contrary, it is a conventional suburban housing tract, to be constructed after mass grading the site in the amount of 11.7 million cubic yards. At 5,000 square feet minimum, the lot sizes are far below the minimum ½ acre permitted in the adjacent FTSP areas, and the proposed average density of 1.35 dwelling units per acre vastly exceeds the prevailing minimum of 1 dwelling unit per 2 acres. The proposal includes manufactured slopes 120 feet high, contour elevation changes of 91 vertical feet, and retaining walls 40 feet high.

Characterizing such a proposal as "rural" can only be described as "Orwellian." The submitted area plan application does include a "Rural Character Statement." However, this document merely sets forth general platitudes and idealized sketches on the subject, not specific to the proposed project, and not demonstrating how the concepts would actually be implemented. In the context of this project, "rural" must in large measure be defined in terms of compliance *with the regulations and guidelines of the FTSP, which purport and serve to implement the general goal of* preserving *the area's rural character. Thus the subject proposal is rural to the extent of its compliance with the detailed requirements of the FTSP, and that compliance leaves much to be desired.*

- *"Except for those legal building sites existing at the time of Specific Plan adoption where compliance with this requirement would preclude development of a single residence on the existing building site, mapping shall identify a minimum corridor width (other than for the wildlife corridor parallel to Live Oak Canyon Road) at all locations of 400 feet measured perpendicular to the corridor's boundary." (FTSP II.C.2.2(c)(3), page II-11, underlining in original.)*

The proposal fails to delineate a 400-foot-wide wildlife corridor through the project. The corridor mentioned in the text of the area plan actually diminishes to under 200 feet wide where it passes between the main spine road on the south and St. Michael's Abbey on the north.

- *"Development shall maintain a 50-foot setback of all structures and barrier fencing from all corridors. Uses within the setback zone shall be limited to low-intensity, residential-related activities such as recreation and private open space." (FTSP II.C.2.4(a), page II-14.)*

The proposed wildlife corridor violates this setback requirement where it passes between the southern and northern clusters of housing units.

Please include this letter in the official record of proceedings for this project. Thank you for the opportunity to comment.

Rural Canyons 5 – Response

Please see Section 3.3.2 (Connor 3 - Response) of this Response to Comments document regarding the proposed project's consistency with the F/TSP.

3.3.8 Saddleback Canyons Conservancy

Gloria D. Sefton, June 10, 2002

Saddleback Canyons Conservancy 1 – Comment

The Saddleback Canyons Conservancy is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Canyon Specific Plan (FTSP) area and surrounding areas of Orange County. The following comments are provided in response to the DEIR.

NONCOMPLIANCE WITH THE FTSP

The proposed project lies within the FTSP area. The proponents of the project have proposed a zone change (ZC 98-3) that would be required to amend the FTSP for the project ("Bridlewood Residential District"). Such an amendment to the FTSP would exempt the project from all regulations and guidelines ion the FTSP other than those provided by Bridlewood Residential District.

Upholding the integrity of the FTSP is of utmost concern to the Saddleback Canyons Conservancy. The proposed project site serves as a transitional buffer between the suburban developments of Lake Forest and Mission Viejo to the rural canyons area. The project's proximity to the Cleveland National Forest (within 1 mile) speaks to the need to for compliance to – not exemption from – the development guidelines set forth in the FTSP.

The proposed development violates the spirit and letter of the FTSP. The primary goals of the FTSP are to "preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." The project in no way conforms to such a goal. Indeed, 299 tract homes on a mass-graded site is anything but "rural." It is time to stop suburban sprawl, say "no" to continued mass development, and "yes" to a preservation and conservation plan.

Saddleback Canyons Conservancy 1 – Response

Please see Section 3.3.2 (Connor 3 - Response) of this Response to Comments document regarding the proposed project's consistency with the F/TSP.

Saddleback Canyons Conservancy 2 – Comment

DESTRUCTION OF HABITAT AND INTERFERENCE WITH WILDLIFE CORRIDORS

The project site is within the Southern Orange County Natural Communities Conservation Plan (NCCP) and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for the federally endangered Riverside fairy shrimp, and the federally threatened coastal California gnatcatcher, among other special status species. In view of the fact that the County, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game have initiated the Southern

Subregion NCCP process and that preliminary reserve designs are scheduled for completion in July 2002, a revised environmental document should be prepared to incorporate this critical information.

Saddleback Canyons Conservancy 2 – Response

Please see Section 3.3.2 (Connor 19 - Response) of this Response to Comments document regarding the NCCP. The Southern Subregion NCCP process was started several years ago, while a preliminary reserve design is protected for July 2002, it will be two or three years before the reserve design is adopted.

Saddleback Canyons Conservancy 3 – Comment

FAILURE TO ADEQUATELY ANALYZE CUMULATIVE IMPACTS

The list of "related" projects is limited to a small area near the project and excludes other major projects on the NCCP Southern Subregion. Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Rancho Mission Viejo project (14,000 homes and 427 acres of "urban activity"). Additionally the DEIR fails to mention the Rancho Protrero Leadership Academy, which also lies within the FTSP area, for which the Board of Supervisors filed a Notice of Determination in December 2001. The cumulative analysis of land use and planning, geology and soils, hydrology and water quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider all foreseeable projects.

Saddleback Canyons Conservancy 3 – Response

It would be inappropriate to include the Rancho Mission Viejo project in the cumulative analysis as it is in the early planning stages and not within the project study area. Please see Section 2.0 of this Response to Comments document for a revised Table 3.1, which includes the Rancho Protero Leadership Academy. However, it should be noted that this additional information did not change the conclusions of the EIR.

Saddleback Canyons Conservancy 4 – Comment

NONCOMPLIANCE WITH NEW WATER QUALITY REGULATIONS

Aliso Creek, adjacent to the project site, is listed as a Category I Priority Impaired Water Body in the EPA's National Water Quality Report (2000). New water quality regulations have recently been ordered against the County of Orange by the Regional Water Quality Control Board. These stricter regulations supplant the 1994 NPDES permit referenced in the DEIR, and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek. The DEIR fails to explain how the project can comply with these new water quality regulations.

Saddleback Canyons Conservancy 4 – Response

Section 4.4.2 of the Draft Revised Subsequent EIR describes in detail potential impacts to water quality and Aliso Creek. Implementation of the Project Design Features and compliance with the Standard County Conditions, in addition to other applicable regulatory requirements, impacts to water quality would be less than significant. In addition, a mitigation measure was included to facilitate the implementation of alternate and/or supplemental regional water quality mitigation to ensure the proposed project is consistent with the requirements of the new storm water NPDES permit (see M 4-1 on page 4.4-17 through 4.4-18 of the Draft Revised Subsequent EIR).

Saddleback Canyons Conservancy 5 – Comment

LACK OF WATER TO SUPPORT THE DEVELOPMENT

The Orange County Register recently reported (May 18, 2002) that "drought conditions have dried up two wells that the Trabuco Canyon Water District relies on to supply Trabuco Canyon and Rancho Santa Margarita residents." The TCWD is seeking additional appropriative water rights from the State Water Resources Control Board. Yet, as reported in correspondence to me dated May 14, 2002 from the State Water Resources Control Board, further processing of the TCWD's request for additional water rights is being held in abeyance until several senior priority applications in the watershed are processed. This water shortage should be recognized as an impediment to the advancement of any new development in the area served by the TCWD.

Saddleback Canyons Conservancy 5 – Response

As stated in Section 4.16.2 of the Draft Revise Subsequent EIR, the Trabuco Canyon Water District (TCWD) indicates that it would be able to accommodate the required water supply demand for the proposed project. A letter received from TCWD on July 15, 2002 indicates that the district has sufficient capacity to serve the site.[1]

Saddleback Canyons Conservancy 6 – Comment

CONCLUSION

The project is out of compliance with the FTSP. The project is not rural. The project significantly and negatively impacts biological resources and wildlife corridors. The project site is adjacent to the impaired Aliso Creek. The water district has severe water shortage problems. An additional 299 homes adds to suburban sprawl and downstream negative environmental impacts. The project should not proceed. The site should be set aside as a preserved habitat/wildlife corridor, and protected as open space for generations to come.

[1] *Letter to Kris Weber, Hunsaker & Associates, dated July 15, 2002 from Brian Bertsch, Project Manager, Trabuco Canyon Water District*

Please incorporate this letter in to the official record of proceedings for this project.

Saddleback Canyons Conservancy 6 – Response

This comment is a summary of comments included above. No additional response is required.

3.3.9 Sierra Club

Gail Prothero, June 23, 2002

Sierra Club 1 – Comment

The Sierra Club appreciates the opportunity to comment upon the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows – EIR 566 (DRSEIR). As strong supporters of protecting the ecological integrity and aesthetic value of the remaining open space in Orange County, our members are closely monitoring projects proposed for properties in the vicinity of the Cleveland National Forest. To facilitate this monitoring process, as well as to properly inform the general public and decision-makers, it is essential that all environmental assessment related to such projects be conducted in strict compliance with the provisions of CEQA and the CEQA Guidelines.

Unfortunately, as it is currently written, the DRSEIR does not adequately address significant issues related to the proposed Saddleback Meadows residential development and its effect on the local environment. These issues include those justifiably raised by a number of individuals in comments already provided to you; therefore, the Sierra Club wishes to incorporate into this letter, by reference, each of the following documents:

- *Comments by Terrell Watt, AICP, submitted in a letter dated June 7, 2002, on behalf of the National Audubon Society, Endangered Habitats League, and Rural Canyons Conservation Fund*
- *Comments by Edmond M. Connor, submitted in a letter dated June 9, 2002, in behalf of the Vedanta Society of Southern California*
- *Comments by Ray Chandos, submitted in a letter to Frank McGill dated May 28, 2002, in behalf of the Rural Canyons Conservation Fund*
- *Comments by Patricia Martz, PhD., submitted in a letter dated June 10, 2002*

Sierra Club 1 – Response

The Draft Revised Subsequent EIR was completed in compliance with the provisions of Public Resources Code, Division 13, Sections 21000 et seq. and the California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000, et seq. The comment letters and responses listed above have been included in this Response to Comments document.

Sierra Club 2 – Comment

Although the Sierra Club believes that all of the issues discussed in the above documents warrant full consideration and thorough analysis in a revised DRSEIR, two are of overarching significance to our members and deserve particular emphasis.

Suburban Sprawl

The significant negative impacts of the proposed Saddleback Meadows development are all attributable to the fact that the project would further extend suburban-style development into the remaining wildlands of Eastern Orange County. Attendant to such sprawl are the inevitable habitat destruction and fragmentation; watershed and water quality degradation; increases in vehicle miles traveled, traffic congestion, and air pollution; and deterioration of viewsheds and noisesheds. An adequate DRSEIR must honestly identify the true nature of the proposed Saddleback Meadows development as suburban sprawl, analyze the cumulative impacts of allowing similar sprawl-type projects to encroach upon remaining wildlands, and propose alternative locations for providing similar amounts of housing within the existing footprint of urban/suburban Orange County.

Sierra Club 2 – Response

Impacts associated with implementation of the proposed project were discussed in Section 4.0 and various technical appendices of the Draft Revised Subsequent EIR. Cumulative impacts to biological resources were discussed in Section 4.8.3.

Alternative locations for development of the proposed project were discussed in Section 5.3 of the Draft Revised Subsequent EIR. This alternative was eliminated from further consideration due to the fact that the project applicant does not own or control any other project sites within the region and the fact that no other property within the vicinity of the project site exhibits similar existing project specific General Plan and Zoning designations that would accommodate the proposed project. Further, it is speculative and unlikely that the project applicant would assemble other contiguous properties within the area to accommodate the number and type of residences proposed. Moreover, if such properties were identified and acquired, the properties would likely have resources and environmental constraints similar to the project site. Development of the proposed project at an alternative location is unlikely to be economically viable and would be unlikely to reduce impacts in comparison to the proposed project.

Sierra Club 4 – Comment

Benefits of Preservation

Although serious and ongoing consideration has been given to acquiring the Saddleback Meadows site for preservation in its natural state, only passing attention is given to acquisition in the DRSEIR. An adequate DRSEIR would thoroughly analyze the environmental and economic benefits of acquisition, potential sources of funding and the relationship of acquisition to fulfilling the goals and objectives of all of the following: The Orange County General Plan, Foothill/Trabuco Specific Plan, Aliso Creek Corridor Specific Plan, and Central-Coastal Subregion National Community Conservation Planning/Habitat Conservation Plan.

Sierra Club 4 – Response

Section 5.0 of the Draft Revised Subsequent EIR included a discussion of various no development and/or conservation alternatives. The project applicant has engaged in numerous discussions regarding acquisition of the project site for open space and conservation purposes, with each discussion resulting in no action based upon a lack of appropriate acquisition funding.

Please see Section 3.3.2 (Connor 2 – Response) of this Response to Comments document for a discussion of the feasibility of property acquisition.

Sierra Club 5 – Comment

The Sierra Club recommends that the DRSEIR be revised to properly address all issues raised in this letter, both directly and by reference, and recirculated for public comment.

Sierra Club 5 – Response

Please refer to Section 3.3.9 (Sierra Club 1 – Response) of this Response to Comments document. No recirculation of the document is required.

3.3.10 Trails 4 All

Jim Meyer, June 4, 2002

Trails 4 All 1 – Comment

Recently the County's Regional Riding and Hiking Trails Advisory Committee (RRHTAC) that I serve on was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route, the RRHTAC supported an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would them connect with the proposed Love Oak Plaza project site and connect to the Live Oak Canyon Regional Trail.

Upon review, Trails4All would also like to offer our support for the additional local trails through the proposed Saddleback Meadows project, linking with Live Oak Plaza and the Saddle Creek projects. We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

Trails 4 All 1 – Response

Please see Section 3.3.6 (RRTAC 1 – Response) of this Response to Comments document.

3.3.11 Terrell Watt, AICP

June 7, 2002

Watt 1 – Comment

This comment letter on the Draft Revised Subsequent Environmental Impact Report ("DRSEIR") for the proposed Saddleback Meadows development project ("project") is submitted on behalf of National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund ("the commenting groups"). These comments provide a detailed and explicit outline of the problems and inadequacies presented by: (1) the project itself, including its geological impacts and impacts to the habitat of several endangered and sensitive species; (2) the DRSEIR, including fatal deficiencies under the California Environmental Quality Act ("CEQA") (Pub. Res. Code §§ 21000 et seq.) and the CEQA Guidelines (14 Cal. Code Regs. §§ 15000 et seq.); and (3) the project's inconsistency with the County General Plan.[1]

Watt 1 – Response

This comment presents an overview of the comments detailed below. Please see responses to detailed comments.

Watt 2 – Comment

A summary of the DRSEIR's major defects follows:

Inadequate Project Description: The DRSEIR's project description remains incomplete and, therefore, inadequate. Specifically, the project description lacks important details about the project that are critical to an adequate analysis of project-related and cumulative impacts. Such details include, but are not limited to: (1) fundamental engineering aspects of the project related to mass grading and the probable need for export of unsuitable cut and importation of suitable fill; (2) a detailed description and proposed uses of open space; (3) the complete Project Design Feature that includes the final drainage plan; (4) proposed home size and total development contemplated, including accessory structures and paving; (5) hazards and hazards-related project features, such as possible presence of on-site contamination; among other information about the project. Without this information, the evaluation of impacts cannot be complete.

Watt 2 – Response

As stated in Section 2.0 of the Draft Revised Subsequent EIR, the purpose of the Project Description is to describe the project in a way that will be meaningful to the public, reviewing agencies, and decision-makers. Section 15124 of the CEQA Guidelines requires that a complete Project Description contain the following information: (1) the location and boundaries of the proposed project; (2) a statement of project objectives; (3) a general description of the project's technical, economic, and environmental characteristics; and (4) a statement briefly describing the intended uses of the EIR, including a list of the agencies that are expected to use the EIR in their decision making, and a list of the approvals for which the EIR will be used. According to CEQA

(Section 15124) an adequate Project Description need not be exhaustive, but should supply the detail that is necessary for project evaluation.

The Project Description meets the requirements of CEQA and discusses grading, open space, drainage, land use and hazards. The details requested by the commenter (i.e., specific housing design, etc.) are not required.

Watt 3 – Comment

Inadequate Project Setting: The DRSEIR fails to describe key elements of the project setting adequately and completely. Such elements include, but are not limited to: (1) key general plan policies and regional policies relating to habitat planning, in particular the Southern Orange County Natural Communities Conservation Plan (NCCP); and (2) a list of cumulative projects, geographic study area for the cumulative analysis or plan based approach to cumulative impacts. This information is critical to the analysis of project-related and cumulative impacts.

Watt 3 – Response

The existing general plan designation and zoning are discussed in Section 2.1.2 and general plan policies and regional policies are discussed in Section 4.1.1 of the Draft Revised Subsequent EIR. Applicable plans and policies related to biological issues are discussed in Section 4.8 and Appendix I of the Draft Revised Subsequent EIR. Cumulative projects were summarized in Table 3.1 of the Draft Revised Subsequent EIR, please see Section 2.0 of this Response to Comments document for an updated table.

Watt 4 – Comment

Failure to Identify or Analyze the Full Extent of Significant Environmental Impacts: The DRSEIR is riddled with conclusions unsupported by facts and analysis on the significance of environmental impacts. Specifically the DRSEIR concludes, based on improperly deferred mitigation measures and mitigation measures of unproven efficacy, that all potentially significant impacts except cumulative air quality will be reduced to less than significant with mitigation. Insufficient evidence is provided to support the conclusion that all but one impact will be less than significant after mitigation.

Watt 4– Response

The Draft Revised Subsequent EIR was prepared according to the requirements of CEQA. The commenter offers no specific areas where the EIR is deficient. No further response is required.

Watt 5 – Comment

Inadequate Cumulative Impacts Analyses: The DRSEIR's cumulative impacts section is non-existent. The DRSEIR fails to provide a complete list of cumulative projects or to outline a plan based approach to the cumulative

analysis. The list of "related" projects is limited to a small area near the project and excludes other major projects in the NCCP Southern Subregion. Brief, conclusory statements are made concerning cumulative impacts throughout the DRSEIR. Moreover, the DRSEIR fails to consider feasible mitigation for the project's incremental contribution to cumulative impacts. Notwithstanding this complete lack of analysis, the DRSEIR concludes that all cumulative impacts will be less than significant with the exception of cumulative air quality.

Watt 5 – Response

Cumulative impacts were discussed under each environmental issue area within Section 4.0 of the Draft Revised Subsequent EIR. As stated in Section 3.7 of the Draft Revised Subsequent EIR, the cumulative analysis for each respective environmental subsection was described based on the related projects, as appropriate. The Natural Community Conservation Planning Program (NCCP) is discussed in Section 4.8 and Appendix I. Additionally, the NCCP represents 64,100 acres as compared to the proposed project's 222 acres.

Watt 6 – Comment

Inadequate Growth-Inducing Impacts Analysis: The DRSEIR's growth-inducing impacts section is likewise inadequate. For example, the DRSEIR fails to analyze the potentially significant growth-inducing impacts associated with the extension of utilities and roads, and the placement of a water tank and access road beyond the project site. The DRSEIR offers no analysis or even recognition of the precedent-setting effect the proposed project would have on development in the area, and development on sites where the topography and presence of biological habitat and wildlife corridors should limit such projects.

Watt 6 – Response

The F/TSP and Tract Map 10692 allow for a 705-unit manufactured housing development within the boundary of the project site. As stated in Section 2.3.4 of the Draft Revised Subsequent EIR, the water tank site was previously dedicated to the Trabuco Canyon Water District when the existing Final Tract Map 10692 was recorded, to be used for development of the water distribution facility for the proposed project site. The proposed on-site roadways and utility systems would serve only the proposed project and would not accommodate any additional development. No off-tract infrastructure improvements are proposed.

Watt 7 – Comment

Inappropriate Deferral of Feasible Mitigation Measures: The DRSEIR improperly defers mitigation measures. Many of the deferred mitigation measures, including measures related to drainage and hazards mitigation, are relied upon to reduce significant impacts without any supporting facts or analysis.

Watt 7 – Response

The mitigation measures included in the Draft Revised Subsequent EIR are based on current regulations and do not defer mitigation requirements. It is unclear as to what specific mitigation measures the commenter is regarding drainage. Upon implementation of the identified Project Design Features and Standard County Conditions, no mitigation measures would be required (see Section 4.3.6 of the Draft Revised Subsequent EIR).

Watt 8 – Comment

Failure to Analyze a Reasonable Range of Alternatives: The DRSEIR includes numerous alternatives, but fails to analyze an alternative that fully mitigates for on- and off-site impacts. Moreover, the DRSEIR fails to properly identify the environmentally superior alternative, after the no-project alternatives, as Alternative 4.

These and other major defects in the DRSEIR described below render the document inadequate as a basis for informed decision-making and legally deficient under CEQA and the planning and zoning law. The County should give no further consideration to the project until an EIR is prepared and circulated that fully complies with CEQA and the CEQA Guidelines.

Watt 8 – Response

Please see Section 3.3.2 (Connor 2 – Response and Connor 30 – Response) of this Response to Comments document.

Watt 9 – Comment

CONSIDERATION OF THE PROJECT IS PREMATURE

The County, the U.S. Fish and Wildlife Service and the Department of Fish and Game have initiated the Southern Subregion NCCP process. Preliminary reserve designs are scheduled for completion in July 2002.The project site is within the Southern Subregion and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for a number of special status species.

The NCCP reserve design(s) will suggest where development should and should not occur based on biological resources. This new information is fundamental to a determination of whether all or a portion of the project site should be included in a "reserve," or alternatively in a development area. A revised environmental document must include this information.

Watt 9 – Response

Please see Section 3.2.1 (USFWS/CDFG 4 – Response) and Section 3.3.2 (Connor 19 – Response) of this Response to Comments document. The NCCP process was initiated in 1993 and is only now proposing alternative palns for consideration by the public and decision makers. Final approval of the NCCP is not expected for another year or two. CEQA has no requirement that a project be evaluated against a planning or regulatory document that has not been adopted/approved. The project applicant has been in communication with U.S. Army Corps of Engineers (USACE), California Department of Fish and Game (CDFG), and U.S. Fish and Wildlife Service (USFWS) regarding NCCP related issues and has included a detailed Biological Resources Mitigation Plan (including a wildlife movement corridor) as a Project Design Feature (see Section 4.8 of the Draft Revised Subsequent EIR). Additionally, the proposed project seeks to replace the existing 705 residential lot subdivision with a new development plan that provides a wildlife corridor.

Watt 10 – Comment

BACKGROUND AND PROJECT CONTEXT

The property is located in the lower, southeastern foothills of the Santa Ana Mountains and is currently used for horse and cattle grazing. The site's topography is hilly with several steep slopes and ravines. Soils on site are highly erodable. Aliso Creek is located nears the western site boundary and generally follows El Toro Road. Drainage from the site flows to the west into Aliso Creek, which drains into the Pacific Ocean at Aliso Beach, and Oso Creek, a tributary of Trabuco and San Juan Creeks, and south to O'Neill Regional Park. DRSEIR at page 4.2-2. The site provides an essential low elevation wildlife corridor between the Central and Southern NCCP areas and the Cleveland National Forest. Such a low elevation corridor is needed for gnatcatchers and other species. The site also supports important wetlands that provide habitat for Riverside fairy shrimp and western spade foot toad.

Watt 10 – Response

This comment restates the existing setting of the proposed project. No response is required.

Watt 11 – Comment

Under the proposed project, a gated community of 299 single-family residential lots would be built on approximately 222 acres. The total developed area would be approximately 66.9 acres and the total open space would be on approximately 155.1 acres. Only a portion of the area, approximately 83.25 acres would be in "natural resource preservation area." However, this area is subject to remedial grading and biological enhancement activities, thereby potentially degrading the resources even within this "natural resource preservation area." DRSEIR at page 2-16. Massive grading is needed to accommodate the project on this site. Grading would involve 70%+ of the site. It is still unclear to what extent remedial grading will extend beyond the area illustrated in the preliminary grading plan.

Watt 11 – Response

Project Design Features (PDF 8-1) and Standard County Conditions (SC 2-3) have been included to protect the natural resource preservation area (see Sections 4.8.4 and 4.2.4 of the Draft Revised Subsequent EIR). The biological impact analysis considered areas that would be impacted by both conventional and remedial grading. No grading would occur outside the project site boundary.

The final Grading Plan will be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division prior to issuance of a grading permit (Standard County Condition SC 2-2). The level of detail included in Section 4.2 and Appendix C of the Draft Revised Subsequent EIR is appropriate.

Watt 12 – Comment

In summary, the site plan can best be characterized as "suburban sprawl," with roads and units extending across the entire site, thereby fragmenting the open space areas and extending into wildlands and interfering with wildlife corridors. This pattern of development would severely impact biological resource values on- and off-site and impede wildlife migration.

Watt 12 – Response

A Final Subdivision Map (Final Map 10692) for 705 manufactured housing/mobile home units was recorded for the property in 1988. Furthermore, the property is surrounded by existing development or approved projects on nearly 50 percent of its perimeter. A Biological Resource Mitigation Plan has been incorporated into the proposed project to mitigate impacts to biological resources and enhance currently degraded habitat. In addition, the proposed project leaves a substantial amount of the site (approximately 70 percent) as open space and/or biological reserve.

Watt 13 – Comment

ANALYSIS

I. THE DRSEIR IS INADEQUATE UNDER CEQA.

The DRSEIR is deeply flawed under CEQA. An EIR must provide enough analysis and detail about environmental impacts to enable decision-makers to make intelligent judgments in light of the environmental consequences of their decisions. See CEQA Guidelines § 15151; Kings County Farm Bureau v. City of Hanford, 221 Cal.App.3d 692 (1990). Under the law, the lead agency must make a good faith effort to fully disclose the environmental impacts of the project. This requirement cannot be met unless the project is adequately described and existing setting information is complete. See County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 199(1977). Both the public and decision-makers need to fully understand the implications of the choices presented by

the project, mitigation measures, and alternatives. See Laurel Heights Improvement Ass'n v. Regents of University of California (Laurel Heights I), 6 Cal.4th 1112,1123 (1988). The DRSEIR fails to provide sufficient information to enable informed decision-making by the County, the public, and the permitting agencies. Much important information remains improperly omitted or deferred until a later date in violation of CEQA; what information is provided remains vague and flawed.

The DRSEIR is a construction level EIR and therefore would allow for the issuance of a rough grading permit. Many of the most significant impacts are irreversible after rough grading has occurred. Thus, detailed information concerning project level impacts must be provided at this stage of project consideration so that the public, agencies and County decision-makers can fully understand the impacts of the proposed project and alternatives. Deferral of information concerning project-related and cumulative impacts, mitigation measures and alternatives is improper and unacceptable given the types of activities that will result from the approval of the project at this stage.

Watt 13 – Response

The commenter is correct in citing Section 15151 of the *CEQA Guidelines*, which states "An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. However, this section goes on to state, "An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible." The Draft Revised Subsequent EIR includes a detailed analysis of environmental factors based on a publicly circulated Initial Study and technical appendices for the following: geology, hydrology, water quality, traffic, air quality, noise, biology, and archaeology.

Please see Section 3.3.12 (Watt 11 – Response) of this Response to Comments document regarding grading.

Watt 14– Comment

- *The DRSEIR Fails to Describe the Project Adequately.*

The DRSEIR fails to describe the project and its setting accurately and completely. It omits key project features that have the potential to result in significant impacts.

The CEQA Guidelines define "project" as "the whole of an action, which has a potential for resulting in a physical change in the environment, directly or ultimately . . .." CEQA Guidelines § 15378. Among other components, an EIR's project description must contain a "general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities." CEQA Guidelines § 15124(c). As the Court of Appeal has noted, "The defined project and not some other project must be the EIR's bona fide subject." County of Inyo, 71 Cal.App.3d at 185. An accurate and complete project description

is indispensable because, "[a] curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage oft terminating the proposal . . . and weigh other alternatives in the balance. An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR" id. at 192.

The DRSEIR also fails to provide an adequate description of the setting for the project. Such a failure is fatal under CEQA. CEQA and the CEQA Guidelines mandate that an EIR include a description of "the physical environmental conditions in the vicinity of the project...from both a local and a regional perspective . . . Knowledge of the regional setting is critical to the assessment of environmental impacts." CEQA Guidelines §§ 15125(a) and (c). This requirement derives from the principle that without an adequate description of the project's local and regional context, the EIR, and thus the decision-makers and the public who rely on the EIR, cannot accurately assess the potentially significant impacts of the proposed project.

The DRSEIR for the project is inadequate. It fails to describe key aspects of the proposed project with the potential to result in significant environmental impacts. Additionally, it fails to describe accurately and completely the environmental setting impacted by the project. Accordingly, potentially significant environmental impacts cannot be adequately analyzed or addressed by the DRSEIR and, for this reason, the DRSEIR is fatally deficient under CEQA.

Watt 14 – Response

Please see Section 3.3.12 (Watt 2 – Response) of this Response to Comments document. In addition, the environmental setting for the proposed project is described in Sections 2.1, 3.0 and throughout 4.0 of the Draft Revised Subsequent EIR for each environmental issue area. The environmental setting is adequately described under the requirements of CEQA.

Watt 15 – Comment

1. *The DRSEIR Fails to Describe Adequately the Source and Placement of Cut and Fill Material and the Extent of Grading Required to Accommodate Roads and Dwelling Units.*

Massive earthwork will be required to prepare the site for access roads and houses. More than ½ of the site (126 acres) has slopes in excess of 26% with about 32 acres with slopes exceeding 50%. Preliminary estimates in the DRSEIR are that about 2.45 million cubic yards of conventional excavation (cut) and an equal amount of fill will be required. In addition, about 6.8 million cubic yards of remedial grading are required. The DRSEIR states that cut and fill (including several areas exceeding 50 feet in depth) will he balanced on site. However, the DRSEIR and geotechnical report present information that indicates on-site materials may not be suitable to support the project without imported materials. See DRSEIR at page 4.2-l 1. Moreover, mitigation measures M 2-14 and M 2-15 suggests that off-site borrow materials will be needed and on-site material removed:

M 2-14 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal off-site. DRSEIR at page 4.2-l 8

M 2-15 All borrow sites shall be approved by the Soil Engineer/ Geologist prior to on-site delivery. This will permit the timely allocation of such available materials for use on the project site.

To the extent that exportation of cut and importation of fill will be required to implement the project, this information must be provided. Related impacts to air quality, off-site grading and stockpiling and traffic, among other issues must be disclosed and analyzed in a revised environmental document.

Watt 15 – Response

The mitigation measures referenced above are standard with regard to material selection and have been included in case small amounts of on-site material would not be acceptable. It is not meant to indicate that large quantities of material will have to exported or imported. As indicated in the Draft Revised Subsequent EIR, all grading operations would be balanced on-site and import/export of cut/fill material is not proposed. However, the commenter is correct in noting that mitigation measures M 2-14 and M 2-15 could be misleading or misinterpreted. Please see Section 2.0 of this Response to Comments document for a clarification of M 2-14. M 2-15 has been deleted.

Watt 16 – Comment

Although the DRSEIR fails to provide adequate information concerning proposed cuts and fills in terms of their location and extent, the document does refer to fills in excess of 50 feet in height. The DRSEIR provides virtually no information regarding the source and placement of cut and fill material, the full extent of grading required to accommodate roads and dwelling units, and the phasing of the cut and fill operation. Without this information, the DRSEIR environmental impacts analysis does not and cannot analyze the impacts of transporting such a significant amount of fill to the project site in terms of increased traffic and air pollutants, or the impacts of the cutting and filling itself including impacts to air quality, open space, habitat, and special status species. Without an accurate and complete description of the proposed site grading and fill, the DRSEIR cannot adequately analyze environmental impacts or comment on the proposed project's consistency with the County's General Plan and grading ordinance.

A revised environmental document should include clear graphics that show cross sections where cuts and fills will exceed 50 feet. In addition, a revised environmental document must identity the sources of fill that are suitable to support the proposed development. Additional information must be provided concerning the suitability of on-site material for fill if the DRSEIR continues to assume that cut and fill will balance on-site.

Watt 16 – Response

Please see Section 3.2.12 (City of RSM 2 – Response) and Section 3.3.12 (Watt 15 – Response) of this Response to Comments document. As stated in Section 2.4 of the Draft Revised Subsequent

EIR, the proposed project includes the approval of Vesting Tentative Tract Map 15230, which provides a greater level of detail. The tentative map is on file with the County of Orange and is incorporated by reference.

Watt 17 – Comment

2. *The DRSEIR Fails to Describe Adequately the "Open Space" Areas.*

The DRSEIR fails to provide a complete description of the "open space" areas of the proposed project. Little or no information is provided regarding, among other aspects: the extent of grading to the open space; to what degree the open space will be altered from its present natural condition; the uses to which the open space will be put and the extent of those uses, including trails and recreation; and, the presence and location in the open space of utility lines, access roads and other services.

The lack of a complete description in the DRSEIR of alteration to, and ultimate uses of the open space areas renders any analysis of either project-related or cumulative impacts thoroughly inadequate. A revised description of any alteration to the open space and the uses proposed for the open space land, including the proposed water reservoir, must be completed. Once a complete description has been obtained, the DRSEIR's analysis of the environmental impacts to biological resources, geology, and air quality, among others, must be revised.

Watt 17 – Response

The Draft Revised Subsequent EIR includes descriptions of open space areas in Sections 2.1; 4.1.2; 4.8.4 and 4.8.6; 4.9.4; and 4.11.2, 4.11.4 and 4.11.6. Open space is also discussed in Table 2.1 and shown on Figures 2.8; 2.10; 2.11; 4.8.7; 4.9.10 and 4.11.2.

Watt 18 – Comment

3. *The DRSEIR Fails to Describe Adequately the Project's Master Drainage Concept and Project Features Directed as Maintaining Water Quality.*

The DRSEIR fails to adequately describe the project's drainage concept and project features purportedly directed at maintaining water quality. Specifically, the DRSEIR's environmental impacts analysis concerning hydrology states that the "Project Design Feature" to mitigate drainage impacts is "being prepared in consultation with USACE." DRSEIR at page 4.3-7. Thus, the complete master drainage concept is not included in the DRSEIR for public, decision-maker and agency review. Although a final description of the master drainage concept is still being developed, the DRSEIR nonetheless concludes that no significant impacts associated with drainage will occur. In part, this is correct: no significant impacts can be identified based on such an inadequate project description. Without a complete description of the necessary drainage facilities, the DRSEIR fails under CEQA because impacts to water quality, biological resources, habitat, special status species, and human safety cannot be assessed. Once a complete description has been obtained, a revised impacts analysis must be completed.

The DRSEIR continues to describe other aspects of the project intended to mitigate water quality impacts:

"The remainder of the project site (the northerly development area) does not have sufficient room to accommodate the land-intensive requirements of the riverine system Therefore, runoff from the balance of the developed portion of the project site would be primarily cleansed through stormceptors prior to discharge into natural drainage courses. Stormceptors trap trash, sediment, and oils. They would also trap phosphorus that is attached to the sediment. However, they have no known effect on bacterial indicators or toxic constituents, both of which are constituents of concern for Aliso Creek. Removal of bacterial indicators would occur as the runoff continues through 3,300 linear feet of natural [sic] *before reaching Aliso Creek. As part of the final design ponds and swales would be incorporated to the maximum extent feasible in the development area within many small-scale features, such as, medians, parkways, and other developed open space in order to maximize the opportunity for removal of bacterial indicators and toxic constituents prior to outletting in the natural drainages." DRSEIR at page 4.4-12.*

This paragraph suggests that:

> *Key elements of the project that are critical to reducing significant impacts to drainage and water quality have not been designed. Therefore, the project description lacks key information to support both an adequate analysis of impacts and to support a conclusion that project impacts will be less than significant.*
>
> *Mitigation may not be sufficient to address impacts associated with bacterial indicators or toxic constituents.*

A revised environmental document, based on a complete description of drainage and water quality features and feasible mitigation measures must be completed.

Watt 18 – Response

Tentative map level hydrology and water quality analysis is included in Sections 4.3 (Hydrology) and 4.4 (Water Quality) of the Draft Revised Subsequent EIR, which is consistent with the manner in which development projects are processed. Additional technical information was also included in Appendix D and Appendix E of the Draft Revised Subsequent EIR.

Watt 19 – Comment

4. *The DRSEIR Fails to Describe Adequately the Characteristics of Residential Uses*

The DRSEIR lacks a complete description of proposed uses at the project site. Specifically, the DRSEIR fails to describe key aspects of the proposed residential project including, but not limited to: the size of the houses; their lot coverage; paving for roads driveways and parking lots; and accessory uses, such as swimming pools and storage. Without an adequate description of home size, lot coverage, and accessory uses, significant environmental impacts to aesthetics and water quality, among other impacts, cannot be identified or assessed and suitable mitigation measures

cannot be proposed. To the extent this information is not available, a worst-case estimate of total site soft and hard cover must be developed and used to determine the extent of environmental impacts associated with site coverage. Without a clear understanding of how much land is to be covered by development, potentially significant environmental impacts to drainage, water quality, habitat, and special status species, among others, and the creation of geologic and flooding hazards cannot be identified, let alone assessed.

Watt 19 – Response

Section 2.0 of the Draft Revised Subsequent EIR includes a detailed project description including information pertaining to lot sizes, private streets, and proto-typical architecture as indicated in the comment. The level of detail requested in this comment such as a description of swimming pools and accessory uses is not required for an EIR. Residences will be developed in accordance with County zoning standards for the lot sizes shown on the Vesting Tentative Tract Map. The amount of land to be covered by development is clearly defined by the information in Figure 4.2.4 of the Draft Revised Subsequent EIR and provides sufficient information for assessing impacts to habitat, special status species, geologic and flooding hazards, etc. For analysis that is dependent on more detailed information (i.e., home size, lot coverage, etc.) worst-case estimates were made. For example, the visual simulations were prepared based on assumptions on the size and bulk of the proposed homes consistent with the County's zoning ordinance (see Section 4.9 of the Draft Revised Subsequent EIR). The water quality analysis made worst-case estimates of the amount of impervious surfaces that would result from implementation of the proposed project (see Section 4.4 and Appendix E of the Draft Revised Subsequent EIR). No additional analysis is required.

Watt 20 – Comment

5. The DRSEIR Fails to Describe Adequately the Proposed Project's Construction Activities and Phasing.

The project description provides a cursory description of construction phasing and activities. Among the information that is not sufficient is information about the extent and duration of grading activities. Without a description of these activities and phasing and the assumptions underlying the air quality estimates, the DRSEIR cannot adequately identify and analyze environmental impacts to air and water quality, among others, due to truck traffic and emissions, construction noise and dust. An EIR for a project such as this must include a description of the construction period activities, including, but not limited to: phasing; types of equipment; construction employment; staging areas, borrow sites and spoils disposal sites, among other details of the construction that could result in impacts. A revised environmental document must be prepared that includes this information and revised impact analyses as warranted based on the information.

Watt 20 – Response

Please see Section 3.3.2 (Connor 10 – Response) of this Response to Comments document.

Watt 21 – Comment

6. The DRSEIR Fails to Describe the Project Site's Biological Resources and Habitats Adequately.

The DRSEIR fails to adequately describe biological resources on- and off-site. The document contains inadequate information concerning on-site biological resources, including oak woodlands, aquatic resources, raptor nesting locations and wildlife corridors, and fails to provide any description of biological resources within an adequate cumulative study area, which at a minimum should include the entire Southern Subregion and Central NCCP areas.

Finally, the relationship of the project site to the Southern Orange County NCCP is not described or analyzed. There is a Figure in the DRSEIR, which illustrates a proposed Southern reserve, but the DRSEIR fails to state how this related to the proposed project. See Figure 4.8-2. Clarification is needed concerning the Southern NCCP process and its implications for this project. Without the inclusion of these, and other, key details of the on- and off-site biological regime, the DRSEIR cannot adequately analyze project-related and cumulative impacts.

Watt 21 – Response

Biological resources are described in Section 4.8 and in detail in Appendix I of the Draft Revised Subsequent EIR. Please also see Section 3.3.2 (Connor 19 – Response) of this Response to Comments document.

The commenter's request for inclusion of the entire Central and Southern Sub regions of the NCCP is not appropriate. These tow sub regions represent over 87,300 acres, as compared to the project's 222 acres.

Watt 22 – Comment

7. The DRSEIR Fails to Describe Project Inconsistencies with Applicable Plans.

A number of plans are applicable to the project site including, but not limited to:

The Orange County General Plan
The Foothill/Trabuco Specific Plan
Aliso Creek Corridor Specific Plan
The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCP/HCP)

The DRSEIR provides a very cursory policy consistency review in the Land Use section and the biological resources sections. The consistency review does not include a table of key policies and "findings" as to project consistency with these policies. It appears that the section omits several key policy inconsistencies, including the following:

Orange County General Plan

The Orange County General Plan Resources Element includes several policies concerning protection of natural resources as follows:

Goal 1: Protect wildlife and vegetation resources and promote development that preserves these resources.

Goal 3: Manage and utilize wisely the County's landform resources.

Objective 3.1: To minimize to the extent feasible the disruption of significant natural landforms in Orange County.

Policy 1. To identify and preserve the significant wildlife and vegetation habitats of the County.

Policy 5. To protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities.

The project as proposed appears to conflict with these overarching goals, objectives and policies of the Orange County General Plan. A revised analysis of project consistency with applicable General Plan policies must be included in a revised and recirculated environmental document.

Watt 22 – Response

Section 4.1 of the Draft Revised Subsequent EIR includes a discussion of the proposed project's consistency with applicable plans. Further, the proposed project would not conflict with the goals objective or policies of the plans identified by the commenter. As discussed in Section 2.0 of the Draft Revised Subsequent EIR, approximately 70 percent of the site would remain as open space and detailed mitigation has been developed to protect and enhance the biological resources on-site (Goal 1 and Policy 1), and contour grading would provide for edge treatments responsive to the natural terrain (Goal 3, Objective 3.1, and Policy 5).

Watt 23 – Comment

The Foothill Trabuco Specific Plan

The Foothill Trabuco Specific Plan calls for preservation of significant landform, biological, cultural and scenic resources on-site. According to the DRSEIR's alternatives analysis, only Alternative 4 is consistent with the Specific Plan requirements. Also according to the DRSEIR, "[t]he proposed project would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692 with respect to proposed residential gross density and providing for the provision of a substantial increase in open space and the presence of a wildlife corridor as outlined in the F/TSP." DRSEIR at page 4.1-12. However, the proposed project would amend the F/TSP. DRSEIR at page 4.1-12. Nowhere in the DRSEIR are the proposed amendments to the F/TSP outlined.

The proposed project is inconsistent with the F/TSP in other major respects, including, but not limited to its failure to provide information required by the F/TSP (see Letter submitted by Rural Canyons Conservation Fund, dated May 28,2002, hereby incorporated by reference).

Watt 23 – Response

Please see Section 3.3.2 (Connor 3 – Response and Connor 4 – Response) of this Response to Comments document.

As stated in Section 2.4 of the Draft Revised Subsequent EIR, the project requires approval of the following discretionary approvals: Area Plan 98-2, Zone Change 98-3, Tentative Tract Map 15784 and Vesting Tentative Tract Map 15230, all of which are incorporated by reference. These documents provide the level of information required by the F/TSP.

Watt 24 – Comment

The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCPHCP)

Figure 4.8.2 indicates that the entire project site is located within an NCCP "reserve area." The DRSEIR fails to point this out or to analyze the implications of this for the project. A significant theme of all of these plans is the protection of key wildlife corridors in the area. It is clear from the project site plan that minimal provisions will be made for continued wildlife movement and those species that attempt to traverse the on-site corridor will be subject to significant additional constraints including: modified topography, new road corridors, presence of new residents in the area, increased noise and lighting as well as residential units in the path of the Northern Corridor. See Figure 4.8.4. The project will have significant impacts on wildlife migration that must be identified in the environmental document and called out as inconsistencies with applicable policies in the above-listed Plans. To the extent that wildlife corridors are assumed on adjacent privately owned properties, the revised environmental document should explain how these corridors would be maintained and not destroyed by cumulative development projects.

Watt 24 – Response

Please see Section 3.2.1 (USFWS/CDFG 4 - Response) of this Response to Comments document.

Watt 25 – Comment

B. The DRSEIR's Analysis of Environmental Impacts Is Inadequate.

The DRSEIR's analysis of environmental impacts fails to provide the necessary facts and analysis to allow the County and the public to make an informed decision. Without such detail, the DRSEIR is deficient under CEQA. The

role of the EIR is to make manifest a fundamental goal of CEQA: to "inform the public and responsible officials of the environmental consequences of their decisions before they are made." Laurel Heights I, 6 Cal.4th at 1123. To do this, an EIR must contain facts and analysis, not merely bare conclusions. See Citizens of Goleta Valley v. Board of Supervisors, 52 Cal.3d 553,568 (1990). Any conclusion regarding the significance of an environmental impact not based on analysis of the relevant facts fails to achieve CEQA's informational goal.

As set forth below, the DRSEIR is riddled with conclusory statements regarding environmental impacts, unsupported by facts and necessary analysis. Furthermore, the DRSEIR attempts to defer analysis of environmental impacts to a later date. As discussed below, such deferral is not an option. CEQA mandates that environmental impacts be identified and analyzed in the EIR, not at a later date. See Sundstom v. County of Mendocino, 202 Cal.App.3d 296 (1988) (holding that a negative declaration was invalid when county approved a project while postponing the resolution of uncertainties regarding environmental impacts to a later date).

Watt 25 – Response

Please see Section 3.3.12 (Watt 4 – Response) of this Response to Comments document. It is unclear as to what the commenter is referring to regarding "… defer analysis…" The Draft Revised Subsequent EIR fully analyzed impacts to each environmental resource area, please see Section 4.0.

Watt 26 – Comment

1. *The DRSEIR Fails to Analyze Impacts to Biological Resources Adequately.*

The DRSEIR's biological impacts analysis is inadequate in numerous respects, including, but not limited to:

Underestimation of project-related impacts to biological resources: The DRSEIR fails to adequately characterize the extent of project-related impacts to biological resources: First, the uses and management of the open spaces on the project-site are not sufficiently defined and "locked-in" to ensure that biological resources located in these areas will not be impacted. For example, if there are recreational uses in the open space areas, wildlife may not use these migration corridors. In addition, impacts could be associated with the public and private landscaping plans, which are not required to be prepared until after project approval and EIR certification. See SC 8-7 and SC 8-8. No criteria are specified in the DRSEIR for these plans. Moreover, because the full extent of grading and importation of fill/exportation of cut is not disclosed, there are likely to be additional impacts to biological resources on- and off-site that are not described in the DRSEIR. If recreation and other uses are to be prohibited in the open space areas, a revised DRSEIR must state how these restrictions will be enforced and cite examples where similar restrictions have been effective (e.g. more effective than "fencing," which is a proposed mitigation measure).

Watt 26 – Response

The proposed project's potential impacts to biological resources have been thoroughly analyzed and detailed mitigation has been developed. The project was re-designed at the request of the U.S. Fish

and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) to provide an east/west wildlife corridor to connect the project area to the Cleveland National Forest. Please see Section 4.8 and Appendix I of the Draft Revised Subsequent EIR and Appendix B of this Final Revised Subsequent EIR.

SC 8-7 and SC 8-7 both include detailed criteria regarding the preparation of public and private area landscape plans (please see page 4.8-30 of the Draft Revised Subsequent EIR). These Standard County Conditions require review and approval of all landscape plans by the County. Said plans must take into account the County standard plans for landscaped areas, adopted plant palette guides, applicable scenic requirements, and water conservation measures. The level of detail required regarding landscape plans for the proposed project is consistent with the standard manner in which development projects are processed.

Please see Section 3.3.11 (Watt 16 – Response) of this Response to Comments document regarding grading.

Watt 27 – Comment

Deferral of analysis and mitigation: The DRSEIR improperly defers surveys for trees that host nesting raptors. Trees on the project site that provide nesting should be identified prior to certification of the EIR and protection provided as required under the federal MTBA. DRSEIR at page 4.8-22.

Watt 27 – Response

PDF 8-1 included in Section 4.8.4 of the Draft Revised Subsequent EIR does not defer surveys for trees that host raptors but instead requires an *additional* survey prior to the start of construction. Please see Section 4.8.1 and Appendix I of the Draft Revised Subsequent EIR for details of all of the biological surveys, including raptor surveys, completed for the proposed project.

Watt 28 – Comment

Insufficient evidence to support a conclusion that indirect effects would be insignificant. The DRSEIR's conclusion that indirect effects are insignificant is not supported by evidence. The proposed site plan results in a pattern of development (roads and houses) that fragments the property, extends to adjacent undeveloped lands and has an extensive edge. Moreover, the project would introduce lighting, noise and residents in a wildlife area - the effects of which are not adequately disclosed or analyzed in the DRSEIR. Mitigation measures recommend "fencing" adjacent to undisturbed areas of open space. DRSEIR at page 4.8-32. Not only could such fencing result in additional impacts (e.g. impeding wildlife migration), but there is no evidence such fencing will effectively protect open space areas from trespass by children, pets and the like. Additional evidence must be provided in a revised environmental document to support the conclusion that these indirect effects are not significant, particularly where there are a number of alternative projects that would significant [sic] avoid these impacts (e.g. Alternatives 4 and 7).

Watt 28 – Response

The project site is currently being used for horse and cattle grazing. Portions of the site have been previously grazed, cleared or disturbed. As stated in Section 4.8.2 of the Draft Revised Subsequent EIR, indirect impacts would not be significant due to the inclusion of a primary wildlife corridor and the proposed open space. This would minimize indirect impacts such as fragmentation, edge effects, lighting and noise.

Fencing described in M 8-2 of the Draft Revised Subsequent EIR was included at the request of USFWS. Please see Section 3.2.1 (USFWS/CDFG 2 – Response) of this Response to Comments document regarding wildlife corridors.

Watt 29 – Comment

Insufficient evidence is provided that mitigation measures will be effective. The DRSEIR does not provide sufficient evidence that proposed mitigation measures will actually mitigate impacts to less than significant levels. First, the DRSEIR implies that the biological resource mitigation plan has the blessing of the resource agencies:

"The biological resource mitigation plan has been reviewed by the effectual regulatory agencies and a biological opinion has been issued by USFWS. The biological resource mitigation plan mitigates project related impacts to wetland/riparian habitats, sensitive upland habitats and wildlife movement..." DRSEIR at page 4.8-23

Yet, there are no letters in the DRSEIR which document that these agencies have agreed that the biological resource mitigation plan will adequately mitigate project related impacts to biological resources. Furthermore, the referenced biological opinion purports only to "transmit our biological opinion based on our review of the proposed Saddleback Meadows Residential Development Project located in Orange County, California and its effects on the federally endangered Riverside fairy shrimp (Srreptocephulus woottoni "fairy shrimp") and its designated critical habitat, and designated critical habitat for the threatened coastal California gnatcatcher (Polioptila californica californica, "gnatcatcher"), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.)." (Biological Opinion, dated October 26, 2001, at page 1.) I.e., this biological opinion is confined to assessing the project's effects on two species, only, and their designated critical habitats, under the federal Endangered Species Act, not CEQA. If these agencies have not signed off on the adequacy of the biological resource plan under CEQA, the DRSEIR should not leave the impression that they have done so. A revised DRSEIR must include information from the agencies concerning the adequacy of the biological resources plan so that the public and the decision-makers are fully informed about the likely changes these agencies will require in order to issue permits for the project (such changes may include additional mitigation or reconfiguration of the site plan).

Watt 29 – Response

Please see Section 3.2.1 (USFWS/CDFG Responses) of this Response to Comments document.

Watt 30 – Comment

The letters previously submitted by the wildlife agencies on prior project environmental documents raise significant concerns about the project's impacts on biological resources. Specifically, the October 29" letter states:

"Our biologists' professional opinion is that neither of the two previously submitted preferred projects (318 DU and 705 DU) nor the 299 DU Contingency Plan retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows. As currently proposed, the 299 DU Contingency Plan development "footprint" would severely constrain wildlife movement from O'Neill Regional Park (i.e. southern NCCP planning area) to the Central NCCP reserve and Cleveland National Forest and is not acceptable." October 29, 1998 letter at page 2. See Letters from the wildlife agencies dated October 29, 1998 and August 8, 1997, hereby attached as attachments 2 and 3 and incorporated herein by reference.

Watt 30 – Response

Please see Section 3.3.2 (Connor 20 – Response) of this Response to Comments document.

Watt 31 – Comment

Second, the DRSEIR assumes that Project Features and mitigation measures will reduce project-related impacts to biological resources to less than significant levels. Such measures include highly experimental elements such as creation of new ponds and relocation of species (fairy shrimp) the possible failure of which is explicitly anticipated by the cited biological opinion No documentation is provided about projects that have successfully used these techniques.

Watt 31 – Response

Please see Section 3.3.2 (Connor 22 – Response) of this Response to Comments document.

Watt 32 – Comment

Third, the DRSEIR makes clear that drainage and water quality mitigation "features" are not yet completely designed. Questions remain whether the proposed system will maintain water quality, particularly with respect to bacterial indicators and toxic constituents. DRSEIR at page 4.4-l. Yet, the DRSEIR contains no mention of, or analysis concerning the potentially significant project-related and cumulative impacts of bacterial and toxic constituents on species in the creek system downstream of the project site. This analysis must be included in a revised environmental document. Nor does the DRSEIR explain how the project can comply with new water quality regulations recently ordered against the County of Orange by the Regional Water Quality Control Board (CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION ORDER NO. R9-2002-0001 NPDES NO. CAS0108740 WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF URBAN RUNOFF FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) DRAINING THE WATERSHEDS OF THE COUNTY OF

ORANGE, THE INCORPORATED CITIES OF ORANGE COUNTY, AND THE ORANGE COUNTY FLOOD CONTROL DISTRICT WITHIN THE SAN DIEGO REGION), February 13.2001.) These stricter regulations supplant the 1994 NPDES permit referenced in the DSEIR and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek, adjacent to the project, resulting in numerous beach closures at Aliso Beach.

Watt 32 – Response

Please see Section 3.3.8 (Saddleback Canyons Conservancy 4 – Response) of this Response to Comments document. The proposed project will meet the permit requirements of the RWQCB.

Watt 33 – Comment

Fourth, the DRSEIR clearly relies on the long-term maintenance of wildlife corridors on adjacent privately owned properties, some of which are planned for future development. Yet, there is no description of how these corridors would be protected from development, and no analysis of the cumulative impact of future developments that could interfere with essential corridors.

Watt 33 – Response

Figure 4.8.4 of the Draft Revised Subsequent EIR depicts the relationship between the proposed on-site wildlife movement corridor and the regional wildlife movement corridors. The project site currently has a recorded map for 705 manufactured housing/mobile home units with no provision for a wildlife corridor. Future developments would be subject to the same requirements as the proposed project with regard to potential impacts to wildlife corridors and would be required to mitigate any impacts to less than significant.

Watt 34 – Comment

Finally, the DRSEIR fails to state how the project will comply with the NCCP/Coastal Sage Scrub agreement. This information must be included in a revised DRSEIR.

Watt 34 – Response

Although the proposed project is consistent with the NCCP, the plan for this portion of the County has not been completed. The project applicant has worked with wildlife agencies to minimize impacts to coastal sage scrub and provide for significant on-site preservation and off-site acquisition. Combined, these measures fully mitigate impacts to coast sage scrub.

Watt 35 – Comment

Inadequate cumulative analysis. Similar to other cumulative discussions in the DRSEIR the biological resource section cumulative "analysis" is nonexistent. The brief discussion concludes that "...all identified related projects in the region would have to mitigate biological impacts to less than significant." DRSEIR at page 4.8-22. This statement is not sufficient to support finding that there would be no cumulatively significant impacts to biological resources in the region. A revised discussion must identify cumulative projects and their collective impacts (by species, habitat and acreage), disclose the mitigation measures that would be required, provide evidence that the mitigation would be effective and document the conclusion that there would be no significant cumulative impacts.

Watt 35 – Response

Cumulative biological impacts were discussed in Section 4.8.3 of the Draft Revised Subsequent EIR. In addition, as shown on Table 4.8.3, the project would mitigate for more habitat (on-site/off-site) than it would actually impact (53.07 acres impacted/80.48 acres as mitigation).

Watt 36 – Comment

Failure to identify potential inconsistencies with applicable plans and policies. The preliminary reserve design for the Southern Subregion NCCP, Figure 4.8-2, appears to include the site in the reserve. Not only does the DRSEIR fail to discuss the fact that the Southern Subregion NCCP is underway, with updated reserve designs due in July 2002, the DRSEIR fails to disclose that the site is identified as part of the reserve on Figure 4.8-2. A revised environmental document must discuss how the NCCP process applies to the proposed project. Specifically, since the Board of Supervisors agreed to participate in the NCCP process in 1993, can the Board properly take action on this project in advance of the NCCP process reaching major milestones concerning proposed reserve design or even more advanced outcomes? What is the relevance of the site being shown as part of the "reserve" in Figure 4.8-2?

Watt 36 – Response

Please see Section 3.3.12 (Watt 34 – Response) of this Response to Comments document. The entire project is not included as preserve in Figure 4.3.2 of the Draft Revised Subsequent EIR. As noted, the proposed project has been designed to ensure connectivity through the project and meet the objectives of the NCCP for this portion of the County.

Watt 37 – Comment

2. *The DRSEIR Fails to Disclose and Analyze Impacts to Geology and Soils Adequately.*

The DRSEIR is deficient in its analysis of geologic impacts. As noted above, the project description and the DRSEIR as a whole provide little information regarding the massive grading and fill required to actualize this proposed project. The extent of cut and fill also appears to underestimate what could be required to accommodate the project as proposed. It is not clear from the DRSEIR whether importation and exportation of fill will be necessary. If necessary, no analysis is provided of the additional impacts of such activities, including, but not limited to: traffic

associated with hauling materials, direct impacts to borrow and spoils sites, air quality implications and the like. A revised analysis must include evidence that supports the DRSEIR's assertion that grading will balance on site, or in the alternatives, the true extent of project-related impacts must be disclosed. Also, clearer graphics showing the extent and location of cuts and fills must be included in a revised document so that the public and decision-makers can fully appreciate the impacts of this project on the topography.

Watt 37 – Response

Please see Section 3.3.12 (Watt 16 – Response) of this Response to Comments document.

Watt 38 – Comment

3. The DRSEIR's Analysis of Air Quality Impacts Is Incomplete.

The Air Quality section states:

"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end."

The discussion fails to discuss the fact that a leading contributor to emissions, and the least likely land use configuration to successfully result in TSM program trip reductions is suburban sprawl - the land use configuration proposed by the project. No discussion is included in the DRSEIR about meaningful ways to address air quality in terms of major policy changes to how the County uses and develops land (e.g. the County could refocus its efforts to accommodate new housing in "infill" areas, and the like). No TSM mitigation measure is included for the project, because the type of land use proposed by the project is not conducive to TSM programs. In light of the fact the County is located within a non-attainment basin, the County should evaluate bolder land use policy measures to address air quality emissions. Such measures (alternatives such as locating housing in infill areas) should be discussed in the DRSEIR.

The DRSEIR appears to understate the impacts on air quality that will be generated both by project construction and by the built project itself. As noted above, the DRSEIR fails to adequately describe construction activities and phasing, and fails to analyze potential air quality impacts associated with hauling cut and fill on-and off-site. Therefore, the DRSEIR fails to analyze and disclose the potentially significant impacts associated with these activities. As stated above, additional information concerning the suitability of on-site soils as fill for the project must be provided if the DRSEIR is going to assume that cut and fill will balance on-site. Alternatively, a revised environmental document must analyze the impacts associated with exportation of unsuitable cut material and importation of suitable fill material. This analysis must include disclosure of both 1) where the materials will be disposed of and 2) locations for imported fill.

The other major deficiency in the analysis is the lack of any meaningful analysis of cumulative air quality impacts. A revised environmental document must include such an analysis (e.g. other construction projects in the area generating air pollutants; etc.).

Watt 38 – Response

Please see Section 3.3.2 (Connor 10 – Response) of this Response to Comments document regarding construction activities. As stated above, the reference to export/import of material is incorrect. The air quality analysis correctly analyzed impacts with regard to construction activities and phasing.

As stated in Section 4.6.3, a related project with a similar timeframe as the proposed project would increase the short-term emissions for concurrent activities during any day of the construction period. Any additional construction activity during this time and in the vicinity of the project would add additional air pollutant emissions. However, these other projects would be required to include mitigation to reduce these emissions to less than significant levels.

Watt 39 – Comment

4. The DRSEIR Fails to Analyze Hazards Adequately.

The DRSEIR defers analysis of potential on-site contamination. Specifically, the potential for on-site contamination is deferred until prior to recordation of the subdivision map. See SC 2-13 at page 4.2-l 6 of the DRSEIR. At a minimum the results of a phase I site assessment should be included in a revised environmental document.

Watt 39 – Response

As stated in Section 2.1.1 of the Draft Revised Subsequent EIR, the project site is largely undeveloped and portions of the site have been previously grazed, cleared or disturbed. The site is currently being used for horse and cattle grazing and there is no historical use that would indicate the potential for on-site contamination. A Phase I study was completed in 1978 and included as Appendix O of the Draft EIR No. 561, which was incorporated by reference in Section 1.1 of the Draft Revised Subsequent EIR.

Watt 40 – Comment

5. The DRSEIR Fails to Analyze Land Use and Planning Impacts Adequately.

The DRSEIR fails to describe all relevant policies and plans, and fails to evaluate the consistency of the project with each policy. Each relevant County and other agency policy, general plan policy, regulation, guideline or standard should be summarized in a table, noting whether the project is consistent with the applicable provision and what must

be done to reconcile the two [sic] *where they are inconsistent. Instead, the DRSEIR fails to identify key County policies and fails to discuss the applicable policies and regulations of other agencies (e.g., policies of the U.S. Fish and Wildlife Service and the Regional Water Quality Control Board among others). A revised environmental document must include this analysis.*

Watt 40 – Response

Please see Section 3.3.12 (Watt 22 – Response) of this Response to Comments document. All applicable plans and policies related to the proposed project were discussed in the EIR. In addition to the land use policies included in Section 4.1; Section 4.4 included a discussion of regulatory policies of the State Water Resources Control Board and the Regional Water Quality Control Board; Section 4.5 included a discussion of Congestion Management Plans and traffic related policies of the County of Orange General Plan and the F/TSP; Section 4.6 included a discussion of the federal and state clean air standards, the Air Quality Management Plan; and Section 4.8 included a discussion of the Endangered Species Act, California Fish and Game Code, the Clean Water Act and the NCCP.

Watt 41 – Comment

6. The DRSEIR Fails to Analyze Impacts to Traffic Adequately.

The DRSEIR fails to disclose that the project's proposed land use pattern would not support sound transportation management practices because of its location, low density and contribution to the suburban sprawl pattern in Orange County. As a result, the project will perpetuate the exclusive use of automobiles for transportation, the very practice that has contributed to the traffic and air quality problems that are so acute in the County.

The Air Quality section states:

> *"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end."*

No TSM mitigation measure is included for the project because the type of land use proposed by the project is not conducive to TSM programs. The DRSEIR should disclose this fact and acknowledge the poor pattern of land uses represented by this and other projects in the area, will continue to frustrate the County's progress toward acceptable traffic flows and clean air quality. A revised environmental document should discuss alternatives to the general plan land uses in the area - and explore the potential for transferring these planned units to infill sites.

Finally, the DRSEIR fails to adequately analyze cumulative traffic impacts including how projects of this type are likely to frustrate the County's attempts at a meaningful TSM program. The geographic study area for the analysis of cumulative projects is artificially small in size, and fails to provide a sufficiently large study area for many impacts,

including traffic, air quality and biological resources. See Table 3.1, Related projects. Moreover, there is no information provided on construction period traffic for even these related projects; information which must be provided and included in a revised cumulative analysis for traffic and air quality. The study area for the revised analysis should extend at least to the likely areas where new residents in the proposed project and related projects are employed. No such information is included in the DRSEIR. Thus, it is unclear how the study area was selected. Information concerning where new residents in these areas work and therefore commute, must be developed and used to form the basis for the new analysis of traffic and transit impacts.

Watt 41 – Response

Traffic issues related to land use and development of this site have been analyzed in the context of the Orange County Congestion Management Program (CMP) and the County of Orange Growth Management Program (GMP). Although each of these programs involves different specific objectives and requirements, the underlying goal from a transportation perspective is to eliminate or mitigate the impact of changes in land use on the transportation system. The CMP recommends that the study area for CMP highway system links be defined by a measure of significant traffic impact represented by three percent of roadway capacity. The GMP utilizes a more stringent test (than the CMP) of the effect of the project traffic on existing intersection operations to determine whether or not an intersection should be included in a project traffic impact analysis study effort. Intersections where the existing plus project intersection capacity utilization (ICU) increases by one percent (or more) compared to the existing ICU are included within the traffic impact analysis study area. The analysis area addresses project impacts based on direction from the County of Orange and in accordance with the GMP one percent test.

The basic approach taken in assessing the effects of the proposed project on traffic circulation in the study area has assumed that the worst case conditions would occur in association with the build-out of the General Plan land uses (as reflected in the officially adopted countywide population and employment growth forecasts) in the vicinity of the project site. A comprehensive travel demand forecasting analysis has, therefore, been undertaken for the express purpose of developing long-range traffic projections for a variety of conditions. Future conditions both with and without the proposed project have been evaluated.

The CMP also requires that the basic inputs to any model being used for traffic analysis purposes must be compared to the official regional projections of growth to verify model consistency with the official regional projections. The OCP-2000 growth forecasts are the currently adopted official projections for the County of Orange. These data has been incorporated into the OCTAM 3.1 tool used for this analysis.

The approach taken to this analysis was to use a computerized forecasting tool or traffic model to represent the interaction of the proposed project with the surrounding study area. The computerized

traffic modeling forecasts used to evaluate future build-out conditions for this traffic study were produced using a derivative of the Orange County Transportation Analysis Model (OCTAM). The OCTAM was developed by the Orange County Transportation Authority (OCTA). Inputs to OCTAM include the MPAH roadway structure and most current OCP-2000 socioeconomic data. Documentation of the traffic model is contained in the report OCTAM 3.1 Orange County Transportation Analysis Model Summary Documentation and Validation Report (OCTA, June, 2001). The commenter is also referred to that report for information concerning development of the traffic model and validation of the model. The area encompassed by the OCTAM contains the five Southern California Counties (Ventura, Los Angeles, Riverside, San Bernardino, and Orange) with most focus on Orange County.

Both the CMP and GMP are based on the evaluation of peak hour intersection operations using the ICU methodology. LOS "D" is the limit of acceptable peak hour intersection operations, with LOS "E" being defined as the beginning of deficient operations. Any peak hour intersection operations of LOS "E" or worse are, therefore, considered deficient in the project traffic analysis.

A traffic impact is considered significant if the project both: (1) contributes measurable traffic to; and (2) substantially and adversely changes the level of service to any intersection projected to experience deficient operations under foreseeable worst-case conditions.

Project Design Features, Standard County Conditions, and mitigation measures have been identified to reduce the project impact to a level of insignificance (see Section 4.5. of the Draft Revised Subsequent EIR). The feasibility of proposed mitigation measures has been evaluated on the basis of field reconnaissance and/or review of aerial photographs of the study area. The CMP and GMP then require that a project contribute a pro-rata contribution for improvements at locations requiring improvements.

Watt 42 – Comment

7. *The DRSEIR Fails to Analyze Adequately Impacts to Hydrology, Drainage and Water Quality.*

Pollution carried by storm water and urban runoff is the largest source of contamination to surface water both in California and nationwide. Construction sites, in particular, have been identified as significant dischargers of polluted storm water, involving high concentrations of silt and turbidity as well as oil and grease, trash, sewage, and other chemicals used in construction activities and equipment maintenance. Despite this well-known and well-documented problem, the DRSEIR fails to adequately describe construction activities and on-site and off-site drainage "improvements," both of which could impact the water quality of the area. See concerns raised above about the inadequate and incomplete description of the project drainage and water quality features.

Watt 42 – Response

Hydrology and drainage (Section 4.2 and Appendix D), and water quality (Section 4.4 and Appendix F) were discussed in detail in the Draft Revised Subsequent EIR.

Watt 43 – Comment

The DRSEIR concludes that there will be no significant drainage impacts after mitigation because of a highly engineered system of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to "control project drainage." DRSEIR at page 4.3-7. A "riverine water quality titration system" is proposed next to the road to "cleanse low flow urban runoff." DRSEIR at page 4.3-7. There is no evidence in the DRSEIR that confirms this combination of features will mitigate for the impacts associated with the introduction of impervious surfaces, the complete alteration of the on-site drainage system and redirection of the natural drainages. No examples of successful projects that are similar in features are provided in the DRSEIR.

Moreover, there is no discussion of what kind of long-term maintenance and monitoring will be needed to maintain this highly engineered system The DRSEIR merely states that the "structural and non-structural BMPs would be owned, operated and maintained by the home owner's association (HOA) or community services district." DRSEIR at page 4.4-12. Specific information about the drainage and water quality features and how they will be maintained and monitored over the long-term (including information about the cost of maintenance and monitoring) is essential to determine: first, whether the extent of drainage alterations is an acceptable project feature; and second, whether the proposed system of drainage features will actually be a viable system over the long-term, and effectively mitigate significant impacts to the natural drainage system. Specific information about the Riverine system, and the fact that the northerly development area does not have sufficient room to continue this system, suggests that the proposed project features may fall short of ensuring water quality is not adversely impacted by the project. DRSEIR at page 4.4- 11.

The revised document should include examples of projects that incorporated similar features and have been demonstrated to result in effectively addressing drainage and water quality impacts. Absent this information, the conclusion reached in the DRSEIR that "[u]pon implementation of the Project Design Features and compliance with the Standard County Conditions, water quality impacts would be mitigated to a less than significant level," is not supported by evidence.

Watt 43 – Response

The master drainage concept for the proposed project has been prepared in consultation with the County of Orange and utilizes standards and criteria of the Orange County Flood Control District (page 4.3-7 of the Draft Revised Subsequent EIR). The proposed Drainage Master Plan provides a series of water quality enhancement features designed to reduce stormwater quality impacts to Aliso Creek

Watt 44 – Comment

Finally, the significance of project-related impacts requires that the analysis of cumulative impacts to drainage and water quality be extensive. The DRSEIR fails to complete any analysis of these admittedly significant cumulative impacts, yet concludes that as a result of "required mitigation," cumulative impacts would not be significant. DRSEIR at pages 4.3-7 and 4.4-13.

Watt 44 – Response

The Draft Revised Subsequent EIR includes a comprehensive evaluation of project impacts on hydrology and water quality and a series of Project Design Features and mitigation to reduce impacts to less than significant (see Sections 4.3 and 4.4 and Appendices D and E).

Watt 45 – Comment

C. The DRSEIR Fails to Analyze Cumulative Impacts Adequately.

The DRSEIR utterly fails to analyze cumulative impacts in the manner or to the degree required by CEQA. The CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." CEQA Guidelines §§ 15355(a). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." Id.

A legally adequate cumulative impacts analysis views a particular project over time and must consider the impact of the project combined with other projects causing related impacts, including past, present, and probable future projects. CEQA Guidelines 15130(b)(l). Projects currently under environmental review unequivocally qualify as reasonably probable future projects to be considered in a cumulative impacts analysis. See San Franciscans for Reasonable Growth v. City and County of San Francisco, 151 Cal.App.3d 61, 74 & n. 13 (1984). In addition, projects anticipated beyond the near future should be analyzed for their cumulative effect if they are reasonably foreseeable. See Bozung v. Local Agency Formation Comm'n, 13 Cal.3d 263.284(1975). Alternatively, an EIR may utilize:

A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact.

CEQA Guidelines § 15130(b)(l)(B). Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. Id.

The discussion of cumulative impacts must include a summary of the expected environmental effects to be produced by those projects, a reasonable analysis of the cumulative impacts, and full consideration of all feasible mitigation measures that could reduce or avoid any significant cumulative effects of a proposed project. See CEQA Guidelines §§ 15126.4(a)(1) and 15130(b)(3).

The cumulative impacts concept recognizes that "[t]he full environmental impact of a proposed...action cannot be gauged in a vacuum." Whitman v. Board of Supervisors, 88 Cal.App.3d 397,408 (1097). The requirement of a cumulative impacts analysis of a project's regional impacts is considered a "vital provision" of CEQA. Bozung, 13 Cal.3d at 283. Moreover, an EIR must examine not only the anticipated cumulative impacts, but also reasonable options for mitigating or avoiding the project's contribution to significant cumulative impacts. CEQA Guidelines § 15130(b)(3). The DRSEIR does not come close to meeting these requirements for the reasons described below.

Watt 45 – Response

Please see Section 3.3.12 (Watt 3 – Response) of this Response to Comments document.

Watt 46 – Comment

1. *The DRSEIR's Cumulative Impacts Analysis' Geographic Study Area Is Too Small and Thus Inadequate Under CEQA.*

The DRSEIR considers a geographic study area far to small to reveal the true nature of the proposed project's cumulative impacts and, thus, is deficient under CEQA. The analysis of cumulative impacts appears to be based on a short list of "related" projects in the immediate area of the project. See Table 3.1 and Figure 3.2.

Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Mission Viejo project and other projects in the Southern Subregion NCCP area. In September of 2001, the Mission Viejo Company filed an application for development of its land. As such, the cumulative analyses of land use and planning, geology and soils, hydrology and water quality, air quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider this potentially massive foreseeable project.

Furthermore, the document does not provide even minimal information regarding other projects within the Southern Orange County NCCP Study area. Analysis of these additional projects is particularly important given the project's location in the Southern Orange County Natural Community Conservation Program Study area.

Although the DRSEIR concludes that the project's cumulative impacts, with the exception of air quality, will not be significant, such a conclusion cannot be supported in light of the inadequacy of the geographic study area. The DRSEIR's failure to consider the 14,000 home Rancho Mission Viejo Project alone renders its scope inadequate. The DRSEIR must also acknowledge and analyze the project's significant cumulative impact on the existing severely "impacted" water quality in adjacent Aliso Creek. This failure to consider regional or area wide cumulative impacts is fatal under CEQA and, as such, the document must be revised.

Watt 46 – Response

The geographic study area used for the cumulative analysis in the Draft Revised Subsequent EIR was appropriate for this size and scale of project. Please see Section 3.2.6 of the Response to Comments document, which includes a letter from the Southern California Association of Governments (SCAG). As stated in SCAG's letter, the proposed project is not of regional significance. The project's cumulative impacts have been adequately addressed.

Watt 47 – Comment

2. *The DRSEIR Fails to Analyze any of the Cumulative Impacts Adequately.*

In addition to relying on a far too small geographic study area, the level of analysis in the DRSEIR's cumulative impacts analysis is far too cursory. An EIR must include objective measurements of a cumulative impact when such data are available or can be produced by further study and are necessary to ensure disclosure of the impact. See Kinas County, 221 Cal.App.3d at 729. Despite this mandate, the DRSEIR fails to analyze adequately a number of cumulative impacts, including, but not limited to, impacts to biological resources, water quality and drainage, and aesthetics, among others.

For example, with regard to cumulative water quality impacts, the DRSEIR states that "Ultimate development planned in the watershed in conjunction with the proposed project would potentially impact both surface and groundwater quality. Without controls, both short-term construction-related and long-term impacts due to pollutants in urban runoff could substantially impact water quality." DRSEIR at page 4.4-13. Despite this finding and despite the project's location in the watershed streams, the DRSEIR concludes that: "...as with the proposed project, related projects would be required to mitigate impacts to water quality to less than significant levels." Id. The DRSEIR fails to adequately summarize any information that would support the conclusion, and offers no supporting analysis itself. A revised environmental document must include analysis of cumulative impacts in order to support the conclusions throughout the DRSEIR that cumulative impacts will be reduced to less than significant levels. Statements such as: "cumulative projects are required to mitigate their impacts, therefore they will," are insufficient to support findings that all cumulative impacts, except air quality, will be less than significant.

Moreover, none of the cumulative impact discussions provide quantified information concerning cumulative project impacts, including, but not limited to: acres of habitat types directly/indirectly impacted by development or total construction trips. This information must be provided in revised cumulative analyses in a revised environmental document. Without such information, there is insufficient evidence to support the DRSEIR's conclusion that cumulative impacts to biological resources, traffic and water quality, among other impacts, will be insignificant. A revised document must also specify mitigation measures for cumulative impacts. Currently, the DRSEIR includes conclusory statements in each section concerning potentially significant cumulative impacts. In each case, "required mitigation" is assumed to reduce significant cumulative impacts to less than significant levels. For example, the biology section contains the following statement concerning cumulative impacts:

"However, as with the proposed project, all identified related projects within the region would have to mitigate biological project impacts to less than significant." DRSEIR at page 4.8-22.

This conclusory statement provides no evidence that cumulative impacts to biological impacts will or can in fact be mitigated, nor is there any legal requirement that "all proposed projects" mitigate biological project impacts to less than significant. CEQA requires only that such impacts be mitigated to the extent feasible, which may not be to a less than significant level. See also DRSEIR at pages 4.1-12 (cumulative loss of open space would be adverse, but not significant); 4.4-13 (ultimate development in the watershed would potentially impact both surface and groundwater quality, but such impacts would be required to be mitigated to less than significant levels); 4.12-4, and other cumulative sections throughout the DRSEIR.

Watt 47 – Response

Cumulative impacts of the proposed and related projects were evaluated for each environmental factor in Section 4.0 of the Draft Revised Subsequent EIR.

Watt 48 – Comment

Finally, as described above, the DRSEIR fails to explore the full range of mitigation measures that could potentially reduce cumulative impacts below a level of significance. An EIR must examine reasonable options for mitigating or avoiding the project's contribution to cumulative impacts. See CEQA Guidelines §15130(b)(3).

Watt 48 – Response

Project Design Features and mitigation measures were included in the Draft Revised Subsequent EIR that would serve to incrementally reduce cumulative impacts. These include, but are not limited to, remedial grading activities that would stabilize slopes currently subject to landslides above El Toro Road (PDF 2-1); reduce sediment and pollutant transport to Aliso and Oso Creeks (PDF 3-1, PDF 4-4, PDF 4-6, and PDF 4-12); transportation improvements (M 5-3, M 5-4, and M 5-5); enhancement of biological resources (PDF 8-1); and additional recreational resources (PDF 11-1, PDF 11-2, PDF 11-3, PDF 11-4, PDF 11-5).

Watt 49 – Comment

D. The DRSEIR's Discussion of Growth-Inducing Impacts is Inadequate Under CEQA.

The DRSEIR must consider the growth-inducing potential of the project in this undeveloped area. CEQA requires that an EIR include a "detailed statement" setting forth the growth-inducing impacts of the proposed project .See Public Resources Code § 21100(b)(5); City of Antioch v. City Council of Pittsburg, 187 Cal.App.3d 1325, 1337 (1986). The statement must "[d]iscuss the ways in which the proposed project could foster economic growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." CEQA Guidelines §

15126.2(d). It must also discuss how a project may "encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively" or "remove obstacles to population growth." Id.

The DRSEIR's brief growth-inducing section concludes that the project is consistent with growth management policies of SCAG's RCP and would not extend or serve beyond the project boundaries. There is no analysis of whether the extension of roads and services on-site, and the development of a water tank and access road off-site, would facilitate growth on adjacent properties. Nor does the discussion reach any conclusion as to whether the project is or is not growth inducing as required by CEQA. The DRSEIR fails to address the potential for the off-site water tank to support development on adjacent, currently undeveloped parcels. In addition, wastewater pipes would be extended on site. The DRSEIR fails to describe the potential for these pipes to support development beyond the project site. A revised environmental document must include an adequate analysis of the project's potential for growth inducement.

Finally, the DRSEIR fails to consider the precedent set by approval of this project. Specifically, the project interprets the general plan and other County plan policies to allow this development. No information is provided on the status of "permitted" development under the applicable plans for the area including the site and beyond. Figure 4.1.3, Foothill/Trabuco Specific Plan Land Use Designations, indicates development potential on a number of presently undeveloped properties that are contiguous to the project site. No information is provided in the DRSEIR concerning the status of development within the Specific Plan (e.g., the current statistical summary). It is clear that the development of the project site could have a growth inducing effect on these adjacent properties. Overall, the DRSEIR provides little evidence that the improvements to infrastructure, it will involve and the precedent it will set will not induce growth to adjacent undeveloped properties.

Watt 49 – Response

The proposed project would not effect growth inducement related to adjacent property, as the project does not extend access or utility infrastructure to accommodate additional growth. Furthermore, the project site has a recorded Final Subdivision Map for 705 manufactured/mobile home units, which was record in 1988.

Please see Section 3.2.6 of the Response to Comments document, which includes a letter from (SCAG). As stated in SCAG's letter, the proposed project is not of regional significance.

Watt 50 – Comment

In addition, the DRSEIR must analyze the potentially eviscerating effect of all other undeveloped sites within the Foothill Trabuco Specific Plan area seeking to follow the precedent of spot-amending the Specific Plan to explicitly exempt proposed development from all of the regulations and guidelines of the Specific Plan.

A revised growth inducing analysis must be prepared and include the status of development permitted on adjacent properties under all applicable plan and policies. This analysis should inform a revised analysis of cumulative impacts, including, but not limited to the long-term sustainability of an adequate wildlife corridor system.

Watt 50 – Response

Please see Section 3.3.12 (Watt 49 – Response) of this Response to Comments document. As stated previously, an amendment to the F/TSP is not proposed or required.

Watt 51 – Comment

E. The DRSEIR Improperly Attempts to Defer Mitigation to a Later Date, Fails to Identify Feasible Mitigation Measures, and Relies on Inadequate Mitigation Measures.

CEQA requires that mitigation measures be identified and analyzed. "The purpose of an environmental impact report is…to list ways in which the significant effects of such a project might be minimized…." Pub. Res. Code § 21061. The Supreme Court has described the mitigation and alternative sections of the EIR as the "core" of the document. Citizens of GoletaValley v. Board of Supervisors, 52 Cal. 3d 553 (1990). As explained below, the DRSEIR's identification and analysis of mitigation measures, like its analysis throughout, is thoroughly inadequate. An EIR is inadequate if it fails to suggest mitigation measures, or if its suggested mitigation measures are so undefined that it is impossible to evaluate their effectiveness. See San Franciscans for Reasonable Growth v. City and County of San Francisco, 15 1 Cal.App.3d 61,79 (1984). Moreover, an EIR may not use the inadequacy of its impacts review to avoid mitigation: "The agency should not be allowed to hide behind its own failure to collect data." Sundstrom v. County of Mendocino, 202 Cal.App.3d 296,361 (1988). Nor may the agency use vague mitigation measures to avoid disclosing impacts. See Stanislaus Natural Heritage Project v. County of Stanislaus, 48 Cal.App.4th 182, 195 (1996). Lastly, the formulation of mitigation measures may not properly be deferred until after Project approval; rather, "[m]itigation measures must be fully enforceable through permit conditions, agreements, or legally biding instruments." 14 CCR § 15126.4 (a). In the present case, the DRSEIR does not come close to satisfying these basic CEQA requirements regarding impact mitigation. Most egregiously, it attempts to defer discussion and development of suitable mitigation measures until after the certification of the environmental document and the conclusion of public review.

Watt 51– Response

Please see Section 3.3.12 (Watt 7 – Response) of this Response to Comments document.

Watt 52 – Comment

1. The DRSEIR Improperly Defers Mitigation.

The DRSEIR impermissibly concludes that all of the project's environmental impacts, with the exception of cumulative air quality, will be mitigated below a level of significance, while at the same time deferring necessary analysis of mitigation measures. DRSEIR at page 9-1. Under CEQA, an EIR may conclude that impacts are insignificant only if it provides an adequate analysis of the magnitude of the impacts and the degree to which they will be mitigated.

See Sundstrom, 202 Cal.App.3d at 306-07. Thus, if an agency fails to investigate a potential impact, its finding of insignificance simply will not stand. Id. Further, CEQA generally requires that all mitigation measures be adopted simultaneously with, or prior to, project approval. An agency may defer preparation of a plan for mitigation only when the agency commits itself and/or the project proponent to satisfying specified performance standards that will ensure the avoidance of any significant effects. Id.

In the present case, the DRSEIR violates CEQA by deferring critical analyses of project impacts and necessary mitigation. The following is a non-exhaustive list of the project design features and mitigation measures that the DRSEIR improperly defers to a later date:

a. *PDF 3-1. A master drainage concept has been incorporated into project design to mitigate hydrology impacts to existing OCFCDs requirement sand standards…This Project Design Feature is being prepared in consultation with USACE.*
b. *M 4-l. The applicant shall have the option to research off-site water quality improvements to determine the technical and economic feasibility of implementing improvements that have regional water quality benefits and can also mitigate project-related impacts…*
c. *PDF 4-9. The storm drain system shall be designed to mimic natural drainage patterns as closely as possible. Emphasis added.*
d. *As part of final design, ponds and swales would be incorporated to the maximum extent feasible…DRSEIR at page 4.4-l 2.*

The DRSEIR's failure to adequately analyze the potentially significant effects of the project, and to design proper mitigation measures prior to project approval, renders the document inadequate and vulnerable to legal challenge. With the DRSEIR in its current form, decision-makers, the public and permitting agencies cannot evaluate the advisability of project approval. Too little is known, and too much is entirely unknown, about the project's environmental impacts.

Watt 52 – Response

Please see Section 3.3.12 (Watt 7 – Response) of this Response to Comment document.

Watt 53 – Comment

2. *The DRSEIR Fails to Identify Feasible Mitigation Measures.*

The DRSEIR's consideration of mitigation is inadequate because it fails to identify several feasible measures that could reduce or eliminate identified significant impacts. Mitigation is defined by CEQA as including:

a. *Avoiding the impact altogether by not taking a certain action or parts of an action.*
b. *Minimizing impacts by limiting the degree or magnitude of the action and its implementation.*
c. *Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.*

d. *Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.*
e. *Compensating for the impact by replacing or providing substitute resources or environments.*

CEQA Guidelines § 15370. The DRSEIR fails to consider measures, which could mitigate in the fashion described above significant impacts in several resource categories, including, but not limited to, biology, geologic hazards, hydrology and water quality, among others.

Watt 53 – Response

Project Design Features, Standard County Conditions, and mitigation measures have been included to mitigate impacts associated with the proposed project. Please see the following sections of the Draft Revised Subsequent EIR: Sections 4.8.4 and 4.8.6 regarding biology; Sections 4.2.4 and 4.2.6 regarding geologic hazards; and Section 4.3.4 regarding water quality.

Watt 54 – Comment

Furthermore, the DRSEIR improperly concludes that all impacts except cumulative air quality, are mitigated to below a level of significance based either on deferred mitigation measures, as discussed above, incomplete and "future" project features, or on mitigation measures of unproven efficacy. These determinations are not supported by substantial evidence. A partial list of impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to the following:

Project impacts to biological resources: *There is insufficient information in the DRSEIR to establish the efficacy of proposed mitigation measures including wildlife corridors and replacement ponds, and to support a finding that the impacts to biological resources will be less than significant with mitigation. Moreover, the applicant has not secured all of the necessary permits for the project and the agencies have not signed off on the adequacy of the proposed measures. Even with such agency approvals, significant impacts may remain. For these reasons, and because a feasible project alternative is proposed that would significantly reduce impacts to resources (Alt. 4), a revised environmental document should identify project related impacts to biological resources as significant and unavoidable.*

Cumulative impacts to biological resources. *In the USFWS biological opinion, the Service states under cumulative impacts:*

"At this time, we do not have adequate information to fully evaluate the potential impacts of the Saddlecreek/Saddlecrest Residential Development Project, Whispering Hills Development Project, and the Capistrano Valley Water District Pipeline Project on designated critical habitat for the gnatcatcher." Biological Opinion at page 23.

Another major project in the Southern NCCP area, the Mission Viejo Project, implicates some of the same species and habitats as the proposed project. Based on: 1) the significant amount of habitat loss involved with these development projects in combination with properties surrounding the project site "planned" for development; 2) the lack

of information concerning the efficacy of proposed mitigation measures; and 3) the lack of information concerning mitigation measures for cumulative projects, a revised environmental document should identify cumulative impacts to biological resources as a cumulatively significant and unavoidable impact.

Watt 54 – Response

Please see Section 3.3.12 (Watt 35 – Response) of this Response to Comments document.

Watt 55 – Comment

Project-related aesthetic impacts: *The DRSEIR finds that impacts to aesthetic and visual resources would be less than significant. DRSEIR at page 4.9-23. In support of this finding, the text of the document states:*

> *"The proposed project would not have a substantial negative aesthetic effect. As depicted in the visual simulations, Saddleback Meadows would be low-density and rural in character and would not conflict with the surrounding environment..." DRSEIR at page 4.9-23.*

The project is not "rural in character." Figure 2.9, Conceptual Streetscape, clearly illustrates a project that is suburban in character. Lot sizes averaging 6,672 square feet clearly represent urban/suburban development densities. The protection of fragmented areas of the project site in open space does not "transform" this suburban development into "rural" character. Based on Appendix G of the CEQA Guidelines, the transformation of this site from undeveloped to suburban in the midst of wildlife habitat would constitute a substantial degradation of the existing visual character of the site and its surroundings. Therefore, this impact should be identified as significant and unavoidable as clearly demonstrated by the visual simulations (Compare figures 4.8.4 and 4.9.1, and see Figures 4.9.4, 4.9.5, and 4.9.9, among other exhibits in the DRSEIR, which demonstrate the significant change in character of the site and surrounding area with development as proposed.)

Cumulative Aesthetic Impacts. *Figure 2.6 and 4.1.3 clearly indicate that other properties in the project area are designated for development. Cumulative development in the area should have been analyzed and mitigation measures proposed to ensure that the area's visual resources are not further degraded by planned development. Since no cumulative analysis was undertaken, and no cumulative mitigation measures are proposed, the potential for cumulatively significant and unavoidable aesthetic and visual impacts should be identified in a revised environmental document.*

Watt 55 – Response

As stated in Section 4.9 of the Draft Revised Subsequent EIR, with implementation of Project Design Features and Standard County Conditions, impacts to visual resources would be less than significant.

Watt 56 – Comment

Other impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to: plan and policy inconsistencies; landform alteration; project-related and cumulative drainage and water quality impacts; cumulative traffic impacts; and cumulative impacts to public services and utilities. Growth inducement should also be identified as a significant adverse result of the project. The DRSEIR does not include sufficient evidence to identity these and other impacts as less than significant after mitigation

Watt 56 – Response

These environmental factors were evaluated in the Draft Revised Subsequent EIR and found to be less than significant with implementation of Project Design Features, Standard County Conditions and mitigation measures.

Please see Section 3.3.11 (Watt 49 – Response) of this Response to Comments document.

Watt 57 – Comment

F. The DRSEIR Does Not Adequately Discuss Alternatives to the Proposed Project.

Although the alternatives section of the DRSEIR describes a number of alternatives, this section continues to fall short of the standard set by CEQA. Under CEQA, an EIR must analyze a reasonable range of alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives while avoiding or substantially lessening the project's significant impacts. See Pub. Res. Code § 21100(b)(4); CEQA Guidelines § 15126.6(a); Citizens for Quality Growth v. City of Mount Shasta, 198 Cal.App.3d 433,443-45 (1988). As stated in Laurel Heights I, "Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process…[Courts will not] countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the consequences of action by their public officials." 47 Cal.3d 376,404 (1988). The DRSEIR's discussion of altematives fails to meet these standards.

First, none of the development alternatives are "transparently" based on a comprehensive constraints map that identifies areas of high resource values and areas that should be avoided based on County plan policies. However, one of the alternatives, Alternative 4 – F/TSP EIR 531 Staff Alternative B, appears to avoid substantially more of the impacts than the proposed project and the other development alternatives. Alternative 7 - Acquisition Alternative, would protect key on-site resources because the site would be acquired rather than developed. Because of the resource values represented on the site, the site's sensitive location and its topography, all development alternatives, including Alternatives 4 and 6 would result in substantial grading of sensitive areas, impacts to water quality and biological resources and other significant impacts. A revised analysis should include an alternative based on a site constraints map, which represents current information about high value resources.

Watt 57 – Response

Please see Section 3.3.2 (Connor 2 – Response, Connor 29 – Response, and Connor 30 – Response) of this Response to Comments document.

Watt 58 – Comment

Second, the DRSEIR fails to describe an alternative location for the project housing. Therefore, no off-site alternative was evaluated. No information is contained in the DRSEIR concerning the potential for in-fill housing within the County, including on sites assembled by the applicant within incorporated and unincorporated areas to accommodate the units proposed by the project. Such sites should include "infill" sites with reuse, redevelopment and additional development potential (e.g. under performing shopping centers and other underutilized/vacant sites). The explanation in the DRSEIR concerning such sites is not supported by a methodology, analysis or facts. Moreover, the DRSEIR applied criteria to alternative sites that is unreasonably constrained. According to the DRSEIR:

"It is speculative, but unlikely that the project applicant could assemble other contiguous properties within the area to accommodate the number and type or [f] residences proposed for the project. Moreover, if such properties were identified and acquired by the applicant, the properties would likely have resources and environmental constraints similar to Saddleback Meadows. Development of the proposed project at an alternative location, therefore, is unlikely to be economically viable and would probably not reduce environmental impacts in comparison to the proposed project." DRSEIR at page 5-3.

Off-site alternatives to accommodate housing in the County should not be limited to contiguous properties. Recently, the Planning Center completed an analysis of where development could be accommodated in Orange County. See LA Times, June 17,2001 article. The study concluded that there are sufficient underutilized shopping center sites to accommodate significant development demand. Based on this information and a reasonable methodology for off-site locations, a revised analysis must describe specifically the methodology used to determine that alternative sites do not exist.

Watt 58– Response

Section 5.3 of the Draft Revised Subsequent EIR included a discussion of alternative locations for the proposed project. However, this alternative was eliminated from consideration due to the limited number of developable sites remaining in Orange County and alternative sites within outlying areas of the County are neither within the control of the applicant or unlikely to meet the project objectives. Further, it is speculative but unlikely that the applicant would assemble other contiguous properties within the area to accommodate the number and type of residences included as part of the proposed project. No additional analysis is required.

Watt 59 – Comment

Third, the DRSEIR fails to identify appropriate environmentally superior alternatives as required by CEQA. Specifically, the DRSEIR fails to identify Alternative 4 as the environmentally superior development alternative. See Table 5.7, which clearly indicates that Alternative 4 is the superior development alternative and meets the applicant's objectives. The DRSEIR improperly identities Alternative 8 as the environmentally superior alternative of the "non-no project alternatives." DRSEIR at page 5-47. This section of the DRSEIR must be revised to report the appropriate environmentally superior alternative based on the facts contained in the DRSEIR. Moreover, because Alternative 4 has fewer impacts than the proposed project, and meets project objectives, facts must be presented that this alternative is infeasible if it is rejected in favor of another development alternative.

Watt 59 – Response

Please see Section 3.3.2 (Connor 30 – Response) of this Response to Comments document.

Watt 60 – Comment

Finally, the DRSEIR fails to adequately analyze the feasibility of Alternative 7 – Acquisition Alternative. No information is provided concerning interest expressed by agencies and other conservation organizations to purchase the property and whether the applicant is a "willing seller." This information is critical to the County's consideration of the project and must be provided in a revised analysis. Moreover, this section should identify potential funding sources for purchase of the property, including Proposition 40 funding and the possibility of funding under the NCCP program if the site is upheld as important for inclusion in a reserve. The DRSEIR's statement that this alternative would not meet project objectives assumes that the County cannot develop an aggressive infill program as part of its housing element to provide for needed housing in the County. Information about the feasibility of meeting housing needs without relying on parcels that contain sensitive biological and environmental resources must be included in a revised analysis.

Watt 60 – Response

Please see Section 3.3.2 (Connor 30 – Response) of this Response to Comments document.

Watt 61 – Comment

II. THE PROJECT MUST BE DISAPPROVED OR THE DEIR MUST AGAIN BE REVISED AND RECIRCULATED.

The serious inadequacies of the DRSEIR are symptomatic of fundamental deficiencies in the project itself. Only a project as deeply flawed as this would fail to result in an adequate revised DEIR after the extensive and highly detailed comments provided by the groups and many others on the first DEIR. The enormous mass grading and placement of fill on erosion-prone soils required for the project seriously call into question the suitability of the site for residential development. The project would wreak unnecessary havoc on the habitat and corridors of several sensitive

and endangered species, including the gnatcatcher. For these reasons, the project application should be denied as inadequate and infeasible.

In the alternative and at a minimum, the County may not approve the project unless the DRSEIR is again revised and recirculated to fully disclose and analyze the project's impacts and a proper range of alternatives. Given the multiple inadequacies discussed above, this DRSEIR cannot properly form the basis of a final EIR. CEQA and the CEQA Guidelines require recirculation of a draft EIR where, as here, the document is so fundamentally inadequate in nature that meaningful public review and comment are precluded. See CEQA Guidelines § 15088.5.

CONCLUSION

As set forth above, the DRSEIR suffers from numerous deficiencies, many of which would independently render it inadequate under CEQA. Taken as a whole, the deficiencies of the DRSEIR are so pervasive as to necessitate further extensive revision of the document- and recirculated for public comment. National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund respectfully request that the County deny the project at this time. The project should not be reconsidered until a legally adequate EIR is prepared.

Watt 61 – Response

This comment is a summary of statements included in the above comments. Responses to specific comments have been provided. The commenter's opposition to the project is noted and will be forwarded on to the decision makers.

3.4 INDIVIDUAL COMMENT LETTERS

The following individuals commented on the Draft Revised Subsequent EIR:

- Richard and Patti Gomez
- Mr. and Mrs. Michael Hodges
- Kathleen Stockwell
- Andy Wing

3.4.1 Richard T. Gomez And Patti A. Gomez

June 10, 2002

Gomez 1 – Comment

My wife and I are members of The Saddleback Canyons Conservancy which is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Specific Plan (FTSP) area and surrounding areas of Orange County; however, we submit these comments as residents and members of the concerned general public.
Compliance with the FTSP:

The FTSP was chartered by the Orange County Board of Supervisors to assure the "rural character of the area and preserve, forever, open space." The current request for exemption to the FTSP is not in keeping with the spirit or letter of the plan. Furthermore, such exemptions only serve those who would gain financially by such exemptions and do not serve the intended constituents, area residents or the planned protection envisioned by the plan.

We find this request inappropriate, unfair and a blatant disregard for the development guidelines that all residents must comply with. It is no coincidence the new project cannot comply with FTSP guidelines; it is simply too destructive. Just because a project cannot comply foes not warrant exemption; it is simply inappropriate planning, and that planning process must be revisited.

Gomez 1 – Response

Please see Section 3.3.2 (Connor 3 – Response) of this Response to Comments document regarding the proposed project's consistency with the F/TSP.

Gomez 2 – Comment

Cumulative impacts:

As you know this is not the only project currently being considered for this area. Unfortunately, each project is only evaluated with regard to itself and not for its cumulative impact on the environment. Water quality is a key component of this certain degradation and to ignore such cumulative impacts is not only a dereliction of duty and responsibility but an error in favor if an exception for a special interest project.

We encourage you to be diligent and objective in your analysis, not cursory and subjective.

Specific projects include the planned RPLA facility, SaddleCreek and SaddleCrest and the development at the Rancho Mission Viejo. All projects will increase overall pollutant loads and receiving waters should be properly analyzed. We ask that your agency require the applicant to comply with this request and address critical concerns of the FTSP compliance and protection of precious water quality resources.

Gomez 2 – Response

As stated in Section 4.4.2 of the Draft Revised Subsequent EIR, no significant impacts to water quality would occur with implementation of Project Design Features and compliance with Standard County Conditions. Please also see Section 3.3.8 (Saddleback Canyons Conservancy 4 – Response) of this Response to Comments document.

3.4.2 Mr. And Mr. Michael Hodges

April 30, 2002

Hodges 1 – Comment

As a longtime resident of Orange County, my wife and I are strongly opposed to further residential growth in South County and cannot support a zone change to the Foothill/Trabuco Specific Plan. Mission Viejo has done enough already with the enormous amount of homes and apartments being developed off El Toro road between Live Oak and Marguerite.

Hodges 1 – Response

The comment is noted and will be forwarded on to the decision makers. No additional response is required.

3.4.3 Kathleen Stockwell

June 7, 2002

Stockwell 1 – Comment

My name is Kathleen Stockwell and I reside in Mission Viejo, Please include my entire comment in the official record of proceedings for this project.

Of major concern are the sensitive biological resources that are present at Saddleback Meadows, and in particular the proposed mitigation and related hydrological/water quality issues closely related to the preservation of those resources. The Riverside fairy shrimp (Streptocephalus woottoni), present at Saddleback Meadows, is a Federal endangered species with a USFWS recovery priority of 5C, indicating "that it is a species facing a high degree of threat and having a low potential for recovery" (USFWS Recovery Plan for Vernal Pools of Southern California, Sept. 1998, pg. 19). This extremely rare, beautiful, and wonderful species has very limited geographical distribution, existing only in Southern California. Another Branchiopod that exists in one of the Saddleback Meadows ephemeral pools, Cyzicus californicus (a "clam shrimp") is equally fascinating and beautiful, and is related to fossil clam shrimps that date back in the fossil record ca. 350 million years!

DRSEIR566 implies that the "pilot" mitigation proposed to artificially create "ephemeral ponds/vernal pools" will bring the direct and significant impact to the existing ephemeral pools and the Riverside fairy shrimp to a less than significant level. This assumption is based on insufficient scientific evidence, since ***this type of mitigation is "experimental in nature with many uncertainties"*** *(USFWS Biological Opinion for Saddleback Meadows, pg. 19). The Riverside fairy shrimp, as a highly endangered species having a low potential for recovery, deserves the highest level of protection where it exists, and it is not being afforded this protection by allowing experimental mitigation that has a high potential for failure.*

Stockwell 1 – Response

Please see Section 3.3.2 (Connor 19 – Response) of this Response to Comments document. Additionally, the proposed project has attempted to avoid impacts to ponds supporting fairy shrimp. Without human maintenance of the ponds, they would eventually breach and/or silt in. The long-term management of the ponds and creation of additional ponds provides for significant long-term protection.

Stockwell 2 – Comment

The "Implementation Plan/Rationale for Expecting Implementation Success" (Appendix I.2, Section VI. Pg. 9) cites as justification for this mitigation a "recent review of vernal pool rehabilitation and creation projects" which mentions:

- *Ephemeral ponds created in San Diego County where one obligate vernal pool plant (Pogogyne abramsii) was sustained 5-10 years adjacent to existing habitat.*
- *A Del Sol Reserve vernal pool project in Santa Barbara County that demonstrated "pools created and restored in 1986 are self-sustaining and support native vernal pool plant species".*

- *One vernal pool construction project in Folsom, California where density and composition of microinvertebrae populations, including "several" species of fairy shrimp, were similar to adjacent reference pools. (Rogers 1998).*

What justification do these few and poorly explained examples provide? *The first two give vernal pool plant restoration examples. Furthermore, upon examination of the Folsom project in Sacramento County, California (Aquatic Macroinvertebrate Occurrences and Population Trends in Constructed and Natural Vernal Pools in Folsom, California, D. Christopher Rogers, 1996):*

- *This project is geographically far removed from southern California, and cannot represent unique ecological parameters that exist here.*

- *The two kinds of fairy shrimp occurring in the pools at the Folsom project are different species with requirements that vary from the southern California Riverside Fairy Shrimp. For example, both of these species, the Vernal Pool Fairy Shrimp (Branchinecta lynchi) and the California Fairy Shrimp (Linderiella packardi), develop to maturity in less time than the Riverside Fairy Shrimp. The Riverside Fairy Shrimp needs 1-2 weeks to hatch and another 7-8 weeks to reach maturity. The span in which the right conditions can occur must cover several month, not just two. This strongly suggests that created pools that are* ***only required to hold rainwater for a minimum of 60 days*** *at depths required for the Riverside Fairy Shrimp will not be adequate for long term survival of the Riverside Fairy Shrimp. Ephemeral pools in which large numbers of Riverside Fairy Shrimp can successfully breed in Orange County are deep pools that persist for four to five months, or even longer.* ***"Because these constructed pools are mitigation for impacted vernal pools, they need to demonstrate that they are functioning ecologically like naturally occurring vernal pools to be considered adequate compensation".*** *This takes time, a minimum of 10 years, according to the USFWS, and should not be allowed as an experiment unless the original ephemeral pools and their watersheds are left entirely intact until success is proven.*

Stockwell 2 – Response

Please see Section 3.3.2 (Connor 19 – Response) of this Response to Comments document. The reference cited is relevant in that it shows that pools with sensitive resources, including other fairy shrimp species can be successfully created. More importantly, as noted in Section 3.3.2 (Connor 19 – Response), ponds supporting Riverside fairy shrimp have been successfully created. The standard will be to create ponds capable of supporting Riverside Fairy shrimp over the long-term, not the creation of vernal pools since vernal pools are not the sensitive resource being impacted.

Stockwell 3 – Comment

Why is it that only a five year monitoring program is mentioned in the EIR, when 10 years is required? Why is deferral of mitigation allowed in case of failure? This is not acceptable.

- *The Folsom project that is quoted in the EIR only presented the results of the first two years in a nine year monitoring program, which began in 1994.* ***What is the current status of its results, and how does this relate to such projects in Orange County?***

- *The Folsom project site contains 273 natural vernal pools on 246.0 hectares, where 37 pools were constructed. The high number of natural vernal pools alone points to a higher chance for success of the created pools, in my opinion. This project, although admirable, does not seem to be in itself adequate justification for experimental mitigation for an entirely different species of endangered fairy shrimp and a different set of ecological circumstances in Orange County, where such high numbers of natural vernal pools never occur in one complex.*

The USFWS Biological Opinion for Saddleback Meadows, pg. 13 and 18, state: "The 9 ponds at Saddleback Meadows represent 53 percent of the 17 remaining occupied pools/ponds, making it the largest fairy shrimp habitat complex found in Unit 2" (L.A. Basin-Orange Management Area). "Implementation of the proposed project...represents a 56 percent loss of fairy shrimp ponds, and a 68 percent loss of the pond basin area, onsite." ***Why is it deemed acceptable to gamble with perhaps the most valuable habitat complex for the Riverside Fairy Shrimp in Orange County?*** *Page 19 of this same Biological Opinion states that "..construction of an artificial impervious layer to retain water [in sandy soils] for a minimum of 60 days..has never been done successfully. It is obvious to me that there should be a more concentrated effort to acquire the Saddleback Meadows property and preserve it as it now is. It is a real treasure for Orange County and very important for the NCCP process as well, since it "****represents the only low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP planning areas."*** *(page 18) Much effort has gone into the NCCP, but it seems the endangered fairy shrimp species and their ephemeral/vernal pond habitats of Orange County were never an integral part of the NCCP planning as they should have been.* ***The proposed wildlife corridor as presented in DSEIR 566 is also inadequate,*** *being much too narrow and poorly designed. Other sensitive species certainly exist at Saddleback Meadows, such as the Catalina and Intermediate Mariposa Lily populations, which have not been adequately considered either. Two well known host plants for the endangered Quino checkerspot butterfly also exist on this site, and should be in the preservation plan since existence of the Quino in Orange County is still possible.*

Stockwell 3 – Response

The Biological Opinion (BO) for the proposed project requires a ten-year monitoring program for the ponds (see Section 4.8.4 and Appendix I of the Draft Revised Subsequent EIR). The ponds on-site currently supporting fairy shrimp were created in the same soils as proposed for in the restoration plan. Soils tests conducted by the project geologist indicate that appropriate soils are available on-site to create an impervious layer capable of holding water for in excess of 60 days. The proposed project has been analyzed within the context of the Natural Community Conservation Planning Program (NCCP) and provides for wildlife movement through the project (please see Section 3.2.1, USFWS/CDFG 4 - Response, of this Response to Comments document).

Please see Section 3.3.2 (Connor 20 – Response) of this Response to Comments document regarding the intermediate Mariposa lily.

No Quino checkerspot butterflies were observed on-site and none are anticipated to occur.

Stockwell 4 – Comment

DSEIR566 fails to adequately define, analyze, and show mitigation for the hydrological aspects of the project, my concern is especially related to the proposed ephemeral pool mitigation. Nuisance water and non-point source pollution appear to be directed into the natural drainage courses, and may seriously alter any chance for a successful mitigation.

It seems obvious that such a drastic change in the watershed caused by grading, etc. will alter that natural regime of the ephemeral ponds no matter what "mitigation" takes place, further placing them in jeopardy.

Stockwell 4 – Response

The mitigation for the Riverside fairy shrimp was developed through extensive discussions with USFWS. The hydrological design for the proposed project reflects these discussions with USFWS and the proposed mitigation basins are being carefully designed to provide appropriate hydrological conditions necessary for the shrimp to persist. With implementation of the mitigation measures, impacts to Riverside fairy shrimp would be less than significant.

Stockwell 5 – Comment

Will you please explain in specific detail how Basins 1,3,4,5, and 6 (shown directly below houses and slopes on Fig.4 of Appendix I.2) will be unaffected by changes in hydrology and water quality? I have observed the "mitigation" carried out at the Santiago Canyon Estates/Beazer project for the Riverside Fairy Shrimp, and it appears to be sadly inadequate for long term survival of this endangered species. It is directly below homes and slopes similar to the illustration in Fig. 4 mentioned above, has multiple rows of PVC irrigation pipe (made of a very toxic material that may leach into the rainwater?) in and around it (for what purpose?), and cement drainage structures of some kind that look very foreign to a so-called "ephemeral pond". The slopes directly above it are landscaped with non-native plants that may require chemicals. Will you please tell me where the "inoculent" of Riverside fairy shrimp/cysts originated that were put there? Is this questionable mitigation being used as a model for Saddleback Meadows? Please explain the status of the Santiago Canyon Estates "mitigation", and how it relates to Saddleback Meadows.

Stockwell 5 – Response

All of the proposed watershed areas for ponds on Saddleback Meadows will be planted only with native species, and no irrigation is proposed within the pond watersheds. The Santiago Canyon Estates project is not being used as a "model" for Saddleback Meadows, and a comparison of the two is not warranted.

Stockwell 6 – Comment

My last questions/comments are these:

Page 5 of the USFWS Biological Opinion states that the created ponds must demonstrate the ability to hold "water" for a minimum of 60 days. As I have stated above in more detail, a 60 day minimum is not long enough. Does the term "water" mean natural rainwater only? Professor Emeritus Clyde Ericksen has stated, "Attempts to maintain these pools, and thus their fairy shrimp populations, by keeping them full with tap water has proven useless. Tap water chloramines which kills living shrimps."

Why does the first sentence of point C (Schedule) under section VI of Appendix I.2, pg. 9, state that, "Grading is to be completed no later than December 31, 2000". Please explain?

The following should be incorporated into the project proposal as mitigation measures:

1. *A 10 year monitoring program for the ephemeral pool mitigation plan should be in place, not 5 years. No development impacts should be allowed to proceed in any of the nine existing occupied ephemeral pools or their watersheds until this 10 year period has proven that successful mitigation can occur.*

2. *The 60 day minimum requirement for created mitigation pools to hold rainwater at depths required for the Riverside Fairy Shrimp (Streptocephalus woottoni) should be increased to a period appropriate to the life cycle of this particular species.*

Stockwell 6 – Response

Sixty days of natural rainwater is the time necessary for the Riverside fairy shrimp to complete its life cycle. No tap water would be used; only natural runoff. The reference to completing grading by December 31, 2000 is incorrect. As noted above, ten years of monitoring is required for the Riverside fairy shrimp.

3.4.4 Andy Wing

June 23, 2002

Wing 1 – Comment

The question which occurs to me, having experienced weekly for several years severe eye irritation with each trip to Saddleback Valley, continually seen the great brown haze of smog, and read that the area ranks among the top as most polluted on the country, how ANY development of the area can be contemplated?

Wing 1 – Response

As stated in Section 4.6 of the Draft Revised Subsequent EIR, impacts to air quality would not be significant (with the exception of cumulative impacts), with incorporation of Standard County Conditions and mitigation measures.

Wing 2 – Comment

Anything more than "open space, habitat preservation, recreation", and agriculture should not be permitted because it will further exacerbate the already horrendous existing problems, including traffic.

Wing 2 – Response

As stated in Section 4.5 of the Draft Revised Subsequent EIR, impacts to traffic from implementation of the proposed project would not be significant with implementation of Project Design Features, Standard County Conditions and mitigation measures.

The commenter's opposition to the project is noted and will be forwarded on to the decision makers.

SECTION 4.0

REFERENCES

4.0 REFERENCES

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APPENDIX A.1

PUBLIC NOTICE / DISTRIBUTION LIST

PUBLIC NOTICE
of Time Extension
DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT: SADDLEBACK MEADOWS

DESCRIPTION: Pursuant to the California Environmental Quality Act (CEQA), the Orange County Planning & Development Services Department has prepared Environmental Impact Report No. 566 to evaluate the environmental impacts resulting from the proposed Saddleback Meadows project. The project proposes the phased development of 299 single-family residential units on a 229.2-acre site. The gross density proposed is 1.4 dwelling units per acre, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6-acres) of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding & hiking trail connections and biological resource enhancement. Project implementation requires the approval of Zone Change (Foothill/Trabuco Specific Plan Amendment), Area Plan and Vesting Tentative Tract Map.

EIR 566 examines the potential impacts generated by the proposed project in relation to the following CEQA Checklist categories: Land Use & Planning; Geophysical; Hydrology & Drainage; Water Quality; Transportation/Circulation; Air Quality; Noise; Biological Resources; Aesthetics; Cultural/Scientific Resources; Recreation; Hazards; Public Services; and, Utilities & Service Systems. The proposal will result in unavoidable adverse impacts to air quality.

The purpose of this notice is to inform local residents, institutions and other interested parties about a TIME EXTENSION for the review of the Draft EIR. THE REVISED PUBLIC COMMENT PERIOD IS: APRIL 25TH, 2002 TO JUNE 24TH, 2002. Written comments on the Draft EIR must be submitted by June 24th, 2002, by 5:00 p.m. to: anager, OCPDS/Environmental Planning Services Division, 300 N. Flower St., Box 4048, Santa Ana, California 92702-4048.

Location: Easterly side of El Toro Road, approximately ½ mile south of the intersection of Santiago Canyon Road/El Toro and Live Oak Canyon Road, in east-central unincorporated Orange County.

REVIEWING LOCATIONS

COPIES OF THE DRAFT EIR ARE AVAILABLE FOR PUBLIC REVIEW AT THE FOLLOWING LOCATIONS:

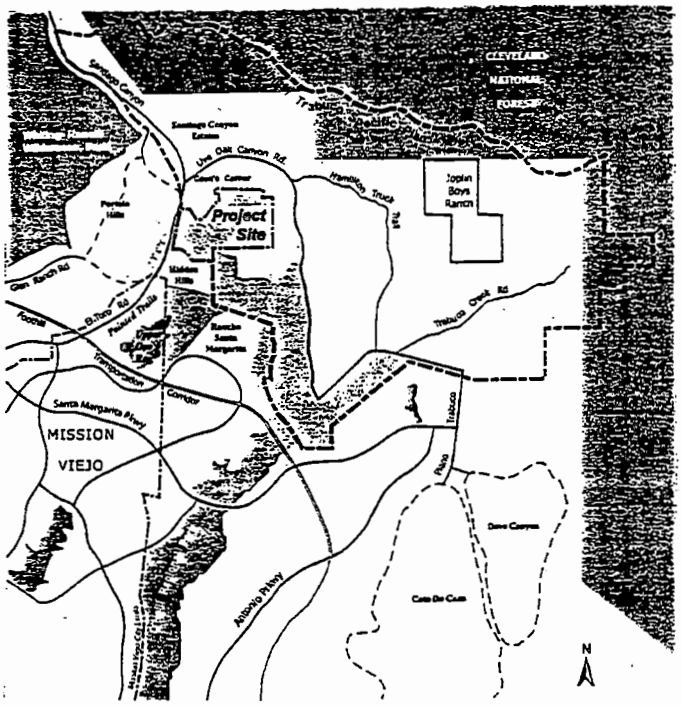
County of Orange/Planning & Development Services Department/
Environmental Planning Services Division
Contacts: Bill Grieman 834-5550
Chuck Shoemaker 834-5550

ORANGE COUNTY BRANCH LIBRARIES:
25209 Marguerite Parkway, Mission Viejo
28192 Silverado Canyon Road, Silverado
24672 Raymond Avenue, El Toro
30902 La Promesa Drive, Rancho Santa Margarita
California State University, Fullerton, Library Documents Section
UC Irvine Main Library/Government Publications/Microforms Department

COPIES OF THE DRAFT EIR HAVE BEEN PROVIDED TO THE FOLLOWING GROUPS:

FOOTHILL/TRABUCO REVIEW BOARD MEMBERS: Adam Smith, Jeanne Porter, Robert Wilkes, Raymond Mills, & Stephen Nordeck
Hidden Ridge HOA, c/o Mr. Jerry Kacsir
rtola Hills HOA I, c/o Rinevol & Co.
ortola Hills HOA II, c/o Ms. Elizabeth Wallace
Canyon View Homeowners Association
Inter-Canyon League, c/o Bob Hunt
California Native Plant Society
National Audubon Society, Inc.

PROJECT LOCATION MAP



Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies	Signature File Received
7920-2243-2229	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95814	Fed Ex	Y	4/25/2002 10:11	M. Hoze	7 Vol. 1	Y
7918-2339-2201	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95815	Fed Ex	Y	4/25/2002 10:11	M. Hoze	8 Vol. 1	Y
7920-2243-2343	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95816	Fed Ex	Y	4/25/2002 10:11	M. Hoze	7 Vol. 2	Y
7920-2243-2354	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95817	Fed Ex	Y	4/25/2002 10:11	M. Hoze	8 Vol. 2	Y
7918-2340-9163	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95818	Fed Ex	Y	4/25/2002 10:11	M. Hoze	7 Vol. 3	Y
7920-2244-5549	Chief, State Clearinghouse	Government Office Of Planning and Research	1400 Tenth Street	Sacramento	CA	95819	Fed Ex	Y	4/25/2002 10:11	M. Hoze	8 Vol. 3	Y
7918-2342-2712	Bryan Speegle	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/25/2002 9:23	B. Hardwick	5 Vol. 1, 5 Area Plan	Y
7918-2342-2675	Bryan Speegle	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/25/2002 9:23	B. Hardwick	5 Vol. 2, 5 Vol. 3	Y
7903-9588-5750	Jim Bartel	U.S. Fish & Wildlife Services	2730 Liker Avenue West	Carlsbad	CA	92008	Fed Ex	Y	4/25/2002 9:30	E. Gouch	1 set	Y
7905-1304-4272	William E. Tippets	CA Dept of Fish & Game	4949 Viewridge Avenue	San Diego	CA	92123	Fed Ex	Y	4/25/2002 9:59	B. Young	1 set	Y
7903-9589-4273	Stacey Baczkowksi	CA Reg. Water Quality Control Board	9174 Sky Park Court, Suite 100	San Diego	CA	92123	Fed Ex	Y	4/25/2002 8:52	D. Smith	1 set	Y
7903-9589-8717	Management District	South Coast Air Quality	21865 E. Copley Drive	Diamond Bar	CA	91765	Fed Ex	Y	4/25/2002 9:12	J. Caldero	1 set	Y
7905-1304-9046		O.C. Transportation Authority	550 So. Main Street	Orange	CA	92868	Fed Ex	Y	4/25/2002 10:17	N. Buzenes	1 set	Y
7903-9590-2919		CA Dept of Transportation - District 12	3337 Michelson Drive, Suite CN-380	Irvine	CA	92612	Fed Ex	Y	4/25/2002 9:21	R. Marquez	1 set	Y
7905-1305-0966		Southern California Association Of Governments (SCAG)	818 W. 7th Street	Los Angeles	CA	90017	Fed Ex	Y	4/25/2002 10:04	C. Milner	1 set	Y - no signature
7918-2357-6667	Laura Blaul	Orange County Fire Authority	180 South Water Street	Orange	CA	92866	Fed Ex	Y	4/25/2002 9:40	S. Morris	1 set	Y
7903-9590-7450		Orange County Library - Silverado Branch	28192 Silverado Canyon Road	Silverado	CA	92676	Fed Ex	Y	4/25/2002 11:05	M. Flagal	1 set	Y
7918-2357-8800		Orange County Library - Mission Viejo Branch	25209 Marguerite Parkway	Mission Viejo	CA	92691	Fed Ex	Y	4/25/2002 9:37	C. Sands	1 set	Y
7918-2357-9416		Orange County Library - El Toro Branch	24672 Raymond Avenue	El Toro	CA	92630	Fed Ex		4/26/2002 10:53	R. Jane	1 set	Y
7903-9591-1887	Shiley Land	City of Mission Viejo	25909 Pala, Suite 200	Mission Viejo	CA	92691	Fed Ex	Y	4/25/2002 9:35	S. King	1 set	Y
7905-1305-5990		Orange County Library	30902 La Promesa Drive	Rancho Santa Margarita	CA	92688	Fed Ex	Y	4/25/2002 10:18	K. Paul	1 set	Y
6329-7953-8390	Y. Jae Chung	ACOE - Los Angeles District	911 Wilshire Blvd., 11th Floor	Los Angeles	CA	90017	Fed Ex	Y	4/25/2002 9:48	J. Jimeson	1 set	Y
7903-9589-5409		CA Dept. Parks & Rec	8885 Rio San Diego Drive	San Diego	CA	92108	Fed Ex	Y	4/25/2002 10:13	G. Bobotis	1 set	Y
7903-9724-1780		Saddleback Valley Unified - School District	25631 Diseno Drive	Mission Viejo	CA	92691	Fed Ex	Y	04/26/2002 at 11:28 A	B.KOWALCZ.	1 set	Y
7903-9725-5261		So. California Edison Company	1325 S. Grand Avenue	Santa Ana	CA	92705	Fed Ex	Y	4/26/2002 9:23	D.AGUILERA	1 set	Y

Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies	Signature File Received
7905-1382-2188	Jacqueline Wyland	Environmental Protection Agency	75 Hawthorne Street	San Francisco	CA	94105	Fed Ex	Y	4/29/2002 10:30	K. CLARK	1 set	Y
7920-2330-7677	Lisa Egelhardt	Canyon View Homeowners Association c/o Professional Community Management	23726 Birtcher Drive	Lake Forest	CA	92630	Fed Ex	Y	4/26/2002 12:23	K. WOESSNER	1 set	Y
7903-9727-1522	Christine Diemer Iger	Building Industry Association	9 Executive Circle, Suite 100	Irvine	CA	92614	Fed Ex	Y	4/26/2002 9:11	K. WARD	1 set	Y
7903-9727-7152	Bowie, Arneson, Kadi Wiles & Giannone	Trabuco Canyon Water District	4920 Campus Drive	Newport Beach	CA	92660	Fed Ex	Y	04/26/2002 at 2:41	N. HERNANEZ	1 set	Y
7920-2331-4874		O.C. Horseman's Association	25301 Travuco Road, Box 26	El Toro	CA	92630	Fed Ex	Y	4/26/2002 11:25	S. HILLMAN	1 set	Y
7903-9729-3527		Orange County Grand Jury	700 Civic Center West	Santa Ana	CA	92701	Fed Ex	Y	4/26/2002 10:04	L. CENTENO	1 set	Y
7918-2453-1381	Robert A. Hamilton	Conservation Chair & Section - Orange County CNPS	34 Rivo Alto Canal	Long Beach	CA	90803	Fed Ex	Y	4/26/2002 14:17	14439241	1 set	Y - no sig required
7918-2453-6328	Elizabeth Brown	Laguna Greenbelt, Inc.	1377 Lewellyn Drive	Laguna Beach	CA	92651	Fed Ex	Y	4/29/2002 5:18pm	1377RLS	1 set	Returned to HDR - waiting on new Address
7903-9730-6060	Conservation Chair	Sierra Club - South OC Chapter	908 La Mirada Street	Laguna Beach	CA	92651	Fed Ex	Y	4/26/2002 11:12	S.IERA CLUB	1 set	Y - no signature because of waiver
7920-2334-9960	Rinevol & Co (Tina Volpe)	Portola Hills HOA	23421 South Pointe Drive, Suite 200	Laguna Beach	CA	92653	Fed Ex	Y	04/26/2002 at 11:47	J.NOLAN.	1 set	Y
7905-1387-7541	Bob Hunt	Inter-Canyon League	28371 Modjeska Canyon Road	Modjeska Canyo	CA	92676	Fed Ex	Y	4/30/2002 17:09	R. HUNT	1 set	Y
7918-2457-6520	Fr. Hugh Barbour	Saint Michael's Abbey	19292 El Toro Road	Silverado	CA	92676	Fed Ex	Y	4/26/2002 1:24	N. HARRIS	1 set	Y
7905-1388-2231	Cisca Stellhorn Attorney	Cisca Stellhorn	38 Corporate Park, Suite 200	Irvine	CA	92605	Fed Ex	Y	4/26/2002 9:12	B.RERICHA	1 set	Y
7903-9736-9823		Orange County Tomorrow	4509 West Coast Highway	Newport Beach	CA	92663	Fed Ex				1 set	Returned to HDR - waiting on new Address
7903-9737-2083	Adam Smith	F/TSP Review Board	30672 Hamilton Trail	Trabuco Canyo	CA	92678	Fed Ex	Y	5/1/02 5:04pm	M. Lontney	1 set	Y
7903-9731-0008	Elizabeth Wallace	Portola Hills HOA	19241 Jasper Road	Trabuco Canyo	CA	92679	Fed Ex	Y	4/26/2002 14:54	1485343	1 set	Y - no sig required
7927-2334-3620	Jerry Kacsir	Hidden Ridge HOA	23 Riverside Drive	Trabuco Canyo	CA	92679	Fed Ex	Y	4/26/2002 1:09	11327232	1 set	Y - no sig required
7920-2333-8264	Gayle Ackerman, Director of Development Services	City of Lake Forest	23161 Lake Center Drive #100	Lake Forest	CA	92630	Fed Ex		4/29/2002 11:30	J. LAWRENCE	1 set	Y
7903-9737-8482	Dean Brown	The Planning Consortium	1111 W. Town & Country Road #37	Orange	CA	926868	Fed Ex	y	04/26/2002 at 11:42am	B.MINNIS	1 set	Y
7903-9738-0666	Sue Cook	Canyon Rim Association	2492 Walnut Avenue, Suite 100	Tustin	CA	92680	Fed Ex	Y	4/26/2002 10:38	C. WHITE	1 set	Y
7918-2459-0818		Trabuco Canyon Water District	30575 Trabuco Canyon Road, Suite 200	Trabuco Canyo	CA	92678	Fed Ex	Y	4/26/2002 14:36	A. NICOLA	1 set	Y
7905-1389-4176	Trabuco Ranger District	Cleveland National Forest	1147 E. Sixth Street	Corona	CA	91719	Fed Ex	Y	4/29/2002 2:47	J. Johnson	1 set	Y
7927-2335-3296	Shellie Xanthos	Santiago Estates HOA Trans Pacific Management Services	2112 East Fourth Street, Suite 200	Santa Ana	CA	92705	Fed Ex	Y	4/26/2002 10:59	G. ALLEN	1 set	Y
7927-2335-3826		Accell Property Management Hidden Ridge HOA	23052-A Alicica Parkway, Suite 235	Mission Viejo	CA	92693	Fed Ex	Y	4/26/2002 9:39	C.DISCHINI	1 set	Y
7920-2337-4803	Planning Department	Rancho Santa Margarita	30211 Avenida de las Banderas, Suite 101	Rancho Santa Margarita	CA	92688	Fed Ex	Y	4/26/2002 11:50	J. NICHOALS	1 set	Y
7905-1390-2373	Matt Rayl	Serrano Creek Ranch Equestrian Center	25201 Trabuco Road	Lake Forest	CA	92630	Fed Ex	Y	04/26/2002 at 11:22	S.HILLMAN	1 set	Y
7905-1390-3370	Raymond C. Mills	F/TSP Review Board	13651 Yellowstone Drive	Santa Ana	CA	92705	Fed Ex	Y	4/29/2002 1:52pm	R. Mills	1 set	Y
7903-9740-7243	Mary Ann Milbourn	Orange County Register	22481 Aspan Street	Lake Forest	CA	92630	Fed Ex	Y	4/26/2002 11:46	D. SALAZAR	1 set	Y
7903-9740-9750	Bruce R. Conn		19471 Live Oak Canyon	Trabuco Canyo	CA	92679	Fed Ex	Y	4/26/2002 10:52	Release waiver on file	1 set	Y - no sig required
7920-2338-3587	Bob Bennyhof	Foothill Sentry	10642 Morada Drive	Orange	CA	92869	Fed Ex	Y	4/26/2002 1:15	169459	1 set	Y - no sig required
7927-2335-7328	Sandra Jacobs	SFC Consultants	26012 Marguerite Parkway, Suite H424	Mission Viejo	CA	92692	Fed Ex	Y	4/26/2002 8:58	L.SHAPIRO	1 set	Y
7920-2338-6656	Edmond M. Conner, Esq.	Connor, Culver, Blake & Griffin	2600 Michelson Drive, Suite 1450	Irvine	CA	92612	Fed Ex	Y	4/26/2002 13:01	D. HESSETT	1 set	Y
7903-9742-4989	Rachel J. Sater, Esq.	Law Offices of Rachel J. Sater	436 14th Street, Suite 1300	Oakland	CA	94612	Fed Ex	Y	4/29/2002 11:43	G. Shnider	1 set	Y - returned to HDR per Rachel J. Sater, not on project
7918-2461-7715	Mary L. Hudson, Esq.	Law Offices of Mary L. Hudson	1505 Bridgeway, Suite 206	Sausalito	CA	94965	Fed Ex		4/29/2002 11:32am	A. Hardy	1 set	Y
7918-2461-9270	VerLyn N. Jensen, Esq.	Jensen & Coeur-Barron, LLP	5100 Campus Drive, Suite 200	Newport Beach	CA	92660	Fed Ex	Y	4/26/2002 14:05	J. FREDIAN	1 set	Y
7905-1391-7376	Robert K. Break, Esq.	Latham & Watkins	650 Town Center Drive, 20th Flr	Costa Mesa	CA	92626	Fed Ex	Y	4/26/2002 9:04	J.COWLING	1 set	Y

Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies	Signature File Received
7905-1425-6315	Bob Caustin	Defend the Bay	471 Old Newport Blvd., Suite 200	Newport Beach	CA	92663	Fed Ex	Y	4/29/2002 2:52	W. Karges	1 set	Y
7911-8738-7476	Gary Brown	Orange County Coastkeep	3416 Via Oporto, Suite 201	Newport Beach	CA	92663	Fed Ex	Y	5/2/02 12:37pm	E. Nerrie	1 set	Y
7903-9803-0372	Richard Garner		27001 Calle Maria	apistrano Beac	CA	92624	Fed Ex	Y	4/29/2002 11:40am	6676679	1 set	
7903-9803-2732	Rick Wilson	Surfrider Foundation	668 North Coast Highway #266	Laguna Beach	CA	92651	Fed Ex	Y	4/29/2002 1:28pm	C. Wineman	1 set	Y
0000-0093-1119	Evan Halper	LA Times, Orange County	1375 Sunflower Avenue	Costa Mesa	CA	92626	Lightning Express	Y	4/25/2002	Kathy Prichard	1 set	
0000-0093-1120	Jim Radcliffe	Orange County Register	22481 Asran Street	Lake Forest	CA	926301	Lightning Express	Y	4/25/2002	Jim Radcliff	1 set	
7905-1420-2267	Bill Grieman	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/29/2002 2:54pm	B. Bart	5 Vol. 1	Y- no sig
7903-9792-6908	Bill Grieman	County of Orange, Planning and Development Services	300 North Flower Street, 3rd Flr.	Santa Ana	CA	92703	Fed Ex	Y	4/29/2002 2:54	B. Bart	5 Vol. 2, 5 Vol. 3	Y - no sig.

Saddleback Meadows Draft EIR Distribution 4/24/2002

Tracking Number	Attention	Company Name	Address	City	State	Zip	Priority	Arrived	Date Time	Signed By	Copies
23010370000058897523	Laura Simonek	MWD of Southern California	P.O. Box 54143	Los Angeles	CA	90054		Y	4/26/2002 6:16am	Waiver	1 set
23002730000028056187	Wally Kreitzen	TCA (Transportation Coordination Agency)	P.O. Box 53770	Irvine	CA	92619-3770	resent on 05/01/02 - **previously sent to P.O. Box 28870, Santa Ana, CA 92799	Y	5/2/2002 3:01pm	waiver	1 set
23010370000058892608	Eve Mitchell		P.O. Box 408	Trabuco Canyon	CA	92678		Y	4/26/2002 3:17pm	B. Parker	1 set
23010370000058896057	Pete DeSimone	National Audobon Society, Inc.	100 Bell Canyon Road	Trabuco Canyon	CA	92679	resent on 05/01/02 - ** previously sent to P.O. Box 967, Trabuco Canyon, CA 92678	Y	5/3/2002 7:58	S. Callen	1 set
23010370000042433492		Orange County Vector Control District	P.O. BOX 87	Santa Ana	CA	92702		Y	4/29/2002 11:47am	V. Blaycock	1 set
23010370000058892585	Technical Supervisor	So. California Gas Company	P.O. Box 3334	Anaheim	CA	92803		Y	4/29/2002 6:03am	Waiver	1 set
23010370000056668526		Gabrieleno Tribal Council	P.O. Box 693	San Gabriel	CA	91778		Y	4/26/2002 4:49pm	Anthony Morales	1 set
23010370000058892615	Library Documents Section	Cal-State University Fullerton	P.O. Box 4150	Fullerton	CA	92834		Y	4/26/2002 11:23am	Thuy Le	1 set
23010370000056668519		Mission Viejo Report	P.O. Box 2247	Mission Viejo	CA	92675	NEED NEW ADDRESS - still waiting for address 5/6/02				1 set
23010370000058892578	Ms. Katherine Swiss	Sant Michael's Abbey	P.O. Box 721	Trabuco Canyon	CA	92678		Y	5/01/02 3:53pm	K. Swiss	1 set
23010370000058892516	Jerry Boone	Montecido at Portola Hills Assn	P.O. BOX 4708	Irvine	CA	92616		Y	4/30/02 9:31am	A. Uribe	1 set
23010370000058892509	Microforms Dept.	UCI Main Library/Gov. Pub	P.O. BOX 19557	Irvine	CA	92623		Y	4/30/02 8:03am	Y. Barra	1 set
23010370000058896064		Saddleback Valley News	22481 Aspan Street	Lake Forest	CA	92630-1630	resent on 05/01/02 - **previously sent to P.O. Box 3629, Mission Viejo, CA 92691	Y	5/2/2002 3:08pm	Dianna Balizar	1 set
23010370000058892639	Jeanne E. Porter	F/TSP Review Board	P.O. Box 243	Trabuco Canyon	CA	92678	pending delivery as of 5/6/02	Y	5/7/2002 10:33am	Tracy Eddy	1 set
23010370000058892646	Ray Chandos	Rural Canyons Conservation Fund	P.O. Box 556	Trabuco Canyon	CA	92678		Y	4/29/2002 2:29pm	R. Chandos	1 set
23010370000058892530	Richard Jennings	Vedanta Soc. Of So. Cal Ramakrishma Monastery	P.O. Box 408	Trabuco Canyon	CA	92678		Y	4/26/2002 2:27pm	P. Hamilton	1 set
23010370000058892592	Stephen Nordeck	F/TSP Review Board	P.O. Box 440	Trabuco Canyon	CA	92678	pending delivery as of 5/6/02				1 set
23010370000056668281	Sherry Lee Meddick		P.O. BOX 771	Silverado	CA	92676		Y	4/29/2002 9:30am	S. Meddick	1 set
23010370000058892561	Robert A. Wilkes	F/TSP Review Board	P.O. Box 81	Trabuco Canyon	CA	92678		Y	4/30/02 10:31am	M. Wilkes	1 set
23010370000028047659	Roger von Butow	Clear Water Now	P.O. Box 4711	Laguna Beach	CA	92652		Y	4/29/2002 11:51am	Roger von Butrow	1 set

APPENDIX A.2

COMMENT LETTERS

US Fish and Wildlife Service
Carlsbad Fish and Wildlife
2730 Loker Avenue West
Carlsbad, CA 92008
(760) 431-9440
FAX (760) 431-9624

CA Dept. of Fish & Game
South Coast Regional Office
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4201
FAX (858) 467-4299

In Reply Refer To:
FWS-OR-1023.10

JUN 2 6 2002

Mr. Tim Neely, Division Manager
Orange County Planning and Development Services
Environmental Planning Services Division
300 North Flower Street
Santa Ana, California 92702-4048

Re: Draft Revised Subsequent Environmental Impact Report (State Clearing House No. 19996121072) for the Saddleback Meadows Project, County of Orange, California

Dear Mr. Neely:

The U.S. Fish and Wildlife Service (Service) and the California Department of Fish and Game (Department), hereafter referred to as the Wildlife Agencies, have reviewed the Draft Revised Subsequent Environmental Impact Report (DEIR) for the construction of the Saddleback Meadows Project, in the County of Orange, California. The project proposes development of 299 single-family houses on a 229.2-acre site in the lower foothills of the Santa Ana Mountains in southern Orange County. The proposed project also includes two new paved access roads off of El Toro Road and an adjacent offsite 1.4 million-gallon water reservoir. The Wildlife Agencies have commented on various development proposals and environmental documents for this project since 1994. As we have stated in our previous comments, the proposed project poses significant unmitigated impacts to future Natural Communities Conservation Plan/Habitat Conservation Plan (NCCP/HCP) reserve design for the Southern Subregion of Orange County.

Responsibilities of the Wildlife Agencies

The Department is identified as a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) section 15386 and is responsible for the conservation, protection, and management of the State's biological resources. The Department is also responsible, pursuant to the California Endangered Species Act, California Fish and Game Code 2050 *et seq.*, for the protection of species listed by the State as endangered or threatened or identified as species of concern, and the habitats they require. The Department also manages the NCCP Program (California Fish and Game Code 2800 *et seq.*), a regional conservation planning effort, that includes southern Orange County.

The Service's primary mission is to work "with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." The

Service has legal responsibility for the welfare of migratory birds, anadromous fish, and endangered animals and plants occurring in the United States. Specifically, we administer the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), and work in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401 as amended,16 U.S.C. 661 *et seq.*). Section 7 of the Act requires Federal agencies to consult with the Service should it be determined that their actions may affect federally listed threatened or endangered species. Take incidental to otherwise lawful activities can be permitted under the provisions of sections 7 (Federal consultations) or 10 (permits) of the Act.

As noted in the DEIR, the Service has completed formal consultation with the U.S. Army Corps of Engineers (Corps) and issued a biological opinion (FWS-OR-1023.8) on the Saddleback Meadows Project's effects on the federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*, "fairy shrimp") and its designated critical habitat and designated critical habitat for the threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher"), in accordance with section 7 of the Act. To clarify, however, our biological opinion evaluated the 283-unit alternative, not the proposed 299-unit alternative discussed in the DEIR. If the 299-unit Alternative is pursued, reinitiation of consultation with the Corps would be required. Although impacts to federally listed species and their designated critical habitat have been addressed in the cited biological opinion for the Saddleback Meadows project, evaluation of impacts to wildlife movement for non-listed species in relation to development of an NCCP/HCP is outside the purview of section 7 of the Act.

Relationship of the Project to Regional Conservation Planning Efforts

The NCCP Act was approved in 1991 and established a program to provide for regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development growth. The program provides an alternative to "single-species" conservation via the formulation of regional, natural community-based habitat protection programs. The first NCCP/HCP projects in California focused on providing adequate conservation and mitigation for impacts to coastal sage scrub vegetation, the preferred plant community of the gnatcatcher.

Following the Federal listing of the gnatcatcher in 1993, the Service adopted a Special Rule for the gnatcatcher pursuant to section 4(d) of the Act incorporating the conservation and process guidelines established by the State under the NCCP Act. The guidelines set forth procedures for the creation of regional and subregional conservation plans. In accordance with the guidelines, jurisdictions enrolled in the NCCP planning program can authorize a limited amount of interim loss of coastal sage scrub during the planning period subject to six interim habitat loss provisions[1]. However, the interim habitat loss provisions are only applicable until adoption of a regional or

[1] The following mandatory findings must be met for a project to be approved pursuant to the interim habitat loss provisions of the Special 4(d) Rule: 1) The habitat loss does not cumulatively exceed the 5% guideline; 2) The habitat loss will not preclude connectivity between areas of high habitat values; 3) The habitat loss will not preclude or prevent the preparation of the subregional Natural Community Conservation Plan; 4) The habitat loss has been minimized and mitigated to the maximum extent practicable in accordance with the Conservation Guidelines; 5) The habitat loss will not appreciably reduce the likelihood of the survival and recovery of listed species in the wild; and 6) The habitat loss is incidental to otherwise lawful activities.

subregional conservation plan. In summary, per the NCCP program, conservation planning within enrolled jurisdictions may be governed by an adopted regional or subregional conservation plan, or is subject to the interim habitat loss provisions of the Special 4(d) Rule.

As an enrolled jurisdiction in the NCCP program, the County of Orange (County) has both an adopted subregional conservation plan that applies to its Central and Coastal subregions (the Orange County Central-Coastal NCCP/HCP) and is participating in development of the Southern Subregion NCCP/HCP. The County has committed to work with the Wildlife Agencies to ensure that projects within its jurisdiction do not prevent connectivity between areas of high habitat values or preclude reserve design options for the Southern Subregion NCCP/HCP.

Reserve Design Inconsistency

Our primary concern with the proposed project is the significant impact it poses to the major lower elevation wildlife movement corridor/linkage along the Santa Ana Mountain foothills of southern Orange County. Saddleback Meadows, together with the adjacent Saddle Creek and Live Oak properties, represents the only remaining unobstructed low elevation wildlife corridor/linkage between the Central and Southern Subregions of the Orange County NCCP/HCP planning areas. To highlight its importance, Orange County's Central-Coastal NCCP/HCP identifies this area as a key corridor/linkage between the subregions. The proposed development on Saddleback Meadows along the eastern and northern portions of the site as shown in Alternative 2 (the No Project, "Existing Entitlement" Alternative), Alternative 3 (the F/TSP EIR 531 Staff Alternative A), Alternative 5 (the Cluster/Single-Family/Multi-Family Residential Alternative), or Alternative 8 (the Reduced Residential Alternative) of the DEIR could substantially eliminate this corridor/linkage and, thereby, severely constrain movement of mule deer, coyote, mountain lion and other large mammals from O'Neill Regional Park in the Southern Subregion to the Central Subregion NCCP/HCP reserve. We raised similar concerns regarding the proposed development on the Saddle Creek property in our comments on the recently circulated DEIR- State Clearing House No. 199111120 (FWS-OR-1309.1).

Pursuant to the CEQA Guidelines (Section 15130), a revised DEIR should discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable and should review the impacts in light of past, present and future probable projects that could result in related impacts, including those outside of the control of the lead agency. However, this current, revised DEIR does not adequately address cumulative impacts to the low-elevation wildlife corridor/linkage through the Saddleback Meadows, Saddle Creek and Live Oak properties. Also, it appears that a comprehensive plan for maintaining a viable corridor/linkage through these properties has not been completed. For example, the Saddleback Meadows DEIR shows a northern wildlife corridor extending from Saddleback Meadows through the adjacent Saddle Creek property. However, the Saddle Creek DEIR does not show this corridor, which would be blocked by the residential development proposed in the DEIR. In addition, development on the Live Oak property could further limit wildlife movement between the subregions. Therefore, the Saddleback Meadows DEIR should evaluate cumulative impacts to wildlife movement in consideration of past development, the proposed development on the Saddle Creek and Live Oak properties and other probable developments, and demonstrate that the Saddleback Meadows

project will not preclude the retention of a viable low-elevation wildlife corridor/linkage connecting the Central and Southern Subregions through all three properties. We wish to work with the County and property owners to develop a comprehensive plan to accomplish this vital component of the Southern Subregion NCCP/HCP.

To address our concerns for Saddleback Meadows, the Wildlife Agencies recommend further consideration of Alternative 4 (F/TSP EIR 531 Staff Alternative B) of the DEIR as it would allow continued movement of wildlife through the area while still meeting the project's objective of "develop(ing) a single-family, rural community that balances residential development with protection of on-site sensitive resources and values of the surrounding community." Alternative 6 (the 44/178 Alternative) may be able to mitigate significant impacts to wildlife movement if remedial grading requirements can be limited within the corridor/linkage area.

Geotechnical

According to the DEIR, the site is characterized by several unfavorable geotechnical conditions including unstable landslides and presence of ground water that could compromise the site's ability to support the project. Mitigation would include the construction of canyon subdrains and back drains to minimize or eliminate the effects of ground water. The Final EIR (FEIR) should discuss how these changes would affect groundwater availability and timing for use by riparian vegetation in upper Aliso Creek.

Hydrology/Beneficial Uses

The Santa Ana Regional Water Quality Control Board has designated the existing biological beneficial uses of "warm freshwater habitat," "wildlife habitat," and "rare, threatened, or endangered species" for portions of Aliso Creek, including the reach downstream from the proposed Saddleback Meadows project. The Wildlife Agencies are concerned about the onsite and downstream effects the project-related changes in the surface flows may have on these beneficial uses and on the habitats and biological resources supported by Aliso Creek. In addition to modifications in peak flows resulting from an increase in impervious surface, we are concerned about changes in the velocity, volume, duration, and frequency of dry-weather and non-peak wet-weather flows. Even small changes in the flow regime often effect changes in the stream community that, over time, can seriously damage stream habitats. Increases in flows from impervious surfaces associated with urbanization can result in: 1) stream bed scouring and habitat degradation; 2) shoreline erosion and stream bank widening; 3) loss of aquatic species; and 4) decreased baseflow (USEPA 1999). Downstream sections of Aliso Creek are known to be sediment-deficient and have already been adversely affected by scour, erosion and subsequent habitat degradation. The Wildlife Agencies recommend that every effort be made to integrate measures to ensure full protection of the beneficial uses and biological resources of Aliso Creek. The development design and construction operations should minimize the modifications of dry and wet-weather flows and integrate onsite best management practices (BMPs) that would attenuate the flows to reduce impacts on the stream morphology and habitats onsite and downstream. Examples of BMPs to consider include appropriately sized grassy swales and vegetated detention basins. Proper design of structural BMPs will require analyses of the

sediment transport and hydrological regime of the headwaters of Aliso Creek. The project is located within Reach 1 of the *Aliso Creek Watershed Management Feasibility Study, Orange County, California* prepared for the Corps. We recommend this study be consulted to determine possible effects of the project on the Aliso Creek watershed.

Significance Criteria for Biological Resources

The thresholds of significance for biological resources provided in section 4.8.2 of the DEIR do not appear to be consistent with the CEQA definition of rare, threatened, and endangered species (see CEQA Guidelines, § 15380). In addition, The Department recommends that the significance criteria in the body of the DEIR be revised to be consistent with CEQA Sections 15064.7 and 15065, and Appendix G of the CEQA guidelines.

Annual Grasslands

The project proposes that mitigation requirements for cumulative impacts to raptor foraging habitat (consisting primarily of coastal sage scrub and grasslands) will be met in conjunction with the proposed coastal sage scrub habitat mitigation. The Department recommends mitigation measures be incorporated specifically for impacts to annual grassland. These areas provide foraging areas for raptors and small mammals and proposed impacts to a total of 103.7 acres on- and offsite should be considered significant. Appendix I.1 of the DEIR indicates that raptor species including Cooper's hawk (*Accipiter cooperii*), a state species of special concern (CSC), sharp-shinned hawk (*A. striatus*, CSC), red tailed hawk (*Buteo jamaicensis*) red shouldered hawk (*B. strianus*), and American kestrel (*Falco sparverius*) were observed during surveys of the project site, and other species including northern harrier (*Circus cyaneus*, CSC) and loggerhead shrike (*Lanius ludovicianus*, CSC) have at least a moderate potential of using the grasslands onsite for foraging. We therefore recommend that annual grassland mitigation at a 0.5:1 preservation-to-impact ratio in an offsite area with long-term conservation potential be included in the FEIR.

Intermediate Mariposa Lily

The DEIR states that impacts to intermediate mariposa lily (*Calochortus weeddii* var. *intermedius*) would not be significant. This species is listed by the California Native Plant Society as a "1B" plant (Plants rare, threatened, or endangered in California and elsewhere). Species included on List 1B must be fully considered under CEQA. The Department recommends that the FEIR include mitigation for impacts to this species (for example, see Rancho Potrero Leadership Academy EIR, County of Orange, 2001).

Cactus Wren

According to the DEIR, impacts to the cactus wren (*Campylorhynchus brunneicapillus couesi*) are not considered significant. As proposed in Appendix I.3 to the DEIR, the coastal sage scrub mitigation plan does not specifically include salvage or container stock planting of prickly-pear

(*Opuntia* spp.) required for cactus wren nesting and foraging. By providing suitable replacement habitat, a potentially significant impact to cactus wren may be mitigated. To provide replacement habitat for cactus wren impacted by implementation of the project, we recommend that the coastal sage scrub plant palette is revised to include a substantial amount of prickly-pear. This may be achieved by salvage of existing plant material followed by direct replanting within the mitigation area or by collecting pads prior to impact and rooting them in containers. In addition, we recommend that reference sites currently supporting cactus wren be chosen to provide an appropriate baseline for comparison.

Oak Woodland Mitigation Plan

Mitigation for oak woodland impacts is described on page 4.8-26 of the DEIR and we concur with the restoration approach in concept. However, unlike the coastal sage scrub mitigation plan, details of the oak woodland mitigation strategy are not adequately described in Appendix L3 such that the impacts can be shown to be mitigated below a level of significance. For example, the proposed locations for oak woodland restoration should be depicted and described. In addition, container sizes, understory species, and maintenance activities specific to the oak woodland restoration should be detailed.

The Wildlife Agencies appreciate the opportunity to review and comment on the DEIR. If you have any questions please contact Mr. David Zoutendyk of the Service at (760) 431-9440 or Mr. Brad Henderson of the Department at (310) 214-9950.

Sincerely,

Karen A. Evans
Assistant Field Supervisor
U.S. Fish and Wildlife Service

William E. Tippets
Environmental Program Manager
CA Department of Fish and Game

Literature Cited

U.S. Environmental Protection Agency. 1999. Preliminary Data Summary of Urban Storm Water Best Management Practices. EPA-821-R-99-012. Pp. 4-24

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

ACKNOWLEDGEMENT OF RECEIPT

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

DATE: May 9, 2002

TO: Bill Grieman/Chuck Shoemaker
Orange County Planning and Development Services Department
300 North Flower Street 3rd Floor
P.O. Box 4048
Santa Ana, CA 92702

RE: Saddleback Meadows
SCH#: 1996121072

This is to acknowledge that the State Clearinghouse has received your environmental document for state review. The review period assigned by the State Clearinghouse is:

Review Start Date: April 26, 2002
Review End Date: June 10, 2002

We have distributed your document to the following agencies and departments:

California Highway Patrol
Caltrans, District 12
Department of Conservation
Department of Fish and Game, Region 5
Department of Forestry and Fire Protection
Department of Housing and Community Development
Department of Parks and Recreation
Department of Water Resources
Native American Heritage Commission
Office of Historic Preservation
Regional Water Quality Control Board, Region 9
Resources Agency
State Lands Commission

The State Clearinghouse will provide a closing letter with any state agency comments to your attention on the date following the close of the review period.

Thank you for your participation in the State Clearinghouse review process.

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

June 11, 2002

Bill Grieman/Chuck Shoemaker
Orange County Planning and Development Services Department
300 North Flower Street 3rd Floor
P.O. Box 4048
Santa Ana, CA 92702

Subject: Saddleback Meadows
SCH#: 1996121072

Dear Bill Grieman/Chuck Shoemaker:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 10, 2002, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

Attachment F

Document Details Report
State Clearinghouse Data Base

SCH# 1996121072
Project Title Saddleback Meadows
Lead Agency Orange County

Type EIR Draft EIR

Description Phased development 299 single-family residential lots on approximately 222 acres. Approximately 71 percent of the project site is proposed to remain in open space.

Lead Agency Contact

Name Bill Grieman/Chuck Shoemaker
Agency Orange County Planning and Development Services Department
Phone 714-834-5550 **Fax** 714-834-6132
email
Address 300 North Flower Street 3rd Floor
P.O. Box 4048
City Santa Ana **State** CA **Zip** 92702

Project Location

County Orange
City
Region
Cross Streets El Toro Road/Live Oak Canyon Road
Parcel No. 856-071-81,91
Township **Range** **Section** **Base**

Proximity to:

Highways 241
Airports
Railways
Waterways Upper Oso Reservoir
Schools Portola Hills Elementary
Land Use Vacant/Residential/Suburban Residential

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Conservation; Department of Fish and Game, Region 5; Department of Forestry and Fire Protection; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 12; Department of Housing and Community Development; Regional Water Quality Control Board, Region 9; Native American Heritage Commission; State Lands Commission

Date Received 04/26/2002 **Start of Review** 04/26/2002 **End of Review** 06/10/2002

Note: Blanks in data fields result from insufficient information provided by lead agency.

Attachment F

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894

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Clear 6.10.02

May 28, 2002

Mr. Bill Grieman
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

File: IGR/CEQA
SCH#: 1996121072
Log #: 952B
SR: 241, I-5

Subject: Saddleback Meadows

Dear Mr. Grieman ,

Thank you for the opportunity to review and comment on the Draft EIR dated April 2002 for **Saddleback Meadows.** The project is located on the eastern side of El Toro Road, one half mile from the Santiago Canyon/Live Oak Canyon Road junction.

The project consists of the development of 299 detached single family residences on 66.9 acres out of a total 222-acre site. The nearest State Routes are SR-241 and I-5.

Caltrans District 12 status is a reviewing agency on this project and has the following comments:

1. As indicated in the report, the proposed project will generate 3690 trips per day that mostly use El Toro Road. This report has not included west/south of El Toro beyond Santa Margarita Parkway towards I-5 interchange in the Traffic study section. We have concerns that this development will ultimately contribute to the cumulative impacts at El Toro Road/I-5.

2. We recommend that the project proponents work to coordinate their efforts with the City of Lake Forest and their project " The Arbor on El Toro Specific Plan" in terms of project phasing, filing a traffic management plan during construction, and avoiding impacts to El Toro Road and ultimately the I-5 during traffic peak periods.

3. Other than identifying the County Bikeway network, this project doesn't evaluate or stipulate the use of alternative modes of transportation, such as buses, to be incorporated into the development. Such alternatives would work to reduce future congestion in the region while at the same time help to improve the overall air quality.

4. The project proponents will insure that during construction all loads will be contained that may use state routes and that no net runoff increase will flow over, onto or under State Right of Way.

Please continue to keep us informed of this project and other future developments, which could potentially impact our transportation facilities. If you have any questions or need to contact us, please do not hesitate to call Maureen El Harake at (949) 724-2086.

Sincerely,

Robert F. Joseph, Chief
IGR/Community Planning Branch

c: Terry Roberts, Office of Planning and Research
Ron Helgeson, HQ IGR/Community Planning
Raouf Moussa, Traffic Operations – South
Joe El Harake, Traffic Operations – Toll Roads

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

Memorandum

Date: June 20, 2002

To: All Reviewing Agencies

From: Scott Morgan, Project Analyst

Re: SCH # 1996121072
Saddleback Meadows

Pursuant to the attached letter, the Lead Agency has extended the review period for the above referenced project to June 24, 2002 to accommodate the review process. All other project information remains the same.

cc: Bill Greiman
Orange County Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

PUBLIC NOTICE
of Time Extension
DRAFT ENVIRONMENTAL IMPACT REPORT

RECEIVED
JUN 14 2002
STATE CLEARING HOUSE

PROJECT: SADDLEBACK MEADOWS SCH# 1996121072

DESCRIPTION: Pursuant to the California Environmental Quality Act (CEQA), the Orange County Planning & Development Services Department has prepared Environmental Impact Report No. 566 to evaluate the environmental impacts resulting from the proposed Saddleback Meadows project. The project proposes the phased development of 299 single-family residential units on a 229.2-acre site. The gross density proposed is 1.4 dwelling units per acre, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6-acres) of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding & hiking trail connections and biological resource enhancement. Project implementation requires the approval of Zone Change (Foothill/Trabuco Specific Plan Amendment), Area Plan and Vesting Tentative Tract Map.

EIR 566 examines the potential impacts generated by the proposed project in relation to the following CEQA Checklist categories: Land Use & Planning; Geophysical; Hydrology & Drainage; Water Quality; Transportation/Circulation; Air Quality; Noise; Biological Resources; Aesthetics; Cultural/Scientific Resources; Recreation; Hazards; Public Services; and, Utilities & Service Systems. The proposal will result in unavoidable adverse impacts to air quality.

The purpose of this notice is to inform local residents, institutions and other interested parties about a TIME EXTENSION for the review of the Draft EIR. THE REVISED PUBLIC COMMENT PERIOD IS: APRIL 25TH, 2002 TO JUNE 24TH, 2002. Written comments on the Draft EIR must be submitted by June 24th, 2002, by 5:00 p.m. to: Manager, OCPDS/Environmental Planning Services Division, 300 N. Flower St., Box 4048, Santa Ana, California 92702-4048.

Location: Easterly side of El Toro Road, approximately ½ mile south of the intersection of Santiago Canyon Road/El Toro and Live Oak Canyon Road, in east-central unincorporated Orange County.

REVIEWING LOCATIONS

COPIES OF THE DRAFT EIR ARE AVAILABLE FOR PUBLIC REVIEW AT THE FOLLOWING LOCATIONS:

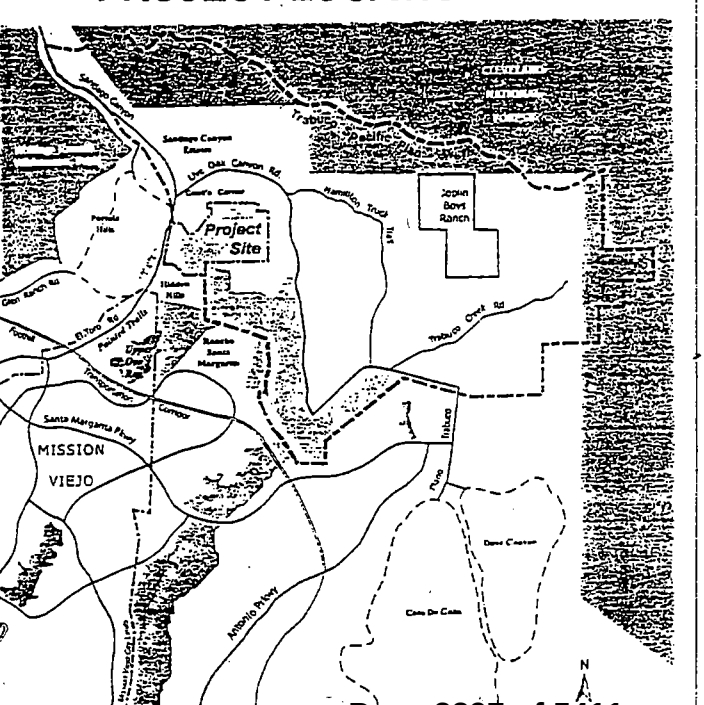
County of Orange/Planning & Development Services Department/
Environmental Planning Services Division
Contacts: Bill Grieman 834-5550
Chuck Shoemaker 834-5550

ORANGE COUNTY BRANCH LIBRARIES:
25209 Marguerite Parkway, Mission Viejo
28192 Silverado Canyon Road, Silverado
24672 Raymond Avenue, El Toro
30902 La Promesa Drive, Rancho Santa Margarita
California State University, Fullerton, Library Documents Section
UC Irvine Main Library/Government Publications/Microforms Department

COPIES OF THE DRAFT EIR HAVE BEEN PROVIDED TO THE FOLLOWING GROUPS:

FOOTHILL/TRABUCO REVIEW BOARD MEMBERS: Adam Smith, Jeanne Porter, Robert Wilkes, Raymond Mills, & Stephen Nordeck
Hidden Ridge HOA, c/o Mr. Jerry Kacsir
Portola Hills HOA I, c/o Rinevol & Co.
Portola Hills HOA II, c/o Ms. Elizabeth Wallace
Canyon View Homeowners Association
Inter-Canyon League, c/o Bob Hunt
California Native Plant Society
National Audubon Society, Inc.

PROJECT LOCATION MAP



Attachment F

See NOTE below

SCH#1996121072

NOTICE OF COMPLETION

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

Project Title: Saddleback Meadows — DEIR 565

Lead Agency:	County of Orange	Contact Person:	Bill Grieman/Chuck Shoemaker
Street Address:	300 North Flower Street	Phone:	(714) 834-5550
City:	Santa Ana	County:	Orange

Project Location: Easterly side of El Toro Road, approximately ½ mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County.

County:	Orange	City/Nearest Community:	Mission Viejo		
Cross Streets:	El Toro Road/Live Oak Canyon Road		Zip Code: 92679	Total Acres:	222
Assessor's Parcel No.:	859-071, 81 & 91	Section:	Twp:	Range:	Base:
Within 2 Miles: State Hwy. #:	241	Waterways:	Upper Oso Reservoir		
Airports:	N/A	Railways:	N/A	Schools:	Portola Hills Elementary

Document Type (Check one)

RECEIVED
APR 25 2002
STATE CLEARING HOUSE

CEQA		NEPA	OTHER
_ NOP	_ Supplement/Subsequent	_ NOI	_ Joint Document
_ Early Cons	_ Prior EIR (SCH #)	_ EA	_ Final Document
_ Neg Dec	_ Other	_ Draft EIS	_ Other
X Draft EIR		_ FONSI	

Local Action Type (Check all that apply)

_ General Plan Update	_ Specific Plan	X Rezone	_ Annexation
_ General Plan Amend.	_ Master Plan	_ Prezone	_ Redevelopment
_ General Plan Element	_ Planned Unit Dev.	_ Use Permit	_ Coastal Permit
X Community Plan	_ Site Plan	X Land Division subdivision parcel, tract maps etc.)	_ Other

Development Type (Check all that apply)

	Units/Sq Ft	Acres	Employees		Type
X Residential	299	222		_ Water Facilities	MGD
_ Office				_ Transportation	
_ Commercial				_ Mining	Mineral:
_ Industrial				_ Power	Watts
_ Educational				_ Waste Treatment	
_ Recreational				_ Hazardous Waste	
				_ Other Open Space – 158-acres	

Project Issues Discussed in Document (Check all that apply)

X Aesthetics/Visual	X Flood Plain/Flooding	X Schools/Universities	X Water Quality
_ Agricultural Land	X Forest Land/Fire Hazard	_ Septic Systems	X Water Supply/Ground Water
X Air Quality	X Geologic/Seismic	X Sewer Capacity	X Wetland/Riparian
X Archaeo/History	_ Minerals	X Soil Erosion/Compaction	X Wildlife
_ Coastal Zone	X Noise	X Solid Waste	X Growth Inducing
X Drainage Absorption	_ Population Housing Balance	X Toxic/Hazardous	X Land Use
_ Economic/Jobs	X Public Services/Facilities	X Traffic/Circulation	X Cumulative Effects
_ Fiscal	X Recreation/Parks	X Vegetation	_ Other

Present Land Use/Zoning/General Plan Designation

Vacant/Residential/Suburban Residential

Project Description:

Phased development 299 single-family residential lots on approximately 222 acres. Approximately 71 percent of the project site is proposed to remain in open space.

State Clearinghouse Contact: Scott Morgan (916) 445-0613

State Review Began: 4-26-2002

SCH COMPLIANCE 6-10-2002

Please note State Clearinghouse Number (SCH#) on all Comments

SCH#: 1996121072

Please forward late comments directly to the Lead Agency

AQMD/APCD 33

(Resources: 4/27)

Project Sent to the following State Agencies

X Resources	Boating & Waterways	Coastal Comm
Colorado Rvr Bd	X Conservation	X Fish & Game # 5
Delta Protection Comm	X Forestry & Fire Prot	X Historic Preservation
X Parks & Rec	Reclamation Board	Bay Cons & Dev Comm
X DWR	OES (Emergency Svcs)	

Bus Transp Hous

Aeronautics

X CHP

X Caltrans # 12

Trans Planning

X Housing & Com Dev

Food & Agriculture

Health Services

State/Consumer Svcs

General Services

Cal EPA

ARB – Airport Projects

ARB – Transportation Projects

ARB – Major Industrial Projects

Integrated Waste Mgmt Bd

SWRCB: Clean Wtr Prog

SWRCB: Wtr Quality

SWRCB: Wtr Rights

X Reg. WQCB # 9

Toxic Sub Ctrl-CTC

Yth/Adlt Corrections

Corrections

Independent Comm

Energy Commission

X NAHC

Public Utilities Comm

Santa Monica Mtns

X State Lands Comm

Tahoe Rgl Plan Agency

Other:

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

June 25, 2002

Bill Grieman/Chuck Shoemaker
Orange County Planning and Development Services Department
300 North Flower Street 3rd Floor
P.O. Box 4048
Santa Ana, CA 92702

Subject: Saddleback Meadows
SCH#: 1996121072

Dear Bill Grieman/Chuck Shoemaker:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on June 24, 2002, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Terry Roberts

Terry Roberts
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

Attachment F

SCH# 1996121072
Project Title Saddleback Meadows
Lead Agency Orange County

Type EIR Draft EIR

Description Phased development 299 single-family residential lots on approximately 222 acres. Approximately 71 percent of the project site is proposed to remain in open space.

Lead Agency Contact

Name Bill Grieman/Chuck Shoemaker
Agency Orange County Planning and Development Services Department
Phone 714-834-5550 **Fax** 714-834-6132
email
Address 300 North Flower Street 3rd Floor
P.O. Box 4048
City Santa Ana **State** CA **Zip** 92702

Project Location

County Orange
City
Region
Cross Streets El Toro Road/Live Oak Canyon Road
Parcel No. 856-071-81,91
Township **Range** **Section** **Base**

Proximity to:

Highways 241
Airports
Railways
Waterways Upper Oso Reservoir
Schools Portola Hills Elementary
Land Use Vacant/Residential/Suburban Residential

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Conservation; Department of Fish and Game, Region 5; Department of Forestry and Fire Protection; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 12; Department of Housing and Community Development; Regional Water Quality Control Board, Region 9; Native American Heritage Commission; State Lands Commission

Date Received 04/26/2002 **Start of Review** 04/26/2002 **End of Review** 06/24/2002

Note: Blanks in data fields result from insufficient information provided by lead agency.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894

Flex your power!
Be energy efficient!

RECEIVED
JUN - 5 2002
STATE CLEARING HOUSE

Clear 6.10.02

May 28, 2002

Mr. Bill Grieman
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

File: IGR/CEQA
SCH#: 1996121072
Log #: 952B
SR: 241, I-5

Subject: Saddleback Meadows

Dear Mr. Grieman

Thank you for the opportunity to review and comment on the Draft EIR dated April 2002 for **Saddleback Meadows.** The project is located on the eastern side of El Toro Road, one half mile from the Santiago Canyon/Live Oak Canyon Road junction.

The project consists of the development of 299 detached single family residences on 66.9 acres out of a total 222-acre site. The nearest State Routes are SR-241 and I-5.

Caltrans District 12 status is a reviewing agency on this project and has the following comments:

1. As indicated in the report, the proposed project will generate 3690 trips per day that mostly use El Toro Road. This report has not included west/south of El Toro beyond Santa Margarita Parkway towards I-5 interchange in the Traffic study section. We have concerns that this development will ultimately contribute to the cumulative impacts at El Toro Road/I-5.

2. We recommend that the project proponents work to coordinate their efforts with the City of Lake Forest and their project " The Arbor on El Toro Specific Plan" in terms of project phasing, filing a traffic management plan during construction, and avoiding impacts to El Toro Road and ultimately the I-5 during traffic peak periods.

3. Other than identifying the County Bikeway network, this project doesn't evaluate or stipulate the use of alternative modes of transportation, such as buses, to be incorporated into the development. Such alternatives would work to reduce future congestion in the region while at the same time help to improve the overall air quality.

4. The project proponents will insure that during construction all loads will be contained that may use state routes and that no net runoff increase will flow over, onto or under State Right of Way.

Please continue to keep us informed of this project and other future developments, which could potentially impact our transportation facilities. If you have any questions or need to contact us, please do not hesitate to call Maureen El Harake at (949) 724-2086.

Sincerely,

Robert F. Joseph, Chief
IGR/Community Planning Branch

c: Terry Roberts, Office of Planning and Research
Ron Helgeson, HQ IGR/Community Planning
Raouf Moussa, Traffic Operations – South
Joe El Harake, Traffic Operations – Toll Roads

Attachment F

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
District 12
3337 Michelson Drive, Suite 380
Irvine, CA 92612-8894

Flex your power!
Be energy efficient!

May 28, 2002

Mr. Bill Grieman
County of Orange
Planning and Development Services
P.O. Box 4048
Santa Ana, CA 92702-4048

File: IGR/CEQA
SCH#: 1996121072
Log #: 952B
SR: 241, I-5

Subject: Saddleback Meadows

Dear Mr. Grieman

Thank you for the opportunity to review and comment on the Draft EIR dated April 2002 for **Saddleback Meadows.** The project is located on the eastern side of El Toro Road, one half mile from the Santiago Canyon/Live Oak Canyon Road junction.

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Sincerely,

Robert F. Joseph, Chief
IGR/Community Planning Branch

c: Terry Roberts, Office of Planning and Research
Ron Helgeson, HQ IGR/Community Planning
Raouf Moussa, Traffic Operations – South
Joe El Harake, Traffic Operations – Toll Roads

CALIFORNIA STATE UNIVERSITY, LOS ANGELES

COLLEGE OF NATURAL AND SOCIAL SCIENCES
Department of Anthropology

Anthropology Department June 10, 2002

Manager,
OCPDS/Environmental Planning Services Division
300 N. Flower Street
Box 4048
Santa Ana, CA 92702

RE: Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows

I have reviewed the cultural resources section of the DEIR and have the following comments:

1. The cultural resources section of the EIR does not accurately reflect the findings and recommendations provided in the cultural resources appendix. In some cases there are serious contradictions.

2. The cultural resources appendix indicates that this project is subject to a Corps of Engineers 404 permit and therefore the cultural resources are subject to the provisions of Section 106 of the National Historic Preservation Act. The EIR does not indicate this and the treatment of the archaeological sites is not in compliance with the Act as amended in 1999

3. The investigations to determine the significance/importance of the archaeological sites are inadequate. The excavation of three 1 X 1 meter units in CA-ORA-713 is not sufficient to determine the depth, nature, condition and extent of a site of this size. Since the site appears to be dispersed over a large area, remote sensing and/or geomorphological studies should be conducted to locate areas of the site that contain buried cultural deposits and features. The discovery of buried cultural deposits and features or human burials should not be done by bulldozer.

4. Likewise the determination that CA-ORA-715 is based on the excavation of four 1 X 1 meter units. This is not sufficient to determine the depth, nature, condition, and extent of this site and to determine that it is not "significant/important".

5. Pg. 4.10-12 of the EIS states that a final test excavation of site CA-ORA-1437 was undertaken in November 2001, but does not indicate the methods used or the results. There is no information to support the determination that the site is not "significant/important".

6. Pg. 4.10-14 – Project impacts: The statements regarding CA-ORA-710 are contradictory and raise doubts regarding whether the site is going to be preserved. If

5151 State University Drive, Los Angeles, CA 90032-8220 (323) 343-2446 FAX: (323) 343-2445 www.calstatela.edu
The California State University: Bakersfield, Channel Islands, Chico, Dominguez Hills, Fresno, Fullerton, Hayward, Humboldt, Long Beach, Los Angeles, Maritime Academy, Monterey Bay, Northridge, Pomona, Sacramento, San Bernardino, San Diego, San Francisco, San Jose, San Luis Obispo, San Marcos, Sonoma, Stanislaus

the sit is to be protected through site burial and preserved within a biological mitigation area, then why does the EIR state that data recovery would occur prior to ground disturbing activities. If the site is to be protected, why should there be ground-disturbing activities? In addition, site burial has to be done very carefully to ensure that the site will be protected. The standards/specifications for covering the site should be indicated.

7. CA-ORA-1257 has not been subsurface tested and should not be graded without further investigation.

8. CA-ORA-711 is considered to be significant/important. According to the DEIR, only a small fraction of the total site area was tested. Grading with monitoring as stated on pg. 4.10-14 is not adequate mitigation for the destruction of the site.

9. Pg. 4.10-20: The DEIR makes the assumption that the completion of a data recovery excavation program, (or even worse, monitoring during grading) constitutes a no adverse effect. This is not the case. The implementing regulations for Section 106 of the National Historic Preservation Act (36 CFR 800.5(a)(2)(iii) along with 800.5(a)(2)(I), as amended May 1999, acknowledge the reality that destruction of a site and recovery of its information and artifacts is adverse and no longer consider data recovery as sufficient mitigation to reduce the impacts to a level of insignificance.

10. Even if this project were not under the jurisdiction of the federal government, CEQA was patterned after the National Environmental Policy Act and the pertinent federal regulations. Therefore, to ignore the reality that the destruction of an archaeological site, including the destructive process of archaeological excavations, is a significant impact seems counter to the spirit and intent of CEQA.

11. According to CEQA: **When archaeological resources are involved, avoidance, or preservation in an undisturbed state is the preferable course of action.** Section 21083.2 then provides that preservation methods may include:
a. Planning construction to avoid archaeological sites
b. Deeding sites into permanent conservation easements
c. Capping or covering sites with a layer of soil before building on the sites.
d. Planning parks, greenspace, or other open space to incorporate archaeological sites.

When avoidance is not possible, then data recovery excavation may be the only feasible mitigation measure.

11. According to CEQA data recovery is the last resort after the lead agency considers all of the above preservation methods and determines that they are not possible or feasible. With the exception of CA-ORA-710 (but the EIR also implies that the site may be impacted – see above) the only mitigation measures that have been considered for the remaining sites to be impacted by the proposed project are data recovery excavation, or worse yet, grading with monitoring.

Based on the above comments, the DEIR is inadequate in that (1) There is not sufficient information to support the determinations that all of the sites to be impacted by the proposed project (except two) are not significant/important. (2) The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of six of the seven archaeological sites to be impacted by the proposed project have been considered. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. If the determination is that none of the preservation measures are possible or feasible, the justification for this determination and documentation that serious consideration was given to preservation methods should be included in the EIR. (3) Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

If it is determined that data recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Preservation Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

If you have any questions or comments I can be reached at (323) 343-2445 or pmartz@calstatela.edu.

Sincerely,

Patricia Martz

Patricia Martz, Ph.D.
Professor

South Coast
Air Quality Management District
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • http://www.aqmd.gov

FAXED: JUNE 7, 2002

June 7, 2002

Chuck Shoemaker
Manager, Environmental Planning Services
County of Orange
300 N. Flower Street
Box 4048
Santa Ana, CA 92702-4048

Dear Mr. Shoemaker

Draft Revised Subsequent Environmental Impact Report (DRSEIR)
Saddleback Meadows

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The following comments are meant as guidance for the Lead Agency and should be incorporated in the Final Environmental Impact Report.

Pursuant to Public Resources Code Section 21092.5, please provide the AQMD with written responses to all comments contained herein prior to the certification of the Final Environmental Impact Report. The AQMD would be happy to work with the Lead Agency to address these issues and any other questions that may arise. Please contact Charles Blankson, Ph.D., Transportation Specialist – CEQA Section, at (909) 396-3304 if you have any questions regarding these comments.

Sincerely

Mike A. Nazemi
Manager
Planning, Rule Development & Area Sources

Attachment

MN: CB

ORC020425-02
Control Number

Draft Revised Subsequent Environmental Impact Report (DRSEIR)
Saddleback Meadows

1. **Project Size**: In the Public Notice announcing the availability of the DRSEIR, it is stated that the proposed project will occupy an area measuring 229.2 acres and approximately 71 percent of this or 158.6 acres will be devoted to open space. In the Project Summary in the DRSEIR on page 1-3, it is stated that the proposed project will occupy 222 acres and 70 percent or 155.1 acres will be devoted to open space. It is not clear from the above statements whether the project area is 229.2 acres or 222 acres? Please provide accurate information on the size of the project area since it has implications for grading emissions and subsequently air quality.

2. **Emissions Inventory**: In Table 4.6.2 on page 4.6-7 of the DRSEIR, emissions data are provided for the years 2000 and 2010. While the 2010 forecasts are the same as those reported in the SCAQMD Final 1997 AQMP, the 2000 data is different. See Table B-6 on page III-B-18 of Appendix III of the SCAQMD Final 1997 AQMP. Please correct the discrepancy.

3. **URBEMIS2001**: It is reported in Appendix G of the DSEIR that the lead agency used URBEMIS7G to calculate project emissions. There are two points to be noted about this. The first is that both Appendix G and the SDEIR limit the discussion on construction activity impacts to fugitive dust and PM_{10} emissions. PM_{10} emissions are reported to be less than the PM_{10} significance threshold. However, as noted on page 4.6-12 of the DRSEIR, construction also entails the use of internal combustion engines in on-road and off-road mobile, semi-mobile and other diesel-powered equipment which generate emissions of NO_X, CO and also PM_{10}. There are also ROG emissions from paints and other architectural coatings. The lead agency fails to mention that the URBEMIS7G output table shows very large ROG construction emissions. At 1,171.19 pounds per day during the Summer, these are very significant emissions. The lead agency needs to address these high ROG emissions and propose measures to reduce them to less than the significance threshold in the Final SEIR. The second point is that URBEMIS2001 is currently available on ARB Webpage and has replaced URBEMIS7G as the model of choice and should be used to estimate project emissions. The lead agency is therefore encouraged to use URBEMIS200 which uses current emission factors and therefore reflects project emissions more accurately. In discussing the proposed project's air quality impacts, both construction and operational emissions as well as the corresponding significance thresholds should be presented in the main text of the Final SEIR. If construction ROG emissions still exceed the significance threshold, the lead agency should propose mitigation measures accordingly.

4. **Screening Tables**: The lead agency uses the Screening Table in the SCAQMD 1993 CEQA Air Quality Handbook (Table 6-2) to determine that construction-related equipment combustion emissions from the project will not be significant. See discussion on page 4.6-12 of the DRSEIR. Please note that although the screening tables were developed by the AQMD, the AQMD no longer supports the use of these tables in determining the significance of project emissions. This is because the mobile source emission factors used in computing the tables are from an old version of the California Air Resources Board EMFAC model.

Attachment F

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

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www.scag.ca.gov

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Orange County: Charles Smith, Orange County • Ron Bates, Los Alamitos • Ralph Bauer, Huntington Beach • Art Brown, Buena Park • Lou Bone, Tustin • Elizabeth Cowan, Costa Mesa • Cathryn DeYoung, Laguna Niguel • Richard Dixon, Lake Forest • Alta Duke, La Palma • Shirley McCracken, Anaheim • Bev Perry, Brea • Tod Ridgeway, Newport Beach

Riverside County: Bob Buster, Riverside County • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Ron Roberts, Temecula • Jan Rochman, Corona • Charles Weber, Moreno Valley

San Bernardino County: Jon Mikels, San Bernardino County • Bill Alexander, Rancho Cucamonga • David Eshleman, Fontana • Lee Ann Garcia, Grand Terrace • Bob Hoerner, Victorville • Gachia Hutton-Perry, Chino Hills • Judith Valles, San Bernardino

Ventura County: Judy Mikels, Ventura County • Glen Becerra, Simi Valley • Donna De Paola, San Buenaventura • Toni Young, Port Hueneme

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Bill Davis, Simi Valley

Printed on Recycled Paper 1/9/1/1/02

May 7, 2002

Mr. Bill Grieman
County of Orange
Planning & Development Services Department/
Environmental Planning Services Division
300 N. Flower Street, P. O. Box 4048
Santa Ana, CA 92702-4048

RE: SCAG Clearinghouse No. I 20020232 Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows

Dear Mr. Grieman:

Thank you for submitting the **Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

We have reviewed the **Saddleback Meadows**, and have determined that the proposed Project is not regionally significant per SCAG Intergovernmental Review (IGR) Criteria and California Environmental Quality Act (CEQA) Guidelines (Section 15206). The proposed project is not a residential development of more than 500 units. Therefore, the proposed Project does not warrant comments at this time. Should there be a change in the scope of the proposed Project, we would appreciate the opportunity to review and comment at that time.

A description of the proposed Project was published in SCAG's **April 30, 2002** Intergovernmental Review Clearinghouse Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this Project. Correspondence should be sent to the attention of the Clearinghouse Coordinator. If you have any questions, please contact me at (213) 236-1867. Thank you.

Sincerely,

JEFFREY M. SMITH, AICP
Senior Planner
Intergovernmental Review

Attachment F

FAX

Date: June 10, 2002

Number of pages including cover sheet 16

TO:

Bill Grierman or
Chuck Shoemaker

Phone: 714-834-6105
Fax: 714-834-4652

FROM: Valarie McFall

Transportation Corridor Agencies
125 Pacifica, Suite 100
Irvine, CA 92618-3304

Phone: 949-754-3483

Fax: 949-754-3491

REMARKS: ___ Urgent _X_ For your review ___ Reply ASAP ___ Please comment

Please find attached a letter re: DEIR No./ 566: Saddleback Meadows.

San Joaquin Hills Corridor Agency
Chairwoman: Linda Lindholm, Laguna Niguel

TRANSPORTATION CORRIDOR AGENCIES

Foothill/Eastern Corridor Agency
Chairman: Scott Diehl, San Clemente

June 10, 2002

Manager
OCPDS/Environmental Planning Services Division
300 N. Flower Street
P.O. Box 4048
Santa Ana, CA 92702-4048

Subject: DEIR No. 566; Saddleback Meadows

To Whom It May Concern:

Thank you for forwarding the Draft Environmental Impact Report No. 556 for the proposed Saddleback Meadows Project. The Transportation Corridor Agencies (TCA) has reviewed the above-subject draft environmental document and would like to offer the following comment for your review:

- The DEIR identifies the intersection of Portola Parkway and the FTC-N as being impacted. The DEIR states, "The addition of one southbound left turn lane at the intersection of Portola Parkway (NS) at Foothill Transportation Corridor (EW) would be required for 2005 condition." Mitigation measure M 5-5 specifies that the project shall pay its fair share funding of this improvement. The fair share funding amount agreed to by the TCA must be submitted to the TCA prior to the issuance of any building permits for the project.

Should you have any questions regarding this letter, or the submission of payment, please contact me at (949) 754-3483.

Sincerely,

Macie Cleary-Milan

Macie Cleary-Milan, Deputy Director
Environmental and Planning

cc: Valarie McFall

Walter D. Kreutzen, Chief Executive Officer
125 PACIFICA, SUITE 100, IRVINE CA 92618-3304 • P.O. BOX 53770, IRVINE CA 92619-3770 • 949/754-3400 FAX 949/754-3467
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Mission Viejo • Orange • Newport Beach • Rancho Santa Margarita • Santa Ana • San Clemente • San Juan Capistrano • Tustin • Yorba Linda

ORANGE COUNTY FIRE AUTHORITY
P.O. Box 86, Orange, CA 92856-0086 • 145 South Water St., Orange, CA 92866
Chip Prather, Fire Chief *(714) 744-0400*

RECEIVED
JUN - 7 2002

June 6, 2002

Manager, OPDS/Environmental Planning Services
300 North Flower Street
P. O. Box 4048
Santa Ana, CA 92702-4048

Re: Draft EIR Saddleback Meadows

Dear Sir(s):

Thank you for the opportunity to comment on the Draft EIR for the Saddleback Meadows project. In response to our review, we would like to offer the following:

Page 4.12-1, Section 4.12.1, Second paragraph. "61 fire stations" should read "59 fire stations"

Page 4.12-1, Section 4.12.1, Third paragraph, Third bullet. Remove "only available from a medic van" from the sentence. OCFA provides paramedic service both paramedic assessment and full paramedic services through a number of configurations in addition to the medic vans.

Page 4.12-2, Table 4.12.1, Fire Station Locations. Several things are wrong with this table.

- Fire Station 18 is 4.2 miles from the project not 1.5. The response time to the project for FS18 would be calculated at 8 minutes and 40 second using an average of 35 mph and 90 seconds of call processing and turnout time.
- Fire Station 16 is located 3.5 miles from the project and would calculate at 9 minutes and 30 seconds using the same formula as above with a two minute time period added for the volunteer personnel to get to the fire station. This station does NOT have paramedics or full time firefighters. It is staffed with volunteer firefighters only.
- Fire Station 45 is located 5.3 miles away with a response time calculation of 10 minutes and 30 seconds.
- Additionally, Fire Station 54 is located 2.8 miles from the project with a response time calculation of 6 minutes and 20 seconds.
- Fire Station 31 is located 3.7 miles away with a response time of 7 minutes and 50 seconds. This is the closest paramedic unit to the project.

Page 2 - Draft EIR-Saddleback Meadows - June 6, 2002

Page 4.12-2, Third paragraph. Change "average response time of six minutes" to "average response time of nine minutes".

Page 4.12-2, Forth paragraph. Replace the last sentence, "At this location three firefighters are on duty staffing either a paramedci assessment unit or a brush engine." With "At this location, 20 volunteer firefighters staff the engine when called upon to do so."

Page 4.12-3. First paragraph, last sentence. Should read 7 firefighters rather than 8 firefighters.

Page 4.12-9. Add new Condition SC12-16. Secured Fire Protection Agreement. "Prior to grading, the applicant shall enter into a Secured Fire Protection Agreement with the OCFA. The reason for the timing this agreement is that the service needs for the project increases at the point of grading and continues to increase as the project is built. Service agreements will need to be in place at this time.

As noted in Section 4.12.3, Cumulative Impact, the seven related projects in this area have an effect on the service delivery within the area. Additional staffing and/or equipment may be needed to meet this demand. This issue will be addressed within the Secured Fire Protection Agreement.

Page 5-9, Alternatives, Alternative 2 – No project Alternative, this project would have many issues with fuel modification both "onsite" and "offsite".

Page 5-38, Alternatives, Alternative 6 – 44/178 Alternative. It should be noted that the layout of the "Development Area" does not allow for secondary access for emergency vehicles and may require the project to acquire additional easements or other mitigation measures to insure that adequate access to the project is provided.

The project area is within the designated Special Fire Protection Area and is as a result a significant wildfire risk. These risks will require special mitigation measures an accordance with OCFA standards. All other standard conditions of development including access will also be applicable to the proposed project. Guidelines for these issues are available on the OCFA website at (http://www.ocfa.org/business/pandd/guidelin.htm).

If you have any additional questions or concerns regarding this project, please contact my officer at (714) 744-0484 or at genebegnell@ocfa.org.

Sincerely,

Gene F. Begnell
Battalion Chief, Strategic Services

Attachment F

STAFF MEMBERS

Bruce Boner, General Manager

TRABUCO CANYON WATER DISTRICT

BOARD OF DIRECTORS

James Haselton, President
Matthew Disston, Vice President
Don Gladd, Director
Michael Safranski, Director
Corinne Teskot, Director

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

May 8, 2002

Manager
County of Orange
Planning & Development Services Department
Environmental Planning Services Division
300 N. Flower Street
P. O. Box 4048
Santa Ana, CA 92701-4048

Re: Comments of Trabuco Canyon Water District
Draft Revised Subsequent Environmental Impact, Report No. 566
Saddleback Meadows
Planning Application 980103, Zone Change (ZC) 98-3, Area Plan (AP) 98-2
Tentative Tract Map 15784, Vesting Tentative Tract Map 15230

Gentlemen:

Trabuco Canyon Water District (District) is in receipt of the Draft Revised Subsequent Environmental Impact Report No. 566 (DEIR 566) for the above-captioned project (Project). Based upon our review of the document, the following comments are submitted to the County of Orange (County) with regard to the Project and the environmental proceedings being undertaken by the County with respect to the Project. Please note that the District reserves its right to provide or submit additional or supplemental comments relative to the DEIR566 and any other or further documents provided or furnished by the County with respect to the Project or the environmental proceedings undertaken by the County with respect to the Project during the review period and/or public hearing process for this matter.

Request for Notices

Pursuant to the provisions of the California Environmental Quality Act (CEQA) and Public Resources Code Section 21091.1, the District hereby requests that copies of all notices and other documents mailed in relation to the above-referenced Project be furnished to the District. If there are any fees and charges required for the provision of such notices, please provide us with an invoice for such costs, and we will reimburse the appropriate County department. This

32003 Dove Canyon Drive, Trabuco Canyon, CA 92679 · 949/858-0277 · Fax: 949/858-3025
Mailing Address: P.O. Box 500, Trabuco Canyon, CA 92678
www.tcwd.ca.gov

request for notice specifically includes, but is not necessarily limited to, notices of all hearings, proposed actions to be taken with regard to the developmental process and, in particular, any Notice of Determination prepared, furnished or filed with regard to this Project.

Background Information

Our general legal counsel, Bowie, Arneson, Wiles & Giannone, provided written comments on behalf of the District on August 11, 1997 and supplemental comments on October 17, 1997, photocopies of which are attached hereto. We request that these letters be included as part of the record of proceedings for the environmental review of the Project, Including DEIR566.

As stated in the October 17, 1997 letter, there remains a "significant question as to whether the mitigation measure referenced includes and covers necessary master plan and in-tract water transmission and distribution facilities, and necessary master plan in-tract wastewater facilities." We again request that mitigation monitoring language, as required by Public Resources Code Section 21081(a)(1) and Section 21081.6, be incorporated within the final environmental impact report prepared for the Project.

Trabuco Canyon Water District further states that the District's Rules and Regulations require improvement agreements to be entered into in order for the District to approve tract maps and for the District to provide water and wastewater service to any property within its boundaries. The District previously requested of California Quartet to undertake negotiations relative to entering new improvement agreements relative to the Project. No response has been received by the District.

In addition to the above, a Sub-Area Master Plan must be prepared and financed by the developer to define needed facility improvements which include:

> Water: Pump stations, reservoir, pressure reducing valves and pipelines.
> Sewer: Local collection lines only. The project has already purchased regional wastewater collection, treatment and disposal capacity.

All fees and capacity charges must be reevaluated following completion of the Sub-Area Master Plan.

Sincerely,

Bruce Boner
General Manager

BB:ses

attachments

CITY OF LAKE FOREST

Celebrating 10 Years of Cityhood

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Mayor Pro Tem
Peter Herzog

Council Members
Kathryn McCullough
Marcia Rudolph
Helen Wilson

City Manager
Robert C. Dunek

June 6, 2002

Manager
OCPDS/Environmental Planning Services Division
300 N. Flower St.
Box 4048
Santa Ana, CA 92702-4048

SUBJECT: Saddleback Meadows Draft EIR

Dear County Staff:

The City of Lake Forest has received the Draft Environmental Impact Report for the Saddleback Meadows development. Public Works staff has reviewed the Water Quality Technical Report, Appendix E and Traffic Study, Appendix F of the EIR and offers the attached comments. Development Services staff has reviewed the body of the EIR and offers the following comments;

1. Section 3.7 and Table 3-1 discuss related projects. Please confirm project 3, Los Angeles Athletic Club is the name of the self-storage facility located on the corner of Marguerite Parkway and El Toro Road. In addition, the Gateway Commercial Center Project located on the corner of Portola Parkway and El Toro Road, within the City of Lake Forest, should be considered in the EIR. Please see City staff for information on the approved project.

2. The applicant should be advised that the City of Lake Forest does not permit any off-site signage. Therefore, there shall be no advertising or directional signage placed within the City of Lake Forest or along streets within the City's jurisdiction.

We would like to continue to receive information and documents on the project. Please send all further correspondence to myself, Ms. Gayle Ackerman, AICP, Director of Development Services at 23161 Lake Center Drive, Suite 100, Lake Forest, CA 92630, telephone number (949) 461-3460.

Sincerely,
CITY OF LAKE FOREST

Gayle Ackerman

Gayle Ackerman, AICP
Director of Development Services

Attachments: Memo from Nabil Kassih, June 4, 2002 and Memo from John Squire, May 29, 2002

CC: Bob Woodings, P.E., Director of Public Works
Interjurisdictional File

DRUG USE IS LIFE ABUSE

MEMORANDUM

DATE: JUNE 4, 2002

TO: STEPHANIE EKLUND
DEVELOPMENT SERVICES PLANNER

FROM: NABIL KASSIH, P.E.
CIVIL ENGINEERING ASSOCIATE

SUBJECT: REVIEW OF WATER QUALITY MANAGEMENT PLAN FOR THE SADDLEBACK MEADOWS DRAFT EIR

I have reviewed the Conceptual Water Quality Management Plan section of Saddleback Meadows EIR. The following are comments for the subject document.

1. In the Developed Conditions section of the Report, page 6, it states that "The permanent open space will dedicated to the County of Orange as a regional park and will be maintained by the County or a third-party conservation group". The report indicated that this open space area is 88.2 acres.

   - Has the County of Orange agreed to accept the open space area and the maintenance responsibility associated with it?
   - What impacts will this dedication have on the City if and when this area is annexed to the City of Lake Forest?
   - Will the public have access to this regional park?

   Please respond to these questions and provide additional information to clarify this item and its impact on the City of Lake Forest.

2. In the Developed Conditions section of the Report, Page 6, states that "Only lots 1 through 37 connect directly to an existing storm drain facility in El Toro Road". Please provide all required Hydrology and Hydraulic backup information to show that the existing facility has enough capacity to accommodate this portion of the development. Furthermore, provide detail information on the watershed that contributes to this existing facility on El Toro Road and the down stream impacts of this development.

3. Section 7 entitled "Monitoring, Inspection and Maintenance, page 12, Subsection (g) entitled "Common Area Catch Basin Inspection", the inspection and power wash of the screen for the stormceptor should be performed more than once per year. In fact,

the first few years after completion of this project, the inspection rate should be 3-4 times per year, or after a sizeable rainstorm. This rate of inspection will be needed until such time the newly planted vegetation/landscaping begin to contribute to the reduction of erosion. After that, the rate may be reduced 2-3 times per year to allow for continuos and proper clean screens for all stormceptors.

4. Same section as stated in item 3 above, page 12, subsection (h) entitled "Street Sweeping Private Streets and Parking Lots". Please be more specific in regards to statement "This procedure will be intensified around October 15th of each year..." In other words, is the street sweeping required twice a week or more? The term "intensified" needs to be clearly defined.

5. 75% of this area ultimately drains to Aliso Creek, which is an impaired water body and is under an enforcement action (California Water Code Section 13225) from the San Diego Regional Water Quality Control Board. What specific measures are to be undertaken by this development to eliminate pollutant runoff from entering the curb and gutter as required by the NPDES permit and in support of the enforcement action.

cc: Robert L. Woodings, P.E., Director of Public Works/City Engineer
Ted Simon, P.E., Engineering Services Manager
John Squier, P.E., City Traffic Engineer

f\c\e\n\n\saddleback meadows EIR.doc

MEMORANDUM

DATE: MAY 29, 2002

TO: STEPHANIE ECKLUND
DEVELOPMENT SERVICES PLANNER

FROM: JOHN SQUIER, P.E.
TRAFFIC ENGINEER

SUBJECT: REVIEW OF TRAFFIC SADDLEBACK MEADOWS DRAFT EIR

Please find attached comments on the subject traffic study.

Attachment

cc: Gayle Ackerman, AICP, Director of Development Services
Robert L. Woodings, P.E., Director of Public Works/City Engineer
Theodore G. Simon, P.E., Engineering Services Manager

F:\Public Works\TOM\SM Draft EIR Trans 052902.doc

WILLDAN
Serving Public Agencies

Memorandum

TO: Mr. Bob Woodings, Director of Public Works/City Engineer
Mr. John Squier, Traffic Engineer
- City of Lake Forest

FROM: Mr. R. Scott Bacsikin, P.E., Division Manager RSB (by HL)

SUBJECT: Saddleback Meadows Traffic Impact Report

DATE: May 23, 2002

We have reviewed the *Saddleback Meadows Traffic Report* prepared by Urban Crossroads for the County of Orange. The following are comments for the subject document.

1. The following intersections are STOP sign controlled and should be analyzed utilizing the 2000 HCM: Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline Rd. and Santiago Canyon Rd./Live Oak Canyon Rd. The intersection analyses Tables should be updated to reflect the delay/LOS for each of these intersections under each scenario which was analyzed.

2. Although the intersection of El Toro Rd./Live Oak Canyon Rd. does meet a warrant for signalization under existing conditions, the HCM worksheets indicate that this intersection is currently operating at acceptable Levels of Service B during both the AM and PM peak hours. Therefore, further analyses should be completed to determine if signalization is needed based upon other factors such as accident data or safety concerns.

3. The volumes provided in the count data found in Appendix B do not match the northbound and southbound through volumes at the intersection of Portola Parkway and the Foothill Transportation Corridor Ramps under existing conditions as shown in Figures 2E and 2F. A discussion should be added on how the northbound and southbound existing through volumes were derived for the AM and PM peak hours.

4. On Table 2-2, the Level of Service at Portola Parkway/Glenn Ranch Road should be "B" and not "A".

5. The peak hour project volumes for the AM inbound and PM outbound movements at the project access point on El Toro Road, as shown in Exhibits 3-C and 3-D, do not equate to the projected trip generation provided in Table 3-2. The Figures and intersection analyses worksheets should be revised to reflect the correct numbers.

6. Table 3-5 should be revised to reflect the Level of Service on each road segment based upon the roadway capacity values found in Table 2-1.

7. On Table 4-4 the following Levels of Service should be corrected to reflect to following Levels of Service:

   El Toro/Valley Vista Way - PM peak hour - LOS B
   Saddleback Ranch/Glenn Ranch - PM peak hour - LOS B
   Portola Parkway/El Toro - AM peak hour - LOS D
   Portola Parkway/El Toro - PM peak hour - LOS C

8. It is unclear who is responsible for the Year 2005 improvement (Southbound Left Turn Lane) required at the study intersection of Portola Parkway/Foothill Transportation Corridor. This should be indicated in the study.

9. Table 4-6 should be corrected. The study intersection of El Toro Rd./Valley Vista Way should have a LOS value of E instead of D.

10. A discussion/table should be added to the traffic study regarding the project's impacts at each study intersection where the Level of Service is unacceptable and the project increases the ICU value, and where the intersection's operation is degraded to an unacceptable operation with the project. In addition, the proposed improvements, which would mitigate the project's impacts, should be shown along with additional improvements which are needed without the project for Year 2025 conditions. Responsibility of the improvements should also be provided.

11. Peak hour traffic volumes for some movements under the Year 2025 without the project scenario are decreasing when compared to volumes under the Year 2005 without the project scenario. The following intersections should be reviewed and changes made to the Figures and ICU worksheets or an explanation provided on why the volumes are decreasing in the Year 2025.

Santiago Canyon/Modjeska Canyon	Santiago Canyon/Ridgeline
El Toro/Live Oak Canyon	El Toro/Ridgeline
El Toro/Valley Vista	El Toro/Glenn Ranch
Saddleback Ranch / Glenn Ranch	Marguerite Parkway/El Toro
Portola Pkwy/Glenn Ranch	Portola Pkwy/Foothill Trans. Corr.
Portola Pkwy/El Toro	

12. Appendix J contains traffic signal warrants for the intersections of Santiago Canyon Rd./Modjeska Canyon Rd., Santiago Canyon Rd./Ridgeline and El Toro Rd./Live Oak Canyon Road under a variety of analyses conditions. The body of the report does not discuss why traffic signal warrants were applied or when (under what time-frame) the signal may be required. This should be included in the text of the report.

13. There is an existing bike path/trail, which runs along the eastside and parallel with El Toro Road. The main project access will intersect this bike path/trail. Provisions should be provided for signing the bike path/trail with the proper controls.

14. There is a discrepancy in the trip generation provided in a letter dated October 17, 2001 to Mr. Pike Oliver, California Quartet LTD, from Mr. Bill Lawson, Urban Crossroads, Inc regarding "Alternative Development Scenarios" for the *Saddleback Meadows* Alternatives. This letter should be revised so the trip generation data provided in the letter reflects the trip generation information indicated in Table 2 of the aforementioned letter.

Susan Withrow
Mayor
Sherri M. Butterfield
Mayor Pro Tempore
William S. Craycraft
Council Member
John Paul "J.P." Ledesma
Council Member
Gail Reavis
Council Member

City of Mission Viejo

Community Development Department

May 30, 2002

Frank McGill
Senior Planner
County of Orange
P.O. Box 4048
Santa Ana, CA 92702

SUBJECT: Zone Change ZC98-3 and Area Plan AP98-2 for Saddleback Meadows (aka Bridlewood) in the County of Orange

Dear Mr. McGill:

Thank you for the opportunity to review and comment on Zone Change ZC98-3 and Area Plan AP98-2 for Saddleback Meadows (aka Bridlewood) in the County of Orange. Of particular interest to the City of Mission Viejo are the transportation-related components of the Draft Revised Subsequent Environmental Impact Report (EIR 566) for the Saddleback Meadows project filed with the County of Orange. The City's comments are as follows:

1. Project Trip Generation:
The project traffic study identifies a residential trip distribution assumption wherein twenty-five percent of the daily traffic would enter/leave the project site, using El Toro Road north of the project entrance, and with twenty percent continuing along Santiago Canyon Road. Page 3-5 of the project traffic study states that "trip distribution patterns for this study are consistent with previous traffic studies and were reviewed by County staff prior to completion of this traffic analysis." The City of Mission Viejo continues to believe that the 25% assignment of traffic to El Toro Road, north of the project access, is high. The City of Mission Viejo recommends that the Draft EIR provide narrative discussion which explains the land uses or destinations that exist or are proposed north of the project site, which would cause one-quarter of the project's daily trips to use this segment of El Toro Road, versus using El Toro Road south of the project site to access freeways, major highways, and public facilities. The assumptions used in the project trip distribution would have a resultant impact on analyzed intersections south of the project entrance to El Toro Road, and, in particular, would increase Intersection Capacity Utilization (ICU) calculations if a greater percentage of project trips were assigned southerly along El Toro Road.

2. El Toro/Glenn Ranch Road Intersection:
The El Toro/Glenn Ranch Road intersection is a Measure M intersection that is fully assigned to the City of Mission Viejo. In compliance with countywide Measure M

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http://www.ci.mission-viejo.ca.us
949/470-3053
FAX 949/951-7176

requirements, the City of Mission Viejo must maintain this intersection at a Level of Service "D" or better.

The project traffic study identifies that the El Toro/Glenn Ranch Road intersection will maintain a Level of Service A through project buildout in Year 2005, but that the intersection is projected to operate at a Level of Service "E" in the pm peak period in Year 2025 buildout, with or without the project. The project traffic study further identifies that the completion of additional El Toro Road improvements, specifically, the addition of through lanes that increases El Toro Road's lane capacity from a two-lane to a four-lane facility, will allow this intersection to operate at a Level of Service "C" in the pm peak period, thus maintaining consistency with Measure M Growth Management Program level of service standards.

The City of Mission Viejo recognizes that the implementation of additional El Toro Road improvements is not necessitated by the Saddleback Meadows project, since project buildout, and associated levels of service standards, can be maintained at the El Toro/Glenn Ranch Road intersection with existing improvements. In conjunction with Measure M Interjurisdictional Planning Forums, the City of Mission Viejo will monitor the operation of El Toro Road and will work with the County of Orange, to allow for the implementation of the additional El Toro Road lane improvements in advance of any failing intersection performance at the El Toro/Glenn Ranch Road intersection.

On behalf of the City of Mission Viejo, I thank you for your consideration of our comments. If you have any questions, please feel free to call Elaine Lister or me at (949) 470-3053.

Sincerely,

Charles E. Wilson, AICP
Director of Community Development

cc: Dennis Wilberg, Assistant City Manager/ Director of Public Works
Loren Anderson, City Engineer
Shirley Land, Transportation Manager
Elaine Lister, Planning Manager

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CITY OF RANCHO SANTA MARGARITA

May 16, 2002

Mayor
James M. Thor
Mayor Pro Tempore
Gary Thompson
Council Members
Neil C. Blais
Carol Gamble
Christy Riley

County of Orange Planning and Development Services Department
Attn: Frank McGill
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: Saddelback Meadows Zone Change and Area Plan

Dear Mr. McGill:

Thank you for the opportunity to review and comment on the Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for the proposed Saddleback Meadows development. It is our understanding that the existing zoning allows for 705 manufactured homes, 1.7 acres of commercial, and 130 acres of open space. The proposed development will include 299 single-family detached dwelling units and 155 acres of open space.

The City of Rancho Santa Margarita has reviewed the Zone Change and Area Plan and has the following comments:

1. Saddleback Meadows Rural Character Statement Page 6 (graphics): It is not clear which direction the views from off-site are from.

2. Page 6-1: Grading Concept: Contour grading is discussed but there are not any graphics that show where cut and fill areas will occur.

Please include the City of Rancho Santa Margarita on your mailing list for review of any documents related to this project.

30211 Avenida de las Banderas, Suite 101 • Rancho Santa Margarita • California 92688
Phone: (949) 635-1800 • Fax: (949) 635-1840 • www.cityofrsm.org

CITY OF RANCHO SANTA MARGARITA

If you have any questions or concerns about our comments, please call me at (949) 635-1800.

SINCERELY,

for Kathleen Haton
Planning Director

Mayor
James M. Thor
Mayor Pro Tempore
Gary Thompson
Council Members
Neil C. Blais
Carol Gamble
Christy Riley

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CENTER FOR BIOLOGICAL DIVERSITY

CALIFORNIA AND PACIFIC OFFICE

protecting and restoring natural ecosystems and imperiled species through science, education, policy, and environmental law

VIA FACSIMILE AND U.S. MAIL

June 24, 2002

Project Manager
Environmental Planning Services Division
County of Orange
300 N. Flower, Room 321
Box 4048
Santa Ana, California 92702-4048
Facsimile: (714) 834-6132

RE: Comments on Draft Revised Subsequent EIR 566 (SCH No. 1996121072) for Saddleback Meadows.

Dear Mr. Britton:

These comments are submitted on behalf of the Center for Biological Diversity ("Center"), a non-profit public interest membership organization dedicated to the preservation of native species and their habitats. On June 11, 2001 our Legal Assistant Susie Roe called the County of Orange Environmental Planning and Services Division requesting a copy of the EIR for the Saddleback Meadows Project, SCH No. 1996121072. Ms. Roe was told by staff that the EIR could only be sent via the authority of Mr. Bill Grieman, then on vacation. Ms. Roe left a voicemail for Mr. Grieman, who never returned the call. Today, June 24th, Ms. Roe called Mr. Grieman to check on the status of the request for the EIR, and was told that he was unsure when and if it could be sent because the comment period is now over. This is outrageous. First, the comment period is not "over" as it is not yet the close of business. Second, the Center has right to review the EIR regardless of whether the comment period is "over" or not. Third, the County of Orange Environmental Planning and Services Division should not be incapable of sending out a copy of an EIR while one staff member is on vacation. The actions of County staff have deprived the Center, our members and staff, and members of the public with an interest in protecting the biological resources of the Saddleback Meadows project site with an opportunity to comment on this project.

From reviewing the comments of the Sierra Club and others, it seems apparent that the Draft Supplemental EIR is deeply flawed, the environmental impacts of this project are unacceptable, and the mitigation proposed is entirely inadequate. The Center will submit further comments once we have received the EIR. The Center requests that the comment period be extended due to the County's

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Kassie Siegel, Associate Attorney
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Email: ksiegel@biologicaldiversity.org • www.biologicaldiversity.org

failure to timely release a copy of the EIR upon request. Should the deadline not be extended, the Center will still submit comments and strongly urges the County to consider them and respond fully in the Final EIR. As you know, the CEQA Amendments of 1994 make it clear that an organization exhausts its administrative remedies (and therefore preserves its right to judicial review of the project approval) by submitting comments at any time prior to the certification of the EIR. Pub. Resources Code § 21177(a),(b); *Galanta Vineyards v. Monterey Peninsula Water Management District* (6th Dist. 1997), 60 Cal. App.4th 1117-1121.

Thank you for your consideration of these comments. Please contact me at (909) 659-6053 x. 302 should you have any questions.

Sincerely,

Kassie Siegel
Center for Biological Diversity

Cc:
Gail Prothero
Conservation Chair, Sierra Sage Group
Angeles Chapter Sierra Club – Orange County
29302 Sandalwood Court
San Juan Capistrano, CA 92675
(949)347-1255

CONNOR, BLAKE & GRIFFIN LLP

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June 9, 2002

George Britton
Manager
Environmental Planning Services Division
County of Orange
300 N. Flower, Room 321
Box 4048
Santa Ana, California 92702-4048

VIA TELEFACSIMILE AND MESSENGER

Re: *Draft Revised Subsequent Environmental Impact Report No. 566 for Saddleback Meadows 299-Unit Single Family Housing Project*

Dear Mr. Britton:

On behalf of the Vedanta Society of Southern California ("Vedanta"), we hereby submit our comments on "Draft Revised Subsequent Environmental Impact Report No. 566" ("DRSEIR 566" or the "DRSEIR") for the 299-unit single family housing project (the "299-Unit Project") proposed for the Saddleback Meadows property (the "Property"). Vedanta's specific comments on DRSEIR 566 are set forth in Exhibit "A" attached hereto and are incorporated herein by reference. We request that each of the comments set forth in Exhibit "A" receives a full and complete response pursuant to section 15088 of the State CEQA Guidelines.

We are particularly disappointed that, after having described the "44/178 Alternative" in detail in the letter which we sent to you on August 31, 2001, in response to the Notice of Preparation for DRSEIR 566, California Quartet's consultant, HDR, has chosen to address a *radically different* alternative under the guise of the "44/178 Alternative." In our letter, we clearly described the "44/178 Alternative" as dividing the Property into a 44-acre "Development Parcel" and a 178-acre "Conservation Parcel" with all residential dwelling units and related improvements being confined to the "Development Parcel." We stressed that the "Conservation Parcel" was to be permanently preserved in its natural condition as undeveloped and undisturbed open space, and that no development activities (*e.g.*, remedial

grading) were to be permitted outside the 44-acres of the "Development Parcel." However, in the DRSEIR, the "44/178 Alternative" is inexplicably presented as a 127-unit single family housing project.

As was disclosed by California Quartet's representatives during Vedanta's settlement negotiations with them and various County officials in 1998, a 127-unit alternative would require a development area of at least 75 acres and would entail massive remedial grading and a 50-foot loeffel wall that would destroy virtually all of the vernal ponds, oak trees, and sensitive habitat areas that would otherwise be preserved by the 44-acre development footprint that is the hallmark of the "44/178 Alternative" proposed by Vedanta.

We consider the unfair and distorted presentation of the "44/178 Alternative" that is contained in DRSEIR 566 to be so deceptive and misleading that it requires the DRSEIR to be redrafted and recirculated. Section 15088.5(a)(3) of the State CEQA Guidelines has clearly been triggered in this regard. Moreover, given the conclusory and deficient nature of many of the other sections of DRSEIR 566, recirculation is also required under section 15088.5(a)(4) of the State CEQA Guidelines.

What is required is a fair and honest evaluation of the merits of the "44/178 Alternative." As the County's own staff members proved in developing the 65-unit "Mathews Alternative" in April 1998, the "44/178 Alternative" would provide California Quartet with a feasible--albeit lower density--housing project which would preserve and protect the environmentally-sensitive resources on this unique "wildlife corridor" property. Regrettably, the County has so far allowed California Quartet's consultant to evade the state law requirements which mandate that this project alternative be adequately analyzed and reported on in the DRSEIR. We cannot believe that the County has allowed this blatant misconduct to occur and we hope that you will rectify it immediately.

In the interest of providing the decision-makers of the County of Orange and the members of the public with a complete and non-deceptive evaluation of the project alternatives, environmental impacts, and feasible mitigation measures associated with the 299-Unit Project, we respectfully request that DRSEIR 566 be revised and recirculated before any public hearings are scheduled on this matter.

Very truly yours,

Edmond M. Connor

Enclosure

EXHIBIT "A"

COMMENTS OF VEDANTA SOCIETY OF SOUTHERN CALIFORNIA ON DRAFT REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT NO. 566

1. Draft Revised Subsequent Environmental Impact Report No. 566 ("DRSEIR 566" or the "DRSEIR") fails to identify, analyze, and mitigate the impacts associated with the failure of the 299-unit single family housing project (the "299-Unit Project") to comply and be consistent with the goals, objectives, components, regulations, and guidelines of the Foothill/Trabuco Specific Plan (the "FTSP"). At page 4.1-12, the DRSEIR simply concludes that the 299-Unit Project "would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692" and, therefore, as a result of the fact that the 705-unit manufactured housing project (the "705-Unit Project") described in Recorded Map 10692 was exempted--due to bankruptcy code concerns--from compliance with the FTSP, the 299-Unit Project should likewise be exempted. However, the DRSEIR fails to provide any legal or factual support for this conclusion. The FTSP provides an exemption for the development of the Saddleback Meadows property (the "Property") *only* if it is developed in accordance with Recorded Map 10692--*i.e.*, if the 705-Unit Project is developed. If any proposed development "deviates" from Recorded Map 10692, an amendment to the FTSP is required to "(1) determine an appropriate density cap for the property; (2) establish new development regulations for the Bridlewood Residential District; and (3) be consistent with all of the provisions of the Specific Plan." (FTSP at page III-20, para. 3.2(b).) By seeking to create an entirely new exemption from the FTSP for the Property, and by submitting an entirely new subdivision map for the Property, the developer has acknowledged that the 299-Unit Project deviates from Recorded Map 10692 and is not covered by the exemption from the FTSP provided for the 705-Unit Project. DRSEIR 566 incorrectly concludes that the 299-Unit Project is exempt from the FTSP because it "would be in substantial compliance with or consistent with previously approved and Recorded Map 10692." If the DRSEIR seeks to rely on this patently false conclusion, some attempt must be made to support it by providing a good faith comparison of the 705-Unit Project and the 299-Unit Project to prove that they are the same project. If they are essentially the same project, then the environmental analysis set forth in the DRSEIR is fatally flawed because the 299-Unit Project is portrayed as involving far fewer impacts.

2. DRSEIR 566 fails to identify, analyze, and mitigate the impacts--including the adverse precedent--associated with the creation of an entirely new exemption for the Property from the goals, objectives, components, regulations, and guidelines of the FTSP. If a new exemption is to be created, the DRSEIR should (a) identify all other projects, if any, which have received a similar exemption from the FTSP and (b) identify each of the goals, objectives, components, regulations, and

guidelines of the FTSP with which the 299-Unit Project is inconsistent, but will nonetheless be exempted from, including, but are not limited to, (a) the goals and objectives relating to rural character and resource preservation; (b) the resources overlay component relating to wildlife corridors, oak woodlands, tree management/preservation, and streambeds; (c) the Bridlewood Residential District Regulations; (d) landscaping regulations; (e) grading standards relating to the maximum height of manufactured slopes and the 70% "natural open space" requirement; (f) area plan submittal requirements; (g) grading, drainage and site planning guidelines; and (h) architectural guidelines.

3. DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on the Ramakrishna Monastery and St. Michael's Abbey. At page 4.1-13, under the heading "Level of Significance Before Mitigation," DRSEIR 566 concludes that "due to a natural space buffer, implementation of the proposed project would not result in significant land use compatibility impacts to the Rama Krishna Monastery or St. Michael's Abbey." However, at page 19, under the heading "Significant Impacts of the Project Prior to Mitigation," "Addendum PA980103 to Certified Final Subsequent Environmental Impact Report 566" ("Addendum No. 1") earlier concluded that the 299-Unit Project "would result in significant land use compatibility impacts to O'Neill Regional Park, the Ramakrishna Monastery, St. Michael's Abbey, and surrounding residential communities." Moreover, despite the incorporation of the identical "Project Design Features" which are proposed by DRSEIR 566, "Draft Environmental Impact Report No. 561" ("DEIR 561") concluded that the very similar 318-unit single family housing project which it analyzed would have a significant, *unavoidable*, adverse impact on land use compatibility with O'Neill Regional Park, the Ramakrishna Monastery, and St. Michael's Abbey. (DEIR 561 at page 8-1.) The DRSEIR fails to explain or reconcile these clearly inconsistent and contradictory conclusions.

4. DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on O'Neill Regional Park. At page 4.1-11, the DRSEIR concludes that the 299-Unit Project is "not incompatible" with O'Neill Regional Park. This conclusion is reached based on the fact that a portion of the Property is to be dedicated to the County of Orange (the "County") for incorporation into O'Neill Regional Park and that portion of the Property purportedly would cause O'Neill Regional Park to be "substantially buffered from the development by natural undisturbed, open space and topography." However, a comparison of the Open Space Plan for the 299-Unit Project (Figure 2.11) and any map or diagram indicating the surrounding property boundaries (*e.g.*, Figure 4.1.2, 2.3, or 2.6) reveals that the 299-Unit Project abuts a significant portion of the property boundary shared by the Property and O'Neill Regional Park. Indeed, the 299-Unit Project will require grading and fuel modification activities to be conducted in a portion of O'Neill Regional Park. (*See, e.g.*, Figure 4.2.5 (grading cannot conveniently stop at property boundary as indicated in Removal Area "C")

and 4.12.1.) Hence, not only does the DRSEIR fail to provide any factual support for its conclusion that the 299-Unit Project is "not incompatible" with O'Neill Regional Park, but it actually provides information demonstrating that this conclusion is obviously incorrect. Moreover, as noted in the previous paragraph, earlier environmental documents regarding the 299-Unit Project and the similar 318-Unit Project concluded that such projects did have significant land use compatibility impacts on O'Neill Regional Park, but DRSEIR 566 has not explained or reconciled these inconsistencies.

5. DRSEIR 566 fails to properly identify, analyze, and mitigate any of the environmental impacts which would result if title and possession of a significant portion of O'Neill Regional Park were to revert back to Vedanta due to any construction or other activities associated with the 299-Unit Project. In 1974, Vedanta granted the approximately 245 acres located immediately to the south of the Property, and the west and southwest of the Monastery, to the County so that the land could be made a part of O'Neill Regional Park and be permanently maintained as open space. The grant of this land contained several conditions subsequent pursuant to which the land would revert back to Vedanta in the event of a breach of any of those conditions. The conditions expressly prohibit any grading activities, the placement of any soils, and the removal of any trees, shrubs, or natural growth from the land gifted to the County. All of the grading maps in the DRSEIR attempt to show that no grading will be conducted in O'Neill Regional Park. For example, Figure 4.2.5 shows that when the limits of remedial grading--which generally trace the contours of the land and the outline of the geotechnical conditions which purportedly are to be remedied--reach the property line between the Property and O'Neill Regional Park, the limits of remedial grading miraculously make a sharp turn and follow precisely along the property line in order to stay out of O'Neill Regional Park. Clearly, this is not possible and, as currently designed, the 299-Unit Project requires certain grading--and also *fuel-modification* activities--to be conducted within the portion of O'Neill Regional Park which Vedanta gave to the County. Moreover, the 299-Unit Project provides for a storm drain to discharge into the natural drainage course which runs directly into O'Neill Regional Park. (*See* Figure 4.3.2.) Each of these constitutes a breach of the conditions subsequent to Vedanta's gift of land to the County and would cause such land to revert back to Vedanta. DRSEIR 566 should acknowledge this fact and identify, analyze, and mitigate the environmental impacts which would result therefrom. If the DRSEIR is going to continue to insist that no grading or other activities will be conducted within O'Neill Regional Park, then DRSEIR 566 should provide an explanation of how grading and all other activities will be excluded from O'Neill Regional Park.

6. DRSEIR 566 fails to properly identify, analyze, and mitigate the land use compatibility impacts of the 299-Unit Project on all surrounding residential areas. At page 4.1-10, the DRSEIR states that the 299-Unit Project "has a lower gross density than the surrounding area projects." However, in reaching this

conclusion, DRSEIR 566 relies solely upon two nearby projects which are located *outside* the FTSP--*i.e.*, Portola Hills and Hidden Hills/Hidden Ridge--while ignoring two nearby residential projects that are *within* the FTSP. (*See* Table 4.1.2.) DRSEIR 566 fails to acknowledge or analyze the fact that the "gross density" for the 299-Unit Project (1.3 dwelling units/acre) is double that of Santiago Canyon Estates (gross density of 0.66 dwelling units/acre) and four times that of the proposed Saddle Creek/Saddle Crest (gross density of .33 dwelling units/acre).

7. DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts associated with the inconsistency between the 299-Unit Project and the Aliso Creek Corridor Specific Plan. At page 4.1-12, the DRSEIR concludes that the 299-Unit Project "would be in conformance with the Aliso Creek Corridor Specific Plan" and, therefore, makes no attempt to mitigate the impact of any inconsistency with such Specific Plan. However, at page 19, Addendum No. 1 concludes that the 299-Unit Project "would also conflict with policies of the Aliso Creek Corridor Specific Plan." DRSEIR 566 fails to explain or reconcile these inconsistent and contradictory conclusions.

8. DRSEIR 566 fails to properly identify, analyze, and mitigate the grading and other geophysical impacts associated with the 299-Unit Project. The impacts and mitigation measures which DRSEIR 566 fails to address, include, but are not limited to, the following:

   (a) The impacts which the grading activities for the 299-Unit Project will have on the Trabuco Canyon area and its residents based on how long it will take to complete the proposed grading. Although all previous environmental impact reports the County has prepared for the Property have likewise failed to fully address these impacts, they did, at least, concede in the "Geophysical Resources" subsection that, depending on the project, grading would take between 10 and 18 months to complete, based on an average daily grading quantity of 30,000 cubic yards. (*See* Addendum No. 1 at p. 21; "Final Subsequent Environmental Impact Report No. 566" ("FSEIR 566") at p.4-22; DEIR 561 at p.4-28.) The "Geophysical Resources" subsection of the DRSEIR, however, is strangely silent on this issue and the "Project Description" section (p. 2-16) now simply contains a single sentence and footnote stating that grading will require approximately 13 months to complete based on an average of 30,000 cubic yards per day and 21-work days per month. Not only is this estimate incorrect using the County's own numbers (a total of 9.25 million cubic yards of grading at an average of 30,000 cubic yard per day and 21-work days per month translates to 14.68 months of grading), but, as Vedanta and its consultants have repeatedly stated in connection with all previously proposed projects, an average of 30,000 cubic yards per day--especially for the remedial grading--is very unrealistic. Although

30,000 cubic yards per day may possibly be achieved for the 2.45 million cubic yards of conventional grading, a figure of 10,000 cubic yards per day is a much more reasonable assumption for the 6.8 million cubic yards of remedial grading that is proposed. Using these figures (and DRSEIR 566's estimate of 21-work days per month), grading would take longer than 36 months or 3 years to complete. The DRSEIR fails to justify its estimate regarding how long grading for the 299-Unit Project will take, and it also fails to address the impacts that conducting grading activities for that amount of time would have on Trabuco Canyon and its residents--including, but not limited to, the excessive noise, dust, and traffic delays associated with excavating and recompacting more than nine million cubic yards of soil which will remain exposed to the wind during dry seasons, and the rain during wet seasons, over the course of the several years it will take to complete all of the proposed rough grading.

(b) The impacts associated with the heavy ground water seepage into the excavations at the site which DRSEIR 566 anticipates will occur (p.4.2-18 mitigation measure M 2-20), including, but not limited to, (i) the impact of the discharge of collected ground water seepage, (ii) the impact of the interruption in subsurface ground water flow on downstream wells, and (iii) the impacts of the presence of the deep shear keys for buttress fills on the final ground water conditions. The DRSEIR also fails to address whether there is a potential for surfacing of ground water behind the effective subsurface dam created by the shear key of the buttress fill.

(c) The impact of buttress backcut failures. DRSEIR 566 projects a buttress backcut failure rate of 10 percent. (*See* DRSEIR 566 at p. 4.2-20, mitigation measure M 2-34.) However, due to the subsurface conditions typified by landslides within landslides, this 10 percent estimate is overly optimistic. Moreover, the effect of backcut failures on upstream and adjacent properties, regardless of the percentage of failures, are not addressed.

(d) The impact of new soil stability problems which will be created by increasing the amount of water that is discharged into the Property's natural drainage courses and the ground water table. (As stated in the "Hydrology" and "Water Quality" subsections of DRSEIR 566 daily nuisance and storm water runoff will be discharged into the Property's natural drainage courses.) In particular, (i) the increased erosion that will occur in the Property's natural drainage courses during storm flows due to the fact that the weak alluvial soils which are present in those courses will have been softened by the daily nuisance runoff that will be discharged into such drainage courses, (ii) the weakened support for existing landslides which will also result from the discharge of daily nuisance runoff and increased storm water runoff into the Property's natural

drainage courses, and (iii) the new instability problems which will be created by the ground water levels being raised by the infiltration of irrigation and other new sources of water.

(e) The special grading requirements which are necessary to perform the extremely deep fill that are proposed. Although the DRSEIR acknowledges that fill depths will exceed 50 feet and settlement associated with those fills of 4 to 6 inches can be expected (p. 4.2-20 mitigation measure M 2-33), fill depths of up to 130 feet will actually be required to construct the proposed shear keys for the buttress fills. Fills of such great depths require, *inter alia*, (i) additional evaluation that may necessitate compaction criteria well in excess of code minimums, (ii) special moisture conditioning of fill during compaction, and (iii) long-term settlement monitoring prior to building construction.

(f) Imposing a 100 percent performance bond to cover the possibility of the developer's failure to complete the extremely large amount of conventional and remedial grading required for the 299-Unit Project.

9. DRSEIR 566 fails to properly identify, analyze, and mitigate the hydrology impacts associated with the 299-Unit Project. The impacts which the DRSEIR fails to address, include, but are not limited to, the impacts of discharging daily nuisance water runoff and increased storm water runoff into the natural drainage courses of the Property. The natural drainage courses of the Property are dry for a majority of the year (only receiving water during storms). However, the daily nuisance water runoff from the 299-Unit Project will cause the drainage courses to be wet year-round and, therefore, more susceptible to, *inter alia*, erosion. Moreover, the character of the water being dumped into the natural drainage courses will change from slower-moving water carrying soil and debris to faster-moving water that has less soil and debris and, therefore, is prone to picking up soil and debris. DRSEIR 566 acknowledges that, by increasing the flows in the Property's natural drainage courses, the 299-Unit Project will have erosion and sedimentation impacts, but the DRSEIR fails to address any of these impacts. Instead, any analysis of this issue is improperly deferred until *after* the certification of DRSEIR 566--*i.e.*, until a point in the approval process where the public is not permitted an opportunity to review and comment on that analysis, and the County is not required to respond to any public comments.

10. DRSEIR 566 fails to identify, analyze, or mitigate any of the water quality impacts associated with the 299-Unit Project because the entire "Water Quality" subsection of the DRSEIR is based upon a conceptual water quality management plan for a *different* project. At page 4.4-1, the DRSEIR states that its "Water Quality" subsection "summarizes the findings and conclusions of the *Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230 County of Orange, California*" which is included in the DRSEIR as

Appendix "E." However, as its complete title indicates, the "Conceptual Water Quality Management Plan for Saddleback Meadows Proposed VTTM 15230, Development Alternative for 283 Residential Home Sites, County of Orange, CA" which is found in Appendix "E" was prepared to address a different project--*i.e.*, the 283-unit single family housing project which is Alternative No. 8 in the DRSEIR. As such, the entire "Water Quality" subsection must be revised to correctly identify, analyze, and mitigate the water quality impacts of the 299-Unit Project as opposed to the 283-Unit Project which it currently addresses.

11. Assuming *arguendo* that the "Water Quality" subsection of DRSEIR 566 did address the 299-Unit Project, such subsection nonetheless fails to fully and properly identify, analyze, and mitigate the water quality impacts associated with the 299-Unit Project because, *inter alia*, it fails to fully describe how pollutants will be filtered from the daily nuisance and storm water runoff from the 299-Unit Project and what the impacts will be of discharging polluted runoff into the Property's natural drainage courses and O'Neill Regional Park, and the area's groundwater. The DRSEIR claims that a riverine system will be used to filter pollutants from the daily nuisance and storm water runoff from approximately 80 percent of the 299-Unit Project. (*See, e.g.*, p.4.4-13 at PDF 4-1.) In reliance on the riverine system, stormceptor filters will be installed on the storm drains serving the 20 percent of the Project which is located in the northeastern quadrant of the Property only. However, nowhere is it depicted or explained in DRSEIR 566 how flows from the 299-Unit Project will be directed into the riverine system. Indeed, Figure 4.3.2, entitled Proposed Drainage Improvements, shows that all of the runoff from the 299-Unit Project will be directed into the storm drain system and discharged into the Property's natural drainage courses, but the storm drains serving a majority of the 299-Unit Project will not have filters to reduce the amount of pollution in the runoff. The DRSEIR also acknowledges that the riverine system is designed to accommodate low flows only, but it fails to explain how any flows that exceed the capacity of the riverine system will be filtered for pollutants given that the storm drains collecting runoff from 80 percent of the Project will not have filters installed due to the existence of the riverine system. Moreover, the DRSEIR acknowledges that the filters that will be installed will not trap bacterial indicators or toxic constituents. (DRSEIR 566 at p. 4.4-11.) Instead, the DRSEIR relies upon 3,300 lineal feet of the Property's natural drainage courses to filter these pollutants. However, the DRSEIR does not in any way address the impacts that these pollutants will have on the Property's natural drainage courses--some of which flow into O'Neill Regional Park--and the area's groundwater.

12. DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts the 299-Unit Project would have on the Natural Communities Conservation Plan ("NCCP") program and the County's ability to complete its Southern NCCP Subregion and to link the Southern and Central/Coastal NCCP Subregions. Previous environmental impact reports for the Property included four or more

pages of text addressing the NCCP and the impacts of the proposed projects on the NCCP. (*See, e.g.*, FSEIR 566 at pp. 4-127 -- 4-130, 4-144; DEIR 561 at pp. 4-123 -- 4-126, 4-139 -- 4-140.) The DRSEIR, however, contains less than one page of very cursory discussion regarding the NCCP and it fails in any way to address the impacts of the 299-Unit Project on the NCCP and the County's NCCP planning efforts. Moreover, DRSEIR 566 fails to, *inter alia*, (i) acknowledge that the United States Fish and Wildlife Service and the California Department of Fish and Game (collectively, the "Wildlife Agencies") have repeatedly informed the County that the Property provides a critical habitat corridor/linkage necessary for the completion of the NCCP Southern Subregion and (ii) identify the findings which the NCCP requires to be made with respect to the impacts the 299-Unit Project will have on the coastal sage scrub habitat located on the Property. The DRSEIR should be revised to include an appropriate and complete discussion of the impacts of the 299-Unit Project on the NCCP.

13. DRSEIR 566 fails to properly identify, analyze, and mitigate the impact of the 299-Unit Project on wildlife movement on the Property and throughout the NCCP Southern and Central/Coastal Subregions. The DRSEIR touts that the 299-Unit Project has been designed to incorporate a wildlife movement corridor that will permit wildlife to continue to travel safely across the Property. (*See, e.g.*, DRSEIR 566 at p. 4.8-27.) However, the DRSEIR fails to acknowledge that the Wildlife Agencies have previously informed the County that the wildlife corridor proposed as part of the 299-Unit Project does not "retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows." (October 29, 1998 Letter from the Wildlife Agencies to the Orange County Board of Supervisors.) As such, the DRSEIR needs to be revised to contain an analysis of the adequacy of the proposed wildlife movement corridor/linkage and the impact of failing to provide an adequate corridor/linkage.

14. DRSEIR 566 fails to properly identify, analyze, and mitigate the biological resources impacts associated with the 299-Unit Project because, *inter alia*:

(a) The DRSEIR fails to properly identify the sensitivity of the intermediate mariposa lily (*calochortus weedii var. intermedius*) and based thereon erroneously concludes that there will be no significant impact of it requiring any mitigation. (*See* DRSEIR 566 at p. 4.8-21 and Appendix I.1 at p.17.) In Appendix I.1, the DRSEIR erroneously identifies the sensitivity of the intermediate mariposa lily as California Native Plant Society ("CNPS") List 4. (*See* Appendix I.1 at p. 9.) In the text, the DRSEIR correctly lists the intermediate mariposa lily as CNPS List 1B, but then proceeds to conclude that, due to its low sensitivity status, the impact of destroying all plants found on the Property is not significant. (*See* DRSEIR 566 at pp. 4.8-13, 4.8-21.) However, as explained in Appendix "C" to Appendix I.1 of the DRSEIR, the presence of the

intermediate mariposa lily on the CNPS List 1B means that it is "rare, threatened, or endangered in California and elsewhere and is eligible for state listing." Indeed, the only higher listing under the CNPS system is List 1A which includes only those plants that are presumed to be extinct. DRSEIR 566 needs to be revised to correct the inconsistency between its text and Appendix I.1 and, if it is going to maintain its conclusion that there will be no significant impacts on the intermediate mariposa lily, it need to provide facts to support such conclusion because, contrary to how the DRSEIR currently reads, the intermediate mariposa lily does not have a low sensitivity status.

(b) The DRSEIR erroneously concludes that the 299-Unit Project will not have a significant impact on the federally-listed endangered Riverside fairy shrimp because the impacts to it will be mitigated to a level of insignificance by the creation of several ephemeral ponds on the Property. However, as the Biological Opinion on the Saddleback Meadows Residential Development Project found in Appendix I.4 states at pages 19-20, creation of such ponds is experimental and has *never* been done successfully, especially with respect to the conditions found on the Property.

(c) Although one of the technical reports found in the appendices to DRSEIR 566 acknowledges that the Property has been designated as critical habitat for the Riverside fairy shrimp and the coastal California gnatcatcher pursuant to the U.S. Endangered Species Act, the text of the DRSEIR fails to acknowledge this fact. Neither the text of DRSEIR 566, nor any of the appendices thereto, address in any way the significance of this designation.

(d) The DRSEIR fails to properly and adequately mitigate the impacts the 299-Unit Project will have by destroying the hundreds of acres of oak woodlands, vernal ponds, coastal sage scrub habitat, and other biotic communities on the Property which are home to sensitive, threatened, or endangered flora and fauna. The mitigation DRSEIR 566 offers regarding these impacts fall far below that which is required by, *inter alia*, the FTSP, the NCCP, the state and federal endanger species legislation

15. DRSEIR 566 fails to properly identify, analyze, and mitigate the "Aesthetic/Visual" impacts associated with the 299-Unit Project. At page 4.9-22 through 4.9-23, the DRSEIR concludes that the 299-Unit Project will not have a significant aesthetic or visual impact prior to mitigation. However, at page 4-192, DEIR 561 concludes that, despite the use of many of the same contoured grading and viewshed screening techniques which are proposed for the 299-Unit Project, the 318-unit single family housing project which was the subject of DEIR 561 would nonetheless have *unavoidable* significant aesthetic and visual impacts (including night glare impacts) on the Ramakrishna Monastery, St. Michael's

Abbey, and O'Neill Regional Park. DRSEIR 566 fails to explain and reconcile these inconsistent and conflicting conclusions.

16. DRSEIR 566 fails to fully and properly identify and analyze the importance of the archaeological sites found on the Property. At page 4.10-19, the DRSEIR concludes that archaeological site CA-ORA-711 is the only site on the Property which is deemed to be important or significant. However, at page 104, Addendum No. 1 concludes that there are a total of four archeological sites on the Property which are deemed to be important or significant. Those sites are CA-ORA-710, CA-ORA-713, CA-ORA-715, and CA-ORA-1435H. DRSEIR 566 should have an analysis explaining and reconciling these inconsistent conclusions regarding the importance of certain of the archeological sites found on the Property.

17. DRSEIR 566 fails to properly identify, analyze, and mitigate the impacts associated with project "Hazards" as both the Initial Study and the Introduction to the DRSEIR (*see* page 1-4) indicated that it would. Indeed, the Initial Study identifies "Hazards" as one of six areas of potentially significant impacts which might result from the 299-Unit Project, but DRSEIR 566 fails to contain a section identifying and analyzing such impacts. All previous environmental documentation for the Property contained a separate section in which "Hazards" such as wildfire, emergency access, and wildlife interaction were all identified and analyzed. (*See* Addendum No. 1 at pp. 113-17; FSEIR 566 at pp. 4-203 -- 4-212, and DEIR 561 at pp. 4-219 -- 4-228.) Although the DRSEIR does address certain wildfire hazards and fuel modification requirements under the "Public Services--Fire Protection" subsection, it does not address any other hazards, such as the fact that the Project has only one main access road, which Addendum No. 1 identifies as an area of concern and which the Orange County Fire Authority proposed mitigation measures to specifically address. An analysis of the "Hazards" analyzed in the previous environmental documents for the Property should be conducted with respect to the 299-Unit Project.

18. DRSEIR 566 fails to properly describe the "44/178 Alternative" as initially proposed by Vedanta in October 1998 and again in the comments Vedanta submitted regarding the Notice of Preparation (the "NOP") for the DRSEIR. As proposed by Vedanta, although the developer would be free to develop the project of its choice on the 44-acre "Development Parcel," the 178-acre "Conservation Parcel" would be left in its undisturbed natural state--*i.e.*, no development activities of any kind would be conducted on such parcel, including, but not limited to, grading of any kind. However, as described in the DRSEIR, the "44/178 Alternative" allows for the development of 127 single-family housing units on the "Development Parcel" which, as Vedanta indicated in its comments on the NOP, can only be developed on such Parcel if a substantial amount of remedial grading and other construction activities are conducted on the "Conservation Parcel." Indeed, shortly after Vedanta proposed the "44/178

Alternative" in October 1998, the developer conceded that, in order to develop 127 single-family housing units on the "Development Parcel" it would have to grade at least 30 acres of the "Conservation Parcel"--which is not contemplated under the "44/178 Alternative" as proposed by Vedanta. Therefore, a new analysis of the "44/178 Alternative" should be conducted based upon a proper description of the alternative which identifies a range of units which can safely be accommodated within the "Development Parcel." This analysis should include, *inter alia*, an analysis of the geotechnical conditions to determine the greatest number of units that can be developed on the 44-acre "Development Parcel" with the least amount of rough grading. The grading study is of critical importance because it will not only address the economic feasibility of the "44/178 Alternative," but it also determines the nature and extent of the environmental resources which can be spared from the bulldozer's blade. As requested in Vedanta's comments on the NOP, this analysis should consider two versions of the "44/178 Alternative," one in which the developer is required to dedicate the 178-acre "Conservation Parcel" to the County (which has been the County's standard practice on all other major development projects approved during the past 25 years) and another in which the "Conservation Parcel" is purchased by a governmental entity (such as the United States Fish and Wildlife Service and the California Department of Fish and Game), a private entity, private person(s), or any combination thereof.

19. DRSEIR 566 fails to provide sufficient factual information about each of the proposed alternatives to allow for meaningful evaluation, analysis, and comparison with the 299-Unit Project. The DRSEIR provides very little factual information regarding the proposed alternatives and their environmental impacts. Instead, DRSEIR 566 simply makes very general and conclusory statements regarding whether each impact will be greater or less than the 299-Unit Project and each of the other alternatives. Very little factual information is provided which permits differential impacts to be quantified and meaningfully analyzed. For example, no information is provided to allow the number or acres of oak trees, vernal ponds, coastal sage scrub, or any of the other biological resources which are affected under each alternative to be compared with the 299-Unit Project. Similarly, the extent to which each of the alternatives comply with the various goals, objectives, components, regulations, and guidelines of the FTSP is not provided so as to allow a comparison of the alternatives with the 299-Unit Project. Indeed, the alternatives analysis in DRSEIR 566 is almost entirely devoid of any factual information which would support its conclusions regarding the relative impacts of the 299-Unit Project and each of the alternatives. Accordingly, an entirely new analysis of each of the alternatives is necessary to provide the factual information required to conduct a meaningful evaluation, analysis, and comparison of the alternatives with the 299-Unit Project. (Note: Although the DRSEIR provides grading quantities for many of the alternatives, it curiously fails to state a remedial grading quantity for the "44/178 Alternative" while nonetheless conceding that remedial grading will be required for that alternative.)

20. DRSEIR 566 fails to provide any factual information which supports its conclusion that, except for the "No Project Alternative," Alternative No. 8 is the environmentally superior alternative. Alternative 8 is a "reduced density alternative" which simply lowers the number of single family dwelling units by 16 units--*i.e.*, from 299 down to 283. In reaching this conclusion, the DRSEIR provides absolutely no explanation or factual support for how a 283-unit single family housing project--which has virtually the identical environmental impacts as the 299-Unit Project--could possibly be an environmentally superior alternative to Alternative 4 (a 100-unit single family housing project which leaves 85% of the Property as natural open space), Alternative 6 (the "44/178 Alternative"), or Alternative 7 (the "Acquisition Alternative" in which the entire property is purchased by a governmental entity, private entity, or private person(s) for preservation as permanent open space).

21. DRSEIR 566 fails to consider a residential housing alternative which complies with the goals, objectives, components, regulations, and guidelines of the FTSP, nor does it explain why such an alternative would be unacceptable. In its comments on the NOP, Vedanta specifically requested that the DRSEIR identify and analyze at least one reduced-density alternative which complies with all of the goals, objectives, components, regulations, and guidelines of the FTSP. Instead, in Alternative No. 8, the DRSEIR identifies and analyzes a reduced-density alternative that eliminates only 16 out of 299 dwelling units and which complies with virtually none of the goals, objectives, components, regulations, and guidelines of the FTSP. Indeed, DRSEIR 566 fails to provide any explanation for why an FTSP-compliant alternative was not considered.

The Gas Company

A Sempra Energy company

Southern California Gas Company
1919 S. State College, Bldg. A
Anaheim, CA 92803

May 16, 2002

Manager, OCPDS
Environmental Planning Services Division
300 N. Flower St., Box 4048
Santa Ana, CA 92702-4048

Attention: Manager

Subject: Draft Environmental Impact Report – Saddleback Meadows.

This letter is not to be interpreted as a contractual commitment to serve the proposed project but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served without any significant impact on the environment. Gas facility additions for the expansion would be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the California Public Utilities Commission. We can also be affected by actions of gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Estimates of gas usage for non-residential and residential projects are developed on an individual basis and are obtained from the Commercial-Industrial/Residential Market Services Staff by calling (800) 427-2000. We have developed several programs, which are available upon request to provide assistance in selecting the most energy efficient appliances or systems for a particular project. If you desire further information on any of our energy conservation programs, please contact this office for assistance.

Sincerely,

Robert S. Warth
Technical Supervisor
Orange Coast Region

ep
eir.doc

Juaneño Band of Mission Indians
Acjachemen Nation

Tribal Council
Damien Shilo•Chairman Alice Lopez-Sainz•Vice Chair
Christopher A. Lobo•Secretary/Treasurer
Fran Yorba•Member at Large Andrea Cole•Member at Large

Anthropology Department Manager,
OCPDS/Environmental Planning Services Division
300 N. Flower Street
Box 4048
Santa Ana CA 92702

June 10, 2002

Re: Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows

After review of the cultural resources section of the DEIR, we, the Juaneño Band of Mission Indians ("tribe") are concerned about the protection of this land regarding both archaeological and anthropological impact. We feel that there has been an inadequate investigation into the significance/importance of the archaeological sites. The report indicates that there were three 1 x 1 meter units used to determine the archaeological significance /importance. This is an inadequate sampling of the area to make a determination for the size of this project. Also, we feel that the monitors should be from the local tribe. The practice of finding out of area monitors who do not understand the cultural significance of the local area needs to be corrected. There is also a concern for the wildlife corridor and endangered species, neither of which are adequately addressed.

There is not sufficient information to support the determinations made. The DEIR fails to provide documentation that the CEQA recommended preservation alternatives to the total destruction of archaeological sites to be impacted. The developer should be required to conduct a good faith examination of the feasibility of the preservation measures. They should be encouraged to incorporate one or more of the preservation measures and include the preservation plan in the EIR. Grading and monitoring is not adequate mitigation for the destruction of a significant archaeological site.

If it is determined that data recovery excavation and destruction of the sites is the only feasible option, the investigations should be guided by a research design that follows the California Office of Historic Preservation Guidelines for Archaeological Research Designs (Preservation Planning Bulletin No. 5, February 1991. Dept. of Parks and Recreation, Office of Historic Preservation). The report documenting the excavations should follow the Office of Historic Preservation Guidelines for Archaeological Resource Management Reports (Preservation Planning Bulletin No. 5, December 1989).

Sincerely,

Damien Shilo, Chairman
Juaneño Band of Mission Indians
Acjachemen Nation

31411-A La Matanza Street San Juan Capistrano CA 92675-2674 Phone (949)488-3484 Fax (949)488-3294 www.juaneno.com

Attachment F

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June 25, 2002

Via Facsimile and U.S. Mail
Bill Grieman, Project Manager
County of Orange, PDSD
Environmental Planning Services Division
P.O. Box 4048
Santa Ana, California 92702-4048

Re: Saddleback Meadows Revised SEIR No. 566

Dear Mr.Grieman:

I represent Rutter Development Corporation in connection with its entitlement and natural resources permitting efforts for the Saddle Crest and Saddle Creek residential development projects near the Saddleback Meadows project site. The southern boundary of the Saddle Creek project constitutes the northern border of the Saddleback Meadows project. Rutter Development supports the current proposed project and certainly sees it as preferable to the massive mobilehome park previously approved for the site. However, Rutter Development takes exception to Figures 4.8.2 and 4.8.4 in the Biological Resources section of the SEIR.

Figure 4.8.2 is labeled "Proposed NCCP Southern Subregional Planning Area," but it does more than simply delineate the subregional boundaries. The "reserve area" overlay on this exhibit has no basis in any approved or even proposed plan. Consequently, this exhibit should be replaced with one that simply shows the boundaries of the southern subregional planning area and overalys the project's boundaries. Similarly, Figure 4.8.4 is labeled "Proposed Regional Wildlife Movement Corridors" but there is no discussion regarding who is "proposing" the establishment of these corridors or for what species they are proposed to function as corridors. The "proposed" corridors in the exhibit do not correspond to the wildlife corridors shown in the adopted Foothill Trabuco Specific Plan or any other formally adopted or even proposed plan. Therefore, this exhibit should also be deleted, replaced or modified in the Final SEIR.

Thank you for the opportunity to comment on the draft SEIR for the Saddleback Meadows project. Please feel free to call if you have any questions or wish to discuss this matter.

Very truly yours,

Mark R. McGuire

Cc: D. Eadie, RDC

ORANGE COUNTY
REGIONAL RECREATIONAL TRAILS
ADVISORY COMMITTEE

May 31, 2002

Thomas Mathews, Director
Planning and Development Services Department
300 North Flower Street, 3rd Floor
Santa Ana, CA 92703-5000

Subject: Saddleback Meadows Residential Project – Additional Trail Alignment

Dear Mr. Mathews:

As you know, the Regional Recreational Trails Advisory Committee (RRTAC) is a Board-appointed committee composed of equestrians, mountain bicyclists, and hikers. Recently, the RRTAC approved a motion to provide an additional riding and hiking trail through the proposed Saddleback Meadows project site.

The Committee was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route we suggest an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would then connect with the proposed Live Oak Plaza project site and connect to the Live Oak Canyon Regional Trail. **We also request an additional link from Trail B to the proposed Saddle Creek project at the north edge of the Saddleback Meadows project near the connection to Live Oak Plaza.** Mr. Jeff Dickman, County's Chief of Trail Planning, concurred with this concept.

The RRTAC hereby expresses its support for the additional local trail through the proposed Saddleback Meadows project ("Trail B"). We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

Should you have any questions, please feel free to contact me at (714) 456-1157.

Sincerely,

Alice Sorenson
Chair, RRTAC

RURAL CANYONS CONSERVATION FUND

P.O. Box 556, Trabuco Canyon, CA 92678-0556(ruralcyn@yahoo.com)

May 28, 2002

Frank McGill, Senior Planner
Current Planning Services Division
Planning and Development Services Department
County of Orange
P.O. Box 4048
Santa Ana, CA 92702-4048

VIA fax (714) 834-6132 and U.S. mail

Re: Proposed Zone Change (ZC) 98-3 and Area Plan (AP) 98-2 for Saddleback Meadows

Dear Mr. McGill:

The Rural Canyons Conservation Fund, founded in 1983, advocates for the preservation of Orange County's unique inland rural canyon areas through a program of public education and participation in land use decisions affecting the area's unique and scenic natural resources.

We comment as follows on the above referenced proposals:

1. THE AREA PLAN APPLICATION IS INCOMPLETE.

The Foothill Trabuco Specific Plan (FTSP) lists certain informational items that must be provided when a proposed area plan is submitted. Several such items are missing from the subject proposal, including:

- a site-specific resources assessment by a qualified field biologist;
- a site-specific oak woodlands analysis;
- a site-specific wildlife corridor analysis;
- a hydrological analysis;
- detailed mapping of areas within 50 vertical feet or 200 horizontal feet of designated major ridgelines or rock outcroppings;
- a detailed viewshed analysis of the proposed development as viewed from scenic highways;

- a conceptual grading plan at a minimum scale of 1:40 clearly delineating existing and proposed contour elevations, the location and elevation of all building pads, access roads, driveways, slope percentages, heights of manufactured slopes, the total area of disturbance, area of the flat graded pad on each parcel, and the location of retaining and crib walls;

- clear delineation of the building lines for assessing setbacks;

- a consistency report evaluating the project's consistency with each of the regulations and guidelines contained in the FTSP; and,

- three-dimensional models of the site before and after proposed grading.

(FTSP III.G.2.0(e), pages III-90 through III-93.)

Because key information is missing from the application we received, we cannot fully assess the extent of non-compliance with the FTSP at this time, and therefore reserve the right to comment further if and when complete information becomes available.

2. THE PROPOSED SPOT AMENDMENT OF THE FOOTHILL TRABUCO SPECIFIC PLAN IMPROPERLY RENDERS THE FTSP INTERNALLY INCONSISTENT AND INEQUITABLE, AND IS THEREFORE INVALID ON ITS FACE.

State law requires that general and specific plans maintain internal consistency. However, the FTSP amendment proposed as part of this project renders the FTSP internally inconsistent. This inconsistency arises from the following language contained in the proposed spot amendment:

> "Any development shall be in compliance with every regulation of this District (BWR) *and shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.*" (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4(c), italics added.)

This spot amendment conflicts with other general language within the FTSP:

> "This specific plan is adopted pursuant to regulations contained in the Orange County Zoning Code. It is specifically intended by such adoption that the development standards and provisions contained herein shall regulate *all development* within the Specific Plan area." (FTSP III.C.3.0, page III-1, emphasis added.)

> "It is uncertain whether this development cap can be achieved *since all development is required to be consistent with the Specific Plan regulations and guidelines.*" (FTSP II.D.3.0(b), page II-29, emphasis added.)

> "All development within the Specific Plan Area shall be required to be phased in a manner, which is consistent with the requirements of the Growth Management Plan (GMP) Element." (FTSP II.F.1.0(a), page II-43.)

> "For all development projects, a minimum of 50 percent of all shrubs to be planted should be native species." (FTSP IV.G.1.0(a), page IV-16.)

> "For all development projects, a minimum of 50 percent of all shrubs to be planted should be native species." (FTSP IV.G.1.0(a), page IV-16.)

Moreover, as will be shown below, the proposed development which the above spot amendment attempts to legitimize actually conflicts with and undermines the overarching goals and objectives for the Specific Plan area at the expense of the Specific Plan's integrity.

The proposed "wildcard" zoning also creates a class of unwarranted special privileges for this project's applicant, effectively denying other persons subject to the FTSP the equal protection of the law, in violation of the state and federal constitutions.

The proposed spot zoning amendment, therefore, is invalid on its face and thereby subject to nullification by the courts.

3. THE PROPOSED SPOT AMENDMENT OF THE FTSP IS BARRED BY THE FTSP ITSELF.

The FTSP explicitly provides how the Specific Plan may be amended to allow for development, as is now being proposed, that deviates from the recorded tract map for the Saddleback Meadows site:

> "If a development proposal on the aforementioned [Bridlewood, Lyon Ranch, Santiago Ranch, and Zadeh] sites deviates from these approvals and cannot be found to be in substantial compliance with these approvals, a Specific Plan Amendment shall be required for the individual site. Said Specific Plan Amendment *shall*: 1) determine an appropriate density cap for the property; 2) establish new Land Use District Regulations for the site; and 3) *be consistent with all of the provisions of the Specific Plan, as amended.*" (FTSP III.C.10.0(d), page III-4.)

> "Any development proposal, which deviates from the approved Saddleback Meadows Planned Community zoning and Recorded Tract 10692 and which cannot be found to be in substantial compliance with these approvals shall require a Specific Plan Amendment which *shall:* 1) determine an appropriate density cap for the property; 2) establish new development regulations for the Bridlewood Residential District; and 3) *be consistent with all of the provisions of the Specific Plan.*" (FTSP III.D.3.2.(b), page III-20, italics added.)

The proposed spot amendment exempting Saddleback Meadows from all but the revised district regulations clearly conflicts with the above requirements of the FTSP, which unequivocally mandate that the amended zoning regulations for Saddleback Meadows must be consistent with *all* of the provisions of the FTSP. Thus the proposed spot amendment is facially invalid, and, as will be shown below, the proposed area plan is in actual conflict with numerous of the FTSP's substantive requirements.

4. A SITE DEVELOPMENT OR USE PERMIT IS REQUIRED PRIOR TO ANY GRADING.

The proposed spot amendment explicitly allows issuance of a "preliminary grading permit" prior to approval of a site development or use permit. (Proposed Draft Ordinance, Exhibit 1, paragraph 3.4(d).) This flies directly in the face of the following general regulation of the FTSP:

> "Grading: Grading shall be permitted within the Specific Plan Area only upon approval of a site development permit or use permit by the Planning Commission. No grading permits shall be issued without the approval of a precise plan of development, i.e., site development permit or use permit." (FTSP III.C.6.1, page III-2.)

issued without the approval of a precise plan of development, i.e., site development permit or use permit." (FTSP III.C.6.1, page III-2.)

5. DEVELOPMENT DEPICTED ON THE PROPOSED AREA PLAN IMPROPERLY CONFLICTS WITH THE FTSP.

Since, as shown above, the proposed wildcard exemption from all of the FTSP's general substantive and procedural requirements is invalid, all of the FTSP's general provisions apply to this project. Unfortunately, the proposed development violates numerous of these provisions, including:

⇒"Rural Character/Forest Buffer: To preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." (FTSP I.C.1.0(a), "Goals and Objectives," page I-5.)

By any measure of the term, the proposed development, due to its extreme intensity and scale, is anything but "rural" in character. On the contrary, it is a conventional suburban housing tract, to be constructed after mass grading the site in the amount of 11.7 million cubic yards. At 5,000 square feet minimum, the lot sizes are far below the minimum ½ acre permitted in the adjacent FTSP areas, and the proposed average density of 1.35 dwelling units per acre vastly exceeds the prevailing minimum of 1 dwelling unit per 2 acres. The proposal includes manufactured slopes 120 feet high, contour elevation changes of 91 vertical feet, and retaining walls 40 feet high.

Characterizing such a proposal as "rural" can only be described as Orwellian. The submitted area plan application does include a "Rural Character Statement." However, this document merely sets forth general platitudes and idealized sketches on the subject, not specific to the proposed project, and not demonstrating how the concepts would actually be implemented. In the context of this project, "rural" must in large measure be defined in terms of *compliance* with the regulations and guidelines of the FTSP, which purport and serve to implement the general goal of *preserving* the area's rural character. Thus the subject proposal is rural to the extent of its compliance with the detailed requirements of the FTSP, and that compliance leaves much to be desired.

⇒"Except for those legal building sites existing at the time of Specific Plan adoption where compliance with this requirement would preclude development of a single residence on the existing building site, mapping shall identify a minimum corridor width (other than for the wildlife corridor parallel to Live Oak Canyon Road) at all locations of 400 feet measured perpendicular to the corridor's boundary." (FTSP II.C.2.2(c)(3), page II-11, underlining in original.)

The proposal fails to delineate a 400-foot-wide wildlife corridor through the project. The corridor mentioned in the text of the area plan actually diminishes to under 200 feet wide where it passes between the main spine road on the south and St. Michael's Abbey on the north.

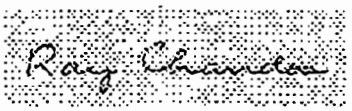
⇒"Development shall maintain a minimum 50-foot setback of all structures and barrier fencing from all corridors. Uses. within the setback zone shall be limited to low-intensity, residential-related activities such as recreation and private open space." (FTSP II.C.2.4(a), page II.14.)

The proposed wildlife corridor violates this setback requirement where it passes between the southern and northern clusters of housing units.

The proposed wildlife corridor violates this setback requirement where it passes between the southern and northern clusters of housing units.

Please include this letter in the official record of proceedings for this project. Thank you for the opportunity to comment.

Sincerely,



Ray Chandos
Secretary/Treasurer

cc
Foothill/Trabuco Specific Plan Review Board

Saddleback Canyons Conservancy

PO BOX 714
TRABUCO CANYON, CALIFORNIA 92678
Phone (949) 589-9230
Fax (949) 459-1147

VIA FACSIMILE 714 834-4652/714 834-6132
June 10, 2002

Manager, OCPDS/Environmental Planning Services Division
300 N. Flower Street,
Box 4048
Santa Ana, CA 92702-4048

Re: Comments of Saddleback Canyons Conservancy on the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows (DEIR), State Clearinghouse No. 1996121072

Dear Sir or Madam:

The Saddleback Canyons Conservancy is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Specific Plan (FTSP) area and surrounding areas of Orange County. The following comments are provided in response to the DEIR.

NONCOMPLIANCE WITH THE FTSP

The proposed project lies within the FTSP area. The proponents of the project have proposed a zone change (ZC 98-3) that would be required to amend the FTSP for the project ("Bridlewood Residential District"). Such an amendment to the FTSP would exempt the project from all regulations and guidelines in the FTSP other than those provided for by the Bridlewood Residential District.

Upholding the integrity of the FTSP is of utmost concern to the Saddleback Canyons Conservancy. The proposed project site serves as a transitional buffer between the suburban developments of Lake Forest and Mission Viejo to the rural canyons area. The project's proximity to the Cleveland National Forest (within 1 mile) speaks to the need for compliance to – not exemption from – the development guidelines set forth in the FTSP.

The proposed development violates the spirit and letter of the FTSP. The primary goals of the FTSP are to "preserve the rural character of the area and provide a buffer between urban development and the Cleveland National Forest." The project in no way conforms to such a goal. Indeed, 299 tract

homes on a mass-graded site is anything but "rural." It is time to stop suburban sprawl, say "no" to continued mass development, and "yes" to a preservation and conservation plan.

DESTRUCTION OF HABITAT AND INTERFERENCE WITH WILDLIFE CORRIDORS

The project site is within the Southern Orange County Natural Communities Conservation Plan (NCCP) and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for the federally endangered Riverside fairy shrimp, and the federally threatened coastal California gnatcatcher, among other special status species. In view of the fact that the County, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game have initiated the Southern Subregion NCCP process and that preliminary reserve designs are scheduled for completion in July 2002, a revised environmental document should be prepared to incorporate this critical information.

FAILURE TO ADEQUATELY ANALYZE CUMULATIVE IMPACTS

The list of "related" projects is limited to a small area near the project and excludes other major projects in the NCCP Southern Subregion. Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Rancho Mission Viejo project (14,000 homes and 427 acres of "urban activity"). Additionally, the DEIR fails to mention the Rancho Potrero Leadership Academy, which also lies within the FTSP area, for which the Board of Supervisors filed a Notice of Determination in December 2001. The cumulative analyses of land use and planning, geology and soils, hydrology and water quality, air quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider all foreseeable projects.

NONCOMPLIANCE WITH NEW WATER QUALITY REGULATIONS

Aliso Creek, adjacent to the project site, is listed as a Category I Priority Impaired Water Body in the EPA's National Water Quality Report (2000). New water quality regulations have recently been ordered against the County of Orange by the Regional Water Quality Control Board. These stricter regulations supplant the 1994 NPDES permit referenced in the DEIR, and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek. The DEIR fails to explain how the project can comply with these new water quality regulations.

LACK OF WATER TO SUPPORT THE DEVELOPMENT

The Orange County Register recently reported (May 18, 2002) that "drought conditions have dried up two wells that the Trabuco Canyon Water District relies on to supply Trabuco Canyon and Rancho Santa Margarita residents." The TCWD is seeking additional appropriative water rights from the State Water Resources Control Board. Yet, as reported in correspondence to me dated May 14, 2002 from the State Water Resources Control Board, further processing of the TCWD's request for

additional water rights is being held in abeyance until several senior priority applications in the watershed are processed. This water shortage should be recognized as an impediment to the advancement of any new development in the area served by the TCWD.

CONCLUSION

The project is out of compliance with the FTSP. The project is not rural. The project significantly and negatively impacts biological resources and wildlife corridors. The project site is adjacent to the impaired Aliso Creek. The water district has severe water shortage problems. An additional 299 homes adds to suburban sprawl and downstream negative environmental impacts. The project should not proceed. The site should be set aside as a preserved habitat/wildlife corridor, and protected as open space for generations to come.

Please incorporate this letter into the official record of proceedings for this project.

Very truly yours,

Gloria D. Sefton Richard T. Gomez (GDS)

Gloria D. Sefton
Richard T. Gomez
Co-Founders, Saddleback Canyons Conservancy

Attachment F

3435 Wilshire Boulevard
Suite 320
Los Angeles, CA 90010-1904

SIERRA CLUB
FOUNDED 1892

(213) 387-6528 phone
(213) 387-5383 fax
www.sierraclub.org

June 23, 2002

VIA TELEFACSIMILE AND U.S. MAIL

Manager
OCPDS/Environmental & Project Planning Services Division
300 N. Flower St.
Box 4048
Santa Ana, CA 92702-4048

Subject: Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows—EIR 566

Dear Manager:

The Sierra Club appreciates the opportunity to comment upon the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows—EIR 566 (DRSEIR). As strong supporters of protecting the ecological integrity and aesthetic value of the remaining open space in Orange County, our members are closely monitoring projects proposed for properties in the vicinity of the Cleveland National Forest. To facilitate this monitoring process, as well as to properly inform the general public and decision-makers, it is essential that all environmental assessment related to such projects be conducted in strict compliance with the provisions of CEQA and the CEQA Guidelines.

Unfortunately, as it is currently written, the DRSEIR does not adequately address significant issues related to the proposed Saddleback Meadows residential development and its effect on the local environment. These issues include those justifiably raised by a number of individuals in comments already provided to you; therefore, the Sierra Club wishes to incorporate into this letter, by reference, each of the following documents:

- Comments by Terrell Watt, AICP, submitted in a letter dated June 7, 2002, on behalf of the National Audubon Society, Endangered Habitats League, and Rural Canyons Conservation Fund
- Comments by Edmond M. Connor, submitted in a letter dated June 9, 2002, on behalf of the Vedanta Society of Southern California
- Comments by Ray Chandos, submitted in a letter to Frank McGill dated May 28, 2002, on behalf of the Rural Canyons Conservation Fund
- Comments by Patricia Martz, Ph.D., submitted in a letter dated June 10, 2002

Although the Sierra Club believes that *all* of the issues discussed in the above documents warrant full consideration and thorough analysis in a revised DRSEIR, two are of overarching significance to our members and deserve particular emphasis.

SIERRA CLUB

Suburban Sprawl

The significant negative impacts of the proposed Saddleback Meadows development are all attributable to the fact the project would further extend suburban-style development into the remaining wildlands of eastern Orange County. Attendant to such sprawl are the inevitable habitat destruction and fragmentation; watershed and water quality degradation; increases in vehicle miles traveled, traffic congestion, and air pollution; and deterioration of viewsheds and noisesheds. An adequate DRSEIR must honestly identify the true nature of the proposed Saddleback Meadows development as suburban sprawl, analyze the cumulative impacts of allowing similar sprawl-type projects to encroach upon remaining wildlands, and propose alternative locations for providing similar amounts of housing within the existing footprint of urban/suburban Orange County.

Benefits of Preservation

Although serious and ongoing consideration has been given to acquiring the Saddleback Meadows site for preservation in its natural state, only passing attention is given to acquisition in the DRSEIR. An adequate DRSEIR would thoroughly analyze the environmental *and* economic benefits of acquisition, potential sources of funding, and the relationship of acquisition to fulfilling the goals and objectives of all of the following: The Orange County General Plan, Foothill/Trabuco Specific Plan, Aliso Creek Corridor Specific Plan, and Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan.

The Sierra Club recommends that the DRSEIR be revised to properly address all issues raised in this letter, both directly and by reference, and recirculated for public comment.

Respectfully submitted,

Gail Prothero

Gail Prothero
Conservation Chair, Sierra Sage Group
Angeles Chapter Sierra Club – Orange County
29302 Sandalwood Court
San Juan Capistrano, CA 92675
(949)347-1255

JK

Attachment F

TRAILS4ALL

June 4, 2002

Thomas Mathews, Director
Planning and Development Services Department
300 North Flower Street, 3rd Floor
Santa Ana, CA 92703-5000

Subject: Saddleback Meadows Residential Project – Additional Trail Alignment

Dear Tom:

Recently, the County's Regional Riding and Hiking Trails Advisory Committee (RRHTAC) that I serve on was given a presentation regarding the subject project. Staff noted that the project is already proposing a local trail (referred to in this letter as "Trail A") along the main entry road extending west to east through the project. To provide a loop route, the RRHTAC supported an additional local trail ("Trail B"), to begin at Trail A and go north around the east side of St. Michael's Abbey. Trail B would then connect with the proposed Live Oak Plaza project site and connect to the Live Oak Canyon Regional Trail.

Upon review, Trails4All would also like to offer our support for the additional local trails through the proposed Saddleback Meadows project, linking with Live Oak Plaza and the Saddle Creek projects. We appreciate your department's efforts to provide this trail, and we would like to be kept informed of its progress.

Should you have any questions, please feel free to contact me at (714) 834-3136.

Sincerely,

Jim Meyer,
Executive Director

300 North Flower Street · Box 4048 · Santa Ana, CA 92702-4048 · (714) 834.3136 · Fax (714) 834.7651

TERRELL WATT, AICP
PLANNING CONSULTANT
1757 UNION STREET
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FAX (415) 563-8701
terrellwatt@yahoo.com

June 7, 2002

Manager, OCPDS/Environmental Planning Services Division
300 N. Flower Street,
Box 4048
Santa Ana, CA 92702-4048

Re: Comments on the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows (DRSEIR), State Clearinghouse No. 1996121072

Manager

This comment letter on the Draft Revised Subsequent Environmental Impact Report ("DRSEIR") for the proposed Saddleback Meadows development project ("project') is submitted on behalf of National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund ("the commenting groups"). These comments provide a detailed and explicit outline of the problems and inadequacies presented by: (1) the project itself, including its geological impacts and impacts to the habitat of several endangered and sensitive species; (2) the DRSEIR, including fatal deficiencies under the California Environmental Quality Act ("CEQA") (Pub. Res. Code §§ 21000 et seq.) and the CEQA Guidelines (14 Cal. Code Regs. §§ 15000 et seq.); and (3) the project's inconsistency with the County General Plan.[1]

[1] This comment letter was prepared by Terrell Watt, Planning Consultants, with assistance from legal counsel to the commenting groups. Terrell Watt has over twenty years of land use and environmental planning experience. She has expertise in conservation planning, "smart growth" development projects, CEQA and NEPA, NCCPs/HCPs and government reorganization projects. Her recent projects include: (1) development of conservation plans for the Central Coast under a grant from the David and Lucile Packard Foundation; (3) project management of a Sphere of Influence Study for Marin County; (3) consulting on a habitat conservation planning program for the City of Livermore, partially funded with a grant from the California Department of Fish and Game; and (4) project management of the Los Angeles Infill Working Group Project under a grant from Caltrans. The latter is a joint effort by the State Department of Housing and Community Development, the City and County of Los Angeles and Environment Now. A current resume for Ms. Watt is attached.

A summary of the DRSEIR's major defects follows:

Inadequate Project Description: The DRSEIR's project description remains incomplete and, therefore, inadequate. Specifically, the project description lacks important details about the project that are critical to an adequate analysis of project-related and cumulative impacts. Such details include, but are not limited to: (1) fundamental engineering aspects of the project related to mass grading and the probable need for export of unsuitable cut and importation of suitable fill; (2) a detailed description and proposed uses of open space; (3) the complete Project Design Feature that includes the final drainage plan; (4) proposed home size and total development contemplated, including accessory structures and paving; (5) hazards and hazards-related project features, such as possible presence of on-site contamination; among other information about the project. Without this information, the evaluation of impacts cannot be complete.

Inadequate Project Setting: The DRSEIR fails to describe key elements of the project setting adequately and completely. Such elements include, but are not limited to: (1) key general plan policies and regional policies relating to habitat planning, in particular the Southern Orange County Natural Communities Conservation Plan (NCCP); and (2) a list of cumulative projects, geographic study area for the cumulative analysis or plan based approach to cumulative impacts. This information is critical to the analysis of project-related and cumulative impacts.

Failure to Identify or Analyze the Full Extent of Significant Environmental Impacts: The DRSEIR is riddled with conclusions unsupported by facts and analysis on the significance of environmental impacts. Specifically the DRSEIR concludes, based on improperly deferred mitigation measures and mitigation measures of unproven efficacy, that all potentially significant impacts except cumulative air quality will be reduced to less than significant with mitigation. Insufficient evidence is provided to support the conclusion that *all but one* impact will be less than significant after mitigation.

Inadequate Cumulative Impacts Analyses: The DRSEIR's cumulative impacts section is non-existent. The DRSEIR fails to provide a complete list of cumulative projects or to outline a plan based approach to the cumulative analysis. The list of "related" projects is limited to a small area near the project and excludes other major projects in the NCCP Southern Subregion. Brief, conclusory statements are made concerning cumulative impacts throughout the DRSEIR. Moreover, the DRSEIR fails to consider feasible mitigation for the project's incremental contribution to cumulative impacts. Notwithstanding this complete lack of analysis, the DRSEIR concludes that all cumulative impacts will be less than significant with the exception of cumulative air quality.

Inadequate Growth-Inducing Impacts Analysis: The DRSEIR's growth-inducing impacts section is likewise inadequate. For example, the DRSEIR fails to analyze the potentially significant growth-inducing impacts associated with the extension of utilities and roads, and the placement of a water tank and access road beyond the project site. The DRSEIR

offers no analysis or even recognition of the precedent-setting effect the proposed project would have on development in the area, and development on sites where the topography and presence of biological habitat and wildlife corridors should limit such projects.

Inappropriate Deferral of Feasible Mitigation Measures: The DRSEIR improperly defers mitigation measures. Many of the deferred mitigation measures, including measures related to drainage and hazards mitigation, are relied upon to reduce significant impacts without any supporting facts or analysis.

Failure to Analyze a Reasonable Range of Alternatives: The DRSEIR includes numerous alternatives, but fails to analyze an alternative that fully mitigates for on- and off-site impacts. Moreover, the DRSEIR fails to properly identify the environmentally superior alternative, after the no-project alternatives, as Alternative 4.

These and other major defects in the DRSEIR described below render the document inadequate as a basis for informed decision-making and legally deficient under CEQA and the planning and zoning law. The County should give no further consideration to the project until an EIR is prepared and circulated that fully complies with CEQA and the CEQA Guidelines.

CONSIDERATION OF THE PROJECT IS PREMATURE

The County, the U.S. Fish and Wildlife Service and the Department of Fish and Game have initiated the Southern Subregion NCCP process. Preliminary reserve designs are scheduled for completion in July 2002. The project site is within the Southern Subregion and provides a critical wildlife connector between the Central and Southern NCCP subregions and the Cleveland National Forest. In addition, the site itself provides habitat for a number of special status species.

The NCCP reserve design(s) will suggest where development should and should not occur based on biological resources. This new information is fundamental to a determination of whether all or a portion of the project site should be included in a "reserve," or alternatively in a development area. A revised environmental document must include this information.

BACKGROUND AND PROJECT CONTEXT

The property is located in the lower, southeastern foothills of the Santa Ana Mountains and is currently used for horse and cattle grazing. The site's topography is hilly with several steep slopes and ravines. Soils on site are highly erodable. Aliso Creek is located nears the western site boundary and generally follows El Toro Road. Drainage from the site flows to the west into Aliso Creek, which drains into the Pacific Ocean at Aliso Beach, and Oso Creek, a tributary of Trabuco and San Juan Creeks, and south to O'Neill Regional Park. DRSEIR at page 4.2-2. The site provides an essential low elevation wildlife corridor between the Central and Southern NCCP areas and the Cleveland National Forest. Such a low elevation corridor is needed for gnatcatchers and other species. The site also supports important wetlands that provide habitat for Riverside fairy shrimp and western spade foot toad.

Under the proposed project, a gated community of 299 single-family residential lots would be built on approximately 222 acres. The total developed area would be approximately 66.9 acres and the total open space would be on approximately 155.1 acres. Only a portion of the area, approximately 83.25 acres would be in "natural resource preservation area." However, this area is subject to remedial grading and biological enhancement activities, thereby potentially degrading the resources even within this "natural resource preservation area." DRSEIR at page 2-16. Massive grading is needed to accommodate the project on this site. Grading would involve 70%+ of the site. It is still unclear to what extent remedial grading will extend beyond the area illustrated in the preliminary grading plan.

In summary, the site plan can best be characterized as "suburban sprawl," with roads and units extending across the entire site, thereby fragmenting the open space areas and extending into wildlands and interfering with wildlife corridors. This pattern of development would severely impact biological resource values on- and off-site and impede wildlife migration.

ANALYSIS

I. THE DRSEIR IS INADEQUATE UNDER CEQA.

The DRSEIR is deeply flawed under CEQA. An EIR must provide enough analysis and detail about environmental impacts to enable decision-makers to make intelligent judgments in light of the environmental consequences of their decisions. See CEQA Guidelines § 15151; Kings County Farm Bureau v. City of Hanford, 221 Cal.App.3d 692 (1990). Under the law, the lead agency must make a good faith effort to fully disclose the environmental impacts of the project. This requirement cannot be met unless the project is adequately described and existing setting information is complete. See County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 199 (1977). Both the public and decision-makers need to fully understand the implications of the choices presented by the project, mitigation measures, and alternatives. See Laurel Heights Improvement Ass'n v. Regents of University of California (Laurel Heights I), 6 Cal.4th 1112, 1123 (1988). The DRSEIR fails to provide sufficient information to enable informed decision-making by the County, the public, and the permitting agencies. Much important information remains improperly omitted or deferred until a later date in violation of CEQA; what information is provided remains vague and flawed.

The DRSEIR is a construction level EIR and therefore would allow for the issuance of a rough grading permit. Many of the most significant impacts are irreversible after rough grading has occurred. Thus, detailed information concerning project level impacts must be provided at this stage of project consideration so that the public, agencies and County decision-makers can fully understand the impacts of the proposed project and alternatives. Deferral of information concerning project-related and cumulative impacts, mitigation measures and alternatives is improper and unacceptable given the types of activities that will result from the approval of the project at this stage.

A. The DRSEIR Fails to Describe the Project Adequately.

The DRSEIR fails to describe the project and its setting accurately and completely. It omits key project features that have the potential to result in significant impacts.

The CEQA Guidelines define "project" as "the whole of an action, which has a potential for resulting in a physical change in the environment, directly or ultimately . . .." CEQA Guidelines § 15378. Among other components, an EIR's project description must contain a "general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities." CEQA Guidelines § 15124(c). As the Court of Appeal has noted, "The defined project and not some other project must be the EIR's bona fide subject." County of Inyo, 71 Cal.App.3d at 185. An accurate and complete project description is indispensable because, "[a] curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal . . . and weigh other alternatives in the balance. An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR." Id. at 192.

The DRSEIR also fails to provide an adequate description of the setting for the project. Such a failure is fatal under CEQA. CEQA and the CEQA Guidelines mandate that an EIR include a description of "the physical environmental conditions in the vicinity of the project . . . from both a local and a regional perspective . . . Knowledge of the regional setting is critical to the assessment of environmental impacts." CEQA Guidelines §§ 15125(a) and (c). This requirement derives from the principle that without an adequate description of the project's local and regional context, the EIR, and thus the decision-makers and the public who rely on the EIR, cannot accurately assess the potentially significant impacts of the proposed project.

The DRSEIR for the project is inadequate. It fails to describe key aspects of the proposed project with the potential to result in significant environmental impacts. Additionally, it fails to describe accurately and completely the environmental setting impacted by the project. Accordingly, potentially significant environmental impacts cannot be adequately analyzed or addressed by the DRSEIR and, for this reason, the DRSEIR is fatally deficient under CEQA.

1. **The DRSEIR Fails to Describe Adequately the Source and Placement of Cut and Fill Material and the Extent of Grading Required to Accommodate Roads and Dwelling Units.**

Massive earthwork will be required to prepare the site for access roads and houses. More than ½ of the site (126 acres) has slopes in excess of 26% with about 32 acres with slopes exceeding 50%. Preliminary estimates in the DRSEIR are that about 2.45 million cubic yards of conventional excavation (cut) and an equal amount of fill will be required. In addition, about 6.8 million cubic yards of remedial grading are required. The DRSEIR states that cut and fill (including several areas exceeding 50 feet in depth) will be balanced on site. However, the DRSEIR and geotechnical report present information that indicates on-site materials may not be suitable to support the project without imported materials. See DRSEIR at page 4.2-11. Moreover, mitigation measures M 2-14 and M 2-15 suggests that off-site borrow materials will be needed and on-site material removed:

> M 2-14 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal off-site. DRSEIR at page 4.2-18
>
> M 2-15 All borrow sites shall be approved by the Soil Engineer/Geologist prior to on-site delivery. This will permit the timely allocation of such available materials for use on the project site.

To the extent that exportation of cut and importation of fill will be required to implement the project, this information must be provided. Related impacts to air quality, off-site grading and stockpiling and traffic, among other issues must be disclosed and analyzed in a revised environmental document.

Although the DRSEIR fails to provide adequate information concerning proposed cuts and fills in terms of their location and extent, the document does refer to fills in excess of 50 feet in height. The DRSEIR provides virtually no information regarding the source and placement of cut and fill material, the full extent of grading required to accommodate roads and dwelling units, and the phasing of the cut and fill operation. Without this information, the DRSEIR environmental impacts analysis does not and cannot analyze the impacts of transporting such a significant amount of fill to the project site in terms of increased traffic and air pollutants, or the impacts of the cutting and filling itself, including impacts to air quality, open space, habitat, and special status species. Without an accurate and complete description of the proposed site grading and fill, the DRSEIR cannot adequately analyze environmental impacts or comment on the proposed project's consistency with the County's General Plan and grading ordinance.

A revised environmental document should include clear graphics that show cross sections where cuts and fills will exceed 50 feet. In addition, a revised environmental document must identify the sources of fill that are suitable to support the proposed development. Additional information

must be provided concerning the suitability of on-site material for fill if the DRSEIR continues to assume that cut and fill will balance on-site.

2. The DRSEIR Fails to Describe Adequately the "Open Space" Areas.

The DRSEIR fails to provide a complete description of the "open space" areas of the proposed project. Little or no information is provided regarding, among other aspects: the extent of grading to the open space; to what degree the open space will be altered from its present natural condition; the uses to which the open space will be put and the extent of those uses, including trails and recreation; and, the presence and location in the open space of utility lines, access roads and other services.

The lack of a complete description in the DRSEIR of alteration to, and ultimate uses of the open space areas renders any analysis of either project-related or cumulative impacts thoroughly inadequate. A revised description of any alteration to the open space and the uses proposed for the open space land, including the proposed water reservoir, must be completed. Once a complete description has been obtained, the DRSEIR's analysis of the environmental impacts to biological resources, geology, and air quality, among others, must be revised.

3. The DRSEIR Fails to Describe Adequately the Project's Master Drainage Concept and Project Features Directed as Maintaining Water Quality.

The DRSEIR fails to adequately describe the project's drainage concept and project features purportedly directed at maintaining water quality. Specifically, the DRSEIR's environmental impacts analysis concerning hydrology states that the "Project Design Feature" to mitigate drainage impacts is "being prepared in consultation with USACE." DRSEIR at page 4.3-7. Thus, the complete master drainage concept is not included in the DRSEIR for public, decision-maker and agency review. Although a final description of the master drainage concept is still being developed, the DRSEIR nonetheless concludes that no significant impacts associated with drainage will occur . In part, this is correct: no significant impacts can be identified based on such an inadequate project description. Without a complete description of the necessary drainage facilities, the DRSEIR fails under CEQA because impacts to water quality, biological resources, habitat, special status species, and human safety cannot be assessed. Once a complete description has been obtained, a revised impacts analysis must be completed.

The DRSEIR continues to describe other aspects of the project intended to mitigate water quality impacts:

"The remainder of the project site (the northerly development area) does not have sufficient room to accommodate the land-intensive requirements of the riverine system. Therefore, runoff from the balance of the developed portion of the project site would be primarily cleansed through stormceptors prior to discharge into natural drainage courses. Stormceptors trap trash, sediment,

and oils. They would also trap phosphorus that is attached to the sediment. However, they have no known effect on bacterial indicators or toxic constituents, both of which are constituents of concern for Aliso Creek. Removal of bacterial indicators would occur as the runoff continues through 3,300 linear feet of natural before reaching Aliso Creek. As part of the final design, ponds and swales would be incorporated to the maximum extent feasible in the development area within many small-scale features, such as, medians, parkways, and other developed open space in order to maximize the opportunity for removal of bacterial indicators and toxic constituents prior to outletting in the natural drainages." DRSEIR at page 4.4-12.

This paragraph suggests that:

> Key elements of the project that are critical to reducing significant impacts to drainage and water quality have not been designed. Therefore, the project description lacks key information to support both an adequate analysis of impacts and to support a conclusion that project impacts will be less than significant.
>
> Mitigation may not be sufficient to address impacts associated with bacterial indicators or toxic constituents.

A revised environmental document, based on a complete description of drainage and water quality features and feasible mitigation measures must be completed.

4. The DRSEIR Fails to Describe Adequately the Characteristics of Residential Uses

The DRSEIR lacks a complete description of proposed uses at the project site. Specifically, the DRSEIR fails to describe key aspects of the proposed residential project including, but not limited to: the size of the houses; their lot coverage; paving for roads driveways and parking lots; and accessory uses, such as swimming pools and storage. Without an adequate description of home size, lot coverage, and accessory uses, significant environmental impacts to aesthetics and water quality, among other impacts, cannot be identified or assessed and suitable mitigation measures cannot be proposed. To the extent this information is not available, a worst-case estimate of total site soft and hard cover must be developed and used to determine the extent of environmental impacts associated with site coverage. Without a clear understanding of how much land is to be covered by development, potentially significant environmental impacts to drainage, water quality, habitat, and special status species, among others, and the creation of geologic and flooding hazards cannot be identified, let alone assessed.

5. The DRSEIR Fails to Describe Adequately the Proposed Project's Construction Activities and Phasing.

The project description provides a cursory description of construction phasing and activities.

Among the information that is not sufficient is information about the extent and duration of grading activities. Without a description of these activities and phasing and the assumptions underlying the air quality estimates, the DRSEIR cannot adequately identify and analyze environmental impacts to air and water quality, among others, due to truck traffic and emissions, construction noise and dust. An EIR for a project such as this must include a description of the construction period activities, including, but not limited to: phasing; types of equipment; construction employment; staging areas, borrow sites and spoils disposal sites, among other details of the construction that could result in impacts. A revised environmental document must be prepared that includes this information and revised impact analyses as warranted based on the information.

6. The DRSEIR Fails to Describe the Project Site's Biological Resources and Habitats Adequately.

The DRSEIR fails to adequately describe biological resources on- and off-site. The document contains inadequate information concerning on-site biological resources, including oak woodlands, aquatic resources, raptor nesting locations and wildlife corridors, and fails to provide any description of biological resources within an adequate cumulative study area, which at a minimum, should include the entire Southern Subregion and Central NCCP areas.

Finally, the relationship of the project site to the Southern Orange County NCCP is not described or analyzed. There is a Figure in the DRSEIR, which illustrates a proposed Southern reserve, but the DRSEIR fails to state how this related to the proposed project. See Figure 4.8-2. Clarification is needed concerning the Southern NCCP process and its implications for this project. Without the inclusion of these, and other, key details of the on- and off-site biological regime, the DRSEIR cannot adequately analyze project-related and cumulative impacts.

7. The DRSEIR Fails to Describe Project Inconsistencies with Applicable Plans.

A number of plans are applicable to the project site including, but not limited to:

The Orange County General Plan

The Foothill/Trabuco Specific Plan

Aliso Creek Corridor Specific Plan

The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCP/HCP)

The DRSEIR provides a very cursory policy consistency review in the Land Use section and the biological resources sections. The consistency review does not include a table of key policies and

"findings" as to project consistency with these policies. It appears that the section omits several key policy inconsistencies, including the following:

Orange County General Plan

The Orange County General Plan Resources Element includes several policies concerning protection of natural resources as follows:

Goal 1: Protect wildlife and vegetation resources and promote development that preserves these resources.

Goal 3: Manage and utilize wisely the County's landform resources.

Objective 3.1: To minimize to the extent feasible the disruption of significant natural landforms in Orange County.

Policy 1. To identify and preserve the significant wildlife and vegetation habitats of the County.

Policy 5. To protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities.

The project as proposed appears to conflict with these overarching goals, objectives and policies of the Orange County General Plan. A revised analysis of project consistency with applicable General Plan policies must be included in a revised and recirculated environmental document.

The Foothill/Trabuco Specific Plan

The Foothill/Trabuco Specific Plan calls for preservation of significant landform, biological, cultural and scenic resources on-site. According to the DRSEIR's alternatives analysis, only Alternative 4 is consistent with the Specific Plan requirements. Also according to the DRSEIR, "[t]he proposed project would be in substantial compliance with or consistent with the previously approved and Recorded Map 10692 with respect to proposed residential gross density and providing for the provision of a substantial increase in open space and the presence of a wildlife corridor as outlined in the F/TSP." DRSEIR at page 4.1-12. However, the proposed project would amend the F/TSP. DRSEIR at page 4.1-12. Nowhere in the DRSEIR are the proposed amendments to the F/TSP outlined.

The proposed project is inconsistent with the F/TSP in other major respects, including, but not limited to its failure to provide information required by the F/TSP (see Letter submitted by Rural Canyons Conservation Fund, dated May 28, 2002, hereby incorporated by reference).

The Central-Coastal Subregion Natural Community Conservation Planning/Habitat Conservation Plan (NCCP/HCP)

Figure 4.8.2 indicates that the entire project site is located within an NCCP "reserve area." The DRSEIR fails to point this out or to analyze the implications of this for the project.

A significant theme of all of these plans is the protection of key wildlife corridors in the area. It is clear from the project site plan that minimal provisions will be made for continued wildlife movement and those species that attempt to traverse the on-site corridor will be subject to significant additional constraints including: modified topography, new road corridors, presence of new residents in the area, increased noise and lighting as well as residential units in the path of the Northern Corridor. See Figure 8.4.4. The project will have significant impacts on wildlife migration that must be identified in the environmental document and called out as inconsistencies with applicable policies in the above-listed Plans. To the extent that wildlife corridors are assumed on adjacent privately owned properties, the revised environmental document should explain how these corridors would be maintained and not destroyed by cumulative development projects.

B. The DRSEIR's Analysis of Environmental Impacts Is Inadequate.

The DRSEIR's analysis of environmental impacts fails to provide the necessary facts and analysis to allow the County and the public to make an informed decision. Without such detail, the DRSEIR is deficient under CEQA. The role of the EIR is to make manifest a fundamental goal of CEQA: to "inform the public and responsible officials of the environmental consequences of their decisions before they are made." Laurel Heights I, 6 Cal.4th at 1123. To do this, an EIR must contain facts and analysis, not merely bare conclusions. See Citizens of Goleta Valley v. Board of Supervisors, 52 Cal.3d 553, 568 (1990). Any conclusion regarding the significance of an environmental impact not based on analysis of the relevant facts fails to achieve CEQA's informational goal.

As set forth below, the DRSEIR is riddled with conclusory statements regarding environmental impacts, unsupported by facts and necessary analysis. Furthermore, the DRSEIR attempts to defer analysis of environmental impacts to a later date. As discussed below, such deferral is not an option. CEQA mandates that environmental impacts be identified and analyzed in the EIR, not at a later date. See Sundstom v. County of Mendocino, 202 Cal.App.3d 296 (1988) (holding that a negative declaration was invalid when county approved a project while postponing the resolution of uncertainties regarding environmental impacts to a later date).

1. The DRSEIR Fails to Analyze Impacts to Biological Resources Adequately.

The DRSEIR's biological impacts analysis is inadequate in numerous respects, including, but not limited to:

Underestimation of project-related impacts to biological resources: The DRSEIR fails to adequately characterize the extent of project-related impacts to biological resources: First, the uses and management of the open spaces on the project-site are not sufficiently defined and "locked-in" to ensure that biological resources located in these areas will not be impacted. For example, if there are recreational uses in the open space areas, wildlife may not use these migration corridors. In addition, impacts could be associated with the public and private landscaping plans, which are not required to be prepared until after project approval and EIR certification. See SC 8-7 and SC 8-8. No criteria are specified in the DRSEIR for these plans. Moreover, because the full extent of grading and importation of fill/exportation of cut is not disclosed, there are likely to be additional impacts to biological resources on- and off-site that are not described in the DRSEIR. If recreation and other uses are to be prohibited in the open space areas, a revised DRSEIR must state how these restrictions will be enforced and cite examples where similar restrictions have been effective (e.g. more effective than "fencing," which is a proposed mitigation measure).

Deferral of analysis and mitigation: The DRSEIR improperly defers surveys for trees that host nesting raptors. Trees on the project site that provide nesting should be identified prior to certification of the EIR and protection provided as required under the federal MTBA. DRSEIR at page 4.8-22.

Insufficient evidence to support a conclusion that indirect effects would be insignificant. The DRSEIR's conclusion that indirect effects are insignificant is not supported by evidence. The proposed site plan results in a pattern of development (roads and houses) that fragments the property, extends to adjacent undeveloped lands and has an extensive edge. Moreover, the project would introduce lighting, noise and residents in a wildlife area – the effects of which are not adequately disclosed or analyzed in the DRSEIR. Mitigation measures recommend "fencing" adjacent to undisturbed areas of open space. DRSEIR at page 4.8-32. Not only could such fencing result in additional impacts (e.g. impeding wildlife migration), but there is no evidence such fencing will effectively protect open space areas from trespass by children, pets and the like. Additional evidence must be provided in a revised environmental document to support the conclusion that these indirect effects are not significant, particularly where there are a number of alternative projects that would significant avoid these impacts (e.g. Alternatives 4 and 7).

Insufficient evidence is provided that mitigation measures will be effective. The DRSEIR does not provide sufficient evidence that proposed mitigation measures will actually mitigate impacts to less than significant levels. First, the DRSEIR implies that the biological resource mitigation plan has the blessing of the resource agencies:

"The biological resource mitigation plan has been reviewed by the effectual regulatory agencies and a biological opinion has been issued by USFWS. The biological resource mitigation plan mitigates project related impacts to wetland/riparian habitats, sensitive upland habitats and wildlife movement..." DRSEIR at page 4.8-23

Yet, there are no letters in the DRSEIR which document that these agencies have agreed that the biological resource mitigation plan will adequately mitigate project related impacts to biological resources. Furthermore, the referenced biological opinion purports only to "transmit[] our biological opinion based on our review of the proposed Saddleback Meadows Residential Development Project located in Orange County, California and its effects on the federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*, "fairy shrimp") and its designated critical habitat, and designated critical habitat for the threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher"), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*)." (Biological Opinion, dated October 26, 2001, at page 1.) I.e., this biological opinion is confined to assessing the project's effects on two species, only, and their designated critical habitats, under the federal Endangered Species Act, not CEQA. If these agencies have not signed off on the adequacy of the biological resource plan under CEQA, the DRSEIR should not leave the impression that they have done so. A revised DRSEIR must include information from the agencies concerning the adequacy of the biological resources plan so that the public and the decision-makers are fully informed about the likely changes these agencies will require in order to issue permits for the project (such changes may include additional mitigation or reconfiguration of the site plan).

The letters previously submitted by the wildlife agencies on prior project environmental documents raise significant concerns about the project's impacts on biological resources. Specifically, the October 29th letter states:

"Our biologists' professional opinion is that neither of the two previously submitted preferred projects (318 DU and 705 DU) nor the 299 DU Contingency Plan retain appropriate topography and habitat to ensure the continued function of the wildlife movement corridor/linkage that exists on Saddleback Meadows. As currently proposed, the 299 DU Contingency Plan development "footprint" would severely constrain wildlife movement from O'Neill Regional Park (i.e. southern NCCP planning area) to the Central NCCP reserve and Cleveland National Forest and is not acceptable." October 29, 1998 letter at page 2. See Letters from the wildlife agencies dated October 29, 1998 and August 8, 1997, hereby attached as attachments 2 and 3 and incorporated herein by reference.

Second, the DRSEIR assumes that Project Features and mitigation measures will reduce project-related impacts to biological resources to less than significant levels. Such measures include highly experimental elements such as creation of new ponds and relocation of species (fairy shrimp) the possible failure of which is explicitly anticipated by the cited biological opinion No documentation is provided about projects that have successfully used these techniques.

Third, the DRSEIR makes clear that drainage and water quality mitigation "features" are not yet completely designed. Questions remain whether the proposed system will maintain water quality, particularly with respect to bacterial indicators and toxic constituents. DRSEIR at page 4.4-1. Yet, the DRSEIR contains no mention of, or analysis concerning the potentially significant project-related and cumulative impacts of bacterial and toxic constituents on species in the creek

system downstream of the project site. This analysis must be included in a revised environmental document. Nor does the DRSEIR explain how the project can comply with new water quality regulations recently ordered against the County of Orange by the Regional Water Quality Control Board (CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION ORDER NO. R9-2002-0001 NPDES NO. CAS0108740 WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF URBAN RUNOFF FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) DRAINING THE WATERSHEDS OF THE COUNTY OF ORANGE, THE INCORPORATED CITIES OF ORANGE COUNTY, AND THE ORANGE COUNTY FLOOD CONTROL DISTRICT WITHIN THE SAN DIEGO REGION), February 13, 2001.) These stricter regulations supplant the 1994 NPDES permit referenced in the DSEIR, and were enacted due, in part, to the extremely impaired water quality existing in Aliso Creek, adjacent to the project, resulting in numerous beach closures at Aliso Beach.

Fourth, the DRSEIR clearly relies on the long-term maintenance of wildlife corridors on adjacent privately owned properties, some of which are planned for future development. Yet, there is no description of how these corridors would be protected from development, and no analysis of the cumulative impact of future developments that could interfere with essential corridors.

Finally, the DRSEIR fails to state how the project will comply with the NCCP/Coastal Sage Scrub agreement. This information must be included in a revised DRSEIR.

Inadequate cumulative analysis. Similar to other cumulative discussions in the DRSEIR, the biological resource section cumulative "analysis" is nonexistent. The brief discussion concludes that "...all identified related projects in the region would have to mitigate biological impacts to less than significant." DRSEIR at page 4.8-22. This statement is not sufficient to support a finding that there would be no cumulatively significant impacts to biological resources in the region. A revised discussion must identify cumulative projects and their collective impacts (by species, habitat and acreage), disclose the mitigation measures that would be required, provide evidence that the mitigation would be effective and document the conclusion that there would be no significant cumulative impacts.

Failure to identify potential inconsistencies with applicable plans and policies. The preliminary reserve design for the Southern Subregion NCCP, Figure 4.8-2, appears to include the site in the reserve. Not only does the DRSEIR fail to discuss the fact that the Southern Subregion NCCP is underway, with updated reserve designs due in July 2002, the DRSEIR fails to disclose that the site is identified as part of the reserve on Figure 4.8-2. A revised environmental document must discuss how the NCCP process applies to the proposed project. Specifically, since the Board of Supervisors agreed to participate in the NCCP process in 1993, can the Board properly take action on this project in advance of the NCCP process reaching major milestones concerning proposed reserve design or even more advanced outcomes? What is the relevance of the site being shown as part of the "reserve" in Figure 4.8-2?

2. The DRSEIR Fails to Disclose and Analyze Impacts to Geology and Soils Adequately.

The DRSEIR is deficient in its analysis of geologic impacts. As noted above, the project description and the DRSEIR as a whole provide little information regarding the massive grading and fill required to actualize this proposed project. The extent of cut and fill also appears to underestimate what could be required to accommodate the project as proposed. It is not clear from the DRSEIR whether importation and exportation of fill will be necessary. If necessary, no analysis is provided of the additional impacts of such activities, including, but not limited to: traffic associated with hauling materials, direct impacts to borrow and spoils sites, air quality implications and the like. A revised analysis must include evidence that supports the DRSEIR's assertion that grading will balance on site, or in the alternatives, the true extent of project-related impacts must be disclosed. Also, clearer graphics showing the extent and location of cuts and fills must be included in a revised document so that the public and decision-makers can fully appreciate the impacts of this project on the topography.

3. The DRSEIR's Analysis of Air Quality Impacts Is Incomplete.

The Air Quality section states:

"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end."

The discussion fails to discuss the fact that a leading contributor to emissions, and the least likely land use configuration to successfully result in TSM program trip reductions is suburban sprawl – the land use configuration proposed by the project. No discussion is included in the DRSEIR about meaningful ways to address air quality in terms of major policy changes to how the County uses and develops land (e.g. the County could refocus its efforts to accommodate new housing in "infill" areas, and the like). No TSM mitigation measure is included for the project, because the type of land use proposed by the project is not conducive to TSM programs. In light of the fact the County is located within a non-attainment basin, the County should evaluate bolder land use policy measures to address air quality emissions. Such measures (alternatives such as locating housing in infill areas) should be discussed in the DRSEIR.

The DRSEIR appears to understate the impacts on air quality that will be generated both by project construction and by the built project itself. As noted above, the DRSEIR fails to adequately describe construction activities and phasing, and fails to analyze potential air quality impacts associated with hauling cut and fill on-and off-site. Therefore, the DRSEIR fails to analyze and disclose the potentially significant impacts associated with these activities. As stated above, additional information concerning the suitability of on-site soils as fill for the project must

be provided if the DRSEIR is going to assume that cut and fill will balance on-site. Alternatively, a revised environmental document must analyze the impacts associated with exportation of unsuitable cut material and importation of suitable fill material. This analysis must include disclosure of both 1) where the materials will be disposed of and 2) locations for imported fill.

The other major deficiency in the analysis is the lack of any meaningful analysis of cumulative air quality impacts. A revised environmental document must include such an analysis (e.g. other construction projects in the area generating air pollutants; etc.).

4. The DRSEIR Fails to Analyze Hazards Adequately.

The DRSEIR defers analysis of potential on-site contamination. Specifically, the potential for on-site contamination is deferred until prior to recordation of the subdivision map. See SC 2-13 at page 4.2-16 of the DRSEIR. At a minimum, the results of a phase I site assessment should be included in a revised environmental document.

5. The DRSEIR Fails to Analyze Land Use and Planning Impacts Adequately.

The DRSEIR fails to describe all relevant policies and plans, and fails to evaluate the consistency of the project with each policy. Each relevant County and other agency policy, general plan policy, regulation, guideline or standard should be summarized in a table, noting whether the project is consistent with the applicable provision and what must be done to reconcile the two where they are inconsistent. Instead, the DRSEIR fails to identify key County policies and fails to discuss the applicable policies and regulations of other agencies (e.g., policies of the U.S. Fish and Wildlife Service and the Regional Water Quality Control Board, among others). A revised environmental document must include this analysis.

6. The DRSEIR Fails to Analyze Impacts to Traffic Adequately.

The DRSEIR fails to disclose that the project's proposed land use pattern would not support sound transportation management practices because of its location, low density and contribution to the suburban sprawl pattern in Orange County. As a result, the project will perpetuate the exclusive use of automobiles for transportation, the very practice that has contributed to the traffic and air quality problems that are so acute in the County.

The Air Quality section states:

"A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) would achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward

achieving that end."

No TSM mitigation measure is included for the project because the type of land use proposed by the project is not conducive to TSM programs. The DRSEIR should disclose this fact and acknowledge the poor pattern of land uses represented by this and other projects in the area, will continue to frustrate the County's progress toward acceptable traffic flows and clean air quality. A revised environmental document should discuss alternatives to the general plan land uses in the area – and explore the potential for transferring these planned units to infill sites.

Finally, the DRSEIR fails to adequately analyze cumulative traffic impacts including how projects of this type are likely to frustrate the County's attempts at a meaningful TSM program. The geographic study area for the analysis of cumulative projects is artificially small in size, and fails to provide a sufficiently large study area for many impacts, including traffic, air quality and biological resources. See Table 3.1, Related projects. Moreover, there is no information provided on construction period traffic for even these related projects; information which must be provided and included in a revised cumulative analysis for traffic and air quality. The study area for the revised analysis should extend at least to the likely areas where new residents in the proposed project and related projects are employed. No such information is included in the DRSEIR. Thus, it is unclear how the study area was selected. Information concerning where new residents in these areas work and therefore commute, must be developed and used to form the basis for the new analysis of traffic and transit impacts.

7. The DRSEIR Fails to Analyze Adequately Impacts to Hydrology, Drainage and Water Quality.

Pollution carried by storm water and urban runoff is the largest source of contamination to surface water both in California and nationwide. Construction sites, in particular, have been identified as significant dischargers of polluted storm water, involving high concentrations of silt and turbidity, as well as oil and grease, trash, sewage, and other chemicals used in construction activities and equipment maintenance. Despite this well-known and well-documented problem, the DRSEIR fails to adequately describe construction activities and on-site and off-site drainage "improvements," both of which could impact the water quality of the area. See concerns raised above about the inadequate and incomplete description of the project drainage and water quality features.

The DRSEIR concludes that there will be no significant drainage impacts after mitigation because of a highly engineered system of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to "control project drainage." DRSEIR at page 4.3-7. A "riverine water quality filtration system" is proposed next to the road to "cleanse low flow urban runoff." DRSEIR at page 4.3-7. There is no evidence in the DRSEIR that confirms this combination of features will mitigate for the impacts associated with the introduction of impervious surfaces, the complete alteration of the on-site drainage system and redirection of the natural drainages. No examples of successful projects that are similar in features are provided in the DRSEIR.

Moreover, there is no discussion of what kind of long-term maintenance and monitoring will be needed to maintain this highly engineered system. The DRSEIR merely states that the "structural and non-structural BMPs would be owned, operated and maintained by the home owner's association (HOA) or community services district." DRSEIR at page 4.4-12. Specific information about the drainage and water quality features and how they will be maintained and monitored over the long-term (including information about the cost of maintenance and monitoring) is essential to determine: first, whether the extent of drainage alterations is an acceptable project feature; and second, whether the proposed system of drainage features will actually be a viable system over the long-term, and effectively mitigate significant impacts to the natural drainage system. Specific information about the Riverine system, and the fact that the northerly development area does not have sufficient room to continue this system, suggests that the proposed project features may fall short of ensuring water quality is not adversely impacted by the project. DRSEIR at page 4.4-11.

The revised document should include examples of projects that incorporated similar features and have been demonstrated to result in effectively addressing drainage and water quality impacts. Absent this information, the conclusion reached in the DRSEIR that "[u]pon implementation of the Project Design Features and compliance with the Standard County Conditions, water quality impacts would be mitigated to a less than significant level," is not supported by evidence.

Finally, the significance of project-related impacts requires that the analysis of cumulative impacts to drainage and water quality be extensive. The DRSEIR fails to complete any analysis of these admittedly significant cumulative impacts, yet concludes that as a result of "required mitigation," cumulative impacts would not be significant. DRSEIR at pages 4.3-7 and 4.4-13.

C. The DRSEIR Fails to Analyze Cumulative Impacts Adequately.

The DRSEIR utterly fails to analyze cumulative impacts in the manner or to the degree required by CEQA. The CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." CEQA Guidelines § 15355(a). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." Id.

A legally adequate cumulative impacts analysis views a particular project over time and must consider the impact of the project combined with other projects causing related impacts, including past, present, and probable future projects. CEQA Guidelines 15130(b)(1). Projects currently under environmental review unequivocally qualify as reasonably probable future projects to be considered in a cumulative impacts analysis. See San Franciscans for Reasonable Growth v. City and County of San Francisco, 151 Cal.App.3d 61, 74 & n. 13 (1984). In addition, projects anticipated beyond the near future should be analyzed for their cumulative effect if they are reasonably foreseeable. See Bozung v. Local Agency Formation Comm'n, 13 Cal.3d 263, 284 (1975). Alternatively, an EIR may utilize:

> A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact.

CEQA Guidelines § 15130(b)(1)(B). Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. Id.

The discussion of cumulative impacts must include a summary of the expected environmental effects to be produced by those projects, a reasonable analysis of the cumulative impacts, and full consideration of all feasible mitigation measures that could reduce or avoid any significant cumulative effects of a proposed project. See CEQA Guidelines §§ 15126.4(a)(1) and 15130(b)(3).

The cumulative impacts concept recognizes that "[t]he full environmental impact of a proposed . . . action cannot be gauged in a vacuum." Whitman v. Board of Supervisors, 88 Cal.App.3d 397, 408 (1097). The requirement of a cumulative impacts analysis of a project's regional impacts is considered a "vital provision" of CEQA. Bozung, 13 Cal.3d at 283. Moreover, an EIR must examine not only the anticipated cumulative impacts, but also reasonable options for mitigating or avoiding the project's contribution to significant cumulative impacts. CEQA Guidelines § 15130(b)(3). The DRSEIR does not come close to meeting these requirements for the reasons described below.

1. The DRSEIR's Cumulative Impacts Analysis' Geographic Study Area Is Too Small and Thus Inadequate Under CEQA.

The DRSEIR considers a geographic study area far to small to reveal the true nature of the proposed project's cumulative impacts and, thus, is deficient under CEQA. The analysis of cumulative impacts appears to be based on a short list of "related" projects in the immediate area of the project. See Table 3.1 and Figure 3.2.

Among the major projects that must be included in a revised cumulative analysis include but are not limited to the massive Mission Viejo project and other projects in the Southern Subregion NCCP area. In September of 2001, the Mission Viejo Company filed an application for development of its land. As such, the cumulative analyses of land use and planning, geology and soils, hydrology and water quality, air quality, traffic and transportation, biological resources, public services and utilities, aesthetics and growth inducement must consider this potentially massive foreseeable project.

Furthermore, the document does not provide even minimal information regarding other projects within the Southern Orange County NCCP Study area. Analysis of these additional projects is

particularly important given the project's location in the Southern Orange County Natural Community Conservation Program Study area.

Although the DRSEIR concludes that the project's cumulative impacts, with the exception of air quality, will not be significant, such a conclusion cannot be supported in light of the inadequacy of the geographic study area. The DRSEIR's failure to consider the 14,000 home Rancho Mission Viejo Project alone renders its scope inadequate. The DRSEIR must also acknowledge and analyze the project's significant cumulative impact on the existing severely "impacted" water quality in adjacent Aliso Creek. This failure to consider regional or area wide cumulative impacts is fatal under CEQA and, as such, the document must be revised.

2. The DRSEIR Fails to Analyze any of the Cumulative Impacts Adequately.

In addition to relying on a far too small geographic study area, the level of analysis in the DRSEIR's cumulative impacts analysis is far too cursory. An EIR must include objective measurements of a cumulative impact when such data are available or can be produced by further study and are necessary to ensure disclosure of the impact. See Kings County, 221 Cal.App.3d at 729. Despite this mandate, the DRSEIR fails to analyze adequately a number of cumulative impacts, including, but not limited to, impacts to biological resources, water quality and drainage, and aesthetics, among others.

For example, with regard to cumulative water quality impacts, the DRSEIR states that "Ultimate development planned in the watershed in conjunction with the proposed project would potentially impact both surface and groundwater quality. Without controls, both short-term construction-related and long-term impacts due to pollutants in urban runoff could substantially impact water quality." DRSEIR at page 4.4-13. Despite this finding and despite the project's location in the watershed streams, the DRSEIR concludes that: "...as with the proposed project, related projects would be required to mitigate impacts to water quality to less than significant levels." Id. The DRSEIR fails to adequately summarize any information that would support the conclusion, and offers no supporting analysis itself. A revised environmental document must include analysis of cumulative impacts in order to support the conclusions throughout the DRSEIR that cumulative impacts will be reduced to less than significant levels. Statements such as: "cumulative projects are required to mitigate their impacts, therefore they will," are insufficient to support findings that all cumulative impacts, except air quality, will be less than significant.

Moreover, none of the cumulative impact discussions provide quantified information concerning cumulative project impacts, including, but not limited to: acres of habitat types directly/indirectly impacted by development or total construction trips. This information must be provided in revised cumulative analyses in a revised environmental document. Without such information, there is insufficient evidence to support the DRSEIR's conclusion that cumulative impacts to biological resources, traffic and water quality, among other impacts, will be insignificant. A revised document must also specify mitigation measures for cumulative impacts. Currently, the

DRSEIR includes conclusory statements in each section concerning potentially significant cumulative impacts. In each case, "required mitigation" is assumed to reduce significant cumulative impacts to less than significant levels. For example, the biology section contains the following statement concerning cumulative impacts:

"However, as with the proposed project, all identified related projects within the region would have to mitigate biological project impacts to less than significant." DRSEIR at page 4.8-22.

This conclusory statement provides no evidence that cumulative impacts to biological impacts will or can in fact be mitigated, nor is there any legal requirement that "all proposed projects" mitigate biological project impacts to less than significant. CEQA requires only that such impacts be mitigated to the extent feasible, which may not be to a less than significant level. See also DRSEIR at pages 4.1-12 (cumulative loss of open space would be adverse, but not significant); 4.4-13 (ultimate development in the watershed would potentially impact both surface and groundwater quality, but such impacts would be required to be mitigated to less than significant levels); 4.12-4, and other cumulative sections throughout the DRSEIR.

Finally, as described above, the DRSEIR fails to explore the full range of mitigation measures that could potentially reduce cumulative impacts below a level of significance. An EIR must examine reasonable options for mitigating or avoiding the project's contribution to cumulative impacts. See CEQA Guidelines § 15130(b)(3).

D. The DRSEIR's Discussion of Growth-Inducing Impacts is Inadequate Under CEQA.

The DRSEIR must consider the growth-inducing potential of the project in this undeveloped area. CEQA requires that an EIR include a "detailed statement" setting forth the growth-inducing impacts of the proposed project. See Public Resources Code § 21100(b)(5); City of Antioch v. City Council of Pittsburg, 187 Cal.App.3d 1325, 1337 (1986). The statement must "[d]iscuss the ways in which the proposed project could foster economic growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment." CEQA Guidelines § 15126.2(d). It must also discuss how a project may "encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively" or "remove obstacles to population growth." Id.

The DRSEIR's brief growth-inducing section concludes that the project is consistent with growth management policies of SCAG's RCP and would not extend or serve beyond the project boundaries. There is no analysis of whether the extension of roads and services on-site, and the development of a water tank and access road off-site, would facilitate growth on adjacent properties. Nor does the discussion reach any conclusion as to whether the project is or is not growth inducing as required by CEQA. The DRSEIR fails to address the potential for the off-site water tank to support development on adjacent, currently undeveloped parcels. In addition, wastewater pipes would be extended on site. The DRSEIR fails to describe the potential for these

pipes to support development beyond the project site. A revised environmental document must include an adequate analysis of the project's potential for growth inducement.

Finally, the DRSEIR fails to consider the precedent set by approval of this project. Specifically, the project interprets the general plan and other County plan policies to allow this development. No information is provided on the status of "permitted" development under the applicable plans for the area including the site and beyond. Figure 4.1.3, Foothill/Trabuco Specific Plan Land Use Designations, indicates development potential on a number of presently undeveloped properties that are contiguous to the project site. No information is provided in the DRSEIR concerning the status of development within the Specific Plan (e.g. the current statistical summary). It is clear that the development of the project site could have a growth inducing effect on these adjacent properties. Overall, the DRSEIR provides little evidence that the improvements to infrastructure it will involve and the precedent it will set will not induce growth to adjacent undeveloped properties.

In addition, the DRSEIR must analyze the potentially eviscerating effect of all other undeveloped sites within the Foothill Trabuco Specific Plan area seeking to follow the precedent of spot-amending the Specific Plan to explicitly exempt proposed development from all of the regulations and guidelines of the Specific Plan.

A revised growth inducing analysis must be prepared and include the status of development permitted on adjacent properties under all applicable plan and policies. This analysis should inform a revised analysis of cumulative impacts, including, but not limited to the long-term sustainability of an adequate wildlife corridor system.

E. The DRSEIR Improperly Attempts to Defer Mitigation to a Later Date, Fails to Identify Feasible Mitigation Measures, and Relies on Inadequate Mitigation Measures.

CEQA requires that mitigation measures be identified and analyzed. "The purpose of an environmental impact report is . . . to list ways in which the significant effects of such a project might be minimized . . . ." Pub. Res. Code § 21061. The Supreme Court has described the mitigation and alternative sections of the EIR as the "core" of the document. Citizens of Goleta Valley v. Board of Supervisors, 52 Cal. 3d 553 (1990). As explained below, the DRSEIR's identification and analysis of mitigation measures, like its analysis throughout, is thoroughly inadequate. An EIR is inadequate if it fails to suggest mitigation measures, or if its suggested mitigation measures are so undefined that it is impossible to evaluate their effectiveness. See San Franciscans for Reasonable Growth v. City and County of San Francisco, 151 Cal.App.3d 61, 79 (1984). Moreover, an EIR may not use the inadequacy of its impacts review to avoid mitigation: "The agency should not be allowed to hide behind its own failure to collect data." Sundstrom v. County of Mendocino, 202 Cal.App.3d 296, 361 (1988). Nor may the agency use vague mitigation measures to avoid disclosing impacts. See Stanislaus Natural Heritage Project v. County of Stanislaus, 48 Cal.App.4th 182, 195 (1996). Lastly, the formulation of mitigation

measures may not properly be deferred until after Project approval; rather, "[m]itigation measures must be fully enforceable through permit conditions, agreements, or legally binding instruments." 14 CCR § 15126.4 (a). In the present case, the DRSEIR does not come close to satisfying these basic CEQA requirements regarding impact mitigation. Most egregiously, it attempts to defer discussion and development of suitable mitigation measures until after the certification of the environmental document and the conclusion of public review.

1. The DRSEIR Improperly Defers Mitigation.

The DRSEIR impermissibly concludes that all of the project's environmental impacts, with the exception of cumulative air quality, will be mitigated below a level of significance, while at the same time deferring necessary analysis of mitigation measures. DRSEIR at page 9-1. Under CEQA, an EIR may conclude that impacts are insignificant only if it provides an adequate analysis of the magnitude of the impacts and the degree to which they will be mitigated. See Sundstrom, 202 Cal.App.3d at 306-07. Thus, if an agency fails to investigate a potential impact, its finding of insignificance simply will not stand. Id. Further, CEQA generally requires that all mitigation measures be adopted simultaneously with, or prior to, project approval. An agency may defer preparation of a plan for mitigation only when the agency commits itself and/or the project proponent to satisfying specified performance standards that will ensure the avoidance of any significant effects. Id.

In the present case, the DRSEIR violates CEQA by deferring critical analyses of project impacts and necessary mitigation. The following is a non-exhaustive list of the project design features and mitigation measures that the DRSEIR improperly defers to a later date:

a. PDF 3-1. A master drainage concept has been incorporated into project design to mitigate hydrology impacts to existing OCFCDs requirements and standards...This Project Design Feature is being prepared in consultation with USACE.
b. M 4-1. The applicant shall have the option to research off-site water quality improvements to determine the technical and economic feasibility of implementing improvements that have regional water quality benefits and can also mitigate project-related impacts...
c. PDF 4-9. The storm drain system shall be designed to mimic natural drainage patterns as closely as possible. Emphasis added.
d. As part of final design, ponds and swales would be incorporated to the maximum extent feasible...DRSEIR at page 4.4-12.

The DRSEIR's failure to adequately analyze the potentially significant effects of the project, and to design proper mitigation measures prior to project approval, renders the document inadequate and vulnerable to legal challenge. With the DRSEIR in its current form, decision-makers, the

public and permitting agencies cannot evaluate the advisability of project approval. Too little is known, and too much is entirely unknown, about the project's environmental impacts.

2. The DRSEIR Fails to Identify Feasible Mitigation Measures.

The DRSEIR's consideration of mitigation is inadequate because it fails to identify several feasible measures that could reduce or eliminate identified significant impacts. Mitigation is defined by CEQA as including:

> (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
> (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
> (c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.
> (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
> (e) Compensating for the impact by replacing or providing substitute resources or environments.

CEQA Guidelines § 15370. The DRSEIR fails to consider measures, which could mitigate in the fashion described above significant impacts in several resource categories, including, but not limited to, biology, geologic hazards, hydrology and water quality, among others.

Furthermore, the DRSEIR improperly concludes that all impacts except cumulative air quality, are mitigated to below a level of significance based either on deferred mitigation measures, as discussed above, incomplete and "future" project features, or on mitigation measures of unproven efficacy. These determinations are not supported by substantial evidence. A partial list of impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to the following:

Project impacts to biological resources: There is insufficient information in the DRSEIR to establish the efficacy of proposed mitigation measures including wildlife corridors and replacement ponds, and to support a finding that the impacts to biological resources will be less than significant with mitigation. Moreover, the applicant has not secured all of the necessary permits for the project and the agencies have not signed off on the adequacy of the proposed measures. Even with such agency approvals, significant impacts may remain. For these reasons, and because a feasible project alternative is proposed that would significantly reduce impacts to resources (Alt. 4), a revised environmental document should identify project related impacts to biological resources as significant and unavoidable.

Cumulative impacts to biological resources. In the USFWS biological opinion, the Service

states under cumulative impacts:

"At this time, we do not have adequate information to fully evaluate the potential impacts of the Saddlecreek/Saddlecrest Residential Development Project, Whispering Hills Development Project, and the Capistrano Valley Water District Pipeline Project on designated critical habitat for the gnatcatcher." Biological Opinion at page 23.

Another major project in the Southern NCCP area, the Mission Viejo Project, implicates some of the same species and habitats as the proposed project. Based on: 1) the significant amount of habitat loss involved with these development projects in combination with properties surrounding the project site "planned" for development; 2) the lack of information concerning the efficacy of proposed mitigation measures; and 3) the lack of information concerning mitigation measures for cumulative projects, a revised environmental document should identify cumulative impacts to biological resources as a cumulatively significant and unavoidable impact.

Project-related aesthetic impacts: The DRSEIR finds that impacts to aesthetic and visual resources would be less than significant. DRSEIR at page 4.9-23. In support of this finding, the text of the document states:

"The proposed project would not have a substantial negative aesthetic effect. As depicted in the visual simulations, Saddleback Meadows would be low-density and rural in character and would not conflict with the surrounding environment..." DRSEIR at page 4.9-23.

The project is not "rural in character." Figure 2.9, Conceptual Streetscape, clearly illustrates a project that is suburban in character. Lot sizes averaging 6,672 square feet clearly represent urban/suburban development densities. The protection of fragmented areas of the project site in open space does not "transform" this suburban development into "rural" character. Based on Appendix G of the CEQA Guidelines, the transformation of this site from undeveloped to suburban in the midst of wildlife habitat would constitute a substantial degradation of the existing visual character of the site and its surroundings. Therefore, this impact should be identified as significant and unavoidable as clearly demonstrated by the visual simulations (Compare figures 4.8.4 and 4.9.1, and see Figures 4.9.4, 4.9.5, and 4.9.9, among other exhibits in the DRSEIR, which demonstrate the significant change in character of the site and surrounding area with development as proposed.)

Cumulative Aesthetic Impacts. Figure 2.6 and 4.1.3 clearly indicate that other properties in the project area are designated for development. Cumulative development in the area should have been analyzed and mitigation measures proposed to ensure that the area's visual resources are not further degraded by planned development. Since no cumulative analysis was undertaken, and no cumulative mitigation measures are proposed, the potential for cumulatively significant and unavoidable aesthetic and visual impacts should be identified in a revised environmental document.

Other impacts that should be identified as significant and unavoidable in a revised environmental document include, but are not limited to: plan and policy inconsistencies; landform alteration; project-related and cumulative drainage and water quality impacts; cumulative traffic impacts; and cumulative impacts to public services and utilities. Growth inducement should also be identified as a significant adverse result of the project. The DRSEIR does not include sufficient evidence to identify these and other impacts as less than significant after mitigation.

F. The DRSEIR Does Not Adequately Discuss Alternatives to the Proposed Project.

Although the alternatives section of the DRSEIR describes a number of alternatives, this section continues to fall short of the standard set by CEQA. Under CEQA, an EIR must analyze a reasonable range of alternatives to the project, or to the location of the project, that would feasibly attain most of the basic objectives while avoiding or substantially lessening the project's significant impacts. See Pub. Res. Code § 21100(b)(4); CEQA Guidelines § 15126.6(a); Citizens for Quality Growth v. City of Mount Shasta, 198 Cal.App.3d 433, 443-45 (1988). As stated in Laurel Heights I, "Without meaningful analysis of alternatives in the EIR, neither the courts nor the public can fulfill their proper roles in the CEQA process . . . [Courts will not] countenance a result that would require blind trust by the public, especially in light of CEQA's fundamental goal that the public be fully informed as to the consequences of action by their public officials." 47 Cal.3d 376, 404 (1988). The DRSEIR's discussion of alternatives fails to meet these standards.

First, none of the development alternatives are "transparently" based on a comprehensive constraints map that identifies areas of high resource values and areas that should be avoided based on County plan policies. However, one of the alternatives, Alternative 4 – F/TSP EIR 531 Staff Alternative B, appears to avoid substantially more of the impacts than the proposed project and the other development alternatives. Alternative 7 – Acquisition Alternative, would protect key on-site resources because the site would be acquired rather than developed. Because of the resource values represented on the site, the site's sensitive location and its topography, all development alternatives, including Alternatives 4 and 6 would result in substantial grading of sensitive areas, impacts to water quality and biological resources and other significant impacts. A revised analysis should include an alternative based on a site constraints map, which represents current information about high value resources.

Second, the DRSEIR fails to describe an alternative location for the project housing. Therefore, no off-site alternative was evaluated. No information is contained in the DRSEIR concerning the potential for in-fill housing within the County, including on sites assembled by the applicant within incorporated and unincorporated areas to accommodate the units proposed by the project. Such sites should include "infill" sites with reuse, redevelopment and additional development potential (e.g. under performing shopping centers and other underutilized/vacant sites). The explanation in the DRSEIR concerning such sites is not supported by a methodology, analysis or facts. Moreover, the DRSEIR applied criteria to alternative sites that is unreasonably constrained. According to the DRSEIR:

"It is speculative, but unlikely that the project applicant could assemble other contiguous properties within the area to accommodate the number and type or[f] residences proposed for the project. Moreover, if such properties were identified and acquired by the applicant, the properties would likely have resources and environmental constraints similar to Saddleback Meadows. Development of the proposed project at an alternative location, therefore, is unlikely to be economically viable and would probably not reduce environmental impacts in comparison to the proposed project." DRSEIR at page 5-3.

Off-site alternatives to accommodate housing in the County should not be limited to contiguous properties. Recently, the Planning Center completed an analysis of where development could be accommodated in Orange County. See LA Times, June 17, 2001 article. The study concluded that there are sufficient underutilized shopping center sites to accommodate significant development demand. Based on this information and a reasonable methodology for off-site locations, a revised analysis must describe specifically the methodology used to determine that alternative sites do not exist.

Third, the DRSEIR fails to identify appropriate environmentally superior alternatives as required by CEQA. Specifically, the DRSEIR fails to identify Alternative 4 as the environmentally superior development alternative. See Table 5.7, which clearly indicates that Alternative 4 is the superior development alternative and meets the applicant's objectives. The DRSEIR improperly identifies Alternative 8 as the environmentally superior alternative of the "non-no project alternatives." DRSEIR at page 5-47. This section of the DRSEIR must be revised to report the appropriate environmentally superior alternative based on the facts contained in the DRSEIR. Moreover, because Alternative 4 has fewer impacts than the proposed project, and meets project objectives, facts must be presented that this alternative is infeasible if it is rejected in favor of another development alternative.

Finally, the DRSEIR fails to adequately analyze the feasibility of Alternative 7 – Acquisition Alternative. No information is provided concerning interest expressed by agencies and other conservation organizations to purchase the property and whether the applicant is a "willing seller." This information is critical to the County's consideration of the project and must be provided in a revised analysis. Moreover, this section should identify potential funding sources for purchase of the property, including Proposition 40 funding and the possibility of funding under the NCCP program if the site is upheld as important for inclusion in a reserve. The DRSEIR's statement that this alternative would not meet project objectives assumes that the County cannot develop an aggressive infill program as part of its housing element to provide for needed housing in the County. Information about the feasibility of meeting housing needs without relying on parcels that contain sensitive biological and environmental resources must be included in a revised analysis.

II. THE PROJECT MUST BE DISAPPROVED OR THE DRSEIR MUST AGAIN BE REVISED AND RECIRCULATED.

The serious inadequacies of the DRSEIR are symptomatic of fundamental deficiencies in the project itself. Only a project as deeply flawed as this would fail to result in an adequate revised DEIR after the extensive and highly detailed comments provided by the groups and many others on the first DEIR. The enormous mass grading and placement of fill on erosion-prone soils required for the project seriously call into question the suitability of the site for residential development. The project would wreak unnecessary havoc on the habitat and corridors of several sensitive and endangered species, including the gnatcatcher. For these reasons, the project application should be denied as inadequate and infeasible.

In the alternative and at a minimum, the County may not approve the project unless the DRSEIR is again revised and recirculated to fully disclose and analyze the project's impacts and a proper range of alternatives. Given the multiple inadequacies discussed above, this DRSEIR cannot properly form the basis of a final EIR. CEQA and the CEQA Guidelines require recirculation of a draft EIR where, as here, the document is so fundamentally inadequate in nature that meaningful public review and comment are precluded. See CEQA Guidelines § 15088.5.

CONCLUSION

As set forth above, the DRSEIR suffers from numerous deficiencies, many of which would independently render it inadequate under CEQA. Taken as a whole, the deficiencies of the DRSEIR are so pervasive as to necessitate further extensive revision of the document– and recirculated for public comment. National Audubon Society, Endangered Habitats League and Rural Canyons Conservation Fund respectfully request that the County deny the project at this time. The project should not be reconsidered until a legally adequate EIR is prepared.

Very truly yours,

Terrell Watt

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EXPERIENCE

1989 - **TERRELL WATT PLANNING CONSULTANTS**
Planning consulting firm owner.

1981-1989 **SHUTE, MIHALY & WEINBERGER**
Urban Planner/Paralegal:
Reviewed planning and environmental review documents for adequacy, advised on planning and environmental review processes, prepared planning documents, and provided expert witness testimony.

1981-1983 **MUNDIE & ASSOCIATES**
Economic and Environmental Planner:
Project Manager for preparation of agricultural land analyses, planning documents and environmental impact reports.

1979-1980 **EDAW, INC.**
Project Manager:
Projects included drafting of general plans, specific plans, environmental documents, and project design plans.

PROFESSIONAL MEMBERSHIPS

American Institute of Certified Planners (AICP)
American Planning Association (APA)

EDUCATION

USC GRADUATE SCHOOL OF URBAN AND REGIONAL PLANNING
Masters degree in City and Regional Planning

STANFORD UNIVERSITY
Bachelors degree in Urban Studies

RECENT PROJECTS

- Santa Clara County Parks and Recreation Department: Currently working with 2M Associates, Inc., to assist the Department to develop a Countywide Strategic Plan primarily directed at managing and improving existing parks and recreation facilities. Work effort includes: 1) working with the Advisory Committee to develop the Strategic Plan and draft action plans, including a resource management plan, and 2) facilitating public workshops related to Plan development. Reference: Lisa Killough, Assistant Director, (408) 355-2219.

- Santa Clara County Land Trust: Assisted the Land Trust to develop an agricultural conservation strategy for agricultural lands adjacent to Gilroy and Morgan Hill (a willing seller/agricultural easement program). Reference: Nancy Richardson, Executive Director, (408) 224-0114.

- David and Lucile Packard Foundation - Conserving California Landscapes Initiative Grant: Developed a Conservation Plan for the Central Coast of California, including Monterey, Santa Cruz and Santa Clara counties. The Plan identifies "no regrets" acquisition parcels based on habitat, agricultural and scenic values and identifies long-term conservation strategies. Reference: Bill Leahy, The Nature Conservancy, (415) 777-0487.

- Mid-Peninsula Regional Open Space District: Currently working with 2M Associates, Inc., to assist the District in its proposed boundary change to include San Mateo Coast within its jurisdiction. The work effort includes: 1) facilitating meetings of the Advisory Committee, and 2) development of a project description for the area including acquisition and management policies, preparation of the Local Agency Formation Commission annexation applications, and responsibility for the LAFCO process. Reference: Craig Britton, General Manager (650) 691-1200.

- City of Livermore Habitat Conservation Plan: Advised the City on the development of a Memorandum of Agreement with the USFWS and CDFG for the completion of a regional HCP. Obtained a Section 6 Grant for the City's effort. Reference: Marc Roberts, Community Development Director, (925) 373-5200.

- Bay Conservation and Development Commission (BCDC): Assisted in the development of a revised San Francisco Bay Plan that will result in (1) additional piers being removed to create new public open spaces and bay views, (2) new land uses in return for new public plazas in conjunction with development, and (3) public access within and around piers. Reference: Jeff Blanchfield, Director of Planning.

- Infill Working Group: Assisted Environment Now to launch an "Infill Working Group," including representatives of the development community, the State Department of Housing and Community Development and Caltrans to develop a model infill assessment methodology. The work efforts includes facilitation of the Infill Working Group monthly meetings. Funding provided by an Environmental Equity grant from Caltrans, and matching funding from Environment Now and the City and County of Los Angeles. Reference: Dave Myerson, Environment Now (310) 829-5568.

- Marin Local Agency Formation Commission: Assisted in the review of Sphere's of Influences (SOI's) in response to the Hertzberg amendments to the Cortese-Knox-Hertberg Local Government Reorganization Act. Currently working on the Southern Marin Sphere of Influence report, which includes a public agency and community outreach component. Reference: Peter Banning, Executive Officer (415) 446-4409.

- Monterey County Planning: Currently assisting local community groups in Monterey County to promote policies that are supportive of "smart growth" and resource conservation in the County General Plan update. The effort includes significant community outreach and agency coordination. Reference: Jean Driscoll, Resources Law Group.

- City of Livermore: Assisted the City in preparing general plan amendments, and a specific plan for the South Livermore Valley "winecountry." The plans were developed collaboratively with members of the community and landowners. The plan includes: (1) fees and dedication requirements in return for limited, clustered new development; (2) development of a model conservation easement; (3) transfer of development rights to protect open space; and (4) protection of up to 10,000 acres of agricultural lands beyond an urban growth boundary. The effort also resulted in the launching of a land trust and a voter approved urban growth boundary.

- Silicon Valley Conservation Council: Assisted in the passage of a local measure to raise funding for open space in the region. Headed up the campaign and public outreach effort, which will raise $8 million per year for open space acquisition and management. The Council includes representatives of the Silicon Valley Manufacturing Group, Cisco Systems, Greenbelt Alliance, the Santa Clara County Land Trust and Santa Clara County Open Space Authority, The Nature Conservancy, among other groups.

- The Nature Conservancy and Sierra Los Tulares Land Trust: Currently assisting these organizations to develop a conservation plan for Tulare County and to develop strategies for agricultural and habitat land conservation. Reference: Alex Mas, TNC (415) 777-0487.

- Endangered Habitats League: Provide ongoing assistance reviewing and commenting on general plan updates and environmental documents for Orange, San Bernadino, San Diego and Riverside counties. Assisting in the development of a transfer of development rights concept to address rural property rights issues in San Diego County. Reference: Dan Silver, Director (323-654-1456).

- Cambria Pine Forest Committee: Prepared a "white paper" on alternative organizational structures and funding sources for the management of the remaining stands of native Monterey Pine forest in San Luis Obispo County. Reference: Paul Cylinder, Jones and Stokes (916)373-7000.

Richard T. Gomez & Patti A. Gomez
P.O. Box 1022
Trabuco Canyon, CA 92678
Phone (949) 888-1604
Fax (949) 855-3045

June 10, 2002

Manager, OCPDS/Environmental Planning Services Division
300 N. Flower Street,
Box 4048
Santa Ana, CA 92702-4048
(714) 834-6132 fax

Re: Comments on the Draft Revised Subsequent Environmental Impact Report for Saddleback Meadows (DEIR), State Clearinghouse No. 1996121072

Dear Sir or Madam:

My wife and I are members of The Saddleback Canyons Conservancy which is dedicated to protecting and enhancing the environment and quality of life in the Foothill/Trabuco Specific Plan (FTSP) area and surrounding areas of Orange County; however, we submit these comments as residents and members of the concerned general public.

Compliance with the FTSP:

The FTSP was chartered by the Orange County Board of Supervisors to assure the "rural character of the area and preserve, forever, open space." The current request for exemption to the FTSP is not in keeping with the spirit or letter of the plan. Furthermore, such exemptions only serve those who would gain financially by such exemptions and do not serve the intended constituents, area residents or the planned protection envisioned by the plan.

We find this request inappropriate, unfair and a blatant disregard for the development guidelines that all residents must comply with. It is no coincidence the new project cannot comply with FTSP guidelines; it is simply too destructive. Just because a project cannot comply does not warrant exemption; it is simply inappropriate planning, and that planning process must be revisited.

Cumulative impacts:

As you know this is not the only project currently being considered for this area. Unfortunately, each project is only evaluated with regard to itself and not for its cumulative impact on the environment. Water quality is a key component of this certain degradation and to ignore such cumulative impacts is not only a dereliction of duty and responsibility but an error in favor of an exception for a special interest project.

We encourage you to be diligent and objective in your analysis, not cursory and subjective.

Specific projects include the planned RPLA facility, SaddleCreek and SaddleCrest and the development at the Rancho Mission Viejo. All projects will increase overall pollutant loads and receiving waters should be properly analyzed. We ask that your agency require the applicant to comply with this request and address critical concerns of FTSP compliance and protection of precious water quality resources.

Sincerely,

Richard and Patti Gomez

Attachment E

PDSD

04/30/02
Manager
OCPDS/Environmental Planning Services Division
Sanita Ana, CA 92702

RE: EIR 566
Saddleback Meadows

As a longtime resident of Orange County, my wife and I are strongly opposed to further residential growth in South County and cannot support a Zone Change to the Foothill/Trabuco Specific Plan. Mission Viejo has done enough already with the enormous amount of homes and apartments being developed off of El Toro road between Live Oak and Marguerite.

Sincerely,

Mr. & Mrs. Michael Hodges
28491 Cedar Ridge
Trabuco Canyon, CA 92679

June 7, 2002 Pg. 1 of 5

Mr. Grieman, Project Manager
Environmental Planning Services Division
Planning and Development Services Department
County of Orange
P.O. Box 4048 (300 N. Flower Street)
Santa Ana, California 92702-4048

Sent via FAX to (714) 834-~~5413~~ 6132 and by U.S. Postal Service

RE: Comments on Draft Revised Subsequent EIR 566 (State Clearinghouse No. 1996121072) for Saddleback Meadows.

Dear Mr. Grieman:

My name is Kathleen Stockwell and I reside in Mission Viejo. **Please include my entire comment in the official record of proceedings for this project.**

Of major concern are the sensitive biological resources that are present at Saddleback Meadows, and in particular the proposed mitigation and related hydrological/water quality issues closely related to the preservation of these resources. The Riverside fairy shrimp (Streptocephalus woottoni), present at Saddleback Meadows, is a Federal endangered species with a USFWS recovery priority of 5C, indicating "that it is a species facing a high degree of threat and having a low potential for recovery" (USFWS Recovery Plan for Vernal Pools of Southern California, Sept. 1998, pg. 19). This extremely rare, beautiful, and wonderful species has very limited geographic distribution, existing only in southern California. Another Branchiopod that exists in one of the Saddleback Meadows ephemeral pools, Cyzicus californicus (a "clam"shrimp) is equally fascinating and beautiful, and is related to fossil clam shrimps that date back in the fossil record ca. 350 million years!

DRSEIR566 implies that the "pilot" mitigation proposed to artificially create "ephemeral ponds/vernal pools" will bring the direct and significant impact to the existing ephemeral pools and the Riverside fairy shrimp to a less than significant level. This assumption is based on insufficient scientific evidence, since **this type of mitigation is "experimental in nature with many uncertainties"** (USFWS Biological Opinion for Saddleback Meadows, pg.19). The Riverside fairy shrimp, as a highly endangered species having a low potential for recovery, deserves the highest level of protection where it exists, and it is not being afforded this protection by allowing experimental mitigation that has a high potential for failure.

The "Implementation Plan/Rationale for Expecting Implementation Success" (Appendix I.2, section VI. pg.9) cites as justification for this mitigation a "recent review of vernal pool rehabilitation and creation projects" which mentions:

*Ephemeral ponds created in San Diego County where **one obligate vernal pool plant** (Pogogyne abramsii) was sustained 5-10 years adjacent to existing habitat.

*A Del Sol Reserve vernal pool project in Santa Barbara County that demonstrated "pools created and restored in 1986 are self-sustaining and **support native vernal pool plant species".**

***One vernal pool construction project in Folsom, California** where density and composition of macroinvertebrate populations, including "several" species of fairy shrimp, were similar to adjacent reference pools. (Rogers 1998).

What justification do these few and poorly explained examples provide? The first two give vernal pool **plant** restoration as examples. Furthermore, upon examination of the Folsom project in Sacramento County, California (Aquatic Macroinvertebrate Occurrences and Population Trends in Constructed and Natural Vernal Pools in Folsom, California, D. Christopher Rogers, 1996) :

*This project is geographically far removed from southern California, and cannot represent unique ecological parameters that exist here.

*The two kinds of fairy shrimp occurring in the pools at the Folsom project are different species with requirements that vary from the southern California Riverside Fairy Shrimp. For example, both of these species, the Vernal Pool Fairy Shrimp (Branchinecta lynchi) and the California Fairy Shrimp Linderiella packardi), develop to maturity in less time than the Riverside Fairy Shrimp. The Riverside Fairy Shrimp needs 1-2 weeks to hatch and another 7-8 weeks to reach maturity. The span in which the right conditions can occur must cover several months, not just two. This strongly suggests that created pools that are **only required to hold rainwater for a minimum of 60 days** at depths required for the Riverside Fairy Shrimp will not be adequate for long term survival of the Riverside Fairy Shrimp. Ephemeral pools in which large numbers of Riverside Fairy Shrimp can successfully breed in Orange County are deep pools that persist for four to five months, or even longer. The paper presented by D. Christopher Rogers on the Folsom project states that, **"Because these constructed pools are mitigation for impacted vernal pools, they need to demonstrate that they are functioning ecologically like naturally occurring vernal pools to be considered adequate compensation".** This takes time, a minimum of 10 years according to the USFWS, and should not be allowed as an experiment unless the original ephemeral pools and their watersheds are left entirely intact until success is proven.

Why is it that only a five year monitoring program is mentioned in the EIR, when 10 years is required? Why is deferral of mitigation allowed in case of failure? This is not acceptable.

* The Folsom project that is quoted in the EIR only presented results of the first two years in a nine year monitoring program, which began in 1994. **What is the current status of its results, and how does this relate to such projects in Orange County?**

*The Folsom project site contains 273 natural vernal pools on 246.9 hectares, where 37 pools were constructed. The high number of natural vernal pools alone points to a higher chance for success of the created pools, in my opinion. This project, although admirable, does not seem to be in itself adequate justification for experimental mitigation for an entirely different species of endangered fairy shrimp and a different set of ecological circumstances in Orange County, where such high numbers of natural vernal pools never occur in one complex.

The USFWS Biological Opinion for Saddleback Meadows, pg. 13 and 18, state: "**The 9 ponds at Saddleback Meadows represent 53 percent of the 17 remaining occupied pools/ponds, making it the largest fairy shrimp habitat complex found in Unit 2**" (L.A. Basin-Orange Management Area). "Implementation of the proposed project ...represents a 56 percent loss of fairy shrimp ponds, and a 68 percent loss of the pond basin area, onsite." **Why is it deemed acceptable to gamble with perhaps the most valuable habitat complex for the Riverside Fairy Shrimp in Orange County?** Page 19 of this same Biological Opinion states that "..construction of an artificial impervious layer to retain water [in sandy soils] for a minimum of 60 days..**has never been done successfully**. It is obvious to me that there should be a more concentrated effort to acquire the Saddleback Meadows property and preserve it as it now is. It is a real treasure for Orange County, and very important for the NCCP process as well, since it **"represents the only low elevation wildlife corridor /linkage between the Central and Southern Subregionsof the Orange County NCCP planning areas."** (pg. 18) Much effort has gone into the NCCP, but it seems the endangered fairy shrimp species and their ephemeral/vernal pool habitats of Orange County were never an integral part of the NCCP planning as they should have been. **The proposed wildlife corridor as presented in DSEIR566 is also inadequate,** being much too narrow and poorly designed. Other sensitive species certainly exist at Saddleback Meadows, such as the Catalina and Intermediate Mariposa Lily populations, which have not been adequately considered either. Two well known host plants for the endangered Quino checkerspot butterfly also exist on this site, and should be in the preservation plan since existence of the Quino in Orange County is still possible.

DSEIR566 fails to adequately define, analyze, and show mitigation for the hydrological aspects of the project, my concern is especially related to the proposed ephemeral pool

mitigation. Nuisance water and non-point source pollution appear to be directed into the natural drainage courses, and may seriously alter any chance for a successful mitigation. It seems obvious that such a drastic change in the watershed caused by grading, etc.will alter the natural regime of the ephemeral ponds no matter what "mitigation" takes place, further placing them in jeopardy.

Will you please explain in specific detail how Basins 1,3,4,5,and 6 (shown directly below houses and slopes on Fig.4 of Appendix I.2) will be unaffected by changes in hydrology and water quality? I have observed the "mitigation" carried out at the Santiago Canyon Estates/Beazer project for the Riverside Fairy Shrimp, and it appears to be sadly inadequate for long term survival of this endangered species. It is directly below homes and slopes similar to the illustration in Fig. 4 mentioned above, has multiple rows of PVC irrigation pipe (made of a very toxic material that may leach into the rainwater?) in and around it (for what purpose?), and cement drainage structures of some kind that look very foreign to a so-called "ephemeral pond". The slopes directly above it are landscaped with non-native plants that may require chemicals. **Will you please tell me where the "inoculent" of Riverside fairy shrimp/cysts originated that were put there? Is this questionable mitigation being used as a model for Saddleback Meadows? Please explain the status of the Santiago Canyon Estates "mitigation", and how it relates to Saddleback Meadows.**

My last questions/comments are these:

Page 5 of the USFWS Biological Opinion states that the created ponds must demonstrate the ability to hold **"water"** for a minimum of 60 days. As I have stated above in more detail, a 60 day minimum is not long enough. **Does the term "water" mean natural rainwater only?** Professor Emeritus Clyde Ericksen has stated, "Attempts to maintain these pools, and thus their fairy shrimp populations, by keeping them full with tap water has proven useless. Tap water contains chloramines which kills living shrimps."

Why does the first sentence of point C (Schedule) under section VI of Appendix I.2, pg.9, state that, "Grading is to be completed no later than December 31, 2000". Please explain?

The following should be incorporated into the project proposal as mitigation measures :

1) **A 10 year monitoring program for the ephemeral pool mitigation plan should be in place**, not 5 years. **No** development impacts should be allowed to proceed in any of the nine existing occupied ephemeral pools or their watersheds until this 10 year period has proven that successful mitigation can occur.

2) The **60 day minimum requirement** for created mitigation pools to hold rainwater at depths required for the Riverside Fairy Shrimp (Streptocephalus woottoni) **should be increased to a period appropriate to the life cycle of this particular species.**

Thank you for including and responding to my comments.

Sincerely,

K. Stockwell

Kathleen Stockwell
22792 Orense
Mission Viejo, CA 92691

Planning and Development Services Dept., Orange County
P. O. Box 4048, Santa Ana, CA. 92702-4048

The question which occurs to me, having experienced weekly for several years severe eye irritation with each trip to Saddleback Valley, continually seen the great brown haze of smog, and read that the area ranks among the top as most polluted in the country, how ANY development of the area can be contemplated?

Anything more than "open space, habitat preservation, recreation", and agriculture should not be permitted because it will further exacerbate the already horrendous existing problems, including traffic.

Andy Wing
1244 Victory Walk,
Laguna Beach, CA. 92651

6-23-02
494-2709

Andy Wing
1244 Victory Walk
Laguna Beach CA 92651-1845

Planning and Development Services Dept.,
Orange County
P.O. Box 4048
Santa Ana, CA.
92702-4048

APPENDIX B

STREAMBED ALTERATION ALTERATION AGREEMENT

STATE OF CALIFORNIA - THE RESOURCES AGENCY GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME

South Coast Region (Region 5)
Habitat Conservation Planning
4949 Viewridge Avenue
San Diego, California 92123
Tel. No. (858) 467-4201/02
(858) 467-4299

December 4, 2001

California Quartet
c/o TPG Management, Inc.
ATTN: Pike Oliver
3341 Norris Avenue
Sacramento, CA 95821

Dear: Mr. Oliver

Enclosed is your copy of Streambed Alteration Agreement **5-178-99**. If you agree with the conditions/measures set forth in the agreement, please make a copy, then sign and return both copies to our office for signature. Send the copies to Brad Henderson; Department of Fish and Game; Post Office Box 1879; Redondo Beach, CA 90278. Written notice of your intent to commence project activities needs to be provided to the Department at least five days in advance of commencing project activities.

The California Fish and Game Code requires that you notify the Department in writing within 14 days of receipt of this Proposal as to its acceptability. If you do not respond within this time period you will lose your right to request binding arbitration. For minor changes we suggest you contact the person responsible for writing your agreement prior to sending the written response.

Please be advised the Department cannot execute (sign) your Streambed Alteration Agreement without your:

- CEQA (California Environmental Quality Act) document,
- certified Notice of Determination (NOD),
- CEQA Findings (if applicable), and
- proof of payment of CEQA document filing fee, or filing of De Minimis Fee Exemption

If these documents were not included with the Streambed Alteration notification package, please provide copies of these documents when you return the Agreement to the Department for the Department's signature. If the lead agency determined that the project is exempt from CEQA analysis and public comment, please provide a copy of the Notice of Exemption or other appropriate documentation. Also, be advised that this Agreement is subject to change upon receipt and review of your CEQA documents.

If you have any questions regarding the proposed conditions please contact me at (310) 214-9950.

Thank you for your cooperation in this matter.

Brad Henderson
Environmental Scientist
Habitat Conservation Planning, Region 5

Enclosure: SAA #5-178-99 CC (via Fax): Mike McCollum; Barry Jones; Joe LaCava

CALIFORNIA DEPARTMENT OF FISH AND GAME
4949 Viewridge Avenue
San Diego, California 92123

Notification No. 5-178-99
Page 1 of 9

December 4, 2001

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and Pike Oliver, 3341 Norris Avenue Sacramento, CA 95821, hereinafter called the Operator, is as follows:

WHEREAS, pursuant to Section 1603 of California Fish and Game Code, the Operator, on the 15th day of June, 1999, notified the Department that they intend to divert or obstruct the natural flow of, or change the bed, channel, or bank of, or use material from the streambeds of, the following waters: Aliso Creek, unnamed tributaries and impoundment (Pond A); unnamed tributary drainages to Oso Creek, unincorporated Orange County, California, Section 4, Township 6 South; Range 7 West, SBBM.

WHEREAS, the Department (represented by Brad Henderson during a site visit on the eighth day of March, 2001) has determined that such operations may substantially adversely affect those existing fish and wildlife resources within the Aliso Creek and Oso Creek and tributaries thereto within the project site and the vicinity of the site, specifically identified as follows: invertebrates: Riverside fairy shrimp (*Streptocephalus woottoni*); amphibians: western spadefoot toad (*Scaphiopus hammondii*), California treefrog (*Hyla cadaverina*), western toad (*Bufo boreas*), California slender salamander (*Batrachoseps attenuatus*); reptiles: orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Gerrhonotus multicarinatus*), western skink (*Eumeces skiltonianus*), gopher snake (*Pituophis melanoleucus*) ; birds: yellow-breasted chat (*Icteria virens*), western yellow warbler (*Dendroica petechia brewsteri*), song sparrow (*Melospiza melopdia*), Cooper's hawk (*Accipiter cooperii*), Nuttall's woodpecker (*Picoides nuttallii*), bushtit (*Psaltriparus minimus*), spotted towhee (*Pipilo maculatus*); mammals: desert cottontail (*Sylvilagus auduboni*), California ground squirrel (*Spermophilus beecheyi*), bobcat (*Lynx rufus*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*) ; riparian vegetation which provides habitat for those species: western sycamore (*Platanus racemosa*) willows (*Salix* spp.), mule fat (*Baccharis salicifolia*), mugwort (*Artimesia douglasiana*), laurel sumac (*Malosma laurina*), coast live oak (*Quercus agrifolia*), Mexican elderberry (*Sambucus mexicana*), and all other aquatic and riparian wildlife resources in the area.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife resources during the Operator's work. The Operator hereby agrees to accept the following measures/conditions as part of the proposed work.

If the Operator's work changes from that stated in the notification specified above, this Agreement is no longer valid and a new notification shall be submitted to the Department of Fish and Game. Failure to comply with the provisions of this Agreement and with other pertinent code sections, including but not limited to Fish and Game Code Sections 5650, 5652, 5937, and 5948, may result in prosecution.

Nothing in this Agreement authorizes the Operator to trespass on any land or property, nor does it relieve the Operator of responsibility for compliance with applicable federal, state,

or local laws or ordinances. A consummated Agreement does not constitute Department of Fish and Game endorsement of the proposed operation, or assure the Department's concurrence with permits required from other agencies.

This Agreement becomes effective on the date of Department's signature and terminates December 31, 2004 for project construction only. This Agreement shall remain in effect for that time necessary to satisfy the terms/conditions of this Agreement.

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

1. The following provisions constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that the Operator is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this Agreement shall be subject to separate notification pursuant to Fish and Game Code Sections 1600 et seq.

Project Description

2. Saddleback Meadows is a 222-acre site located in an unincorporated area of southeastern Orange County approximately 16 miles inland from the Pacific Ocean within the foothills of the Santa Ana Mountains. The parcel is situated on the northeastern side of Santiago Canyon Road, approximately 1,000 feet south of its intersection with Live Oak Canyon Road (S-19) in the Foothill-Trabuco area. Aliso Creek runs north and south along the western boundary of the site, and drains the central and western portion of the site. Streams in the southeastern portion of the site are tributary to Oso Creek. Residential communities are located to the south and west, pasture land is located to the east, and Saint Michael's Abbey is located to the north. The project site supports 8.47 acres of Department jurisdictional streams, including 0.34 acre of impounded intermittent ponds, 4.32 acres of wetland/riparian vegetation, and 3.58 acres of streambeds. The proposed project would impact approximately 3.78 acres of Department jurisdiction, including 0.11 acre of intermittent Pond A, 2.22 acres of wetland vegetation (1.51 acres of mule fat scrub, 0.61 acre of oak woodland, and 0.10 acre of sycamore woodland), and 1.45 acres of ephemeral streambeds traversing upland habitats.

The Operator proposes to alter the streambeds and impoundments to develop 283 single-family residential lots, roads, and recreational trails on approximately 121.8 acres of the property. An additional 28.2 acres will be impacted by remedial grading and shall be revegetated with coastal sage scrub vegetation. The Operator will avoid portions of Drainages (i.e., jurisdictional streams) 5, 10, 14, 15, and 16 and associated oak woodlands near the center of the property as identified in Figure 3 of the *Jurisdictional Delineation of the Saddleback Meadows Property in Orange County* dated March 2000 prepared by Chambers Group, Inc. The remedial grading areas occurring within proposed open space will be recontoured to preconstruction elevations, revegetated and preserved as open space. The remaining remedial grading areas will be landscaped for fuel management purposes. A total of approximately 159 acres of the property's 222 acres will be dedicated in permanent open space, including 90 acres dedicated to the County of Orange as an extension of O'Neill Regional Park. Manufactured slopes extending outside of the fuel modification zones will be revegetated with native vegetation and dedicated as open space.

3. The agreed work includes activities associated with No. 2 above. Specific work areas are described in the documents submitted by the Operator, including the Notification of Lake or

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

Streambed Alteration dated June 15, 1999, the revised Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas dated May 21, 2001 prepared by Helix Environmental Planning, Inc., the Draft Biological Resources Technical Report dated June 1999 prepared by Chambers Group, Inc., the Biological Assessment dated July 6, 2000 prepared by Helix Environmental Planning, Inc., the Jurisdictional Delineation dated March 2000 prepared by Chambers Group, Inc., and the Addendum to Certified Final Subsequent Environmental Impact Report 566 dated August 1998. The project shall be implemented as proposed in the aforementioned documents unless directed differently by this agreement.

4. The Operator shall not impact more than 3.78 acres of jurisdictional streams. Disturbance to streambeds or removal of vegetation beyond the 3.78-acre jurisdictional area to be impacted, as described in the documents referenced in Condition Number 3, will require additional mitigation at an acreage ratio of 5:1. The form of additional mitigation, if necessary, shall be determined by the Department and may include on- or off-site riparian/wetland habitat creation, enhancement, or preservation.

Mitigation

5. Mitigation for project impacts has been proposed in the Saddleback Meadows Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas dated May 21, 2001 prepared by Helix Environmental Planning, Inc. (Mitigation Plan). The Operator shall submit a revised Saddleback Meadows Conceptual Mitigation and Monitoring Plan reflecting recent project changes (reduction of impacts) to the proposed project and mitigation measures within 60 days of executing this agreement. Specific locations for the off-site creation and/or protection of riparian habitat and ephemeral streams shall be described in the revised Mitigation and Monitoring Plan.

6. The Operator shall mitigate for the loss of 0.11 acre of intermittent ponds at a 3:1 ratio, or a total of 0.33 acre. A total of 0.82acres of intermittent ponds will be created, 0.49 acre in excess of the 3:1 ratio. The excess intermittent pond mitigation totaling 0.49 acre shall apply toward mitigation for impacts to mule fat scrub. Impacts to 2.22 acres of wetland vegetation (1.51 acres of mule fat scrub, 0.61 acre of oak woodland, and 0.10 acre of sycamore woodland) will be mitigated at a 3:1 ratio with the on-site creation of 2.74 acres of wetlands, the off-site creation of 2.25 acres of riparian habitat, the off-site preservation and enhancement of 1.18 acres of riparian habitat, and the aforementioned 0.49-acre credit from the creation of intermittent ponds.

Creation of ponds and streambeds and the surrounding wetland vegetation on site requires the excavation, grading, and contouring in disturbed upland areas or areas disturbed by remedial grading to form basins or streambeds, and revegetating the margin of these areas with riparian cuttings, container stock, and seeds of native understory species. The depth and shape of the constructed basins will be based on the contours of the existing ponds. In addition, soils from the bottom of the existing ponds will be collected prior to impacts and the collected soils will be used to innoculate the created ponds. Approximately 0.86 acre of mule fat scrub will be created around the pond margins. Additional mitigation measures include relocation and monitoring of western spadefoot toad, and the installation of fencing to deter vandalism and other disturbance of the mitigation sites. The fencing around the ponds will be maintained until mitigation success criteria have been met and will be of a 5-strand rounded wire design.

Creation and enhancement of riparian and oak woodland habitat off site is proposed on the Hidden Ranch property. If the Hidden Ranch mitigation bank is not available for use, the

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

Operator may propose alternate locations subject to approval by the Department. The final location(s) and site-specific mitigation measures shall be described in the revised Mitigation Plan.

Impacts to 1.45 acres of CDFG-jurisdictional streambeds will be mitigated on site by the creation of streambeds within areas proposed for remedial grading previously supporting streambeds (0.44 acre), and off site by purchase of 1.01 acre of existing streambeds at the Hidden Ranch Mitigation Bank or other location acceptable to the Department. Impacts will be mitigated at a 1:1 ratio for a total of 1.45 acres to be purchased.

7. All mitigation areas shall be protected in perpetuity under a conservation easement prior to initiation of project-related streambed impacts. The format of the conservation easement shall be approved by the Department's legal advisor prior to the conveyance of the easement. The 1.01-acre streambed(s) shall also be purchased and protected in perpetuity under an approved conservation easement prior to project-related streambed impacts.

8. The Operator will be responsible for financing pre-grading plan hydrological testing, installation, maintenance, and monitoring of the habitat creation and enhancement areas. In order to ensure the success of mitigation, the Operator will enter into a five-year, secured agreement to cover the projected cost to install, monitor, and report on the mitigation. The Operator shall submit a draft of the bond and/or letter of credit with an itemized cost list to the Department for approval at least 60 days prior to impacting jurisdictional streams. The operator shall submit the final bond and/or letter of credit for the amount approved by the Department within 20 days of receiving approval of the draft bond/and or letter of credit. Either of the following options would satisfy the security requirement:

(Option A) The agreement shall be in the form of a 120 percent letter of credit in favor of the Department for mitigation costs within the entire 8.44-acre area to be created or enhanced.

(Option B) The agreement shall be in the form of: (1) a 120 percent bond or letter of credit in favor of the Corps and/or Service for mitigation costs associated with Corps jurisdiction; and (2) a 120 percent letter of credit in favor of the Department for mitigation costs associated with the remaining acreage (i.e., Department jurisdiction) such that the entire 8.44-acre area to be created or enhanced is covered by both secured agreements.

9. Grading of the mitigation areas is to be completed no later than December 31, 2004. Planting and then seeding shall occur between November 15 and February 15 to take advantage of winter rains. Since irrigation will be provided for the container stock, planting (but not seeding) may occur into early spring. Container stock will be installed no later than April 30; cuttings will be installed no later than February 1, and seed will be planted no later than December 31.

10. Grading associated with providing adequate hydrology for habitat creation or riparian revegetation on the project site and at the Hidden Ranch site shall not impact nesting birds. Therefore, grading shall not take place in vegetated areas from March 1 to September 15 to avoid impacts to nesting birds. Alternately, an independent qualified biologist may perform a nesting bird survey no more than three days prior to grading. The results of the nesting bird survey, including site conditions and a list of all vertebrate species observed, shall be provided to the Department for concurrence prior to grading. If active nests are observed, the operator shall provide a buffer zone of at least 100 feet (300 feet for raptors) until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the project.

11. Grading associated with providing adequate hydrology for riparian revegetation on the project

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

site or at the Hidden Ranch mitigation site shall not impact any California Species of Special Concern. The day before grading, an independent qualified biologist shall perform a survey for Coast Range California newt (*Taricha torosa torosa*) in reaches of the Creek and adjacent areas to be disturbed by excavation, deposition of overburden, or staging of vehicles to ensure that the grading or other activities do not impact individuals. Any individuals encountered shall be relocated at least 1/4 mile upstream from the disturbance in areas of suitable habitat. Relocated individuals shall be dispersed and not released in a single area.

12. Mitigation site preparation shall be carried out pursuant to condition nos. 22-26; 28-31; and 33-39 below.

13. Plant material (seeds, container plants and cuttings) to be used for the revegetation effort will be derived from on-site material at each site. On-site material is anticipated to be adapted to the site conditions and exhibit local genotypes.

14. Pond basins 1, 2, 5 and 8, as identified in Figure 4 of the *revised Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas* dated May 21, 2001 prepared by Helix Environmental Planning, Inc., shall be constructed concurrently with grading. A grading plan will be developed for all the new ponds based on their position in the watershed, and the contours of the existing ponds. The new ponds will mimic as closely as possible the depths and areas of the existing ponds. Soils at the proposed sites shall be tested for permeability characteristics prior to initiation of pond construction. Rough grading contours will be deep enough to allow for the application of a surface soil layer removed from the existing ponds. Only non-vegetative erosion control measures may be used in areas with native vegetation. Such erosion control measures may include sandbags, soil binders, waterbars, trenches, or dissipators. These measures preclude the introduction of non-native weedy species into the seed bank of areas with native vegetation. Drainage and sedimentation control devices shall be routinely cleaned, maintained, and repaired prior to and during the rainy season for three years following completion of project grading. All repairs to these systems will be immediately executed to minimize erosion problems. Garbage and debris will be removed from all areas of the mitigation site. Dead or downed wood will not be removed.

15. After finish grading of the relocation ponds, the upper 24 inches of soils from existing ponds proposed to be impacted will be collected and spread over the bottom of the relocation ponds in two layers. The top layer shall be 1" deeper than the cracks in the soil and the second layer will be the remaining depth to 24". Initial grading of the mitigation site must include over excavation to allow for placement of the salvaged soil. Relocation ponds must also support a sufficient prey base population. If ponds do not support sufficient algal populations they will be inoculated with resources from the original ponds.

16. Western spadefoot toad individuals to be impacted shall be relocated and dispersed within all of the created ponds.

17. The operator shall retain an independent qualified biologist to survey all of the pond basins on site to be impacted to identify western spadefoot toad activity. Surveys to identify tadpoles shall begin the first week of January or following the first one-inch or greater rain event, and will be repeated as necessary to monitor their development. An estimate of the total larval population for each pond and total density for all of the impacted ponds shall be recorded and provided to the Department in monitoring reports. The biologist shall attempt to capture approximately 25% of the western spadefoot tadpoles present in each impacted pond prior to metamorphosis. The tadpoles shall be relocated by netting the individuals, placing them in containers with pond water, and quickly moving the containers to each designated translocation pond. Once the water in the containers has equilibrated to the same temperature as the translocation pond, the tadpoles shall

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

be carefully released into the pond. An estimate of the number of tadpoles captured and released into each translocation pond shall be recorded and provided to the Department in monitoring reports. Because western spadefoot toad are episodic breeders, larvae may not be present for collection during the first year. If spadefoot toad larvae are not present during the first year, spadefoot toadlets shall be collected from the preserved ponds as described in Condition 18 below.

18. The juvenile western spadefoot toad relocation shall occur at each impacted pond during the peak day of metamorphosis and the day immediately following. Spadefoot toadlets (recently metamorphosed juveniles) will be relocated from all impacted ponds supporting spadefoot toad into the ponds created in advance of construction. The toadlets shall be relocated prior to leaving the ponds by netting the individuals, placing them in containers with pond water, and moving the containers to the translocation pond. Once the water in the containers has equilibrated to the same temperature as the translocation pond, the toadlets shall be carefully released into the pond. An effort shall be made to remove all the toadlets from the ponds to be impacted. An estimate of the number of toadlets captured from each impacted pond and released into each created pond shall be recorded and provided to the Department in monitoring reports. If toadlets are unavailable for collection during the first year due to low precipitation, the Operator shall collect and relocate approximately 25% of the toadlets from the site's preserved ponds during at least one subsequent year.

19. Maintenance/ monitoring methods and performance criteria for revegetation are provided on pages 18-23 of the Mitigation Plan. A mule fat scrub reference site shall be designated with the concurrence of the Department. Mule fat scrub shall achieve a native cover of 80% by the third year after planting, 90% by the fourth year after planting, and 100% by the fifth year after planting. Native species diversity of the planted mule fat scrub will be 60%, 70%, and 80% of the designated reference site in years three, four, and five, respectively. In planted oak and sycamore woodland habitats, the mitigation sites shall achieve a native cover of 40% by the third year after planting, 55% by the fourth year after planting, and 65% by the fifth year after planting. The planted oaks shall achieve at least 50% survivorship by the end of the fifth year. Replacement plants shall be monitored with the same survival and growth requirements for 5 years after planting.

20. Monitoring of the spadefoot toad relocation sites shall include annual bimonthly surveys for tadpoles in the translocation ponds between January 1 and June 1. An estimate of the number of tadpoles in each translocation pond shall be recorded, along with an estimate of tadpole density for all of the translocation ponds. Because the spadefoot toad is reported to become reproductively mature within two to three years, the identification of tadpoles at the relocation sites during years three through five following the initial relocation may indicate the successful breeding of the relocated individuals. The success criteria will be the natural reproduction of spadefoot toad at the relocation sites, indicated by the presence of tadpoles in the relocation ponds. If spadefoot toad tadpoles are observed in each of the relocation ponds (i.e., Ponds 1, 2, 5, and 8) at any time during the monitoring period beginning the second year after the ponds have been created, filled with water, and stocked with spadefoot tadpoles, the translocation effort shall be deemed successful.

21. An annual report shall be submitted to the Department by January 1 of each year for five years after planting. This report shall include: (1) a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year; (2) a copy of the agreement and any attachments including Special Conditions and subsequent Letters of Modification; (2) an analysis of all qualitative and quantitative monitoring data including spadefoot toad monitoring results; (3) copies of all monitoring photographs; and (4) maps identifying monitoring areas, transects, planting zones, and so forth as appropriate. Remedial recommendations, if necessary, shall be made in the annual reports as well as a

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

summary of whether or not the mitigation is meeting the success criteria for the appropriate year. Monitoring and performance criteria will be tied to implementation. The first annual monitoring event will occur in June after the first full growing season. Annual technical monitoring reports shall be submitted to the Department by the end of August of each year to ensure that there is adequate time remaining in the dry season to implement any necessary contingency measures.

Specific Work Conditions to Protect Fish and Wildlife Resources

22. Riparian/wetland habitat and ponds to be retained in open space shall be protected from construction disturbance through construction fencing and silt fencing or other erosion protection devices around the construction limits to prevent the flow of sediment into the ponds.

23. The removal of vegetation within any streams from March 1 to September 15 must avoid impacts to nesting birds. If vegetation must be cleared within this period, an independent qualified biologist may perform a nesting bird survey no more than three days prior to grading. The results of the nesting bird survey, including site conditions and a list of all vertebrate species observed, shall be provided to the Department for concurrence prior to grading. If active nests are observed, the operator shall provide a buffer zone of at least 100 feet (300 feet for raptors) until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the project.

24. In areas outside of the mass grading footprint, access to the work site shall be via existing roads, access ramps and previously disturbed areas. Vehicles shall not cross streams at any time to gain access to the work site.

25. No equipment shall be operated in ponded or flowing areas.

26. Disturbance or removal of vegetation shall not exceed the limits approved by the Department.

27. Installation of bridges, culverts, or other structures shall be such that water flow is not impaired. Bottoms of temporary culverts shall be placed at stream channel grade; bottoms of permanent culverts shall be placed at or below stream channel grade.

28. Preparation shall be made so that runoff from steep, erodible surfaces will be diverted into stable areas with little erosion potential. Frequent water checks shall be placed on dirt roads, cat tracks, or other work trails to control erosion.

29. Water containing mud, silt or other pollutants from aggregate washing or other activities shall not be allowed to enter a lake or flowing stream or placed in locations that may be subjected to high storm flows.

30. Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

31. Staging/storage areas for equipment and materials shall be located outside of the stream.

32. If a stream's low flow channel, bed or banks/lake bed or banks have been altered, these shall be returned as nearly as possible to their original configuration and width, without creating future erosion problems.

33. Spoil sites shall not be located within a stream/lake, where spoil shall be washed back into a stream/lake, or where it will cover aquatic or riparian vegetation.

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

34. Materials associated with project related activities shall be prevented from contaminating the soil and/or entering the waters of the state. These materials include (but are not limited to) the following: raw cement/concrete or washings thereof; asphalt; paint or other coating material; oil or other petroleum products; or any other substances which could be hazardous to aquatic life. These materials, placed within or where they may enter any stream, by the Operator or any party working under contract, or with the permission of the Operator, shall be removed immediately.

35. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

36. The Operator shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the operator to ensure compliance.

37. No equipment maintenance shall be done within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.

38. The Operator will submit final grading plans to the Department for approval prior to initiating impacts. Avoidance areas will be clearly delineated on the grading plans.

39. The Operator shall request an extension of this agreement prior to its termination. Extensions may be granted for up to 12 months prior to the date of termination of the agreement and are subject to Departmental approval. The extension request and fees shall be submitted to the Department's South Coast Regional Office at the above address. If the Operator fails to request the extension prior to the agreement's termination then the Operator shall submit a new notification with fees and required information to the Department. Any activities conducted under an expired agreement is a violation of Fish and Game Code Section 1600 et. seq. The Operator may request up to a maximum of one extension of this agreement.

40. The Operator shall **provide a copy of this** Agreement **to all contractors, subcontractors, and the Operator's project supervisors. Copies of the** Agreement **shall be readily available at work sites at all times during periods of active work** and must be presented to any Department personnel, or personnel from another agency upon demand.

41. The Department reserves the right to enter the project site and mitigation areas at any time to ensure compliance with terms/conditions of this Agreement.

42. The Operator **shall** notify the Department, **in writing, at least five (5) days prior to initiation of construction (project) activities and at least five (5) days prior to completion of construction (project) activities.**

43. It is understood the Department has entered into this Streambed Alteration Agreement for purposes of establishing protective features for fish and wildlife. The decision to proceed with the project is the sole responsibility of the Operator, and is not required by this agreement. **It is further agreed all liability and/or incurred cost related to or arising out of the Operator's project and the fish and wildlife protective conditions of this agreement, remain the sole responsibility of the Operator.** The Operator agrees to hold harmless the State of California and the Department of Fish and Game against any related claim made by any party or parties for

STREAMBED ALTERATION CONDITIONS FOR NOTIFICATION NUMBER: 5-178-99

personal injury or any other damages.

44. The Department reserves the right to suspend or cancel this Agreement for other reasons, including but not limited to the following

a. The Department determines that the information provided by the Operator in support of the Notification/Agreement is incomplete or inaccurate;
b. The Department obtains new information that was not known to it in preparing the terms and conditions of the Agreement;
c. The project or project activities as described in the Notification/Agreement have changed;
d. The conditions affecting fish and wildlife resources change or the Department determines that project activities will result in a substantial adverse effect on the environment.

45. Before any suspension or cancellation of the Agreement, the Department will notify the Operator in writing of the circumstances which the Department believes warrant suspension or cancellation. The Operator will have seven (7) working days from the date of receipt of this notification to respond in writing to the circumstances described in the Department's notification. During the seven (7) day response period, the Operator shall immediately cease any project activities which the Department specified in its notification. The Operator shall not continue the specified activities until that time when the Department notifies the Operator in writing that adequate methods and/or measures have been identified and agreed upon to mitigate or eliminate the significant adverse effect.

CONCURRENCE

OPERATOR

_____
(signature) (date)

_____
(Type or print name and title)

CALIFORNIA DEPT. OF FISH AND GAME

_____
(signature) (date)

C.F. Raysbrook, Regional Manager

Prepared by: Brad Henderson, Environmental Scientist

APPENDIX C

LETTER FROM DENNIS MURPHY

UNIVERSITY OF NEVADA RENO

Ecology, Evolution and
Conservation Biology/314
134 Fleischmann Agriculture
Reno, Nevada 89557
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5 July 2002

Mr. Thomas Mathews
Planning and Environmental Services
County of Orange
P.O. Box 4048
Santa Ana, CA 92702

Dear Tom,

It's been almost a decade since we last crossed paths, and it's hardly a surprise that again we touch bases regarding an issue related to NCCP. Developers of the Saddleback Meadows property adjacent to El Toro Road asked me to visit their property and to convey to you my observations in reference to a letter jointly signed by staff of the U. S. Fish and Wildlife Service and California Department of Fish and Game (to Tim Neely, dated 26 June 2002). The landowner's concern involves the contention by the agencies that the proposed project will sever landscape linkages between reserved lands in "lower elevation Santa Ana Mountain foothills," thereby compromising the persistence of key (but not state or federal listed) species, and in turn compromising the goals of NCCP. The immediate concern is attenuated by a long history of negotiations over this property, previously agreed upon mitigations, and (apparently) full resolution of listed species issues.

As chief architect of the original guidelines for NCCP, I must admit to being heartened by the wildlife agencies' general approach to multiple species planning, which calls not just for reserve designs to meet the habitat needs of imperiled species, but goes further to add landscape connectivity that can be necessary to sustain certain more abundant and wide ranging species, which can play important roles in ecosystem function. Ultimately, conservation of species at risk requires protection of all of the constituent elements of their habitats, including species not equally so imperiled. Unfortunately for this developer, the regulatory approach of providing connectivity to more common species is being applied on the Saddleback Meadows property without any clear benefit to species of concern, either common or imperiled.

Any extant wildlife corridor through Saddleback Meadows currently must be funneling dispersing animals from the extensive open spaces of O'Neill Regional Park and the Cleveland National Forest toward busy El Toro Road and the small (and degraded) low elevation coastal sage scrub patches beyond, or to O'Neill Park from the National Forest, a route that is redundant with available reserve lands. While those sage patches north and east of the Foothill Transportation Corridor have habitat value for California Gnatcatcher, which can fly between them, they have little value and make no sense in planning for larger mammals -- deer have access to much superior open spaces to the north and east, mountain lions should hardly be encouraged into small natural spaces in already suburbanized Orange County, and coyotes, they will find their ways to those patches with or without the proposed development. The fates of gnatcatcher and other coastal sage-dependent species in this lower elevation corner of Orange County's two NCCP's are already sealed. The proposed project will make no difference. The local fates of large mammals are not going to be dependent on engineered habitat stringers and pathways within suburban development, but on the wildlands of O'Neill Regional Park, Whiting Ranch Wilderness Park, and National Forest lands beyond.

This observation begs the biological rationale for the corridors map presented in the draft EIR (figure 4.8.4) referenced on page 3 of the agency letter. A more nonsensical map would be hard to conjure up. Two of four named "corridors," central and southern, show connections between open space reserves (to the east) west through a transportation gauntlet to essentially dead-ended habitat remnants. The other two "corridors," northern and eastern, are not corridors in any application of the term. They are open space habitat; in fact reserves, not corridors.

The purpose of a wildlife corridor is to facilitate the dispersal or movement of organisms between reserve land units that otherwise would be isolated. In 1993, my colleagues and I on the scientific review panel to NCCP called on land planners to include such corridors where necessary to connect reserves. This is not, however, such a circumstance.

At lower elevations northeast of the foothill Transportation the gnatcatcher will fly between remnant patches of coastal sage scrub without corridors and despite extant land barriers. Reserved lands are continuous at higher elevations; animal dispersal will not require corridors. In between and around currently proposed Saddleback Meadows development, anticipated open space set asides should contribute to local and regional species conservation, facilitate dispersal of many species known to successfully inhabit mosaics of developed land, and provide important ecosystem services, such as controlling local hydrodynamics and stabilizing soils. What Saddleback Meadows developers cannot

offer the Orange County NCCPs is a wildlife corridor where one simply does not and cannot exist.

It is my best professional judgement that the agencies's call for a low elevation wildlife corridor across the Saddleback Meadows property is not warranted and should be rejected. If I can be of any further assistance please feel free to contact me at (775) 784-1303.

Sincerely,

Dennis D. Murphy, PhD.
Professor and Program Director

APPENDIX D

CONCEPTUAL WATER QUALITY MANAGEMENT PLAN

CONCEPTUAL WATER QUALITY MANAGEMENT PLAN

FOR

SADDLEBACK MEADOWS PROPOSED VTTM 15230

Development for 299 Residential Home Sites

COUNTY OF ORANGE, CA

November 21, 2001

PREPARED FOR:

CALIFORNIA QUARTET, LTD.
TPG MANAGEMENT, INC.
3323 Watt Avenue, Box 291
Sacramento, CA 95821-3609
(916) 482-7200

PREPARED BY:

HUNSAKER & ASSOCIATES IRVINE, INC.
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TABLE OF CONTENTS

I. Purpose

II. Existing Conditions

III. Developed Conditions

IV. Best Management Practices

a. Introduction

b. Highlights

c. Selection Criteria

V. Summary

EXHIBITS

1. Riverine exhibit (cross section)

I. PURPOSE

The goal of the Saddleback Meadows Water Quality Management Plan (WQMP) is to reduce pollutants and/or specific sources of pollution which affect or may affect the project property as well as the downstream properties in its development. Such reductions should result in cleaner water in onsite runoff, storm water and incidental flows, including those flows emptying towards offsite facilities and features downstream.

When implemented, the pollution control measures proposed by the WQMP will create cleaner water runoff associated with development in compliance with all applicable water quality ordinances and laws. These laws include, but are not limited to, San Diego Region, California State Regional Water Quality Control Board directives; the County of Orange's NPDES Drainage Area Management Plan (DAMP); and the Clean Water Act of the United States of America.

II. EXISTING CONDITIONS

A. Saddleback Meadows

Saddleback Meadows is located primarily within the Aliso Creek Watershed area. Its hillside topography is incised with drainage courses that mainly drain west to Aliso Creek. Aliso Creek is located just west of the project's western flank. Some remaining courses drain south to Oso Creek. Oso Creek is located south of the project's southeast boundary.

The vacant, 222.2 acre project site comprises hillside topography covered with native grasses and dirt trails. Remnants related to agricultural and ranching uses employed since the 1930's include an abandoned, worn out wooden house, corrals, an overgrown olive orchard and eight stock ponds. The remainder of the site is covered by coastal sage scrub, chapparel and oak woodland. The property has been heavily grazed for the past several decades. This is evident as the native vegetation has been replaced by grasslands on over 50% of the property. Significant portions of the property are also covered by artichoke thistle, another indicator of overgrazing. Accordingly, evidence on the property indicates poor hydrologic conditions with high stormwater runoff and highly erosive overland flow. Over the past several years, numerous highly incised drainage courses have been cut into the natural rolling topography. During low flow conditions, for example a 2-year storm event, peak discharges are 30% higher than in its pre-grazing natural state.

An east-west running ridgeline located in the southern portion of the property rises up from the west (elevation 1,200') and extends east approximately 3,000 LF. This ridge spans two thirds of the east-west width of Saddleback Meadows. The ridgeline then turns north-northeast, continuing to rise and extending 2,200 LF towards the northeast property corner. Existing site elevations exceeding 1,600' are typical at the northern portion of the east property line.

In general, storm water runoff flows drain to the west across the property, eventually emptying into Aliso Creek. In the project's area, Aliso Creek flows parallel to and at the **west side** of existing El Toro Road. Existing El Toro Road, in this same area, forms the western boundary of Saddleback Meadows.

Existing storm drain facilities on the **east side** of El Toro Road picks up water runoff from the project site and conveys it westerly under El Toro Road, to outlets discharging into Aliso Creek. These existing storm drain facilities are maintained by the County of Orange. They are:

- The J01 facility per the J01-701-15 storm drain improvements approved by the County of Orange located north of the project's spine road intersection with El Toro Road.
- The Line "B", 24" RCP storm drain line per J01-701-15 plans (described directly above) located south of the project's spine road intersection with El Toro Road.
- Lines "A", "B" and "C", 24" RCP storm drain lines per the improvement plans for Tract 12724, County of Orange, located at the southern most entry street (existing Valley Vista Street) intersection with El Toro Road.

However, some stormwater runoff flows at the eastern two thirds of the southern portion of the property surface drain to the south property line, then southerly across natural vegetation of the adjacent property and empties into Oso Creek. Oso Creek runs as close as 200 LF from Saddleback Meadow's southern boundary.

B. Regional

Down stream to this project there is drainage from the newer projects which are tributary to the Aliso Creek which is a natural water course. Recently, the Regional Water Quality Board has issued a new directive to clean the high bacteria count (Coliform) from the Creek. The Board's goal is to make Aliso Creek Beach safe for swimming.

III. DEVELOPED CONDITIONS

A. Saddleback Meadows

Residential development for up to 299 single-family homes is proposed in two project areas. 173 residential lots are proposed in the southwest quadrant of the project, 70 residential lots are proposed for the southeasterly quadrant and the remaining 56 residential lots are located in the northeasterly quadrant. While stabilization of the existing land slides and conventional mass grading will disturb approximately 71% of the entire project site, approximately 69% of the property will be placed into permanent open space.

Table 1

Summary of Proposed Land Uses

Land Use	Area (acres)	Portion of Site
Single-Family Residential Lots (299)	47.9	21.5%
Streets (private)	19.0	8.5%
Regional Park *	83.25	37.6%
Biological Open Space Easement**	11.65	5.2%
Restricted Scenic Preservation Easement***	60.2	27.2%
Total	**222.0**	**100%**

*Regional Park, as required by the County of Orange, excludes manufactured slopes and fuel modification areas. Regional Park may include areas subject to remedial grading and biological enhancement.

** Biological Open Space Easement includes biologically restored manufactured slopes outside fuel modification areas.

*** Restricted Scenic Preservation Easement included fuel modification areas owned and maintained by homeowner's association/community management district.

Table 2

Summary of Grading Disturbance

Land Use	Area (acres)	Portion of Site
Single-Family Residential Lots (299)+ Roads	66.9	30%
Manufactured Slopes	63.2	28%
Remedial Grading*	27.9	13%
Undisturbed Areas **	64.0	29%
Total	**222.0**	**100%**

* Landfill stabilization beyond the limits of the conventional mass grading
** Undisturbed areas may include Fuel Modification Zones and may be subject to biological enhancement; i..e., annual grasslands replaced with Coastal Sage Scrub or Oak Woodlands as discussed in the Biological Technical Report

Open space areas are proposed for both the project's northwest quadrant and significant areas along the project's eastern and southern flanks. The permanent open space will be dedicated to the County of Orange as a regional park and will be maintained by the County or a third-party conservation group. Maintenance of the permanent open space will be funded by a permanent endowment created by the developer.

Saddleback Meadows will be served by urban type drainage systems. Drainage systems will conform to County of Orange Flood Control District standards, and basically comprised of paved street gutters, catch basins, and underground concrete pipes.

Storm drain improvements for the southwest development area will drain westerly into existing Orange County maintained storm drains at the west-southwest project boundary where the main storm drain and low-flow channel will cross. Only Lots 1 through 37 connect directly to an existing storm drain facility in El Toro Road. Storm drain improvements for the northeastern development area, in general, will drain easterly and outlet into the project's open space area located in the north central portion of the project. Drainage flows through the open space and collects in a tributary which drains westerly about 2,000 feet before draining into Aliso Creek. Aliso Creek continues another 600 feet before emptying into the existing J01 storm drain facility inlet located north of the El Toro Road/Spine road intersection.

The Storm drain outlets have been carefully located so that they discharge into natural channels in order to replicate natural flow patterns as closely as possible. In some cases, this has resulted in multiple outlets; for example, the drainage system in the northwest development area.

B. Regional

The project is located within the boundaries of two primary watershed areas:

Aliso Creek Approximately 75% of the site *is within the Aliso Creek Watershed.* Aliso Creek is located west of the project site. The natural creek is located along the eastside of El Toro Road but crosses under the roadway near the project's entrance, continuing southwesterly along the west side of El Toro Road. The creek flows through natural open space and urban development and outlets at the ocean at Aliso Creek Beach. Aliso Creek's watershed encompasses 23,000 acres, and includes natural open space, rural and urban development, agriculture and ranching, regional parks and other recreational facilities. There are a number of street crossings over Aliso Creek which have been built as the result of newer or existing developments downstream. Saddleback Meadows represents less than 1% of the Aliso Creek watershed.

Oso Creek The remaining 25% of the site located on the southeasterly portion of the project is part of the Oso Creek watershed. Flows from the project

drain offsite through natural drainages. The natural drainages converge and flow into a concrete storm drain system that runs in a southwesterly direction though Tract 12724 (Hidden Ridge residential development). The system outlets onto a concrete energy dissipator and then into the natural drainage course of Oso Creek. The creek drains into the Upper Oso Reservoir. Overflows from the reservoir continue westerly eventually draining into San Juan Creek which outlets into the Pacific Ocean at Doheney State Beach.

A small area at the extreme eastern portion of the site drains into the Trabuco Creek watershed.

IV. BEST MANAGEMENT PRACTICES (BMP'S)

A. Introduction

In order to reduce, control, prevent, remove or eliminate pollution, BMPs will be proposed, implemented and followed for development of Saddleback Meadows. BMPs are construction devices, procedures, rules or methods that will be used to control predictable pollutant runoff associated with the development of Saddleback Meadows.

B. BMP Highlights for Saddleback Meadows

The Saddleback Meadows BMP's have been chosen based on local industry standards and the existing constraints on the property. The site plan for Saddleback Meadows has been carefully designed to minimize the impact to the natural topography and vegetation. The proposed development area is the minimum area possible which accommodates the project's 299 Single Family Residential lots. This reduces the opportunity to use structural BMPs that require larger areas (created wetlands, basins) within the development area. Sensitive biological habitat also prevents locating such facilities within the open space areas. The structural BMP's therefore have been designed to take advantage of excess space for created wetlands and basins and in-line solutions where space is not available.

Saddleback Meadows BMP's will include the following.

1. **Restore Natural Watershed** – The portion of the property that will not be disturbed by grading, approximately 30%, will be restored by cessation of cattle grazing. Furthermore, the annual grasslands and artichoke thistle will be replaced with coastal sage scrub and oak woodlands. Existing disturbed coastal sage scrub will be enhanced. All of these actions will reduce stormwater runoff by up to 30%. This will also significantly reduce erosion potential and should eliminate the erosion that is currently plaguing the property. The remaining 40% of the property that will be placed into permanent open space will be revegetated with coastal sage scrub and oak woodlands ensuring that these disturbed areas are stabilized.

2. **Minimize Impervious Areas** – The project has been designed to minimize impervious areas through the use of larger lots (5,000 square foot minimum, nearly 6,700 square foot average) and narrower private streets. This will limit impervious areas to less than 17% of the property.

3. **Storm Drain System** – The storm drain system has been designed to mimic natural drainage patterns as closely as possible. Storm drain outlets will be provided to return runoff into each natural drainage that intersects the development area. This serves the dual purpose of ensuring that the natural drainages are receiving no more runoff than they can accommodate and ensuring that natural riparian habitat continue to receive an adequate supply of water. Appropriate energy dissipaters will be installed at each outlet to reduce flows to non-erosive velocities.

4. **Riverine System** – The southwest and southeast quadrants of development, approximately 80% of the residential lots and streets, will be served by a riverine system designed to provide a natural cleansing of the urban run-off. Incidental and low flows produced by the completed project will be filtered by the riverine system. The riverine system will collect low flows at strategically located catch basins. Underground pipes will then convey the low flows to a vegetated swale. This swale is located parallel to and along the north side of the project's spine road attached exhibit provides the detail and cross section of the proposed Riverine system. The swale design will filter pollutants from low flows. It will also allow dissipation of a portion of the flows through percolation and evaporation. The downstream terminus of the riverine system is a 1200' long by 60' wide earthen and vegetated detention basin) located just north of the spine road and 700' east of the El Toro Road/spine road intersection. The effectiveness of the Riverines generally depend on the length and the amount of vegetation within the Riverines along the path. The typical vegetation within the Riverine system include PlatanusRacemosa, Schinus Molle, Baccharis Sacfolia, Juncus Mexicanus, Scripus Californicus.

5. **Stormceptors** – Stormceptors are in-line storm drain devices designed to separate sediment and oil from low-flow runoff flowing through underground storm drain pipes. The trapped sediment and oil is then removed during routine maintenance and disposed of at an approved landfill. All storm drain pipe flows within the northeastern quadrant, the remaining 20% of the development, will pass through strategically located Stormceptors prior to discharging into project open space areas. The Stormceptors will be able to remove up to 80% of the total sediment load (TDS). The Stormceptors will also remove free oil from stormwater during normal flow conditions. It should be noted that the stormceptor will retain trapped pollutants during peak stormflows.

6. **Erosion and Sedimentation Control** – The Saddleback Meadows erosion and sedimentation control plan will be prepared and implemented in order to achieve the following two primary goals:

a. Soil erosion shall be minimized by keeping soil stabilized as long as possible.

b. Runoff from remaining disturbed areas shall be directed to locations where sediments will be removed prior to discharge into water courses.

Installation of temporary sediment basins, sand bag debris dams and temporary sand bag sediment catchment areas at catch basins during construction, are examples of ways the goal outlined in paragraph (b) directly above will be achieved by implementation of project BMP's.

7. **Monitoring, Inspection and Maintenance** – Structural BMPs will be monitored periodically and maintained sufficiently for their effectiveness. BMPs, such as the Stormceptors and the riverine system, will be privately maintained by the homeowner's association. A detailed plan for maintenance, inspection and for assessing the effectiveness of the BMPs including testing, will be included in the project's final WQMP and SWPPP. The final plans will be submitted to the applicable County departments and regional jurisdictions for their review and approval prior to issuance of the project grading permit. It is anticipated that the maintenance responsibilities will entail the following:

a. **Homeowners/Tenant Education**

California Quartet or its' assigns will insure that all homeowners will be given a copy of the recorded CC&R's which will contain a section outlining the environmental awareness education materials. The Master HOA will establish requirements for the implementation of a community awareness program that informs home buyers of the impacts of dumping oil, paints, solvents or other potentially harmful chemicals into the storm drain; the proper use and management of fertilizers, pesticides and herbicides in home landscaping and gardening practices; the impacts of littering and improper watering. Environmental awareness education materials, shall be provided to all members of the Master HOA periodically thereafter.

b. **Activity Restrictions**

Within the Master CC&R's prepared by California Quartet or its assigns, language will be included to identify surface water quality protection required by the Master HOA. Surface water quality activities shall also be conducted in conformance with the Water Quality Management Plan as it relates to the handling and disposal of contaminants. The following language provides additional direction for controlling activities that may affect the environment of the project and/or surrounding areas.

PROPOSED LANGUAGE

POLLUTANT RUNOFF
The Master HOA and its members shall comply with plans for the regulation and control of pollutant run-off by using "Best Management Practices" in accordance with the residential provisions of the California and Orange County Storm Water Best Management Practices Handbook, which include the following:

The Master HOA shall periodically provide to their members environmental awareness education materials made available by the local municipalities. These materials will describe the use of chemicals (including household types) that should be limited to the Covered Property with no discharge of specified wastes via hosing or other direct discharge to gutter, catch basins, settling basins and storm drains. The materials shall also provide a description of fertilizer and pesticide usage guidelines consistent with County Management Guidelines for Use of Fertilizers and Pesticides.

The Master HOA shall establish trash management and litter control procedures aimed at reducing pollution of drainage water.

The Master HOA shall have any drainage systems, streets and catch basins on property they maintain inspected and cleaned, and any streets and parking areas they maintain swept prior to the storm season (no later than October 15th of each year).

The Master HOA shall implement irrigation and landscaping practices which will include provision of water sensors, programmable irrigation times, grouping of plants with similar water requirements in order to reduce excess irrigation runoff and to promote surface filtration. The Master HOA shall maintain erosion control devices on the property they maintain until adequate vegetation coverage has been achieved following establishment of the landscape plantings.

c. **Common Area Landscape Management**

Management programs will be designed and established by the Master HOA, who will own and maintain all common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage. Ongoing maintenance will be consistent with the County Water Conservation Resolution (Ordinance. No. 3802) and the State of California Model Water-Efficient Landscape Ordinance. Fertilizer and Pesticide usage

shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

d. **BMP Maintenance**

As indicated above, the CC&R's identify the Master HOA as being responsible for implementation of each applicable non-structural BMP as well as scheduling cleaning of all applicable structural BMP facilities and will be responsible for inspection and maintenance activities in landscape areas. Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the Master HOA. California Quartet or its' assigns will be responsible for maintenance during construction.

e. **Common Area Litter Control**

The Master HOA will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Master HOA may contract with their landscape maintenance firm to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations by homeowners and reporting the violations to the Master HOA for investigation.

f. **Employee Training**

An employee training/education program will be established as it would apply to future employees, contractors of the Master HOA, and volunteers to inform and train employees engaged in maintenance activities regarding the impact of dumping oil, paints, solvents or other potentially harmful chemicals into storm drain; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal. In addition, California Quartet or its' assigns will make available training and education materials to their contractors and subcontractors and their employees during construction.

g. **Common Area Catch Basin Inspection**

The proposed storm drain mainline along with its catch basins and the stormceptor shall be constructed by California Quartet or its' assigns and maintained and cleaned by the Maintenance Landscape Company hired by the Master HOA. This will be done on a regular basis and prior to the storm season, no later than October 15th of each year. The Master HOA will maintain all catch basins on-site.

California Quartet or its' assigns will be responsible for on-site inspection and maintenance during construction.

The proposed stormceptor will have the following maintenance performed by the HOA:

- Annual inspection and power wash of the screen.
- Inspection of the unit after the first major seasonal storm.
- Removal of captured pollutants by a vac truck when the sump becomes 2/3 to ¾ full.
- Remove and replace oil and grease sorbents when fully discolored/coated with oil.

h. **Street Sweeping Private Streets and Parking Lots**

The Master HOA shall have all private streets and parking lots vacuum swept on a weekly basis. This procedure will be intensified around October 15th of each year prior to the "first flush" storm.

8. **Routine Structural BMP's** – Structural BMP's shall be installed initially by California Quartet or its' assigns, the developer, through the construction and development of the project, for instance; slope planting and irrigation systems shall be designed by licensed landscape architects and installed by qualified contractors to specifications and standards of the County of Orange.

a. **Filtration**

This BMP is considered a "routine" BMP and will be implemented through the provisions of a grassy swale. This grassy swale will be located on the north side of the project spine road. Low flow, dry weather, nuisance flows will be directed to the grassy swale areas for "polishing" prior to being discharged downstream.

The proposed riverine system/grassy swale will have the following maintenance performed by the HOA.

- Vegetation within the grassy swale shall be monitored monthly to identify and remove any dead or dying material. Vegetation removed shall be replaced in a timely manner to ensure the continued effectiveness of the grassy swale.

- The grassy swale shall be inspected monthly for trash and debris. Any trash and debris shall be removed and disposed of properly. The density of the vegetation shall be monitored monthly to ensure that the grassy swale contains adequate material to "polish" the runoff flows. Any areas found to be deficient shall be planted with the appropriate material.

- The vegetation shall be monitored twice yearly to ensure that the growth and condition of the plant materials are consistent with the approved fuel modification program.

- The grasses shall be mowed or weed whipped (depending on the type of grass) on a monthly basis during the dry weather months. All grass clippings shall be disposed of properly.

b. **Common Area Efficient Irrigation**

As a part of the design of all common area landscape irrigation, implementation of the County Water Conservation Resolution including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc., will be used. Such common areas will be maintained by the Master HOA.

c. **Common Area Runoff - Minimizing Landscape Design**

As a part of the design of all common area landscape areas, similar planting material with similar water requirements will be used in order to reduce excess irrigation runoff and promote surface filtration. Such common areas will be maintained by the Master HOA.

d. **Energy Disapators**

Energy disapators will be installed per the approved storm drain plans and maintained by the Master HOA.

e. **Catch Basin Stenciling**

As a part of the final civil engineering drawings, it will be required by California Quartet or its' assigns to stencil on all catch basins, where applicable in paved areas, the words, "No Dumping - Drains to Ocean." This will be done in a location that can be clearly seen by all and will be routinely inspected and restenciled as required.

9. **BMP Selection Criteria** – BMP selection for Saddleback Meadows will be refined during the preparation of the project's grading and drainage plans. Final selection will be made in accordance with two major objectives of the WQMP. These two WQMP objectives are:

   a. To identify the sources of pollution that affects the quality of storm water discharges from the project construction sites.

   b. To identify, assign and implement control measures and management practices to reduce pollutants in the storm water discharges before and after the completion of construction activities.

   The final analysis and design of the BMP's will meet or exceed the minimum standard BMPs set forth by County of Orange and State of California Water Quality Regulations, Permits and Guidelines.

10. **Standard Conditions** – In addition to this Conceptual Plan, implementation of the project will be controlled by the County of Orange through compliance with the conditions of approval for the Tentative Tract Map. The following will be part of those conditions:

    a. Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/subdivision and Grading Services Division, County of Orange.

    b. Prior to issuance of a grading permit, a Water Quality Management Plan specially identifying Best Management Practices that will be used onsite to control predictable pollutant runoff shall be prepared and approved by the County of Orange.

    c. Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, County of Orange, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

IV. SUMMARY

Saddleback Meadows WQMP, when implemented, will achieve the primary objectives of applicable governmental storm water permits and water quality management for construction activities in that it will:

A. Reduce excessive erosion potential

B. Minimize excessive sedimentation.

C. Prevent materials used at construction sites from causing on-site or offsite contamination.

D. Prevent non-storm water discharges from the project's construction activities.

E. Install appropriate measures to reduce impacts on downstream waterways from the completed project, and provide a commitment that these measures will be maintained.

F. Establish maintenance commitments on post-construction sites.

There are standard conditions of approval and Mitigation Measures that this project will have to comply with during the development process. These conditions are part of the Tentative Tract Map conditions and below are a few of these measures. Overall, these Mitigation Measures will ensure that all the above goals will be achieved.

Following are the standard County of Orange Mitigation Measures:

A. Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/subdivision and Grading Services Division.

B. Prior to issuance of a grading permit, a Water Quality Management Plan specially identifying Best Management Practices that will be used onsite to control predictable pollutant runoff shall be prepared and approved by the County of Orange.

C. Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

During the planning phase of this project, the following items have been incorporated into the project plans to minimize the impact from the development:

A. Preservation of natural topography, existing drainage and existing vegetation to the extent possible.

B. Reduction of the paved area by means of narrower streets to the extent allowed by the local jurisdiction.

C. Use of existing vegetation and creation of new standards vegetated area to promote infiltration.

D. The street lay out and storm drain systems have been designed for easy maintenance and cleaning.

DG:wp
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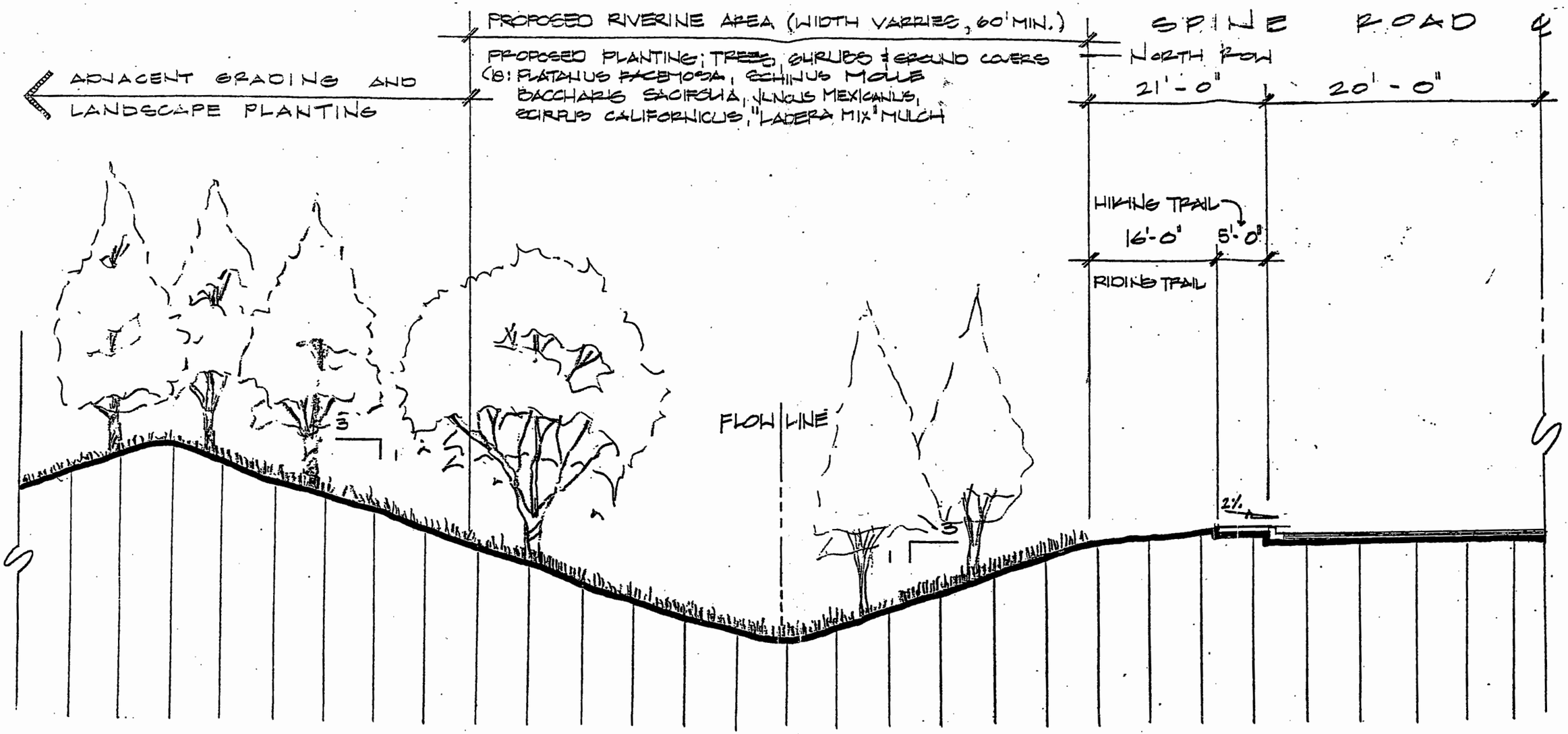


TYPICAL SECTION @ RIVERINE AREA NTS

Gary L. Granville
Orange County Clerk-Recorder
P. O. Box 238
Santa Ana, CA 92702

@ P&DSD

Office of the Orange County Clerk-Recorder

Memorandum

SUBJECT: Environmental Impact Reports
Amendment of "Public Resources Code, Section 21092.3"

The attached notice was received, filed and a copy was posted on 8/2/01

It remained posted for 20 (twenty) days.

Gary L. Granville
County Clerk-Recorder of the State of California
in and for the County of Orange

By: _____ Deputy

Public Resource Code 21092.3

The notices required pursuant to Sections 21080.4 and 21092 for an environmental impact report shall be posted in the office of the County Clerk of each county *** in which the project will be located and shall remain posted for a period of 30 days. The notice required pursuant to Section 21092 for a negative a negative declaration shall be so posted for a period of 20 days, unless otherwise required by law to be posted for 30 days. The County Clerk shall post notices within 24 hours of receipt.

Public Resources Code 21152

All notices filed pursuant to this section shall be available for public inspection, and shall be posted ***within 24 hours of receipt in the office of the County Clerk. Each notice shall remain posted for a period of 30 days.
***Thereafter, the clerk shall return the notice to the local lead agency ***within a notation of the period it was posted. The local lead agency shall retain the notice for not less than nine months.

Additions or changes by underline; deletions by ***

PLANNING & DEVELOPMENT SERVICES DEPARTMENT
300 N. FLOWER STREET
P. O. BOX 4048
SANTA ANA, CALIFORNIA 92702-4048

NOTICE OF PREPARATION

POSTED
AUG 02 2001
GARY L. GRANVILLE, Clerk-Recorder
By _____ DEPUTY

DATE. August 2, 2001

SUBJECT: Notice Of Intent To Prepare
Draft Environmental Impact Report # 566

Project Title: Saddleback Meadows

Applicant: California Quartet/TPG

The Orange County Planning & Development Services Department has conducted an Initial Study for the subject project and has determined that an Environmental Impact Report is necessary. The County of Orange will be the Lead Agency for the subject project and will prepare the EIR In order for the concerns of your agency to be incorporated into the Draft EIR, we need to know the views of your agency as to the scope and content of the environmental information relevant to your agency's statutory responsibilities in connection with the proposed project. Your agency must consider the EIR prepared by the County of Orange when considering your permit or approval for the project. The project description, location, and an analysis indicating the probable enviornmental effects of the proposed action are contained in the attached materials Interested individuals and groups are also invited to comment on the scope of the anticipated EIR.

Pursuant to Section 21080.4 of CEQA, your response must be sent as soon as possible but *not later than 30 days after receipt of this notice.*

All parties that have submitted their names and mailing addresses will be notified if any significant changes in the proposed project occur. If you wish to be placed on the mailing list, please submit your name and mailing address to the contact person at the address below. If you have need of additional information, contact Bill Grieman of the Environmental Planning Services Division at 834-5550. The mailing address is Planning & Development Services Department, P O Box 4048, Santa Ana, CA 92702-4048.

Submitted by:

RHCB/RA FORMS OCT 1997

PUBLIC NOTICE

NOTICE OF INTENT TO PREPARE ENVIRONMENTAL IMPACT REPORT NO. 566

Pursuant to Public Resources Code Section 21165, the County of Orange is the Lead Agency responsible for preparing an environmental impact report (EIR) addressing potential impacts associated with the proposed Saddleback Meadows project, located approximately 1/2 mile southerly of the El Toro Road/Live Oak Canyon Road intersection in the Foothill Trabuco Specific Plan area of unincorporated Orange County. The project proposes the phased development of 299 single-family residential units on a 229.2-acre site. The gross density proposed is 1.4 dwelling units per acre, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6-acres) of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding & hiking trail connections, and biological resource enhancement. The proposed project will also comply with the urban stormwater runoff requirements of the California Regional Water Quality Control Board, and water quality infiltration basins have been incorporated into the project design. Project implementation requires the approval of a Zone Change (Foothill/Trabuco Specific Plan Amendment), Area Plan and Vesting Tentative Tract Map.

At a minimum, EIR 566 will examine the potential impacts generated by the proposed Project in relation to the following CEQA Checklist categories: Land Use & Planning; Geophysical, Hydrology & Drainage; Water Quality; Transportation/Circulation; Air Quality; Noise; Biological Resources; Aesthetics; Cultural/Scientific Resources; Recreation; Hazards; Public Services; and, Utilities and Service Systems. A more complete description of EIR requirements is included in the Notice of Preparation.

REVIEWING LOCATIONS

COPIES OF THE NOP ARE AVAILABLE FOR PUBLIC REVIEW FROM August 2, 2001 TO September 1, 2001 AT THE FOLLOWING LOCATIONS.

County of Orange/Planning & Development Services Department/
Environmental Planning Services Division
Contact: Bill Grieman 834-5550

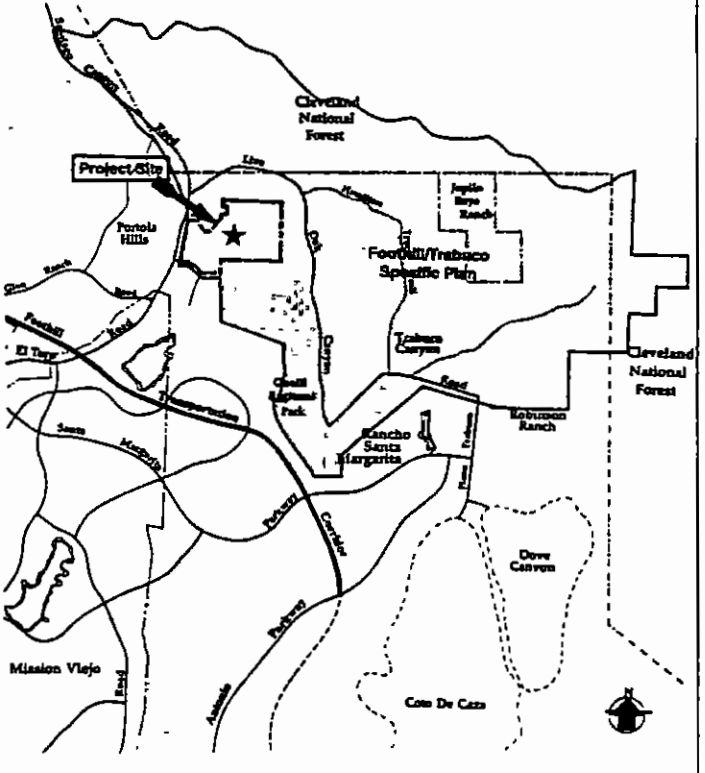
ORANGE COUNTY BRANCH LIBRARIES:
25209 Marguerite Parkway, Mission Viejo
28192 Silverado Canyon Road, Silverado
24672 Raymond Avenue, El Toro
30902 La Promesa Drive, Rancho Santa Margarita
California State University, Fullerton, Library Documents Section
UC Irvine Main Library/Government Publications/Microforms Department

COPIES OF THE NOP HAVE BEEN PROVIDED TO THE FOLLOWING GROUPS:

FOOTHILL/TRABUCO REVIEW BOARD MEMBERS: Adam Smith, Jeanne Porter, Robert Wilks, Raymond Mills, & Bruce Conn
Hidden Ridge HOA, c/o Ms. Marie Walsh
Portola Hills HOA I, c/o Rinevol & Co.
Portola Hills HOA II, c/o Ms. Elizabeth Wallace
Canyon View Homeowners Association
Santiago Estates H
Inter-Canyon League, c/o Bob Hunt
California Native Plant Society
National Audubon Society, Inc.
Sierra Club - Orange County Chapter
Rural Canyons Conservation Fund, c/o Bruce Conn

Address Comments to: Manager, Environmental Planning Services Division — 300 No. Flower, Room 321, Santa Ana, CA 92702-4048

PROJECT LOCATION MAP



INITIAL STUDY
SADDLEBACK MEADOWS PROJECT

State Clearinghouse No. 96121072

August, 2001

LEAD AGENCY: COUNTY OF ORANGE
Planning & Development Services Department

APPLICANT: CALIFORNIA QUARTET/TPG

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT (SEIR) 566
Planning Application PA 980103
Zone Change 98-3
Area Plan 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

I. INTRODUCTION/BACKGROUND

Pursuant to Public Resources Code Section 21165, the County of Orange is the Lead Agency responsible for preparing an Environmental Impact Report (EIR) addressing potential impacts associated with the proposed Saddleback Meadows project, located approximately 1/2-mile from the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Specific Plan area of unincorporated Orange County. In accordance with the California Environmental Quality Act (CEQA) and its Guidelines, an Initial Study has been prepared for the proposed project. Based on the analysis conducted for the Initial Study (see Section VII of this document), it has been determined that the proposed project could result in significant environmental impacts and the preparation of a Subsequent EIR will be required. According to Section 15162 of the *CEQA Guidelines*, a Subsequent EIR is required when subsequent changes are proposed in the project which will require important revisions to the previous EIR due to the involvement of new significant environmental impacts not considered in the previous EIR.

CEQA documentation prepared for the project to date is summarized as follows:

- **EIR 059:** In August 1978, the Board of Supervisors of Orange County adopted General Plan Amendment 78-1 for the Saddleback Meadows property. Final EIR 059 was prepared and certified in conjunction with the general plan amendment.
- **EIR 203:** In January 1980, the Board of Supervisors adopted Ordinance Number 3177, which placed the property in the PC "Planned Community" District. Final EIR 203 was prepared and certified in conjunction with the Ordinance.
- **EIR 561:** EIR 561 was prepared and circulated in February 1996 for 318 detached single family dwelling units on a 222.2 acre site. On July 30, 1996, the Orange County (County) Planning Commission recommended that the Board of Supervisors certify the EIR, which, on October 22, 1996, the Board failed to do.
- **Subsequent EIR 566:** Subsequent EIR 566 for the Saddleback Meadows project was prepared and circulated in May 1997 and was certified by the County Planning Commission on December 3, 1997. The County Board of Supervisors failed to grant an appeal of this action on February 24, 1998.
- **Subsequent EIR 566 Addendum No. 1:** Addendum No. 1 was prepared in July 1998. The project evaluated by Addendum No. 1 included 299 detached single family dwelling units on 222.2 acres. The Addendum was approved by the Planning Commission on October 7, 1998 and by the Board of Supervisors on December 8, 1998.
- **Subsequent EIR 566 Addendum No. 2:** Addendum No. 2 was prepared in March 2001 to evaluate and document any potential changes in the environmental effects or

baseline conditions since the preparation of Addendum No. 1. The project evaluated by Addendum No 2 was identical to Addendum No. 1 (299 detached single-family dwelling units) and included updated traffic and biological resources impact studies. On May 9, 2001, the Planning Commission failed to approve Addendum No. 2 and recommended preparation of a new EIR for the 299-lot project. This recommendation was upheld by the Board of Supervisors on May 22, 2001.

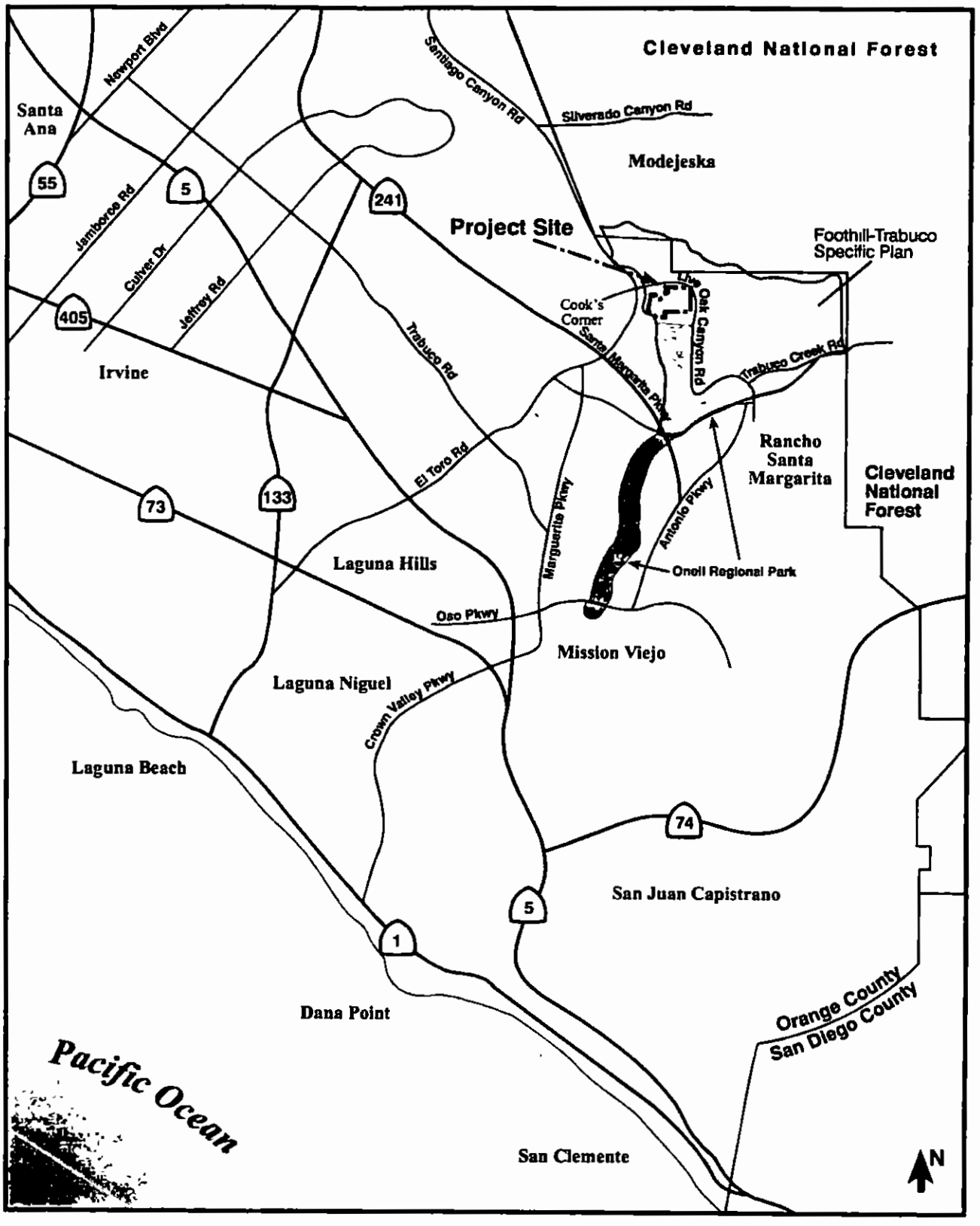
II. PROJECT DESCRIPTION

The project proposes the phased development of 299-detached single-family residential units on a 222.2-acre site, located on the easterly side of El Toro Road (see Exhibits 1, 2,and 3). The gross residential density is 1.4 du/ac, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6 acres) of the project site is proposed to remain in open space.

In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding/hiking trail connections, and biological resource enhancement. The proposed project will also comply with the urban stormwater runoff requirements of the California Regional Water Quality Control Board, and water quality infiltration basins have been added to the project features. Project implementation requires the approval of a Zone Change (Foothill/Trabuco Special Plan Amendment), Area Plan and Vesting Tentative Tract Map.

The proposed project represents a complete revision and redesign of previously approved and recorded Tract 10692. As a result of a directive from the Orange County Planning Commission in January 1995, the original project was revised in consideration of changed circumstances and new information of environmental significance not previously considered in EIR 078. The current project design is a result of numerous meetings with interested citizens, resource agencies and adjacent property owners from 1995 to the present.

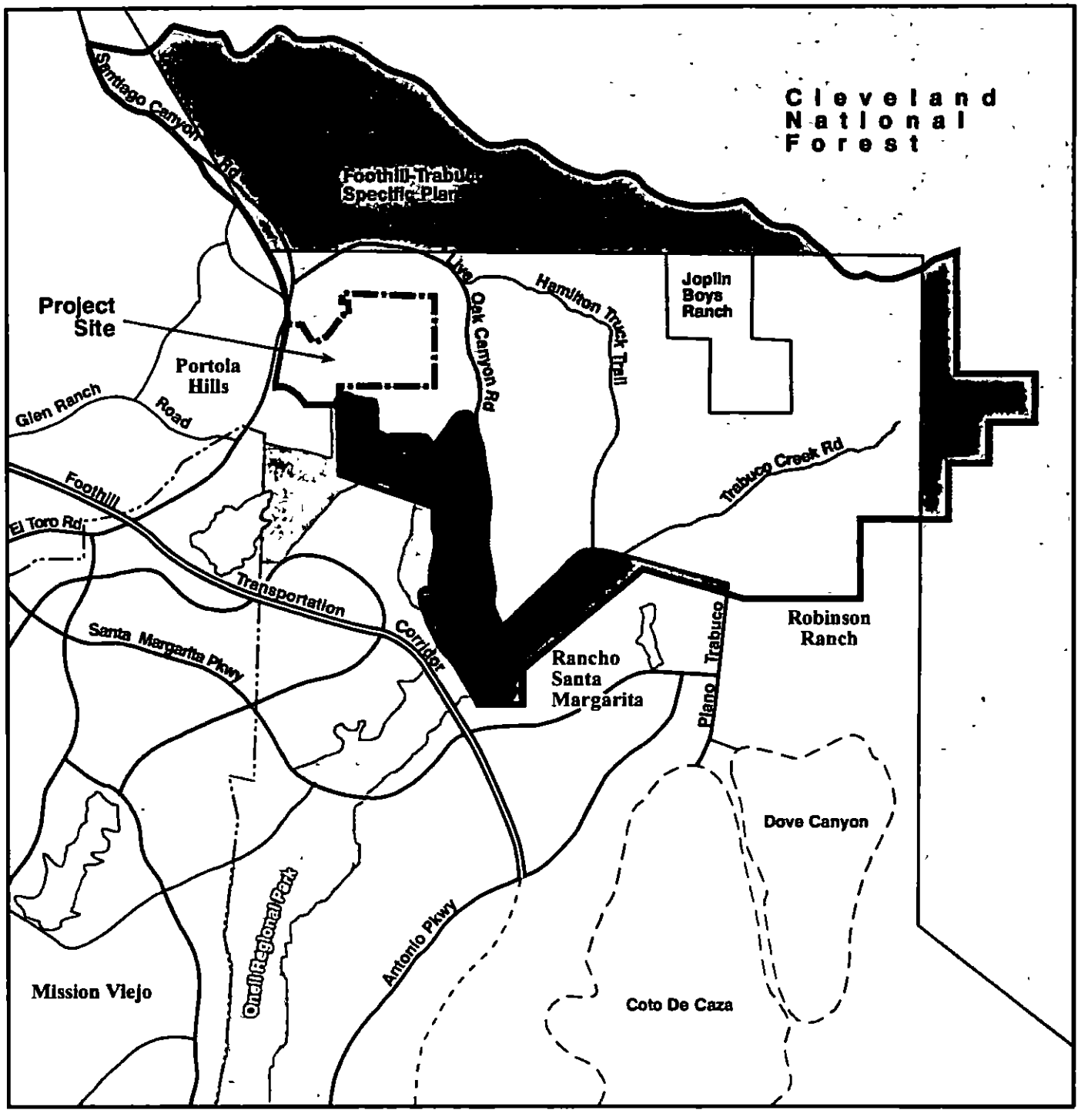
The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan, approximately 1/2-mile southerly of the El Toro Road/Live Oak Canyon Road intersection. Implementation of the proposed project would directly effect 149.0-acres of the project site, or 65 percent, including remedial grading. In addition to on-site grading, 2.04-acres of offsite area would be effected for access road construction and remedial grading.



Map Not to Scale
Source : DRC, 1998

HDR

Exhibit 1
Regional Location Map
Saddleback Meadows



Map Not to Scale

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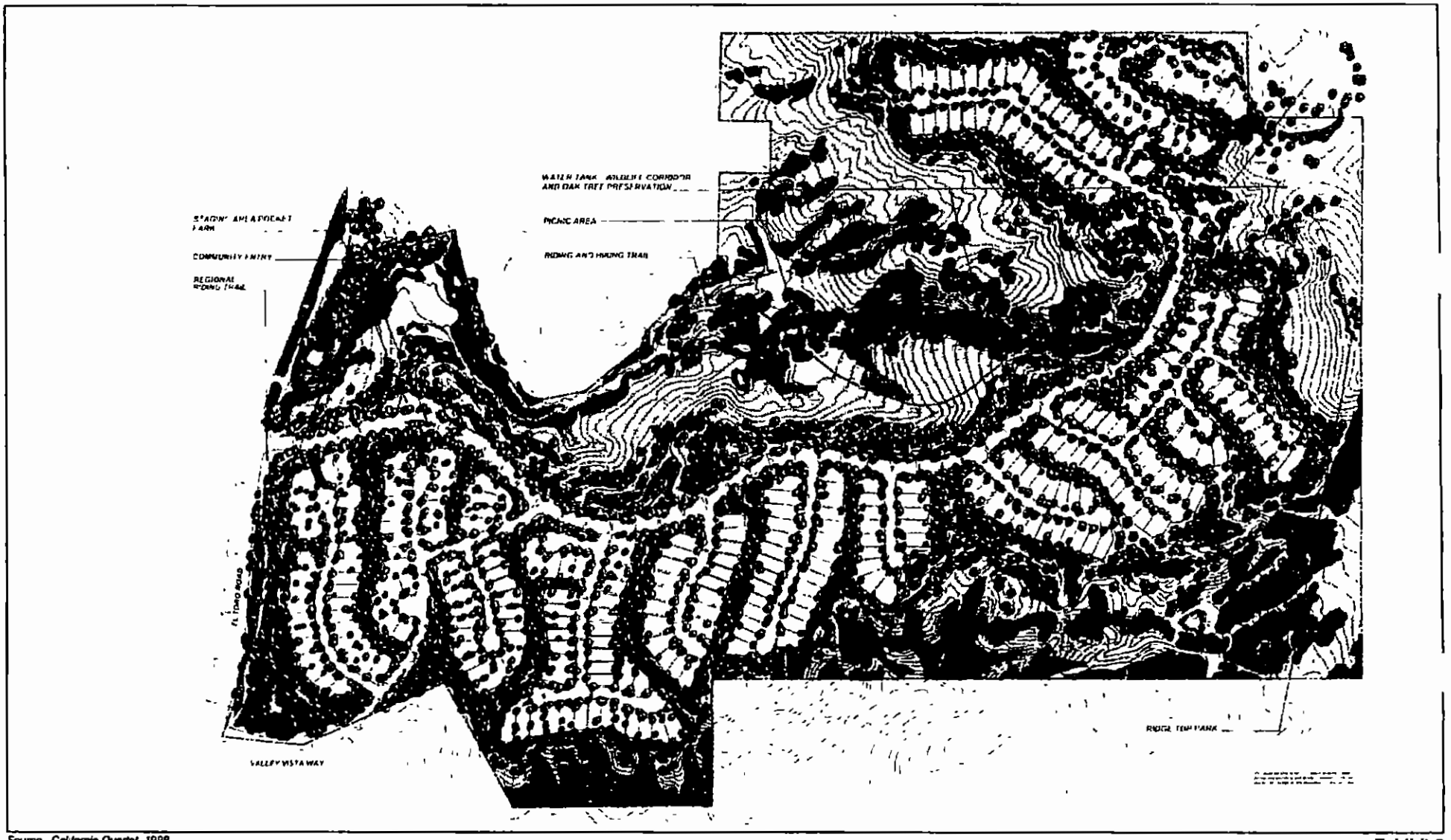
Exhibit 2
Project Vicinity Map
Saddleback Meadows



Source: California Quartet, 1998

HDR

Exhibit 3
Illustrative Site Plan
Saddleback Meadows

A total of 8.6 million cubic yards of grading would be required to implement the project. The following table outlines a comparison between the current and previously submitted project:

Recorded/Proposed Project Comparison

Features	Proposed Project	Previously Approved Recorded Tract 10692
Dwelling Units	299	705
Minimum Lot Size	5,000 sf	3,200 sf
Gross Density	1 4 du/ac	3 03 du/ac
% Open Space	71%	31%
Wildlife Corridor	Yes	No

III. SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS

Based on the Initial Study prepared for the proposed project (see Section VIII), project implementation could result in significant impacts to one or more of the following:

- Air quality
- Biological resources
- Aesthetics
- Cultural/scientific resources
- Recreation
- Hazards

It is anticipated that with the implementation of appropriate mitigation measures, impact for the following environmental resources will be less than significant: land use and planning, geophysical, hydrology and drainage, water quality, noise, public services and utilities. The Initial Study concludes that less than significant or no impact will result to: agricultural resources, population and housing, transportation, and mineral resources.

IV. ALTERNATIVES TO BE EVALUATED IN THE DRAFT EIR

In accordance with Section 15126.6 of the *CEQA Guidelines*, the EIR will define and evaluate project alternatives that have the potential to meet the primary objectives of the proposed project and reduce any significant environmental impacts of the project. The lead agency has determined that the following alternatives to the proposed project are reasonable alternatives

to be discussed in the EIR:

- **No Development Alternative:** This alternative would leave the proposed site in its existing condition
- **No Project Alternative:** This alternative would not allow any change from existing entitlements on the project site for 705 manufactured units.
- **F/TSP EIR 531 Staff Alternative A:** This alternative would allow 150 units with a minimum lot size of 20,000 square feet.
- **F/TSP EIR 531 Staff Alternative B:** This alternative would reduce the number of dwelling units on the project site to no more than 100 on approximately 30 acres.
- **Cluster/Single Family/Multi Family Residential Alternative:** This alternative would feature 318 detached and attached dwelling units, within a reduced development impact area (110.5 acres).
- **44/178 Alternative:** This alternative would allow 127 single-family units on a 44-acre "Development Parcel." The alternative would also feature a 178-acre "Conservation Area" parcel
- **Acquisition Alternative:** This alternative would involve the County and adjacent landowners purchasing the property from the developer. Subsequent to acquisition, the property would be placed in a permanent open space reserve.
- **Golf Course Alternative:** This alternative would feature an 18 hole target style golf course on 150-acres, avoiding sensitive habitat areas wherever possible. Alternative may also include a small lodge/hotel and conference retreat center and resort casitas linked to the conference center.

V. MANDATORY FINDINGS

As required by CEQA, mandatory findings are determined to be made by the lead agency to determine not only whether an EIR must be prepared, but also to identify the effects to be analyzed in the document.

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Potential significant effect. Based on previously prepared studies, several sensitive species exist within the proposed project site. The proposed project has the potential of significantly affecting the range of wildlife that may currently use this property as a wildlife movement corridor.

b) Does the project have the potential to achieve the short-term environmental goals to the disadvantage of the long-term environmental goals?

Potential significant effect. The project has the potential to permanently impact existing biological, aesthetic and cultural resources that are unique to this area.

c) Does the project have possible environmental effects which are individually limited but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Potential significant effect. The proposed project could have significant cumulative effects on the air quality, and biological resources of the area.

d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than significant with mitigation. Project implementation could have substantial adverse effects on human beings in terms air quality and geotechnical hazards.

VI. DETERMINATION

Based on the Initial Study, the proposed project may have a significant effect on the environment that has not been analyzed in a previous CEQA document. Preparation of an EIR is therefore required. The following environmental topics will be addressed in the EIR:

- Land Use & Planning
- Geophysical
- Hydrology and Drainage
- Water Quality/Water Quality
- Transportation/Circulation
- Biological Resources
- Aesthetics
- Cultural/Scientific Resources
- Recreation
- Hazards

- Air Quality
- Noise
- Public Services
- Utilities & Service Systems

VII. CONTACT PERSON

Bill Grieman, Planner
Environmental & Project Planning Division
Planning and Development Services Department
County of Orange
300 N. Flower Street, Third Floor
Phone: (714) 834-5550
FAX: (714)834-6132

INITIAL STUDY

PROJECT TITLE: Saddleback Meadows

PROJECT NUMBER: PA 980103 **LEAD DIVISION: Current Planning**

INITIAL STUDY NUMBER: PA 980103

PROJECT PLANNER: Frank McGill **PHONE: (714) 834-2099**

CEQA PLANNER: Bill Grieman **PHONE: (714) 834-5175**

PROJECT LOCATION: Easterly side of El Toro Road, south of the "Y" intersection of Santiago Canyon Road and Live Oak Canyon Road.

PROJECT APPLICANT: California Quartet/TPG

ADDRESS: **777 Campus Commons Road, Suite 200**

Sacramento, CA 95825

PHONE: **(916) 482-7200**

PROJECT DESCRIPTION: Development of 299 single-family homes

DECISION MAKER: Board of Supervisors

SOURCES OF INFORMATION (as numbered on checklist): See Section VIII of the Initial Study.

RESPONSIBLE/TRUSTEE AGENCIES INVOLVED: U.S. Fish and Wildlife Service; U.S. Army Corps of Engineers; Calif. Department of Fish & Game

LAND USE ENTITLEMENT SUMMARY:

General Plan Land Use Designation: 1B

Zoning: S "Specific Plan" (F/TSP)

PREVIOUS ENVIRONMENTAL DOCUMENTATION (If Applicable): See Section I of the Initial Study.

INITIAL STUDY DATE: August 2, 2001

ENVIRONMENTAL ANALYSIS CHECKLIST

Project Number: PA 980103

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
1. LAND USE & PLANNING. Would the project:				
a) Conflict with general plan designation or zoning?	☐	☒	☐	☐
b) Conflict with applicable environmental plans or policies of agencies with jurisdiction over the project?	☐	☒	☐	☐
c) Disrupt or divide the physical arrangement of an established community (e g low income, minority)?	☐	☐	☐	☒
d) Conflict with adjacent, existing or planned land uses?	☐	☒	☐	☐
2. AGRICULTURE. Would project:				
a) Convert Farmlands listed as "Prime", "Unique" or of "Statewide Importance " as shown on the State Farmland Mapping and Monitoring Program, to non-agricultural use?	☐	☐	☐	☒
b) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☒
3. POPULATION & HOUSING. Would project:				
a) Cumulatively exceed adopted regional or local population projections?	☐	☐	☐	☒
b) Induce substantial growth in an area directly or indirectly through project in an undeveloped area or extension of major infrastructure?	☐	☐	☐	☒
c) Displace existing housing affecting a substantial number of people?	☐	☐	☐	☒
4. GEOPHYSICAL. Would project result in or expose people to impacts involving:				
a) Local fault rupture?	☐	☐	☒	☐
b) Seismicity ground shaking or liquefaction?	☐	☒	☐	☐
c) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
d) Landslides or mudslides?	☐	☒	☐	☐
e) Erosion, changes in topography or unstable soil conditions from excavation, grading or fill?	☐	☒	☐	☐
f) Subsidence of the land?	☐	☒	☐	☐
g) Expansive soils?	☐	☒	☐	☐
h) Unique geologic or physical features?	☐	☒	☐	☐
5. HYDROLOGY&DRAINAGE. Would the project:				
a) Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in manner which would result in				
i) substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
ii) a substantial increase in the rate or amount of surface runoff in manner which would result in flooding on- or off-site?	☐	☒	☐	☐
b) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
c) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
d) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
6. WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of a local groundwater table level?	☐	☐	☒	☐
c) Otherwise substantially degrade water quality?	☐	☒	☐	☐
7. TRANSPORTATION/CIRCULATION. Would the project result in:				
a) Increased vehicle trips or traffic congestion beyond adopted policies and/or forecasts?	☐	☐	☒	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Safety hazards from design features (e g sharp curves or dangerous intersections) or incompatible uses (e g farm equipment)?	☐	☐	☒	☐
d) Inadequate emergency access or access to nearby uses?	☐	☐	☒	☐
e) Insufficient parking capacity on-site or off-site?	☐	☐	☒	☐
f) Hazards or barriers for pedestrians or bicyclists?	☐	☐	☒	☐
g) Conflicts with adopted policies supporting alternative transportation (e g bus turnouts, bicycle racks)?	☐	☐	☒	☐
h) Rail, waterborne or air traffic impacts?	☐	☐	☐	☒
i) Change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
8. AIR QUALITY. Would the project:				
a) Exceed any SCAQMD standard or contribute to air quality deterioration beyond projections of SCAQMD?	☒	☐	☐	☐
b) Expose sensitive population groups to pollutants in excess of acceptable levels?	☐	☒	☐	☐
c) Alter air movement, moisture, or temperature, or cause any change in climate?	☐	☐	☐	☒
d) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
9. NOISE. Would the project:				
a) Increase existing noise levels?	☐	☒	☐	☐
b) Expose people to noise levels exceeding adopted County standards?	☐	☒	☐	☐
c) If located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
10. BIOLOGICAL RESOURCES. Would the project impact:				
a) Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects animals and birds)?	☒	☐	☐	☐
b) Locally designated species (e g. heritage trees)?	☒	☐	☐	☐
c) Locally designated natural communities (e g. oak forest, coastal habitat, etc)?	☒	☐	☐	☐
d) Wetland habitat (e.g. marsh, riparian and vernal pool)?	☐	☒	☐	☐
e) Wildlife dispersal or migration corridors?	☐	☒	☐	☐
f) Adopted or proposed conservation plans and policies (e g. Natural Community Conservation Plan or Resource Management Plan)?	☒	☐	☐	☐
11. AESTHETICS. Would the project:				
a) Affect a scenic vista or view open to the public?	☒	☐	☐	☐
b) Affect a designated scenic highway?	☒	☐	☐	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d) Create light or glare beyond the physical limits of the project site?	☐	☒	☐	☐

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
12. CULTURAL/SCIENTIFIC RESOURCES, Would the project·				
a) Disturb archaeo or paleo resources?	☒	☐	☐	☐
b) Affect historical resources?	☒	☐	☐	☐
c) Have the potential to cause a physical change which would affect unique ethnic cultural values?	☒	☐	☐	☐
13. RECREATION. Would project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☒	☐	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☒	☐	☐
c) Conflict with adopted recreational plans or policies?	☒	☐	☐	☐
14. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
15. HAZARDS. Would the project:				
a) Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Exposure of people to existing sources of health hazards?	☐	☐	☐	☒
d) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
e) For a project within the vicinity of private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures to a significant risk or loss injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☒	☐	☐	☐
16. PUBLIC SERVICES. Would project result in need(s) for new/altered government facilities/services in:				
a) Fire protection?	☐	☒	☐	☐
b) Police protection?	☐	☒	☐	☐
c) Schools?	☐	☒	☐	☐
d) Maintenance of public facilities, including roads?	☐	☒	☐	☐
e) Other government services?	☐	☒	☐	☐
17. UTILITIES & SERVICE SYSTEMS. Would project result in needs for new or substantial alterations in·				
a) Power or natural gas?	☐	☒	☐	☐
b) Communications systems?	☐	☒	☐	☐
c) Local or regional water treatment or distribution facilities?	☐	☒	☐	☐
d) Sewer or septic tanks?	☐	☒	☐	☐
e) Solid waste disposal?	☐	☒	☐	☐

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
MANDATORY FINDINGS				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife population to drop below self sustaining levels threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have the potential to achieve the short-term environmental goals to the disadvantage of the long-term environmental goals?	☒	☐	☐	☐
c) Does the project have possible environmental effects which are individually limited but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects and the effects of probable future projects)	☒	☐	☐	☐
d) Does project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly	☐	☒	☐	☐

DETERMINATION:

Based upon the evidence in light of the whole record documented in the attached environmental checklist explanation, cited incorporations and attachments, I find that the proposed project:

COULD NOT have a significant effect on the environment, and a negative declaration (ND) will be prepared pursuant to CEQA Guidelines Article 6, 15070 through 15075. ☐

COULD have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures have been added to the project. A negative declaration (ND) will be prepared pursuant to CEQA Guidelines Article 6, 15070 through 15075 ☐

MAY have a significant effect on the environment which has not been analyzed previously Therefore, an environmental impact report (EIR) is required ☒

Signature Will Grieman

Planner Bill Grieman
Environmental & Project Planning Division
Telephone (714) 834-5550

NOTE All referenced and/or incorporated documents may be reviewed by appointment only, at the County of Orange Planning & Development Services Department, 300 N Flower Street Santa Ana, California, unless otherwise specified An appointment can be made by contacting the CEQA Contact Person identified above.

VIII. ENVIRONMENTAL ANALYSIS AND EXPLANATION OF CHECKLIST REPONSES

This Initial Study has been conducted pursuant to Section 15060 of the *CEQA Guidelines* and the County of Orange CEQA procedures. The following discussion provides information to substantiate the responses in the foregoing Orange County Environmental Analysis Checklist. For each environmental category, the discussion is outlined to address the: (1) existing setting; (2) potential impacts; and (3) scope of the EIR discussion. The scope of the EIR will be refined, as appropriate, upon completion of the public scoping process including input from responsible agencies and the public.

As encouraged by CEQA, source references used to substantiate the checklist are referenced following each topical area. A list of references in included at the end of the checklist summary on this Initial Study in Section IX.

1. LAND USE & PLANNING

Source References (see Section IX): 3, 7, 8

Existing Setting

The project site is situated within the Foothill/Trabuco Specific Plan (F/TSP) planning area. The 6,500 acres of the F/TSP area are situated within the foothills of the Santa Ana Mountains and are characterized by abundant natural and scenic resources, and primarily low-density residential and open space land uses. The project site is currently undeveloped; however, it has been used for agriculture and cattle grazing since the 1940's.

The entire 222.2-acre Saddleback Meadows project site is currently zoned S "Specific Plan" (Foothill/Trabuco Specific Plan) with an SR "Sign Restriction" overlay district. The Specific Plan designation for the site is BWR "Bridlewood Residential" District. The BWR District was established within the F/TSP, adopted December 1991, to recognize the existing zoning and tract map approvals for the Bridlewood/Saddleback Meadows property. The General Plan Land Use Element (LUE) designation for the project site is 1B "Suburban Residential" (0.5 to 18 dwelling units per acre).

Surrounding land uses include: (1) St. Michael's Abbey, Cooks Corner, natural open space, Cleveland National Forest, Live Oak Plaza, Santiago Canyon Estates, and low density residential to the north; (2) Hidden Hills/Hidden Ridge developments, Painted Trails development, O'Neill Regional Park, and the Ramakrishna Monastery to the south; (3) low density residential, a church, and natural open space to the east; and (4) Portola Hills and Foothill Ranch communities, and Aliso

Creek to the west.

Potential Impacts

Potential impacts which may result if the project is developed include: the introduction of 299 detached single-family residential units and related major infrastructure improvements into an area previously used primarily for open space and agricultural uses, and potential conflicts with existing surrounding land uses. Implementation of the proposed project would result in construction of only 45 percent of the units allowed by the current zoning and General Plan land use designations.

The circumstances regarding surrounding land uses have changed since the previous EIRs were certified and the original project was approved. When EIRs 059 and 078 were certified, the vicinity of the project, with the exceptions of St. Michael's Abbey and the Ramakrishna Monastery, was characterized by an undeveloped, predominantly natural environment. The project site, although disturbed by farming and cattle grazing activities, was dominated by grasslands, coastal sage scrub, and oak woodlands. The closest urban development was approximately four miles south of the site near the El Toro/Trabuco Road intersection. The project vicinity has become more urban since the original approvals with residential developments to the north, west, and south. It is now characterized by major residential development, including the Portola Hills Planned Community, the Hidden Ridge project and Foothill Ranch. With the changes that have taken place since the original project was approved, there is a question of the project's compatibility with surrounding uses.

Scope of EIR Discussion

The land use section of the EIR will include a detailed discussion of the following:

- The project's consistency with the General Plan and F/TSP.
- Project consistency with applicable regional plans.
- Potential land use compatibility conflicts with surrounding land uses.
- Recommendation of mitigation measures to reduce or avoid significant land-use related impacts.
- Identification of unavoidable and cumulative land use impacts.

2. AGRICULTURE

Source References (see Section IX): 1, 7, 8

Existing Setting

Orange County has historically been a rural community supported by an agricultural economy. During the 1960's and 1970's, the County experienced a sharp decline in agriculture production as the urban development grew. Growth projections through 2000 indicate the continued urbanization of Orange County. In 1965, the Williamson Act was adopted in response to the increasing pressures on agricultural land. Under the Williamson Act, agricultural land can be held within agricultural preserves in order to protect these lands from urban development.

The project site is largely undeveloped. Portions of the site have historically been used for cattle grazing. The project site is not located in an area identified as important farmland as classified by the Department of Conservation, Farmland Mapping and Monitoring Program. The project site is designated as "other lands," which is defined as "land which does not meet the criteria of any other category including low-density rural developments, wetlands, dense brush and timberlands...."

Potential Impacts

Development of the proposed project will not convert farmlands listed as Prime Unique, or of Statewide Importance to non-agricultural uses. Moreover, none of the property is bound by a Williamson Act Contract as an agricultural preserve. Implementation of the proposed project will eliminate the existing use of portions of the site for cattle grazing. On a County-wide basis, the number of acres lost to this use is considered minimal and incremental, and less than significant.

Scope of EIR Discussion

The potential impact of the proposed project on agricultural resources is determined to be less than significant. This topical area will not be addressed in the EIR.

3. POPULATION & HOUSING

Source References (see Section IX): 2, 6, 7, 8

Existing Setting

The County of Orange General Plan Housing Element, adopted September 14, 1993, outlines specific goals, policies and programs to facilitate development of housing in unincorporated

areas. For analytical purposes, the region has been broken into units called Regional Statistical Areas (RSAs). The project site is located in RSA C-43. As of 1999, RSA C-43 had a population of 190,000 with a 2000 projection of 212,700. The total population for Orange County is 2,846,289 (2000). Projected population for the County in 2010 is 3,105,300. The eastern and southern areas of the County, including RSA C-43, are expected to realize the largest populations gains. Subsequently, new development reflects this trend and approximately 57 percent of residential construction will be in south County. The average household size in unincorporated Orange County in 1999 was 2.58.

Potential Impacts

Approximately 299 single-family housing units will be constructed under the proposed project, which would result in an increase of approximately 771 new residents for the County. This compares to the approved 705 manufactured homes, which would result in approximately 1,819 new residents. The proposed project is not expected to cumulatively exceed adopted regional or local population projections, in fact, a reduction in the number of planned residential units would occur.

Infrastructure to serve the proposed project will only be extended to meet the needs of the development. Capacities will not be upgraded beyond what is needed to meet the development of the area in accordance with the adopted F/TSP. The project, therefore, will not be growth inducing.

Project implementation will not displace existing, occupied housing.

Scope of EIR Discussion

The potential impact of the proposed project on population and housing is determined to be less than significant. This topical area will not be addressed in the EIR.

4. GEOPHYSICAL

Source references (see Section IX): 4, 7, 8

Existing Setting

The proposed project site is located within the Canada De Los Alisos in the low coastal foothills of the Santa Ana Mountains These hills are part of the Peninsular Ranges Geomorphic Province and are generally underlain by sedimentary bedrock of Tertiary age. Ridges, ravines, and gullies form the dominant physiographic features, provide moderate to high topographic relief. Elevations above mean sea level range from approximately 1,000 to 1,550 feet. Natural slope gradients range from nearly level along some ridge crests and valley bottoms to 1:1 (horizontal:vertical) within deeply incised gullies. The site drains generally toward the west and southwest into Aliso Creek and Oso Creek tributaries of San Juan Creek.

Approximately 43 percent of the project site is in the 0 to 25 percent slope category, 43 percent is in the 26 to 50 percent slope category and 14 percent of the project site has slopes exceeding 50 percent.

On-site bedrock consists of a thick sequence of interbedded, fine- to course-grained sandstone and siltstone. Ancient to active landslides underlie much of the project area. Recent and older alluvial deposits are confined to the major gullies and Aliso Creek drainage. Topsoil and colluvium mantel the bedrock and landslides throughout most of the site. Fill soils underlie areas where man-made features, such as roads and berms associated with livestock ponds, were constructed.

The closest, major active fault is the Whittier-Elsinore Fault Zone, located approximately eight miles to the northeast of the F/TSP area. The Aliso Fault, located along the F/TSP southwest boundary is classified as potentially active, but considered to have a low potential for activity within the F/TSP area. The likelihood of surface faulting within the F/TSP area is considered minimal. The primary seismic hazard potentially affecting the project site, as well as most other sites in southern California, is ground shaking due to an earthquake on a major regional fault.

Potential Impacts

Potential impacts which may result if the project is developed include substantial short-term changes of the site's landforms and topographical features particularly during grading activities. In the long-term, the project proposes site reconfiguration to reflect the site's natural land form features, and related impacts on the soil stability of the site. During

construction, erosion and siltation of soils may also occur. The proposed project will also introduce new structures and residents into the seismically active, southern California area.

Grading activities on the project site could result in sediment being carried into the Aliso Creek Corridor and downstream ultimately to Aliso Beach.

Scope of EIR Discussion

Various geotechnical studies have been prepared for the proposed project. The geophysical section of the EIR will document the findings and recommendation of the technical reports, which will be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Proposed grading in areas previously designated for preserved open space areas.
- Identification of soil and geologic characteristics and limitations of the project site, including soil stability, earthquake potential and known geologic hazards, including landslides, mudslides, ground failures and similar hazards for the entire site.
- Identification of the seismic features of the site, including the potential exposure of people or property to environmental impacts of the proposed project associated with earthquakes, liquefaction or similar hazards.
- The potential environmental impacts of the proposed project on the existing site topography and unique geologic or physical features.
- Mitigation measures necessary to reduce geophysical impacts to a level of insignificance.
- Identification of unavoidable and cumulative geophysical impacts.

5. HYDROLOGY & DRAINAGE

Source references (see Section IX): 4, 7, 8

Existing Setting

There are three major drainage areas within the F/TSP area: Aliso Creek Drainage, Oso Creek Drainage, and Trabuco Creek Drainage. The proposed project site is within the Aliso Creek and Oso Creek Drainage areas. Approximately 75 percent of the project site drains into Aliso Creek, with the remaining 25 percent draining into Oso Creek. The on-site project drainage has not been modified and remains in a natural state; however, embankments were

constructed across several minor tributaries in order to impound water, presumably to provide watering holes for the cattle. As many as eight ponds have been identified on-site; however, one of the ponds has breached and another pond has been completely filled with silt. In addition, some improvements have been made to sections of Aliso Creek, adjacent to the site, including a major man-made drainage channel. This channel passes from the proposed site to the westerly side of El Toro Road.

The area of Aliso Creek Corridor is classified as Floodplain FP-2 by the Federal Emergency Management Agency (FEMA).

Potential Impacts

Potential impacts which may result if the project is implemented include changes in absorption rates, alteration of the project site's existing landform, subsequently altering the existing flow of water onto, through, around and off the project site. During construction the disruption of soils may also affect the content of site run-off into the watershed area of Aliso Creek. Groundwater levels and quality, including absorption rates, may be affected by the proposed project. Potential impacts include pollutant discharges into Aliso Creek. The National Pollution Discharge Elimination System (NPDES) is a regulatory program required by the Clean Water Act and administered by OCEMA, which addresses water quality issues.

Scope of EIR Discussion

Various hydrology studies have been prepared for the proposed project. The hydrology and drainage section of the EIR will document the findings and recommendations of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Identification and quantification of the current surface water and groundwater drainage patterns and water flows within, and adjacent to, the project site.
- Identification and quantification of the portion of the project site or off-site area that will be impacted by proposed project currently located within FEMA's FP-2 floodplain designation.
- Identification and quantification of the current surface water and groundwater quality within, and adjacent to, the project site, including existing on-site discharges into drainage channels.
- Identification of significant changes in the course or direction of water movements.
- Identification of changes in absorption rates, drainage patterns, or the rate and amount of surface water run-off.

- Identification of changes in erosion or changes in siltation which may modify the channel of Aliso Creek.
- Identification of changes in the amount of surface water as a result of any proposed storm drain retarding basins.
- Identification of changes in the quantity or quality of groundwater.
- Identification of the potential environmental impacts of the proposed project on wind or water erosion of soils, on-site or off-site.
- Identification of alterations to the course, flow or magnitude of flood waters, and resultant exposure of people or property to flood hazards.
- Recommendation of mitigation measures necessary to reduce project impacts to a level of insignificance, including the development of Best Management Practices (BMP) for compliance with the Clean Water Act.
- Identification of unavoidable and cumulative water resource impacts.

6. WATER QUALITY

Source references (see Section IX): 4, 7, 8

Existing Setting

Water pollution control is regulated in California by the State Water Resources Control Board (SWRCB) and nine California Regional Water Quality Control Boards (RWQCBs). Each of the nine regional boards is required to adopt a Water Quality Control Plan or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the Region's ground and surface waters, and local water quality conditions and problems. The project site is located within the San Diego Basin and subject to the policies in the Water Quality Control Plan for that basin.

Based on information included in the EIR for the F/TSP, groundwater quality within each of the three drainage basins (Aliso Creek, Oso Creek, and Trabuco Creek) is of poor quality.

The discharge of pollutants into water is regulated by the state through the NPDES program. The County of Orange has adopted the Drainage Area Master Plan (DAMP) to satisfy the requirements of the NPDES program. Structural and non-structural Best Management Practices are required to control possible pollutant discharges to surface water.

Potential Impacts

Grading and construction activities will potentially result in short-term water quality impacts including increased erosion and sediment contribution to surface water. Improper handling of construction materials and/or equipment could result in accidental spills that could adversely affect water quality. Potential long-term water quality impacts include the addition of pollutants typical of urban runoff (such as pesticides, fertilizers, vehicle hydrocarbons, greases, oil, plastics, and litter) and the increase of on-site activities.

Scope of EIR Discussion

Various water quality studies have been prepared for the proposed project. The water quality section of the EIR will document the findings and recommendations of the technical reports, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Overview of existing groundwater quality, beneficial uses and regulatory environment.
- Identification of potential project impacts and pollutant sources that could affect surface or groundwater quality.
- Recommendation of mitigation measures to reduce or avoid significant water quality impacts, including the identification of structural and non-structural Best Management Practices.
- Identification of unavoidable and cumulative water quality impacts.

7. TRANSPORTATION/CIRCULATION

Source references (see Section IX): 4, 7

Existing Setting

The existing roadways that will serve the proposed project is El Toro Road and Valley Vista Way, located within the Hidden Ridge/Hidden Hills Community. The site's interior is natural and has no road access.

El Toro Road is classified as a Major Arterial Highway south of Live Oak Canyon Road in Orange County's Master Plan of Arterial Highways (MPAH).

Potential Impacts

The proposed project will generate additional vehicle trips that will contribute to local traffic particularly on El Toro Road. Traffic will also contribute to peak hour intersection traffic.

Scope of EIR Discussion

A transportation and circulation study is being prepared for the proposed project. The transportation and circulation section of the EIR will document the findings and recommendations of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- An inventory of existing area-wide conditions including current traffic volumes, roadway capacities and levels of service.
- Assessment of project related and cumulative impacts on area roadways and intersection operation and levels of service.
- Identification and analysis of the existing ingress and egress to the project site, its potential internal circulation and parking problems associated with the proposed development.
- Identification of existing impacts to equestrians, motor vehicles, bicyclists and/or pedestrians.
- Evaluation of the need for El Toro Road to be a primary arterial versus a major arterial.
- Identification of increases in demand for public transit services with special attention to relationship with low income housing for senior citizens and any potential conflicts

with planned roadway widenings or extensions.

- Identification of specific potential internal circulation problems and potential traffic hazards to motor vehicles, bicyclists and/or pedestrians which may result from the proposed project.
- Recommendation of mitigation measures necessary to reduce project traffic and circulation impacts to a level of insignificance
- Identification of unavoidable and cumulative impacts to transportation and circulation resources.

8. AIR QUALITY

Source references (see Section IX): 7, 8

Existing Setting

The project site is located within the South Coast Air Basin (SCAB), which is generally characterized by poor air quality. SCAB falls under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). In conjunction with the Southern California Association of Governments (SCAG), SCAQMD is responsible for formulating and implementing air pollution controls. In 1997, SCAQMD's Air Quality Management Plan was adopted establishing a comprehensive air pollution control program leading to attainment of state and federal air quality standards. State and federal air quality standards are often exceeded within SCAB.

Potential Impacts

Potential impacts which may result if the project is developed include: generation of both short-term and long-term air quality impacts, both individually and cumulatively. Construction related emissions will be associated with the vehicle emissions of heavy construction equipment and fugitive dust from grading and other soil disturbance. The primary contribution to long-term emissions will result from vehicle emissions and increased trips generated by the project. Increased air emissions may also result in impacts on sensitive receptors in the project vicinity including St. Michael's Abbey and the Hillside Montessori School, and the exposure of persons to locally elevated levels of air pollution. Implementation of the project will not alter air movement, moisture, temperature, or cause a change in the climate. Moreover, there are no proposed land uses that will have the potential to create objectionable odors.

Scope of EIR Discussion

A project specific air quality study is being prepared for the proposed project. The air quality section of the EIR will document the findings and recommendations of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Identification of the existing air quality environment of the project site in the local and regional context.
- Identification of air quality impacts associated with construction of the proposed project.
- Assessment of the proposed project's consistency with the SCAQMD's Air Quality Management Plan (AQMP).
- Identification and quantification of long-term air quality impacts resulting from development of the proposed project.
- Identification and analysis of the potential sensitive receptors which may be exposed to pollutants in excess of acceptable levels.
- Recommendation of mitigation measures to reduce or avoid air quality impacts.
- Identification of unavoidable and cumulative air quality impacts.

9. NOISE

Source references (see Section IX): 4, 7, 8

Existing Setting

The project area is located in a relatively remote portion of eastern Orange County and partially developed with low-density single-family residences. The project site is primarily in its natural state with noise generated by existing land uses and vehicular trips is minor. Existing noise levels are primarily associated with traffic noise generated along primary roadways. The F/TSP stipulates a noise standard for the area that is more stringent than the more urban areas of the County. Mitigation measures for the F/TSP require that residential lots and dwellings be attenuated so as not to exceed an exterior standard of 60 dB CNEL (compared to the 65 dB County standard) and interior standard of 45 dB CNEL. The project is adjacent to El Toro Road, a major access road to O'Neill Regional Park.

Potential Impacts

Construction activities will involve heavy equipment and generate noise levels in excess of ambient levels in the project area. Long-term noise impacts will primarily be associated with an increase in vehicle trips and an incremental increase in traffic noise within the area.

Scope of EIR Discussion

A project-specific noise analysis is being prepared for the proposed project. The noise section of the EIR will document the findings of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Analysis of short-term construction related noise impacts
- Identification of nearby sensitive receptors, both human and noiser sensitive biotic communities.
- Analysis of stationary noise impacts and mobile source noise impacts on project vicinity residents and identified sensitive receptors. Evaluation of noise impacts in terms of ambient traffic or aircraft noise impacts on adjacent noise sensitive uses.
- Conformance requirements of project development with the Orange County General Plan Noise Element, and local and state regulations.
- Recommendation of mitigation measures necessary to reduce noise impacts to a level of insignificance.
- Identification of unavoidable and cumulative noise impacts.

10. BIOLOGICAL RESOURCES

Source References (see Section IX): 4, 7, 8

Existing Setting

The proposed project site is largely undeveloped, and annual grasslands cover over 50 percent of the site. Five types of native vegetation occur on the project site: Venturan-Diegan costal sage scrub, coast live oak woodland, southern mixed chaparral, southern sycamore riparian woodland, and mulefat scrub. Portions of the Venturan-Diegan costal sage scrub are disturbed. Agricultural land and ephemeral ponds also occur on the site.

Within these habitats, the following two sensitive plants were determined to potentially occur on the project site: Catalina mariposa lily (*Calochortus catalinae*) and intermediate mariposa lily (*Calochortus weedii* var. *intermedius*). There are known wildlife corridors within the project site. In addition, the following endangered, threatened, or rare animal species could occur within the project vicinity: Riverside fairy shrimp (*Streptocephalus woottoni*), western spadefoot toad (*Spea hammondi*), coastal whiptail (*Cnemidophorus tigris multiscutatus*), orange throat whiptail (*Cnemidophorus hyperythrus beldingi*), Cooper's hawk (*Accipter cooperii*), coastal cactus wren (*Campylorhynchus brunneicapillus*), loggerhead shrike (*Lanius ludovicianus*), southern California rufous-crowned sparrow (*Aimophila rucieps canescens*), and coastal California gnatcatcher (*Poplioptila californica*).

In addition, the project site is located within the watershed area of Aliso Creek Corridor. The Aliso Creek Corridor, which is located adjacent to the project site, is identified as a "blue line" stream by the United States Geologic Survey (USGS).

Potential Impacts

Grading and construction of the developed area will impact existing vegetation and potentially result in direct and indirect impacts to some of the sensitive plant and animal species identified that may occur in the area (as listed above). The project will also impact some coast live oaks. The proposed project also will potentially impact wildlife corridors and wetlands and related habitat resources.

Scope of EIR Discussion

Various project-specific biological assessments have been prepared for the proposed project. The biological resources section of the EIR will document the findings of the technical reports, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- General biological survey for wildlife and plant species with emphasis on potential habitat for sensitive species.
- Discussion of wildlife corridors.
- A detailed discussion of the proposed project's impacts to the Riverside fairy shrimp, including mitigation measures to avoid or reduce impacts.
- Assessment of the project's impacts on unique, sensitive, aesthetically significant, rare, threatened, or endangered flora and fauna within the project site, including oak tree groves and coastal sage scrub.
- Identification of impacts which might result from the removal of existing and intermittent ponds and the associated habitat for sensitive species, including the Riverside fairy shrimp, from the project site and off-site areas contiguous to project site.
- Recommendation of mitigation measures necessary to reduce all identified biological resource impacts to a level of insignificance.
- Identification of unavoidable and cumulative biological resource impacts.

11. AESTHETICS

Source references (see Section IX): 3

Existing Setting

The F/TSP area is recognized as an area characterized by visual resources unique to the County. Features that significantly contribute to the visual character of the area are identified in the F/TSP as: topography, natural vegetation, natural watercourses, and vistas and viewscape corridors. The F/TSP identifies public viewpoints based on relative visibility, significance or view corridors and/or important vistas. Additionally, per the County's Master Plan of Arterial Highways, El Toro Road is designated as a Scenic Highway.
The proposed project site is primarily in a natural state.

Potential Impacts

Potential aesthetic impacts which may result if the project is developed include the construction of slopes and retaining walls, and a significant alteration in the appearance of the site from offsite vantage points, including El Toro Road, which is designated a Scenic Highway. Aesthetic impacts are especially pronounced from the existing uses southerly and westerly of the project site.

Potential light and glare impacts which may result if the project is approved include increased levels of exterior lighting and illumination, having the potential for adverse impacts upon residential neighborhoods and sensitive biotic communities.

Scope of EIR Discussion

The aesthetics section of the EIR will include viewshed impact simulations and also include the following analysis:

- Identify existing scenic vistas and views open to the public across the project site. Assess the obstruction of any scenic vista or view open to the public or the creation of any aesthetically offensive site open to public view.
- Complete a line of sight analysis of the project from El Toro Road, Hidden Ridge; Portola Hills, St. Michaels Abbey, Ramakrishna Monastery, and O'Neill Regional Park.
- Assess the current aesthetic importance of the project site and the aesthetic impact of the proposed project to other developments in the project vicinity.
- Evaluate and compare the potential aesthetic impacts associated with implementing the existing zoning and those associated with the proposed project. The narrative of this topical discussion must be supplemented by detailed simulation models of both the General Plan and the project.
- Recommendation of mitigation measures necessary to reduce aesthetic impacts to a level of insignificance.
- Identify of unavoidable and cumulative aesthetic impacts.

12. CULTURAL/SCIENTIFIC RESOURCES

Source references (see Section IX): 3, 7

Existing Setting

The project site is located within an area that is sensitive for cultural resources. Previously conducted cultural resources reports were prepared which indicated that there are prehistoric and historic sites recorded within the project boundaries. In addition, the project site is also located within an area with high potential to produce significant paleontological resources.

Potential Impacts

Grading could potentially result in alteration of or damage to significant archaeological, historical and/or paleontological resources on the project site.

Scope of EIR Discussion

Site-specific cultural resources reports have been conducted for the project site. The cultural resources section of the EIR will document the findings and recommendations of the technical reports, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Inventory existing significant archaeological and/or historical sites, structures, objects, or buildings located on the project site.
- Inventory potential paleontological sites.
- Evaluation of potential significant impacts to archaeological or historical sites, structures, objects, or buildings
- Recommendation of mitigation measures necessary to reduce identified cultural/scientific resources to a level of insignificance.
- Identification of unavoidable and cumulative cultural/scientific resource impacts.

13. RECREATION

Source references (see Section IX): 7

Existing Setting

There are no existing recreation or public open space uses located on the project site. However, the proposed project site is located between O'Neill and Whiting Ranch/Limestone Regional Parks. A proposed trail is designated within the project site by the Orange County General Plan Recreation Element Master Plan of Regional Riding and Hiking trails.

Potential Impacts

The project represents a potential conflict with adopted recreational plans and policies, including the Aliso Creek Corridor Specific Plan, the General Plan Recreation Element and the Foothill/Trabuco Specific Plan.

Scope of EIR Discussion

The recreation section of the EIR will include a detailed discussion of the following:

- Identification of all currently planned recreational opportunities within the project site and the surrounding vicinity.
- Assessment of the impact of the proposed project on the quality and quantity of existing recreation opportunities.
- Evaluation and comparisons of the potential recreation impacts associated with implementing the existing zoning designations and those associated with the proposed project.
- Identification of mitigation measures necessary to reduce recreation impacts to a level of insignificance.
- Identification of unavoidable and cumulative recreation impacts.

14. MINERAL RESOURCES

Source references (see Section IX): 4, 7

Existing Setting

No known mineral resource exist on the project site. The project site is not designated as a know or potential mineral deposit by the state (mineral resource mapping as required under the Surface Mining and Reclamation Act) or the County of Orange.

Potential Impacts

The proposed project site is not located in an area identified as a mineral resource area, including mineral resources and energy resources. Implementation of the proposed project, therefore, will not result in the loss of availability of a known mineral resource that would be of future value to the region or the residents of the state. No locally important mineral resources are known to be present on or beneath the project site and implementation of the proposed project will not result in the loss of these minerals.

Scope of EIR Discussion

The proposed project will not result in a significant impact to mineral resources. This topical area will not be addressed in the EIR.

15. HAZARDS

Source references (see Section IX): 7, 8

Existing Setting

The project site is located close to the Cleveland National Forest, an area that is subject to high wild land fire hazards. When in operation, the site may also have been subject to hazards related to the flight operations at the El Toro Marine Corp Air Station (MCAS). The MCAS has been closed, and the facilities are currently being proposed for development of an international airport. No other sources of health hazards are known to exist within the project area.

Potential Impacts

Development of the project will introduce residents to a high fire hazard area. Development

and operation of a regional airport at MCAS could also expose residents to safety and accident hazards related to future flights from that airport. The project will not involve the use, storage or handling of hazardous materials.

Scope of EIR Discussion

The hazards section of the EIR will include a detailed discussion of the following:

- Identification of the current fire hazards, both on-site and within the project site vicinity
- Identification of any existing emergency response plans for the project site and potential impacts of the project on such plans.
- Disclosure of the status and environmental findings related to potential hazards of the proposed international airport as the former MCAS site.
- Recommendation of mitigation measures necessary to avoid or reduce hazards to a level of insignificance.
- Identification of unavoidable and cumulative hazard impacts.

16. PUBLIC SERVICES

Source references (see Section IX): 7, 8

Existing Setting

The project site is undeveloped open space with limited use for cattle grazing. The project site is served by the following major public services:

- Fire and emergency services are provided by the Orange County Fire Authority. Station No. 42 located at 19150 Ridgeline Road, is approximately ½ mile from the project site, and provides primary response.
- Police protection is provided by the Orange County Sheriff-Coroner's Department. The Department's headquarters located at 550 N. Flower Street in Santa Ana. Patrol cars are in the vicinity of the project site on a regular basis patrolling the area, rather than being dispatched from a particular substation.
- Saddleback Unified School District, serving grades K-12 provides school services for the project area.

- Orange County Public Library serves the project site and vicinity. The closest library to the site is the Rancho Santa Margarita Branch Library located at 30902 La Promesa in Ranch Santa Margarita.

Potential Impacts

Implementation of the proposed project will introduce approximately 299 single-family dwelling units to the area. This increase may result in the need for additional fire and emergency medical and police personnel and equipment in order to service the project site and vicinity. Therefore, the proposed project may have a potential significant impact related to the ability of fire and police to provide adequate level of service. The proposed project will generate additional elementary, intermediate, and high school students. As stated above, the project site is located within the Saddleback Valley Unified School District, which is at maximum capacity. The introduction of new students into the already crowded district may result in a significant impact. Implementation of the project will also incrementally increase the demand for library services.

Scope of EIR Discussion

The services section of the EIR will provide a detailed discussion of the following:

- Evaluation of existing fire and police service levels and capacities and the adequacy of these providers to serve the proposed project including: personnel and equipment, availability, and response times.
- Assessment of project impacts related to Saddleback Valley Unified School District.
- Identification and assessment of impacts in the local library system.
- Recommendation of mitigation measures necessary to avoid or reduce public services impacts to a level of insignificance.
- Identification of unavoidable and cumulative public services impacts.

17. UTILITIES & SERVICE SYSTEMS

Source references (see Section IX) 7, 8

Existing Setting

The project site is undeveloped open space with limited use for cattle grazing. The project site is served by the following major public utilities and service systems:

- Southern California Edison (SCE) – electrical service
- Southern California Gas (SCG) Company – natural gas
- Trabuco Canyon Water District – sewer and water service
- Waste Management of Orange County – solid waste

Potential Impacts

The proposed development of approximately 299 single-family dwelling units will incrementally increase service requirements for electricity, gas, sewer, water, and solid waste.

Scope of EIR Discussion

The utilities and services sections of the EIR will include a detailed discussion of the following:

- Assessment of the adequacy and capacity of public utilities and service systems to serve the proposed project site.
- Demonstration of compliance with County requirements to reduce impacts to landfills.
- Recommendation of mitigation measures necessary to avoid or reduce all identified public utility and service system impacts to a level of insignificance.
- Identification of unavoidable and cumulative public services impacts.

IX. SOURCE REFERENCES

The following information sources have been referenced in preparation of the Initial Study. The source numbers correspond to the numbers within the respective environmental topics of

Section VIII.

(1) California Department of Conservation, *Farmland Mapping and Monitoring Program*, Orange County Important Farmland 1998, 1999.

(2) California Department of Finance, Demographic Research Unit, *City/County Population and Housing Estimates*, 2001. (http://www.dof.ca.gov)

(3) County of Orange, Environmental Management Agency, *Foothill/Trabuco Specific Plan*, adopted December 1991.

(4) County of Orange, Environmental Management Agency, Foothill/Trabuco Specific Plan Draft Environmental Impact Report, July 1991.

(5) County of Orange, Environmental Management Agency, *County of Orange General Plan Resources Element*, April 18, 1984.

(6) County of Orange, Environmental Management Agency, *County of Orange General Plan Housing Element*, adopted September 14, 1993.

(7) County of Orange, Planning and Development Services Department, *Draft Subsequent Environmental Impact Report No. 566 Saddleback Meadows*, June 1997.

(8) County of Orange, Planning and Development Services, Draft Environmental Impact Report Saddle Creek & Saddle Crest Projects, December 2000.

(9) Southern California Association of Governments (SCAG), *County Population and Household Projections*, September 16, 1999.

Screencheck DEIR Submittal:	
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Response to Comments Submittal:	
Final EIR Submittal:	
Final EIR Certified:	

DRAFT
RESPONSE TO COMMENTS

SUBSEQUENT ENVIRONMENTAL IMPACT REPORT NO. 566

SADDLEBACK MEADOWS
Recorded Tract Map 10692

State Clearinghouse No. 96121072

Prepared for:

ORANGE COUNTY PLANNING &
DEVELOPMENT SERVICES DEPARTMENT

Prepared by:

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October 1997

DRAFT
RESPONSE TO COMMENTS

SUBSEQUENT
ENVIRONMENTAL IMPACT REPORT
NO. 566
State Clearinghouse No. 96121072

SADDLEBACK MEADOWS
Recorded Tract Map No. 10692

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October 1997

TABLE OF CONTENTS

Section			Page
I.	**INTRODUCTION**		I-1
	A.	Public Review Process	I-1
	B.	Organization of Comments and Responses	I-2
II.	**CORRECTIONS and ADDITIONS TO THE DRAFT EIR**		II-1
III.	**RESPONSE TO WRITTEN COMMENTS**		
	A.	Matrix of Agencies and Interested Persons Commenting on the Draft SEIR	
	B.	Response to Written Testimony	III-1
	1.	Robert A. Hamilton, Orange County CNPS (RAH)	III-1
	2.	Transportation Corridor Agencies (TCA)	III-4
	3.	State of California, Business and Transportation Agency, Department of Transportation (CAL)	III-5
	4.	SFC/Saundra F. Jacobs, REA (SFC)	III-6
	5.	Connor, Culver, Blake, Griffin, LLP (CCBG)	III-8
	6.	The Gas Company (TGC)	III-11
	7.	Connor, Culver, Blake, Griffin, LLP (CCBG.2)	III-12
	8.	U.S. Fish & Wildlife Service/California Department of Fish & Game (USFWS)	III-14
	9.	City of Mission Viejo (CMV)	III-31
	10.	Bowie, Arneson, Kadi, Wiles & Giannone (BAKWG)	III-39
	11.	The Orange County Transportation Authority (OCTA)	III-48
	12.	Kimberly A. Stocking (KAS)	III-49
	13.	TPG Management (TPG)	III-50
	14.	Wayne L. Brown (WLB)	III-54
	15.	Amber Graves (AMG)	III-55
	16.	Debra Moddelmog (DBM)	III-56
	17.	Justin Watson (JW)	III-57
	18.	City of Lake Forest (CLF)	III-58
	19.	Southern California Association of Governments (SCAG)	III-62
	20.	Saddleback Valley Unified School District (SVUSD)	III-76
	21.	State of California - Resources Agency, Department of Parks and Recreation (DPR)	III-78
	22.	Rural Canyons Conservation Fund (RCCF)	III-80

23. Governor's Office of Planning & Research (GOPR) III-87
24. Rutan & Tucker, LLP (RAT) III-88
25. SFC/Saundra F. Jacobs, REA (SFC.2) III-99
26. Connor, Culver, Blake, Griffin, LLP (CCBG.3) III-133

APPENDIX A

Letters Received from Commenting Agencies, Groups and Individuals

APPENDIX B

Letter from Thomas B. Mathews to CONNOR, CULVER, BLAKE & GRIFFIN, LLP, Edmond M. Connor, August 12, 1997

Letter from Thomas B. Mathews to SFC CONSULTANTS, Sandra F. Jacobs, August 14, 1997

Letter from Thomas B. Mathews to RUTAN & TUCKER, LLP, David B. Cosgrove, August, 1997

Letter from Thomas B. Mathews to SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT, Mary Lou Smith, August 14, 1997

I. INTRODUCTION

This document comprises the Response to Comments volume of the Final Environmental Impact Report (FEIR) No. 566 for Saddleback Meadows (Recorded Tract Map No. 10692/GA 960048. The purpose of this document is to:

> Respond to all comments of environmental significance received by the County of Orange relative to the Draft Environmental Impact Report (DEIR) No. 566, State Clearinghouse Number 96121072; and incorporate revisions and minor additions into the DEIR based upon public and agency comments.

Several of the comment letters received on the DEIR have stated that certain mitigation measures contained in the DEIR defer or put off actual mitigation requirements to a future time, beyond the certification of the Final EIR. Although a grading permit application was the initiating action which resulted in the determination that DEIR 566 be prepared, grading is only one of the issues being evaluated in the CEQA document. The CEQA document will consider the entire action, which in this case, is the development of a 705-unit manufactured housing subdivision and a small commercial site on the project site. Certification of the Final EIR by the Orange County Planning Commission, if acted on, signifies that the environmental effects of the proposed project have been adequately evaluated and considered, and in no way, authorizes the issuance of a grading permit which would allow commencement of onsite grading activities. Rather, once the final DEIR has been certified, the actual grading plans for the proposed project will be subjected to a thorough geotechnical and grading design plan check process. This process will require submittal of 40 scale grading plans for the entire grading operation being proposed, along with a detailed geotechnical report which will evaluate several factors including slope stability, remedial grading methods, sub-grade requirements and inspection information. The grading plans, the content of which is currently unknown, must meet all County of Orange procedural and substantive grading code requirements, and all conditions and mitigation measures tied to the grading permit must be satisfied, prior to issuance of the grading permit.

Several of the mitigation measures contained in DEIR 566, primarily standard condition (SC) mitigation measures, mandate the completion of a mitigation activity *prior to the issuance of any grading permit.* Standard Conditions or mitigation measures have been developed and adopted by the County of Orange Planning and Development Services Department, and are included, as required, in all CEQA documents prepared by the department. Completion of the specific activities addressed by these mitigation measures, at this stage of the planning process, would be premature. Should any *prior to any grading permit* related mitigation measure result in the generation of significant new information and new significant impacts not previously addressed by the Final EIR, a new CEQA document would be triggered and a new CEQA process will be initiated.

A. PUBLIC REVIEW PROCESS

The DEIR was distributed to various public agencies, citizens groups and interested individuals on June 27, 1997 and comments were received for a period of 45 days with the State Clearinghouse, Office of Planning and Research responsible for the coordination of

State of California Agency comments. The comment period closed August 12, 1997, with a total of 18 comment letters received.

In accordance with Section 15132 of the State CEQA Guidelines, a list of the persons, organizations and public agencies making comments on the DEIR is indicated in the matrix contained in this document. Comments / testimony and associated responses have been retyped and correspondingly numbered in sequential order. Copies of all actual DEIR comment letters are contained in Appendix A. of this document. Each comment is retyped as it appears in the actual letter including typographical errors. Responses follow each comment.

B. ORGANIZATION OF COMMENTS AND RESPONSES

Section 15088 of the CEQA Guidelines requires the County of Orange as the Lead Agency to evaluate comments on environmental issues received from public agencies, groups, and persons and to prepare written responses to comments received.

The following response to comments sections are included in this document:

1. Matrix of Agencies and Interested Persons Commenting on the DEIR
2. Responses to Written Comments
3. Letters Received from Commenting Agencies and Persons

In accordance with Public Resources Code 21092.5 (a) and the CEQA Guidelines, the Response to Comments document will be circulated to commenting public agencies, organizations, and individuals, a minimum of 10 days prior to certification of the Final EIR

II. CORRECTIONS AND ADDITIONS TO THE DRAFT EIR

II. CORRECTIONS AND ADDITIONS TO THE DRAFT EIR

This "*Corrections and Additions to the Draft EIR*" section contains revisions to information contained in the Draft EIR based on: (1) additional or revised information required to prepare a response to a specific comment, (2) updated information which has become out-of-date as a result of the passage of time, and/or (3) typographical errors.

1. Page I-1, Paragraph and Page 4-41, paragraph 4: Change the spelling of *effect* to *affect.*

2. Page 4-126, paragraph 3: Delete the sentence that states, *No amphibians were observed during the surveys of the site,* and add *the Western spadefoot toad was observed onsite in two of the ephemeral ponds.*

3. Page 4-123, Paragraph 2: Add the phrase *Southern Orange County Subregion* to follow NCCP.

4. Page 4-126, Paragraph 3: Add the following sentence: *The western spadefoot toad, Pacific treefrog and the western toad are expected to distributed across the project site and the surrounding area.*

5. Page 4-126 - Reptiles: Change the spelling of orangethroat whiptail to *orange throated whiptail.*

6. Page 4-130, Paragraph 1: Add the following statement: *The Cleveland National Forest is not a participant in the Orange County NCCP Southern subregion.*

7. Page 4-152, Paragraph 4: Add the following mitigation measure: *Prior to the issuance of any grading permit, the applicant shall provide proof that the project site has been currently surveyed for coastal California gnatcatcher, in accordance with the United States Fish and Wildlife Service protocol, to the satisfaction of the manager, PDS/Subdivision and the Administrator, Planning and Zoning.*

8. Page 4-130, Paragraph 3: Change central subregion to *central-coastal subregion.*

9. Page 4-136, Exhibit 53: Please refer to revised Exhibit 53, at the end on Section II.

10. Page 4-137, Paragraph 3: Add the following statement: *The western spadefoot toad is a California state species of concern.*

11. Page 4-139, Paragraph 2: Add San Bernardino County to the distribution list.

12. Page 4-153, Paragraph 4: Add the following mitigation measure: *Prior to the issuance of any grading permit, the applicant shall provide proof that the project site has been currently surveyed for the Quino checkerspot, in accordance with the survey protocol requirements of the United States Fish and Wildlife Service, to the satisfaction of the*

manager, PDS/Subdivision and the Administrator, Planning and Zoning.

13. Page 4-412, Table 27: Change the scientific name of the Northern harrier to *Cirous cyaneus.*

14. Page 4-52, Paragraph 7: Replace the third sentence with the following: *The proposed project is expected to generate approximately 8.340 trip-ends per day with 540 vehicles per hour in the AM peak hour and 825 vehicles per hour during the PM peak hour.*

15. Page 4-234, Paragraph 4: Add the following mitigation measure:

Prior to undertaking construction of the project, the applicant shall enter into an improvement agreement with the District to provide for the design, construction, installation, dedication and funding of all necessary master plan and in-tract storage facilities or, alternatively, pay the district's in-lieu water storage fees, as required under the district's rules and regulating and the tract map approval for Tract No. 10692.

16. Page 4-234, Paragraph 4: Add the following mitigation measure:

Prior to undertaking construction of the project, the applicant shall enter into an improvement agreement with the district to provide for the design, construction, installation, dedication and funding of all necessary master plan and in-tract storage facilities or, alternatively, pay the district's in-lieu water storage fees, as required under the district's rules and regulating and the tract map approval for Tract No. 10692.

17. Page 2-2, Environmental Procedures: Add the following bullet to the section: City of Lake Forest Community Development Department, April 23, 1997.

18. Page 4-214, Table 33: Replace Table 33 with the following table;

Table 33
PROJECT RELATED STUDENT GENERATION

Grade	Units	Student Generation Factor	Student Generation
K-6	705	0.2264	160
7-8	705	0.0566	40
9-12	705	0.0755	54
Total	**705**	**0.3585**	**254**

19. Page 4-210, Paragraph 4: Add the following sentence: *Currently, students in this general area are assigned to Portola Hills Elementary, Rancho Santa Margarita Intermediate and*

either El Toro or Trabuco Hills High School. All of these schools are filled to capacity and either do have now or will have by fall 1997, added a number of relocatable buildings to house enrollment exceeding the capacity of their original construction.

20. Page 4-1 through 4-235: All *should* wording contained within mitigation measures is changed to *shall.*

21. Page 2-7, Table 3: Change Ordinance 3486 to Ordinance 3468.

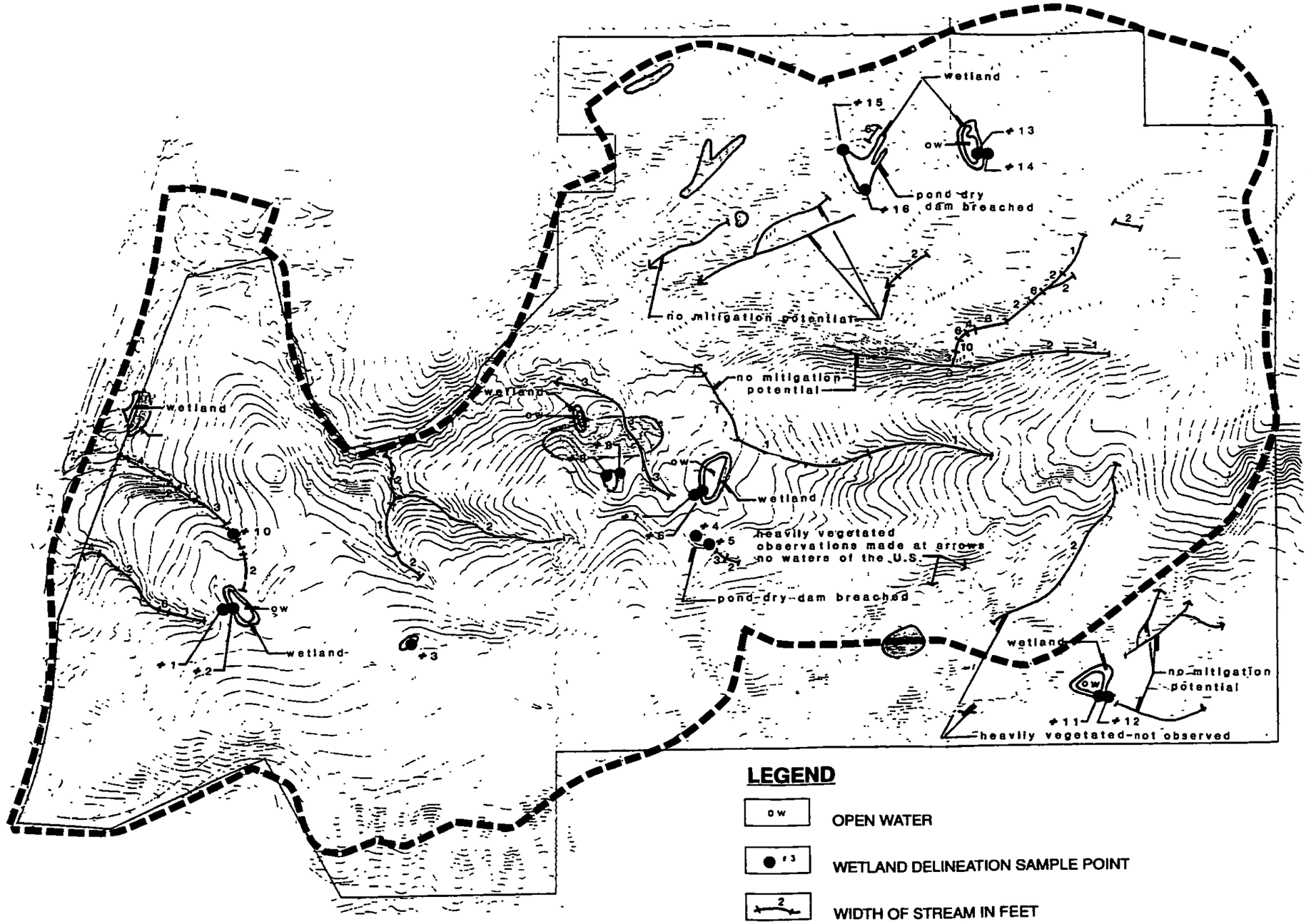
22. Page 4-39, Exhibit 22: Exhibit 22 is revised to include storm drain reference numbers. Please see revised Exhibit 22 at the end of Section II.

23. Page 4-94, Paragraph 2: The first sentence should read, *The bulk of the proposed project's impact will derive from the approximately 8,340 daily trips that will be generated at full site buildout.*

24. Page 4-155, Mitigation Measure 7-8: the following mitigation measure is added to the draft EIR: *All biological resource mitigation measures shall be monitored for compliance with applicable resource agency requirements and established success criteria, to the satisfaction of the manager PDS/Subdivisions and the Administrator Planning and Zoning.*

25. Page 4-158, Mitigation Measure 7-15: Change the working *should* to *shall.*

26. Page 4-174, Mitigation Measure 8-4: Add the following: *The applicant shall provide a fair share contribution to the Trabuco Canyon Water District for the purposes of water tank landscape screening.*



LEGEND

- OW — OPEN WATER
- #3 — WETLAND DELINEATION SAMPLE POINT
- 2 — WIDTH OF STREAM IN FEET
- LIMIT OF REMEDIAL GRADING

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS

Scale: 1"=400'

Source: Sweetwater Environmental Biologists, Inc.

N

Jurisdictional Wetlands and Waters of the United States

EXHIBIT No. 53

III-A. MATRIX OF AGENCIES AND INTERESTED GROUPS AND PERSONS COMMENTING ON THE DRAFT EIR

SADDLEBACK MEADOWS
DRAFT EIR NO. 566
SCH. NO. 96121072

Request for Public Comments
Public Review Period
June 27, '97 to August 12, '97

COMMENTATORS	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/Non-CEQA
June 29, 1997																															
1. Robert A Hamilton/CNB P. O. Box 961 Trabuco Canyon, CA 92678							X																							X	X
July 16, 1997																															
2. Transportation Corridor Agencies Steve Letterly, Director 201 E. Sandpointe Avenue Suite 200/P. O. Box 28870 Santa Ana, CA 92799-8870																															X
July 17, 1997																															
3. State of California-Business & Transportation Agency Department of Transportation District 12 2501 Pullman Street Santa Ana, CA 92705																															X
August 5, 1997																															
4. SFC/Saundra F. Jakobs 28012 Maguerite Pkwy. Suite H 424 Mission Viejo, CA 92692	X		X																											X	

SADDLEBACK MEADOWS DRAFT EIR NO. 566 SCH. NO. 96121072 Request for Public Comments Public Review Period June 27, '97 to August 12, '97 COMMENTATORS	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/Non-CEQA
✓August 6, 1997 5. Connor, Culver, Blake & Griffin, LLP. 2600 Michelson Dr. Suite 1450 Irvine, CA 92612	X		X																											X	
August 7, 1997 6. The Gas Company P. O. Box 3334 Anaheim, CA 92803																			X												
✓August 8, 1997 7. Connor, Culver, Blake & Griffin, LLP. 2600 Michelson Dr. Suite 1450 Irvine, CA 92612	X		X																											X	
✓August 8, 1997 8. U.S. Fish & Wildlife Service/ California Dept. of Fish & Game 2730 Loker Ave. Carlsbad, CA 92008			X	X			X			X																		X			

SADDLEBACK MEADOWS DRAFT EIR NO. 566 SCH. NO. 96121072 Request for Public Comments Public Review Period June 27, '97 to August 12, '97 COMMENTATORS	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/Non-CEQA
✓August 11, 1997 9. City of Mission Viejo 25909 Pala Suite 200 Mission Viejo, CA 92681	X	X	X		X	X	X	X		X				X														X			
✓August 11, 1997 10. Bowie, Arneson, Kadi, Wiles & Giannone 4920 Campus Drive Newport Beach, CA 92660																				X										X	X
August 11, 1997 11. The Orange County Transportation Authority Ben Jarvis, Associate Transporation Analyst 550 S. Main Street/P. O. Box 14184 Orange, CA 92863-1584																															X
✓August 11, 1997 12. Kimberly A. Stocking 26 Yellowpine Lane Trabuco Canyon, CA 92679	X																X											X			

SADDLEBACK MEADOWS
DRAFT EIR NO. 566
SCH. NO. 96121072

Request for Public Comments
Public Review Period
June 27, '97 to August 12, '97

COMMENTATORS	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/Non-CEQA
August 12, 1997 13. TPG Management, Inc. 1601 Dove Street Suite 105 Newport Beach, CA 92660	X																											X			
✓August 12, 1997 14. Wayne L. Brown 19252 Sleeping Oak Trabuco Canyon, CA 92679							X		X																						
✓August 12, 1997 15. Amber Graves 19252 Sleeping Oak Trabuco Canyon, CA 92679					X		X																					X			
✓August 12, 1997 16. Debra Moddelmog 19252 Sleeping Oak Trabuco Canyon, CA 92679					X		X																								

SADDLEBACK MEADOWS
DRAFT EIR NO. 566
SCH. NO. 96121072

Request for Public Comments
Public Review Period
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COMMENTATORS	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/Non-CEQA
✓August 12, 1997 17. Justin Watson 19252 Sleeping Oak Trabuco Canyon, CA 92679									X																X						
✓August 12, 1997 18. City of Lake Forest 25161 Lake Center Drive Suite 100 Lake Forest, CA 92630			X		X		X		X					X			X													X	X
✓August 12, 1997 19. J. David Stein/Manager, Performance Assessment and Implementation Southern California Association of Governments 818 W. Seventh Street, Sixth Fl. Los Angeles, CA 90017	X		X						X					X													X	X	X		X
✓August 13, 1997 20. Saddleback Valley Unified School District 25831 Diseno Drive Mission Viejo, CA 92691																	X														

SADDLEBACK MEADOWS
DRAFT EIR NO. 566
SCH. NO. 96121072

Request for Public Comments
Public Review Period
June 27, '97 to August 12, '97

COMMENTATORS	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/Non-CEQA
August 15, 1997 21. State of California - Resources Agency Department of Parks and Recreation 17801 Lake Perris Dr. Perris, CA 92571							X		X									X										X			
August 18, 1997 22. Rural Canyons Conservation Fund P. O. Box 550 Trabuco Canyon, CA 92072	X				X									X			X											X		X	X
August 19, 1997 23. Governor's Office of Planning & Research 1400 Tenth Street Sacramento, CA 95814																														X	
August 21, 1997 24. Rutan & Tucker, LLP 611 Anton Boulevard Suite 1400 Costa Mesa, CA 92626	X		X						X															X				X		X	X

SADDLEBACK MEADOWS
DRAFT EIR NO. 566
SCH. NO. 96121072

Request for Public Comments
Public Review Period
June 27, '97 to August 12, '97

COMMENTATORS	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset/Human Health	Population/Housing	Right of Way/Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics/View/Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/Non-CEQA
August 22, 1997 25. SFC/Saundra F. Jakobs 28012 Maguerite Pkwy. Suite H 424 Mission Viejo, CA 92692	X		X	X		X	X	X	X				X	X					X					X	X			X		X	X
August 27, 1997 26. Connor, Culver, Blake & Griffin, LLP. 2600 Michelson Dr. Suite 1450 Irvine, CA 92612	X		X						X					X															X	X	X

III-B. RESPONSE TO WRITTEN COMMENTS

III-B. RESPONSE TO WRITTEN TESTIMONY

Section III-B of this document contains Responses to Comments received on the Draft EIR during the Public Review period. Letters are arranged according to the dates received. Comments that present information which are not related to the environmental effects of the proposed project or the Draft EIR itself are noted, and will be referred to the appropriate decision-maker for consideration for consideration. Actual letters are contained in Appendix A. of this document.

COMMENTS AND RESPONSES - Robert A. Hamilton, June 29, 1997

RAH-1

Comment

On behalf of the Orange County Chapter of the California Native Plant Society (CNPS), and on my own behalf as a wildlife biologist, I offer the following comments on Draft Subsequent EIR No. 566. My knowledge of the CEQA review process, as it applies to biological resources in Orange County and the region, derives from over eight years' experience as a full-time biological consultant based in Orange County. During this time, I have prepared numerous biological technical reports for CEQA documentation covering large and small projects throughout Orange County and elsewhere in the region. I've certainly never encountered a situation where a project, once denied because of its incompatibility with applicable planning and zoning laws, was resubmitted in a form that actually flaunts the law more flagrantly than it did the first time around. I know better than to inquire about the circumstances under which such a ridiculous situation has come to be, or to spend much time actually considering the new development scheme.

Response

The comment states the qualifications of the commentator and his opinion relative to the consistency of the proposed project with applicable planning and zoning laws. A detailed discussion of the relationship between the recorded tract map and existing zoning and planning laws is contained in Section 4.1.3 of the DEIR on page 4-11.

RAH-2

Comment

On 29 February 1996, I submitted a letter to the County of Orange (County) commenting on DEIR No. 561, which covered the applicant's previously proposed project on this same site. This letter contained 26 comments (many more, actually, but that's the number that were responded to in any form). Most of my comments addressed the DEIR's factual errors and internal inconsistencies. I also suggested a number or realistic solutions to problems that I identified.

I have just completed a review of the responses prepared by the applicant/County in response

to my previous letter, and now remember afresh that most of my direct questions and comments were sidestepped, ignored, vaguely acknowledged, or responded to in a manner that obfuscated the comment's intent. This, combined with the fact that the new project makes no pretense of complying with planning and zoning laws, or the concerns of this community, indicates to me that the applicant/County has no meaningful interest in my thoughts or opinions.

I'm sure this is a common reaction of citizens who commented on the previous DEIR, but I find the situation particularly confounding, as the County recently selected me to serve on the 37,000-acre Nature Reserve of Orange County's Technical Advisory Committee. According to the 23 May 1997 appointment letter that I received from Executive ?Director Tim Neely, this committee will "serve as advisors to the Board of Directors on issues relating to monitoring , management and science." These are precisely the types of issues that I have commented on with regard to this project. I can't be an ignorant gadfly and a trusted scientific advisor simultaneously, so I ask the County to make up its mind

Response

The referenced letter dated February 29, 1996 which was directed at DEIR 561, was apportioned into 26 distinct comments for the purpose of preparing concise responses. Each comment was individually responded to and, in general, directed the commentator to the location in DEIR 561 where the information requested was located

RAH-3

Comment

Finally, I ask at least one County planner to review the responses that the applicant's consultants gave to my previous comments on this project; these were given with your approval and under your agency's name. If the goal of the Environmental & Project Planning Services Division is to completely frustrate the few citizens who take the time to read and comment on your EIRs, and to thus subvert the California Environmental Quality Act, you have succeeded.

Response

This comment is directed at DEIR 561 for a conventional subdivision of 318 single family dwellings (SFDs). The preparation of the previous Response to Comments Document was extensively reviewed and/or revised by staff of the Orange County Planning and Development Services Department, Environmental & Project Planning Division staff. All responses to comments contained in the referenced document were prepared in accordance with the requirements of CEQA and the CEQA Guidelines.

RAH-4

Comment

If the County is interested in taking a step in a more productive direction, I suggest that you spend a few dollars having an outside biological consultant review biological assessments *and* responses to comments prepared for major EIRs. For documents prepared by biologists based outside of Orange County, the reviewing firm should be based within Orange County, as consultants based elsewhere often display limited knowledge of the status and distribution of plant and animal species in Orange County. This simple and relatively cheap process would greatly improve the quality and credibility of the County environmental documents; it is a fairly common practice for CEQA lead agencies statewide.

Response

The comment indicating that biological firms based outside of the County have less credibility and knowledge than those based within the county is without basis. In fact, many of the firms and individuals involved with developing the Orange County NCCP are not based in the County. The Planning and Development Services Department does not require second party review practices.

COMMENTS AND RESPONSES - TRANSPORTATION CORRIDOR AGENCIES
Steve Letterly, Director, July 16, 1997

TCA-1

Comment

Thank you for providing the Transportation Corridor Agencies (TCA) with the opportunity to review and comment on the subject Draft EIR. Staff has reviewed the Draft EIR and has no comments at this time. If you have any questions regarding this correspondence, please contact Laura Coley Eisenberg of my staff at (714) 513-3482.

Response

The comment is noted. No response is required.

COMMENTS AND RESPONSES - STATE OF CALIFORNIA, BUSINESS AND TRANSPORTATION AGENCY, DEPARTMENT OF TRANSPORTATION/Robert F. Joseph, Chief, July 17, 1997

CAL-1

Comment

Thank you for the opportunity to review and comment on the Draft Environmental Impact Report for Saddleback Meadows. The proposed project is for the phased development of 705 manufactured single family housing units and a 1.5 acre, neighborhood commercial center and associated infrastructure. The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor approximately ½ mile south of the El Toro Road/Live Oak Canyon Road intersection. Caltrans District 12 is a reviewing agency and has no comment at this time.

Please continue to keep us informed of future developments which could potentially impact our State Transportation Facilities If you have any questions, or need to contact us, please call Aileen Kennedy on (714) 724-2239.

Response

The comment is noted No response is required.

COMMENTS AND RESPONSES - SFC CONSULTANTS/Saundra F. Jacobs, REA, Principal, August 5, 1997

SFC-1

Comment

I want to thank you and Bill Grieman again for providing for me, not only the previous EIR's for Saddleback Meadows, but for providing a desk and room for me to review these documents in your office.

While I intend to provide the County with my comments to Draft EIR 566, I would like a reasonable period of time to review the current Phase I grading plans which area referenced in the Draft EIR. My objective would be to determine whether the Draft EIR adequately addresses the impacts associated with the proposed grading shown on the grading plans. Unfortunately, I have been informed that the grading plans, which are the subject of the grading permit application, are not currently on file at the County for me to review at this time. I was able to review an older version of the grading plans that Bill Grieman had available. However, I have been told that I can make separate arrangements with the applicant to obtain a copy of the current grading plans, but that would take additional time and money that I had not planned on spending. Under the circumstances, I would ask that I be provided with an extension of time to submit comments on the Draft EIR, after I have had a chance to review the grading plans, which I hope will be made available at the County shortly.

I am requesting a three-week extension to the September 12, 1997 deadline, to review not only the grading plan, but also to review the files to the Zone Changes previously approved by the County. I have asked the Clerk of the Board to pull files for the following Zone Change Applications: ZC 79-24, ZC 82-63 and ZC 84-3, and I have received a call back from Beverly at the Clerk of the Board, indicating that these files should be available for my review sometime this week.

Please let me know whether you office will be able to accommodate my request for the three-week time extension to submit comments on the Draft EIR. The August 12 deadline is coming on too fast for me to be able to complete my review of all the necessary documents, particularly the grading plans, so I hope that you will be able to grant me the extra time I have requested. Please call me with your response.

Response

Although a grading plan application is the initiating activity which resulted in the determination that DEIR 566 be prepared, grading is only one of the issues being evaluated in the CEQA document. The County's CEQA action will consider the entire action, which in this case, is the development of a 705 unit manufactured housing subdivision and a small retail site on the project site.

Sufficient detailed grading and related geotechnical information is available in DEIR 566, including information incorporated by reference from DEIR 561, prepared for the previous 318 unit proposal, in Section 4.2 of the DEIR, beginning on page 4-33. The information is based upon extensive geotechnical investigations conducted for the project site, which are contained in the Appendices for DEIR 566 and DEIR 561.

The geotechnical information contained in DEIR 566 meets standard practices of the County of Orange, which requires sufficient grading information for a planning decision. The planning level of detail includes the location of landslides, faults and other geotechnical hazards, the types of soil, and proposed grading concepts, including post grading topography, being proposed.

Standard 40 scale grading plans and accompanying more detailed geotechnical review documents and detailed hydrology reports will be reviewed and approved by the Subdivision and Grading Services Division, in consultation with various other divisions of the County including Environmental and Project Planning Services Division, prior to issuance of a grading permit. If significant new impacts, not previously addressed, are discovered at that time, a new CEQA document will be required.

COMMENTS AND RESPONSES - CONNOR, CULVER, BLAKE & GRIFFIN, LLP.
Edmond M. Connor, August 6, 1997

CCBG-1

Comment

As you know, August 12, 1997 is the current deadline for submitting comments on Draft EIR 566, the subsequent environmental impact report which has been prepared in connection with the grading permit application submitted by the developer of the Saddleback Meadows project. Our firm has been asked to submit comments on the Draft EIR on behalf of the Vedanta Society of Southern California (the "Society") which owns and maintains the Ramakrishna Monastery adjacent to the project site. However, due to an unusual set of circumstances, we find ourselves unable to submit comments prior to the August 12 deadline because critically important documents that we and our consultants need to analyze in assessing the adequacy of Draft EIR 566 have not been made available for public review.

The problem that we have encountered is that we have not been able to gain access to the developer's grading plans which are the *sine qua non* of the grading permit application process. Without such plan, no permit can be issues. Moreover, without access to the grading plans themselves, it is impossible to comment on the adequacy of Draft EIR 566 which, as stated in the Initial Study, was prepared for the express purpose of evaluating the environmental effects associated with the grading permit application.

Indeed, without being able to review the grading plans, neither our firm, nor the geotechnical consultants which have been engaged on behalf of the Society, can determine whether Draft EIR 566 properly evaluates the impacts, and adequately addresses the mitigation measures, associated with the proposed grading of the Saddleback Meadows property. Thus, the Society is effectively stymied in its ability to submit adequate comments on the Draft EIR by the August 12 deadline.

Last Friday, during a meeting with Messrs. McGill and de Mayo at the County offices, I asked if I could obtain copies of the grading plans, but I was informed that the County had returned the plans to the developer and no longer had a set available for public review. I was also told that, if I wanted to obtain a copy of the grading plans, I would have to contact the developer directly and make arrangements to pay for copies of the plans to be made. Although my office promptly contacted the developer's agent, TPG Management, immediately following my meeting at the County, and then, first thing Monday morning, messengered a check to TPG to comply with its demand that we pay *in advance* for the cost of copying the plans, several days have gone by; and we still have not received any plans as of this writing. I am surprised that it would take more than three days to run blue lines of the grading plan, but, be that as it may, we still do not have them and the August 12 deadline for submitting comments is coming on fast. Under these circumstances, therefore, I would respectfully request that the Society ;be granted a minimum of 30-day extension of time to submit its comments on Draft EIR 566.

Actually, I think the proper thing to do in light of the fact that the grading plans have not been available for public review at *any* time during the 45-day comment period for Draft EIR 566 is to circulate a *new* public notice setting a *new* deadline for submitting comments on the Draft EIR. The new time period for submitting comments should not start running until the grading plans are made available for public review at the County.

Response

Please refer to Response to Comment SFC-1 and the letter from Mr. Tom Mathews, Director, County of Orange Planning and the Development Services Department, to Mr. Edmond N. Connor, dated August 12, 1997 (Appendix B). The letter explains that although the grading application (960048) is the initiating activity which resulted in the determination that DEIR 566 be prepared, the County's CEQA action will consider all of the components of the proposed project. In addition, the letter indicates that the DEIR contains sufficient detailed grading and geotechnical information which meets standard County practices for a planning decision. Due to the special interest of the Vedanta Society, the County agreed to respond to comments from the Vedanta Society provided they were received no later than 4:00pm on August 22, 1997.

CCBG-2

Comment

What should *also* be made available for review and copying at the County is the soils engineer's geotechnical review and copying at the County is the soils engineer's geotechnical review of the 40-scale grading plans which the Orange County Grading Code requires be submitted *before* any grading permit can be issued. Indeed, without the soils "specs" providing details regarding proposed buttresses, shear keys, back cuts, etc., it is difficult to understand the grading plans. Moreover, it is virtually *impossible* to assess feasible mitigation measures for known geotechnical hazards without having access to the grading plan review prepared by the soils engineer of record.

Please let me know whether the grading plan review by G.A. Nicoll & Associates is available for public review and copying. As ;you may be aware, Draft EIR 566 specifically states that a grading plan review will be prepared "to accompany the grading permit application." (See Appendix D, p. 4, paragraph 4.) If, as I suspect, Nicoll's grading plan review is *not* available for review and copying, then this would be yet another reason for re-noticing the public comment period on Draft EIR 566. In fact, if the grading plan review has not been prepared or is unavailable for public review, this would raise serious questions as to the legal adequacy of Draft EIR 566.

Response

Please refer to response to comment CCBG-1

CCBG-3

Comment

I do not wish to criticize the County for what appears to have been a problem created by the developer in not making critical documents available for review, but the fact remains that neither the Society, nor any other "interested party" or member of the public, has been dealt a "fair hand" in being required to submit comments on Draft EIR 566 without being allowed reasonable and timely access to the documents which are the "very heart and soul" of the grading permit application, i.e., the grading plans and the grading plan review. I would greatly appreciate it if your office would rectify this problem by (1) making copies of the grading plans and the grading plan review available for public review at the County as soon as possible and (2) providing public notice to all interested persons that a new 45-day time period to submit comments on Draft EIR 566 has been established. If your office is not inclined to provide all members of the public with such an extension of time, then, at the minimum, I would ask that the Society be provided with the 30-day extension which I have requested.

As a final note, I would ask that my name and address be placed on whatever public notice lists area being maintained by the County in connection with the Saddleback Meadows project and any planning approvals and matters relating thereto. Please add me as an "interested party" on all mailing lists so that I can receive public notice, information, and reports regarding any and all aspects of the Saddleback Meadows property or project. Thank you for your courtesy and cooperation in this regard.

Response

Please refer to comment CCBG-2.

COMMENTS AND RESPONSES - THE GAS COMPANY, August 7, 1997

TGC-1

Comment

This letter is not to be interpreted as a contractual commitment to serve the proposed project, but only an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served from an existing main as shown on the attached atlas sheet without any significant impact on the environment. The service will be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Residential (System Area Average) Yearly

Single-family	750 therms/year/dwelling unit
Multi-family units	475 therms/year/dwelling unit

These averages are based on total gas consumption in residential units served by Southern California Gas Company and it should not be implied that any particular home, apartment or tract or homes will use these amounts of energy.

We have developed several programs which are available, upon request, to provide assistance in selecting the most energy; efficient appliances or systems for a particular project. If you desire further information on any of our energy programs, please contact this office at 1(800)427-2000, for assistance.

Response

Section 4.13 of the DEIR, beginning on page 4-223, contains an evaluation of the impact of the proposed project on existing utilities and service systems, including natural gas. The ability of The Gas Company to serve the proposed project, based on current conditions and regulatory policy is noted.

COMMENTS AND RESPONSES - CONNOR, CULVER, BLAKE & GRIFFIN, LLP.
Edmond M. Connor, August 8, 1997

CCBG.2-1

Comment

This will confirm this afternoon's telephone conversation during which you kindly agreed to provide my client, the Vedanta Society of Southern California (the "Society") with an extension of time, to and including next Friday, August 15, 1997, within which to submit comments on Draft EIR 566. You explained that you had consulted with John Buzas and had concluded that, since various County personnel were unavailable to make a final decision on the requests set forth in my August 6 letter to Messrs. Brantley and Greiman, a three-day extension of time seemed to be an appropriate "stop-gap" remedy under the circumstances.

I understand that, when the appropriate personnel are available at the county next week, I will receive a definitive answer to the requests set forth in my August 6 letter. I certainly appreciate receiving the three-day extension, but my firm and the Society's geotechnical consultants still need more time to review the grading plans and the grading plan review before any of us will be in a position to submit comments on Draft EIR 566. Although the public review provisions of CEQA and the State CEQA Guidelines would suggest that we should not have been required to do so, we have already been compelled to make separate arrangements with, and to pay money to the developer's agent to obtain the right to review the grading plans for which a grading permit is being sought.

However, even if we were willing to pay additional money for the right to gain access to the grading plan review by the soils engineer of record, we could not do so because that report has not even been completed as of this date. Of course, Appendix D to Draft EIR 566 expressly states that a geotechnical review of 40-scale grading plans will be prepared to accompany the grading permit application, but, for whatever reason, the grading plan review has not been finalized and is not available for any member of the public to even see it, much less study it in detail. That really puts the Society, and all other members of the public, at a tremendous disadvantage in being able to adequately comment on the Draft EIR.

Response

Please refer to response to comment SFC-1.

CCBG.2-2

Comment

As I explained to you in my earlier phone message, section 15146 of the State CEQA Guidelines requires that the degree of specificity to be found in Draft EIR 566 must be commensurate with the stage of development that is being evaluated. in other words, since the construction of grading improvements is being analyzed in conjunction with a grading

permit application, the *specific* details of the grading, and the impacts and mitigation measures associated therewith, must be addressed in the Draft EIR. Moreover, under section 15147 of the CEQA Guidelines, all technical data, maps, plans, etc, which are necessary to make a "full assessment" of the environmental impacts of the project must be set forth in the appendices to the Draft EIR, and such appendices "shall be *readily available* for public examination." (Emphasis added.)

The California courts have not hesitated to enforce the above requirements by striking down EIRs which have omitted important technical information, even if the information was found to be available from other sources. As stated by; our own Fourth District Court of Appeal, "whatever is required to be considered in an EIR *must be in that formal report*; what any official might have known from other writings or oral presentations cannot supply what is lacking *in the report." (See, Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d.818,831; *San Joaguin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713,727.)

As the above authorities indicate, both the grading plans and grading plan review should have been (10 set forth in the Appendices to Draft EIR 566 and (2) readily available to all members of the public during the entire 45-day comment period. Since the County will not issue any grading permit to the developer without the grading plans and the grading plan review having been approved by County staff, these documents should not have been *excluded* from the CEQA review process. However, since these documents were, in fact, omitted form Draft EIR 566 and have been available at the County for public review, I think it only fair that the county take quick action to correct these problems.

My proposal would be that the County request the developer to (1) complete the grading plans and the grading plan review and submit them to County staff as soon as possible and (2) revise Draft EIR 566 to not only include these documents as part of the Appendices, but also to adequately address them in Volume I of the EIR. Once the grading plans and grading plan review have been make "readily available" for public review, then a new 45-day period for submitting comments on Draft EIR 566 should be re-noticed.

Again, I apologize for burdening you with this issue in Ben de Mayo's absence, but I sincerely believe, Nick, that fundamental fairness, not to mention the strict dictates of the State CEQA Guidelines, requires the County to remedy the problems which have occurred as a result of the grading plans and grading plan review not having been available for public review prior to the expiration of the comment period on Draft EIR 566. The problems are easily corrected as I have suggested above, and I hope the County will do just that. Thank you for your courtesy and cooperation in doing what you can to make that a reality.

Response

Please refer to response to comment CCBG-1.

COMMENTS AND RESPONSES - U.S. FISH & WILDLIFE SERVICE
Gail C. Kobvetich, Field Supervisor, USFWS, Ron Rempel, NCCP Program Manager, California Department of Fish and Game, August 8, 1997

USFWS-1

Comment

The U.S. Fish and Wildlife Service (Service) and California Department of Fish and Game (Department) Natural Community conservation Planning (NCCP) program staffs (i.e., "the Wildlife Agencies") have reviewed the above DSEIR. The project is located within the Southern Subregion Orange County NCCP Planning Area, near the border with the NCCP Central Subregion. The preferred project proposed the phased development of 705 manufactured, single-family residential units on a 222.9-acre site near the intersection of El Toro Road and Live Oak Canyon Road, impacting a total of about 191 acres on site and 20 acres off site. About 14% of the project site is proposed to reamin as open space.

Biological resources on site include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about four acres of wetland vegetation communities. The federally endagered Riverside fairy shrimp *(Streptocephalus woottoni)* is known to occur whithin at least seven wetlands (identified in the DSEIR as "ephemeral ponds") spread throughout the site. Several plant and animal species considered sensitive by the Wildlife Agencies occur (e.g., cactus wren *[Camphylorhynchus brunneicapillus]*) or may occur. The coastal California gnatcatcher (Polloptila californica californica) here after "gnatcatcher", a federally threatended species, is likely to occur on site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. The Quino checkerspot butterfly (Euphydras editha quino), a federally endangered species, may occur as well.

Response

Comment noted. The comment reiterates information contained in the DEIR. No response is required.

USFWS-2

Comment

Along with the No Project/No Development Alternative ("Alternative 1") required by the California Environmental Quality Act (CEQA), there are four other alternatives presented in the DSEIR. Alternative '1' would avoid any adverse environmental impacts to the project site. Alternative '2' proposes 150 housing units with a minimum lot size of 20,000 feet, disturbing more than 138 acres this would result in elimination of oak woodlands, CSS, and ephemeral ponds of which some rare and sensitive species are obligate residents. Noise decigbel levels would increase and possiblyu affect wildlife in adjacent O'Neill regional Park. Alternative '3' proposes 100 single family units on a 31.7 acre portion of the site. This alternative avoids about 191 acres of habitat, therby appearing to allow connection between open space areas

north, south, and east of the project site. However, this project laternative will impact two ephemeral ponds and CSS habitat. Alternative '4' proposes 299 housing units, distrubing abourt 165 acres. A wildlife corridor, narrowing to 400 feet in width and going up a nearly vertical slope, is proposed to be bisected by a road. Alternative '5' proposed 318 housing units within a development area of 113 acres, leaving about 100 acres in open space. the wildlife corridor would be the same as for Alternative '4' except that the minimum width would be about 700 feet. The proposed project appears to conflict with the earlier-adopted Foothill-Trabuco and Aliso Creek Corridor Specific Plans and also fails to describe adequate project design for maintaining corridor integrity of the Orange County NCCP Reserves. In evaluating alternatives 2-5, Alternative '3' would have the least environmental impact, but would nonetheless, substantially impact wildlife corridor integrity between subregional NCCP reserve areas in Orange County.

Response

Comment noted. The comment reiterates information contained in the DEIR relating to alternatives and their effect on biological resources and wildlife movement. No response is required.

USFWS-3

Comment

The Wildlife Agencies have formally commented at different stages of the proposed project. We have also met with the project applicant and their consultants, including a meeting at the project site on May 20, 1996. On June 29, 1994, the Service wrote aletter stating that project approval must be deferred until the Southern Subregiona NCCP was finalized. In 1996, both agencies commented on the DEIR (No. 561). The Service letter stated that the location of this development within and adjacent to occupied habitat of rare species could compromise the NCCP reserve and its ability to function as a wildlife corridor through the direct and indirect impact of habitat destruction, fragmentation, noise, and lighting Our comments were based upon a project alternative, similar to Alternative four, which provided more open space than the proposed preferred alternative presented in this DSEIR.

In general, the DSEIR does not adequately describe the biological resources of the project area. The document only describes and anlyzes impacts of the different alternatives in a superficial manner. Referring to our joint Wildlife Agency letter of January 30, 1997, responding to the Notice of Preparation, at least eight of our requested infomation items were completely or partially ignored, without explanation. Available data were not identified.. Further, the Initial Study (p. 17) states that the scope of the EIR discussion will provide a "detailed discussion" and "[A] re-inventory of the existing unique, sensitive ... flora and fauna within the project site..." Also to be provided was "[A} detailed analysis of the project's impacts to wildlife movement, including mitigation measures to avoid or reduce those imacts." Neither of these items was adequately accomplished.

Response

Individual letters were received from both the California Department of Fish and Game and the U.S. Fish and Wildlife Services on the previous DEIR (561) on March 25, 1996. DEIR 566 incorporates DEIR 561 by reference, including the analysis of alternatives. DEIR contains an in-depth analysis of the effect of the proposed project and a range of alternatives on biological resources and wildlife movement As promulgated by the CEQA Statute and the CEQA Guidelines, the level of detail of analysis of identified alternatives in the DEIR is more cursory than for the proposed project. Section 3.2 of the DEIR, on page 3-8 outlines the unique characteristics of a recorded tract map and the inability to alter physical design features of the recorded tract map to mitigate impacts. Section 4.7.3 of the DEIR, beginning on page 4-143, documents the unavoidable adverse impacts associated with the proposed project, with mitigation measures outlined in Section 4.7.6 of the DEIR, beginning on page 4-137. Unavoidable adverse impacts, following the implementation of identified mitigation measures, are listed on page 4-154. Certification of the Final EIR will require preparation of a Statement of Overriding Considerations.

USFWS-4

Comment

The Wildlife Agencies offer the following specific information and recommendations to assist the County and the project applicant in planning for the preservation of sensitive wildlife species, habitats, and wildlife corridors within the proposed project area, and as a meanms to assist you in complying with pertinent statutes. Page numbers refer to the DSEIR unless otherwise noted.

1-1, paragraph 2 and 4-41, paragraph 4. Both of these statements should read as "affect."

Response

The comment is noted. Please see Correction and Additions to the DEIR, contained in Section II.

USFWS-5

Comment

4-41, exhibits 21, 22, 53. Interference with existing hydrology on site is shown with the construction of the preferred alternative. Impacts to "ephemeral ponds" not directly within the project footprint would also occur. Analyze these impacts further.

Response

A detailed analysis of project related impacts to onsite habitat, including ephemeral ponds, is contained in Section 4.7 3, beginning on page 4-143 of the DEIR. In addition, a detailed

analysis of project related impacts to hydrology is contained in Section 4.3 of the DEIR, beginning on page 4-33 of the DEIR.

USFWS-6

Comment

4-43, last paragraph. The Wildlife Agencies disagree with the conclusions that there would be "... no unavoidable adverse impacts to surface or groundwater hydrology" and the water quality impacts would be "... to less than significant levels" since current hydrological conditions support the existence of these areas. Implementation of the preferred alternative, including alteration of drainage patterns, would result in the direct loss of a minimum of seven ephemeral ponds on site.

Response

Surface and groundwater hydrology and water quality are evaluated in detail in Section 4.3 of the DEIR. Historical research has determined that the onsite ephemeral ponds were artificially created to support cattle grazing activities and are not directly dependant on surface or groundwater hydrology. The DEIR states, in Section 4.7.3 on page 4-145, that 0.6 acres of the 0 8 acres of ponds, or 7 of the 8 ephemeral ponds, would be directly impacted by implementation of the proposed project.

USFWS- 7

Comment

4-110. The noise impact analysis is cursory and needs to refer to appropriate literature attributing impact to avian populations due to noise. Also, in the cases of "major airport runways" the analysis is biased by not considering adjacent land use changes in the context of the distribution of the coastal California gnatcatcher.

Response

As stated in the noise analysis, in Section 4.6 of the DEIR, noise levels in the vicinity of the project are not expected to appreciably increase as a result of project implementation. Typical noise increases within 100 feet of major highways are calculated to be 1 decibel. In addition, the conversion of MCAS El Toro to a civilian airport would result in reduced noise contours as compared to those shown in the DSEIR on Page 4-105. Earlier surveys prepared for DEIR 561, did not identify any gnatcatchers onsite.

USFWS-8

Comment

4-119, paragraph 2. There was no Service protocol for presence/absence of gnatcatchers in 1993 and 1994.

Response

The comment relating to gnatcatcher survey protocol is incorrect. Gnatcatcher surveys were conducted in 1993 and 1994 to applicable survey protocol in place at the time of the actual survey. These surveys did not identify any gnatcatchers onsite. Paragraph 2 on page 4-119 clearly states that additional surveys for gnatcatchers have not been conducted to current USFWS protocol, which were not established until May, 1997. Gnatcatcher surveys are required prior to the issuance of any grading permit. See Section II, Corrections and Additions to the DEIR in this Document.

USFWS-9

Comment

4-122, exhibit 50. Western spadefoot toad *(Scaphiopus hammondi)* is identified in the exhibit (and on page 4-137) as occurring on site; however, the discussion about amphibians on page 4-126 states that "[N]o amphibians were observed during the surveys of the site." Correct this discrepancy.

Response

The comment is correct and acknowledged. The Western spadefoot toad was observed onsite in two of the ephemeral ponds. Please see Section II of this document, Corrections and Additions to the DEIR.

USFWS-10

Comment

4-123, paragraph 2. Add that the NCCP refers to the Southern Orange County Subregion to distinguish this planning effort from other ongoing and completed efforts.

Response

The comment is noted. A discussion of the southern Orange County subregion will be incorporated into the discussion of the NCCP. Please refer to Section II of this document, Corrections and Additions to the DEIR.

USFWS-11

Comment

4-125, "Ephemeral Ponds." The Wildlife Agencies disagree with the assertion that "all of the ephemeral ponds were artificially created a number of years ago..." Given the geological conditions of frequent landslides in the area, these wetlands could have been "slump" or "slope" ponds that underwent human modification at a later time. These types of wetlands

are known in both Orange and San Diego counties. Further information is needed in the DSEIR regarding the origin of these wetlands in the context of the proposed impacts.

As identified by Marie Simovich, Ph.D , a consultant for the former applicant, some of the on site wetlands contain a high diversity of aquatic invertebrates, strongly suggestive of the normal nautral origin of these wetlands. Known to occur in at least some ponds with Riverside fairy shrimp and western spadefoot are cladocerans (e.g., e.g., *Daphnia*, 2 or 3 species likely), copepods, ostracods (seed shrimp), and clam shrimp (*Cyzicus californicus)*. Clam shrimp have a restricted distrubtion in coastal southern California. Further information is needed in the DSEIR regarding aquatic invertebrates in the context of the proposed impacts.

Response

Please see response to comment number USFWS-6. The ephemeral ponds have been located on the project site for many years, and used as a water supply associated with livestock grazing. Please refer to the discussion of ephemeral ponds on Page 4-125 of the DEIR.

USFWS-12

Comment

4-126, Invertebrates, last sentence. the DSEIR states that "[H]undreds of additional invertebrates are expected to use the site." No date are provided to support this statement. The Wildlife Agencies presume that this statement refers to the expected number of species, not the number of individuals. Please qualify and support the statement.

Response

Please refer to Appendix H of the DEIR for a discussion and listing of onsite identified invertebrates. The "Hundreds" statement refers to the number of invertebrate species expected to occur onsite, although not completely quantifiable.

USFWS-13

Comment

4-126, Amphibians. The last sentence erroneously implies that the distribution of amphibians is restricted to steep slopes. No data are provided to support this statement. The likely widespread distribution on stie of western spadefoot toad, Pacific tgreefrog (*Hyla regilla*), and western toad (*Bufo boreas*) needs to be noted and discussed. Please revise the discussion.

Response

The comment is acknowledged. The DEIR text is hereby revised to reflect this comment.

Please see Section II of this document, Corrections and Additions to the DEIR

USFWS-14

Comment

4-126, Reptiles. The correct name is the orange-throated whiptail lizard. Please correct this name throughout the document (e.g., 4-138, -147).

Response

The comment is correct and acknowledged and hereby incorporated into the DEIR. Please refer to Section II of this document, Corrections and Additions to the DEIR.

USFWS-15

Comment

4-130, paragraph 1. The DSEIR states that the "[Southern] subregion will incorporate public lands of the Cleveland National Forest (CNF)." We suggest that this statement be removed or properly qualified since no additinal conservation benefits would occur unless the U.S. Forest Service (USFS) is a signatory to an NCCP agreement. The USFS is not participating in the Orange County Central/Coastal NCCP and has not indicated that it wishes to be a "participating landowner" in the Southern Subregion. The DSEIR should not presume that future CNF managment activities will be compatible with an NCCP.

Response

The comment is noted. The referenced statement pertaining to the Cleveland National Forest was intended to indicate the availability of habitat for NCCP and other related species. Please see Section II of this document, Corrections and Additions to the DEIR.

USFWS-16

Comment

4-130, paragraph 2. The DSEIR states that the gnatcatcher is not found onsite. Surveys to current Service protocol were not done. The last gnatcatcher surveys were done in 1994. Surveys should be conducted according the Service protocol ot determine the baseline status for the species. The results of these surveys will be needed to assess impacts, including the number of gnatcatchers subject to "take," in accordance with the Intra-Service Biological Opinion for the 4(d) rule.

Response

The comment restates information contained within the DEIR. As part of the County of

Orange approval process for Grading Application 960048, conditions of approval will be developed which will require the completion of current gnatcatcher surveys, conducted to current USFWS protocol, prior to the issuance of a grading permit. Please refer to Section II, Corrections and Additions to the DEIR, for an additional mitigation measure which requires the gnatcatcher survey prior to the issuance of a grading permit.

USFWS-17

Comment

4-130, paragraph 3. The correct name is the Central-Coastal Subregion.

Response

The comment is noted and the correction is hereby incorporated into the DEIR. Please refer to Section II of this document, Corrections and Additions to the DEIR.

USFWS-18

Comment

4-130, paragraph 4. The DSEIR refers to the "disturbed nature of the site" in the context of fulfilling wildlife corridor "needs in the area." No additional information is provided to support this assertion. The existing landscape linkages and documented presence of mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*), all of which would use a wildlife corridor within the project area, needs to be noted and discussed. Mountain lion movement through the area was not disclosed in the DSEIR. This study was undertaken by Paul Beier, Ph.D. and reported in the scientific literature. For further explanation of our request that these data be disclosed and discussed in the context of this proposed project, refer to item number eight in our joint wildlife agency letter of January 30, 1997.

Response

The statement in the DEIR relating to the disturbed nature of the site is correct and is discussed in detail in Sections 3.0 and 4.0 of the document The statement in the DEIR indicates that the listed onsite conditions contribute to the conclusion that an onsite wildlife movement corridor would not *entirely fulfill wildlife corridor needs in the area.* However, it should be noted that EIR No. 553 for the Central-Coastal Subregional Natural Communities Conservation Planning (NCCP)/Habitat Conservation Plan (HCP) which was certified by the Orange County Board of Supervisors on April 16, 1996 identifies the area in the vicinity of the project site as one of the two primary wildlife linkages connecting the Central-Coastal NCCP/HCP and South NCCP study area (See Exhibit No. 11 attached).

In addition, the working group for the South Subregional NCCP program, which includes the project biological consultants, California Department of Fish and Game, U.S. Fish and

Wildlife Service, and others, has determined that the Saddleback Meadows site and surrounding vacant lands in their existing condition are extremely important in providing regional wildlife movement and use connections to the Central subarea of the Central-Coastal NCCP/HCP. This determination was based largely on mountain lion studies conducted by Dr. Paul Beier and large mammal studies conducted by Doug Padley for the Foothill-Trabuco Specific Plan together with the fact that the proposed project area is located immediately adjacent to the Central-Coastal reserve system within the Aliso Creek Corridor portion of whiting Ranch Regional Park and the Southern California Edison parcel. These areas were included in the reserve system to ensure that regional connectivity is maintained between the two subregions.

USFWS-19

Comment

4-131, exhibit 51. This exhibit is difficult to interpret since it was originally a color map of larger size. For example, gnatcatchers and cactus wrens are noted in the legend but are invisible on the exhibit. We suggest that the exhibit be redone to show only relevant information.

Response

Exhibit 51, entitled *Proposed NCCP Southern Subregional Planning* Area, depicts the boundary of the planning area and several biological features related to the NCCP Planning effort. The scale of the exhibit does not allow every detail to be shown in an 11x17 format.

USFWS-20

Comment

4-133, paragraph 3 The DSEIR says that "The fragmented nature of much of the coastal sage scrub onsite makes it low quality." However, the current gnatcatcher status is unknown and most wildlife surveys were out of date, having been conducted in 1993 and 1994. The paragraph continues by stating that the steep slopes support the highest diversity of animal species, but no data are provided to support this statement.

Response

The statement in the DEIR is correct. The highest quality and least fragmented coastal sage scrub plant communities, and the highest CSS related animal species diversity, are located on the steepest portions of the project site. The DEIR includes mitigation measures which require updated gnatcatcher surveys to be completed prior to the issuance of any grading permit.

USFWS-21

Comment

4-133, paragraph 3. The site also contains a habitat linkage, also qualifying it as at least "intermediate value" according the Evaluation Logic Flow Chart.

Response

The comment restates information contained within the DEIR. No response necessary.

USFWS-22

Comment

4-136, exhibit 53. One pond identified as a "potential mitigation area" is in the project footprint of the preferred alternative, as shown on exhibits 18 and 22. Since this area would be under housing and infrastructure and no longer in its present condition, please correct this discrepancy.

Response

The limit of development line shown in exhibit 53, in the vicinity of the subject pond, is shown in the wrong location. Exhibit 7, Site Plan shows the correct relationship of the proposed grading limits to the pond proposed for preservation. Please see Corrections and Additions to the DEIR, revised Exhibit 53.

USFWS-23

Comment

4-137, paragraph 3. The western spadefoot toad is a California State Species of Concern.

Response

The comment is noted. Please refer to Section II of this document, Corrections and Additions to the DEIR.

USFWS-24

Comment

4-137, -139, and -148 state that the site "must be considered occupied by gnatcatcher until proven otherwise." This is inconsistent with the statement on 4-130 that the gnatcatcher is not found on site. Correct and clarify this discussion.

Response

The statement is correct, given the fact that current gnatcatcher surveys have not been conducted in accordance with USFWS protocol. The onsite habitat must be considered occupied, until such time as a current survey, conducted to USFWS protocol standards prove otherwise. The statement indicating that no gnatcatchers have been identified onsite refers to the surveys completed in 1993 and 1994. The DEIR also contains a mitigation measure which requires an updated gnatcather survey and compliance with any protocol conditions prior to the issuance of any grading permit. Please see Section II of this document, Corrections and Additions to the DEIR.

USFWS-25

Comment

4-139. The distribution information for the gnatcatcher is incomplete. The species occurs in portions of Ventura, eastern Los Angeles, and San Bernardino Counties. The assertion regarding limited slope characteristics is not valid. Gnatcatchers occur on steep slopes, using them for nesting, foraging, and movement.

Response

The comment is noted. Please see Section II of this document, Corrections and Additions to the DEIR. The DEIR contains mitigation measures which require updated gnatcather surveys prior to the issuance of any grading permit.

USFWS-26

Comment

4-140. The wildlife agencies disagree that focused surveys for the Quino checkerspot butterfly are not warranted. The limited surveys accomplished do not support the assertion that the probability of occurrence is "low." Appropriate habitat (CSS, chaparral, and grassland) exists within the project site. Surveys consistent with the Service 1997 protocol should be completed.

Response

Required surveys for the Quino checkerspot butterfly, conducted to USFWS protocol are acknowledged, and will be conditioned as a requirement prior to issuance of a grading permit. Please see Section II of this document, Corrections and Additions to the DEIR.

USFWS-27

Comment

4-141. The correct scientific name for the northern harrier is *Circus cyaneus.* It is properly referred to as a raptor. The accepted common name for *Agelaius tricolor* is the tricolored blackbird. The "C2 (category two)" category was discontinued by the Service in February 1996. The gnatcatcher is a California State Species of Concern.

Response

The comments are noted. Please refer to Section II of the document, Corrections and Additions to the DEIR.

USFWS-28

Comment

4-144. There is no analysis of connectivity loss in this discussion of the project in relation to the NCCP Findings. However, 4-148 states that "[T]he project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve [sic], due to restricted wildlife movement " Further on page 4-130, paragraph 3 it says, "the project site occupies a linkage area between the Central and Southern NCCP Subregional preserves [sic], where a wildlife corridor is needed." Please clarify and further analyze this crucial issue. We suggest explanatory text with an exhibit or exhibits specifically rendered

Response

The comment is noted. Project related impacts to wildlife movement and connectivity are discussed throughout Section 4.7 of the DEIR. The statement listed on page 4-144 of the DEIR pertaining to connectivity is part of a listing of NCCP findings that must be satisfied prior to allowance of interim take of coastal sage scrub habitat. This information has been provided in the DEIR to outline requirements in the event that interim take is required. Impacts to wildlife movement have been identified as unavoidable adverse impacts in the DEIR.

USFWS-29

4-145, "Ephemeral Ponds." The use of acreage by itself is inappropriate since it does not sufficiently disclose the impacts of the preferred alternative. The wildlife agencies suggest that the number of ponds also be used as a measure of impact. From the diagrams in the DSEIR, it appears that seven of the eight ponds identified as supporting Riverside fairy shrimp would be directly within the project footprint. The other pond would be subject to edge effects and adverse impacts to water quality. This impact is not apparent when only the acreage figure is considered

Response

The comment is noted. Please see response to USFWS-6. Impacts to ephemeral ponds have been identified in the DEIR as unavoidable and adverse.

USFWS-30

Comment

4-147, Western spadefoot toad. The DSEIR states that the population is small in size. However, no data are provided to support his statement such as the results of a scientifically valid population survey. In the absence of data, we suggest that the statement be eliminated.

Response

Previous onsite surveys have found that the Western spadefoot toad is of limited distribution and population size.

USFWS-31

Comment

4-148, Wildlife Movement. The statement "It can not [sic] be assumed that wildlife would be able to move through the project site..." should be further explained. Further explanation is needed since it is known that there would be the virtual elimination of wildlife and their movements in a high density residential development as the preferred alternative proposes.

Response

The referenced statement backs up the statement that implementation of the project site would directly impact wildlife movement. Even though some wildlife may move through the proposed project, without a recognizable wildlife movement corridor, it cannot be assumed that any wildlife will move thorough the proposed project. Due to the physical design of the proposed project. Wildlife movement impacts have been cited in the DEIR as unavoidable adverse impacts.

USFWS-32

Comment

4-151, -152, Conceptual Mitigation Program. The last sentence on 4-151 states that the program was developed based on input from the wildlife agencies. Regarding the mitigation ratios presented, the DSEIR provides no rationale to support these ratios. Further, the position of the Wildlife Agencies is that the ratios are unjustified and inappropriately low in relation to the proposed impacts, given other mitigation agreements.

Response

The mitigation ratios are have been based upon the level of impact to habitat types, the relative quality of onsite habitat and other similar mitigation projects in the vicinity of the proposed project. It should be noted that any habitat mitigation requirement will need to be accomplished offsite, due to the recorded nature of the tract map.

USFWS-33

Comment

6-3, table 39 The "no project" alternative states that there would be a continuation of

grazing impacts. Include that this is a discretionary landowner activity, otherwise unrelated to the proposed project.

Response

The No Project alternative is included in compliance with CEQA Statutes and Guidelines Implementation of the No Project alternative, assumes that the project site would continue to exist in its current condition, open space utilized for livestock grazing.

USFWS-34

Comment

6-4, paragraph 1. The DSEIR states that "[o]going degradation of onsite biological resources related to cattle grazing operations would continue to occur." This degradation should be further described. For example, on our May 20, 1996 site visit, Wildlife Agency representatives observed cattle within some of the onsite wetlands. We also observed apparently free-ranging horses nearby. Further discussion of the presence of livestock and horses is needed in relation to impacts to Riverside fairy shrimp, other invertebrate species, and CSS. Crushing of fairy shrimp "cysts" and adverse changes to water quality are likely to occur within ponds subject to use by cows and horses. Literature references showing CSS impacts due to grazing should also be referred to and discusses.

Response

Livestock grazing has been ongoing onsite for several decades, and the current condition of onsite vegetation is directly related to this ongoing activity. Onsite ephemeral ponds have also been in place for several decades and are a direct result of livestock grazing activities. These conditions are discussed in Sections 2.0. 3.0 and 4.7 of DEIR 566.

USFWS-35

Comment

6-4, and continuing. The discussion of biological resources impacts is cursory, allowing extremely limited comparison opportunity among the alternatives. A detailed matrix chart of alternatives versus type and amount of habitat impact (e.g., CSS, Riverside fairy shrimp) would help to synthesize the data. However, it appears that alternative three, the 100 unit alternative on 32 acres, would directly avoid seven of the eight ponds occupied by Riverside fairy shrimp, most of the loss of CSS habitat, as well as minimize impacts to wildlife movement

Response

DEIR 566 assumes worst case scenarios with regard to biological resources although the document relies upon previous surveys, i.e. 1993 and 1994, the DEIR assumes the presence of various species habitat on the project site. Impact analysis contained within the Alternatives Section of the DEIR, is less detailed than for the analysis of the proposed project, and along with the detailed site plans provided for each alternative, allows for a specific comparison of biological impacts The comment relating to Alternative three is correct and is acknowledged.

USFWS-36

Comment

8-1. The Inventory of Unavoidable Adverse Impacts should include the amount of CSS loss and the likely "take" of gnatcatchers.

Response

The discussion on Page 8-1 of the DEIR, includes the direct loss of coastal sage scrub. Please see response to comment USFWS-24, and Section II of this document, Corrections and Additions to the DEIR.

USFWS-37

Comment

Appendix C, Notice of Preparation (NOP), page 3. Note that our joint Wildlife Agency NOP commented about "plant/Animal Life."

Response

The comment has been noted

USFWS-38

Comment

Appendices D (conceptual Wetland Mitigation Plan) and E (Conceptual Upland Mitigation Plan) were missing from Appendix "H", the Biological resources Assessment prepared by Sweetwater Environmental Biologists, Inc. The Assessment is a draft, dated March 20, 1997. If an updated version is available, include it in the revised DSEIR.

Response

Appendix H does not include a Conceptual Wetlands Mitigation Plan or a conceptual Upland Mitigation Plan. These documents were associated with the project evaluated in DEIR 561.

USFWS-39

Comment

In conclusion, the DSEIR is inadequate. Major revisions and additions are needed, including completion of updated field surveys and a literature search. for example, the gnatcatcher discussion should include a description and analysis of the regional distribution of CSS, gnatcatcher, and cactus wrens, in relation to the project area. Vegetation maps and species locations in both digitized and hardcover format are available from the County of Orange.

The Wildlife Agencies anticipate that the issues discussed above will be included and addressed in any additional CEQA documents and be presented to the Wildlife Agencies for review and comment. Until the impact assessment and mitigation recommendations are revised to respond to our concerns, the Wildlife Agencies recommend against certification of the DSEIR as currently proposed.

Response

Please see response to comments USFWS-1 through USFWS-38

USFWS-40

Comment

The Wildlife Agencies appreciate working with the County on NCCP conservation planning issues. Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. An improperly implemented project would permanently destroy the integrity of the linkage between the Subregional reserves. If you have any questions or comments please contact Liam H. Davis, NCCP Associate Wildlife Biologist (Department) at 619-467-4207 or Robert Hames, Fish and Wildlife Biologist (Service) at 760-431-9440.

Response

The comment is noted. Please see response to comments USFWS-1 through USFWS-38.

COMMENTS AND RESPONSES - CITY OF MISSION VIEJO
Karen Steele Verlaan, Senior Planner, August 11, 1996

CMV-1

Comment

The City of Mission Viejo is in receipt of the subject Draft EIR and understands the project as proposed to consist of phased development of 705 manufactured single family housing units and a 1.5 acre, neighborhood commercial center and associated infrastructure, on a 222.23 acre site on the easterly site of El Toro Road in the unincorporated territory of the County of Orange. The gross residential density is 3.17 dwelling units per acre, with minimum lot sizes of 2,630 square feet. Fourteen (14%) percent of the project site is proposed to remain in undisturbed, natural open space and 57.6% of the site will remain in total open space. In addition to the residential component, the project also proposed eight private park sites, regional riding/hiking trail connections, and a construction of a water tank site dedicated to and accepted b, the Trabuco Canyon Water District. Project implementation requires approval of grading plan. The grading permit application (GA960048), the project subject of this Draft Environmental Impact Report, is based on Tract 10692, which was recorded December 16, 1988.

The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan, and is located approximately one-half mile south of the El Toro Road/Live Oak Canyon Road intersection. Implementation of the proposed project would directly effect 191.39 acres of the project site, including remedial grading and fuel modification requirements and 19 77 acres offsite, for a total impact area of 211.16 acres.

A total of 2.6 million cubic yards of conventional grading and 8.9 million cubic yards of remedial grading would be required to implement the project.

Response

The comment is noted and restates information contained within the DEIR. No response is required.

CMV-2

Comment

The City of Mission Viejo has the following comments on DEIR 566 for the Saddleback Meadows Project·

General Comments
The city of Mission Viejo is concerned with the numerous unavoidable adverse impacts of the subject project. These impacts are as follows:

1. Gross land use compatibility with (1) O'Neill regional Park, (2) the Ramakrishna Monastery;, and (3) St. Michael's Abbey;

2. Major landform alteration /modification including cut and fill slopes up to 120 ft. in height;

3. Loss of 154.13 acres of onsite habitat and reduction of native habitats and sensitive and non-sensitive species dependent on those habitats, including (1) southern sycamore woodland, (2) coast live oak woodland, (3) coastal sage scrub, (4) mulefat scrub, and (5) ephemeral ponds;

4. Project and cumulative contribution to regional adverse air quality conditions, since the project is located in a non-attainment area with incremental increase in air pollution as a result of vehicle emissions;

5 Increased traffic and urban activity resulting in increased noise in the area:

6. Loss of Riverside fairy shrimp habitat (ephemeral ponds) and individuals, a federally listed endangered species; and

7. Urban landform visual impacts to (1) O'Neill Regional Park, (2) Ramakrishna Monastery, and (3) St. Michael's Abbey.

Response

The comment is noted and restates impact information quantified and analyzed in the DEIR. Please refer to Section 8.0 of the DEIR, Inventory of Unavoidable Adverse Impacts.

CMV-3

Comment

Transportation Comments

1. DEIR Transportation Analysis·

There appears to be a major discrepancy in the Draft EIR's discussion and analysis of the transportation/circulation impacts resulting from the proposed project. This discrepancy needs to be reconciled and corrected in a revised Draft EIR document.

As background, transportation/circulation impacts are summarized and presented in Volume 1 of Draft EIR 566. The basis of the Volume 1 discussion is stated to be a project-specific traffic study that is referenced and included in Volume 3 of Draft EIR· Appendix F.

Volume 1 states that the proposed project will generate 6,220 trip ends per day, with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the PM peak hour. In contrast, the traffic study appendix states that the proposed ;project will generate

8,340 trip-ends per day, with 540 vehicles per hour during the AM peak hour and 825 vehicles per hour during the PM peak hour. This represents a difference of (1) more that thirty percent on a daily basis; (2) more than fifty percent for the AM peak hour analysis; and (3) thirty percent for the PM peak hour analysis.

This inconsistency is carried forth into the specific tables and exhibits of the respective document, where average Daily Traffic forecasts from Existing through Year 2000 to buildout differ between the two documents. For example, page 4-56 of Volume 1 states that the project ADT's along El Toro Road in the vicinity of the site do not exceed 30,000 vehicles per day. However, the traffic study in Appendix F Volume 3, identified that segments of El Toro Road do exceed 30,000 trips per day easterly of the Foothill Transportation Corridor.

Also, even though there is inconsistency between the two volumes on reported ADT and peak hour trips, the Intersection Capacity Utilization (ICU) and Levels of Service (LOS) calculations seem to be similar between the two documents. A Revised Draft EIR needs to explain which trip generation was used for the ICU Levels of Service calculations, and the DEIR analysis needs to be carefully reviewed to accurately present the transportation impacts of the proposed ;project. In particular, the City of Mission Viejo will be reviewing the specific impact of project trips on the El Toro Road/Glenn Ranch Road intersection and the Marguerite Parkway/El Toro Road intersection, to determine any potential impacts and require any mitigation to maintain a Level Service "D" performance standard, as required by the Measure M Growth Management Program.

Response

The comment is noted. During the preparation of the DEIR, numerous meetings were held between the County of Orange, Traffic Engineering Division and the project applicant to discuss the trip generation rate for manufactured housing, since it is not a standardized land use resulting in a typical trip generation factor. The statement in Section 4.4.3 of the DEIR, on Page 4-52, under *Traffic Impact Modeling* is a typographical error, based on an outdated generation rate, and should read as follows: *The proposed project is projected to generate approximately 8,340 trip-ends per day with 540 vehicles per hour during the AM peak hour and 825 vehicles per hour during the PM peak hour.* Please refer to Section II of this document, Corrections and Additions to the DEIR. All other traffic impact assessment data is consistent with the actual technical traffic study contained in Appendix F of the DEIR.

CMV-4

Comment

2. Project Trip Generation:
The project traffic study identifies a residential trip distribution assumption wherein twenty-five percent of the daily traffic would enter/leave the project site using El Toro Road north of the project entrance, and twenty percent continuing along Santiago Canyon Road. The city of Mission Viejo believes this assignment is high. Please clarify the land uses that exist or are proposed north of the project site that would cause one-quarter of the project daily trips to

use this segment of El Toro Road, versus using El Toro Road south of the project site to access freeways, major highways, and public facilities. A review of the Draft EIR school assumptions, for example, shows that school attendance is programmed for facilities located in Mission Viejo, Rancho Santa Margarita, and Trabuco Canyon.

The assumptions used in the project trip distribution would have a resultant impact on analyzed intersections south of the project entrance to El Toro Road, and in particular would increase Intersection Capacity Utilization (ICU) calculations if a greater percentage of project trips were assigned southerly along El Toro Road.

Response

The distribution of project related traffic generation onto the surrounding circulation system is based on a variety of factors including existing travel patterns near residential areas and has been reviewed and approved by the County of Orange, Traffic Engineering Division. As this is a planning document the distribution is of necessity and the study assumes that the majority of traffic will be oriented to the south/west of the site.

CMV-5

Comment

3. El Toro Road:
El Toro Road is classified as a Major Arterial Highway on the Orange County Master Plan of Arterial Highways (MPAH). A Major Arterial is defined as a six-lane highway with a divided median The City of Mission Viejo is currently preparing improvement plans to construct El Toro Road to its master plan configuration of a *six-lane, Major Arterial facility*

Although not specifically stated, the Draft EIR seems to indicate that El Toro Road should be reclassified from a six-lane facility to a four-lane facility, The City of Mission Viejo offers the following comments:

a. The reclassification of El Toro Road from a six-lane Major Arterial to a four-lane Primary Arterial requires the County of Orange to process and MPAH amendment, with the amendment ultimately being approved by the Orange County Transportation Authority (OCTA) board of directors.

It is the City's understanding that such an amendment has not yet been filed with OCTA. Please clarify how the timing of the El Toro Road MPAH reclassification, if proposed by the County of Orange, juxtaposes with the approval of Saddleback Meadows project application(s). Since the DEIR serves as an environmental assessment for the Saddleback Meadows recorded tract map, please clarify whether the right-of-way for El Toro Road has already been reserved for an ultimate six-lane or four-lane facility.

b. The OCTA MPAH guidance manual identified that a multi-jurisdictional, cooperative process will be pursued with any MPAH amendment that affects more than one jurisdiction.

In conjunction with that process, technical data will be prepared and reviewed by Growth Management Area (GMA) forums to determine whether there is consensus on the proposed amendment. Also in conjunction with that process, and environmental assessment of the MPAH amendment must be completed.

Recognizing that the Saddleback Meadows DEIR is being processed in advance of a requested MPAH amendment, a multi-jurisdictional consensus of the El Toro Road reclassification has not yet been achieved. Technical issues may surface through the MPAH cooperative study process that have not yet been identified in the Saddleback Meadows DEIR. Further, inconsistencies on project daily traffic volumes are already present in the Draft EIR. The City of Mission Viejo recommends that the transportation analysis in the Saddleback Meadows DEIR should *not* serve as the environmental documentation for the MPAH reclassification of El Toro Road, unless agreed to by representatives of the cooperative study process.

c. The City of Mission Viejo continues to retain El Toro Road, within its jurisdictional boundaries, as a six-lane Major Arterial facility. The jurisdictional boundary between the City of Mission Viejo and the County of Orange generally lies immediately east of the Glenn Ranch Road intersection at El Toro Road.

Response

Year 2020 projected traffic conditions, with the implementation of all circulation system improvements outlined in the DEIR, indicate that El Toro Road, widened to four through travel lanes north of the Foothill Transportation Corridor would result in all intersections with El Toro Road operating at level of service D or better. It is understood that redesignation of El Toro Road from a Major Arterial (6 lanes) to a Primary Arterial (4 lanes) requires an amendment to the MPAH. This amendment has not been filed by the County to date. Certification of this EIR as well will not preclude the ability to construct El Toro Road to its MPAH designation.

CMV-6

Comment

4. Glenn Ranch Road/El Toro Road Intersection Improvements:
In reviewing the Intersection Capacity Utilization (ICU) projections for the Glenn Ranch Road/El Toro Road intersection, the City of Mission Viejo is concerned that the Glenn Ranch Road/El Toro Road intersection could become a bottleneck as one transitions, north to south, from a four-lane facility to a six-lane facility. This intersection must be guaranteed for maximum feasible improvement to insure that Level of Service "D" performance standard is maintained, in compliance with Measure M Growth Management Program requirements.

The County of Orange will need to be an active participant in the maximum feasible improvement to the Glenn Ranch Road intersection, since:

a The DEIR identifies that seventy-percent (75%) of the project trips will use this intersection, and the intersection will experience Levels of Service F sometime between Year 2000 and Year 2020 performance unless roadway improvements are appropriately phased. The timing of El Toro Road improvements is important because the project traffic study identifies that El Toro Road can remain a two-lane facility through project build-out.

b. The County of Orange will be deeded a 7.710 acre parcel for open space purposes from the Mission Viejo Company. This parcel (a portion of Parcel 4 of PM 89-115) is located south of El Toro Road and immediately west of the Glenn Ranch Road intersection (see attached Exhibit). The City of Mission Viejo will require that appropriate rights-of-way be secured along the open space parcel frontage to achieve a major arterial cross-section and intersection improvements to Glenn Ranch Road that meet projected traffic demand.

Response

The comment is noted

CMV-7

Comment

5 El Toro Road Mitigation Measure AM4-16:
Mitigation Measure AM4-16 states that "north of the Foothill Transportation Corridor, El Toro Road can accommodate projected traffic volumes with the proposed project on four travel lanes divided by a raised to striped median. Implementation of a full Major Arterial cross-section is not needed to serve future traffic volumes. This alternative section represents a modification of the typical cross-section for a Primary Arterial. Appropriate transitions would be required between this cross-section and other modified cross-sections along El Toro Road south of Glenn Ranch Road."

As identified above, the City of Mission Viejo is improving El Toro Road as a six-lane facility from the FTC to Glenn Ranch Road, consistent with its MPAH arterial designation. The City of Mission Viejo recommends that Mitigation Measure AM4-16 include reference that the City of Mission Viejo review and participate in the County of Orange's development if improvement plans for El Toro Road, to insure that·

- El Toro Road is phased and constructed to achieve a roadway cross-section that effectively transitions to the proposed interim two-lane facility;

- El Toro Road can transition from a six-lane facility in the City of Mission Viejo to a four-lane facility in county unincorporated area, while achieving a Level of Service "D" performance standard at the Glenn Ranch Road/El Toro Road intersection through Year 2020.

Response

Please refer to response CMV-5. Additionally, improvement plans which are adjacent to City boundaries will be forwarded to the City for review and comment.

CMV-8

Comments

6. Inventory of Assumed Circulation Improvements:
The project traffic study--Appendix F--identified a Year 2020 scenario in which levels of service at a City of Mission Viejo intersection is projected at Level of Service "F" Marguerite Parkway at El Toro Road. The city's performance standard is Level of Service "D".

The Draft EIR should be revised to include a mitigation measure that requires the applicant to assess, calculate and provide a fair-share contribution to transportation/circulation improvements at all impacted City of Mission Viejo intersections.

In addition, the County of Orange proposed, thorough this project (DEIR), the Year 2020 improvement program of northbound dual right turn lanes at the Marguerite Parkway (NS)/El Toro Road (EW) intersection This proposed improvement is not acceptable to the City of Mission viejo. The City of Mission Viejo does not have any intersection with dual right-turn lanes, and recommends that the Draft EIR analyze an alternative improvement program that will mitigate the Level of Service "F" condition.

Response

The proposed project will be conditioned to contribute to several roadway fee programs as outlined in Table 12 on Page 4-51 of the DEIR. Total road impact fees amount to $ 8,044 per dwelling unit and $8.34 per square foot of commercial land use.

Dual right turn lanes at the intersection of El Toro Road and Marguerite Parkway is an acceptable mitigation to mitigate unacceptable turning movement volumes and related intersection level of service values. Other mitigation measures, which would result in similar mitigation of adverse turning movement volumes and intersection level of service values include the addition of a free right turn lane and/or application of emerging intersection signalization control technologies.

CMV-9

Comment

This concludes the City of Mission Viejo comments on the Saddleback Meadows Project Draft Environmental Impact Report (DEIR 566). The City of Mission Viejo is also reviewing the June 1997 Draft EIR No. 565 for Live Oak Plaza Project. As a result of our technical review of the Draft EIR, the City may raise additional comments or request clarification on

certain issues such as transportation and other areas where there may be inconsistencies in findings or analyses. Thank you for the opportunity to comment on the document. The City would like Response to Comments on the DEIR as soon as they are available.

Response

The comment is noted. The City of Mission Viejo will be provided with a copy of the Response to Comments document in accordance with CEQA requirements.

COMMENTS AND RESPONSES - BOWIE, ARNESON, KADI, WILES & GIANNONE, August 11, 1997

BAKWG-1

The Trabuco Canyon Water District is in receipt of the above-referenced Draft Subsequent Environmental Impact Report (the "DEIR") prepared in regard to the Saddleback Meadows Recorded Tract Map No. 10692, Grading Application GA960048 (the "Project"). Our firm represents the District as general legal counsel. The District, having reviewed the DEIR, and having consulted with us, has requested our firm to provide your office with the comments set forth herein. It is the District's understanding that the Project will involve the phased development of 705 manufactured single family residential units and a 1.7 acre neighborhood commercial center on a 222.23 acre site This seems to correspond, generally, to the final tract map (Tract 10692) approved by the County of Orange (the "County") on 1988. However, the District has not been provided with updates of the plans for the Project and, as such, all of the comments submitted with this letter should be interpreted in that light.

The purpose of this letter is to provide to the County, on behalf of the District, various comments and matters relating to the Project, the potential impacts of the Project on the facilities of the District and the District's requested mitigation measure.

Response

The comment indicates that Bowie, Arneson, Kadi, Wiles & Giannone represents the Trabuco Canyon Water District relative to providing comments on DEIR 566. No response is necessary.

BAKWG-2

Comment

Request for Notices

Pursuant to the provisions of the California Environmental Quality Act ("CEQA") and Public Resources Code Section 21092.2, the District hereby requests that copies of all notices and other documents mailed in relation to the above-referenced Project (specifically including, but not limited to, environmental review notices) be furnished both to the District and the undersigned. If there are any fees and charges required for the provision of such notice(s), please provide our office with an invoice for such costs and we will reimburse the appropriate County department. This request for notice specifically includes, but is not necessarily limited to, notices of all hearings, proposed actions to be taken with regard to the development process and, in particular, any Notice of Determination prepared, furnished or filed with regard to this Project.

Response

The comment is noted. Bowie, Arneson, Fadi, Wiles & Giannone has been added to DEIR 566 mailing list.

BAKWG-3

Comment

Background Information

We have reviewed various referenced to the Trabuco Canyon Water District, and the District's water and wastewater (sewer) facilities contained within the DEIR. In regard to such matters, we would note the following additional facts which are important for a full and complete understanding of the District's background in providing the comments set forth below. The DEIR correctly notes that two improvement agreements were entered into between the prior owner of the property and District dated September 21, 1988 (see further discussion below). It is relevant to note that in connection with those improvement agreements two performance bonds were posted in order to secure the construction of the relevant water and sewer facilities a s required by the terms of those agreements.

The DEIR correctly notes that the District's Capital Improvement Charges ("CICs"), based on 705 residential units, were paid to the District. Those Capital Improvement Charges are levied as part of the District's master financial and facilities planning. Funds from the CICs were expended on various District-wide and master planned facilities is order to be able to furnish water service and water capacity to the property within Tract 10692 (the "Property").

Wastewater (sewer) treatment capacity was purchased in the Santa Margarita Water District ("SMWD") Chiquita Wastewater Treatment System by way of a pass-through payment made by the former property owner to the District and then paid to SMWD. It should be noted that the SMWD Chiquita Wastewater Treatment System is owned and operated by SMWD, and not TCWD. Specified wastewater treatment capacity (based on 705 residential units) was paid for in the Chiquita system and is now available to provide wastewater treatment service for the Property. The major wastewater trunk sewer and downstream lift station facilities were financed for the benefit Property by means of assessment district proceedings pursuant to the relevant provisions of the California Streets and Highways Code. Assessment district No. 5R of the Trabuco Canyon Water District is currently in place and levies assessments on the Property (as well as other properties within the boundaries of the Assessment District). The major trunk sewer and downstream lift station facilities financed through the Assessment District proceedings (and bonds issued by Assessment District No. 5R secured through the levy of assessments) have been constructed. These are available to provide service to the property based on 705 residential units. However, the related facilities for this Property, identified in the improvement agreements, were not finance and have not been constructed as of this date.

As noted above, the District entered into onsite and master plan improvement agreements

relative to the Property (collectively the "Improvement Agreements"). copies of the Improvement Agreements are attached to this letter as Attachments "A" and "B" and incorporated herein by this reference. The Improvement Agreements were entered into pursuant to TCWD's Rules and Regulations which require improvement agreements to be entered into before the District will authorize, or sign off on, any tract map. Correspondingly, TCWD's approval of Tract Map No. 10692 was expressly conditioned on the terms and conditions of the Improvement Agreements. The Improvement Agreements were subsequently assigned, with the District's consent, to a subsequent owner of the Property.

Subsequently, the prior owner of the Property (to whom the Improvement Agreements had been assigned) filed for bankruptcy with the Federal Bankruptcy Court. As a result of prolonged bankruptcy proceedings, the Improvement Agreements, and the corresponding performance bonds, were rejected by the debtor and this action was apparently sustained in the bankruptcy court. Corresponding, the Improvement Agreements are now ;of questionable enforceability and the performance bonds have lapsed. Any building or District service assumptions based on the terms of those Improvement Agreements, or dependent on them, are thus suspect until new agreements with the District are reached. In this regard we would specifically note that the District's Rules and Regulations (see Government Code Section 31024) require improvement agreements to be into in order for the District to approve tract maps and for the District to provide water and wastewater service to any property within its boundaries. The District previously requested of California Quartet (the then-property owner) to undertake negotiations relative to entering into new improvement agreements relative to the Property No response to those entreaties has been received by the District.

Response

The comment relating to the Chiquita Canyon Wastewater Treatment System being owned by the Santa Margarita Water District is acknowledged. It should be noted that the Chiquita Canyon Wastewater Treatment Plant has been constructed and has been operational for several years. Please refer to Corrections and Additions to the DEIR, contained in Section II of this document. The applicability and enforceability of existing improvement agreements between Trabuco Canyon Water District and the applicant are not applicable to a discussion of the environmental effects of the proposed project.

BAKWG-4

Comment

Water Distribution Facilities

As referenced above, the District has undertaken construction and completion of various master plan facilities in order to provide adequate water and water capacity to the Property. As noted, the District's Capital Improvement Charges were previously paid and satisfied in the identified amount. District master plan facilities have been sized based on the Property including 705 residential units. However, the District would note that it has not been provided with current improvement plant and therefore cannot state, at this time, that all

necessary water capacity for non-residential and irrigation needs is available. A re-evaluation of the Project, form an engineering perspective, by the District would be appropriate before definitive plans are finalized.

Also noted above, the Improvement Agreements relative to both master plan and in-tract water distribution facilities, including, but not limited, the water booster station identified in the DEIR, have lapsed and security for those agreements was rejected by action of the bankruptcy court. The specific facilities necessary in order to provide water transportation and distribution service within the boundaries of the Property were identified in those two (2) Improvement Agreements and are specifically enumerated in the improvement plans which were filed with the District and in the cost breakdowns which are included as part of the master plan agreement exhibits. Correspondingly, unless the Improvement Agreements are renegotiated and agreed to by the applicant, as required by the District's Rules and Regulations, and the water transportation and distribution facilities necessary in order to provide water service to the Property are designed, constructed, installed, funded and dedicated to the District as required under the District's Rules and Regulations and the previous improvement plans, the District will not be able to undertake to provide water service to the Property. The inability of the District to provide water transportation and distribution within the Property would constitute a potentially significant adverse environmental impact which would result from the Project unless adequately mitigated. Basic mitigation measures are stated within the DEIR, however, the District specifically requests that, in regard to water transportation and distribution facilities, the following mitigation measures be added to the DEIR:

1. Prior to undertaking construction of the Project the applicant shall enter into an improvement agreement(s) with the District to provide for the design, construction, installation, funding and dedication of all necessary master plan and in-tract water transportation and distribution facilities (Specifically including, but not limited to, a water booster station) as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692; and

2. Pursuant to the aforementioned improvement agreement(s) and prior to receiving a certificate of occupancy for any structures located upon the Property, the applicant shall have completed, at its cost and expense, all design construction, installation, funding and dedication of master plan and in tract water transportation and distribution facilities as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692.

Response

The referenced mitigation measures which are contractually required by the previous improvement agreements are reaffirmed as mitigation measures and hereby incorporated into DEIR 566. Please refer to Section II, Corrections and Additions to the DEIR.

BAKWG-5

Comment

The comments with regard to water distribution facilities, above, are generally applicable relative to water storage facilities in the context of the District Water storage facilities are important for the reasons of reserve water capacity, cost efficiency, fire fighting, emergency supply and system balancing.

Pursuant to determinations by the District's Board of Director, and the Rules and Regulations of the District, developers of property within the District's boundaries are required to either build and dedicate water storage facilities according the District's Rules and Regulations and standard specifications in order to provide stated levels of water storage capacity for the respective development or required to pay In-Lieu Water Storage Capacity Fees. Under the previous Improvement Agreements it was anticipated that the developer (the applicant) would in fact be building and dedicating water storage facilities to the District rather than pay the District's In-Lieu Water Storage Fee(s). It appears, based upon the description in the DEIR, that this is still intended.

On Page 3-9 of the DEIR it is indicated that the water storage tank will be constructed by the District. This is fact not the case. The prior Improvement Agreements and the District's Rules and Regulations, specify that master plan and in-tract facilities (including water storage facilities) which are to be constructed in order to service new development within the District are required to be constructed at the cost and expense of the applicant and in accordance with specified construction requirements, including, but not limited to, the District's standard specifications.

Also noted above, the Improvement Agreements relative to both master plan and in-tract water storage facilities, including, but not limited, the water reservoir identified in the DEIR, have lapsed and security for those agreement s was rejected by operation of the bankruptcy court. The specific facilities necessary in order to provide water service within the boundaries of the Property were identified in those two (2) Improvement Agreements and are specifically enumerated in the improvements plans which were filed with the District and in the cost breakdowns which are include as part of the master plan agreement exhibits. Correspondingly, unless the ;Improvement Agreement are renegotiated and agreed to by the applicant, as required by the District's Rules and Regulations, and the water storage facilities necessary in order to provide water service to the Property are designed constructed, installed, funded and dedicated to the District as required under the District's Rules and Regulations and the previous Improvement Plans, the District will not be able to undertake to provide water service to the Property. The inability of the District to provide adequate water storage with regard to the Property would constitute a potentially significant adverse environmental impact which would result from the Project unless adequately mitigated. Basic mitigation measures are stated within the DEIR, however, the District specifically requests that, in regard to water storage facilities, the following mitigation measures be added to the DEIR:

1. Prior to undertaking construction of the Project the applicant shall enter into an improvement agreements(s) with the District to provide for the design, construction, installation, funding and dedication of all necessary master plan and in-tract water storage facilities or, alternatively, pay the District's In-Lieu Water Storage Fees, as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692; and

2. Pursuant to the aforementioned improvement agreement(s) and prior to receiving a certificate of occupancy for any structures located upon the Property, the applicant shall have completed, at its cost and expense, all design, construction, installation, funding and dedication of master plan and in-tract water storage facilities as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692.

Response

Please refer to response to comment BAKWC-3. The referenced mitigation measures which are contractually required by the previous improvement agreements are reaffirmed as mitigation measures and hereby incorporated into DEIR 566. Please refer to Section II, Corrections and Additions to the DEIR.

BAKWG-6

Comment

Wastewater (Sewer) Facilities

The comments relative to alter distribution facilities, in the context of the Improvement Agreements, are generally applicable to wastewater (sewer) facilities relative to the District. The existence and operational readiness of wastewater collection, transportation and treatment facilities is necessary to satisfy health and safety requirements of occupancy of development in California.

As noted above, wastewater treatment capacity has been purchased in the SMWD Chiquita Waster Water Treatment Facilities. The major wastewater trunk sewer and downstream lift station facilities for the Property have been financed and constructed However, certain in-tract and master plan wastewater collection and transportation facilities, identified in the Improvement Agreements, and in the improvement plans filed with the District, have not yet been constructed. In this regard, the District would reference the previously approved improvement plans and the exhibits to the Improvement Agreements.

As also noted above, the Improvement Agreements relative to both master plan and in-tract wastewater facilities have lapsed and security for those agreements was rejected by operation of the bankruptcy court. Correspondingly, unless the Improvement Agreements are renegotiated and agreed to by the applicant, as required by the District's Rules and Regulations, and the wastewater facilities necessary in order to provide wastewater service

to the Property are designed, constructed, installed, funded and dedicated to the District as required under the District' Rules and Regulations and the previous Improvement Plans, the District will not be able to undertake to provide wastewater service to the Property. The inability of the District to provide adequate wastewater service with regard to the Property would constitute a potentially significant adverse environmental impact which would result from the Project unless adequately mitigated. Basic mitigation measures are stated within the DEIR, however, the District specifically requests that, in regard to wastewater facilities, the following mitigation measures be added to the DEIR:

1. Prior to undertaking construction of the Project the applicant shall enter into an improvement agreement(s) within the District to provide for the design, construction, installation, funding and dedication of all necessary master plan in-tract wastewater facilities as require under the District's Rules and Regulations and the tract map approval for Tract No. 10692, and

2. Pursuant to the aforementioned improvement agreements(s) and prior to receiving a certificate of occupancy for any structures located upon the Property, the applicant shall have completed at its cost and expense, all design, construction, installation, funding and dedication of master plan in-tract wastewater facilities as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692.

Response

Please refer to response to comment BAKWG-3. The referenced mitigation measures which are contractually required by the previous improvement agreements are reaffirmed as mitigation measures and hereby incorporated into DEIR 566. Please refer to Section II, Corrections and Additions to the DEIR.

BAKWG-7

Comment

<u>Financing of Water and Wastewater Facilities</u>

Previously, the district undertook discussions with prior property owners relative to potentially providing financing for water and waste water facilities which needed to be constructed for the benefit of the Property,. These financing were separate and apart from the assessment district financing referenced above. In this regard it was previously proposed to use financing under the Mello-Roos Community Facilities Act of 1982, as amended (the "Act"). However, previous developers did not pursue this means of financing. The District Continues to be willing to discuss financing options relative to the water and wastewater facilities, but believes that the previous proceedings undertaken pursuant to the Act are most likely not viable for application to the current facilities at this time.

In regard to the Improvement Agreements the District notes that certain dollar figures of the construction of the facilities were provided in the exhibits and the referenced performance

bonds. the District would note that nearly a decade has passed since these agreements were signed and as such, the cost to design, construct, install and dedicate the water and wastewater facilities, each as referenced above, is probably significantly increased from the figures previously used. Adequate financing for water and wastewater facilities should be secured in order to ensure that they will be designed, constructed, installed and dedicated to the District in a timely manner relative to the developmental process.

Response

Please refer to response to comment BAKWG-3.

BAKWG-8

Comment

Master Plan Update

The District would note that it is currently in the process of reviewing its Master Plan water and wastewater facilities. This may also have consequences for the District's overall financing master plan. the engineering review and evaluation of the District's Master Plan may result in some reevaluation of engineering presumptions and system requirements. At this time the District is still in the early stages of planning its Master Plan review and as such cannot provide definitive information as to any changes or reevaluations that may occur as a result of this process. However, the District notes that this matter, inasmuch as, if the planning and development process for the Project is significantly delayed, additional information and figures may become available from the District.

Response

The comment is noted. Any additional information available from the Trabuco Canyon Water District will be incorporated into DEIR 566 to the extent feasible.

BAKWG-9

Comment

Conclusion

In light of the foregoing, the District notes that the Project has the potential to impact the infrastructure facilities and systems of the District. Such mitigation are principally related to the availability of facilities, their construction, installation, dedication and acceptance prior to occupancy of any development on the property and related matters. Such potential impacts can be mitigated by way of the above suggested mitigation measures. Provided that such mitigation measures are undertaken the District has no objection to the Project. However, the District specifically notes that a failure to provide the above-requested mitigation measures could result in an adverse environmental impact(s) as a result of the Project. In

such case, the District reserves its rights to protest the proceedings pursuant to Public Resources Code Section 21177 and to undertake all other legal remedies available to do it.

The District specifically requests that the County of Orange, including the County Environmentally and Project Management Services Department Carefully review the above-referenced comments and that those comments be considered as part of the environmental process for the Project.

If you have any questions regarding this matter, please do not hesitate to contact our offices. We would be pleased to provide you with any additional information you may require.

Response

The comment is noted. Please refer to response to comment BAKWG-1 through BAKWG-8.

COMMENTS AND RESPONSES - THE ORANGE COUNTY TRANSPORTATION AUTHORITY (OCTA)/Ben Jarvis, Associate Transportation Analyst, August 11, 1997

OCTA-1

Comment

The Orange County Transportation Authority (OCTA) has reviewed the Saddleback Meadows Recorded Tract Map 10692, Grading Application GA960048. OCTA has no comments at this time.

We appreciate the opportunity to provide input on this project. If you have further questions or need additional information, please call me at 714/560-5786.

Response

The comment is noted. No response is required.

COMMENTS AND RESPONSES - Kimberly A. Stocking, August 11, 1997

KAS-1

Comment

I am submitting this letter to comment on the proposed 705 unit mobile home park on the Saddleback Meadows stie. Not long ago approval was being sought for 318 houses on this site. Why it was not passed I don't understand. Now we are having to deal with the thought of an extremely large number of mobile homes in our very secluded and tranquil area. I was in favor of the 318 homes and even toured the site when they opened it to the public last year to show what they were proposing. Believe me my first choice would be to leave it untouched and unbuilt so we could continue to view the beautiful hillside of our rural area. But if something must be built lets have it be fewer homes with a much more aesthetic appearance that fits into the already existing areas surrounding it. Also, my concern is if 705 units are brought on-site where are all these children going to go to school? Portola Hills Elementary is already at full capacity and measures have had to be taken to accommodate its student load.

I will be following the developments and can only pray that the Planning and Development Service Department along with the County Supervisors will make fair and knowledgeable decisions regarding this 222-acre rural canyon site.

Response

Please refer to Section 3.0 (Project Description) in DSEIR 566 for a complete discussion of the project description. School impacts are evaluated in Section 4.12 of the DEIR. Please also refer to response to comment SVUSD-1.

COMMENTS AND RESPONSES - TPG MANAGEMENT, H. Pike Oliver, August 12, 1997

TPG-1

Comment

On behalf of the project applicant, California Quartet, Ltd., we submit the following comments on Draft Subsequent Environmental Impact Report No. 566, Saddleback Meadows Recorded Tract Map 10692, Grading Application GA 960048, prepared by Urban Vision for the Orange County Planning & Development Services Department.

Our review of Subsequent EIR 566 reveals that the project description should be supplemented to better satisfy provisions of the California Environmental Quality Act. We find it deficient in at least two respects: (1) it fails to discuss economic characteristics and supporting public service facilities relating to the project site; and, (2) it fails to reference the County Board of Supervisors recent (October 1996) failure and/or refusal to approve a reduced density project alternative in lieu of Recorded Tract Map 10692..

Please note that CEQA Guidelines Section 15124 provides that a project description "shall contain" [a] general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities."

We consider Subsequent EIR 566 to be deficient because the project description on pages 3-1 through 3-2 fails to discuss certain significant economic characteristics of Tract Map 10692, and does not consider the supporting public service facilities for the project site paid for by California Quartet or its predecessors-in-interest. These economic characteristics and involved supporting public service facilities are discussed below.

When Tract Map 10692 was recorded in December of 1988, several contractual commitments were entered into by the predecessors-in-interest of California Quartet. These contractual commitments resulted in monies being expended for the construction of capital facilities, including a sewer treatment facility and related trunk lines that serve both Saddleback Meadows and its general vicinity.

One of the conditions of approval for Tentative Tract Map 10692 (Special Condition No. 22.), was that "[p]rior to recordation of each final map ... sewage treatment and disposal facilities will be available to serve all dwelling units. To facilitate this requirement, several subdivision improvement agreements were entered into prior to the recordation of the Final Map.

Response

The comment is noted. The DEIR does document both the supporting public facilities relating to the project site and the County Board of Supervisors recent denial of a 318-unit

residential alternative, as evaluated by DEIR 561. Section 3.2 of the DEIR, on Page 3-1, references the previously recorded tract map and lists all of the improvement plans that have been completed and undertaken associated with recordation of tract map no. 10692. In addition, detailed public facilities information ins contained within Section 4.13 of the DEIR, commencing on Page 4-233. Section 3.2 of the DEIR, beginning on page 3-2, states: *The project site can be presently services by sewer lines and treatment capacity predicated on the density authorized by Recorded Tract map 10692.*

Specific information pertaining to the recent County Board of Supervisors denial of the 318 unit proposal evaluated by DEIR 561 is contained in Section 3.2 of the DEIR, beginning on Page 3-2. The DEIR text states: *It is noted in DEIR 561 that though the 318 unit project was identified as "environmentally superior,* to the 705-unit project currently being proposed, the 318-unit proposal was denied. In addition, Table 3, on page 2-6 of the DEIR states: *October 22, 1996 - Board of Supervisors denied project and did not certify DEIR 561.*

TPG-2

Comment

The two subdivision improvement agreements relating to Master Plan Facilities and Onsite Water and Sewer Facilities for Tract Map 10692 were entered into between the Santa Ana Mountains County Water District, now known as the "Trabuco Canyon Water District" (the "District"), and Southmark Pacific Corporation ("Southmark"), a predecessor-in-interest to California Quartet. One of these agreements executed on September 21, 1988 between Southmark and the District is entitled "Agreement for Designing Construction of Master Plan Facilities, Tract No. 10692" ("MPFA"). The "RECITALS" portion of that agreement, regulations, required Master Plan Water and Sewer Improvements for the Property prior to providing water and sewer service The second subdivision agreement, entitled "Agreement for Construction of Onsite Water and Sewer Facilities, Tract No. 10692" ["Onsite Water and Sewer Facilities Agreement" ("OWSFA")], also executed on September 21, 1988 between Southmark and the District, required the construction and dedication of water and sewer facilities by the subdivider prior to the District's agreement to provide water and sewer service to the final tract Tract Map 10692 provided a zoning capacity density of 715 equivalent dwelling units ("EDUs").

Response

The comment is noted and is here incorporated into DEIR 566.

TPG-3

Comment

In February 1989, California Quartet's predecessor-in-interest paid $973,528.58 for the purchase of sewer treatment capacity rights for the project site in the District's Chiquita

Wastewater System Facilities (the "Chiquita Facilities"). These funds were used by the District to enlarge the Chiquita Facilities to accommodate the 715 EDUs zoned for the property. Thus, California Quartet, as a successor-in-interest, succeeded to all rights and liabilities flowing from the Tentative Tract conditions and subsequent above-described agreements for the purchase of sewer treatment capacity in the Chiquita Facilities for the benefit of the authorized development density of the property

Additionally, California Quartet's predecessor-in-interest was required to pay the District's Capital Improvement Charges ("CICs"). The District's CICs in effect then were $1,265.00 for each equivalent dwelling unit. The CICs for 715 dwelling units totaled $904,475.00. The District's CICs were, and are, imposed on all development within the District in accordance with the District's Master Plan, including the Water and Wastewater Master Plan, the Financial Plan and the District's Impact Fee Structure. The CICs that were paid were deposited in the District's fund and earmarked for capital improvement of water facilities, which have subsequently been constructed.

Response

The comment is noted. The issue of fee payments is beyond the scope of the DEIR.

TPG-4

Comment

It should also be noted that California Quartet is required to pay an annual sewer/water assessment on each of Saddleback Meadows 705 legal lots. This assessment appears on individual property tax bills and totals $60,000 to $75,000 per year for the entire property. California Quartet has been making these assessment payments and paying its tax liability since the 1994-1995 tax year and has not been delinquent on any of these payments. In addition, California Quartet has paid (May 1997) all back taxes, assessments and penalties owed by its predecessor-in interest (approximately ± $1,025,000). Further, California Quartet's predecessor-in-interest made good faith payments for premiums on security and improvement bonds (with a face amount over $9,147,700) for improvements on the Property, in reliance on, and as a condition of the Tract Map 10692.

In sum, the project description should be supplemented as it presently fails to disclose that California Quartet, as a consequence of Tract Map 10692 approval, made substantial expenditures for water and sewage capacity and construction of capital facilities, and entered into contractual obligations to develop the property consistent with the authorized density of Tract Map 10692.

Response

The comment is noted. The issue of fee payments is beyond the scope of the DEIR.

TPG-5

Comment

Further, the County Board of Supervisors at the public hearing on October 22, 1996 on Zone Change Case No. 95-5 and Area Plan Case No. 95-7 failed to approve any of the project alternatives discussed in proposed FEIR No. 561, including Alternative No. 4, the 100 unit alternative. The project description also is inadequate because it fails to disclose this action, which indicates that the Board did not approve any of the nine reduced density alternatives to Tract Map 10692 that were analyzed in FEIR 561.

Response

The project description for DEIR 566 is not required to specifically discuss alternatives evaluated by a previous EIR, and their disposition as the result of project related public hearings. However, it should be noted, as documented in response to comment TPG-1, that DEIR does document Board of Supervisors actions relating to the proposed project and alternatives evaluated in DEIR 561.

TPG-6

Comment

Based on the above, to remedy deficiencies in the project description, subsequent EIR 566 must be revised and supplemented with more detail concerning the economic characteristics of, and public service facilities for, Tract Map 10692 and the Board's decision to reject all reduced density alternatives in lieu of Recorded Tract Map 10692.

Response

Please refer to Response to Comments TPG-1 through TPG-5.

COMMENTS AND RESPONSES - Wayne L. Brown, August 12, 1997

WLB-1

Comment

This project was a bad idea when it was originally corruptly approved, it has only become more evident over time what a poorly conceived project it is. Please consider the animal corridor rather than the pocket book of the proposed builder. After all the builder knew the history of the property when they bought it at "fire sale" prices. They knew about the specific plan that now protects the area from ill conceived plans. If the proposed builder did not know these things, then all the more reason to deny approval to such poor business people who would not have the foresight to research the property.

Response

Please refer to Section 4.7 of the DEIR for a complete discussion of wildlife movement.

COMMENTS AND RESPONSES - Amber Graves, August 12, 1997

AMG-1

Comment

I know this project was approved long before the specific plan came into existence, but because of the way it was originally approved I think it should be looked at like it were being submitted for the first time. This project does not fit in with the area, it leaves no way for the animals to migrate and will be built on ground that will easily slide even after removing tons and tons of dirt. Please deny this builders request.

Response

Please refer to DEIR Section 4.1 (Land Use), 4.2 (Geotechnical Hazards) and 4.7 (Biological Resources).

COMMENTS AND RESPONSES - Debra Moddelmog, August 12, 1997

DBM-1

Comment

Please consider the past history of this property when making a determination. From the fraud that led it to be originally approved, to the sliding slopes and buildings at the Abbey and including the animal corridor THIS IS NOT A GOOD IDEA. Please uphold the principals of the specific plan.

Response

A complete discussion of project history is contained in Section 2.4 of the DEIR. Please refer to Section 4.2 of the DEIR for a complete discussion of Geotechnical hazards and Section 4.7 for a discussion of project impacts to wildlife movement.

COMMENTS AND RESPONSES - Justin Watson, August 12, 1997

JW-1

Comment

What effect is this project going to have on the Abbey and the Monistary, this is part of Orange Countys Culture. Where can these places be relocated without builders taking away their serenity??

Response

Project related impacts to the Ramakrishna Monastery and Saint Michael's Abbey are documented in Sections 4.1 (Land Use) and 4.9 (Cultural Resources) of DEIR 566.

COMMENTS AND RESPONSES - CITY OF LAKE FOREST
Kathy L. Graham, J.D., AICP, August 12, 1997

CLF-1

Comment

Thank you for the opportunity to review the Environmental Impact Report for the Saddleback Meadows Project. Last year, when the board of Supervisors considered this project in November, City staff provided verbal comments on the project at the public hearing The City continues to have concerns regarding the project. On April 23, 1997, the City submitted comments to the County on the Revised Notice of Preparation for DEIR #566. The City's NOP Comments were not cited or addressed in the DEIR Document. The comments identified below in this letter represent the City's previously stated concerns regarding the project. We are expecting that the county, as the lead agency, will address these comments in the "Response to Comments" Document for DEIR #566.

Response

The City of Lake Forest Notice of Preparation comment letter is hereby incorporated into DEIR 566. The comment letter does not raise any new issues not already evaluated by the DEIR. Please refer to Section II of this document, Corrections and Additions to the DEIR.

CLF-2

Comment

From the materials presented, it is clear that significant grading and remediation of the site will be necessary According to the EIR, this grading will involve 2.5 million cubic yards of conventional grading and just under 9 million cubic yards of remedial grading. The EIR did not address the amount of off-site trucking activity which will occur as a result of the earthwork. Earthwork of this magnitude could result in the functional equivalent of half a million double-trailer truck loads of material to be moved. It is our understanding that because of the constraints of this site, a significant portion of this earthen material will be required to be moved to off-site locations for stockpiling and drying prior to returning to the re-engineered and strengthened site.

Response

The comment restates project description and geotechnical information contained in the DEIR. The comment relating to offsite transport and stockpiling of earthen material during the remedial grading phase of the project is incorrect. No offsite transport of earthen material is proposed. All remedial grading will be conducted on the project site in phases.

CLF-3

Comment

The City of Lake Forest has significant concerns about the potentially tremendous increases in traffic, particularly truck traffic, that this project could have on the City. The reports indicate that the excavation and trucking may take as long as eighteen months to complete. The duration of construction is not addressed in the EIR. The City and its residents have been inundated over the last few years with significant public construction and private development outside the City, and the City and its residents have borne a disproportionate impact from this activity. A partial list of construction projects which have impacted the City are as follows: the foothill Transportation corridor, the El Toro Y Project (including streets and off-ramp closures), the Foothill circulation Phasing Plan improvements, and all of the construction and on-going industrial business operations in the City's Sphere of Influence and norther thereof.

Response

Truck traffic would not be a large component of overall project related traffic generation, as no offsite transport of material is proposed, as noted in response to comment CLF-2 Section 3.4 (project phasing) of the DEIR, on Page 3-16, contains a detailed discussion of the duration of construction.

CLF-4

Comment

Based on the impacts from these projects, our residents specifically requested that the City Council consider the adoption of truck routes within the City. The City Council has held a public hearing on this request and is actively studying the need for truck routes within the City. It is our view that approval of this project and the types of truck traffic it would generate would only further the need to establish truck routes within the City. At a minimum, the County needs to incorporate conditions of approval and environmental mitigation relative to truck traffic as it impacts the City, its residents, and its infrastructure. A financial mechanism should be established to reimburse the City for the repair and maintenance costs associated with such heavy truck traffic load on City streets.

Response

Please refer to response to comment CLF-2. No additional mitigation measures are required to mitigate additional truck traffic.

CLF-5

Comment

There are other concerns the City has regarding this project, including the appropriate mitigation of the coastal sage scrub plant community (68.7 acres) and other environmentally sensitive plant and animal species. It is not entirely clear from the documentation how these environmentally sensitive areas are to be addressed. Nor is it indicated or insured that adequate safety precautions will be taken during the grading process to insure that the environmentally sensitive areas (i.e. Aliso Creek) are protected from impacts such as grading, or a grading induced landslide.

Response

Section 4.7 of the DEIR outlines a comprehensive mitigation program designed to address project impacts to coastal sage scrub and the sycamore woodland associated with Aliso Creek. It should also be noted that appropriate permits and agreements must be executed with the U.S. Fish and Wildlife Service, California Department of Fish and Game and the U.S. Army Corps of Engineers (ACOE) prior to the issuance of any grading permit.

CLF-6

Comment

The EIR indicates that the project represents a potential conflict with the Aliso Creek Corridor Specific Plan (ACCSP). The potential conflict must be specified. The Aliso Creek Regional Riding & Hiking Trail is a valuable recreation resource currently used by residents of the City of Lake Forest and our Sphere of Influence. Significant impacts to Aliso Creek and the Trail, including construction impacts, should be avoided or completely mitigated.

Response

Section 4.1.3 of the DEIR, on Page 4-12, documents the inconsistencies of the proposed project with the Aliso Creek Corridor Specific Plan. These listed inconsistencies include lack of preservation of recreational open space and conservation of natural features, including Aliso Creek and adjacent habitat areas. Please note that the project only affects the portions of the ACCSP which are within the project site. The vast majority of the ACCSP area is unaffected.

CLF-7

Comment

Finally, the EIR indicates that children from the proposed project will be absorbed into the Saddleback Valley Unified School District. It is further indicated that all SVUSD schools in the project vicinity are near capacity. The Environmental Impact Report should address

whether the increase in school age children associated with the project will impact Saddleback Valley Unified School District Schools within the City of Lake Forest. Specifically, identify whether enrollment or teacher student ratio will be impacted at any Lake Forest public school site.

Response

Detailed Saddleback Valley Unified School District student and facility impact information is contained in Section 4-12 of the DEIR, beginning on Page 4-209. In addition, updated project related student generation data is included in Section II of the document, Corrections and Additions to the DEIR per comments from the Saddleback Valley Unified School District.

CLF-8

Comment

The concerns identified above must be addressed in the Draft Environmental Impact Report. Please provide the City with a copy of the DEIR "Response to Comments" Document as soon as it is available.

Response

The comment is noted. The City of Lake Forest will be provided with a copy of the Response to Comments document in accordance with State CEQA requirements and County of Orange procedures.

COMMENTS AND RESPONSES - SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS, J. David Stein, Manager, Performance Assessment and Implementation, August 12, 1997

SCAG-1

Comment

Thank you for submitting the County of Orange, Draft Subsequent Environmental Impact Report for Saddleback Meadows Project (Recorded Tract 10692) to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

The attached detailed comments are meant as administrative comments to provide guidance for considering the proposed project within the context of our regional goals and policies. SCAG's policy level review will be initiated with the presentation of the proposed Saddleback Meadows Project to SCAG's Standing committee on Implementation (SCI) on September 4, 1997 at 11:00 am at the SCAG office in Los Angeles. You or the project developer are cordially invited to attend this meeting and answer any questions. If you have any questions regarding the attached comments, please contact Bill Boyd at (213) 236-1960. He will be contacting you with further information concerning this SCI meeting.

Response

The comment is noted. The referenced meeting was not attended by either the applicant or the County of Orange.

SCAG-2

Comment

COMMENTS ON THE COUNTY OF ORANGE SADDLEBACK MEADOWS PROJECT (RECORDED TRACT 10692) DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

PROJECT DESCRIPTION

The Saddleback meadows site encompasses approximately 222 acres and is located on the easterly side of El Toro Road, approximately ½-mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County. The incorporated cities of Mission Viejo and Lake Forest lie approximately three miles to the south and southwest, with the Cleveland National Forest boundary located approximately ½-mile north of the project site. The project site is surrounded by residential development, with the Portola Hills and Foothill Ranch planned communities to the west, the Hidden Ridge/Hidden Hills community and a nursery to the south, and scattered low-density

residential uses to the north and east. O'Neill Regional Park is located adjacent to the southerly boundary of the site with St. Michael's Abbey immediately to the northwest and the Ramakrisha Monastery located immediately to the southeast.

The Project site is located within the Foothill-Trabuco Specific Plan and the DEIR states that the Project is inconsistent with many of the goals, objectives and policies of the plan which generally calls for preservation of the rural character and natural habitat of the area. The site is also located within the Aliso Creek Corridor Specific Plan area, and the DEIR notes that although it incorporates regional; riding and hiking trail connections into its design, it does conflict with several other aspects of the Plan. For example, it would not preserve recreational open space or conserve natural features of the Aliso Creek Corridor as it proposes to replace an existing natural creek with a trapezonal channel. The DEIR also states that the project is in direct conflict with the Natural communities Conservation Planning Program (NCCP) in that it would disturb sensitive wildlife habitat area. The project site is also situated just north of the Foothill Transportation Corridor.

The proposed Project would construct a previously approved and recorded Tract Map 10692 which was originally approved in 1979 and recorded in 1988. The Draft SEIR notes that the Project is consistent with the approved tract map, and proposes the phased planned development of 705 manufactured single family housing units and a 1.5 acre, neighborhood commercial center and associated infrastructure. The gross residential density is 3.17 du/ac, with minimum lot sizes of 2,630 square feet. The total development footprint would affect 86 percent or about 191 acres of the project site. Thirty-nine percent of the project site is proposed to remain in open space, including community slope area. The project proposes eight private park sites; regional equestrian hiking and bicycle trail connections; and the construction of a water tank site to be dedicated to the local water company.

Prior to the most recent submittal of a grading permit application for Tract Map 10692, the project was proposed for 318 single-family dwelling units. The Draft EIR for the Project noted that the 318-unit project was "environmentally superior" to the 705 unit project currently being proposed, the 318-unit proposal was denied. The earlier Draft EIR has identified the 705-unit project as one of the two environmentally inferior alternatives considered.

The Draft EIR identifies the following areas of controversy that have arisen in response to the Notice of Preparation and which are addressed in the DEIR:

- Land Use/Aesthetic Compatibility
- Foothill-Trabuco Specific Plan Conformance
- Emergency Access Requirements
- Wildlife Corridor Design Width
- Project Specific Affordable Housing Requirements
- EIR Preparation Process/Procedures
- Loss of Wild Habitat
- Geophysical Stability
- Traffic/Circulation

The following alternatives to the proposed development are evaluated in the DEIR:

Alt. 1 No Project/No Development.
Alt. 2 Foothill-Trabuco Specific Plan Alt. A - 150 Minimum 20,000 sq. Ft. lots.
Alt. 3 Foothill-Trabuco Specific Plan Alt. B - 100 SFD Units on 31.7 acres.
Alt. 4 OCP&DS Staff Alternative (EIR 561) - 299 SFD Units, Min 5,000 sq. Ft lots.
Alt. 5 Cluster/Reduced Development Footprint - 318 SFD/MFD.

Response

The comment restates information contained within the DEIR 566. No response is required.

SCAG-3

Comment

INTRODUCTION TO SCAG REVIEW PROCESS

The document that provides the primary reference for SCAG's project review activity is the Regional Comprehensive Plan and Guide (RCPG). The RCPG chapters fall into three categories: core, ancillary, and bridge. The Growth Management (adopted June 1994), Regional Mobility (adopted June 1994), and Water Quality (adopted January 1995) chapters constitute the core chapters. These core chapters respond directly to federal and state planning requirements. The core chapters constitute the base on which local governments ensure consistency of their plans with applicable regional plans under CEQA. The Air Quality and Growth Management chapters contain both core and ancillary policies, which are differentiated in the comment portion of this letter. The Regional Mobility Element (RME) constitutes the region's Transportation Plan. The RME policies are incorporated into the RCPG.

Ancillary chapters are those on the Economy, Housing, Human Resources and Services, Finance, Open Space and Conservation, Water Resources, Energy, and Integrated Solid Waste Management These chapters address important issues facing the region and may reflect other regional plans. Ancillary chapters, however, do not contain actions or policies required of local government. Hence, they are entirely advisory and establish no new mandates or policies for the region.

Bridge chapters include the Strategy and Implementation chapters, functioning as links between the Core and Ancillary chapters of the RCPG.

Each of the applicable policies related to the proposed project are identified by number and reproduced below in italics followed by SCAG staff comments regarding the consistency of the project with those policies.

Response

The comment outlines the components of the Regional Comprehensive Plan and Guide. No response is required.

SCAG-4

Comment

Consistency With Regional Comprehensive Plan and Guide Policies

1. The Growth Management Chapter (GMC) of the Regional Comprehensive Plan contains a number of policies that are particularly applicable to this Project.

a. *Core Growth Management Policies*

3.01 The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.

SCAG staff comments. As SCAG has designated subregions, the project is situated in the Orange County subregion. Implementation of the project would result in the creation of 705 housing units. The DEIR acknowledges on page 4-3 that the project site is situated within a Regional Statistical Area that is forecasted to grow at the rate of 2.3 percent between 1995 and 2000 Although the DEIR does not identify the projected population that would be accommodated by the 720 units, it is evident that this growth can be accommodated in that forecasted by SCAG for the subregion. The project is consistent with this RCPG policy.

Response

The comment documents consistency with the Growth Management Chapter of the Regional Comprehensive Plan. No response is required.

SCAG-5

Comment

3.03 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

SCAG staff comments: The DEIR contains an analysis of the relationship of the Project to this policy (18 months to complete project grading, phasing of residential units within 5 years following completion of grading, installation of all infrastructure during initial phase) on page 3-16. The Project is consistent with this RCPG policy.

Response

Please refer to response to comment SCAG-4.

SCAG-6

Comment

b. *Ancillary Growth Management Policies*

3.04 Encourage local jurisdictions' efforts to achieve a balance between the types of jobs they seek to attract and housing prices.

SCAG staff comments. The DEIR references consistency of the Project's objectives of providing affordable housing in a jobs-rich, housing-poor area on page 4-11. It notes that the project was conditionally approved in 1979 with a 66 2/3 percent affordable housing requirement in accordance with the County's Inclusionary Housing Policy. The county policy has since been rescinded, but the project is bound by the original tract map to provide a total of 470 lots to be sold in the affordable range. These lots are further broken down to include: 188 low/moderate and 282 Medium I level housing units. The Project is supportive of this RCPG policy

Response

Please refer to response to comment SCAG-4.

SCAG- 7

Comment

3.05 Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities

SCAG staff comments. This Project would utilize existing water and sewer infrastructure that is available at the site boundary. The type of development proposed in the Project makes good use of this infrastructure as stated on pages 4-230 and 231 of the DEIR. The Project is supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-4

SCAG-8

Comment

3.11 Support provisions and incentives created by local jurisdictions to attract housing

growth in job rich subregions and job growth in housing subregions.

SCAG staff comments. See comments on policy 3.04. The Project is supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-4.

SCAG-9

Comment

3.12 Encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.

SCAG staff comments. The Draft EIR on page 4-52 states that the proposed Project will generate 6,220 trip-ends per day with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the PM peak hour. The project site is not served by an existing bus route adjacent to the site on El Toro Road The nearest OCTA bus service (2 routes) are located 2.25 and 2.5 miles southwest of the project site, and the nearest park-and-ride facility is located 2.0 miles southwest of the site. No provisions are made to provide for transit access to the site and to reduce the reliance on the automobile. The Project will result is increased need for roadway improvements to meet projected vehicle trips and miles traveled. The Project is not supportive of this RCPG policy.

Response

OCTA provides bus service to Orange County and expands service to meet demand.

SCAG-10

Comment

3.17 Support and encourage settlements patterns which contain a range of urban densities.

SCAG staff comments. The Project proposes that the entire site be developed for single residential use at a gross residential density of 3.17 du/acre. Alternative No. 5 (Cluster/Single Family/Multifamily) would have significantly less total acres of the site disturbed (113.0 ac versus 191.4 ac). This alternative could better achieve intent of this SCAG policy, while minimizing site disruption and preserving more open space The Project is not supportive of this RCPG policy.

Response

The comment documents the inconsistency between the proposed project and the RCPG.

SCAG-11

Comment

3.18 Encourage planned development in locations least likely to cause adverse environmental impact.

SCAG staff comments. The DEIR states that the proposed Project will result in the following unavoidable adverse impacts that cannot be mitigated to a level less than significant.

- Land use incompatibility impacts to O'Neill Regional Park (wildlife habitat), the Ramakrishna Monastery and St Michael's Abbey.
- Vehicular emissions from project related traffic will have a cumulative significant air quality impact
- Project specific and cumulative impacts to 50.3 acres of Venturan-Diegan transitional coastal sage scrub until such time as a section 4 (d) interim take is authorized.
- Development of the first large tract within the Foothill/Trabuco Specific Plan area will result in cumulative impacts to existing rural and natural open space and to a continued urbanization of foothill areas in south Orange County.
- Permanent viewshed alteration will occur with regard to the regional park, monastery and abbey and additional night lighting glare change night views from an unlit dark open space to an urban night environment.

Furthermore, the project would result in significant impacts related to slope stability, landslides, mud slides, subsidence and erosion. Mitigation measures are proposed to address these impacts, but the fact remains that the project will result in a total of 2.6 million cubic yards of conventional grading and 8.9 million cubic yards of remedial grading. Taken as a whole, the Project is not supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-10.

SCAG-12

Comment

3.19 National Forests shall remain permanently preserved and used as open space. SCAG shall support policies and actions that preserve open space areas identified in local, state, and federal plans.

SCAG staff comments. The DEIR states that the proposed Project will result in the following conflicts with local or state open space plans and policies:

- The project conflicts with the Foothill-Trabuco Specific Plan, specifically with regard to the preservation of a regionally contiguous wildlife corridor and the types of homes being proposed would be incompatible with site topography and biological resources.
- The project conflicts with the Aliso Creek Corridor Specific Plan in that it would not preserve recreational open space or conserve the natural features of the Aliso Creek Corridor as it proposes to replace an existing natural creek with a trapezonal channel.
- The project conflicts with the Natural Communities Conservation Planning Program in that it would further disturb a sensitive wildlife habitat area.

The Project is not supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-10.

SCAG-13

Comment

3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.

SCAG staff comments. The Draft EIR identifies a number of instances where this policy is not supported:

- The loss of 50.3 acres of Venturan-Diegan Transitional Coastal Sage Scrub that, although it will not be considered a "take" under federal requirements, will when added to other losses in the area, total about 2.4% of the coastal sage scrub in the Southern Subregional NCCP program area.
- The loss of 3.8 acres of Muelfat Scrub (associated with three ephemeral ponds) and 3.3 acres of Southern Sycamore Riparian Woodland which are significant because of their values as wildlife habitats and their function as wetlands.
- The loss of 14.6 acres of Coast Live Oak Woodland (312 individual trees) which are significant because of their wildlife values, their function in watershed protection and their function as part of the planned NCCP regional wildlife corridor.
- The loss of 0.6 acres of existing Ephemeral Ponds which is significant due to the presence of the Riverside fairy shrimp which is a federally endangered species.

- Direct impacts to 1.65 acres of wetlands and 1.78 acres of "Waters of the United States" (intermittent streams and man-made stock ponds).
- Adverse, but not significant, loss of populations of two sensitive plant species, the Catalina mariposa lily and intermediate mariposa lily.
- The loss of approximately 50.3 acres of potential nesting and foraging habitat (coastal sage scrub) on and off site, including portions of areas occupied by at least 12 pairs of southern California rufous-crowned sparrows and at least six pair of coastal cactus wrens, both of which are regionally sensitive species
- General loss of habitat for at least 63 animal species which were observed during various on-site surveys.
- Acknowledgment that "the project, as currently proposed, may hinder or preclude the preparation of the Southern Subregional NCCP Preserve, due to restricted wildlife movement corridors".

The Project is not supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-10.

SCAG-14

Comment

3.21 Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.

SCAG staff comments. The Draft EIR acknowledges that the Project is known to contain significant deposits of artifacts (four significant sites) and fossils, as well as a ranch house ruin. The project is not supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-10.

SCAG-15

Comment

3.22 Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.

SCAG staff comments. The Draft EIR acknowledges that the Project site is characterized as containing ridges, ravines, and gullies with natural slope gradients ranging from nearly level along some ridge crests and valley bottoms to 1:1 (horizontal:vertical) within deep incised gullies. The slope characteristics of the site

are as follows: 95.5 acres (43% of site) is in the 0-25 percent slope category; 94.9 acres (43%) is in the 26-50 percent slope category; and, 31.8 acres (14%) of the project site has slopes in excess of 50 percent. As noted in the project description, significant grading is required to develop the site as proposed.

The Draft EIR also acknowledges that the Project is located in an area designated as a high "Special Fire Protection" area due to its combination of natural combustible vegetation, topography and weather conditions (frequent dry Santa Ana winds). Furthermore, Draft EIR notes a potential conflict between the human environment and the two main top predators of the region, coyotes and mountain lions.

The Project is not supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-10.

SCAG-16

Comment

3.23 *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.*

SCAG staff comments Discussion of mitigation measures to address emergency response concerns due to seismic hazards, biological and ecological resources and other natural or manmade hazards are included in the Executive Summary of the Draft EIR. The Project is supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-4.

SCAG-17

Comment

3.24 *Encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment.*

SCAG staff comments. See staff comments on policy 3.04. The Project will increase the supply and quality of affordable housing in southeastern Orange County. The Project is supportive of this RCPG policy.

Response

Please refer to response to comment SCAG-4.

SCAG-18

Comment

2. The Regional Mobility Chapter (RMC) also has policies, all of which are core, that pertain to the proposed project. This chapter links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitation. Among the relevant policies in this chapter are the following:

Transportation Demand Management and Regional Transit Program Policies

4.01 Support Promote TDM programs along with transit and ridesharing facilities as a viable and desirable part of the overall mobility program while recognizing the particular needs of individual subregions.

4.03 Support the extension of TDM program implementation to non-commute trips for public and private sector activities.

4.04 Support the coordination of land use and transportation decisions with land use and transportation capacity, taking into account the potential for demand management strategies to mitigate travel demand if provided for as a part of the entire package.

SCAG staff comments. See staff comments on policy 3.12. SCAG's December 31, 1996 letter on the Notice of Preparation for the Saddleback Meadows project recommended consideration of these three policies in the preparation of the Draft EIR. No apparent consideration was given to the provision of TDM or transit services to meet the needs of the proposed 6,220 trip ends per day in year 2020. Mitigation measure AM 5-3 is not an air quality mitigation measure, but rather a commentary on not taking credit for mobile source emission reductions, including trip reduction programs. The Project is inconsistent with the three TDM/transit RCPG policies.

Response

Please refer to response to comment SCAG-9.

SCAG-19

Comment

Regional Street and Highways Program Policies

4.20 Expanded transportation system management by local jurisdictions will be encouraged.

4.23 TSM activities throughout the region shall be coordinated among jurisdictions.

SCAG staff comments. The Draft EIR notes that the Project developer will pay for signal modifications and turn lanes at the intersections of El Toro Road with Valley Vista Way and the new northern collector street serving the site. Furthermore, a mitigation measure (AM 4-16) assures that the developer will participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program, El Toro Road Fee Program and the Santiago Road Fee Program. The Project is consistent with these two RCPG policies.

Response

Please refer to response to comment SCAG-4.

SCAG-20

Comment

Regional Non-Motorized Transportation Program Policies

4.25 The development of the regional transportation system should include a non-motorized transportation system that provides an effective alternative to auto travel for appropriate trips. The planning and development of transportation projects and systems should incorporate the following, as appropriate:

a • Provision of safe, convenient, and continuous bicycle and pedestrian infrastructure to and throughout areas with existing and potential demand such as activity areas, schools, recreational areas (including those areas served by trails), which will ultimately offer the same or better accessibility provided to the motorized vehicle.

b • Accessibility to and on transit (but terminals, rail stations, Park-And-Ride lots), where there is demand and where transit boarding time will not be significantly delayed.

c • Maintenance of safe, convenient, and continuous non-motorized travel during and after the construction of transportation and general

development projects. Existing bikeways and pedestrian walkways should not be removed without mitigation that is as effective as the original facility.

SCAG staff comments. The Draft EIR acknowledges that the Project abuts the Aliso Creek Bikeway. Mitigation measures (PDF 10-1 and 10-2) assure the construction of the Live Oak Canyon and Aliso Creek riding and hiking trails within the Project boundaries. No local bikeway or pedestrian circulation improvements are provided for in the Project design The Project is consistent with this RCPG policy as it relates to regional bikeway and trail access but inconsistent with the policy as it pertains to local bikeways and pedestrian walkways within the Project site.

Response

The comment documents both the project's consistency and inconsistency with the non-motorized transportation policies.

SCAG-21

Comment

4.27 Urban form, land use and site-design policies should include requirements for safe and convenient non-motorized transportation, including the development of bicycle and pedestrian-friendly environments near transit.

SCAG staff comments See previous comments on policies 3.12, 4.01, 4.03, 4.04 and 4.25 The Project is inconsistent with this RCPG policy

Response

Please refer to response to comment SCAG-10.

SCAG-22

Comments

3. The Water Quality Chapter (WQC) core recommendations and policy options relate to the two water quality goals; to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters. The core recommendations and policy options that are particularly applicable to the Project include the following:

11.02 Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.

SCAG staff comments: The Draft EIR acknowledges that the project site is located

within the boundaries of two primary watershed areas: 1) Aliso Creek (75% of site) and 2) Oso Creek (24% of the site). The Draft EIR on page 4-38 acknowledges that "Implementation of the proposed project will result in the introduction of impervious surfaces (streets, driveways, residential units) and will result in **a decrease in the area available for stormwater percolation and a substantial increase in stormwater runoff**. Implementation of the proposed project will result in **substantial landform modification**, redirecting site drainage throughout the site." [emphasis added] The Project proposes drainage improvements that mitigate drainage impacts to a level less than significant However, the project as noted previously herein, conflicts with the Aliso Creek Corridor Specific Plan in that it "would not preserve recreational open space or conserve the natural features of the Aliso Creek Corridor as it proposes to replace an existing natural creek with a trapezonal channel". The Project does not recognize watershed management policy in the local government approved Aliso Creek Corridor Specific Plan. The Project is inconsistent with this RCPG policy.

Response

Please refer to response to comment SCAG-10.

SCAG-23

Comment

Conclusions and Recommendations:

(1) As noted in the staff comments, the proposed Sadddleback Meadows Project is consistent with or supports many of the policies in the Regional Comprehensive Plan and Guide, but is inconsistent with core policies 4.01, 4.03, 4.04, 4.27 and 11.02 and is not supportive of ancillary policies 3.12, 3.17, 3.18, 3.19, 3.20, 3.21 and 3.22. Furthermore, the Project is consistent with some aspects of core policy 4.25 and inconsistent with others, as noted in the staff comments.

(2) All mitigation measures associated with the project should be monitored in accordance with AB 3180 requirements and reported to SCAG through the Annual Reasonable Further Progress Reports.

Response

The comment summarizes the comments contained in the comment letter and requests that all mitigation measures be monitored and reported to SCAG on an annual basis. All mitigation measures contained within the Final EIR will be monitored in accordance with the requirements promulgated by CEQA. Copies of the monitoring reports will be made available for SCAG review.

COMMENTS and RESPONSES - SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT, Peter A. Hartman, District Superintendent, August 13, 1997

SVUSD-1

Comment

In response to the above Draft EIR #566 indicating that approval of this project would have significant impacts on the district's provision of adequate school facilities unless mitigation is provided, we would like to provide some information for your consideration:

K-6	= 2264	=	160
7-8	= .0566	=	40
9-12	= .0755	=	54
K-12	= .3585	=	254 students

As we have no district standard for manufactured housing, the above is our prediction for the impact of this project on our district.

Response

The proposed project is not designated as an *adults only* community, and student generation rates would be expected to be similar to standard single family detached dwelling units. The identified student generation rates, based on an existing non-adults only manufactured housing development located within the district, are hereby incorporated into the Final EIR. Please refer to Section II of this document, Corrections and Additions to the DEIR.

SVUSD-2

Comment

Currently, students in this general area are assigned to Portola Hills Elementary, Rancho Santa Margarita Intermediate and either El Toro High School or Trabuco Hills High School. ALL of these schools are filled to capacity and either do have now or will have by fall, 1997 added a number of relocatable buildings to house enrollment exceeding the capacity of their original construction.

Per the current practice of the County of Orange regarding other projects, the district requests that this project be conditioned to require that the proponent, California Quartet, Inc , meet with district staff to review the impact and necessary mitigation measures needed as a result of this project.

Response

The comment relating to high schools which would serve the proposed project and the

overcrowded conditions of all schools that would serve the proposed project is hereby incorporated into DEIR 566. Please refer to Section II of this document, Corrections and Additions to the DEIR.

COMMENTS AND RESPONSES - STATE OF CALIFORNIA - RESOURCES AGENCY, DEPARTMENT OF PARKS AND RECREATION, Bill Berry, District Superintendent, August 15, 1997

DPR-1

Comment

The California Department of Parks and Recreation (CDPR), Los Lagos District office has reviewed the above referenced document thank you for the opportunity to provide comments.

The CDPR is s trustee agency as defined by CEQA. In addition, a defining tenant of our mission is to help to preserve the state's extraordinary biodiversity. As the office responsible for the stewardship of the natural cultural resources of Chino Hills State Park, we have an interest and concern about land use decisions in the geographic area as they relate to our mission and responsibilities under CEQA.

Response

The comment states the trustee responsibility that the State of California, Department of Parks and Recreation has in relationship to DEIR 566.

DPR-2

Comment

We view the maintenance of a functional system of interconnected wildland areas throughout the region as vitally important to the preservation of biodiversity. The Santa Ana mountains and the Puente-Chino Hills are an interdependent ecological system. The health of each area is integral to the other CHSP is located in the Puente-Chino Hills adjacent to the northern end of the Santa Ana Mountains. The Santa Ana Mountains provide a valuable source of genetic material that helps to maintain the health and diversity of CHSP's plant and animal populations.

The importance of the two areas to each other continues to increase as they each become smaller, more isolated, and more fragmented by surrounding development. Fragmentation and isolation portends massive ecosystem collapse that could render all of our other regional conservation efforts nearly pointless.

Given the importance of the Santa Ana Mountains to the maintenance of the diversity of life in CHSP and the Puente-Chino Hills, we are concerned about the potential isolating and fragmenting effects of projects in the vicinity of the mountain range, and conserved lands within it such as the Cleveland National Forest and O'Neill Regional Park We believe that development adjacent to these protected wildland areas would be designed in a manner that will preserve functional biological corridors and buffer protected lands from more intensive land uses

Response

It should be noted that Chino Hills State Park is over twenty air miles northwest of the project site, separated from the project site by the SR 91 freeway. Section 4.7 of the DEIR, beginning on page 4-118 of the DEIR, documents the project related effects to wildlife movement in the vicinity of the project site and in relationship to the ongoing planning efforts associated with the NCCP southern sub-regional preserve. Implementation of the proposed project would have an incremental effect on wildlife movement between O'Neill Regional Park and the Cleveland National Forest, although would not represent a significant impediment to wildlife movement between the Santa Ana Mountains and the Puente-Chino Hills.

DPR-3

Comment

After reviewing the alternative for the project, it appears that Alternative 3 is the most responsible one. It limits development to the western side of the project, thereby protecting connectivity between O'Neill Regional Park and the Cleveland National Forest. It also places new development next to existing residential and commercial areas while providing a significant buffer to the park and forest. It appears that all of the other alternatives in some way fragment the National Forest from the Regional Park, and reduce the buffer to existing wildland.

Response

The comment restates information contained in the Alternatives section of the DEIR.

DPR-4

Comment

In the final development decision, we believe it is incumbent on the lead agency to approve an alternative that is responsible to the invaluable natural resources found in the Cleveland National Forest, the County Regional Parks, and throughout the surrounding Region. We appreciate the consideration given to buffers and corridors in the environmental review, and we encourage their full protection. Thank you for the opportunity to comment. If you have any questions, please contact Geary Hund, Doreen Ferguson or myself at (909) 657-0676

Response

Please refer to response to comment No. DPR-3.

COMMENTS AND RESPONSES - RURAL CANYONS CONSERVATION FUND, Ray Chandos, August 18, 1997

RCCF-1

Comment

We have reviewed Draft EIR 566 (the DEIR) and comment as follows:

1. DEIR MUST IDENTIFY FEASIBLE MITIGATION MEASURES AND PROJECT ALTERNATIVES

A bizarre disclaimer precedes the body of this DEIR at page 3-8.

It is therefore understood that the environmental analyses and evaluations contained in this document are largely informational, and not prescriptive in nature in that mitigation measures which would alter features of the final recorded tract map can not be implemented to reduce all project impacts to a level of insignificance. This is attributable primarily to the physical limitations of the site and the inability to deviate from the final recorded tract map. Accordingly any findings of significant impacts must be offset through the issuance of a statement of Overriding Considerations.

Does this mean that some or all of the mitigation measures listed in the DEIR are "largely informational" and "can not be implemented"? If so, those mitigation measures should be identified, because CEQA required the EIR to set forth feasible mitigation measures and alternatives to reduce or eliminate the project's identified significant environmental impacts to the extent feasible. Please identify for the decision makers which mitigation measures "can not be implemented," and which can be implemented.

Response

The referenced statement was included in DEIR 566 to describe the unique parameters associated with the evaluation of an existing recorded tract map in a DEIR. Mitigation measures which would require the applicant to substantially deviate from the physical design of the recorded tract map are not possible under the Subdivision Map Act, and as such would not be enforceable or considered feasible. As such, mitigation measure development must focus on reducing or eliminating adverse project related impacts through means which would not alter the physical parameters of the recorded tract map. Consequently, as stated in the referenced portion of the document, any unavoidable adverse impacts which cannot be reduced to a level of less than significant, would require a Statement of Overriding Considerations as part of the Final EIR certification process.

RCCF-2

Comment

Further, in stating that "any findings of significant impacts must be offset through the issuance of a statement of Overriding Considerations," the disclaimer implies that the County lacks any discretion to deny the grading permit. As explained below, however, the County may deny the grading permit, or approve an alternative to it.

Response

Please refer to response to comment RCRF-1.

RCCF-3

Comment

2. THE COUNTY HAS DISCRETION TO DENY THE PROJECT OR APPROVE AN ALTERNATIVE PROJECT.

As acknowledged in the DEIR, the Foothill/Trabuco Specific Plan explicitly mandated environmental review of the project under CEQA, requiring an Initial Study and "additional environmental documentation" "[p]rior to the issuance of any grading permit for the subject property." (FTSP Section III.3.2(c).) This provision implies discretion--preparing environmental documentation would simply waste time and paper if it could not be acted upon. CEQA Guidelines classify the issuance of a building permit as discretionary if local ordinance--in this case the FTSP (enacted in 1991 by ordinance)--contains "any discretionary provision." (CEQA Guidelines Section 15268(b).) Section III.3.2© recited above appears to constitute such a "discretionary provision" in this case.

As this court noted in Friends of Westwood v. Los Angeles (1987) 191 Cal.App.3d 259, 266-268, preparing environmental documentation for a purely ministerial project would be futile since the approving agency has no discretion to modify such a project to eliminate or reduce environmental impacts.

Nor does any statute or regulation say that the granting of a grading permit is necessarily ministerial. That depends on the particular circumstances. (CEQA Guidelines Section 15268(a).) The Westwood court held that "doubt whether a project is ministerial or discretionary should be resolved in favor of the latter characterization." (Id. at 191.)

Also, the court in Day v. Glendale (1975) 51 Cal.App.3d 817, 824, held that CEQA may apply even to a governmental approval involving virtually no discretion if that approval "is the only point at which the environmental impact of the project may be publicly considered ..."--certainly the case here

The County's Grading Code also appears to contain several "discretionary provisions" under

Section 7-1-821, "Denial of permit." It says, in part especially pertinent to this project: "If, in the opinion of the Building Official, the land area for which grading is proposed is subject to geological or flood hazard to the extent that no reasonable amount of corrective work can eliminate or sufficiently reduce the hazard to human life or property, the Grading Permit and the Building Permits for habitable structures shall be denied." (O.C. Grading Code, Section 7-1-821(d).) Still another says the "Building Official may require plans and specifications to be modified in order to mitigate anticipated adverse environmental effects of proposed grading projects." (Section 7-1-821(c).) These ordinances, then, provide considerable discretion for the County in granting or denying the proposed grading permit.

Finally, and contrary to the disclaimer, CEQA provides for reducing or avoiding a project's significant environmental impacts through adoption of an alternative project. The DEIR in fact sets forth two alternative projects, numbers 3 and 4, which mitigate every one of the project's identified significant environmental impacts while still attaining its objectives. (DEIR page 6-22.) The DEIR contains no evidence that either of these two alternatives is not feasible.

Response

The comment regarding the discretionary aspects of the grading permit approval process is acknowledged. The grading permit must be approved by the Manager, Subdivision and Grading Services prior to issuance of any grading permits for the proposed project. The comment relating to alternatives is correct.

RCCF-4

Comment

3. DEVELOPMENT COSTS MAY RENDER THE PROJECT ITSELF INFEASIBLE.

In making required CEQA determinations, the decision makers will have to compare the project's feasibility with that of the available alternatives. Unfortunately, the DEIR supplies little or no evidence on which to base such findings.

the feasibility of the preferred project, however, seems obvious at best. On the one hand, several factors limit the selling price of the 708 housing units, including the County's affordable housing requirements (Condition 19 or recorded tract map), small lot size, crowded design, and the low market value of manufactured unit. The $155,000 average per unit selling price used in the DEIR's fiscal impact report seems unduly optimistic, especially since much larger, conventional houses across El Toro Road have assessed valuations averaging only $200,000 to $250.000.

On the other hand, development costs seem unusually high, due primarily to the extensive amount of required grading (11.5 million cubic yards, DEIR page 4-22). Even for a project having much less grading than proposed here, Larry L. Simon estimated $44 million in site

preparation costs in a August 1990 report prepared for Imperial Federal Savings Association (No. RTC-90-000042), or $62,000 per units in site preparation costs alone. Land and construction costs, plus per-unit fees for roads, tollways, bridges, schools, etc. would of course add to the project's costs.

The DEIR should contain the best available information on the feasibility of this project and its alternatives so that the decision makers can make a reasoned choice.

Response

The comment is noted. Financial feasibility information for each alternative has not been provided by the applicant, and as such, is not included in the DEIR.

RCCF-5

Comment

4. THE GRADING PLAN MUST BE PROVIDED FOR REVIEW.

The DEIR seems to contain only a "conceptual" and mostly illegible grading plan" (DEIR page 4-23). Since the project is a grading permit, involving a phenomenal amount of grading, the grading plan itself must be included in the DEIR to allow the public and responsible agencies to review it.

The grading plan must indicate the location of the 19.77 acres of "offside grading" (DEIR page 3-8).

We consider this omission sufficiently serious to require supplementation of the DEIR and an extension of the comment period.

Response

Please refer to response to comment SFC-1 Areas of offsite grading are clearly shown in Exhibit 7, Site Plan.

RCCF-6

Comment

5. A FULL FAITHFUL PERFORMANCE BOND SHOULD BE REQUIRED.

Given the project's questionable feasibility and extensive geological instability, it remains a prime candidate for failure during the 18-month grading process. We note that two previous owners and would-be developers of this site went bankrupt. The EIR must assess the potential safety problems resulting from a half excavated site: drainage and erosion, collapse of adjacent properties, collapse of El Toro Road, etc., as well as the possible financial liability

to the County in the event of abandonment. As a mitigation measure, the County must impose as a condition of approval of any grading a full faithful performance bond sufficient to restore the site to a safe condition.

Response

Please refer to Section 4.2, Soils and Geology for a complete discussion of project related geotechnical hazards and mitigation measures. The financial conditions of the two previous owners of the site is not related to geotechnical conditions. Therefore, the comment regarding bankruptcy is speculative and does not require a response per CEQA.

RCCF-7

Comment

6. DEIR MUST ANALYZE REAL EFFECTS ON CIRCULATION--NOT INTERSECTION LEVELS OF SERVICE.

The DEIR analyzes the project's impacts on traffic and circulation by listing the level of service expected at various intersections around the project. These levels of service, based on the number of lanes, roadway geometry, and traffic volumes, generally indicate how many signal changes it will take to get through an intersection.

The County must stop using this methodology, because it does not measure the true impact on transportation--i.e., on people trying to get from one place to another. Not surprisingly, typical developer-prepared EIR's invariably conclude, as does this one, no significant impact on the region's traffic and circulation. Only minor road widenings, restriping traffic lanes, and installation of more traffic signals are normally deemed necessary to avoid such significant impacts.

And yet, the average travel times have dramatically increased in the region, due mainly to the proliferation of traffic signals. For example, in 1983, there were no traffic signals on El Toro Road from Cook's Corner to Trabuco Road By 1997, there were seven While each one may operate at level of service "D" or better, they collectively can (and often do) add several minutes to a trip which used to take only five minutes.

The average trip time more effectively measures and summarized the project's true impact on "traffic and circulation" than does simply tabulating the expected levels of service at a growing number of signalized intersections, and will more realistically reflect the inevitable and increasing conflicting movements of vehicles generated by the sprawling suburban development in this region.

Under CEQA, EIRs must be written in plain language so that the public can understand the potential effects of a project. This DEIR's traffic analysis fails this requirement, as explained above. Typical travel times, with and without the project, would be included in the DEIR.

Response

The methodology employed in the DEIR to analyze project related traffic impacts is a standard protocol adopted by the County of Orange, and is used in all EIR documentation. Travel time and delay analysis is not appropriate for long range planning purposes. With regard to the plain language comment, the County requires all technical reports, including traffic reports, to be summarized in language understandable by an informed public.

RCCF-8

Comment

7. DEIR MUST ASSESS THE ACTUAL IMPACT ON SCHOOL.

The DEIR gives short shrift to the project's impacts on schools--a single sentence affirming the obvious, that the project would send "400 additional students into the currently overcrowded Saddleback Valley Unified School District." (DEIR page 4-220.) As mitigation, it proposes only the payment of required school fees of $1.72 per square foot of residential (page 4-224), and then somehow concludes that "[n]o unavoidable adverse impacts would occur to education services" (page 4-226).

This conclusion cannot be supported by the available evidence. As the school district has repeatedly verified, the state-required fees do not suffice to provide required school facilities in the region. The DEIR must list the school facilities to be impacted by the project, describe the existing conditions at these facilities, and then assess the expected impact of the project on each

Response

The proposed project must comply with the requirements of the State School Impact Fee Program to alleviate any incremental burden, in accordance with the School Facilities Act, (Government Code Section 65995).

It should be noted that there are other mechanisms available to school districts to fund new school construction. These include community assessment districts and general obligation bonds. However, implementation of these programs will require two-thirds vote of the residents and therefore, are not presently enacted. At this time, the only mechanism enacted by the Saddleback Valley Unified School District is the use of developer fees in accordance with state mandated limitations.

RCCF-9

Comment

These comments are made on behalf of the Rural Canyons Conservation Fund, Ray Chandos as an individual, Bruce Conn as an individual, Sherry Meddick as an individual, and any other

person opposed to this project as proposed. These comments and any references contained herein are hereby incorporated into the official record of proceedings of this project and its successors.

Response

The comment is noted.

COMMENTS AND RESPONSES - GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, Antero A., Rivasplata, August 19, 1997

GOPR-1

Comment

The State Clearinghouse submitted the above named environmental document to selected state agencies for review. The review period is closed and none of the state agencies have comments. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call at (916) 445-0613 if you have any questions regarding the environmental review process. When contacting the Clearinghouse in this matter, please use the eight-digit State Clearinghouse number so that we may response promptly.

Response

The comment is noted. No response is required.

COMMENTS AND RESPONSES - RUTAN & TUCKER, LLP.
David B. Cosgrove, August 21, 1997

RAT-1

Comment

This office, and the undersigned in particular, represent St. Michael's Abbey ("Abbey"). As you may be aware, the Abbey is a landowner adjacent to the proposed Saddleback Meadows Project ("Project") for which the above-referenced Draft Subsequent Environmental Impact Report ("DSEIR") has been prepared. The Abbey will be directly affected by this Project.

The Abbey opposes the Project as currently proposed, for many of the same reasons already expressed in connection with the processing of Environmental Impact Report No. 561. That EIR was the subject of numerous letters from our office, raising various objections to CEQA, land use inconsistencies, and other problems with the Project. The provisions of those letters are incorporated herein by reference, and we would request that copies of them be made a part of the administrative record in the processing of this DSEIR.

The Abbey believes there are a number of legal, environmental, planning, and other defects in the currently proposed Project. This letter, and the items incorporated herein by reference, constitute the Abbey's comments under CEQA public comment procedures for DSEIR No. 566.

Response

The comment is noted. Please note that DEIR 561, including the response to comments document, has been incorporated by reference into DEIR 566.

For ease of reference, the comments are grouped under separate subject headings below.

RAT-2

Comment

1. <u>The Project description and public review of the Project are flawed.</u>

At the outset, the Abbey must note that there is significant confusion regarding exactly what is the Project being reviewed. The Project chronology at DSEIR 2-8 and 2-9 indicate the catalyst for the preparation of this DSEIR was an application for a Phase I grading plan. The Project description at DSEIR 3-1, et seq., seems to indicate the Project is the actual construction of a 705-unit affordable housing project. This project includes a 1.5 acre neighborhood commercial center, which is referenced at DSEIR 3-1, but not analyzed further in other sections of the DSEIR. Moreover, DSEIR 3-15 lists approval of a grading plan and issuance of a grading permit as included within the discretionary actions covered by the environmental review.

Response

Please refer to Section 3.0 of the DEIR for a complete discussion of the project description, and Response to Comment SFC-1. The 1.5 acre neighborhood commercial center is a component of the proposed project that is evaluated throughout the entirety of the DEIR.

RAT-3

Comment

Given this, an obvious question arises. Where is the grading information? Neither the DSEIR nor the grading study attached as Appendix D includes any specific grading plan. In fact, page 4 of the grading study indicates that the report was conducted at what it terms a "EIR level," and that more detailed evaluation would occur during 40-scale grading plan review. Given the imminence of the grading activities, and their role as the entire cause for the environmental processing, this in inadequate. Title 14, California Code of Regulations § 15147[1] requires an EIR to include technical information "sufficient to permit full assessment of significant environmental effects by reviewing agencies and members of the public." This Project appears to be at a "construction project" level, as that term is used in CEQA Regs. § 15146(a), and consequently deferred analysis of the full range of all effects from the massive grading proposed is inappropriate.

Further, I am advised that the 40-scale grading plan, and other information required to determine and assess the specific impacts of the proposed grading, has not been publicly available, even up until a few days prior to the announced deadline for submission of DSEIR comments. This is a "construction phase" project proposal; it is not a general plan or program EIR. Consequently, all of the specifics of the grading proposal should have been formulated, and available for public review and comment, prior to Project approval. The DSEIR has failed to follow this process. Attached as Appendix "A" is a listing of all "mitigation measures" which defer analysis on various topics until the time of grading permits. Obviously, no grading permit can issue without a specific grading plan, yet that plan was not proffered for public review and comment. Given the large number of other analyses which hinge on the grading information, such information certainly constitutes "significant new information" as that term is used in CEQA Reg. § 15088.5, without which full, adequate public review is impossible. The DSEIR therefore must be re-noticed and recirculated after all the appropriate grading and other information has been available for the full comment period.

Response

Please refer to response to comment SFC-1.

[1] Cited herein as "CEQA Regs."

RAT-4

Comment

2. Analysis and incorporation of mitigation measures is improperly deferred.

No doubt in large part due to the failure to have specific grading information available, an entire host of items which require environmental analysis has been improperly deferred. Appendix "A" hereto is a chart of deferred analysis listing the various mitigation measures purportedly imposed upon the Project, but which actually reveal that fundamental aspects of the mitigation of impacts on endangered species such as the Riverside Fairy Shrimp, impacts on the California Gnatcatcher, acoustical analyses, street configurations and lines of sight, drainage studies, and design of storm drain improvements, to name a few.

The environmental impacts of these components of the Project are neither described or assessed, and no readily identifiable mitigation standard for these impacts is adopted. Given this, the conclusions regarding mitigation of the related impacts to a level of nonsignificance is unsupported by any evidence in the record, and therefore fails to meet the standards imposed upon the lead agency under CEQA Regs. § 15091(b).

Response

The comment is noted. DEIR 566 incorporated by reference the entirety of DEIR 561, including all of the technical studies completed for the previous proposal. Any updates required to existing studies will be completed prior to the issuance of the grading permit for the proposed project.

RAT-5

Comment

3. The available grading information demonstrates the Project should not proceed.

Although incomplete, what grading information is included in the DSEIR clearly indicates the Project should not proceed. The entire Project area is underlain by landslides, and excavations reveal heavy seepage (DSEIR 4-31; appendix D, p. 7). In addition, the oldest and deepest landslides on the property are merely projected from "necessarily limited exploratory borings." (Appendix D, p 8, 16.) This is hardly the type of area which is suitable for the projected 11.5 million cubic yards of direct and remedial grading.

Response

The comment restates information in DEIR 566 and expresses an opinion relative to grading the project site.

RAT-6

Comment

Incredibly, the DSEIR identifies 4" to 6" of settlement likely over the graded area. It finds such impacts insignificant, based upon a wildly optimistic presumption that settlement will occur at uniform rate, and occur evenly over a well-distributed area. (DSEIR 4-33.) With all due respect, the courts are filled with multi-party landslide cases, involving millions of dollars of damage, on ground settlement which is considerably less extensive. This effect must be regarded as significant, and must be mitigated.

Response

The comment correctly restates information contained in DEIR 566, and expresses an opinion relative to landslide related lawsuits. Because County of Orange Standard Conditions of Approval require stability following grading, geotechnical impacts will be reduced to less than significant levels, following implementation of all mitigation measures.

RAT-7

Indeed, the grading information in the DSEIR is contradictory. At page 4-24, it is indicated that no blasting is anticipated. Mitigation measure AM 2-33 contemplates blasting of hard cemented sandstone beds, however. If the Project proponent and its consultants cannot at this phase even uniformly identify the grading measures needed, how is the County or the reviewing public to accurately determine the grading impacts from this proposal?

Response

The referenced statement on Page 4-24 of the DEIR is a statement of general conditions encountered during the exploratory drilling phase of the geotechnical analysis. AM 2-33, on Page 4-31 of the DEIR, discusses excavation options should certain earthen materials be encountered during the grading phase of the project.

RAT-8

Comment

Last December, the Board determined this site was not appropriate for a 318-unit development. The comments already submitted by St. Michael's Abbey on grading and soils matters in connection with EIR No. 561 remain fully applicable here, are incorporated herein by reference, and show grading impacts will be significant. These effects remain unmitigated. Obviously, the site remains unsuitable for the far more intense 705-unit proposal now proposed.

Response

Please refer to the Responses to Comments received on DEIR 561. Both DEIR 561 and DEIR 566 contain detailed information on existing site geotechnical conditions, project impacts, and required mitigation measures.

RAT-9

Comment

4. Seismic impacts are improperly assessed.

Appendix D, page 11, seems to dismiss seismic risks to the site, with a generalized discussion of risks inherent throughout Southern California. Given the grading constraints on the property, a more particularized discussion of potential faulting and its potential impacts on the proposed Project are required. Specifically, DSEIR 4-20 lacks any discussion of the El Modena or Norwalk faults, both of which appear sufficiently proximate to the Project site to create seismic disturbances.

Response

No active or potentially active faults have been identified onsite. Primary regional faults which could seismically affect the project site have been identified in Table 7 on Page 4-20 of the DEIR. Mitigation measure SC2-7 reduces potential seismic impacts to less than significant levels.

RAT-10

5. The DSEIR contains a number of improper or vague mitigation measures.

In order to meet legal requirements, a mitigation measure must have a readily identifiable, performance-based standard which must be met. A number of the mitigation measures in the DSEIR fall short of this requirement.

For example, AM 2-22 merely contains advisory language that certain types of rock are "best not incorporated" in fills. AM 2-27 contains only recommendations, and no requirements. AM 2-45 calls for "precautions in respective expanse of soils, "which is vague, and should be further specified.

Mitigation measure SC 2-4 simply cannot be met. The DSEIR recognizes the incompatibility of the Project with O'Neill regional Park. (See DSEIR 4-12.) The degree of required grading eliminates any compatibility with natural land characteristics of adjacent open space areas, making compliance with this mitigation measure impossible.

Response

Mitigation Measures AM 2-22, AM 2-27 and AM 2-45 are standard Soils Engineer recommendations which supplement the County's standard conditions of approval to identify potential geotechnical constraints Mitigation Measure SC 2-4 will ensure that the transition between the project site grading and adjacent sensitive land uses is as compatible as possible. Other PDF, SC and AM mitigation measures will ensure an adequate transition between proposed grading and adjacent land uses.

RAT-11

Comment

6. A number of significant environmental impacts are improperly addressed.

The DSEIR is also rife with inaccurate or contradictory information in assessing environmental impacts, and concludes they are insignificant. For example, the hydrology study listed in Appendix L appears to have been done for a 318-unit proposal, not the 705-unit proposal listed in the project description. (See hydrology map and "Discussion" text in Appendix L.) DSEIR 4-39 contains an admission that the drainage analysis is inadequate, in stating that it may need to be updated after review of the 40-scale rough grading plans. The preliminary master plan of storm drain improvements listed in PDF 3-1 (DSEIR 4-41) references a tentative map 15230, not the Project, and is essentially unreadable. This map gives no legible reflection of what drainage facilities will be built, where, and no narrative or other graphic summary providing any further explanation appears in the DSEIR. All these studies need to be redone to analyze the Project now proposed.

Response

PDF 3-1 does not reference any Tentative Tract number. Hydrology analysis and data contained within the DEIR evaluates the effects of implementation of the proposed project on onsite hydrology. Baseline hydrology information contained in DEIR 561 remains applicable to DEIR 566.

RAT-12

Comments

Regarding noise, DSEIR 4-110 assesses noise from a projected 3,780 daily Project trips. DSEIR 4-52 indicates the daily trip projection is 6,220. The conclusions regarding vehicular noise are therefore suspect, and should be redone. In addition, DSEIR 4-113 indicates that air conditioning units are standard for housing projects, but fails to require such units as a mitigation measure for exterior noise. This should be included as a mitigation measure. IN addition, the entire acoustical analysis appears to be deferred (see DSEIR 4-115). IT should be conducted now.

Response

Please refer to the Introduction on page I-1 of this report for an explanation of timing for mitigation implementations. The reference to 3,780 daily trips is a typographical error. The acoustical analysis was not deferred and is based on the current traffic study completed for the 705 unit manufactured housing project. Although the County of Orange may require the installation of mechanical ventilation units as part of the building permit process, air conditioning units are normally a market driven feature.

RAT-13

Comment

Most strikingly, the DSEIR completely "ducks" impacts to the Riverside Fairy Shrimp, Coastal Sage Scrub habitat, and the California Gnatcatcher. DSEIR 4-152 indicates 105 acres of off-site mitigation will be reacquired, but the availability or location of this mitigation property receives no discussion DSEIR 4-157 delays the Gnatcatcher survey until some future time, and fails to provide the County or the reviewing public sufficient information to determine Gnatcatcher impacts from the Project whose approval is sought.

Response

Please refer to Response to Comment USFWS-3 and USFWS-16. Section 4.7.6 of the DEIR, beginning on Page 4-151, outlines a comprehensive mitigation program required to mitigate the impacts to onsite biological resource as a result of project implementation.

RAT-14

DSEIR 4-199 indicates a population generation estimate of 2.57 persons per household. The fiscal study, in Appendix G, page 22, uses 2.4. This inconsistency should be reconciled.

Response

The official County of Orange average household population is 2.57 persons/dwelling unit. The population generation factor (2.4 persons per dwelling unit) used in the fiscal impact report, contained in Appendix G of the DEIR was obtained from the California Department of Finance, based on January 1996 data. As of January, 1996 there were 179,571 residential units within the unincorporated portions of the County, containing 74,842 residents, with an average of 2.4 persons/dwelling unit.

RAT-15

Comment

Regarding transportation, the DSEIR notes the nearest bus stop is between 2.25 and 2.5 miles from the Project site (DSEIR 4-52.) This is completely inconsistent, with the proposed

affordable nature of the housing development, whose residents are likely to be more heavily reliant on public transportation. Extension of service or alternative project locations should therefore be analyzed. There is no separate analysis of the traffic, noise, or air quality impacts of the buss which will be required to transport the estimated 399 additional students which will come from the Project, to already overcrowded schools. (DSEIR 4-218.) More fundamentally, students, all the while acknowledging current classrooms are overcrowded. DSEIR 4-216 contains a number of ambiguous conclusions regarding impacts on sheriff, fire, education, and library services. The double negative wording of these sentences seems to indicate each may have a significant impact, none of which is mitigated.

Response

The Orange County Transportation Authority (OCTA) routinely adds public transit lines and stops to their system to accommodate demand. Project related effects on Public services and utility systems are evaluated in Sections 4.12 and 4.13 of the DEIR, beginning on Page 4-209. The OCTA which has reviewed the subject EIR, has not requested or recommended bus facilities in conjunction with the proposed project

RAT-16

Comments

7. The alternatives analysis is insufficient.

CEQA Regs. § 15126(d)(5)(B) calls for review of alternative locations, or finding regarding the infeasibility of alternative locations. The DSEIR fails to address alternative locations.

Response

As outlined in *Goleta II,-Citizens of Goleta Valley v. Board of Supervisors, (1990) 52 Cal. App.3d 553*, alternative site analysis is not warranted for certain types of projects, including those where the applicant has vested development rights based on an approved specific plan and a recorded tract map. Alternative site analysis is appropriate for projects with other viable site options. Several alternatives to the proposed project were evaluated in both DEIR 561 and DEIR 566.

RAT-17

Comment

The alternatives discussion contains inappropriate language suggesting some sort of legal obligation for the county to refund various payments, many of which we understand were made by the Project applicant's predecessor in interest, and not the applicant itself. While we have not conducted a legal analysis of these somewhat unusual claims, we have been informed that many of the water and other development impact credits resulting from these previous payments are fully transferrable, and could be marketed by the owner of the Project at any

time. Consequently, he statement regarding any obligation for refunds in the even to consideration of a "No Project" alternative appears incorrect factually, let alone irrelevant to the environmental analysis the DSEIR purports to be undertaking.

Response

Under the Alternative 1 discussion on Page 6-4 of the DEIR, previously paid development fees, utilized to construct capital facilities, are listed, documenting the total expended by the applicant to date. Implementation of the No Project Alternative would not require any infrastructure, and as such, would require a refund of fees previously paid for site infrastructure.

RAT-18

Comment

The DSEIR makes clear that the "No Project" alternative is the environmentally superior choice. Consistent with prior representations it has made, however, the Abbey has no objection to the 100-unit proposal, currently listed as Alternative 3. The Abbey believes this represents a sound balance between the environmental constraints on the site, and the Project proponent's desire for some degree of development on the property.

Response

The comment states the commentator's preference for Alternative 3, the 100 unit alternative.

RAT-19

Comment

8. The DSEIR's land use planning presumptions are inaccurate.

Although not precisely related to environmental impacts, the DSEIR contains a number of statements regarding land use entitlements the Abbey believes are inaccurate. The proposed Project is not, as the DSEIR asserts, essentially exempt from the Foothill Trabuco Specific Plan ("FTSP"). (DSEIR 4-4, 4-11). The Growth Management element of the county's General Plan was last revised on October 19, 1993, after the adoption of the Foothill Trabuco Specific Plan in 1991. This element is the self-described "key resource document for growth management concerns." Subsection (E) (6) requires that all new development within the Foothill Trabuco Specific Plan planning area "shall be rural in character, and shall comply with the policies of the [Foothill Trabuco Specific Plan] ... in order to maintain a buffer between urban development and the Cleveland National Forest," The Project is clearly contrary to these goals, does not comply with FTSP standards, and is therefore inconsistent with the General Plan.

Moreover, the Project is not "exempt" from FTSP requirements even under the terms of the

Specific Plan. Section 3.2(c) of the Bridlewood Residential District Requirements specifically indicates CEQA review is required prior to the issuance of grading permits for the previously-approved map. Consequently, additional discretionary review and approval was specifically contemplated prior to the time the Project was to be implemented. Any contention of "vested rights" from the filing of he the map is therefore inappropriate.

Response

Please refer to Sections 3.0 and 4.1 of DEIR 566 for a complete discussion of the consistency of the proposed project with land use policy documents. As documented, the proposed 705 unit manufactured housing project is consistent with the Foothill Trabuco Specific Plan and the countywide General Plan. The Growth Management Element of the OC General Plan assumes the development of the 705 unit project.

RAT-20

Comment

In addition, there is some question regarding the validity of the map in the first instance, given the chronology which the DSEIR lists. The map was apparently approved in December of 1979, and recorded some nine years later, in December 1988. The chronology points out that the last stay was granted only until July 24, 1986. There is no indication, at least in the chronology, that the County approved any further extension. What was recorded therefore very may well have been an expired map, which would vest no development rights whatsoever, regardless of any claimed FTSP "exemptions."

Response

Tentative Tract Map 10692 was recorded December 16, 1988, in accordance with the requirements of the County of Orange in effect at that time. The FTSP recognizes the legal status of the recorded Tract Map.

RAT-21

Comment

9. Conclusion.

Even without all the defects listed above, the DSEIR concludes a number of significant impacts are unmitigated, including land use impacts and grading impacts. Given this, the Project approval will require a Statement of Overriding Considerations, which the Abbey believes is wholly insupportable in this context.

Put simply, the Project is inconsistent with the Abbey and the neighboring Ramakrishna Monastery. With all due respect to housing needs, the Abbey submits that the roles the Abbey and Monastery plan, and the services they provide, are unique assets in Orange county. The Abbey would hope that the County would value these assets more than another in what

many consider to be all-to-common residential developments, and not issue a Statement of Overriding Considerations condoning the Project's inconsistency with surrounding land uses.

Whether seriously proposed in its own right, however, or merely as a backdrop to make a previously-rejected project appear more palatable, the DSEIR is insufficient to support the Project approval sought. For this reason, the Abbey respectfully requests the County to fail to certify the DSEIR, and to reject any grading applications, or other development permits, which may be sought pursuant to it.

St. Michael's Abbey thanks the County for the opportunity to respond to this DSEIR, and looks forward to working with the county and the applicant on a more environmentally sound Project proposal.

Response

Please refer to response to comments RAT-1 through RAT-20.

COMMENTS AND RESPONSES - SFC CONSULTANTS/Saundra F. Jacobs, REA, Principal, August 22, 1997

SFC.2-1

Comment

SFC Consultants (SFC) has reviewed the Saddleback Meadows Draft Subsequent EIR 566 ("DSEIR 566" or "EIR") for CEQA compliance and consistency. SFC understands that the County of Orange required DSEIR 566 to be prepared as a result of a grading permit application having been submitted by the developer of the Saddleback Meadows project for the construction of grading improvements for 705 manufactured single family dwelling units with concomitant infrastructure and utilities on approximately 222 acres.

Before getting into the details of the EIR adequacy, some very basic concerns about this DSEIR 566 should be enumerated. First, although the filing of the grading permit application appears to have been the event which triggered the preparation of DSEIR 566, the 40-scale grading plans upon which the permit application is based have not been made available for public review, nor has the geotechnical review of those plans been made available. In addition, these materials have not been addressed in or made a part of DSEIR 566. As a result, a full assessment of the construction level impacts of the project has not been done as required by CEQA.

Response

Please refer to response to comment SFC-1.

SFC.2-2

Comment

Second, whether or not the project analyzed in this DSEIR 566 is a grading plan application or the basic development plan, it is extremely important for this EIR to provide as much detail as possible in discussing environmental impacts and providing relevant mitigation measures. Gathering further information and complying with resource agencies in the future is not proper mitigation. However, this type of mitigation is listed throughout the EIR> exactly 51 of the 200 EIR mitigation measures are based on "Prior to Grading Permit" timing. It is important for the Planning Commission to realize that at this late stage in the development, many of the required mitigation measures should be formulated and be subject to public scrutiny now, not at a later date after the EIR has already been certified.

Response

Please refer to the Introduction section of this document and response to comment SFC-1 for a discussion of the planning process associated with the grading application and the related timing of mitigation measures.

SFC.2-3

Comment

Third, the geotechnical section of the EIR is also riddled with references to "gathering future information as mitigation measures". This may be acceptable if the environmental issue remains significant after mitigation; however, the EIR states that the geotechnical mitigation will mitigate any future and unknown impacts to less than significant levels. This is not a realistic conclusion considering future unknown impacts. A geotechnical review of the grading plans is the mechanism with which we can be assured that the mitigation measures recommended will actually work.

Response

Please refer to response to comment SFJ-1.

SFC.2-4

Comment

Fourth, the traffic section of the DSEIR arbitrarily limits its review and impact analysis of intersections to the El Toro Road/Santa Margarita Parkway intersection and intersection to the north thereof. No analysis has been presented for critical intersections to the south. Also, there is no indication in the traffic study if the traffic calculations have been adjusted to account for the difference in projected use versus actual use of the Foothill Corridor. Published reports indicated that the San Joaquin Corridor's projected usage was overestimated by nearly 50%. The DSEIR should include all intersections that will be impacted by 705 units, including El Toro Road and the San Diego Freeway (I-5), and especially if the Foothill Corridor estimates are similarly overstated. In addition, not withstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the traffic impacts from the reuse of the El Toro MCAS as a commercial airport. It is also not clear from the DSEIR if the regional traffic model utilized for the project impacts, and cumulative project impacts, actually incorporate the regional changes to the traffic resulting from a commercial airport at El Toro.

Response

Please refer to responses to comments CMV-01 through CMV-09.

SFC.2-5

Comment

Fifth, the DSEIR provides a baseline discussion of the impacts from the El Toro MCAS fly-overs. However, the impact section of the EIR fails to identify a noise analysis or potential CNEL contours as a result of the base reuse plan as an active commercial airport No

mitigation measures are included for a multiple fly-over commercial airport. Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the noise impacts from the reuse of the El Toro MCAS as a commercial airport or the regional traffic noise associated with the commercial airport. The DSEIR states "Depending upon future site re-use, aircraft noise may or may not be an important issue." The aircraft noise from a commercial airport at El Toro will be an important issue and must be addressed in the DSEIR.

Response

MCAS El Toro reuse plans have not been finalized, and as such, noise analysis associated with the reuse would be speculative. However, it is acknowledged that subsequent to the closing of MCAS, the potential exists for the development of a civilian airport on the MCAS site. Draft EIR 563 "MCAS El Toro Re-Use," which was certified on December 11, 1996, analyzed the impacts associated with such a use. Depending on the configuration of a future civilian airport, the potential exists for on-going impacts. Draft EIR 566 contains sufficient mitigation measures to effectively mitigate all potential current and future noise impacts.

SFC.2-6

Comment

Sixth, it is also important to note that the biological mitigation for ACOE and CDFG coordination may change the site plan, which would then require a revised EIR. If site plan redesign is not feasible, then the EIR should point out where the off site mitigation locations will be. In addition, the EIR indicates in several places that mitigation measures cannot be implemented by changes to the grading plan because this proposed project is a legally recorded tract map. However, under the Federal Endangered Species Act, all "take" must be accommodated, regardless of tract recordation or not.

Response

Please refer to Section 4.7 of the DEIR for a discussion of project related impacts to biological resources. Also refer to the introduction section of this document for a complete discussion of the planning process associated with the grading application, and the related timing of mitigation measures.

SFC.2-7

Comment

Seventh, the alternatives in the EIR should reflect alternative grading scenarios together with the comparable grading impacts associated with them. DSEIR 566 alternatives currently compare alternative land uses or densities, although these tend to be limited to different grading scenarios. Also, CEQA requires an alternative location to be discussed. This issue is missing in the EIR and should be included.

Response

Each of the alternatives evaluated in the DEIR contain a grading scenario different from that of the proposed project. Please refer to response to comment RAT -16 regarding alternative location.

SFC.2-8

Comment

Eighth, the EIR mitigation measures are also plagued with the word "should" instead of "shall". "Should" mitigation measures will become "shall" upon certification of the EIR. If the lead agent is not sure of a mitigation measure's applicability at this stage of approval, then perhaps the lead agent does not really want to implement important mitigation measures, but simply provide the necessary environmental paper work for a recorded tract map.

Response

All *should* wording contained within mitigation measures is hereby changed to *Shall.* Please refer to Section II of this document, Corrections and Additions to the DEIR.

SFC.2-9

Comment

Finally, the Planning Commission should keep in mind, that this recorded map for 705 units does not tie the County to instant EIR certification, in which CEQA simply becomes a necessary evil. CEQA allows for a public agency to not approve a project as proposed, if there are feasible alternatives or mitigation measures available that would substantially lessen any significant effects that the project would have on the environment (CEQA Guideline Section 15021). The Planning Commission can only override unavoidable adverse impacts if it finds that there are legitimate social, economic, or other considerations which truly outweigh such impacts. Simply implying that affordable housing is an overriding consideration is insufficient to justify the significant environmental effects of the project.

Response

The comment restates provisions of CEQA related to alternatives, mitigation and overriding considerations.

SFC.2-10

Comment

CEQA Guidelines Section 15161 indicates that "The EIR shall examine all phases of the project including planning, construction, and operation". A phased project must be evaluated

in light of each phase. The first sentence of Section 1.0 Executive Summary, Subsection 1.1, page 1-1, describes the project as "the phased development of 705 manufactured single family housing units..." yet the EIR states on page 3-16, Section 3.4 Project Phasing that grading will occur in one phase. This statement, in turn, appears to be at odds with the reference (in Table 3 on page 2-8 of the EIR) to the developer's submittal of an application for "Phase I Grading Plan" on December 3, 1996. Therefore is the grading being phased, or is the construction being phased? If the grading is phased, a phasing plan should be submitted with the EIR distribution and review. DSEIR 566 should describe what the grading phases are, including how much grading in Phase I, II, III etc. A Phasing Plan should be included as part of this DSEIR, and not just be made another condition of approval. Moreover, if residential construction is also being phased in addition to the grading, this needs to be spelled out and addressed in the DSEIR. The Planning Commission cannot certify a DSEIR having such piece-meal information on grading and phasing.

Response

As stated in the DEIR, all grading will be completed in one continuous phase. Only the first portion of the grading plans, referred to in the DEIR as *Phase I* grading plans, have been submitted in conjunction with the grading application.

SFC.2-11

Comment

Section 2.0 Introduction

Technical error: Page 2-7, Table 3 chronology of June 13, 1984: Ordinance 3486 should read - Ordinance 3468.

Response

Error noted and correction incorporated into Final EIR. Please refer to Section II of this document, Corrections and Additions to the DEIR.

SFC.2-12

Comment

Page 3-8, first paragraph. The project description indicates that the removal of the mandated Inclusionary Housing Program requirements could undermine the County-wide calculation used to eliminate the affordable housing mandate. This statement on the surface may seem valid enough, but there is no factual evidence in the EIR to support such speculation. Instead of mere speculation, the DSEIR should include a thorough discussion of housing issues, including the possibility of eliminating the need for affordable units and allowing for a more environmentally sensitive project to be considered.

Response

A thorough analysis of housing issues associated with the affordable housing provisions associated with recorded tract 10692 is beyond the scope of analysis of DEIR 566, and is not warranted.

SFC.2-13

Comment

Page 3-8, Project Features, indicates that a 1.4 million-gallon water tank would be required for this project of 705 units. EIR 561, which analyzed 318 units, also required a 1.4 million-gallon water storage tank. The quantity of fire flow, and stored water necessary for the 705 units therefore appears inconsistent. If two 1.4 million-gallon tanks, or one 2.8 million gallon tank are required, this would significantly increase either the size of the tank location for two tanks, or the amount of grading and screening that would be needed for an increased tank size. The water tank site is owned by the Trabuco Canyon Water District, however, Mr. Bruce Bonner, General Manager of the District was not aware of the discrepancy, and was planning to comment on the EIR for the proper information. Without the proper water storage available for 705 units, the project could not be developed and the DSEIR could not be certified. The extent of grading for the increased tank size and its location must be addressed in the DSEIR. Changing the size of the tank size will also require an amendment to the original Recorded Tract Map. Once the County receives this information, a revised section for review and comment by the public should be prepared.

Response

The water tank site was part of the project site and was dedicated to the Water District, in conjunction with recordation of TT 10692. The 1.4 million gallon water tank has been sized to serve a larger area than the proposed project, and remains adequate to serve project related fire flow and domestic service demand requirements.

SFC.2-14

Comment

Page 3-16, Project Phasing. Project grading is noted as being implemented in one phase, but this does not square with the fact that the developer has only submitted 40-scale grading plans for "Phase I" of the project which, apparently, only involves a portion of the proposed 705 units. This inconsistency should be resolved because, obviously, if the grading is to occur in several stages, instead of in "one phase," then the grading impacts would occur over a much longer period of time than the 18-month estimate set forth in the DSEIR

Moreover, if the EIR shows and states the grading in one phase, then the entire grading plan at 40 scale should be made part of the Appendices to the EIR or, at the very least, the grading plans (and the geotechnical reports needed to fully understand them) should be incorporated

by reference so that members of the public could review them. Either solution will require DSEIR 566 to be revised and recirculated in accordance with CEQA Guidelines Section 15088.5.

The Project Description has inaccurately depicted the project phasing. CEQA Section 15126 requires a complete project description, including all phases, and should be included for review with this DSEIR. Since it appears that the grading will be in phases, this project description is not consistent with CEQA Guidelines Section 15126 and cannot be certified as adequate.

Response

Please refer to response to comment SFC-1.

SFC.2-15

Comment

Section 4.0 Existing Conditions, Project and Cumulative Impacts, Mitigation Measures and Level of Significance After Mitigation:

Section 4.1 Land Use/Housing

Notwithstanding the requirements of CEQA Guidelines Section 15126(c), the EIR makes no attempt to explore feasible measures to mitigate land use impacts to surrounding areas. Suggested land use mitigation should include: Setback criteria, buffer zones of vegetation, pet restrictions, ridgeline protection, project phasing coupled with an Annual Monitoring Report under Zoning Code Section 7-9-103.2(a)(12) to identify imbalances between development and infrastructure, etc. These new mitigations should be included in a revised draft EIR and recirculated for public review and input.

Response

Please refer to response to comment SFC-1 and sections 2.0, 3.0 and 4.1 of the DEIR for a discussion of the recorded tract map.

SFC.2-16

Comment

CEQA Guidelines Section 15131 (b) expressly recognizes that construction can adversely impact religious practices: "if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment". While the Land Use/Housing section of the EIR indicates that the impacts would remain significant,

unavoidable and adverse, there is no attempt to mitigate impacts on surrounding religious uses to any level at all.

Response

Mitigation measures are proposed throughout the DEIR to reduce/eliminate adverse impacts to surrounding land uses. These mitigation measures are summarized in Section 7.0 of the document.

SFC.2-17

Comment

Section 4.2 Soils and Geology

Although SFC was not able to gain access to any of the current grading plans at the County, SFC has learned that, for a price, the developer made copies of such plans available to certain interested parties and that the plans showed only half of the grading that is proposed for the 705-unit project. As stated above, if the rough grading (including all remedial grading) is to be accomplished in one phase, then the plans showing all the grading work to be performed should be made available for public review and DSEIR 566 should be revised and recirculated to incorporate such plans and all related geotechnical reports. This is particularly important with respect to the remedial grading improvements, (which account for the vast majority of the rough grading operations) because mitigation measures, such as shear keys, cannot be property evaluated without the grading plans and soils reports, and cannot be constructed in a piecemeal fashion without the risk of slope instability.

Response

Please refer to response to comment SFC-1.

SFC.2-18

Comment

Page 4-16, Ground Water: It appears from the State Water Resources Board map of wells in the area that there are at least five wells located northerly, westerly and southerly of the site and landslide areas. These wells depend on the groundwater supplies to remain in operation. During remedial grading, perched groundwater and saturated zones will be encountered (according to the geotechnical study). This excess groundwater will require pumping to a point to where the bottom layer of the 120-foot key cut will need to be cleaned out. The EIR does not discuss the high probability that this excessive pumping may impact groundwater and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells is considered a significant impact in CEQA Guidelines Appendix G(h) and (I). The EIR provides neither discussion of this important issue, nor any mitigation for potential impacts

to these wells. While the EIR preparer, or the geotechnical engineer for the project, may speculate that the surrounding wells are being fed by Aliso Creek or "other groundwater", **there is no factual basis to support the conclusion that there will be "no significant groundwater impact" caused by project grading and development.** The Planning Commission must be provided with complete information on this issue before passing on the adequacy of DSEIR 566, and gathering groundwater information during remedial grading for future decisions, and complying with the water resource agencies, is not the proper way to proceed.

Response

The comment is speculative. All grading and any required groundwater pumping will be conducted in compliance with Orange County Grading and Excavation Code requirements.

SFC.2-19

Comment

Page 4-24, last two paragraphs. These paragraphs state that "unfavorable conditions (i.e. "Some ground water") can be mitigated by implementing corrective grading concepts". Yet the DSEIR only speculates on the mitigation necessary to truly lessen future impacts to the development from groundwater and postpones for future analysis whatever specific mitigation measures might eventually be proposed by the soils engineer for the project (see page 4-25). This is not in keeping with CEQA.

Once the shear keys are cut on the project site, the DSEIR indicates that subdrains will be required. Subdrains and dewatering facilities are permanent features, and are notoriously unreliable. This was the case in the Hidden Hills development located immediately adjacent to the south of this site, and is the proposed location of the emergency access to Saddleback Meadows. In this study, the buttress subdrains failed, or in most cases the subdrains were missing and groundwater backed up behind the buttress fill, severely impacting the residences and infrastructure. To truly mitigate geotechnical impacts to less than significant levels, and to a degree that will ensure the Planning Commission that CEQA has been satisfied, additional detailed recommendations should be included in this DSEIR prior to certification. In addition, if in fact the subdrains are only to work temporarily, the DSEIR does not explain to where these subdrains will drain. It is presumed that these features will drain to Los Alisos Creek, which is shown as a blue line on the USGS Quad Map. The EIR should discuss the impact of a permanent alteration to the flow of Los Alisos Creek. A higher degree of specificity on this important issue is required prior to EIR certification.

Response

DEIR 561 and DEIR 566 contain a comprehensive discussion of geotechnical and hydrology impacts associated with the proposed project. Please refer to Sections 4.2 and 4.3 of these documents.

SFC.2-20

Comment

Page 4-25, Mitigation Measure 2-1, state that "A comprehensive remedial grading mitigation plan has been designed to stabilize the project site..." yet on page 4 of the G.A. Nicoll and Associates report in Technical Appendix D, Mr. Nicoll's firm indicates that "a more detailed evaluation" of slope stability issues has yet to be completed and will be conducted as part of the geotechnical review of the 40-scale grading plans. This underscores the fact that only vague and general "concepts" about grading mitigation measures are referenced in DSEIR 566 even though CEQA Guidelines Section 15146 would require a much more detailed and specific discussion of grading impacts and mitigation at this construction-level stage of the project. The mitigation measures listed in this section of the DSEIR are general, boilerplate statements about what information is yet to be gathered and they **do not** represent "a comprehensive remedial grading mitigation plan". The seminal question which remains unanswered is whether DSEIR 566 is intended to be used as the environmental documentation to support the issuance of one or more grading permits for the project or does the County intend to require yet another Supplemental EIR to be prepared to address the grading mitigation measures which are still being analyzed by the project soils engineer? If DSEIR 566 is intended to support the issuance of grading permits, then the construction-level plans and reports necessary for the permits to be issued must be in the EIR itself, instead of being the subject of speculation as to what will be determined at some future date.

Response

Please refer to response to comment SFC-1.

SFC.2-21

Comment

Page 4-27, Mitigation Measure 2-3. This mitigation is unnecessarily vague as to who the "decision-maker" is (the Board of Supervisors? The Planning Commission?), and it is also misleading for the public. CEQA Guidelines Section 15162 states that a subsequent EIR is necessary if "Substantial changes are proposed in the project..." (In this case any substantial change to the grading plan). If the applicant "deviates" from the recorded tract map grading to such an extent that the project has changed and a new application must be submitted per the zoning code, then a subsequent EIR will be required for public review of the changed project. In addition, as the current geotechnical mitigation measures are worded, a subsequent EIR would be required if conditions are exposed during grading which are significantly different from those described in the project description or geotechnical report. As indicated on page 16 of the Nicoll report: "In the event that during construction, conditions are exposed which are significantly different from those described in this report, they should be brought to the attention of the Soil Engineer." Preparing a Subsequent EIR for changed conditions during remedial grading would not be feasible, therefore sufficient

detail must be included with the DEIR and recirculated for public review. The mitigation measure should be revised to reflect this change.

Response

The decision maker, in this case, is the Orange County Grading Official. Please refer to Section II of this Document, Corrections and Additions to the DEIR. Also refer to response to SFC-1. Grading permit authorization is an administrative determination.

SFC.2-22

Comment

Page 4-27, Mitigation Measure 2-4, is not enforceable unless the Planning Commission requires that the EIR show how the graded areas will be compatible with natural land characteristics of the adjacent open space. Future gathering of information is not proper mitigation for a significant impact.

Response

Mitigation measure SC 2-4 is a standard county condition, applied to numerous projects, and is enforceable, under CEQA and California planning and zoning law..

SFC.2-23

Comment

Page 4-29, Mitigation Measure 2-16, the back cut failure guidelines should be provided now for a construction-level grading permit application EIR. This project is already approved with a recorded map. Therefore, a higher level of detail is essential to demonstrate the overall feasibility of the recommended grading techniques. The criterion the project applicant has to follow is to mitigate impacts to less than significant levels and demonstrate that the mitigation measures are adequate under CEQA. The DSEIR has not accomplished this yet.

Response

Please refer to response to comment SFC-1

SFC.2-24

Comment

Page 4-29, Mitigation Measure 2-20 Ponding will be necessary as part of the dewatering process and within Best Management Practices for Regional Water Quality Control Board requirements. This mitigation measure should be amended to reflect actual ponding that will be necessary and the possibility of Vector Control Permits.

Response

The comment is speculative. Ponding may or may not be required depending on subsurface conditions encountered.

SFC.2-25

Comment

Page 4-31, Mitigation Measure 2-34. Ironically, this so-called "mitigation measure" provides more detailed information regarding groundwater problems and dewatering than any discussion set forth in the text of DSEIR 566. Although page 4-24 of the text merely alludes to "some" ground water that might be encountered during grading, this mitigation measure paints a far more graphic and alarming picture. **"Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher elevations as well as in cuts made late in the year."** As indicated above, groundwater wells are located adjacent to the site and landslide areas. Impacts to surrounding groundwater and groundwater wells from required pumping and dewatering are not even discussed in the text of the DSEIR, yet this mitigation measure appears to expect it. Again, the DSEIR does not, but certainly should, discuss the extreme likelihood that this excessive pumping may impact groundwater wells and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact under CEQA. The Planning Commission must be provided with enough factual information before it is asked to certify this EIR. Gathering groundwater information during remedial grading is not proper mitigation.

Response

Please refer to response to comment SFC-1

SFC.2-26

Comment

To truly mitigate geotechnical and groundwater impacts to less than significant levels, and to a degree that will ensure the Planning Commission that CEQA has been satisfied, additional detailed recommendation on grading, dewatering and impacts to groundwater and groundwater wells should be included in this DSEIR prior to EIR certification. This DSEIR requires a higher degree of specificity on this important issue prior to EIR certification

Response

Please refer to response to comment SFC-1.

SFC.2-27

Comment

Page 4-33, Section 4.2.7 of **the DEIR should be changed to read "Implementation of this proposed project, with the mitigation measures outlined above will result in unavoidable adverse geotechnical impacts."** At a minimum, there are significant groundwater impacts and slope stability issues that have not been adequately discussed or mitigated in DSEIR 566 and revision and recirculation of the DSEIR is in order to allow public comment on these matters when they are completed.

Within the Technical Appendix D, page 4, Mr. Nicoll's firm indicates that this geotechnical review is for an EIR level of analysis, and that subsequent analysis will be necessary. However, the "EIR level" soils report in Appendix D does not provide the required specificity for the considerations outlined in the DSEIR, including impacts of dewatering during and following construction, slot cutting or staged excavation to assure on-going support of landslide masses to be stabilized, backcut forecut slope inclinations, and dewatering criteria. A grading plan review report should include all recommendations and geotechnical criteria necessary to undertake and complete all remedial grading improvements and measures, and it should be included as part of DSEIR 566 and circulated to the public. The Planning Commission cannot, without uncertainty, approve this project under the premise that the impacts are mitigated to less than significant levels. If planning staff chooses to amend the DSEIR to show that significant grading impacts will remain after mitigation, then the introduction of new information will trigger recirculation of the EIR per CEQA Guideline Section 15088.5(a).

Response

Please refer to response to comment SFC-1.

SFC.2-28

Comment

Section 4.3 Water/Hydrology

EIR 566 appears to utilize the hydrology map from EIR 561 without changing the underlying site plan. While the existing drainage will not change regardless of the site plan, the post development drainage will change from EIR 561 to EIR 566. DSEIR 566 does not include post development drainage circulations. The DSEIR needs to correlate existing versus post-development change in cfs and % in order for the Planning Commission to base its decision on the storm drain improvement plans that were approved in 1988. This subsequent EIR should incorporate all pertinent information and re-verify the prior calculations and not rely solely on County approvals from 1988.

Response

The comment is incorrect. Exhibit 22, Conceptual Drainage Plan, uses the proposed 705 lot manufactured housing project as the base map.

SFC.2-29

Comment

Page 4-39, Table 10 does not correspond with Exhibit 22 as far as proper labeling of the storm drains. If there are not accurate, the Planning Commission should require updated concepts to verity mitigation measures.

Response

Storm drain reference numbers are hereby added to Exhibit 22, *Conceptual Drainage Plan*, that correspond to Table 10. Please refer to Section II of this document, Corrections and Additions to the DEIR.

SFC.2-30

Comment

Page 4-38 The EIR states that alterations of the rate of flow of groundwater or impacts to groundwater quality are considered to be insignificant. The geotechnical report indicates that groundwater and saturated zones will require dewatering during grading and excavation of the sheer key. Groundwater from these slide planes will require pumping for an undetermined period of times (as demonstrated in Mitigation Measure 2-34). At least five (5) groundwater wells are located near this project site, directly in the path of the groundwater flow. The geotechnical report has completely disregarded the impacts that may be incurred downstream during construction dewatering. **This EIR section should consider impacts to groundwater as significant,** otherwise the Planning Commission should not certify this EIR with an incorrect impact finding.

Response

Impacts to groundwater quantity/quality, as a result of grading operations, will be mitigated by standard County condition of approval SC 2-6 and mitigation measure AM 2-34..

SFC 2-31

Comment

Page 4-41, Mitigation Measure 3-1 indicates that the master drainage concept is included as Appendix L. However, upon closer evaluation of the site plan in Appendix L, it appears that the post development calculations are for the smaller 318 units (EIR 561) project. This EIR

cannot be certified as adequate with erroneous information pertaining to a much smaller project.

Response

Information contained within Section 4.3 of the DEIR, beginning on Page 4-33 contains a comprehensive evaluation of impacts to Water/Hydrology, including the master drainage concept for the proposed project. It should be noted that all information, including the appendices, from DEIR 561 have been incorporated into DEIR 566 by reference.

SFC.2-32

Comment

Page 4-42, Mitigation Measure 3-5. How and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and down stream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent? The mitigation measure is not enforceable and does not reduce impacts in any way. It should be deleted.

Response

Mitigation measure SC 3-6 is an adopted County Standard Condition of Approval, and is applicable to the proposed project, subject to the approval of the Manager, PDS/Subdivision and Grading Services Division

SFC.2-33

Comment

Page 4-42, Mitigation Measure 3-6 indicates participation in a Master Plan of Drainage prior to issuance of any building permits. Preparing a master plan of drainage after the grading has been completed does not allow the County or the public to comment on proper hydrologic calculations. As indicated in the above comment to mitigation measure 3-1, the master drainage concept included in Appendix L was prepared for the smaller 318 units (EIR 561). The master plan of drainage should be submitted with and incorporated into the DSEIR for recirculation and public review.

Response

The Master Plan of Drainage referred to in SC 3-6 is an existing county master plan and not subject to negotiation by the applicant. SC 3-1 through SC 3-7 outline the hydrology/drainage requirements that must be satisfied prior to the issuance of grading permits.

SFC.2-34

Comment

Page 4-42, Mitigation Measure 3-7 indicates that impacts to the site's hydrology shall be reduced to a level of insignificance through engineering design and construction techniques. However, the mitigation measures and analysis leading to the measures must be commensurate with the specificity required for a construction-level grading permit application EIR. There is no guarantee that implementation of this mitigation measure will result in insignificant impacts to this environmental issue. Therefore **this impact should be changed to potentially significant after mitigation** because the mitigation measure is not specific enough to conclude otherwise. The mitigation measure is too speculative for future hydrology of a site, particularly with the wrong hydrology report in the DEIR. In addition, there is no timing associated with implementation of this mitigation measure.

Response

Please see response to SFC-1. Timing associated with mitigation measure SC 3-7 is prior to the issuance of any grading permit, similar to other hydrology related SC mitigation measures.

SFC.2-35

Comment

Page 4-43, Section 4.3.7. indicates that implementation of the proposed mitigation measures would result in no unavoidable adverse impacts to groundwater hydrology, yet there is no information on impacts to downstream wells from excessive dewatering to support the less than significant impact. This conclusion should be changed to **potentially significant impacts will result after implementation of the mitigation measures.** In addition, the new information associated with the new finding will require recirculation of DSEIR 566.

Response

The referenced statement regarding no unavoidable adverse impacts to groundwater hydrology is valid, and is supported by information contained in Sections 4.2 and 4.3 of the DEIR and DEIR 561 which has been incorporated be reference, in conjunction with standard county conditions of approval

SFC.2-36

Comment

Section 4.4 Transportation/Circulation

The traffic section of the DSEIR unfairly limits its review of intersection impacts to El Toro Road/Santa Margarita Parkway and north. No explanation is given in the DSEIR for this

limiting factor, and no analysis is included for the intersections along El Toro south to the San Diego Freeway (I-5). The DSEIR should include all intersections that will be impacted by 705-unit project. This lack of analysis raises another unanswered question: Have the traffic calculations been adjusted to account for the difference in projected use versus actual use of the Foothill Corridor? (The San Joaquin Corridor's projected usage was substantially overestimated by nearly 50%). This difference in projected use versus actual use should be incorporated into the project and regional buildout traffic calculations of the area. With an over estimation of the Foothill Corridor usage, there will need to be an analysis and discussion of traffic along El Toro Road from the Foothill Corridor south to the San Diego Freeway. The intersection of El Toro at the 5-Freeway north and south is virtually impassable during peak hours and the addition of Saddleback Meadows will only exacerbate this growing problem.

Response

The scope of the traffic and circulation impact analysis contained in DEIR 566 was based upon several meetings with County of Orange, PF&R Department, Programs Division, Traffic Engineering Section staff, in conjunction with standard accepted traffic engineering analysis practices and County of Orange adopted policies. Fifteen percent of the project related average daily traffic generation is distributed southbound on El Toro Road, south of Santa Margarita Parkway, with 20 % of the project related average daily traffic generation distributed onto the northbound Foothill Transportation Corridor. The above outlined trip distribution remains valid. Intersections which would experience less than a 1% impact are not considered to have "measurable impacts."

The Foothill Transportation Corridor is currently operating at projected traffic volumes and levels of service (LOS), in contrast to the underutilized San Joaquin Transportation Corridor.

SFC.2-37

Comment

Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the traffic impacts from the ruse of the El Toro Marine Corp Air Station as a commercial airport. In addition, it is not clear from the DSEIR if the regional traffic model utilized for the project impacts, and cumulative project impacts, actually incorporates the regional changes to the traffic resulting from a commercial airport at El Toro. CEQA Guidelines Section 15130(b)(1)(B) provides the cumulative impact elements necessary for an adequate discussion include: "A summary of projections contained in an adopted general plan or related planning document (in this case the Draft Reuse Plan EIR) which is designed to evaluate regional or areawide conditions. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency." The El Toro Reuse Plan and EIR should be included in the regional analysis and cumulative impacts, incorporated by reference, and made available for public review during the recirculation process. Without such an analysis, **the DSEIR cannot conclude that this traffic issue will have less than significant impacts.**

Response

The cumulative traffic impact analysis is based on the most current modeling source available from the County of Orange: the OCTAM, Version 2.5, South County Subarea traffic model. No specific MCAS El Toro reuse cumulative traffic data is available, as a preferred alternative and the related EIR/EIS has not been prepared.

SFC.2-38

Comment

It appears as though the traffic study has distributed residential trips to the commercial area from the project internally via Valley Vista Way. The traffic analysis does not take into account that Valley Vista is closed to through traffic and is to be used as an emergency access only. According to the grading plan, the only way to the commercial area will be from either El Toro Road or Valley Vista. If Valley Vista is to be blocked off, all trips in the traffic study that were to use Valley Vista will now use El Toro Road. This inconsistency should be resolved.

Response

Twenty percent of the commercial site trip generation was distributed internally to the project site via Valley Vista Way. Redistribution of these trip to El Toro Road will not alter the post development level of service analysis contained in the DEIR.

SFC.2-39

Comment

Review of the traffic count data shows that the information was gathered after schools in the District had been let out for summer Updated counts should be included after school has started, but before the Christmas holiday season.

Response

The timing of the baseline traffic data collection, in reference to school schedules, does not have a significant effect on the traffic impact analysis

SFC.2-40

Comment

Page 4-52, Traffic Impact Modeling section of DSEIR 566 indicates that the proposed project of 705 units will generate 6,220 trip-ends per day with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the PM peak hour. However, the Traffic Report in Technical Appendix E states on page 27 that "The Saddleback Meadows (TT-10692)

development is projected to generate a total of approximately 8,340 trip-ends per day with 540 vehicles per hour during the AM peak hour and 825 vehicles per hour during the PM peak hour". **Why is there nearly a 25% discrepancy with respect to trip-end figures?** Even with the inclusion of passby/diverted trip reductions (as calculated on Table 4, page 29 of the Traffic Report in Appendix E), the total project trip-ends is 7,530, nearly 20% greater than what is stated in the DSEIR. The traffic section of the DSEIR should be reanalyzed and recirculated for public review.

Response

Please see response to comment CMV-3

SFC.2-41

Comment

Page 4-52, Section 4.4.2. Effects Found To Be Insignificant. This section concludes that the proposed project would not result in insufficient parking capacity onsite or offsite. This is not consistent with the traffic report in Appendix E which indicates on page 10 that "Verification of adequate parking should be analyzed for the project in conjunction with approval of the site plan." The site plan for Saddleback Meadows is already approved. Lack of available parking for high density housing such as this is the number one Home Owner Association complaint and the subject of many homeowner lawsuits against the developer. The DSEIR should discuss what constitutes a significant parking impact, however, in order to do that, parking verification must be performed first. In order for the traffic engineer's recommendation to be consistent with the DSEIR's finding of insignificance for this parking issue, a parking analysis for the site should be performed prior to certification.

Response

Residential and commercial parking requirements have been incorporated into the recorded tract map, and will be reviewed and verified at the site plan review stage for the commercial land use

SFC.2-42

Comment

Page 4-82, Mitigation measure 4-12 and 4-13 seem to contradict each other. MM 4-12 requires the applicant to design and construct roadway improvements for El Toro Road, including deceleration lanes an entrance pockets, whereas MM 4-13 requires the applicant to provide only a cash deposit for the difference in cost of designing and constructing the roadway improvements of the project compared to the costs associated with the ultimate configuration of El Toro Road The question that remains, therefore, is whether the project has to pay for or build its fair share of the traffic improvements to El Toro Road?

Response

The comment restates mitigation measures contained in the DEIR. Mitigation Measure SC 4-12 requires the construction of specific, project related, improvements to El Toro Road, with Mitigation Measure SC 4-13 requiring a deposit for the construction of ultimate right of way facilities. This mitigation measure is adequate to ensure that the project meets its obligation towards El Toro Road improvements.

SFC.2-43

Page 4-83, Mitigation measure 4-15 states that "Verification of adequate parking shall be analyzed for the site in conjunction with approval of the site plan". This mitigation measure should be revised based on the comments from page 4-52, Section 4.4.2.

None of the mitigation measures listed in the traffic section of the DSEIR provides for reasonable contributions to the regional impacts on traffic from the proposed El Toro commercial airport.

Response

The comment refers to mitigation measure AM-16, not AM-15. Please refer to response to comment SFC.2-41.

SFC.2-44

Comment

Section 4.5 Air Quality

Page 4-94, Mobile Source Impacts. The Air Quality section for Mobile Source Impacts has based its calculation on 5,410 daily vehicle trips, the DSEIR traffic section states a calculation of 6,222 daily trips, while the Traffic Report in Appendix E of the DSEIR states a daily trip calculation of 8,340, a total difference of 35%. Therefore it would appear that the air quality calculations are underestimated. Any CEQA calculations that differ by a factor of 10%, let alone 35% or more, cannot be considered similar and therefore, the Air Quality analysis should be updated with the proper information before certification by the Planning Commission.

Response

The comment is correct in noting that the air quality analysis is based on 7,530 trips per day, rather than 8,340, a difference of 810 trips per day, or 11%. An increase in project related operational emissions would not change any conclusions relating to the potential significance of AQMD threshold exceedances, as outlined in Table 19 of the DEIR, on Page 4-94. Please refer to section II of this document, Corrections and Additions to the DEIR .

SFC.2-45

Comment

Page 4-110; It appears that the applicant has chosen to utilize the project related vehicle trips from the previous noise study prepared for 318 units (EIR 561), rather than updating EIR 566 to reflect more than double the number of units associated with the manufactured housing project. This study should be updated with the proper information prior to certification of the EIR.

Response

The comment is incorrect The acoustical analysis was updated to reflect the 705 unit proposal evaluated in DEIR 566. The reference to the number of daily trips in the text on Page 4-110 of the DEIR is a typographical error. The updated acoustical analysis is contained in it's entirety in Appendix G of the DEIR.

SFC.2-46

Comment

Page 4-118, Section 4.6.7 indicates that the project in conjunction with proposed mitigation measures would not result in any unavoidable adverse operational impacts. However, the EIR fails to analyze the noise impacts the project would have, at buildout, on the surrounding religious organizations to the north and south of the site.

Response

Please refer to Page 4-113, Paragraph 5 in the DEIR for a discussion of noise impacts to adjacent land uses.

SFC.2-47

Comment

Section 4.6 Noise

Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the noise impacts from the reuse of the El Toro Marine Corp Air Station as a commercial airport or the noise from traffic associated with the commercial airport. Once this information has been included in this DSEIR, this document should be recirculated for public review.

Page 4-102, Baseline Noise Levels. The Noise section of the DSEIR provides a baseline discussion of the current impacts from the El Tor MCAS fly-overs which exist at present, but

the impact section of the EIR fails to identify potential CNEL contours as a result of the base reuse plan as an active commercial airport.

Response

Please refer to response to comment SFC.2-37.

SFC.2-48

Comment

Page 4-103, the first paragraph discusses an area of proposed open space as the project location where the 62 dB CNEL contour falls. This may have been true for the previous EIR 561, however, page 7 of the noise study provided in Appendix G states that the 62dB CNEL location is in an area of proposed commercial development. The proper location of the 62 dB CNEL should be verified prior to EIR certification.

Technical Error: page 4-103, first paragraph, last sentence· The DSEIR incorrectly uses the 62 dB CNEL as "over productive". Correct terminology from the Noise Study, page 7, first paragraph. the use of 62 dB CNEL is "overpredictive".

Response

Exhibit 48 shows the location of the existing 60 dB CNEL noise contour for MCAS El Toro. The 60 dB CNEL contour effects the southwest portion of the project site which is proposed as commercial as well as natural open space land uses.

SFC.2-49

Comment

Page 4-103, third paragraph, states "Depending upon future site re-use, aircraft noise may or may not be an important issue." **The aircraft noise from a commercial airport at El Toro will be an important issue.** Nowhere else in the DSEIR is the El Toro MCAS reuse discussed or incorporated by reference. No commercial aircraft noise impact analysis is provided. The DSEIR should include project related noise impacts as a result of the El Toro reuse plan as a commercial airport and traffic related impacts Once this information has been included in this DSEIR, the document should be recirculated for public review.

Response

Please refer to response to comment SFC.2-37.

SFC.2-50

Comment

Page 4-103, fourth paragraph indicates that individual fly-over events may be noise intrusive and mitigation has been provided. However, neither the baseline discussion, impact analysis nor the mitigation measures in the DSEIR include mitigation for a multiple fly-over commercial airport.

Response

Please refer to response to comment SFC.2-37.

SFC.2-51

Comment

Section 4.7 Biological Resources

The Planning Commission should be aware of a note that was included on the preliminary grading plans, that indicates: "Upon issuance of the grading permit by the County, the County will inform the USFWS of the issuance of this permit and any related activity that may potentially involve a CSS "take" resulting from the associate grading activities". This note on the grading plan takes the mitigation monitoring responsibility out of the hands of the County and impermissibly transfers it to the developer and its grading contractor. The note, a copy of which is attached, is an attempt to sidestep the need for coordinating the CDFG and USFWS permits prior to issuance of the grading permit.

Responses

The comment restates information contained on the preliminary grading plans. Mitigation measures SC 7-4 through SC 7-6 require the notification of the appropriate resource agencies of any potential impacts to coastal sage scrub, prior to the issuance of any grading permits.

SFC.2-52

Comment

No grading permit should even be considered for issuance unit after the gnatcatcher study has been completed per USFWS protocol. Under the Federal Endangered Species Act, all "take" must be accommodated regardless if a recorded tract map is involved. This is a grading permit level of detail EIR, and thus, the studies included should reflect CEQA Guidelines Section: 15146: "the degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR." (i.e. grading plan permit). Section 15146 (a) states: "An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a

local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy". If USFWS decides that project modifications or on-site mitigation is required, then the final tract map will have to be changed any way.

Response

Please refer to response to comment SFC-1.

SFC.2-53

Comment

Between the time when EIR 561 and EIR 566 were both prepared, there seems to have been a change in the vegetation communities on the site, or the biology reports are inconsistent between last year's EIR and this year's EIR. Both EIR 561 and 566 are based on the same site and the same biological study, yet the numbers of plant species have changed without new field work. The only updated biological fieldwork was done April 1996 for the western spadefoot toad The following discrepancies between the two biological reports prepared for this EIR need to be rectified: EIR 561 indicated 119 plant species where EIR 566 indicated 110; what were the previous other 9 plant species and where are they now?; were any of these 9 disappearing plant species sensitive? EIR 561 indicates 70 native plant species on site, yet EIR 566 indicates 73 native plant species. Were three more native plant species planted in a year or is EIR 566 incorrect? EIR 561 originally indicated 49 non-native species and now EIR 566 indicates only 39 non-native species. Without new fieldwork having been conducted by the consultant, which biology report is correct? Both Figure 5 in EIR 566 technical appendix and Figure 3 in EIR 561 technical appendix show the same vegetation, yet the vegetation quantities have changed.

Response

New biological resource field work was completed for DEIR 566 for the offsite areas impacted by project implementation, that were not previously impacted by the project evaluated in DEIR 561 DEIR 566 includes an analysis of 19.77 acres of offsite impact area as compared to 7.86 acres of offsite impact area evaluated in DEIR 561. These differing sizes and locations of offsite impact areas have resulted in the changes that have been noted in plant community acreage and numbers of individual species.

SFC.2-54

Comment

Page 4-126, Amphibians This section states that "No amphibians ere observed during surveys of the site", yet Exhibit No. 50 on page 4-122 lists the Western Spadefoot Toad as present. This discrepancy should be corrected.

Response

Comment noted. Please refer to Section II, Corrections and Additions to DEIR.

SFC.2-55

Comment

Page 4-125, Ephemeral Ponds The section states that "All of the ephemeral ponds were artificially created a number of years ago..." Given the geological conditions of frequent landslides in the area, these wetlands could have been "slump" or "slope" ponds that underwent human modification at a later time. Further information is needed in the DSEIR regarding the origin of these wetlands.

Response

Please refer to response to comment USFWS-11.

SFC.2-56

Comment

Page 4-148 of EIR 566, Coastal California Gnatcatcher, indicates that no gnatcatcher survey has been performed with USFWS protocol. Specific surveys for presence or absence must be performed at this level of detail for this construction stage in the project. Combined with the disturbing note on the grading plans, the County will lose the ability to monitor any mitigation for the CCG. In order for this EIR to be deemed adequate under CEQA Guidelines Section 15126 (c), the focused CCG survey must be performed prior to certification of this EIR.

Response

Please refer to response to comment USFWS-16 and Section II of this Document, Corrections and Additions.

SFC.2-57

Comment

Page 4-148, Raptor Foraging Habitat. Whatever consultant recommended to the developer that project slopes would constitute sufficient raptor foraging habitat did not determine this through any consultation with either CDFG or the USFWS. Consultation on appropriate impact significance should be reflected in this DSEIR prior to certification

Response

The USFWS and CDFG were consulted with during the NOP comment period and have provided comments on the DEIR. The referenced statement on Page 4-148 of the DEIR does not indicate that "project slopes would constitute sufficient raptor foraging habitat." Rather, the statement indicates that onsite and surrounding open space would continue to function as raptor foraging habitats.

SFC.2-58

Comment

Page 4-151, Section 4.7.6, commences its discussion on mitigation measures by stating as a "given" that there is supposedly no ability on the part of the County to "deviate from the final recorded tract map." However, no legal or factual support is given for this statement, and it appears to be directly at odds with CEQA Guidelines Section 15041 which provides that the "lead agency for a project has the authority to require changes in any or all activities involved in the project in order to lessen or avoid significant effects on the environment." If this statement, which appears to be an excuse for not doing a complete mitigation analysis, is based on some unstated legal assumptions about the rights of the developer, then this analysis should be explained in detail in DSEIR 566 to let the public know why CEQA is not being complied with fully

Response

Please refer to Section 2.8 on Page 2-10 of DEIR 566.

SFC.2-59

Comment

Page 4-153, Mitigation Measures SC 7-1 though 7-7 and measures 7-11 though 7-14 would appear to be of no value in light of the note placed on the preliminary grading plans. In addition, although EIR 561 provided the mitigation plans as a component of the EIR, DSEIR 566 only provides mitigation in the form of conditions to prepare mitigation plans in the future. The level of detail of the mitigation measures should be commensurate with the level of detail in a recorded tract map. Therefore this Eir does not adequately satisfy CEQA Guidelines Section 15126 (c) requirements at this time. Gathering further information and complying with resources agencies in the future is not proper mitigation. Biological mitigation of ACOE and CDFG coordination may change the development plan, which would then require a revised EIR.

Response

Please refer to response to comment SFC-1.

SFC.2-60

Comment

Page 4-153, Mitigation Measure 7-2 states that a 1603 application has been submitted to CDFG. What is the status of the application? Has CDFG acknowledged receipt of the application? Was the application deemed complete by CDFG? What additional information did CDFG ask for? This future mitigation would hold more credence as a CEQA mitigation measure if more detail were known about the 1603 permit for this project. CDFG has a very limited staff and processing of the permit may take upwards of nine months to a year or more to complete. Is the County going to wait a year for the 1603 permit prior to issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow the site to be radically altered prior to the issuance of the 1603 permit?

Response

A 1603 Streambed Alteration Agreement application has been submitted to the California Department of Fish and Game, and is being held in abeyance until final action is taken on the proposed project and a CEQA document is certified. Mitigation measure SC 7-2 requires the applicant to obtain a 1603 Streambed Alteration Agreement prior to the issuance of any grading permit.

SFC.2-61

Comment

Page 4-153, Mitigation Measure 7-3 states that the applicant will obtain the necessary individual or nationwide permit... According to Page 4-146, second paragraph, the biological consultant states that an individual permit will be necessary. The mitigation measure should accurately state the proper permit necessary. As with the 1603 permit, has the applicant submitted an application for a 404 permit? Has the ACOE acknowledged receipt of the application? Was the application deemed complete by the ACOE? What additional information did the ACOE ask for? The ACOE has even fewer staff than the CDFG, and processing of the permit may take more than a year to complete. Is the County going to wait a year for the 404 permit prior to issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow the site to be permanently stripped of sensitive biological resources prior to the 404 permit being issued?

Response

The applicant has not submitted an application for a Section 404 permit.. The Army Corps of Engineers determines the appropriate type of 404 permit required based on the types and intensity of impacts to waters of the United States and adjacent wetlands. Mitigation measure SC 7-3 requires the applicant to obtain the appropriate type of 404 permit prior to the issuance of any grading permits

SFC.2-62

Comments

Page 4-153, Mitigation Measure 7-4 states that the applicant is to provide a summary in acres of coastal sage scrub to be impacted, but this has already been stated in Table 30 of the DSEIR. The mitigation measure only serves to lead the reader back to the beginning of the impacts section of the DSEIR. The mitigation measure should be specific and consistent with the biological consultants recommendation of "The dedication and long-term preservation of 22.9 acres of habitat of Saddleback Meadows, revegetation of 46.5 acres of Veturan-Diegan transitional coastal sage scrub on site and contribution of the Orange County NCCP".

Response

Mitigation measure SC 7-4 is a standard County condition requiring the applicant to provide an accounting of impacts to coastal sage scrub to the County.

SFC.2-63

Comment

Page 4-153, Mitigation Measure 7-5 states that the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the USFWS This mitigation measure is misleading because it fails to state what permit is needed. USFWS may impose additional mitigation measures as part of its review process. In order to assure that USFWS mitigations do not conflict with any other measures in the DSEIR, the consultation with USFWS should be conducted prior to certification of the DSEIR. As with the 1603 and 404 permit, has the applicant submitted a request for USFWS consultation or filed an application? Has the USFWS acknowledged receipt of the application? Was the application deemed complete by the USFWS? What additional information did USFWS ask for? The USFWS has the fewest staff of all three agencies, and processing of the permit and consultation may take more than a year to complete. Is the County going to wait a year for the Section 10 a permit prior to issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow clearing and grubbing of the site prior to the 10 a permit?

Response

Mitigation measure SC 7-5 is a standard County condition, and requires the applicant to obtain approval for impacts to coastal sage scrub, prior to the issuance of any grading permits The applicant has not filed a request with the USFWS to initiate the process.

SFC.2-64

Comment

Page 4-154, Mitigation Measure 7-6 could in effect override mitigation measure 7-5, if the Administrator, Planning and Zoning so desired. This mitigation measure should be deleted.

Response

Mitigation measure SC 7-6 adds an additional level of protection for the County of Orange to regulate project impacts to coastal sage scrub in relationship to the counties NCCP responsibilities.

SFC.2-65

Comment

Page 4-154, Mitigation Measure 7-7. If there are additional permits required by the USFWS, the DSEIR should list those specific permits. Consultation with the USFWS, as indicated on page 4-151 last paragraph of the DSEIR, states that input has been received from the USFWS. Why didn't the EIR preparer ask what additional permits may be necessary for native vegetation?

Response

Mitigation measure SC 7-7 is a standard County condition, and is designed to ensure that proposed grading activities will be in compliance with the provisions of the Endangered Species Act, and in this case, the NCCP program .

SFC.2-66

Comment

Page 4-155, Mitigation Measure 7-8, F, states that an experienced nursery or other landscape contractor shall care for the transplanted trees for only six (6) months. The biological report states on page 49, second paragraph, "In order to ensure the success of mitigation, the Project proponent should enter into a five year secured agreement with the County of Orange to cover the Projected cost to install, monitor, and report on the mitigation Project. This agreement will be in the form of a 100 percent bond." This extremely important mitigation measure is found nowhere in the DSEIR. IF the DSEIR does not reflect the recommendations of the expert biologist, then mitigation measure 7-8F is ineffective and invalid. The DSEIR cannot be certified without amending this measure to reflect the biologist's's recommendation.

Response

The provision for five years of biological resource mitigation monitoring is hereby incorporated into the DEIR. Please refer to Corrections and Additions to the DEIR.

SFC.2-67

Comment

Page 4-157, Mitigation Measure 7-11 states that the applicant shall provide additional evidence that onsite CSS habitat is not occupied by California Gnatcatchers. The survey for the CCG should be performed now to rule out any occupied habitat. What the mitigation measure is trying to say is that if CCG is found on site, the applicant will be required to file an application for a Federal Section 10(a)(1)(b) permit. If CCG is found, the USFWS will commences their consultation and additional mitigation measure may be imposed by the USFWS In order to assure that USFWS mitigations do not conflict with any other measures in the DSEIR, the CCG survey should be performed prior to certification of the DSEIR. The mitigation measure should accurately state the proper permit necessary. As with the 1603 and 404 permit, has the applicant submitted a request for USFWS consultation or filed an application for a Section 10 a permit? Has the USFWS acknowledged receipt of the application? Was the application deemed complete by the USFWS? What additional information did USFWS ask for? The processing of the permit and consultation may take more than a year to complete. Is the County going to wait a year for the Section 10 a permit prior to issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow clearing and grubbing of the site prior to the 10 a permit?

Response

Please refer to response to comment USFWS-26.

SFC.2-68

Comment

Page 4-158, Mitigation Measure 7-12, is not enforceable as a mitigation measure. The mitigation for the wildlife movement corridor should be included as part of the DSEIR for public review. The mitigation measure should list the onsite or off site options for the movement corridor. This measure should be deleted, and an alternative mitigation measure should be provided.

Response

Mitigation Measure SC 7-12 requires the mitigation of project effects on local and regional wildlife movement, prior to the issuance of any grading permit.

SFC.2-69

Comment

Page 4-158, Mitigation Measure 7-14. This measure in not enforceable as a mitigation measure. The relocation and establishment of a mitigation plan should be included as part of this DSEIR as it was with EIR 561.

Response

The comment restates information contained in DEIR 566.

SFC.2-70

Comment

Page 4-158, Mitigation Measure 7-15. This measure is not enforceable not does it further minimize impacts with wording such as "**Where possible**..." "Lighting within development projects adjacent to conserved habitat "**should**" be selectively placed...",..."lighting from homes abutting conserved habitat "**should**" be screened...",and, "These lighting restrictions "**should**" be incorporated into the project's CC&Rs." All of these "should" mitigation will become "shall" upon certification. If the Planning Commission is not sure that it wants to implement these measures, they should either delete them or change all "shoulds" to "**shalls**".

Response

The reference to *should* in mitigation measure SC 7-15 is hereby changed to *shall.* Please refer to Section II of this document, Corrections and Additions to the DEIR.

SFC.2-71

Comment

Page 4-159, Section 4.7.7 Unavoidable adverse impacts. Under CEQA Guidelines Section 15126(c) all mitigation must be enforced that will "minimize the significant effects" prior to EIR certification. The comment that the County will issue a letter of insignificance once the Interim Loss Habitat Mitigation Plan is approved has no meaning in terms of CEQA. The public has a right to review the ILHMP prior to EIR certification. Also, the second bullet item under this same section discusses future mitigation. A future survey is not mitigation according to the Federal EPA. This is a recorded tract map and a construction level grading permit application EIR. The biological report in the EIR should be the basis of any biological opinion.

Response

Section 15126(c) of the CEQA guidelines does not contain any provisions for *enforcement*

prior to EIR certification. The *Interim Habitat Loss Habitat Mitigation Plan*, is required as a condition of participation in the NCCP program. The NCCP contains provisions for interim loss of coastal sage scrub habitat while the NCCP is being prepared, prior to adoption.

SFC.2-72

Comment

Section 4.8 Aesthetics

Page 4-174. Although aesthetic impacts will remain significant, even after mitigation, the Project Design Feature mitigation measures 8-1 through 8-4 are only standard conditions of approval for any development project. Mitigation measure 8-1 requires public utilities to be undergrounded, but the County would require this "Design Feature" anyway. Mitigation measures 8-2 and 8-3 would only truly be design features if the applicant were required to underground all drainage swales. This is more costly, but in order for these aesthetic mitigation measures to be compatible with the biological mitigation of the manufactured slopes providing rapture foraging habitat, the cost would be justified by both mitigations that would be accomplished.

Response

The comment restates information contained in the DEIR No response required.

SFC.2-73

Comment

Page 4-174, Mitigation Measure 8-4 in not enforceable as a Project Design Feature. If the Trabuco Canyon Water District owns the tank site, the District will be responsible for the landscape screening, not the developer or the County. This mitigation measure should include additional monetary compensation to the Water District for additional landscape screening.

Response

The comment is correct. Please refer to Corrections and Additions to the DEIR.

SFC.2-74

Comment

Section 4.9 Cultural/Scientific Resources

Page 4-178 The DSEIR makes no attempt to analyze either the direct or indirect environmental impacts of the project on the religious or sacred uses withing the potential

impact area. In this case, the potential impact area extends outside of the property boundary. This important issue should be discussed int he DSEIR prior to certification.

Response

The comment is incorrect. Please refer to Sections 4.1, 4.2, 4.3, 4.6 and 4.8 of the DEIR for a discussion of project related impacts to adjacent land uses.

SFC.2-75

Comment

Page 4-216, Section 4.122, Effects Found to be Insignificant. The EIR preparer should look at this section again. The EIR incorrectly reads, "The Initial Study prepared for the proposed project did not identify any (sheriff, fire, education, and library) related effects as insignificant". Therefore, all the effects were significant.

Response

The comment is incorrect. The DEIR text is correct in noting that the Initial Study did not identify any effects as insignificant, and as such, are evaluated in the DEIR.

SFC.2-76

Comment

Page 4-217, Section 4.123, Fire. The 1.4 million-gallon tank was the same quantity tank utilized in EIR 561 for 318 homes. The EIR should reflect the proper fire flow amount for 705 units and the proper tank size or number. New impacts to the tank site will require recirculation of the EIR prior to certification.

Response

Please refer to response to comment SFC.2-13.

SFC.2-77

Comment

Page 4-222, Mitigation Measure 12-4, should be corrected to reflect the proper tank size.

Response

Please refer to response to comment SFC.2-76

SFC.2-78

Comment

Section 4.13 Utilities and Service Systems

page 4-235, Water. While the project description indicates the need for a 1.4 million-gallon tank, the Draft EIR Section 4.13.6, does not mention the need to fire flow storage for a 1.4 million-gallon tank. With the consistency between the two EIRs, this EIR is not certifiable under CEQA unless the information presented to the Planning Commission is accurate, factual and current.

Response

Please refer to response to comment SFC.2-13.

SFC.2-79

Comment

The EIR has failed to identify an alternative location for this project, and is therefore inconsistent with CEQA. DSEIR 566, without a discussion of an alternative location cannot be certified as adequate. Should the Final EIR for 566 choose to include an alternative location analysis, the EIR should be recirculated with the new information for public review. Section 15126 (B) 2 states that "If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR" However disclosure, at this time, of a new location would constitute new information and require recirculation of the DEIR.

Response

Please refer to response to comment RAT-16.

COMMENTS AND RESPONSES - CONNOR, CULVER, BLAKE & GRIFFIN, LLP., Edmond M. Connor, August 22, 1997

CCBG.3-1

Comment

As you know, our firm represents the Vedanta Society of Southern California (the "Society") which, for over five decades, has owned and maintained the Ramakrishna Monastery (the "Monastery") in an area of Trabuco Canyon which is immediately adjacent to the southeastern portion of the Saddleback Meadows property (the "Property") On behalf of the Society, and pursuant to the 10-day extension of time granted in the August 12 letter which I received from Tom Mathews, Director of the Orange County Planning & Development Services department (the "Department"), we are submitting written comments on Draft Subsequent Environmental Impact Report No 56 (DSEIR 566" or the DSEIR").

A. **Regrettably, The Society Is compelled To Submit Its Comments Under Protest.**

The Society must note for the record that it is submitting its comments under protest because of the Department's refusal to accommodate the Society's request, as set forth in my letters of August 6 and 8, 1997, that the Society, and all members of the public be provided with adequate time to comment on DSEIR 566 *after* the grading plans and the grading plan review which are the subject of Grading Application GA960048 (the "Grading Application") have been made a part of DSEIR 566 and the DSEIR has been recirculated for public comment. Because of the Department's decision to deprive the public of access to the very documents upon which the Grading Application is based, i.e., the 40-scale grading plans and the detailed review of those plans by the soils engineer of record, the geotechnical consultants engaged by the Society to comment on DSEIR 566 have been thwarted in their efforts to fully and properly assess the adverse environmental impacts and feasible mitigation measures associated with the rough grading operations for the construction of the 705 units of manufactured housing which were supposedly authorized by Final Tract map 10692 (the "Tract Map").

Without being allowed access to the basic documents that will, in fact, "accompany" the Grading Application, it is hardly fair that the Society, or any other members of the public, be required to submit comments on the adequacy of the environmental documentation prepared to evaluate the effects of the Grading Application. However, the Society will endeavor to do so without waiving its objections to the inherent unfairness of the CEQA review process that is currently being conducted by the Department. The Society urges the Department to reconsider its decision to push ahead with the review of DSEIR 566 without allowing the public to see documents which are crucial to the approval of the Grading Application. Indeed, the Society believes that the fairness and disclosure problems which presently exist can easily be corrected by simply recirculating DSEIR 566 after all of the grading plans and the grading plan review have been made a part of the DSEIR or, at the very least, have been incorporated by reference in the DSEIR and have been made available for public to see documents which are crucial to the approval of the Grading Application. Indeed, the Society

believes that the fairness and disclosure problems which presently exist can easily be corrected by simply recirculating DSEIR 566 after al of the grading plans and the grading plan review have been made a part of the DSEIR or, at the very least, have been incorporated by reference in the DSEIR and have been made available for public review.

Of course, the Society also believes that, if the Department persists in its refusal to make important project documents available to the public, a court of law would certainly find that the Department's actions in this regard were exceedingly unfair and not at all in keeping with either the letter or the spirit of CEQA.

Response

Please refer to response to comment SFC-1.

CCBG.3-2

Comment

B. <u>DSEIR 566 Fails To Comply With The Specificity Requirements Of CEQA Guidelines Section 15146.</u>

The Society will give credit where credit is due and will commend the Department for determining that a Subsequent EIR under CEQA Guidelines section 15162 would have to be prepared and certified before the Grading Application submitted by the Applicant in December 1996 could be approved.

In requiring the preparation of a Subsequent EIR, the Department was not only complying with the dictates of the Foothill/Trabuco Specific Plan (*see*, FTSP, p. III-20, § III.D.3.2c), but it was also adhering to the legal analysis set forth in the landmark case of *Day v. City of Glendale* (1995) 51 Cal.App.3d 817. In *Day*, the Court of Appeal held that a grading permit application is a "project of mixed ministerial-discretionary character [which] should be treated as a discretionary project" for purposed of CEQA review, especially in cases in ;which the applicable grading code affords staff a great deal of discretion in issuing, or conditioning the issuance of, a grading permit (51 Cal.App.3d at pp. 823-824).

However, having correctly determined that a Subsequent EIR should be prepared, the Department must now ensure that the environmental documentation prepared by the Applicant's consultant fully complies with the requirements of CEQA and the State CEQA Guidelines which govern the preparation and review of a construction level EIR. Unfortunately, in its present form, DSEIR 566 does not comply with these requirements because it postpones for *future* analysis the specific details of the very activity which it was supposedly prepared to address, i e., the rough grading of the Project.

There can be no doubt that DSEIR 566 was supposed to analyze the impacts and mitigation measures relating to the Grading Application As stated on page 2-8 of DSEIR 566, the Department determined, on December 16, 1996, that "a Subsequent EIR is required to

evaluate the effects of the *grading application.*" (Emphasis added.) In addition to what is stated in the DSEIR, Mr. Mathews also confirmed in his August 12 letter to me that the Applicant's grading permit application was "the *initiating activity* which resulted in the determination that Draft EIR 566 be prepared " (Emphasis added.)

Since it is clear, therefore, that the Grading Application was the project approval which *initiated* and *necessitated* the preparation of DSEIR 566 it is only logical that the DSEIR analyze the impacts of the rough grading operations not in mere general and conceptual terms but in the *specific* and *detailed* terms that CEQA requires. CEQA Guidelines section 15146 is very explicit on this point and requires far more specificity than is evidenced in DSEIR 566. As stated in section 15146, [a]n EIR on a construction project will necessarily be *more detailed* in the *specific effects* of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the *effects of construction* can be predicted with greater accuracy." (Emphasis added.)

Response

Please refer to response to comment SFC-1.

CCBG.3-3

Comment

CEQA Guidelines section 15146 further provides that the degree of specificity required in an EIR must correspond to "the degree of specificity involved in the underlying activity which is described in the EIR." What this means with reference to DSEIR 566 is that, since the DSEIR was expressly prepared to evaluate the effects of the Grading Application, the *specific details* of the rough grading activities for the construction of the 705-unit Project must be analyzed in DSEIR 566. In order to do that, of course, the documents which County staff will necessarily review and comment on *before* approving the Grading Application -- which will include, at a minimum, the grading plans and the geotechnical review of those grading plans-- must be made a part of or at least incorporated by reference into, the DSEIR so that all the detailed information that is available to the County is likewise made available to the public though the CEQA review process.

Response

Please refer to response to comment SFC-1.

CCBG.3-4

Comment

C. <u>DSEIR 566 Fails To comply With The Technical Detail Requirements of CEQA Guidelines Section 15147.</u>

In the letter which I sent to you on August 8, 1997, a copy of which is attached as Exhibit "A" hereto and is incorporated herein, the point was made that both California case law and the provisions of CEQA Guidelines section 15147 make it abundantly clear that all technical data, maps, plans, diagrams, etc., which are necessary to make a "full assessment" of the environmental impacts of the project being evaluated must be contained in the EIR or in the Appendices thereto. In this case, therefore, since DSEIR 566 was expressly prepared to evaluate the environmental effects o the Grading Application , the 40-scale grading plans and the geotechnical review of those plans should have been made part of the DSEIR *before* it was circulated for public comment.

In his August 12 letter to me, Mr. Mathews disagreed with the above-stated position and stated that "[sufficient detailed grading and geotechnical information is available in the Draft EIR." This is simply not the case. Indeed, without the grading plans and the geotechnical grading plan review which G.A. Nicoll indicates will "accompany the Grading Application *L.A. Times* article could occur as a result of the grading activities to be undertaken in construction the Project. This requires a careful study -- not simply a response to comments -- and the Society requests that it be undertaken *before* any further action is taken to process the Grading Application

The *only* soils report referenced in DSEIR 566 which addressed the 705-unit Project is the one found in Appendix D to the DSEIR. However, that report makes no bones about the fact that it was only "prepared at an EIR level" (whatever that means). In fact, the Geotechnical Environmental Impact Report prepared by G.A. Nicoll & Associates, dated March 14, 1997, expressly states that a "*more detailed evaluation* of the slope stability, including analysis of buttress backcuts and forecuts, individual cut slope buttreses, etc., will be conducted during the 40-scale grading plan review to accompany the grading permit application." (Appendix D, p.4, ¶ 4, emphasis added.)

The March 1997 report prepared by Nicoll & Associates also states at page 16 that "*[c]omplete details* of the corrective grading will be illustrated in the final geotechnical report of the site, which will be submitted *for grading plan permitting* purposes." This is obviously a concession by the soils engineer of record for the Project that more detailed geotechnical analysis must be performed before the county will be in a position to approve the Grading Application and issue a grading permit to the Applicant The question which naturally arises, therefore, is *why* is DSEIR 566 being processed for certification *before* this more detailed information has been made available to the County?

The above question must be answered by the Department and cannot be dismissed as a mere hypertechnical inquiry relevant only to lawyers and judges. Indeed, the question goes to the very heart of the problem facing anyone who tries to determine -- *without* the benefit of the 40-scale grading plans for the entire Project and the geotechnical review of those plans -- how extensive, how costly, and how time-consuming the grading operations for the Project will be.

Response

Please refer to response to comment SFC-1.

CCBG.3-5

Comment

D. Important Details Regarding The Nature And Extent Of The Proposed Grading Must Be Provided In Order To Determine The Cost And Duration Of The Grading And To Ascertain whether The Affordable Housing Condition Imposed On The Project Is Still Achievable.

Without knowing certain basic details regarding the nature and extent of the millions and millions of cubic yards of corrective or "remedial" grading that will need to be undertaken in construction the Project -- such as, for example, the estimated depth of the removals (possibly up to 120' deep in places!), the limits of the backcut that may be left open at any one time without increasing the risk of slope failure beyond the 10% estimated failure rate, the recommended procedures for controlling groundwater encountered during excavation, etc. -- it is *not* possible to develop a reliable estimate of the cost or duration of the grading activities to be performed at the Project site.

According to section 4.2 of DSEIR 566, all of the rough grading at the Project is to be "completed in one *continuous* phase." (DSEIR, at p. 4-22, emphasis added.) Assuming this is true, [2] then all of the persons living in close proximity to the Property, including the monks at the Monastery, the priests and students at St. Michael's Abbey, and the residents of the Hidden Ridge and Portola Hills developments, would be keenly interested in knowing how many months or Iyearsl they could expect to be subjected to the noise, dust, diesel smells, and bare-dirt conditions which would be caused by the veritable army of large earth-moving equipment (e.g., scrapers, dozers, blades, compactors, trucks, etc.) that would have to be deployed at the Project site.

However, without being allowed access to the 40-scale grading plans for the entire Project and the grading plan review containing all of the soils engineer's specifications and recommendations for undertaking the proposed 8.9 million cubic yards of remedial grading work, including the construction of buttresses, shear keys, stabilization fills, and subdrain systems, no grading contractor in Orange county could even begin to estimate the amount of labor, material, and equipment that would be required to rough grade the Project in one continuous phase. IN fact, to even project an average daily production rate for the remedial

[2] After being compelled to make separate arrangements with the applicant to pay for copies of the 40-scale grading plans relating to the Grading Application, the society was surprised to learn that the plans made available by the Applicant cover only a portion of the Project referred to as "Phase I." This would clearly seem to suggest that the statements in DSEIR 566 that all grading will be completed in one continuous phase is not true

grading operating without knowing the soils engineer's recommendations contained in the grading pan review would be nothing short of wild speculation.

Response

The DEIR contains a discussion of project related grading activities, including the phasing and duration of grading, in Section 3.4 on Page 3-16.

CCBG.3-6

Interestingly, without providing any explanation or breakdown of any kind, the applicant's consultant has projected an average daily production rate of 30,000 cubic yards per day for the "total project-related grading," amounting to 11.5 million cubic yards. (DSEIR, at p. 4-23.) Based on this projected rate, it has been estimated in DSEIR 566 that all of the rough grading at the Project "would require approximately 18 months to complete." (Id.) To say the least, this estimate strains credulity, and raises serious questions about whether the duration of the Project grading has been purposely understated in the DSEIR.

Since almost 80% of the grading (8.9) out of a total of 11.5 million cubic yards) will consist of slow, costly, and very difficult remedial work to stabilize the proposed slopes by means of landslide shear keys, buttresses, and stabilization fills, it is nothing short if incredible that anyone could even suggest that this work – which will involve deep slop-cutting that will have to be performed by using special excavating equipment and extremely conservative backcutting procedures – could be accomplished at anything close to 30,000 cubic yards per day on *average*.

In fact, the Society has engaged the chief estimator of a local grading contracting firm as a consultant, but, without having access to all the grading plans and to the grading plan review to know what the soils engineer will be recommending regarding how the remedial grading work will have to be performed at the Project, he has been unable to formulate any reasonable estimates of the time or cost that will be involved in the grading – except to note that the 18-month projection set forth in DSEIR 566 appears to be grossly *underestimated*, possibly by a factor or 100% or more.

The reason that it is important to know the approximate *cost* of the rough grading is that, unless one knows what kind of dollars are involved, one cannot determine whether the measures proposed in DSEIR 566 to mitigate the geotechnical hazards at the site (e.g., landslide shear keys, buttresses, stabilization fills, etc.) Are truly *feasible*, within the meaning of CEQA section 21061.1, and can be "accomplished in a successful manner within a reasonable period of time, taking into account economic...factors." In other words, the costs of the remedial grading work could turn out to be so prohibitively expensive in light of the economics of the Project that the mitigation measures proposed in the DSEIR might not be feasible and thus could not be used to "substantially lessen" the significant impacts of the grading, withing the meaning of CEQA Guidelines section 15091.

Moreover, without knowing the cost of the proposed mitigation measures for the grading

(i.e., the 8.9 million cubic yards of remedial work), one cannot determine whether the economics of the Project would make it even remotely possible for the Applicant to meet the 66.6% affordable housing requirement which was imposed as a condition of approval on the Tract Map when it was originally approved in 1979. Although there is a passing reference to this requirement on page 4-11 of DSEIR 566, there is no discussion of whether the requirement of selling 470 of the 705 units of manufactured housing "in the affordable range" would be achievable, even in part, considering the cost of developing the Project at today's prices for labor, equipment, and material.

For CEQA compliance purposes, it is imperative that a comprehensive discussion regarding the feasibility of achieving the affordable housing requirement be included in DSEIR 566 and that the document then be recirculated so that the public can see and comment on what evidence there might be, if any, to support any proposed findings or statement of overriding considerations prepared by the Department which attempted to cite the affordable housing component of the Project as a "benefit" which might outweigh the unavoidable adverse impacts of the Project, within the meaning of CEQA Guidelines section 15093.

If the Department were to supply the Society with the information it has requested - specifically, the 40-scale grading plan for the entire Project and the geotechnical review of all the grading plans - the Society would be willing to perform the economic analysis necessary to determine whether it would be economically feasible, in light of land acquisition and debt service costs, taxes, planning costs, grading costs, and construction costs, for the Applicant to develop 705 units of manufactured housing and to sell two-thirds of these units as affordable housing. This analysis could then be made a part of DSEIR 566 and the document could be recirculated for public review and comment

Response

The estimate of 30,000 cubic yards of grading per day is appropriate, and can be compared with several other grading projects that have been completed in the vicinity of the project site. The Portola Hills project graded a maximum of 100,000 cubic yards per day. Costs associated with remedial grading activities have not been provided by the applicant. The DEIR, in Section 4.1, beginning on Page 4-1 contains a discussion of the proposed project's affordable housing requirements.

CCBG.3-7

Comment

E. <u>The Discussion Of Soils Impacts And Grading Mitigation Measures In DSEIR 566 Is Seriously Deficient And Fails To Address Significant Adverse Impacts Which Will Be Caused By The Ought Grading.</u>

To assist it in analyzing and commenting on the "Soils and Geology" section of DSEIR 566, the Society has engaged the services of Kenneth R. King, a registered civil engineer, and John R. Byerly, a registered geotechnical engineer. Unfortunately, the assistance provided by these

two consultants has been severely limited due to their inability to obtain access to the 40-scale grading plans and the accompanying grading plan review.

Despite not being able to review the essential documents relating to the Grading Application, Mess King and Byerly have nonetheless found serious deficiencies in how important geotechnical issues have been analyzed, or overlooked, in DSEIR 566. In the hope that DSEIR 566 will be revised and recirculated with the appropriate documentation and a more complete analysis of the true impacts and feasible mitigation measures associated with the rough grading of the Project, the Society is providing the comments received to date from Mess King and Byerly.

Response

Please refer to response to comment SFC-1.

CCBG.3-8

1. Comments From Ken King.

Attached as Exhibit "B" hereto and incorporated herein by reference is a copy of Mr. King's preliminary review of section 4.2 "Soils and Geology" of DSEIR 566. The Society requests that each of the points raised in Mr. King's report be carefully considered and responded to by the Department. In addition, the Society asks that DSEIR 566 be revised and recirculated with the information necessary to address the deficiencies cited in Mr. King's report, particularly with respect to the failure of the DSEIR to analyze the devastating and potentially irremedial impacts which the excavation and dewatering activities will have on the water wells surrounding the Project site.

A recent article appearing in the Los Angeles Times, a copy of which is attached as Exhibit "C" hereto and is incorporated herein by reference, supports the concerns raised by Mr. King, for it reports on how the tunneling and dewatering activities for the construction of the Los Angeles subway system have dried up local streambeds and so drastically depleted groundwater resources that once lush plants and vegetation have died off. DSEIR 566 should address whether the environmental parade of horribles discussed in the L.A. Times article could occur as a result of the grading activities to be undertaken in constructing the Project. This requires a careful study -not simply a response to comments - and the Society requests that it be undertaken before any further action is taken to process the Grading Application.

Response

The comment references an article that was published in the Los Angeles Times relating to Metro Rail construction impacts on local ground and surface water. No additional response is required.

CCBG.3-9

Comment

2. **Comments From John Byerly.**

The comments received from Mr. Byerly regarding section 4.2 of DSEIR 566 may be summarized as follows:

(a) Perched groundwater was encountered in the geotechnical investigations on this site at various elevations in many of the test borings by G.A. Nicoll & Associates and others. DSEIR 566 alludes to "potential dewatering activities." Remedial grading will require the construction of buttresses and extensive shear keys, involving an estimated 8.9 million cubic yards of earth. The excavations fro the shear keys will surely intercept water bearing soil and bedrock layers. The potential effect of the disruption of these water bearing layers on water wells located downstream of this project site has not been evaluated in the DSEIR.

Response

Please refer to response to comment SFC-1.

CCBG.3-10

Comment

(b) During construction, dewatering will remove significant quantities of groundwater and discharge the collected water into existing surface drainage systems. The potential impact of the discharge of the removed groundwater, including turbidity, chemical water quality, and potential for erosion and pollution of streams and other riparian areas subject to regulation by state and federal; authorities has not been addressed in the DSEIR.

Response

Please refer to response to comment SFC-1.

CCBG.3-11

Comment

(c) When the shear keys are completed, they will provide a permanent barrier to the lateral transmission of the presently existing groundwater flow. The groundwater will tend to accumulate behind the shear keys, and could surface unless permanent dewatering systems are provided. The analysis of the practicality of permanent dewatering systems, whether

passive or requiring well points and pumps, and the long term effect of dewatering system discharge has not been evaluated in the DSEIR.

Response

Please refer to response to comment SFC-1.

CCBG.3-12

Comment

(d) Approximately 2.6 million cubic yards of excavation is estimated to "achieve planned elevations and profiles." An additional 8.9 million cubic yards of remedial grading is also described, including 7.5 million cubic yards for shear key and buttress construction. The DSEIR concludes that this grading "would not result in any impact on the stability of adjacent properties." While engineering analysis may show that the *complete* grading improvements would not have an adverse impact on the stability of adjacent property the actual *construction* of these grading improvements may have immense impacts on neighboring properties such as the Monastery and the Abbey. For example, the excavation for shear keys will remove support for existing landslide masses, and will expose landslide shear planes. No discussion of the details of assuring adequate support for the landslides extending onto adjacent properties during the excavation and backfilling of shear keys has been provided in the DSEIR.

Response

Please refer to response to comment SFC-1.

CCBG.3-13

Comment

(e) Currently, both the Monastery and the Abbey are experiencing ongoing distress due to land slippage. As such, the risk of activating existing landslides and triggering catastrophic land movement on these adjacent properties, particularly during the shear key excavation and backfill process, should be addressed in great detail in the DSEIR.

Response

Please refer to response to comment SFC-1.

CCBG.3-14

Comment

An average daily grading rate of 30,000 cubic yards per day is projected in the DSEIR. However, it is inconceivable that the excavation and filing for the shear keys and buttresses, which constitute at least two-thirds of the total grading anticipated for the Project site, can be accomplished at a grading rate of anything more than 10,000 cubic yards per day at best.

Even at the rate of 10,000 cubic yards per day (which is *optimistic* because, if wet material is required to be top-loaded, then only a rate of 5,000 cubic yards per day could be achieved), the grading for the shear key and buttress construction alone will require 35 months to complete -- which is nearly *twice* the duration estimated in the DSEIR. This extended period of grading will also expose the inherently unstable conditions at this site during grading to at least three, if not four, rainy seasons and this has not been accounted for the DSEIR.

Response

Please refer to response to comment CCBG.3-6.

CCBG.3-15

(g) Appendix D of DSEIR 566 ("Geotechnical Environmental Impact Report") presents a brief commentary regarding the geotechnical conditions at this site, and a brief review of recommendations for mitigating and remediating adverse conditions. The county of Orange Grading Manual (Board of Supervisors Resolution No. 81-1358) and current geotechnical practice require a geotechnical review of 40-scale grading plans to be prepared by the developer's geotechnical investigation was performed in 1994, but was done in connection with a different project that involved less extensive grading. Subsequent investigations have focused on EIR issues, and have not provided the required specificity to analyze the significant effects of the grading, including impact of dewatering during and fol+lowing construction, slot cutting or staged excavation to assure ongoing support of landslide masses to be stabilized, backcut and forecut slope inclination, and groundwater water control criteria. The grading plan review report should include all recommendations and geotechnical criteria necessary for a grading contractor to prepare a bid go accomplish the rough grading, and this report should be made part of the DSEIR.

Response

Please refer to response to comment SFC-1.

CCBG.3-16

Comment

(h) Proposed mitigation measure AM-47 on page 4-33 of the DSEIR references total settlements of 4 to 6 inches or more in some areas, and suggest "the degrees and rates of settlement shall be analyzed during the final design phase." The grading plan review report

is an appropriate document for this analysis. However, the report should be prepared now, instead of later, and should be made part of the DSEIR.

Response

Please refer to response to comment SFC-1.

CCBG.3-17

Comment

(I) A cursory review of the "Phase I" grading plans for a portion of the Project underscores the need for access to the grading plan review. For example, with respect to the proposed buttress excavation near the intersection of El Toro Road and the proposed main entrance road to the Project (Saddleback meadows Drive), the main question to be answered by the grading plan review is how much back slope can be open at any one time to ensure only the 10% slope failure rate predicted in the DSEIR?

Response

Please refer to response to comment SFC-1.

CCBG.3-18

Comment

(j) Since the remedial grading quantities are 3.5 times greater than the onsite cut/fill quantities, a large, accessible area will be needed for stockpiling and drying operations, but the grading plans are silent on this point. Will off-site areas be needed for stockpiling and for processing wet material? Another question to be answered is how will the slope rights beyond the limits of grading shown on sheet 4 of 13 of the grading plans be obtained in order to construct the buttress? The questions must be answered before the Grading Application can be approved, and thus they should be addressed in the DSEIR.

Response

All grading is proposed to be completed onsite, as documented in Section 4.2.2 of the DEIR.

CCBG.3-19

Comment

In conclusion, the Society sincerely hopes that, in light of ;the important questions and issues raised above regarding the geotechnical impacts of the Project, the Department will request the Applicant to substantially revise and supplement the "Soils and Geology" section of DSEIR 566 so that the DSEIR can be recirculated for public review and comment once all of the grading plans and the grading plan review have been made part of the DSEIR. AT that point, the Society and its consultants will be in a much better position to understand and comment on the true environmental effects of the proposed grading and the feasibility of the mitigation measures designed to lessen such impacts. Thank you in advance for the Department's anticipated cooperation in this regard.

Response

Please refer to response to comments CCBG.3-1 through CCBG.3-18

APPENDIX A

Letters Received from Commenting Agencies, Groups and Individuals

APPENDIX B

Letter from Thomas B. Mathews to CONNOR, CULVER, BLAKE & GRIFFIN, LLP, Edmond M Connor, August 12, 1997

Letter from Thomas B. Mathews to SFC CONSULTANTS, Sandra F. Jacobs, August 14, 1997

Letter from Thomas B. Mathews to RUTAN & TUCKER, LLP, David B Cosgrove, August, 1997

Letter from Thomas B. Mathews to SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT, Mary Lou Smith, August 14, 1997

Robert A. Hamilton

June 29, 1997

RECEIVED
JUL 01 1997
Environmental & Project Planning

George Britton
County of Orange
Environmental & Project Planning Services Division
300 North Flower Street, Room 321
Santa Ana, CA 92702-4048

Comments on DSEIR No. 566; Saddleback Meadows

Dear Mr. Britton:

On behalf of the Orange County chapter of the California Native Plant Society (CNPS), and on my own behalf as a wildlife biologist, I offer the following comments on Draft Subsequent EIR No. 566. My knowledge of the CEQA review process, as it applies to biological resources in Orange County and the region, derives from over eight years' experience as a full-time biological consultant based in Orange County. During this time, I have prepared numerous biological technical reports for CEQA documentation covering large and small projects throughout Orange County and elsewhere in the region. I've certainly never encountered a situation where a project, once denied because of its incompatibility with applicable planning and zoning laws, was resubmitted in a form that actually flaunts the law more flagrantly than it did the first time around. I know better than to inquire about the circumstances under which such a ridiculous situation has come to be, or to spend much time actually considering the new development scheme.

On 29 February 1996, I submitted a letter to the County of Orange (County) commenting on DEIR No. 561, which covered the applicant's previously proposed project on this same site. This letter contained 26 comments (many more, actually, but that's the number that were responded to in any form). Most of my comments addressed the DEIR's factual errors and internal inconsistencies. I also suggested a number of realistic solutions to problems that I identified.

I have just completed a review of the responses prepared by the applicant/County in response to my previous letter, and now remember afresh that most of my direct questions and comments were sidestepped, ignored, vaguely acknowledged, or responded to in a manner that obfuscated the comment's intent. This, combined with the fact that the new project makes no pretense of complying with planning and zoning laws, or the concerns of this community, indicates to me that the applicant/County has no meaningful interest in my thoughts or opinions.

I'm sure this is a common reaction of citizens who commented on the previous DEIR, but I find the situation particularly confounding, as the County recently selected me to serve on the 37,000-acre Nature Reserve of Orange County's Technical Advisory Committee. According to the 23 May 1997 appointment letter that I received from Executive Director Tim Neely, this committee will "serve as advisors to the Board of Directors on issues relating to monitoring, management and science." These are precisely the types of issues that I have commented on with regard to this project. I can't be an ignorant gadfly and a trusted scientific advisor simultaneously, so I ask the County to make up its mind.

20571 Sycamore Drive ~ P.O. Box 961 ~ Trabuco Cyn, CA 92678 ~ (714) 459-1876 (Phone/Fax)

Finally, I ask at least one County planner to review the responses that the applicant's consultants gave to my previous comments on this project; these were given with your approval and under your agency's name. If the goal of the Environmental & Project Planning Services Division is to completely frustrate the few citizens who take the time to read and comment on your EIRs, and to thus subvert the California Environmental Quality Act, you have succeeded.

If the County is interested in taking a step in a more productive direction, I suggest that you spend a few dollars having an outside biological consultant review biological assessments *and* responses to comments prepared for major EIRs. For documents prepared by biologists based outside of Orange County, the reviewing firm should be based within Orange County, as consultants based elsewhere often display limited knowledge of the status and distribution of plant and animal species in Orange County. This simple and relatively cheap process would greatly improve the quality and credibility of the County's environmental documents; it is a fairly common practice for CEQA lead agencies statewide.

Please provide any written responses to this letter to the following address:

Robert A. Hamilton
P.O. Box 961
Trabuco Canyon, CA 92678

Sincerely,

Robert A. Hamilton
Consulting Biologist
Conservation Chair, Orange County CNPS

cc: Tom Wiberg, Foothill Trabuco Specific Plan Review Board (hand-delivered)
Todd Spitzer, Supervisor, Third District (by e-mail)

San Joaquin Hills Corridor Agency
Chairman
Peter Buffa
Costa Mesa

Foothill/Eastern Corridor Agency
Chairman,
Mike Ward
Irvine

TRANSPORTATION CORRIDOR AGENCIES

William Woollett, Jr
Chief Executive Officer

Walter D Kreutzen
Chief Operating Officer

Colleen E Clark
Chief Financial Officer

Jerry E Bennett
Chief Engineer

July 16, 1997

George Britton, Manager
Environmental & Project Planning Services
300 N. Flower St., Third Floor
P.O. Box 4048
Santa Ana, CA 92702-4048

Subject: Draft EIR 566 for Saddleback Meadows

Dear Mr. Britton:

Thank you for providing the Transportation Corridor Agencies (TCA) with the opportunity to review and comment on the subject Draft EIR. Staff has reviewed the Draft EIR and has no comments at this time If you have any questions regarding this correspondence, please contact Laura Coley Eisenberg of my staff at (714) 513-3482.

Sincerely,

Steve Letterly, Director
Environmental Management

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY PETE WILSON, Gc

DEPARTMENT OF TRANSPORTATION

DISTRICT 12
2501 PULLMAN STREET
SANTA ANA, CA 92705

July 17, 1997

Raymond Brantley
County of Orange
Planning & Development Services
300 North Flower Street
Santa Ana, CA. 92702

IGR/CEQA

SCH#96121072

Subject: Saddleback Meadows Draft Subsequent Environmental Impact Report

Dear Mr. Brantley:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Report for Saddleback Meadows. The proposed project is for the phased development of 705 manufactured single family housing units and a 1.5 acre, neighborhood commercial center and associated infrastructure. The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor approximately 1/2 mile south of the El Toro Road/Live Oak Canyon Road intersection. Caltrans District 12 is a reviewing agency and has no comment at this time.

Please continue to keep us informed of future developments which could potentially impact our State Transportation Facilities. If you have any questions, or need to contact us, please call Aileen Kennedy on (714) 724-2239.

Sincerely,

Robert F. Joseph, Chief
Advance Planning Branch

C: Tom Loftus, OPR
Ron Helgeson, HDQTRS Planning
Tom Persons, HDQTRS Traffic Operations
T.H. Wang, Traffic Operations South

SFC
Consultants

August 5, 1997

Mr. Ray Brantley
Orange County Planning and Development Services Department
Environmental and Project Planning Services Division
300 N. Flower, Room 321
Santa Ana, CA 92702-4048

Subject: Saddleback Meadows - Request For Time Extension on Comments to Draft EIR 566

Dear Mr. Brantley:

I want to thank you and Bill Grieman again for providing for me, not only the previous EIR's for Saddleback Meadows, but for providing a desk and room for me to review these documents in your office.

While I intend to provide the County with my comments to Draft EIR 566, I would like a reasonable period of time to review the current Phase I grading plans which are referenced in the Draft EIR. My objective would be to determine whether the Draft EIR adequately addresses the impacts associated with the proposed grading shown on the grading plans. Unfortunately, I have been informed that the grading plans, which are the subject of the grading permit application, are not currently on file at the County for me to review at this time. I was able to review an older version of the grading plans that Bill Grieman had available. However, I have been told that I can make separate arrangements with the applicant to obtain a copy of the current grading plans, but that would take additional time and money that I had not planned on spending. Under the circumstances, I would ask that I be provided with an extension of time to submit comments on the Draft EIR, after I have had a chance to review the grading plans, which I hope will be made available at the County shortly.

I am requesting a three-week extension to the September 12, 1997 deadline, to review not only the grading plans, but also to review the files to the Zone Changes previously approved by the County. I have asked the Clerk of the Board to pull files for the following Zone Change Applications: ZC 79-24, ZC 82-63 and ZC 84-3, and I have received a call back from Beverly at the Clerk of the Board, indicating that these files should be available for my review sometime this week.

Please let me know whether your office will be able to accommodate my request for the three-week time extension to submit comments on the Draft EIR. The August 12 deadline is coming on too fast for me to be able to complete my review of all the necessary documents, particularly the grading plans, so I hope that you will be able to grant me the extra time I have requested. Please call me with your response.

Thank you again for your consideration.

Very truly yours,

SFC Consultants

Saundra F. Jacobs, REA
Principal

26012 Marguerite Parkway, Suite H424, Mission Viejo, CA 92692
Telephone: (714) 859-5852 Fax: (714) 581-2577 Email: sfc@pacbell.net

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August 6, 1997

Mr. Raymond H.C. Brantley
Mr. William Grieman
Environmental Planning Section
Orange County Planning & Development
Services Department
300 North Flower Street
P.O. Box 4048
Santa Ana, California 92702-4048

VIA TELEFACSIMILE
AND FIRST CLASS MAIL

Re: Saddleback Meadows Draft EIR 566
Request for Extension of Time to Submit Comments

Dear Messrs. Brantley and Grieman:

As you know, August 12, 1997 is the current deadline for submitting comments on Draft EIR 566, the subsequent environmental impact report which has been prepared in connection with the grading permit application submitted by the developer of the Saddleback Meadows project. Our firm has been asked to submit comments on the Draft EIR on behalf of the Vedanta Society of Southern California (the "Society") which owns and maintains the Ramakrishna Monastery adjacent to the project site. However, due to an unusual set of circumstances, we find ourselves unable to submit comments prior to the August 12 deadline because critically important documents that we and our consultants need to analyze in assessing the adequacy of Draft EIR 566 have not been made available for public review

The problem that we have encountered is that we have not been able to gain access to the developer's grading plans which are the *sine qua non* of the grading permit application process. Without such plans, no permit can be issued. Moreover, without access to the grading plans themselves, it is *impossible* to comment on the adequacy of Draft EIR 566 which, as stated in the Initial Study, was prepared for the express purpose of evaluating the environmental effects associated with the grading permit application.

Indeed, without being able to review the grading plans, neither our firm, nor the geotechnical consultants which have been engaged on behalf of the Society, can

determine whether Draft EIR 566 properly evaluates the impacts, and adequately addresses the mitigation measures, associated with the proposed grading of the Saddleback Meadows property. Thus, the Society is effectively stymied in its ability to submit adequate comments on the Draft EIR by the August 12 deadline

Last Friday, during a meeting with Messrs. McGill and de Mayo at the County offices, I asked if I could obtain copies of the grading plans, but I was informed that the County had returned the plans to the developer and no longer had a set available for public review. I was also told that, if I wanted to obtain a copy of the grading plans, I would have to contact the developer directly and make arrangements to pay for copies of the plans to be made Although my office promptly contacted the developer's agent, TPG Management, immediately following my meeting at the County, and then, first thing Monday morning, messengered a check to TPG to comply with its demand that we pay *in advance* for the cost of copying the plans, several days have gone by and we still have not received any plans as of this writing. I am surprised that it would take more than three days to run blue lines of the grading plans, but, be that as it may, we still do not have them and the August 12 deadline for submitting comments is coming on fast. Under these circumstances, therefore, I would respectfully request that the Society be granted a minimum of a 30-day extension of time to submit its comments on Draft EIR 566.

Actually, I think the proper thing to do in light of the fact that the grading plans have not been available for public review at *any* time during the 45-day comment period for Draft EIR 566 is to circulate a *new* public notice setting a *new* deadline for submitting comments on the Draft EIR. The new time period for submitting comments should not start running until the grading plans are made available for public review at the County

What should *also* be made available for review and copying at the County is the soils engineer's geotechnical review of the 40-scale grading plans which the Orange County Grading Code requires be submitted *before* any grading permit can be issued. Indeed, without the soils "specs" providing details regarding proposed buttresses, shear keys, back cuts, etc., it is difficult to understand the grading plans. Moreover, it is virtually *impossible* to assess feasible mitigation measures for known geotechnical hazards without having access to the grading plan review prepared by the soils engineer of record.

Please let me know whether the grading plan review by G.A. Nicoll & Associates is available for public review and copying As you may be aware, Draft EIR 566 specifically states that a grading plan review will be prepared "to accompany the grading permit application " (See Appendix D, p. 4, ¶ 4) If, as I suspect, Nicoll's grading plan review is *not* available for review and copying, then this would be yet another reason for re-noticing the public comment period on Draft EIR 566. In fact, if the grading

plan review has not been prepared or is unavailable for public review, this would raise serious questions as to the legal adequacy of Draft EIR 566.

I do not wish to criticize the County for what appears to have been a problem created by the developer in not making critical documents available for review, but the fact remains that neither the Society, nor any other "interested party" or member of the public, has been dealt a "fair hand" in being required to submit comments on Draft EIR 566 without being allowed reasonable and timely access to the documents which are the "very heart and soul" of the grading permit application, i.e., the grading plans and the grading plan review. I would greatly appreciate it if your office would rectify this problem by (1) making copies of the grading plans and the grading plan review available for public review at the County as soon as possible and (2) providing public notice to all interested persons that a new 45-day time period to submit comments on Draft EIR 566 has been established. If your office is not inclined to provide all members of the public with such an extension of time, then, at the minimum, I would ask that the Society be provided with the 30-day extension which I have requested.

As a final note, I would ask that my name and address be placed on whatever public notice lists are being maintained by the County in connection with the Saddleback Meadows project and any planning approvals and matters relating thereto. Please add me as an "interested party" on all mailing lists so that I can receive public notice, information, and reports regarding any and all aspects of the Saddleback Meadows property or project. Thank you for your courtesy and cooperation in this regard.

Very truly yours,

Edmond M. Connor

cc: Benjamin P de Mayo, Deputy County Counsel (via telefacsimile)

August 7, 1997

County of Orange
Planning & Development Services Department
P.O. Box 4048
Santa Ana, Ca 92702-4048

Attention. George Britton

Southern California
Gas Company
Mailing Address
Box 3334
Anaheim, CA
92803-3334

Subject: Draft EIR 566 for the Saddleback Meadows Project Grading for Recorded Tract No. 10692.

This letter is not to be interpreted as a contractual commitment to serve the proposed project, but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served from an existing main as shown on the attached atlas sheet without any significant impact on the environment. The service will be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies As a public utility, the Southern California Gas Company is under the jurisdiction of the federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Residential (System Area Average)	Yearly
Single-family	750 therms/year/dwelling unit
Multi-family units	475 therms/year/dwelling unit

These averages are based on total gas consumption in residential units served by Southern California Gas Company and it should not be implied that any particular home, apartment or tract or homes will use these amounts of energy.

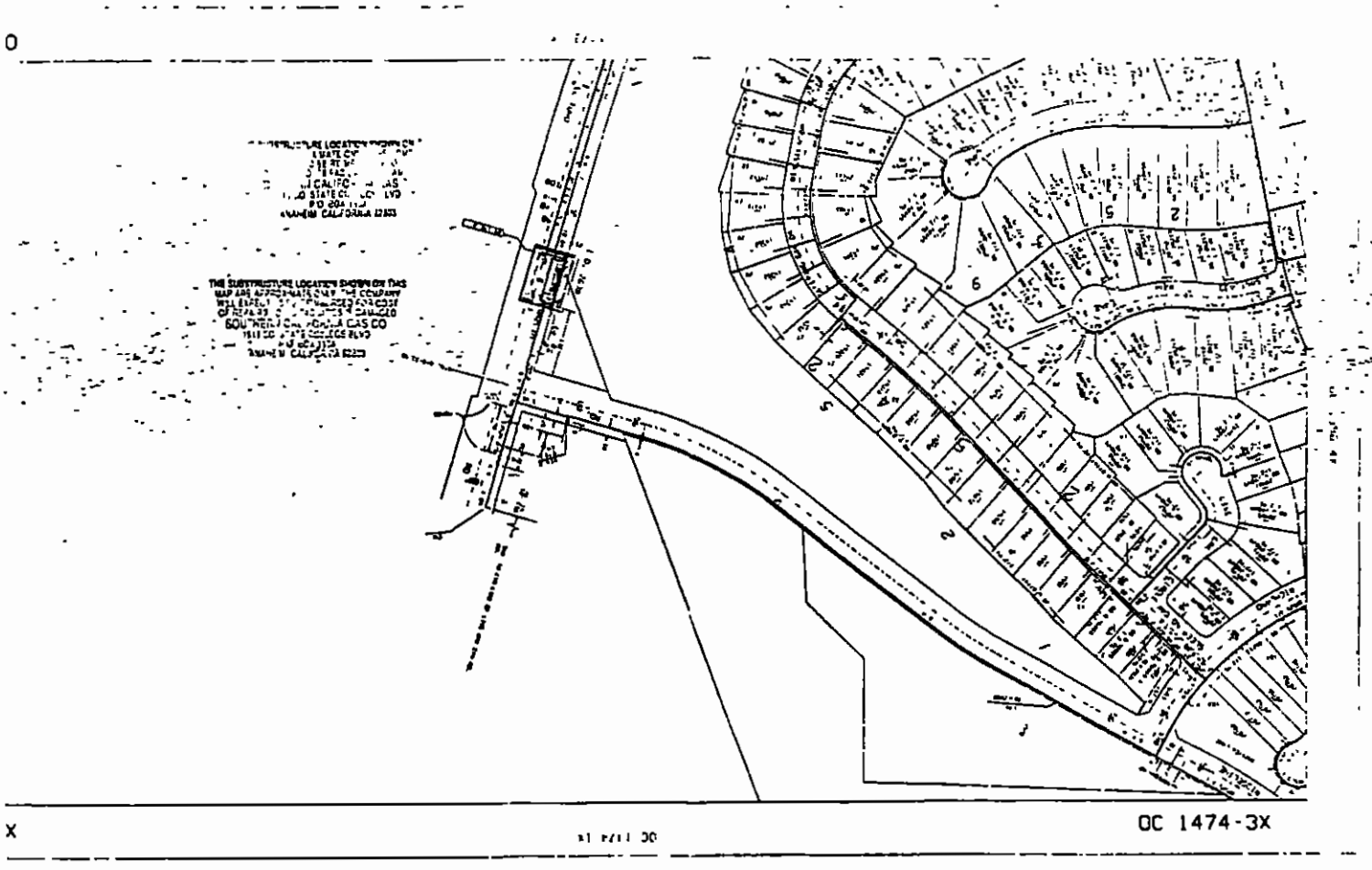
We have developed several programs which are available, upon request, to provide assistance in selecting the most energy efficient appliances or systems for a particular project. If you desire further information on any of our energy programs, please contact this office at 1(800)427-2000. for assistance.

Sincerely,

Robert S. Warth/Myron Spencer
Robert S Warth
Technical Supervisor

jpc
attachment

eirres.doc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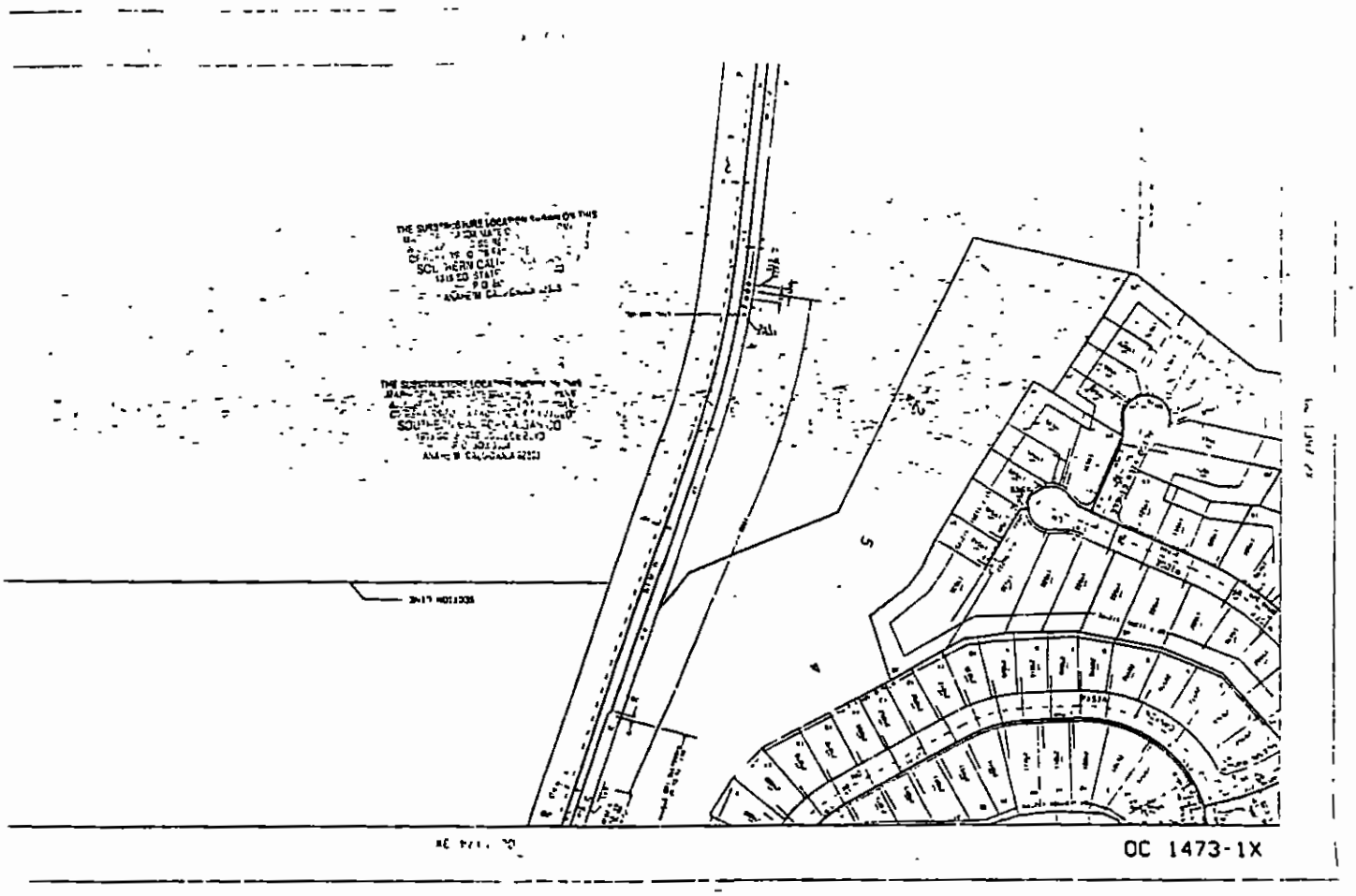
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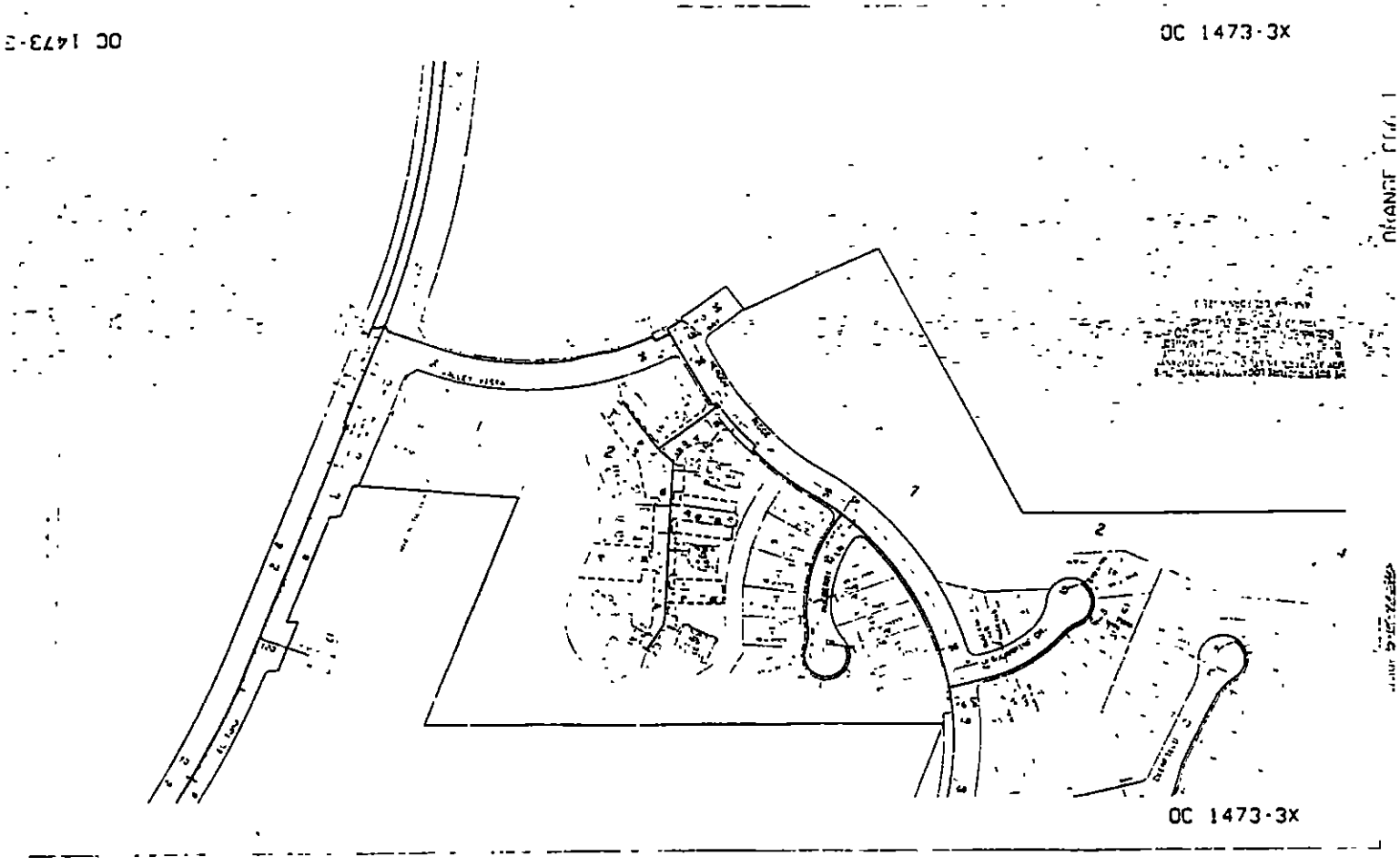
OC 1473-3X
OC 1473-3X

Attachment F

CONNOR, CULVER, BLAKE & GRIFFIN LLP

ATTORNEYS AT LAW

EDMOND M. CONNOR
MARILYN MARTIN CULVER
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E-MAIL: ccbg@ocba.net

August 8, 1997

Mr. Nicholas S. Chrisos
Deputy County Counsel
10 Civic Center Plaza, Room 407
P.O. Box 1379
Santa Ana, CA 92702-1379

VIA TELEFACSIMILE
AND FIRST CLASS MAIL
(Fax: 834-2359)

Re: Saddleback Meadows/Draft EIR 566
Request for Re-Noticing of Public Comment Period

Dear Nick:

This will confirm this afternoon's telephone conversation during which you kindly agreed to provide my client, the Vedanta Society of Southern California (the "Society") with an extension of time, to and including next Friday, August 15, 1997, within which to submit comments on Draft EIR 566. You explained that you had consulted with John Buzas and had concluded that, since various County personnel were unavailable to make a final decision on the requests set forth in my August 6 letter to Messrs. Brantley and Greiman, a three-day extension of time seemed to be an appropriate "stop-gap" remedy under the circumstances.

I understand that, when the appropriate personnel are available at the County next week, I will receive a definitive answer to the requests set forth in my August 6 letter. I certainly appreciate receiving the three-day extension, but my firm and the Society's geotechnical consultants still need more time to review the grading plans and the grading plan review before any of us will be in a position to submit comments on Draft EIR 566. Although the public review provisions of CEQA and the State CEQA Guidelines would suggest that we should not have been required to do so, we have already been compelled to make separate arrangements with, and to pay money to, the

developer's agent to obtain the right to review the grading plans for which a grading permit is being sought.

However, even if we were willing to pay additional money for the right to gain access to the grading plan review by the soils engineer of record, we could not do so because that report has not even been completed as of this date. Of course, Appendix D to Draft EIR 566 expressly states that a geotechnical review of the 40-scale grading plans will be prepared to accompany the grading permit application, but, for whatever reason, the grading plan review has not been finalized and is not available for any member of the public to even see it, much less study it in detail. That really puts the Society, and all other members of the public, at a tremendous disadvantage in being able to adequately comment on the Draft EIR.

As I explained to you in my earlier phone message, section 15146 of the State CEQA Guidelines requires that the degree of specificity to be found in Draft EIR 566 must be commensurate with the stage of development that is being evaluated. In other words, since the construction of grading improvements is being analyzed in conjunction with a grading permit application, the *specific* details of the grading, and the impacts and mitigation measures associated therewith, must be addressed in the Draft EIR. Moreover, under section 15147 of the CEQA Guidelines, all technical data, maps, plans, etc., which are necessary to make a "full assessment" of the environmental impacts of the project must be set forth in the appendices to the Draft EIR, and such appendices "shall be *readily available* for public examination." (Emphasis added.)

The California courts have not hesitated to enforce the above requirements by striking down EIRs which have omitted important technical information, even if the information was found to be available from other sources. As stated by our own Fourth District Court of Appeal, "whatever is required to be considered in an EIR must be *in that formal report*; what any official might have known from other writings or oral presentations cannot supply what is lacking *in the report*." (*See, Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 727.)

As the above authorities indicate, both the grading plans and grading plan review should have been (1) set forth in the Appendices to Draft EIR 566 and (2) readily available to all members of the public during the entire 45-day comment period. Since the County will not issue any grading permit to the developer without the grading plans and the grading plan review having been approved by County staff, these documents should not have been *excluded* from the CEQA review process. However, since these documents were, in fact, omitted from Draft EIR 566 and have never been available at the

CONNOR, CULVER, BLAKE & GRIFFIN LLP

County for public review, I think it only fair that the County take quick action to correct these problems.

My proposal would be that the County request the developer to (1) complete the grading plans and the grading plan review and submit them to County staff as soon as possible and (2) revise Draft EIR 566 to not only include these documents as part of the Appendices, but also to adequately address them in Volume I of the EIR. Once the grading plans and grading plan review have been made "readily available" for public review, then a new 45-day period for submitting comments on Draft EIR 56 should be re-noticed.

Again, I apologize for burdening you with this issue in Ben de Mayo's absence, but I sincerely believe, Nick, that fundamental fairness, not to mention the strict dictates of the State CEQA Guidelines, requires the County to remedy the problems which have occurred as a result of the grading plans and grading plan review not having been available for public review prior to the expiration of the comment period on Draft EIR 566. The problems are easily corrected as I have suggested above, and I hope the County will do just that. Thank you for your courtesy and cooperation in doing what you can to make that a reality.

Very truly yours,

Edmond M. Connor

cc John B. Buzas
Frank McGill
Raymond H.C. Brantley
William Greiman

U.S. Fish & Wildlife Service
2730 Loker Avenue West
Carlsbad, CA 92008
(619) 431-9440
FAX: (619) 431-9618

CA Dept. of Fish & Game
1416 Ninth Street
PO Box 944209
Sacramento CA 94244-2090
(916) 653-9767
FAX: (916) 653-2588

Mr. Raymond Brantley
Environmental & Project Planning Services
300 N. Flower St.
P.O. Box 4048
Santa Ana, California 92702-4048

AUG 0 8 1997

Draft Subsequent Environmental Report (DSEIR) No. 566 for the Saddleback Meadows Project, Orange County, California.

Dear Mr. Brantley:

The U. S. Fish and Wildlife Service (Service) and California Department of Fish and Game (Department) Natural Community Conservation Planning (NCCP) program staffs (i.e., "the Wildlife Agencies") have reviewed the above DSEIR. The project is located within the Southern Subregion Orange County NCCP Planning Area, near the border with the NCCP Central Subregion. The preferred project proposes the phased development of 705 manufactured, single-family residential units on a 222.9-acre site near the intersection of El Toro Road and Live Oak Canyon Road, impacting a total of about 191 acres on site and 20 acres off site. About 14% of the project site is proposed to remain as open space.

Biological resources on site include about 65 acres of coastal sage scrub (CSS), 14 acres of oak woodland, and about four acres of wetland vegetation communities The federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*) is known to occur within at least seven wetlands (identified in the DSEIR as "ephemeral ponds") spread throughout the site Several plant and animal species considered sensitive by the Wildlife Agencies occur (e.g., cactus wren [*Campylorhynchus brunneicapillus*]) or may occur. The coastal California gnatcatcher (*Polioptila californica californica*) hereafter "gnatcatcher," a federally threatened species, is likely to occur on site based on the presence of CSS and gnatcatcher-occupied CSS in surrounding areas. The Quino checkerspot butterfly (*Euphydras editha quino*), a federally endangered species, may occur as well.

Along with the No Project/No Development Alternative ("Alternative 1") required by the California Environmental Quality Act (CEQA), there are four other alternatives presented in the DSEIR. Alternative '1' would avoid any adverse environmental impacts to the project site. Alternative '2' proposes 150 housing units with a minimum lot size of 20,000 feet^2, disturbing more than 138 acres. This would result in elimination of oak woodlands, CSS, and ephemeral ponds of which some rare and sensitive species are obligate residents. Noise decibel levels would increase and possibly affect wildlife in adjacent O'Neill Regional Park. Alternative '3' proposes

100 single family units on a 31.7 acre portion of the site. This alternative avoids about 191 acres of habitat, thereby appearing to allow connection between open space areas north, south, and east of the project site. However, this project alternative will impact two ephemeral ponds and CSS habitat. Alternative '4' proposes 299 housing units, disturbing about 165 acres. A wildlife corridor, narrowing to 400 feet in width and going up a nearly vertical slope, is proposed to be bisected by a road. Alternative '5' proposes 318 housing units within a development area of 113 acres, leaving about 110 acres in open space. The wildlife corridor would be the same as for Alternative '4' except that the minimum width would be about 700 feet. The proposed project appears to conflict with the earlier-adopted Foothill-Trabuco and Aliso Creek Corridor Specific Plans and also fails to describe adequate project design for maintaining corridor integrity of the Orange County NCCP Reserves. In evaluating alternatives 2-5, Alternative '3' would have the least environmental impact, but would nonetheless, substantially impact wildlife corridor integrity between subregional NCCP reserve areas in Orange County.

The Wildlife Agencies have formally commented at different stages of the proposed project. We have also met with the project applicant and their consultants, including a meeting at the project site on May 20, 1996. On June 29, 1994, the Service wrote a letter stating that project approval must be deferred until the Southern Subregion NCCP was finalized. In 1996, both agencies commented on the DEIR (No. 561). The Service letter stated that the location of this development within and adjacent to occupied habitat of rare species could compromise the NCCP reserve and its ability to function as a wildlife corridor through the direct and indirect impacts of habitat destruction, fragmentation, noise, and lighting. Our comments were based upon a project alternative, similar to alternative four, which provided more open space than the proposed preferred alternative presented in this DSEIR.

In general, the DSEIR does not adequately describe the biological resources of the project area The document only describes and analyzes impacts of the different alternatives in a superficial manner. Referring to our joint Wildlife Agency letter of January 30, 1997, responding to the Notice of Preparation, at least eight of our requested information items were completely or partially ignored, without explanation. Available data were not identified. Further, the Initial Study (p. 17) states that the scope of the EIR discussion will provide a "detailed discussion" and "[A] re-inventory of the existing unique, sensitive . . . flora and fauna within the project site . . . " Also to be provided was "[A] detailed analysis of the project's impacts to wildlife movement, including mitigation measures to avoid or reduce those impacts." Neither of these items was adequately accomplished.

The Wildlife Agencies offer the following specific information and recommendations to assist the County and the project applicant in planning for the preservation of sensitive wildlife species, habitats, and wildlife corridors within the proposed project area, and as a means to assist you in complying with pertinent statutes. Page numbers refer to the DSEIR unless otherwise noted.

1-1, paragraph 2 and 4-41, paragraph 4. Both of these statements should read as "affect."

4-41, exhibits 21, 22, 53. Interference with existing hydrology on site is shown with the construction of the preferred alternative. Impacts to "ephemeral ponds" not directly within the project footprint would also occur. Analyze these impacts further.

4-43, last paragraph. The Wildlife Agencies disagree with the conclusions that there would be ". . . no unavoidable adverse impacts to surface or groundwater hydrology" and that water quality impacts would be " . . . to less than significant levels" since current hydrological conditions support the existence of these areas. Implementation of the preferred alternative, including alteration of drainage patterns, would result in the direct loss of a minimum of seven ephemeral ponds on site.

4-110. The noise impact analysis is cursory and needs to refer to appropriate literature attributing impact to avian populations due to noise. Also, in the cases of "major airport runways" the analysis is biased by not considering adjacent land use changes in the context of the distribution of the coastal California gnatcatcher.

4-119, paragraph 2. There was no Service protocol for presence/absence of gnatcatchers in 1993 and 1994.

4-122, exhibit 50. Western spadefoot toad (*Scaphiopus hammondi*) is identified in the exhibit (and on page 4-137) as occurring on site; however, the discussion about amphibians on page 4-126 states that "[N]o amphibians were observed during the surveys of the site." Correct this discrepancy.

4-123, paragraph 2. Add that the NCCP refers to the Southern Orange County Subregion to distinguish this planning effort from other ongoing and completed efforts.

4-125, "Ephemeral Ponds." The Wildlife Agencies disagree with the assertion that "all of the ephemeral ponds were artificially created a number of years ago..." Given the geological conditions of frequent landslides in the area, these wetlands could have been "slump" or "slope" ponds that underwent human modification at a later time. These types of wetlands are known in both Orange and San Diego counties. Further information is needed in the DSEIR regarding the origin of these wetlands in the context of the proposed impacts.

As identified by Marie Simovich, Ph.D., a consultant for the former applicant, some of the on site wetlands contain a high diversity of aquatic invertebrates, strongly suggestive of the more natural origin of these wetlands. Known to occur in at least some ponds with Riverside fairy shrimp and western spadefoot are cladocerans (e.g., *Daphnia*, 2 or 3 species likely), copepods, ostracods (seed shrimp), and clam shrimp (*Cyzicus californicus*). Clam shrimp have a restricted distribution in coastal southern California. Further information is needed in the DSEIR regarding aquatic invertebrates in the context of the proposed impacts.

4-126, Invertebrates, last sentence. The DSEIR states that "[H]undreds of additional invertebrates are expected to use the site." No data are provided to support this statement. The Wildlife Agencies presume that this statement refers to the expected number of species, not the number of individuals. Please qualify and support the statement.

4-126, Amphibians. The last sentence erroneously implies that the distribution of amphibians is restricted to steep slopes. No data are provided to support this statement. The likely widespread distribution on site of western spadefoot toad, Pacific treefrog (*Hyla regilla*), and western toad (*Bufo boreas*) needs to be noted and discussed. Please revise the discussion.

4-126, Reptiles. The correct name is the orange-throated whiptail lizard. Please correct this name throughout the document (e.g., 4-138, -147).

4-130, paragraph 1. The DSEIR states that the "[Southern] subregion will incorporate public lands of the Cleveland National Forest (CNF)." We suggest that this statement be removed or properly qualified since no additional conservation benefits would occur unless the U.S. Forest Service (USFS) is a signatory to an NCCP agreement. The USFS is not participating in the Orange County Central/Coastal NCCP and has not indicated that it wishes to be a "participating landowner" in the Southern Subregion. The DSEIR should not presume that future CNF management activities will be compatible with an NCCP.

4-130, paragraph 2. The DSEIR states that the gnatcatcher is not found onsite. Surveys to current Service protocol were not done. The last gnatcatcher surveys were done in 1994. Surveys should be conducted according to Service protocol to determine the baseline status for the species. The results of these surveys will be needed to assess impacts, including the number of gnatcatchers subject to "take," in accordance with the Intra-Service Biological Opinion for the 4(d) rule.

4-130, paragraph 3. The correct name is the Central-Coastal Subregion.

4-130, paragraph 4. The DSEIR refers to the "disturbed nature of the site" in the context of fulfilling wildlife corridor "needs in the area." No additional information is provided to support this assertion. The existing landscape linkages and documented presence of mountain lion (*Felis concolor*), mule deer (*Odocoileus hemionus*), and coyote (*Canis latrans*), all of which would use a wildlife corridor within the project area, needs to be noted and discussed. Mountain lion movement through the area was not disclosed in the DSEIR. This study was undertaken by Paul Beier, Ph.D, and reported in the scientific literature. For further explanation of our request that these data be disclosed and discussed in the context of this proposed project, refer to item number eight in our joint wildlife agency letter of January 30, 1997.

4-131, exhibit 51. This exhibit is difficult to interpret since it was originally a color map of larger size. For example, gnatcatchers and cactus wrens are noted in the legend but are invisible on the exhibit. We suggest that the exhibit be redone to show only relevant information.

4-133, paragraph 3. The DSEIR says that "The fragmented nature of much of the coastal sage scrub onsite makes it low quality." However, the current gnatcatcher status is unknown and most wildlife surveys were out of date, having been conducted in 1993 and 1994. The paragraph continues by stating that the steep slopes support the highest diversity of animal species, but no data are provided to support this statement.

4-133, paragraph 3. The site also contains a habitat linkage, also qualifying it as at least "intermediate value" according the Evaluation Logic Flow Chart.

4-136, exhibit 53. One pond identified as a "potential mitigation area" is in the project footprint of the preferred alternative, as shown on exhibits 18 and 22. Since this area would be under housing and infrastructure and no longer in its present condition, please correct this discrepancy.

4-137, paragraph 3. The western spadefoot toad is a California State Species of Concern.

4-137, -139, and -148 state that the site "must be considered occupied by gnatcatcher until proven otherwise." This is inconsistent with the statement on 4-130 that the gnatcatcher is not found on site. Correct and clarify this discussion.

4-139. The distribution information for the gnatcatcher is incomplete. The species occurs in portions of Ventura, eastern Los Angeles, and San Bernardino Counties. The assertion regarding limited slope characteristics is not valid. Gnatcatchers occur on steep slopes, using them for nesting, foraging, and movement.

4-140. The wildlife agencies disagree that focused surveys for the Quino checkerspot butterfly are not warranted. The limited surveys accomplished do not support the assertion that the probability of occurrence is "low." Appropriate habitat (CSS, chaparral, and grassland) exists within the project site. Surveys consistent with the Service 1997 protocol should be completed.

4-141. The correct scientific name for the northern harrier is *Circus cyaneus*. It is properly referred to as a raptor. The accepted common name for *Agelaius tricolor* is the tricolored blackbird. The "C2 (category two)" category was discontinued by the Service in February 1996. The gnatcatcher is a California State Species of Concern.

4-144. There is no analysis of connectivity loss in this discussion of the project in relation to the NCCP Findings. However, 4-148 states that "[T]he project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve [sic], due to restricted wildlife

movement." Further on page 4-130, paragraph 3 it says, "the project site occupies a linkage area between the Central and Southern NCCP Subregional preserves [sic], where a wildlife corridor is needed." Please clarify and further analyze this crucial issue. We suggest explanatory text with an exhibit or exhibits specifically rendered.

4-145, "Ephemeral Ponds." The use of acreage by itself is inappropriate since it does not sufficiently disclose the impacts of the preferred alternative. The Wildlife Agencies suggest that the number of ponds also be used as a measure of impact. From the diagrams in the DSEIR, it appears that seven of the eight ponds identified as supporting Riverside fairy shrimp would be directly in the project footprint. The other pond would be subject to edge effects and adverse impacts to water quality. This impact is not apparent when only the acreage figure is considered.

4-147, Western spadefoot toad. The DSEIR states that the population is small in size. However, no data are provided to support this statement such as the results of a scientifically valid population survey. In the absence of data, we suggest that the statement be eliminated.

4-148, Wildlife Movement. The statement "It can not [sic] be assumed that wildlife would be able to move through the project site..." should be further explained. Further explanation is needed since it is known that there would be the virtual elimination of wildlife and their movements in a high density residential development as the preferred alternative proposes.

4-151, -152, Conceptual Mitigation Program. The last sentence on 4-151 states that the program was developed based on input from the wildlife agencies. Regarding the mitigation ratios presented, the DSEIR provides no rationale to support these ratios. Further, the position of the Wildlife Agencies is that the ratios are unjustified and inappropriately low in relation to the proposed impacts, given other mitigation agreements.

6-3, table 39. The "no project" alternative states that there would be a continuation of grazing impacts. Include that this is a discretionary landowner activity, otherwise unrelated to the proposed project.

6-4, paragraph 1. The DSEIR states that "[O]ngoing degradation of onsite biological resources related to cattle grazing operations would continue to occur." This degradation should be further described. For example, on our May 20, 1996 site visit, Wildlife Agency representatives observed cattle within some of the onsite wetlands. We also observed apparently free-ranging horses nearby. Further discussion of the presence of livestock and horses is needed in relation to impacts to Riverside fairy shrimp, other invertebrate species, and CSS. Crushing of fairy shrimp "cysts" and adverse changes to water quality are likely to occur within ponds subject to use by cows and horses. Literature references showing CSS impacts due to grazing should also be referred to and discussed.

6-4, and continuing. The discussion of biological resources impacts is cursory, allowing extremely limited comparison opportunity among the alternatives. A detailed matrix chart of alternatives versus type and amount of habitat impact (e.g., CSS, Riverside fairy shrimp) would help to synthesize the data. However, it appears that alternative three, the 100 unit alternative on 32 acres, would directly avoid seven of the eight ponds occupied by Riverside fairy shrimp, most of the loss of CSS habitat, as well as minimize impacts to wildlife movement.

8-1. The Inventory of Unavoidable Adverse Impacts should include the amount of CSS loss and the likely "take" of gnatcatchers.

Appendix C, Notice of Preparation (NOP), page 3. Note that our joint Wildlife Agency NOP commented about "Plant/Animal Life."

Appendices D (Conceptual Wetland Mitigation Plan) and E (Conceptual Upland Mitigation Plan) were missing from Appendix 'H,' the Biological Resources Assessment prepared by Sweetwater Environmental Biologists, Inc. The Assessment is a draft, dated March 20, 1997. If an updated version is available, include it in the revised DSEIR.

In conclusion, the DSEIR is inadequate. Major revisions and additions are needed, including completion of updated field surveys and a literature search. For example, the gnatcatcher discussion should include a description and analysis of the regional distribution of CSS, gnatcatcher, and cactus wrens, in relation to the project area. Vegetation maps and species locations in both digitized and hardcover format are available from the County of Orange.

The Wildlife Agencies anticipate that the issues discussed above will be included and addressed in any additional CEQA documents and be presented to the Wildlife Agencies for review and comment. Until the impact assessment and mitigation recommendations are revised to respond to our concerns, the Wildlife Agencies recommend against certification of the DSEIR as currently proposed.

The Wildlife Agencies appreciate working with the County on NCCP conservation planning issues. Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. The area of the proposed project is also the only linkage to the NCCP Central Subregion in Orange County. An improperly implemented project would permanently destroy the integrity of the linkage between the

Subregion reserves. If you have any questions or comments please contact Liam H. Davis, NCCP Associate Wildlife Biologist (Department) at 619-467-4207 or Robert James, Fish and Wildlife Biologist (Service) at 760-431-9440.

Sincerely,

Gail C. Kobetich
Field Supervisor
U.S. Fish and Wildlife Service

Ron Rempel
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (B. Tippets, P. Wolf, S. Harris, T. Dickerson)
County of Orange (T. Neely)
Rod Meade
U.S. Army Corps of Engineers (L. Morales, S. McNeil)

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William S. Craycraft
Mayor
Susan Withrow
Mayor Pro Tem
Sherri M. Butterfield
Council Member
Thomas R. Potocki
Council Member
Larry Smith
Council Member

City of Mission Viejo

August 11, 1997

Mr. George Britton, Manager
Environmental & Project Planning Services
COUNTY OF ORANGE
P O Box 4048
Santa Ana, CA 92702-4048

SENT VIA FACSIMILE
10:40 am 8/12/97
FAX: 834-6132

Dear Mr. Britton:

SUBJECT: DRAFT EIR 566 FOR THE SADDLEBACK MEADOWS PROJECT
GRADING FOR RECORDED TRACT NO. 10692

The City of Mission Viejo is in receipt of the subject Draft EIR and understands the project as proposed to consist of phased development of 705 manufactured single family housing units and a 1.5 acre, neighborhood commercial center and associated infrastructure, on a 222.23 acre site on the easterly side of El Toro Road in the unincorporated territory of the County of Orange. The gross residential density is 3.17 dwelling units per acre, with minimum lot sizes of 2,630 square feet. Fourteen (14%) percent of the project site is proposed to remain in undisturbed, natural open space and 57.6% of the site will remain in total open space. In addition to the residential component, the project also proposes eight private park sites, regional riding/hiking trail connections, and a construction of a water tank site dedicated to and accepted by, the Trabuco Canyon Water District. Project implementation requires approval of a grading plan. The grading permit application (GA960048), the project subject of this Draft Environmental Impact Report, is based on Tract 10692, which was recorded December 16, 1988.

The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan, and is located approximately one-half mile south of the El Toro Road/Live Oak Canyon Road intersection. Implementation of the proposed project would directly effect 191.39 acres of the project site, including remedial grading and fuel modification requirements and 19.77 acres offsite, for a total impact area of 211.16 acres.

A total of 2.6 million cubic yards of conventional grading and 8.9 million cubic yards of remedial grading would be required to implement the project.

The City of Mission Viejo has the following comments on DEIR 566 for the Saddleback Meadows Project:

GENERAL COMMENTS

The City of Mission Viejo is concerned with the numerous unavoidable adverse impacts of the subject project. These impacts are as follows:

1. Gross land use incompatibility with (1) O'Neill Regional Park, (2) the Ramakrishna Monastery, and (3) St. Michael's Abbey;

2. Major landform alteration/modification including cut and fill slopes up to 120 ft. in height;

3. Loss of 154.13 acres of onsite habitat and reduction of native habitats and sensitive and non-sensitive species dependent on those habitats, including (1) southern sycamore woodland, (2) coast live oak woodland, (3) coastal sage scrub, (4) mulefat scrub, and (5) ephemeral ponds;

4. Project and cumulative contribution to regional adverse air quality conditions, since the project is located in a non-attainment area with incremental increase in air pollution as a result of vehicle emissions;

5. Increased traffic and urban activity resulting in increased noise in the area;

6. Loss of Riverside fairy shrimp habitat (ephemeral ponds) and individuals, a federally listed endangered species; and

7. Urban landform visual impacts to (1) O'Neill Regional Park, (2) Ramakrishna Monastery, and (3) St. Michael's Abbey.

TRANSPORTATION COMMENTS

1. DEIR Transportation Analysis:
   There appears to be a major discrepancy in the Draft EIR's discussion and analysis of the transportation/circulation impacts resulting from the proposed project. This discrepancy needs to be reconciled and corrected in a revised Draft EIR document.

   As background, transportation/circulation impacts are summarized and presented in Volume 1 of Draft EIR 566. The basis of the Volume 1 discussion is stated to be a project-specific traffic study that is referenced and included in Volume 3 of the Draft EIR: Appendix F.

   Volume 1 states that the proposed project will generate 6,220 trip ends per day, with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the

PM peak hour. In contrast, the traffic study appendix states that the proposed project will generate 8,340 trip-ends per day, with 540 vehicles per hour during the AM peak hour and 825 vehicles per hour during the PM peak hour. This represents a difference of (1) more than thirty percent on a daily basis; (2) more than fifty percent for the AM peak hour analysis; and (3) thirty percent for the PM peak hour analysis.

This inconsistency is carried forth into the specific tables and exhibits of the respective documents, where Average Daily Traffic forecasts from Existing through Year 2000 to buildout differ between the two documents. For example, page 4-56 of Volume 1 states that the projected ADT's along El Toro Road in the vicinity of the site do not exceed 30,000 vehicles per day. However, the traffic study in Appendix F: Volume 3, identifies that segments of El Toro Road do exceed 30,000 trips per day easterly of the Foothill Transportation Corridor.

Also, even though there is inconsistency between the two volumes on reported ADT and peak hour trips, the Intersection Capacity Utilization (ICU) and Levels of Service (LOS) calculations seem to be similar between the two documents. A Revised Draft EIR needs to explain which trip generation was used for the ICU and Levels of Service calculations, and the DEIR analysis needs to be carefully reviewed to accurately present the transportation impacts of the proposed project. In particular, the City of Mission Viejo will be reviewing the specific impact of project trips on the El Toro Road/Glenn Ranch Road intersection and the Marguerite Parkway/El Toro Road intersection, to determine any potential impacts and require any mitigation to maintain a Level of Service "D" performance standard, as required by the Measure M Growth Management Program.

2. Project Trip Generation:
The project traffic study identifies a residential trip distribution assumption wherein twenty-five percent of the daily traffic would enter/leave the project site using El Toro Road north of the project entrance, and twenty percent continuing along Santiago Canyon Road. The City of Mission Viejo believes this assignment is high. Please clarify the land uses that exist or are proposed north of the project site that would cause one-quarter of the project daily trips to use this segment of El Toro Road, versus using El Toro Road south of the project site to access freeways, major highways, and public facilities. A review of the Draft EIR school assumptions, for example, shows that school attendance is programmed for facilities located in Mission Viejo, Rancho Santa Margarita, and Trabuco Canyon.

The assumptions used in the project trip distribution would have a resultant impact on analyzed intersections south of the project entrance to El Toro Road, and in particular,

would increase Intersection Capacity Utilization (ICU) calculations if a greater percentage of project trips were assigned southerly along El Toro Road.

3. El Toro Road:
El Toro Road is classified as a Major Arterial Highway on the Orange County Master Plan of Arterial Highways (MPAH). A Major Arterial is defined as a six-lane highway with a divided median. The City of Mission Viejo is currently preparing improvement plans to construct El Toro Road to its master plan configuration of a *six-lane, Major Arterial facility*.

Although not specifically stated, the Draft EIR seems to indicate that El Toro Road should be reclassified from a six-lane facility to a four-lane facility. The City of Mission Viejo offers the following comments:

a. The reclassification of El Toro Road from a six-lane Major Arterial to a four-lane Primary Arterial requires the County of Orange to process an MPAH amendment, with the amendment ultimately being approved by the Orange County Transportation Authority (OCTA) board of directors.

It is the City's understanding that such an amendment has not yet been filed with OCTA. Please clarify how the timing of the El Toro Road MPAH reclassification, if proposed by the County of Orange, juxtaposes with the approval of Saddleback Meadows project application(s). Since the DEIR serves as an environmental assessment for the Saddleback Meadows recorded tract map, please clarify whether the right-of-way for El Toro Road has already been reserved for an ultimate six-lane or four-lane facility.

b. The OCTA MPAH guidance manual identifies that a multi-jurisdictional, cooperative process will be pursued with any MPAH amendment that affects more than one jurisdiction. In conjunction with that process, technical data will be prepared and reviewed by Growth Management Area (GMA) forums to determine whether there is consensus on the proposed amendment. Also, in conjunction with that process, an environmental assessment of the MPAH amendment must be completed.

Recognizing that the Saddleback Meadows DEIR is being processed in advance of a requested MPAH amendment, a multi-jurisdictional consensus of the El Toro Road reclassification has not yet been achieved. Technical issues may surface through the MPAH cooperative study process that have not yet been identified in the Saddleback Meadows DEIR. Further, inconsistencies on

project daily traffic volumes are already present in the Draft EIR. The City of Mission Viejo recommends that the transportation analysis in the Saddleback Meadows DEIR should *not* serve as the environmental documentation for the MPAH reclassification of El Toro Road, unless agreed to by representatives of the cooperative study process.

c. The City of Mission Viejo continues to retain El Toro Road, within its jurisdictional boundaries, as a six-lane Major Arterial facility. The jurisdictional boundary between the City of Mission Viejo and the County of Orange generally lies immediately east of the Glenn Ranch Road intersection at El Toro Road.

4. Glen Ranch Road/El Toro Road Intersection Improvements:
In reviewing the Intersection Capacity Utilization (ICU) projections for the Glenn Ranch Road/El Toro Road intersection, the City of Mission Viejo is concerned that the Glenn Ranch Road/El Toro Road intersection could become a bottleneck as one transitions, north to south, from a four-lane facility to a six-lane facility. This intersection must be guaranteed for maximum feasible improvement to insure that a Level of Service "D" performance standard is maintained, in compliance with Measure M Growth Management Program requirements.

The County of Orange will need to be an active participant in the maximum feasible improvement to the Glenn Ranch Road intersection, since:

a. The DEIR identifies that seventy-five percent (75%) of the project trips will use this intersection, and the intersection will experience Levels of Service F sometime between Year 2000 and Year 2020 performance unless roadway improvements are appropriately phased. The timing of El Toro Road improvements is important because the project traffic study identifies that El Toro Road can remain a two-lane facility through project build-out.

b. The County of Orange will be deeded a 7.710 acre parcel for open space purposes from the Mission Viejo Company. This parcel (a portion of Parcel 4 of PM 89-115) is located south of El Toro Road and immediately west of the Glenn Ranch Road intersection (see attached Exhibit). The City of Mission Viejo will require that appropriate rights-of-way be secured along the open space parcel frontage to achieve a major arterial cross-section and intersection improvements to Glenn Ranch Road that meet projected traffic demand.

5. El Toro Road Mitigation Measure AM4-16:
Mitigation Measure AM4-16 states that "north of the Foothill Transportation Corridor, El Toro Road can accommodate projected traffic volumes with the proposed project on four travel lanes divided by a raised or striped median. Implementation of a full Major Arterial cross-section is not needed to serve future traffic volumes. This alternative section represents a modification of the typical cross-section for a Primary Arterial. Appropriate transitions would be required between this cross section and other modified cross sections along El Toro Road south of Glenn Ranch Road."

As identified above, the City of Mission Viejo is improving El Toro Road as a six-lane facility from the FTC to Glenn Ranch Road, consistent with its MPAH arterial designation. The City of Mission Viejo recommends that Mitigation Measure AM4-16 include reference that the City of Mission Viejo review and participate in the County of Orange's development of improvement plans for El Toro Road, to insure that:

* El Toro Road is phased and constructed to achieve a roadway cross-section that effectively transitions to the proposed interim two-lane facility;

* El Toro Road can transition from a six-lane facility in the City of Mission Viejo to a four-lane facility in county unincorporated area, while achieving a Level of Service "D" performance standard at the Glenn Ranch Road/El Toro Road intersection through Year 2020.

6. Inventory of Assumed Circulation Improvements:
The project traffic study--Appendix F- -identifies a Year 2020 scenario in which levels of service at a City of Mission Viejo intersection is projected at Level of Service F: Marguerite Parkway at El Toro Road. The City's performance standard is Level of Service "D".

The Draft EIR should be revised to include a mitigation measure that requires the applicant to assess, calculate and provide a fair-share contribution to transportation/circulation improvements at all impacted City of Mission Viejo intersections.

In addition, the County of Orange proposes, through this project (DEIR), the Year 2020 improvement program of northbound dual right turn lanes at the Marguerite Parkway (NS)/El Toro Road (EW) intersection. This proposed improvement is *not* acceptable to the City of Mission Viejo. The City of Mission Viejo does not have any intersection with dual right-turn lanes; and recommends that the Draft EIR analyze an alternative improvement program that will mitigate the Level of Service "F" condition.

This concludes the City of Mission Viejo comments on the Saddleback Meadows Project Draft Environmental Impact Report (DEIR 566). The City of Mission Viejo is also reviewing the June 1997 Draft EIR No. 565 for Live Oak Plaza Project. As a result of our technical review of the Draft EIR, the City may raise additional comments or request clarification on certain issues such as transportation and other areas where there may be inconsistencies in findings or analyses. Thank you for the opportunity to comment on the document. The City would like Response to Comments on the DEIR as soon as they are available.

Sincerely,

CITY OF MISSION VIEJO

Karen Steele Verlaan
Senior Planner

cc: Planning Commission
Assistant City Manager/Director of Public Works
Director of Community Development
Transportation Engineer
GSL Associates

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BOWIE, ARNESON, KADI, WILES & GIANNONE

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RESPOND TO NEWPORT BEACH
REF OUR FILE

17004 M 49.2

August 11, 1997

VIA OVERNIGHT MAIL AND CERTIFIED MAIL, RETURN RECEIPT REQUESTED

County of Orange
Planning & Development Services Department
300 N. Flower Street, Third Floor
Santa Ana, CA 92702

Attn: Mr. George Britton, Manager

Re: Initial Comments of Trabuco Canyon Water District - Draft Subsequent Environmental Impact Report No. 566 - Saddleback Meadows Recorded Tract Map 10692, Grading Application GA960048 - SCH # 96121072

Dear Mr. Britton:

The Trabuco Canyon Water District is in receipt of the above-referenced Draft Subsequent Environmental Impact Report (the "DEIR") prepared in regard to the Saddleback Meadows Recorded Tract Map No. 10692, Grading Application GA960048 (the "Project"). Our firm represents the District as general legal counsel. The District, having reviewed the DEIR, and having consulted with us, has requested our firm to provide your office with the comments set forth herein. It is the District's understanding that the Project will involve the phased development of 705 manufactured single family residential units and a 1.7 acre neighborhood commercial center on a 222.23 acre site. This seems to correspond, generally, to the final tract map (Tract 10692) approved by the County of Orange (the "County") in 1988. However, the District has not been provided with updates of the plans for the Project and, as such, all of the comments submitted with this letter should be interpreted in that light.

The purpose of this letter is to provide to the County, on behalf of the District, various comments and matters relating to the Project, the potential impacts of the Project on the facilities of the District and the District's requested mitigation measure.

Request for Notices

Pursuant to the provisions of the California Environmental Quality Act ("CEQA") and Public Resources Code Section 21092.2, the District hereby requests that copies of all notices and other documents mailed in relation to the above-referenced Project (specifically including, but not limited to, environmental review notices) be furnished both to the District and the undersigned. If there are any fees and charges required for the provision of such notice(s), please provide our office with an invoice for such costs and we will reimburse the appropriate County department. This request for notice specifically includes, but is not necessarily limited to, notices of all hearings, proposed actions to be taken with regard to the developmental process and, in particular, any Notice of Determination prepared, furnished or filed with regard to this Project.

Background Information

We have reviewed various referenced to the Trabuco Canyon Water District, and the District's water and wastewater (sewer) facilities contained within the DEIR. In regard to such matters, we would note the following additional facts which are important for a full and complete understanding of the District's background in providing the comments set forth below. The DEIR correctly notes that two improvement agreements were entered into between the prior owner of the property and District dated September 21, 1988 (see further discussion below). It is relevant to note that in connection with those improvement agreements two performance bonds were posted in order to secure the construction of the relevant water and sewer facilities as required by the terms of those agreements.

The DEIR correctly notes that the District's Capital Improvement Charges ("CICs"), based on 705 residential units, were paid to the District. Those Capital Improvement Charges are levied as part of the District's master financial and facilities planning. Funds from the CICs were expended on various District-wide and master planned facilities in order to be able to furnish water service and water capacity to the property within Tract 10692 (the "Property").

Wastewater (sewer) treatment capacity was purchased in the Santa Margarita Water District ("SMWD") Chiquita Wastewater Treatment System by way of a pass-through payment made by the former property owner to the District and then paid to SMWD. It should be noted that the SMWD Chiquita Wastewater Treatment System is owned and operated by SMWD, and not TCWD. Specified wastewater treatment capacity (based on 705 residential units) was paid for in the Chiquita system and is now available to provide wastewater treatment service for the Property. The major wastewater trunk sewer and downstream lift station facilities were financed for the benefit Property by means of assessment district proceedings pursuant to the relevant provisions of the California Streets and Highways Code. Assessment District No. 5R of the Trabuco Canyon Water District is currently in place and levies assessments on the Property (as well as other properties within the

boundaries of the Assessment District). The major trunk sewer and downstream lift station facilities financed through the Assessment District proceedings (and bonds issued by Assessment District No. 5R secured through the levy of assessments) have been constructed. These are available to provide service to the property based on 705 residential units. However, the related facilities for this Property, identified in the improvement agreements, were not financed and have not been constructed as of this date.

As noted above, the District entered into onsite and master plan improvement agreements relative to the Property (collectively the "Improvement Agreements"). Copies of the Improvement Agreements are attached to this letter as Attachments "A" and "B" and incorporated herein by this reference. The Improvement Agreements were entered into pursuant to TCWD's Rules and Regulations which require improvement agreements to be entered into before the District will authorize, or sign off on, any tract map. Correspondingly, TCWD's approval of Tract Map No. 10692 was expressly conditioned on the terms and conditions of the Improvement Agreements, including the bonds submitted to the District to secure the terms and conditions of those agreements. The Improvement Agreements were subsequently assigned, with the District's consent, to a subsequent owner of the Property.

Subsequently, the prior owner of the Property (to whom the Improvement Agreements had been assigned) filed for bankruptcy with the Federal Bankruptcy Court. As a result of prolonged bankruptcy proceedings, the Improvement Agreements, and the corresponding performance bonds, were rejected by the debtor and this action was apparently sustained in the bankruptcy court. Correspondingly, the Improvement Agreements are now of questionable enforceability and the performance bonds have lapsed. Any building or District service assumptions based on the terms of those Improvement Agreements, or dependent on them, are thus suspect until new agreements with the District are reached. In this regard we would specifically note that the District's Rules and Regulations (see Government Code Section 31024) require improvement agreements to be entered into in order for the District to approve tract maps and for the District to provide water and wastewater service to any property within its boundaries. The District previously requested of California Quartet (the then-property owner) to undertake negotiations relative to entering into new improvement agreements relative to the Property. No response to those entreaties has been received by the District.

Water Distribution Facilities

As referenced above, the District has undertaken construction and completion of various master plan facilities in order to provide adequate water and water capacity to the Property. As noted, the District's Capital Improvement Charges were previously paid and satisfied in the identified amount. District master plan facilities have been sized based on the Property including 705 residential units. However, the District would note that it has not been provided with current

improvement plans and therefore cannot state, at this time, that all necessary water capacity for non-residential and irrigation needs is available. A re-evaluation of the Project, from an engineering perspective, by the District would be appropriate before definitive plans are finalized.

As also noted above, the Improvement Agreements relative to both master plan and in-tract water distribution facilities, including, but not limited, the water booster station identified in the DEIR, have lapsed and security for those agreements was rejected by action of the bankruptcy court. The specific facilities necessary in order to provide water transportation and distribution service within the boundaries of the Property were identified in those two (2) Improvement Agreements and are specifically enumerated in the improvement plans which were filed with the District and in the cost breakdowns which are included as part of the master plan agreement exhibits. Correspondingly, unless the Improvement Agreements are renegotiated and agreed to by the applicant, as required by the District's Rules and Regulations, and the water transportation and distribution facilities necessary in order to provide water service to the Property are designed, constructed, installed, funded and dedicated to the District as required under the District's Rules and Regulations and the previous improvement plans, the District will not be able to undertake to provide water service to the Property. The inability of the District to provide water transportation and distribution within the Property would constitute a potentially significant adverse environmental impact which would result from the Project unless adequately mitigated. Basic mitigation measures are stated within the DEIR, however, the District specifically requests that, in regard to water transportation and distribution facilities, the following mitigation measures be added to the DEIR:

1. Prior to undertaking construction of the Project the applicant shall enter into an improvement agreement(s) with the District to provide for the design, construction, installation, funding and dedication of all necessary master plan and in-tract water transportation and distribution facilities (Specifically including, but not limited to, a water booster station) as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692; and

2. Pursuant to the aforementioned improvement agreement(s) and prior to receiving a certificate of occupancy for any structures located upon the Property, the applicant shall have completed, at its cost and expense, all design, construction, installation, funding and dedication of master plan and in-tract water transportation and distribution facilities as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692.

Water Storage Facilities

The comments with regard to water distribution facilities, above, are generally applicable relative to water storage facilities in the context of the District. Water storage facilities are important

for the reasons of reserve water capacity, cost efficiency, fire fighting, emergency supply and system balancing.

Pursuant to determinations by the District's Board of Director, and the Rules and Regulations of the District, developers of property within the District's boundaries are required to either build and dedicate water storage facilities according the District's Rules and Regulations and standard specifications in order to provide stated levels of water storage capacity for the respective development or required to pay In-Lieu Water Storage Capacity Fees. Under the previous Improvement Agreements it was anticipated that the developer (the applicant) would in fact be building and dedicating water storage facilities to the District rather than pay the District's In-Lieu Water Storage Fee(s). It appears, based upon the description in the DEIR, that this is still intended.

On Page 3-9 of the DEIR it is indicated that the water storage tank will be constructed by the District. This is fact not the case. The prior Improvement Agreements and the District's Rules and Regulations, specify that master plan and in-tract facilities (including water storage facilities) which are to be constructed in order to service new development within the District are required to be constructed at the cost and expense of the applicant and in accordance with specified construction requirements, including, but not limited to, the District's standard specifications.

As also noted above, the Improvement Agreements relative to both master plan and in-tract water storage facilities, including, but not limited, the water reservoir identified in the DEIR, have lapsed and security for those agreements was rejected by operation of the bankruptcy court. The specific facilities necessary in order to provide water service within the boundaries of the Property were identified in those two (2) Improvement Agreements and are specifically enumerated in the improvement plans which were filed with the District and in the cost breakdowns which are included as part of the master plan agreement exhibits. Correspondingly, unless the Improvement Agreements are renegotiated and agreed to by the applicant, as required by the District's Rules and Regulations, and the water storage facilities necessary in order to provide water service to the Property are designed, constructed, installed, funded and dedicated to the District as required under the District's Rules and Regulations and the previous Improvement Plans, the District will not be able to undertake to provide water service to the Property. The inability of the District to provide adequate water storage with regard to the Property would constitute a potentially significant adverse environmental impact which would result from the Project unless adequately mitigated. Basic mitigation measures are stated within the DEIR, however, the District specifically requests that, in regard to water storage facilities, the following mitigation measures be added to the DEIR:

1. Prior to undertaking construction of the Project the applicant shall enter into an improvement agreement(s) with the District to provide for the design, construction, installation, funding and dedication of all necessary master plan and in-tract water storage facilities or, alternatively, pay the District's In-Lieu Water Storage Fees, as

required under the District's Rules and Regulations and the tract map approval for Tract No. 10692; and

2. Pursuant to the aforementioned improvement agreement(s) and prior to receiving a certificate of occupancy for any structures located upon the Property, the applicant shall have completed, at its cost and expense, all design, construction, installation, funding and dedication of master plan and in-tract water storage facilities as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692.

Wastewater (Sewer) Facilities

The comments relative to water distribution facilities, in the context of the Improvement Agreements, are generally applicable to wastewater (sewer) facilities relative to the District. The existence and operational readiness of wastewater collection, transportation and treatment facilities is necessary to satisfy health and safety requirements of occupancy of development in California.

As noted above, wastewater treatment capacity has been purchased in the SMWD Chiquita Waster Water Treatment Facilities. The major wastewater trunk sewer and downstream lift station facilities for the Property have been financed and constructed. However, certain in-tract and master plan wastewater collection and transportation facilities, identified in the Improvement Agreements, and in the improvement plans filed with the District, have not yet been constructed. In this regard, the District would reference the previously approved improvement plans and the exhibits to the Improvement Agreements.

As also noted above, the Improvement Agreements relative to both master plan and in-tract wastewater facilities have lapsed and security for those agreements was rejected by operation of the bankruptcy court. Correspondingly, unless the Improvement Agreements are renegotiated and agreed to by the applicant, as required by the District's Rules and Regulations, and the wastewater facilities necessary in order to provide wastewater service to the Property are designed, constructed, installed, funded and dedicated to the District as required under the District's Rules and Regulations and the previous Improvement Plans, the District will not be able to undertake to provide wastewater service to the Property. The inability of the District to provide adequate wastewater service with regard to the Property would constitute a potentially significant adverse environmental impact which would result from the Project unless adequately mitigated. Basic mitigation measures are stated within the DEIR, however, the District specifically requests that, in regard to wastewater facilities, the following mitigation measures be added to the DEIR:

1. Prior to undertaking construction of the Project the applicant shall enter into an improvement agreement(s) with the District to provide for the design, construction,

installation, funding and dedication of all necessary master plan and in-tract wastewater facilities as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692; and

2. Pursuant to the aforementioned improvement agreement(s) and prior to receiving a certificate of occupancy for any structures located upon the Property, the applicant shall have completed, at its cost and expense, all design, construction, installation, funding and dedication of master plan and in-tract wastewater facilities as required under the District's Rules and Regulations and the tract map approval for Tract No. 10692.

Financing of Water and Wastewater Facilities

Previously, the District undertook discussions with prior property owners relative to potentially providing financing for water and waste water facilities which needed to be constructed for the benefit of the Property. These financings were separate and apart from the assessment district financing referenced above. In this regard it was previously proposed to use financing under the Mello-Roos Community Facilities Act of 1982, as amended (the "Act"). However, previous developers did not pursue this means of financing. The District continues to be willing to discuss financing options relative to the water and wastewater facilities, but believes that the previous proceedings undertaken pursuant to the Act are most likely not viable for application to the current facilities at this time.

In regard to the Improvement Agreements the District notes that certain dollar figures of the construction of the facilities were provided in the exhibits and the referenced performance bonds. The District would note that nearly a decade has passed since these agreements were signed and as such, the cost to design, construct, install and dedicate the water and wastewater facilities, each as referenced above, is probably significantly increased from the figures previously used. Adequate financing for water and wastewater facilities should be secured in order to ensure that they will be designed, constructed, installed and dedicated to the District in a timely manner relative to the developmental process.

Master Plan Update

The District would note that it is currently in the process of reviewing its Master Plan of water and wastewater facilities. This may also have consequences for the District's overall financing master plan. The engineering review and evaluation of the District's Master Plan may result in some reevaluation of engineering presumptions and system requirements. At this time the District is still in the early stages of planning its Master Plan review and as such cannot provide definitive information as to any changes or reevaluations that may occur as a result of this process. However,

the District notes that this matter, inasmuch as, if the planning and development process for the Project is significantly delayed, additional information and figures may become available from the District.

Conclusion

In light of the foregoing, the District notes that the Project has the potential to impact the infrastructure facilities and systems of the District. Such mitigations are principally related to the availability of facilities, their construction, installation, dedication and acceptance prior to occupancy of any development on the property and related matters. Such potential impacts can be mitigated by way of the above suggested mitigation measures. Provided that such mitigation measures are undertaken the District has no objection to the Project. However, the District specifically notes that a failure to provide the above-requested mitigation measures could result in an adverse environmental impact(s) as a result of the Project. In such case, the District reserves its rights to protest the proceedings pursuant to Public Resources Code Section 21177 and to undertake all other legal remedies available to it.

The District specifically requests that the County of Orange, including the County Environmental and Project Management Services Department carefully review the above-referenced comments and that those comments be considered as part of the environmental process for the Project.

If you have any questions regarding this matter, please do not hesitate to contact our offices. We would be pleased to provide you with any additional information you may require.

Very truly yours,

BOWIE, ARNESON, KADI,
WILES & GIANNONE

By:
Robert E. Anslow

Enclosures

cc: Bruce Boner (w/o enclosures)

BAKW&G/REA/40015

AGREEMENT FOR DESIGNING CONSTRUCTION OF MASTER PLAN FACILITIES

Tract No. 10692

This Agreement, is dated this 21st day of September, 1988, by and between SO PAC PROPERTIES, INC., a Delaware corporation, hereinafter referred to as "Subdivider," and SANTA ANA MOUNTAINS COUNTY WATER DISTRICT, a county water district, formed and existing pursuant to Section 30000 et. seq. of the Water Code of the State of California, hereinafter referred to as "District":

R E C I T A L S:

WHEREAS, Subdivider is preparing a final map of Tract No. 10692 for acceptance and recordation by the County of Orange, and desires to obtain water and sewer services from the District for said Tract; and

WHEREAS, Subdivider is required by conditions of approval of the Tentative Map for Tract No. 10692 and by the Districts Rules and Regulations to provide the Master Plan water and sewer improvements for Tract No. 10692, as further described below (the "Master Plan Facilities"); and

WHEREAS, District requires the design, construction and dedication of the Master Plan Facilities by Subdivider as a condition of providing water and sewer service to Tract No. 10692; and

WHEREAS, Subdivider wishes to record the final map of Tract No. 10692 prior to the installation of the required Master Plan Facilities; and

WHEREAS, Subdivider desires District to approve the final map for Tract No. 10692; and

WHEREAS, District has formed Community Facilities District No. 3 (Saddleback Meadows) of the Santa Ana Mountains County Water District ("CFD No. 3") for the purpose of financing public facilities, including the Master Plan Facilities, for Tract 10692; and

WHEREAS, District desires to ensure that the Master Plan Facilities are designed, constructed and installed in accordance with District's standards and specifications and rules and regulations; and

WHEREAS, Subdivider desires to enter into this Agreement in consideration of District's approval of the final map.

NOW, THEREFORE, in consideration of the mutual covenants made herein, it is hereby agreed by and between the parties hereto that:

1. Subdivider shall, at its sole cost and expense, design, construct and install within 730 consecutive calendar days of the date of this Agreement, all of the Master Plan Facilities

described and depicted in Exhibit "A", attached hereto and made a part hereof by this reference. The design of said Master Plan Facilities shall be in conformance with sound engineering practices and shall conform to District requirements and to all state and local requirements and to the District's Rules and Regulations. The design plan shall be subject to the review of the District Engineer.

2. The estimated cost of the Master Plan Facilities is set forward in Exhibit "A", attached hereto.

3. The Performance Bond, Tract No. 10692, Bond No. _____ to secure the faithful performance of this Agreement in the amount of Three Million One Hundred Ten Thousand Four Hundred Seventy-Eight Dollars ($3,110,478) is hereby approved.

4. Subdivider agrees to notify the District Engineer in writing at least 24 hours prior to the start of construction of the Master Plan Facilities.

5. (a) If the Subdivider has not completed the construction of the Master Plan Facilities within 730 consecutive calendar days after the date of this Agreement, the District has the right to call the security referenced in Section 3, hereof, for the faithful performance and to complete construction of the Master Plan Facilities. The security shall remain in effect until 365 days after the Master Plan Facilities have been completed and accepted by the District, subject to the provisions of Section 5(b), hereof. Upon completion of the Master Plan

INITIAL HERE

Facilities, and acceptance thereof by the District, Subdivider may, after written notice to the District, and receipt of confirmation by the District, reduce the security amount to 10% of that amount required in Section 3 hereof.

(b) Notwithstanding the provisions of Section 5(a) hereof, at such time as CFD No. 3 sells bonds, and the District receives proceeds of such bond sale, the Subdivider may request, in writing, that the District release the security required under Section 3, hereof, and the District shall confirm the release of said security within 15 days after receipt of such request.

6. Subdivider shall construct the Master Plan Facilities in accordance with plans approved by the District Engineer, the District's standard specifications, the District's Rules and Regulations, and under the District's inspection.

7. The Subdivider shall indemnify and hold harmless the District, its agents, and employees from and against all claims, damages, losses and expenses, including reasonable attorneys' fees, arising out of, or resulting from, the performance of the work of constructing the Master Plan Facilities, and caused in whole or in part by any negligent act or omission of the Subdivider, contractor, or any subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts any of them may be liable.

8. Subdivider hereby offers to dedicate the completed Master Plan Facilities to the District with all necessary easements and rights of way therefor.

INITIAL HERE

9. (a) It is intended that CFD No. 3 will reimburse Subdivider for the actual amount of the design, construction and related costs of the Master Plan Facilities, listed on Exhibit "A", paid by Subdivider and approved by CFD No. 3, upon delivery of bonds and receipt of the proceeds thereof. Reimbursement from bond proceeds shall occur only to the extent that costs and fees have actually been paid and such payment has been substantiated to the satisfaction of CFD No. 3 and subject to Subdivider's compliance with the requirements of this Agreement with regard to design and construction of the Master Plan Facilities.

(b) Subdivider agrees to keep records of all costs and expenses incurred by Subdivider which may be subject to the reimbursement as provided for herein. The records shall be available for inspection by District representatives at the address listed in Section 19, hereof.

10. Upon completion of the construction in accordance with the approved plans and specifications and the dedication of the necessary easements, District agrees to accept the Master Plan Facilities, whereupon the Master Plan Facilities shall become property of the District.

11. Subdivider hereby guarantees the material and the workmanship of the Master Plan Facilities for a period ending 365 days after the acceptance of the Master Plan Facilities by District, and hereby agrees to reimburse District for all costs associated with the accomplishment of necessary repairs to the Master Plan Facilities which may have been made by the District

INITIAL HERE

within the aforesaid guarantee period in the sole and absolute discretion of the District. In the event that a defect in materials and/or workmanship in the Master Plan Facilities is discovered within the above mentioned period, the District may provide notice to Subdivider requesting that the Subdivider promptly remedy such defect. Upon receipt of such notice, Subdivider shall promptly correct such defect, at its cost, at the earliest possible time. In the case of an emergency situation (where immediate action to repair or correct a defect is required), or at the District's option, the District may repair or correct such defect and thereafter bill Subdivider for the costs of repair or correcting such defect and Subdivider shall promptly reimburse the District for all such costs as provided for above.

12. Developer agrees to reimburse District, on a quarterly basis for the difference between the monthly service charges paid by the occupants of completed Development (including residences) in Tract 10692 receiving sewer service from the District and the actual operating and maintenance costs to the District arising from the provision of sewer capacity to Tract 10692 based on the Santa Margarita Water District Chiquita System operating and maintenance costs (the "Operating and Maintenance Shortfall"). The Santa Margarita Water District's 1988/1989 estimated annual budget for operation and maintenance of the Chiquita System, pro-rated for the 200,000 gallons per day (gpd) of wastewater

INITIAL HERE

capacity owned by the District on behalf of Tract 10692, is $200,000. Developer agrees to reimburse District for the Operating and Maintenance Shortfall until:

(a) Buildout and occupancy of 600 EDU's of sewer capacity development on Tract 10692;

(b) District furnishes written notice to subdivider, pursuant to Section 19, hereof, that the monthly service charges from occupied development on Tract 10692 are such that the Operating and Maintenance Shortfall is eliminated; or

(c) Ten (10) years from the date of this Agreement.

13. Upon the execution of this Agreement and subject to the terms hereof by the parties hereto, the District agrees to give its approval of said Tract Map recording prior to the construction of the Master Plan Facilities.

14. If either party brings an action or proceeding against the other party by reason of default of any term or condition of this Agreement, or otherwise arising out of this Agreement, the prevailing party in such action or proceeding shall be entitled to recover as an element of its costs of suit, and not as damages, reasonable attorneys' fees, which shall be payable whether or not such action is prosecuted to judgment. The "prevailing party" shall be the party who is entitled to recover costs of suit, whether or not suit proceeds to final judgment, and shall include, without limitation, a party who dismisses an action for recovery hereunder in exchange for payment of the sums

allegedly due, performance of covenants allegedly breached, or consideration substantially equal to the relief sought in the action.

15. The parties hereby acknowledge that Subdivider may at a later time record a Tract Map for the property concerned herein, which Tract Map may be different from that Tract Map referenced in this Agreement and may include a different development density. If Subdivider determines to do so prior to the construction of the Master Plan Facilities, then Subdivider and District shall negotiate in good faith to determine the revisions necessary to the Master Plan Facilities and any amendments which are necessary to this Agreement and to the fees and charges imposed by the District under this Agreement. If necessary, the District shall provide for a refund or credit to Subdivider for any fees and charges paid by Subdivider which are in excess of the fees and charges required under the revised Tract Map and as a result of the above mentioned negotiations. If the revised Tract Map of Subdivider provides for greater density, then Subdivider shall pay all additionally required fees and charges as required under the District's Rules and Regulations.

16. Either party to this agreement may specifically and expressly waive, in writing, any portion of this agreement, or any breach thereof, but no such waiver shall constitute a further or continuing waiver of any preceding or succeeding of the same or any other provision. A waiving party may, at any time thereafter, require future compliance by the other party

hereto with any breach or provisions that are so waived. The consent of one party to any acts by the other party for which such written consent was required shall not be deemed to imply consent or waiver of the necessity of obtaining such consent for the same or any similar acts in the future. No waiver or consent shall be implied from silence or any failure of any party to act, except as otherwise specified in this agreement. All rights, remedies, undertakings, obligations, covenants, conditions and agreements contained in this agreement shall be cumulative and no one of them shall be exclusive of any other.

17. This Agreement may not be assigned without the prior written consent of the other party hereto. Such written consent shall not be unreasonably withheld.

18. Any notice, request, demand, consent, approval or other communication required or permitted hereunder by law, shall be validly given and made only if in writing and delivered in person to an officer or duly authorized representative of the party or deposited in the United States mail, first class postage prepaid and addressed to the party for whom intended as follows:

To District:	Santa Ana Mountains County Water District Attention: J. Fred Sims 30575 Trabuco Canyon Road Suite 104 Trabuco Canyon, CA 92678
To Subdivider:	Southmark Pacific Corporation Attention: Ms. Kelli Ryan 4685 MacArthur Court, Suite 450 Newport Beach, CA 92660

Any party may, from time to time, by written notice to the other party hereto, designate a different address which shall be substituted for that above. If any notice or other document is sent by mail as aforesaid, the same shall be deemed fully delivered and received 48 hours after mailing as provided above.

19. The parties hereby understand and agree that this agreement and the attachments hereto have been negotiated and executed in the State of California and shall governed by, and construed under, the laws of the State of California.

20. No addition to, or modification of, any provision contained in this agreement shall be effective unless fully set forth in writing signed by the authorized representative of both of the parties hereto.

21. The signatories hereto represent that they have been appropriately authorized to enter into this agreement on behalf of the party for whom they signed.

IN WITNESS THEREOF, the parties hereto have executed this Agreement on the dates set opposite their respective names.

SANTA ANA MOUNTAINS COUNTY WATER DISTRICT

Dated: Sept 21, 1988

By _____
President/Vice President of the Board of Directors

ATTEST:

_____
Assistant Secretary of the Board of Directors of the Santa Ana Mountains County Water District

Dated: Sept 21, 1988

"Subdivider"
SO PAC PROPERTIES, INC., a Delaware corporation

By _____
Title: Vice President

AGREEMENT FOR CONSTRUCTION OF
ONSITE WATER AND SEWER FACILITIES

Tract No. 10692

THIS AGREEMENT, dated this 21st day of September, 1988, is made by and between the SO PAC PROPERTIES, INC., a Delaware corporation, hereinafter called "Subdivider," and SANTA ANA MOUNTAINS COUNTY WATER DISTRICT, formed and existing pursuant to Section 30000 et. seq. of the Water Code of the State of California hereinafter called "District":

W I T N E S S E T H:

WHEREAS, Subdivider is preparing a final map of Tract No. 10692 for acceptance and recordation by the County of Orange, and desires to obtain water and sewer services from the District for said Tract; and

WHEREAS, Subdivider is required by conditions of approval of the Tentative Map for Tract No. 10692 to provide water and sewer improvements for Tract No. 10692; and

WHEREAS, District requires the construction and dedication of water and sewer facilities by Subdivider as a condition of providing water and sewer service to Tract No. 10692; and

WHEREAS, Subdivider wishes to record the final map of Tract No. 10692 prior to the installation of the required water and sewer facilities; and

INITIAL HERE

WHEREAS, Subdivider desires District to approve the final map for Tract No. 10692; and

WHEREAS, Subdivider has prepared and submitted to District a set of improvement plans for said facilities; and

WHEREAS, District desires to ensure that the said facilities are installed in accordance with District's standards and specifications; and

WHEREAS, Subdivider desires to enter into this Agreement in consideration of District's approval of said final map.

NOW, THEREFORE, it is hereby agreed by and between the Subdivider and District that:

1. Subdivider shall, at its sole cost and expense, construct and install within 730 consecutive calendar days of the date of this Agreement, all of the facilities shown and delineated upon the construction plans entitled "Improvement Plans, Tract No. 10692" (the "Facilities") as approved by the District Engineer and the County of Orange and on file with said County and by reference made a part of this Agreement as though fully set forth herein.

2. The cost of the Facilities is estimated to be Four Hundred Fifty-Seven Thousand Three Hundred Ninety-Four Dollars ($457,394).

3. The Subdivision Improvement Bond, Tract No. 10692, Bond No. _____ to secure the faithful performance of this Agreement in the amount of Four Hundred Fifty-Seven Thousand Three Hundred Ninety-Four Dollars Dollars ($457,394) is hereby approved.

4. Subdivider agrees to notify the District Engineer in writing at least 24 hours prior to the start of construction of the Facilities.

5. If the Subdivider has not completed construction of the Facilities within 730 consecutive calendar days after the date of this Agreement, the District has the right to call the security for faithful performance and complete construction of the Facilities. The security shall remain in effect until 365 days after the Facilities have been completed and accepted by the District. Upon completion of the Facilities, and acceptance thereof by the District, Subdivider, after written notice to, and approval from, the District, may reduce the security amount to 10% of that amount required in Section 3 hereof.

6. Subdivider shall construct the Facilities in accordance with the approved plans, the District's standard specifications and under District's inspection, and shall indemnify and hold harmless the District, its agents, and employees from and against all claims, damages, losses and expenses, including reasonable attorneys' fees arising out of or resulting from the performance of the work of constructing the Facilities, and caused in whole or in part by any negligent act or omission of the Subdivider,

Contractor, or any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable.

7. Subdivider hereby offers to dedicate the Facilities to the District together with necessary easements.

8. Upon completion of the construction in accordance with the plans and specifications and the dedication of the necessary easements, District agrees to accept the Facilities, whereupon the Facilities shall become property of the District.

9. Subdivider hereby guarantees the material and the workmanship of the Facilities for a period ending 365 days after the acceptance of the Facilities by District, and hereby agrees to reimburse District for all costs associated with the accomplishment of necessary repairs to the Facilities which may have been made by the District within the aforesaid guarantee period in the sole and absolute discretion of the District. In the event that a defect in materials and/or workmanship in the Facilities is discovered within the above mentioned period, the District may provide notice to Subdivider requesting that the Subdivider promptly remedy such defect. Upon receipt of such notice, Subdivider shall promptly correct such defect, at its cost, at the earliest possible time. In the case of an emergency situation (where immediate action to repair or correct a defect is required), or at the District's option, the District may repair or correct such defect and thereafter bill Subdivider for

the costs of repair or correcting such defect and Subdivider shall promptly reimburse the District for all such costs as provided for above.

10. Upon the execution of this Agreement and subject to the terms hereof by the parties hereto, the District agrees to give its approval of said Tract Map recording prior to the construction of the Facilities.

11. Prior to approval of the map for Tract No. 10692, Subdivider shall pay to District the following sums:

(1) For the costs of the District's plan review, inspection of construction and the control thereof, and for the testing of materials, the sum of $29,731, which sum shall be based upon the estimated construction cost of $457,394.

(2) A capital improvement charge in the sum of $904,475.

12. In the event District determines that land other than that within Tract No. 10692 can be served by means of the Facilities, at such time as District utilizes any capacity in the Facilities to provide water and/or sewer service to such other land, District shall determine and collect from the owners of said land a proportionate share of the cost of the design and construction of the Facilities plus interest at the maximum rate provided by law unless otherwise determined by District and District shall reimburse such amounts to Subdivider. Such reimbursement shall be made to Subdivider, and shall not be made

INITIAL

to another party, or subsequent landowner(s) without the direction of Subdivider in writing. Other than as hereinabove provided the Facilities shall be used only to provide service to Tract 10692. Such amounts as hereinabove provided shall be in addition to all other fees and charges of District.

13. If either party brings an action or proceeding against the other party by reason of default of any term or condition of this Agreement, or otherwise arising out of this Agreement, the prevailing party in such action or proceeding shall be entitled to recover as an element of its costs of suit, and not as damages, reasonable attorneys' fees, which shall be payable whether or not such action is prosecuted to judgment. The "prevailing party" shall be the party who is entitled to recover costs of suit, whether or not suit proceeds to final judgment, and shall include, without limitation, a party who dismisses an action for recovery hereunder in exchange for payment of the sums allegedly due, performance of covenants allegedly breached, or consideration substantially equal to the relief sought in the action.

14. The parties hereby acknowledge that Subdivider may at a later time record Tract Map for the property concerned herein, which Tract Map may be different from that Tract Map referenced in this Agreement and may include a different development density. If Subdivider determines to do so prior to the construction of the Facilities, then Subdivider and District shall negotiate in good faith to determine the revisions

INITIAL HERE

necessary to the Facilities and any amendments which are necessary to this Agreement and to the fees and charges imposed by the District under this Agreement. If necessary, the District shall provide for a refund or credit to Subdivider for any fees and charges paid by Subdivider which are in excess of the fees and charges required under the revised Tract Map and as a result of the above mentioned negotiations. If the revised Tract Map of Subdivider provides for greater density, then Subdivider shall pay all additionally required fees and charges as required under the District's Rules and Regulations.

15. Either party to this agreement may specifically and expressly waive, in writing, any portion of this agreement, or any breach thereof, but no such waiver shall constitute a further or continuing waiver of any preceding or succeeding of the same or any other provision. A waiving party may, at any time thereafter, require future compliance by the other party hereto with any breach or provisions that are so waived. The consent of one party to any acts by the other party for which such written consent was required shall not be deemed to imply consent or waiver of the necessity of obtaining such consent for the same or any similar acts in the future. No waiver or consent shall be implied from silence or any failure of any party to act, except as otherwise specified in this agreement. All rights, remedies, undertakings, obligations, covenants, conditions and agreements contained in this agreement shall be cumulative and no one of them shall be exclusive of any other.

INITIAL

16. This agreement may not be assigned without the prior written consent of the other party hereto. Such written consent shall not be unreasonably withheld.

17. Any notice, request, demand, consent, approval or other communication required or permitted hereunder by law, shall be validly given and made only if in writing and delivered in person to an officer or duly authorized representative of the party or deposited in the United States mail, first class postage prepaid and addressed to the party for whom intended as follows:

To District:	Santa Ana Mountains County Water District Attention: J. Fred Sims 30575 Trabuco Canyon Road Suite 104 Trabuco Canyon, CA 92678
To Developer:	So Pac Properties, Inc. Attention: Ms. Kelli Ryan 4685 MacArthur Court, Suite 450 Newport Beach, CA 92660

Any party may, from time to time, by written notice to the other party hereto, designate a different address which shall be substituted for that above. If any notice or other document is sent by mail as aforesaid, the same shall be deemed fully delivered and received 48 hours after mailing as provided above.

18. The parties hereby understand and agree that this agreement and the attachments hereto have been negotiated and executed in the State of California and shall governed by, and construed under, the laws of the State of California.

INITIAL HERE

19. No addition to, or modification of, any provision contained in this agreement shall be effective unless fully set forth in writing signed by the authorized representative of both of the parties hereto.

20. The signatories hereto represent that they have been appropriately authorized to enter into this agreement on behalf of the party for whom they signed.

IN WITNESS THEREOF, the parties hereto have executed this Agreement on the dates set opposite their respective names.

SANTA ANA MOUNTAINS COUNTY WATER DISTRICT

Dated: Sept 21, 1988

By _____
President/Vice President of the Board of Directors

ATTEST:

_____
Assistant Secretary of the Board of Directors of the Santa Ana Mountains County Water District

Dated: Sept. 21, 1988

SO PAC PROPERTIES, INC., a Delaware corporation

By _____
Title: Vice president

Va Dell and Associates, Inc.
CIVIL ENGINEERS
SURVEYORS LAND PLANNERS
17801 Cartwright Road Irvine, CA. 92714 (714) 474-1400
1003 E. Cooley Dr., #111 Colton, CA. 92324 (714) 370-3460
10225 Barnes Canyon Rd., A 106 San Diego, CA. 92121 (619) 587-9885

PROJ. # 596.0100
BY MLL DATE 7/8/88 CK
WORK DESCRIP.
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EXIST ST MICHAELS PRIORY

BOOSTER STATION

HYDROPNEUMATIC STATION

RESERVOIR

RESERVOIR SITE BY S.A.M.C.W.D.

TRACT 5055

10" PVC

10" DIP

8" PVC

PRS

SCALE: 1"=50'

LOT "A" LOT "B" LOT "C" LOT "D" LOT "E" LOT "F" LOT "G" LOT "H"

LOT 707 LOT 708 LOT 709 LOT 710 LOT 711 LOT 712 LOT 713 LOT 714 LOT 715

SADDLEBACK MEADOWS ROAD

RIDGECREST WAY

KNOLL COURT

TIERRACE

VISTA

VALLEY

INDEX MAP LEGEND

All Pipe 8" PVC unless noted

SEE SEPARATE STORM DRAIN LINE PLANS FOR ROAD, FOR ALISO CREEK AND PRIVATE ON SITE STORM DRAIN FACILITIES & BIKE TRAIL UNDERPASS.

SEE APPROPRIATE GRADING PLAN FOR EQUESTRIAN AND HIKING TRAILS.

INITIAL HERE

MASTER PLAN
WATER AND PRODUCTION IMPROVEMENTS

CIVIL ENGINEERS
SURVEYORS LAND PLANNERS
17801 Cartwright Road Irvine, CA. 92714 (714) 474-1400
1003 E. Cooley Dr., #111 Colton, CA. 92324 (714) 370-5460
10775 Barnes Canyon Rd., A 106 San Diego, CA. 92121 (619) 587-9885

PROJ. # 536-0100
BY: MEL DATE: 7/8/88 CK
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EXIST ST MICHAELS PRIORY

SCALE: 1"=300'

NOTE: SEE SEPARATE STORM DRAIN IMPR PLANS FOR ISSUE FOR ALISO CREEK AND PRIVATE ON SITE STORM DRAIN FACILITIES & BIKE TRAIL UNDERPASS

TRACT 6084

LOT "A" LOT "B" LOT "C" LOT "D" LOT "E" LOT "F" LOT "G" LOT "H" LOT "I" LOT "J" LOT "K" LOT "106" LOT "107" LOT "108" LOT "109" LOT "110" LOT "111" LOT "112" LOT "113" LOT "114" LOT "115"

MEADOWS ROAD
SADDLEBACK TERRACE
CLIFTON PLACE
VISTA
VALLEY
OAK SUMMIT
RIDGECREST WAY
SEE MEADOWS
SEE SHEET NO 7
SEE SHEET NO 10
SEE SHEET NO 26

RESERVOIR SITE BY S.A.M.C.W.D.

INDEX MAP LEGEND

All pipe 8" VCP

SEE APPROVED GRADING PLAN FOR EQUESTRIAN AND HIKING TRAILS

INITIAL HERE

MASTER PLAN SEWER IMPROVEMENTS

Revised 8/31/88

"EXHIBIT A"

SANTA ANA MOUNTAINS COUNTY WATER DISTRICT

TRACT 10692 - MASTER PLAN FACILITIES

COST ESTIMATE

Master Plan Water Distribution

12" PVC	400	Lin. Ft.	@	$ 23.00	$ 9,200
10" PVC	3,090	Lin. Ft.	@	18.00	55,620
10" PVC, Cl.200	1,412	Lin. Ft.	@	25.00	35,300
10" DIP	947	Lin. Ft.	@	25.00	33,145
8" PVC	17,662	Lin. Ft.	@	16.00	282,592
Bore and Jack	100	Lin. Ft.	@	200.00	20,000
12" GV	2	Ea.	@	1,000.00	2,000
10" GV	14	Ea.	@	800.00	11,200
8" GV	45	Ea.	@	625.00	28,125
Hot Tap w/Valve	2	Ea.	@	3,400.00	6,800
1" Air	2	Ea.	@	750.00	1,500
2" B.O.	12	Ea.	@	620.00	7,440
6" Fire Hydrant	60	Ea.	@	1,700.00	102,000
			TOTAL		$594,922
			BOND AMOUNT		$594,922

Master Plan Water Production Facilities

12" PVC	600	Lin. Ft.	@	$ 23.00	$ 13,800
12" GV	1	Ea.	@	1,000.00	1,000
Pump Station & Housing	120	HP	@	2,500.00	300,000
Reservoir	1.2	MG	@	666,666.66	800,000
Pressure Reducing Station	3	Ea.	@	20,000.00	60,000
Hydropneumatic Station	1	Ea.	@	60,000.00	60,000
			TOTAL		$1,234,800
			BOND AMOUNT		$1,234,800
			Subtotal Water		$1,829,722

Master Plan Sewer Collection:

8" VCP	22,820	Lin. Ft.	@	$ 15.00	$342,300
8" VCP in Easement	1,200	Lin. Ft.	@	21.00	25,200
Bore and Jack	100	Lin. Ft.	@	200.00	20,000
48" Sewer Manhole	85	Ea.	@	1,300.00	110,000
Encase Sewer	56	Lin. Ft.	@	30.00	1,680
Remodel Ex. MH	1	Ea.	@	1,000.00	1,000
			TOTAL		$500,680
			BOND TOTAL		$500,680

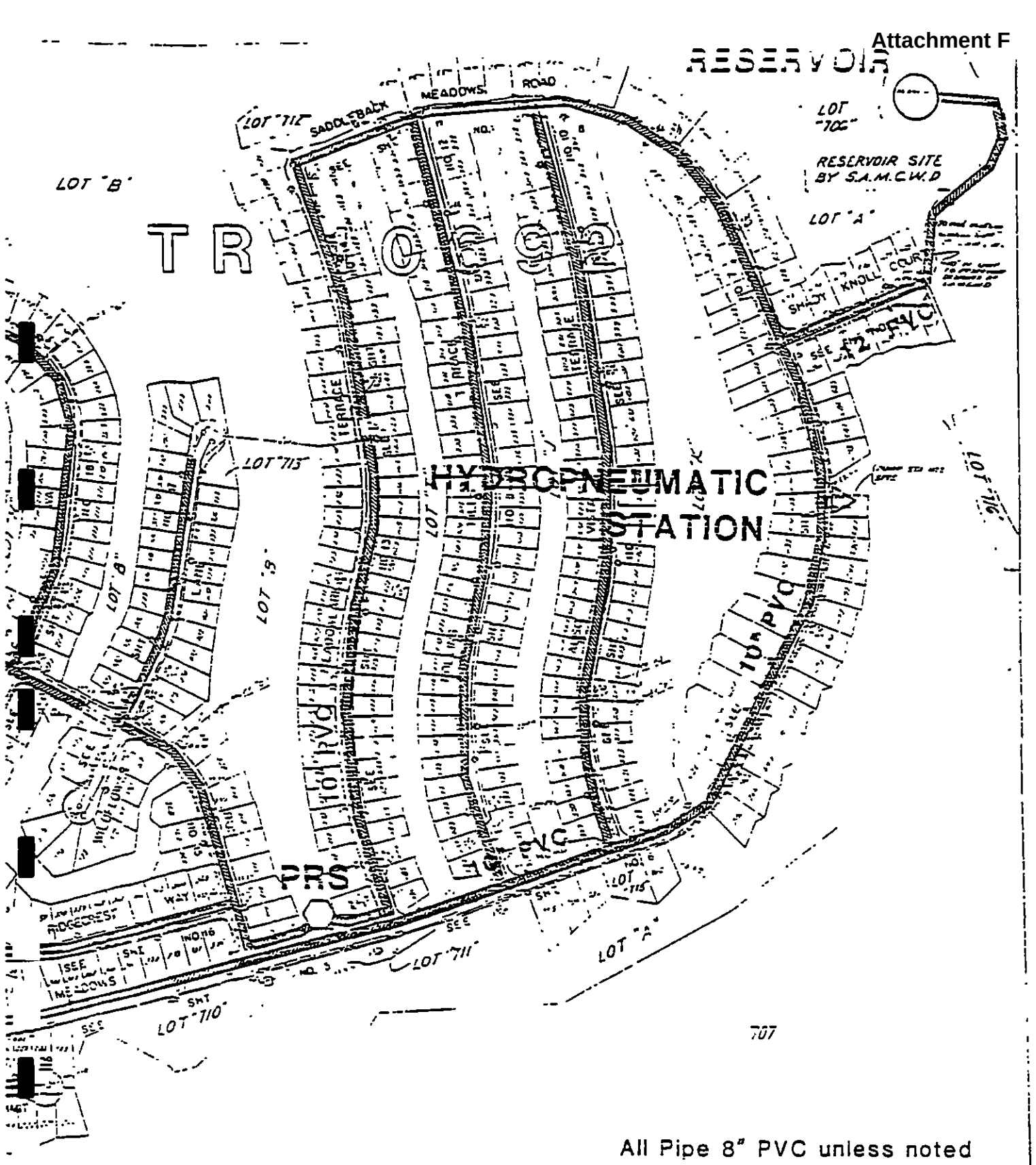
Sewer Transmission

Additional A.D. No. 5	
Pro-Rata Capacity Buy-in	$34,000
Wastewater Equipment Pro-Rata Buy-in	12,000
TOTAL	$46,000
BOND AMOUNT	$46,000
SUBTOTAL SEWER	$ 546,680
TOTAL WATER & SEWER	$2,376,402

Incidental Expenses:*

Contingencies, Design and Contract Administration (25%)	$582,600
Plan Check and Inspection (6 1/2%)	151,476
Subtotal Incidentals	$734,076
TOTAL FUNDING	$3,110,478

* Incidentals Not Applied to Sewer Transmission



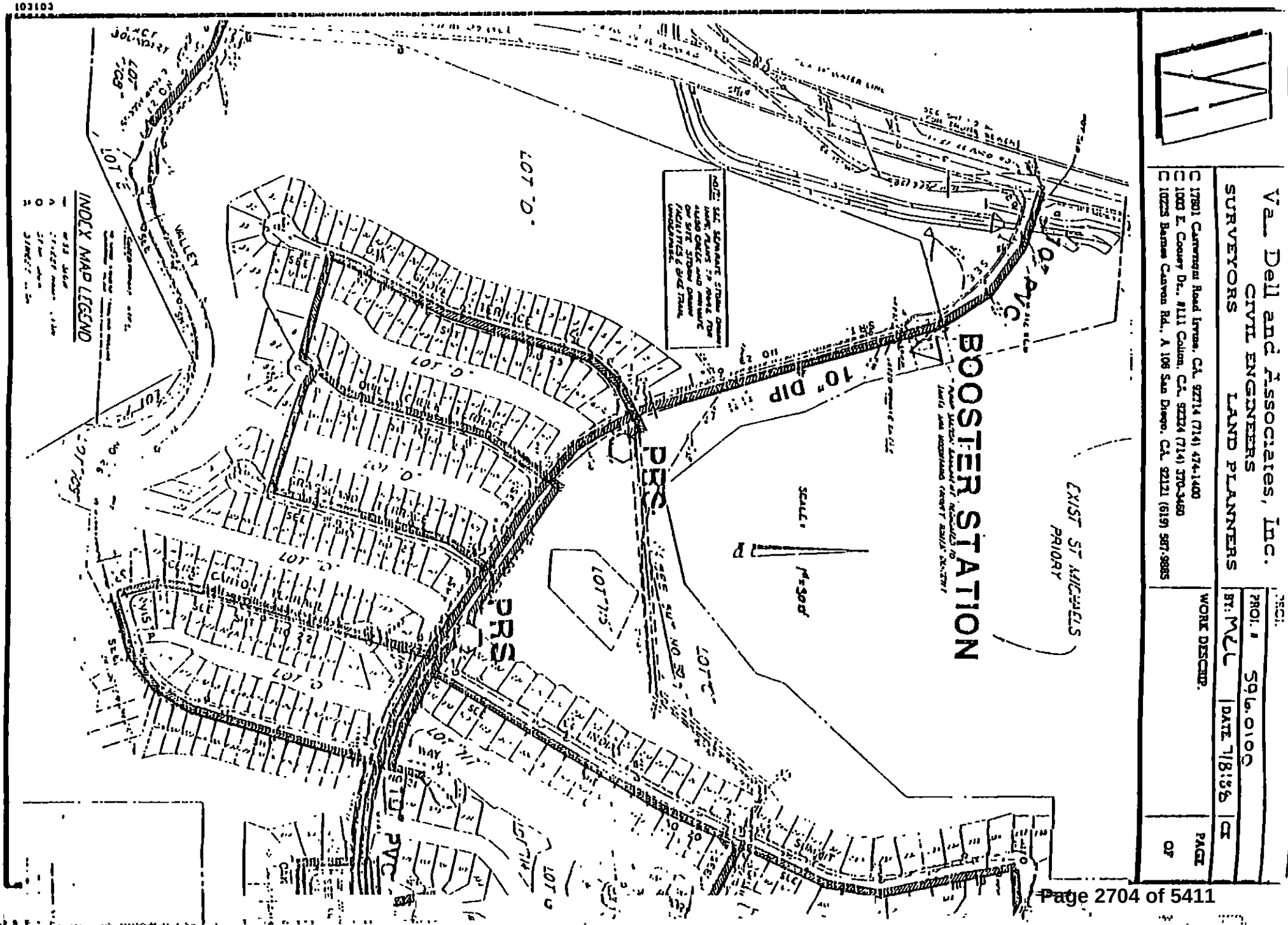
SEE PRECISE GRADING PLAN FOR EQUESTRIAN AND HIKING TRAILS.

INITIAL HERE

MASTER PLAN

WATER AND PRODUCTION IMPROVEMENTS

Revised 8/31/88


BOOSTER STATION
10" DIP
EXIST ST MICHAELS PRIORY
LOT 'D'
LOT 'C'
LOT 115
INDEX MAP LEGEND
SCALE: 1"=50'
Van Dell and Associates, Inc.
CIVIL ENGINEERS
SURVEYORS
LAND PLANNERS
17801 Cartwright Road Irvine, CA. 92714 (714) 474-1400
1000 E. Cooley Dr., #111 Colton, CA. 92324 (714) 370-3460
10225 Barnes Canyon Rd., A 106 San Diego, CA. 92121 (619) 587-9885
PROJ. # 596.0100
BY: MCL
DATE 7/8/96
CK
WORK DESCRIP.
PAGE
OF

SURVEYORS — LAND PLANNERS | BY: M.R.L. | DATE: 7/8/88 | CT

17901 Cartwright Road, Irvine, CA. 92714 (714) 474-1400
1003 E. Cooley Dr., #111 Colton, CA. 92324 (714) 370-3460
10225 Barnes Canyon Rd., A 106 San Diego, CA. 92121 (619) 587-9885

WORK DESCRIP.

PAGE OF

EXIST ST MICHAELS PRIORY

SCALE: 1"=300'

LOT "C"

LOT "D"

LOT 115

LOT 116

LOT 117

LOT 118

LOT 119

LOT 120

LOT 121

LOT 122

LOT 123

LOT 124

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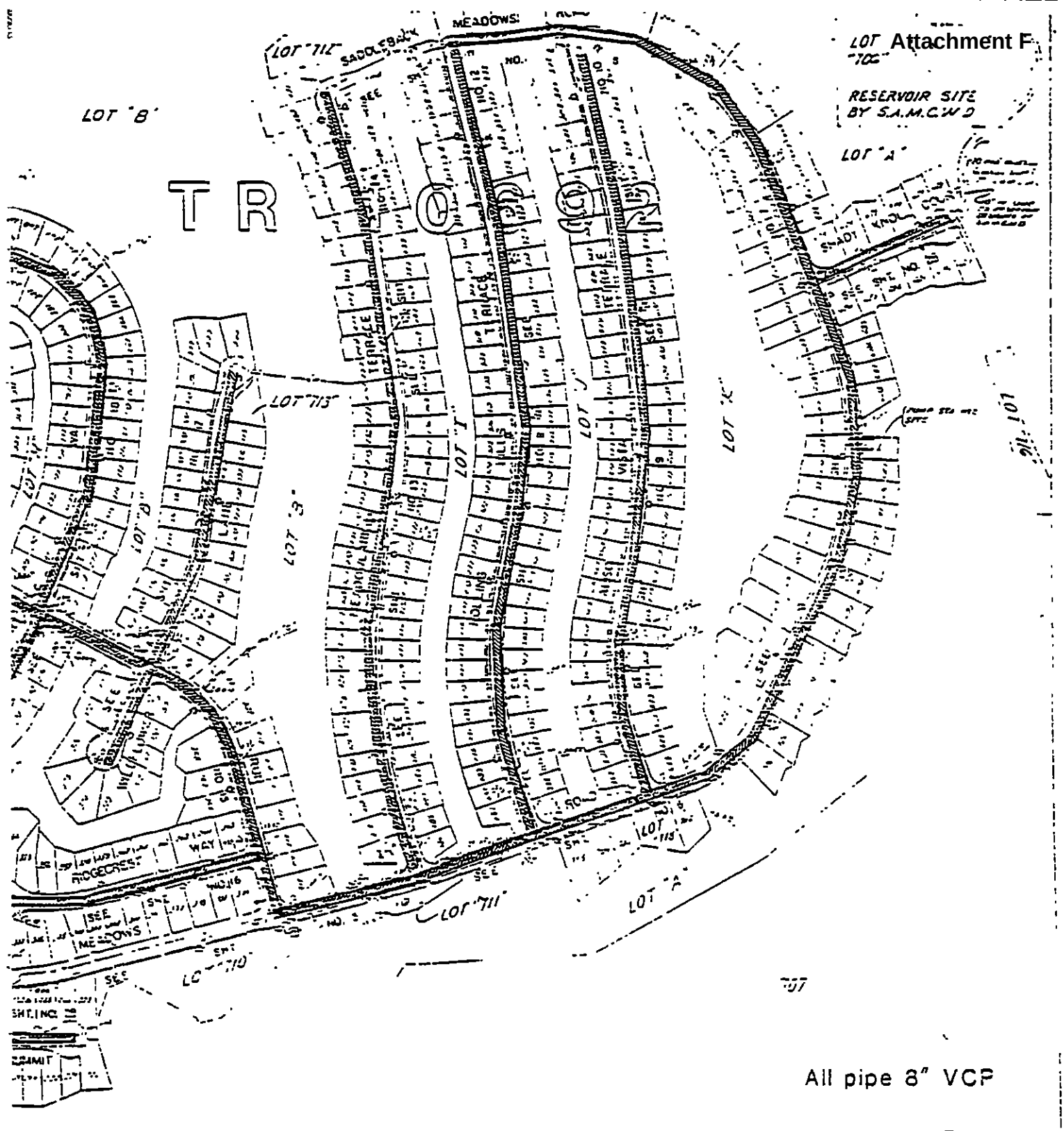
LOT 133

LOT 134

LOT



SEE PRECISE GRADING PLAN FOR STRUCTURAL AND RETAINING WALLS

INITIAL HERE

MASTER PLAN SEWER IMPROVEMENTS

Revised 8/31/83

OCTA

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Ex-Officio Member

Arthur C. Brown
Alternate

William G. Steiner
Alternate

Gregory T. Winterbottom
Alternate

August 11, 1997

George Britton
Environmental and Project Planning Services
County of Orange
P.O. Box 4048
Santa Ana, CA 92702-4048

Dear Mr. Britton:

The Orange County Transportation Authority (OCTA) has reviewed the Saddleback Meadows Recorded Tract Map 10692, Grading Application GA960048. OCTA has no comments at this time.

We appreciate the opportunity to provide input on this project. If you have further questions or need additional information, please call me at 714/560-5786.

Sincerely,

Ben Jarvis
Associate Transportation Analyst

August 11, 1997

Planning and Development Services Department
300 N. Flower St. #321
Santa Ana, CA 92702

RE: Saddleback Meadows Project

To Whom It May Concern:

I am submitting this letter to comment on the proposed 705 unit mobile home park on the Saddleback Meadows stie. Not long ago approval was being sought for 318 houses on this site. Why it was not passed I don't understand. Now we are having to deal with the thought of an extremely large number of mobile homes in our very secluded and tranquil area. I was in favor of the 318 homes and even toured the site when they opened it to the public last year to show what they were proposing. Believe me my first choice would be to leave it untouched and unbuilt so we could continue to view the beautiful hillside of our rural area. But if something must be built lets have it be fewer homes with a much more aesthetic appearance that fits into the already existing areas surrounding it. Also, my concern is if 705 units are brought on-site where are all these children going to go to school? Portola Hills Elementary is already at full capacity and measures have had to be taken to accommodate its student load.

I will be following the developments and can only pray that the Planning and Development Service Department along with the County Supervisors will make fair and knowledgeable decisions regarding this 222-acre rural canyon site.

Sincerely

Kimberly A. Stocking

Kimberly A. Stocking
26 Yellowpine Lane
Trabuco Canyon, CA 92679
(714) 589-1124

TPG Management, Inc.
1601 Dove Street, #105
Newport Beach, CA 92660
714-253-9595 Telephone
714-955-1170 Facsimile

Via Fax & US Mail

August 12, 1997

Mr. Raymond H. C. Brantley
Orange County Planning and Development
Services Department
Environmental & Project Planning Services Division
300 North Flower, Room 321
P. O. Box 4048
Santa Ana, CA 92702-4048

Re: Comments on Draft Subsequent Environmental Impact Report No. 566; Saddleback Meadows Recorded Tract Map 10692; Grading Application GA960048; State Clearinghouse No. 96121072

Dear Mr. Brantley:

On behalf of the project applicant, California Quartet, Ltd., we submit the following comments on Draft Subsequent Environmental Impact Report No. 566, Saddleback Meadows Recorded Tract Map 10692, Grading Application GA960048, prepared by Urban Vision for the Orange County Planning & Development Services Department.

Our review of Subsequent EIR 566 reveals that the project description should be supplemented to better satisfy provisions of the California Environmental Quality Act[1]. We find it deficient in at least two respects: (1) it fails to discuss economic characteristics and supporting public service facilities relating to the project site; and, (2) it fails to reference the County Board of Supervisors recent (October 1996) failure and/or refusal to approve a reduced density project alternative in lieu of Recorded Tract Map 10692.

Please note that CEQA Guidelines section 15124 provides that a project description "shall contain" "[a] general description of the project's technical, economic, and environmental characteristics, considering the principal engineering proposals if any and supporting public service facilities."[2]

We consider Subsequent EIR 566 to be deficient because the project description on pages 3-1 through 3-2 fails to discuss certain significant economic characteristics of Tract Map

[1] Public Resources Code section 21000 *et seq.* ("CEQA") and the CEQA Guidelines issued by Resources Agency and located in the California Code of Regulations, sections 1500 *et seq.*

[2] California case law holds that "[a]n accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR."

10692; and does not consider the supporting public service facilities for the project site paid for by California Quartet or its predecessors-in-interest. These economic characteristics and involved supporting public service facilities are discussed below.[3]

When Tract Map 10692 was recorded in December of 1988, several contractual commitments were entered into by the predecessors-in-interest of California Quartet. These contractual commitments resulted in monies being expended for the construction of capital facilities, including a sewer treatment facility and related trunk lines that serve both Saddleback Meadows and its general vicinity.

One of the conditions of approval for Tentative Tract Map 10692 (Special Condition No. 22.), was that "[p]rior to recordation of each final map ... sewage treatment and disposal facilities will be available to serve all dwelling units. To facilitate this requirement, several subdivision improvement agreements were entered into prior to the recordation of the Final Map.

The two subdivision improvement agreements relating to Master Plan Facilities and Onsite Water and Sewer Facilities for Tract Map 10692 were entered into between the Santa Ana Mountains County Water District, now known as the "Trabuco Canyon Water District" (the "District"), and Southmark Pacific Corporation ("Southmark"), a predecessor-in-interest to California Quartet. One of these agreements executed on September 21, 1988 between Southmark and the District is entitled "Agreement for Designing Construction of Master Plan Facilities, Tract No. 10692" ("MPFA"). The "RECITALS" portion of that agreement, mandated by conditions of the Tentative Tract Map and by the District's rules and regulations, required Master Plan Water and Sewer Improvements for the Property prior to providing water and sewer service. The second subdivision agreement, entitled "Agreement for Construction of Onsite Water and Sewer Facilities, Tract No. 10692" ["Onsite Water and Sewer Facilities Agreement" ("OWSFA")], also executed on September 21, 1988 between Southmark and the District, required the construction and dedication of water and sewer facilities by the subdivider prior to the District's agreement to provide water and sewer service to the final tract. Tract Map 10692 provided a zoning capacity density of 715 equivalent dwelling units ("EDUs").

In February 1989, California Quartet's predecessor-in-interest paid $973,528.58 for the purchase of sewer treatment capacity rights for the project site in the District's Chiquita Wastewater System Facilities (the "Chiquita Facilities"). These funds were used by the District to enlarge the Chiquita Facilities to accommodate the 715 EDUs zoned for the property. Thus, California Quartet, as a successor-in-interest, succeeded to all rights and liabilities flowing from the Tentative Tract conditions and subsequent above-described

[3] An October 21, 1996 correspondence to the Orange County Board of Supervisors from California Quartet concerning the October 22, public hearing for Agenda Item No. 79, FEIR No. 561, Zone Change Case No. 95-5 and Area Plan Case No. 95-7 previously detailed the recorded tract map requirement of payment for and installation of Area capital facilities on the project site by California Quartet and/or its predecessors-in-interest.

agreements for the purchase of sewer treatment capacity in the Chiquita Facilities for the benefit of the authorized development density of the property.

Additionally, California Quartet's predecessor-in-interest was required to pay the District's Capital Improvement Charges ("CICs"). The District's CICs in effect then were $1,265.00 for each equivalent dwelling unit. The CICs for 715 dwelling units totaled $904,475.00. The District's CICs were, and are, imposed on all development within the District in accordance with the District's Master Plan, including the Water and Wastewater Master Plan, the Financial Plan and the District's Impact Fee Structure. The CICs that were paid were deposited in the District's fund and earmarked for capital improvement of water facilities, which have subsequently been constructed.

It should also be noted that California Quartet is required to pay an annual sewer /water assessment on each of Saddleback Meadows 705 legal lots. This assessment appears on individual property tax bills and totals $60,000 to $75,000 per year for the entire property. California Quartet has been making these assessment payments and paying its tax liability since the 1994-1995 tax year and has not been delinquent on any of these payments. In addition, California Quartet has paid (May 1997) all back taxes, assessments and penalties owed by its predecessor-in-interest(approximately $\pm$$1,025,000). Further, California Quartet's predecessor-in-interest made good faith payments for premiums on security and improvement bonds(with a face amount over $9,147,700[4]) for improvements on the Property, in reliance on, and as a condition of the Tract Map 10692.

In sum, the project description should be supplemented as it presently fails to disclose that California Quartet, as a consequence of Tract Map 10692 approval, made substantial expenditures for water and sewage capacity and construction of capital facilities, and entered into contractual obligations to develop the property consistent with the authorized density of Tract Map 10692.

Further, the County Board of Supervisors at the public hearing on October 22, 1996 on Zone Change Case No.95-5 and Area Plan Case No. 95-7 failed to approve any of the project alternatives discussed in proposed FEIR No. 561, including Alternative No. 4, the 100 unit alternative. The project description also is inadequate because it fails to disclose

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[4] One of California Quartet's predecessors-in-interest, Saddleback Ventures I, entered into a public improvement agreement with the County of Orange designated as Agreement No. S988-1748. This agreement required three faithful performance/labor and materials bonds that are still in effect in the following amounts:

(1) Bond No. 112 70 80 issued by the developer's insurance company in the amount of $5,657,700, for private and public street improvements, street lighting, street drains and traffic signals;
(2) Bond No. 112 70 79 issued by the developer's insurance company in the amount of $3,240,000 for landscaping; and,
(3) Bond No. 112 70 78 issued by the developer's insurance company in the amount of 250,000 for monumentation.

this action, which indicates that the Board did not approve any of the nine reduced density alternatives to Tract Map 10692 that were analyzed in FEIR 561.

Based on the above, to remedy deficiencies in the project description, subsequent EIR 566 must be revised and supplemented with more detail concerning the economic characteristics of, and public service facilities for, Tract Map 10692 and the Board's decision to reject all reduced density alternatives in lieu of Recorded Tract Map 10692.

Very truly yours,

H. Pike Oliver
TPG Management, Inc.

CC: Mike McKnight
William D. Ross, Esq.

DOC: Network-Presidio-Saddleback-"Letter to RBrantleyAUG1197"

Wayne L. Brown
19252 Sleeping Oak
Trabuco Canyon, Ca. 92679

Manager,
OCPDS/Environmental & Project Planning Services Division
300 N. Flower St.
Santa Ana, Ca. 92702-4048

This project was a bad idea when it was originally corruptly approved, it has only become more evident over time what a poorly conceived project it is. Please consider the animal corridor rather than the pocket book of the proposed builder. After all the builder knew the history of the property when they bought it at "fire sale" prices. They knew about the specific plan that now protects the area from ill conceived plans. If the proposed builder did not know these things, then all the more reason to deny approval to such poor business people who would not have the foresight to research the property.

Wayne Brown

Amber Graves
19252 Sleeping Oak
Trabuco Canyon, Ca. 92679

Manager,
OCPDS/Environmental & Project Planning Services Division
300 N. Flower St.
Santa Ana, Ca. 92702-4048

I know this project was approved long before the specific plan came into existence, but because of the way it was originally approved I think it should be looked at like it were being submitted for the first time. This project does not fit in with the area, it leaves no way for the animals to migrate and will be built on ground that will easily slide even after removing tons and tons of dirt. Please deny this builders request.

thank you

Amber Graves

Amber Graves

Debra Moddelmog
19252 Sleeping Oak
Trabuco Canyon, Ca. 92679

Manager,
OCPDS/Environmental & Project Planning Services Division
300 N. Flower St.
Santa Ana, Ca. 92702-4048

Please consider the past history of this property when making a determination. From the fraud that led it to be originally approved, to the sliding slopes and buildings at the Abbey and including the animal corridor THIS IS NOT A GOOD IDEA. Please uphold the principals of the specific plan.

Debra Moddelmog.

D. Moddelmog

RECEIVED TIME AUG.12. 9:03PM PRINT TIME AUG.12. 9:06PM

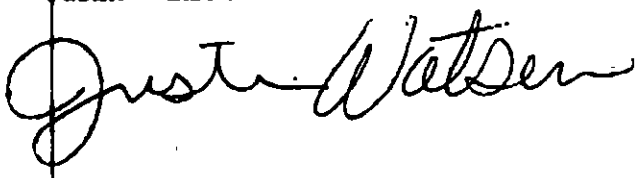
Justin Watson
19252 Sleeping Oak
Trabuco Canyon, Ca. 92679

Manager,
OCPDS/Environmental & Project Planning Services Division
300 N. Flower St.
Santa Ana, Ca. 92702-4048

RE: Saddleback Meadows

What effect is this project going to have on the Abbey and the Monistary, this is part of Orange Countys Culture. Where can these places be relocated without builders taking away their serenity??

Justin Watson



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CITY OF LAKE FOREST

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Richard T. Dixon
Kathryn McCullough
Marcia Rudolph

City Manager
Robert C. Dunek

City Clerk
Jeri L. Stately

August 12, 1997

Mr. Raymond H.C. Brantley
Environmental Management Agency
Environmental & Project Planning
P.O. Box 4048
Santa Ana, CA 92702-4048

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT #566, SADDLEBACK MEADOWS DEVELOPMENT

Dear Mr. Brantley:

Thank you for the opportunity to review the Environmental Impact Report for the Saddleback Meadows Project. Last year, when the Board of Supervisors considered this project in November, City staff provided verbal comments on the project at the public hearing. The City continues to have concerns regarding the project. On April 23, 1997, the City submitted comments to the County on the Revised Notice of Preparation for DEIR #566. The City's NOP Comments were not cited or addressed in the DEIR Document. The comments identified below in this letter represent the City's previously stated concerns regarding the project. We are expecting that the County, as the lead agency, will address these comments in the "Response to Comments" Document for DEIR #566.

From the materials presented, it is clear that significant grading and remediation of the site will be necessary. According to the EIR, this grading will involve 2.5 million cubic yards of conventional grading and just under 9 million cubic yards of remedial grading. The EIR did not address the amount of off-site trucking activity which will occur as a result of the earthwork. Earthwork of this magnitude could result in the functional equivalent of half a million double-trailer truck loads of material to be moved. It is our understanding that because of the constraints of this site, a significant portion of this

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earthen material will be required to be moved to off-site locations for stockpiling and drying prior to returning to the re-engineered and strengthened site.

The City of Lake Forest has significant concerns about the potentially tremendous increase in traffic, particularly truck traffic, that this project could have on the City. The reports indicate that the excavation and trucking may take as long as eighteen months to complete. The duration of construction is not addressed in the EIR. The City and its residents have been inundated over the last few years with significant public construction and private development outside the City, and the City and its residents have borne a disproportionate impact from this activity. A partial list of construction projects which have impacted the City are as follows: the Foothill Transportation Corridor, the El Toro Y Project (including streets and off-ramp closures), the Foothill Circulation Phasing Plan improvements, and all of the construction and on-going industrial business operations in the City's Sphere of Influence and north thereof.

Based on the impacts from these projects, our residents specifically requested that the City Council consider the adoption of truck routes within the City. The City Council has held a public hearing on this request and is actively studying the need for truck routes within the City. It is our view that approval of this project and the types of truck traffic it would generate would only further the need to establish truck routes within the City. At a minimum, the County needs to incorporate conditions of approval and environmental mitigation relative to truck traffic as it impacts the City, its residents, and its infrastructure. A financial mechanism should be established to reimburse the City for the repair and maintenance costs associated with such heavy truck traffic load on City streets.

There are other concerns the City has regarding this project, including the appropriate mitigation of the coastal sage scrub plant community (68.7 acres) and other environmentally sensitive plant and animal species. It is not entirely clear from the documentation how these environmentally sensitive areas are to be addressed. Nor is it indicated or insured that adequate safety precautions will be taken during the grading process to insure that the environmentally sensitive areas (i.e. Aliso Creek) are protected from impacts such as grading, or a grading induced landslide.

The EIR indicates that the project represents a potential conflict with the Aliso Creek Corridor Specific Plan. The potential conflict must be specified. The Aliso Creek Regional Riding & Hiking Trail is a valuable recreation resource currently used by residents of the City of Lake Forest and our Sphere of Influence. Significant impacts to Aliso Creek and the Trail, including construction impacts, should be avoided or completely mitigated.

Finally, the EIR indicates that children from the proposed project will be absorbed into the Saddleback Valley Unified School District. It is further indicated that all SVUSD schools in the project vicinity are near capacity. The Environmental Impact Report should address whether the increase in school age children associated with the project will impact Saddleback Valley Unified School District Schools within the City of Lake Forest. Specifically, identify whether enrollment or teacher student ratio will be impacted at any Lake Forest public school site.

The concerns identified above must be addressed in the Draft Environmental Impact Report. Please provide the City with a copy of the DEIR "Response to Comments" Document as soon as it is available.

Sincerely,
CITY OF LAKE FOREST

Gayle Ackerman for

KATHY L. GRAHAM, J.D., AICP
Director of Community Development

cc: City Council
Planning Commission
Robert C. Dunek, City Manager
Gayle Ackerman, AICP, Senior Planner
Michael E. Balsamo, Community Development Planner

August 12, 1997

Mr. George Britton, Manager
Environmental & Project Planning Services
County of Orange
Planning & Development Services Department
300 North Flower Street, P.O. Box 4048
Santa Ana , CA 92702-4048

RE: **Comments on the County of Orange, Draft Subsequent Environmental Impact Report for Saddleback Meadows Project (Recorded Tract 10692) - SCAG No. I 9700347**

Dear Mr. Britton:

Thank you for submitting the **County of Orange, Draft Subsequent Environmental Impact Report for Saddleback Meadows Project (Recorded Tract 10692)** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

The attached detailed comments are meant as administrative comments to provide guidance for considering the proposed project within the context of our regional goals and policies. SCAG's policy level review will be initiated with the presentation of the proposed Saddleback Meadows Project to SCAG's Standing Committee on Implementation (SCI) on September 4, 1997 at 11:00 am at the SCAG office in Los Angeles. You or the project developer are cordially invited to attend this meeting and answer any questions. If you have any questions regarding the attached comments, please contact Bill Boyd at (213) 236-1960. He will be contacting you with further information concerning this SCI meeting.

Sincerely,

J. DAVID STEIN
Manager, Performance Assessment and Implementation

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

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ty of Ventura, Judy Mikels, Ventura County • ne Fox, Thousand Oaks • John Melton, Santa • Toni Young Port Hueneme

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**COMMENTS ON THE COUNTY OF ORANGE
SADDLEBACK MEADOWS PROJECT (RECORDED TRACT 10692)
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT**

PROJECT DESCRIPTION

The Saddleback Meadows site encompasses approximately 222 acres and is located on the easterly side of El Toro Road, approximately ½-mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County. The incorporated cities of Mission Viejo and Lake Forest lie approximately three miles to the south and southwest, with the Cleveland National Forest boundary located approximately ½-mile north of the project site. The project site is surrounded by residential development, with the Portola Hills and Foothill Ranch planned communities to the west, the Hidden Ridge/Hidden Hills community and a nursery to the south, and scattered low-density residential uses to the north and east. O'Neill Regional Park is located adjacent to the southerly boundary of the site with St. Michael's Abbey immediately to the northwest and the Ramakrisha Monastery located immediately to the southeast.

The Project site is located within the Foothill/Trabuco Specific Plan and the DEIR states that the Project is inconsistent with many of the goals, objectives and policies of the plan which generally calls for preservation of the rural character and natural habitat of the area. The site is also located within the Aliso Creek Corridor Specific Plan area, and the DEIR notes that although it incorporates regional; riding and hiking trail connections into its design, it does conflict with several other aspects of the Plan. For example, it would not preserve recreational open space or conserve natural features of the Aliso Creek Corridor as it proposes to replace an existing natural creek with a trapezonal channel. The DEIR also states that the project is in direct conflict with the Natural communities Conservation Planning Program (NCCP) in that it would disturb sensitive wildlife habitat area. The project site is also situated just north of the Foothill Transportation Corridor.

The proposed Project would construct a previously approved and recorded Tract Map 10692 which was originally approved in 1979 and recorded in 1988. The Draft SEIR notes that the Project is consistent with the approved tract map, and proposes the phased planned development of 705 manufactured single family housing units and a 1.5 acre, neighborhood commercial center and associated infrastructure. The gross residential density is 3.17 du/ac, with minimum lot sizes of 2,630 square feet. The total development footprint would affect 86 percent or about 191 acres of the project site. Thirty-nine percent of the project site is proposed to remain in open space, including community slope area. The project proposes eight private park sites; regional equestrian hiking and bicycle trail connections; and the construction of a water tank site to be dedicated to the

local water company.

Prior to the most recent submittal of a grading permit application for Tract Map 10692, the project was proposed for 318 single-family dwelling units. The Draft EIR for the Project noted that the 318-unit project was "environmentally superior" to the 705 unit project currently being proposed, the 318-unit proposal was denied. The earlier Draft EIR had identified the 705-unit project as one of the two environmentally inferior alternatives considered.

The Draft EIR identifies the following areas of controversy that have arisen in response to the Notice of Preparation and which are addressed in the DEIR:

- Land Use/Aesthetic Compatibility
- Foothill-Trabuco Specific Plan Conformance
- Emergency Access Requirements
- Wildlife Corridor Design Width
- Project Specific Afforãable Housing Requirements
- EIR Preparation Process/Procedures
- Loss of Wild Habitat
- Geophysical Stability
- Traffic/Circulation

The following alternatives to the proposed development are evaluated in the DEIR:

- Alt. 1 No Project/No Development.
- Alt. 2 Foothill-Trabuco Specific Plan Alt. A - 150 Minimum 20,000 sq. ft. lots.
- Alt. 3 Foothill-Trabuco Specific Plan Alt. B - 100 SFD Units on 31.7 acres.
- Alt. 4 OCP&DS Staff Alternative (EIR 561) - 299 SFD Units, Min. 5,000 sq. ft. lots.
- Alt. 5 Cluster/Reduced Development Footprint - 318 SFD/MFD.

INTRODUCTION TO SCAG REVIEW PROCESS

The document that provides the primary reference for SCAG's project review activity is the Regional Comprehensive Plan and Guide (RCPG). The RCPG chapters fall into three categories: core, ancillary, and bridge. The Growth Management (adopted June 1994), Regional Mobility (adopted June 1994), Air Quality (adopted October 1995), Hazardous Waste Management (adopted November 1994), and Water Quality (adopted January 1995) chapters constitute the core chapters. These core chapters respond directly to federal and state planning requirements. The core chapters constitute the base on which local governments ensure consistency of their plans with applicable regional plans under CEQA. The Air Quality and Growth Management chapters contain both core and ancillary policies, which are differentiated in the comment portion of this letter. The Regional

Mobility Element (RME) constitutes the region's Transportation Plan. The RME policies are incorporated into the RCPG.

Ancillary chapters are those on the Economy, Housing, Human Resources and Services, Finance, Open Space and Conservation, Water Resources, Energy, and Integrated Solid Waste Management. These chapters address important issues facing the region and may reflect other regional plans. Ancillary chapters, however, do not contain actions or policies required of local government. Hence, they are entirely advisory and establish no new mandates or policies for the region.

Bridge chapters include the Strategy and Implementation chapters, functioning as links between the Core and Ancillary chapters of the RCPG.

Each of the applicable policies related to the proposed project are identified by number and reproduced below in italics followed by SCAG staff comments regarding the consistency of the project with those policies.

Consistency With Regional Comprehensive Plan and Guide Policies

1. **The Growth Management Chapter (GMC)** of the Regional Comprehensive Plan contains a number of policies that are particularly applicable to this Project.

a. *Core Growth Management Policies*

3.01 The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.

SCAG staff comments. As SCAG has designated subregions, the project is situated in the Orange County subregion. Implementation of the project would result in the creation of 705 housing units. The DEIR acknowledges on page 4-3 that the project site is situated within a Regional Statistical Area that is forecasted to grow at the rate of 2.3 percent between 1995 and 2000. Although the DEIR does not identify the projected population that would be accommodated by the 720 units, it is evident that this growth can be accommodated in that forecasted by SCAG for the subregion. The project is consistent with this RCPG policy.

3.03 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

SCAG staff comments: The DEIR contains an analysis of the relationship of the Project to this policy (18 months to complete project grading, phasing of residential units within 5

years following completion of grading, installation of all infrastructure during initial phase) on page 3-16. The Project is consistent with this RCPG policy.

b. *Ancillary Growth Management Policies*

3.04 Encourage local jurisdictions' efforts to achieve a balance between the types of jobs they seek to attract and housing prices.

SCAG staff comments. The DEIR references consistency of the Project's objective of providing affordable housing in a jobs-rich, housing-poor area on page 4-11. It notes that the project was conditionally approved in 1979 with a 66 2/3 percent affordable housing requirement in accordance with the County's Inclusionary Housing Policy. The county policy has since been rescinded, but the project is bound by the original tract map to provide a total of 470 lots to be sold in the affordable range. These lots are further broken down to include: 188 low/moderate and 282 Medium I level housing units. The Project is supportive of this RCPG policy.

3.05 Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.

SCAG staff comments. This Project would utilize existing water and sewer infrastructure that is available at the site boundary. The type of development proposed in the Project makes good use of this infrastructure as stated on pages 4-230 and 231 of the DEIR. The Project is supportive of this RCPG policy.

3.11 Support provisions and incentives created by local jurisdictions to attract housing growth in job rich subregions and job growth in housing subregions.

SCAG staff comments. See comments on policy 3.04. The Project is supportive of this RCPG policy.

3.12 Encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.

SCAG staff comments. The Draft EIR on page 4-52 states that the proposed Project will generate 6,220 trip-ends per day with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the PM peak hour. The project site is not served by an existing bus route adjacent to the site on El Toro Road. The nearest OCTA bus service (2

routes) are located 2.25 and 2.5 miles southwest of the project site, and the nearest park-and-ride facility is located 2.0 miles southwest of the site. No provisions are made to provide for transit access to the site and to reduce the reliance on the automobile. The Project will result is increased need for roadway improvements to meet projected vehicle trips and miles traveled. The Project is not supportive of this RCPG policy.

3.17 Support and encourage settlement patterns which contain a range of urban densities.

SCAG staff comments. The Project proposes that the entire site be developed for single residential use at a gross residential density of 3.17 du/acre. Alternative No. 5 (Cluster/Single Family/Multifamily) would have significantly less total acres of the site disturbed (113.0 ac versus 191.4 ac). This alternative could better achieve intent of this SCAG policy, while minimizing site disruption and preserving more open space. The Project is not supportive of this RCPG policy.

3.18 Encourage planned development in locations least likely to cause adverse environmental impact.

SCAG staff comments. The DEIR states that the proposed Project will result in the following unavoidable adverse impacts that cannot be mitigated to a level less than significant:

- Land use incompatibility impacts to O'Neill Regional Park (wildlife habitat), the Ramakrishna Monastery and St. Michael's Abbey.
- Vehicular emissions from project related traffic will have a cumulative significant air quality impact.
- Project specific and cumulative impacts to 50.3 acres of Venturan-Diegan transitional coastal sage scrub until such time as a section 4 (d) interim take is authorized.
- Development of the first large tract within the Foothill/Trabuco Specific Plan area will result in cumulative impacts to existing rural and natural open space and to a continued urbanization of foothill areas in south Orange County.
- Permanent viewshed alteration will occur with regard to the regional park, monastery and abbey and additional night lighting glare change night views from an unlit dark open space to an urban night environment.

Furthermore, the project would result in significant impacts related to slope stability, landslides, mud slides, subsidence and erosion. Mitigation measures are proposed to address these impacts, but the fact remains that the project will result in a total of 2.6 million cubic yards of conventional grading and 8.9 million cubic yards of remedial grading. Taken as a whole, the Project is not supportive of this RCPG policy.

3.19 National Forests shall remain permanently preserved and used as open space. SCAG shall support policies and actions that preserve open space areas identified in local, state, and federal plans.

SCAG staff comments. The DEIR states that the proposed Project will result in the following conflicts with local or state open space plans and policies:

- The project conflicts with the Foothill-Trabuco Specific Plan, specifically with regard to the preservation of a regionally contiguous wildlife corridor and the types of homes being proposed would be incompatible with site topography and biological resources.
- The project conflicts with the Aliso Creek Corridor Specific Plan in that it would not preserve recreational open space or conserve the natural features of the Aliso Creek Corridor as it proposes to replace an existing natural creek with a trapezonal channel.
- The project conflicts with the Natural Communities Conservation Planning Program in that it would further disturb a sensitive wildlife habitat area.

The Project is not supportive of this RCPG policy.

3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.

SCAG staff comments. The Draft EIR identifies a number of instances where this policy is not supported:

- The loss of 50.3 acres of Venturan-Diegan Transitional Coastal Sage Scrub that, although it will not be considered a "take" under federal requirements, will when added to other losses in the area, total about 2.4% of the coastal sage scrub in the Southern Subregional NCCP program area.
- The loss of 3.8 acres of Muelfat Scrub (associated with three ephemeral ponds) and 3.3 acres of Southern Sycamore Riparian Woodland which are significant because of their values as wildlife habitats and their function as wetlands.
- The loss of 14.6 acres of Coast Live Oak Woodland (312 individual trees) which are significant because of their wildlife values, their function in watershed protection and their function as part of the planned NCCP regional wildlife corridor.
- The loss of 0.6 acres of existing Ephemeral Ponds which is significant due to the presence of the Riverside fairy shrimp which is a federally endangered species.

- Direct impacts to 1.65 acres of wetlands and 1.78 acres of "Waters of the United States" (intermittent streams and man-made stock ponds).
- Adverse, but not significant, loss of populations of two sensitive plant species, the Catalina mariposa lily and intermediate mariposa lily.
- The loss of approximately 50.3 acres of potential nesting and foraging habitat (coastal sage scrub) on and off site, including portions of areas occupied by at least 12 pairs of southern California rufous-crowned sparrows and at least six pair of coastal cactus wrens, both of which are regionally sensitive species.
- General loss of habitat for at least 63 animal species which were observed during various on-site surveys.
- Acknowledgment that "the project, as currently proposed, may hinder or preclude the preparation of the Southern Subregional NCCP Preserve, due to restricted wildlife movement corridors".

The Project is not supportive of this RCPG policy.

3.21 *Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.*

SCAG staff comments. The Draft EIR acknowledges that the Project is known to contain significant deposits of artifacts (four significant sites) and fossils, as well as a ranch house ruin. The project is not supportive of this RCPG policy.

3.22 *Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.*

SCAG staff comments. The Draft EIR acknowledges that the Project site is characterized as containing ridges, ravines, and gullies with natural slope gradients ranging from nearly level along some ridge crests and valley bottoms to 1:1 (horizontal:vertical) within deeply incised gullies. The slope characteristics of the site are as follows: 95.5 acres (43% of site) is in the 0-25 percent slope category; 94.9 acres (43%) is in the 26-50 percent slope category; and, 31.8 acres (14%) of the project site has slopes in excess of 50 percent. As noted in the project description, significant grading is required to develop the site as proposed.

The Draft EIR also acknowledges that the Project is located in an area designated as a high "Special Fire Protection" area due to its combination of natural combustible vegetation, topography and weather conditions (frequent dry Santa Ana winds). Furthermore, Draft EIR notes a potential conflict between the human environment and the two main top predators of the region, coyotes and mountain lions.

The Project is not supportive of this RCPG policy.

3.23 *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.*

SCAG staff comments. Discussion of mitigation measures to address emergency response concerns due to seismic hazards, biological and ecological resources and other natural or manmade hazards are included in the Executive Summary of the Draft EIR. The Project is supportive of this RCPG policy.

3.24 *Encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment..*

SCAG staff comments. See staff comments on policy 3.04. The Project will increase the supply and quality of affordable housing in southeastern Orange County. The Project is supportive of this RCPG policy.

2. The Regional Mobility Chapter (RMC) also has policies, all of which are core, that pertain to the proposed project. This chapter links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption. promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. Among the relevant policies in this chapter are the following:

Transportation Demand Management and Regional Transit Program Policies

4.01 *Support Promote TDM programs along with transit and ridesharing facilities as a viable and desirable part of the overall mobility program while recognizing the particular needs of individual subregions.*

4.03 *Support the extension of TDM program implementation to non-commute trips for public and private sector activities.*

4.04 *Support the coordination of land use and transportation decisions with land use and transportation capacity, taking into account the potential for demand management strategies to mitigate travel demand if provided for as a part of the entire package.*

SCAG staff comments. See staff comments on policy 3.12. SCAG's December 31, 1996 letter on the Notice of Preparation for the Saddleback Meadows project recommended consideration of these three policies in the preparation of the Draft EIR. No apparent consideration was given to the provision of TDM or transit services to meet the needs of the proposed 6,220 trip ends per day in year 2020. Mitigation measure AM 5-3 is not an air quality mitigation measure, but rather a commentary on not taking credit for mobile source emission reductions, including trip reduction programs. The Project is inconsistent with the three TDM/transit RCPG policies.

Regional Streets and Highways Program Policies

4.20 Expanded transportation system management by local jurisdictions will be encouraged.

4.23 TSM activities throughout the region shall be coordinated among jurisdictions.

SCAG staff comments. The Draft EIR notes that the Project developer will pay for signal modifications and turn lanes at the intersections of El Toro Road with Valley Vista Way and the new northern collector street serving the site. Furthermore, a mitigation measure (AM 4-16) assures that the developer will participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program, El Toro Road Fee Program and the Santiago Road Fee Program. The Project is consistent with these two RCPG policies.

Regional Non-Motorized Transportation Program Policies

4.25 The development of the regional transportation system should include a non-motorized transportation system that provides an effective alternative to auto travel for appropriate trips. The planning and development of transportation projects and systems should incorporate the following, as appropriate:

- *a* o *Provision of safe, convenient, and continuous bicycle and pedestrian infrastructure to and throughout areas with existing and potential demand such as activity areas, schools, recreational areas (including those areas served by trails), which will ultimately offer the same or better accessibility provided to the motorized vehicle.*

- *b* o *Accessibility to and on transit (bus terminals, rail stations, Park-And-Ride lots), where there is demand and where transit boarding time will not be significantly delayed.*

c o *Maintenance of safe, convenient, and continuous non-motorized travel during and after the construction of transportation and general development projects. Existing bikeways and pedestrian walkways should not be removed without mitigation that is as effective as the original facility.*

SCAG staff comments. The Draft EIR acknowledges that the Project abuts the Aliso Creek Bikeway. Mitigation measures (PDF 10-1 and 10-2) assure the construction of the Live Oak Canyon and Aliso Creek riding and hiking trails within the Project boundaries. No local bikeway or pedestrian circulation improvements are provided for in the Project design. The Project is consistent with this RCPG policy as it relates to regional bikeway and trail access but inconsistent with the policy as it pertains to local bikeways and pedestrian walkways within the Project site.

4.27 *Urban form, land use and site-design policies should include requirements for safe and convenient non-motorized transportation, including the development of bicycle and pedestrian-friendly environments near transit.*

SCAG staff comments. See previous comments on policies 3.12, 4.01, 4.03, 4.04 and 4.25. The Project is inconsistent with this RCPG policy.

3. The Water Quality Chapter (WQC) core recommendations and policy options relate to the two water quality goals: to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters. The core recommendations and policy options that are particularly applicable to the Project include the following:

11.02 *Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.*

SCAG staff comments: The Draft EIR acknowledges that the project site is located within the boundaries of two primary watershed areas: 1) Aliso Creek (75% of site) and 2) Oso Creek (24% of the site). The Draft EIR on page 4-38 acknowledges that "Implementation of the proposed project will result in the introduction of impervious surfaces (streets, driveways, residential units) and will result in a **decrease in the area available for stormwater percolation** and a **substantial increase in stormwater runoff.** Implementation of the proposed project will result in **substantial landform modification,** redirecting site drainage throughout the site."[emphasis added] The Project proposes drainage improvements that mitigate drainage impacts to a level less than significant. However, the project as noted previously herein, conflicts with the Aliso Creek Corridor Specific Plan in that it "would not preserve recreational open space or conserve the natural features of the Aliso Creek Corridor as it proposes to replace an existing natural creek with a trapezonal channel". The Project does not recognize watershed management policy in the local government approved Aliso Creek Corridor Specific Plan. The Project is inconsistent with this RCPG policy.

Conclusions and Recommendations:

(1) As noted in the staff comments, the proposed Saddleback Meadows Project is consistent with or supports many of the policies in the Regional Comprehensive Plan and Guide, but is inconsistent with core policies 4.01, 4.03, 4.04, 4.27 and 11.02 and is not supportive of ancillary policies 3.12, 3.17, 3.18, 3.19, 3.20, 3.21 and 3.22. Furthermore, the Project is consistent with some aspects of core policy 4.25 and inconsistent with others, as noted in the staff comments.

(2) All mitigation measures associated with the project should be monitored in accordance with AB 3180 requirements and reported to SCAG through the Annual Reasonable Further Progress Reports.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, the Association is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). Among its other mandated roles and responsibilities, the Association is:

- Designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. §134(g)-(h), 49 U.S.C. §1607(f)-(g) et seq., 23 C.F.R. §450, and 49 C.F.R. §613. The Association is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080.

- Responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). The Association is also designated under 42 U.S.C. §7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

- Responsible under the Federal Clean Air Act for determining ***Conformity*** of Projects, Plans and Programs to the State Implementation Plan, pursuant to 42 U.S.C. §7506.

- Responsible, pursuant to California Government Code Section 65089.2, for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. The Association must also evaluate the consistency and compatibility of such programs within the region.

- The authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

- Responsible for reviewing, pursuant to Sections 15125(b) and 15206 of the CEQA Guidelines, ***Environmental Impact Reports*** of projects of regional significance for consistency with regional plans.

- The authorized ***Areawide Waste Treatment Management Planning Agency***, pursuant to 33 U.S.C. §1288(a)(2) (Section 208 of the Federal Water Pollution Control Act)

- Responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

- Responsible (along with the San Diego Association of Governments and the Santa Barbara County/Cities Area Planning Council) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.

"Preparing today's students to succeed in tomorrow's wc "

August 13, 1997

Mr. Ray Brantley
Environmental & Project Planning
County of Orange
Planning & Development Services Dept.
P. O. Box 4048
Santa Ana, CA 92702-4048

Subject: Draft EIR 566, Saddleback Meadows Project

Dear Mr. Brantley:

Per our telephone conversation, we request an extension of response time to September 3, 1997, for the above referenced project.

Thank you very much.

Sincerely,

Mary Lou Smith
Facilities Planner

dd

SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT
25631 DISEÑO DRIVE
MISSION VIEJO, CALIFORNIA 92691
(714) 586-1234

SUPERINTENDENT
Dr. Peter A. Hartman

BOARD OF EDUCATI
Dore J. Gilbert, M.D., Presic
Marcia L. Birch, Clerk
Debbie Hughes, Mem
Nancy Kirkpatrick, Mem
Don Sedgwick, Mem

LETTER OF TRANSMITTAL

Attach

TO County of Orange
Environmental & Project Planning Division

P.O. Box 4048

Santa Ana, CA 92702-4048

Date	September 8, 1997
Attention	Ray Brantley
Subject	Draft EIR 566
	Saddleback Meadows

GENTLEMEN:

WE ARE SENDING YOU

[X] Attached

[ ] Under separate cover the following items:

Attached please find the hard copy of the District's comments regarding the above referenced project.

THESE ARE TRANSMITTED as checked below:

[ ]	For approval	[ ]	Approved as submitted
[X]	For your use	[ ]	Approved as noted
[ ]	As requested	[ ]	For payment
[ ]	For review and comment	[ ]	For your information
[ ]	_____		

REMARKS

COPY TO _____

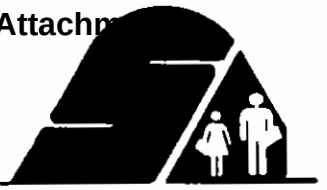
_____

_____

SIGNED Mary Lou Smith Hyd

Mary Lou Smith, Facilities Planner
Saddleback Valley Unified School Dist.
25631 Diseno Dr., Mission Viejo, CA 926

August-13-1997



"Preparing today's students to succeed in tomorrow's wo"

Mr. Ray Brantley
Environmental & Project Planning
County of Orange
Planning & Development Services Department
P.O. Box 4048
Santa Ana, Ca 92702-4048

Re: Draft EIR #566
Saddleback Meadows Development

Dear Mr. Brantley:

In response to the above Draft EIR #566 indicating that approval of this project would have significant impacts on the district's provision of adequate school facilities unless mitigation is provided, we would like to provide some information for your consideration:

This project is proposed for 705 manufactured single family housing units. Most of the similar projects in our district have "adults only" restrictions; however, of the one existing project we identified as accepting children, following are the student generation factors:

K-6 =	.2264	= 160
7-8 =	.0566	= 40
9-12 =	.0755	= 54
K-12 =	.3585	= 254 students

As we have no district standard for manufactured housing, the above is our prediction for the impact of this project on our district.

Currently, students in this general area are assigned to Portola Hills Elementary, Rancho Santa Margarita Intermediate and either El Toro High School or Trabuco Hills High School. ALL of these schools are filled to capacity and either do have now or will have by fall, 1997 added a number of relocatable buildings to house enrollment exceeding the capacity of their original construction.

Per the current practice of the County of Orange regarding other projects, the district requests that this project be conditioned to require that the proponent, California Quartet, Inc., meet with district staff to review the impact and necessary mitigation measures needed as a result of this project.

Peter A. Hartman
District Superintendent

mls/8837

SADDLEBACK VALLEY UNIFIED SCHOOL DISTRICT
25631 DISEÑO DRIVE
MISSION VIEJO, CALIFORNIA 92691
(714) 586-1234

SUPERINTENDENT
Dr. Peter A. Hartman

BOARD OF EDUCAT
Dore J. Gilbert, M.D., Presi
Marcia L. Birch, Clerk
Debbie Hughes, Mem
Nancy Kirkpatrick, Mem
Don Sedgwick, Member

STATE OF CALIFORNIA — THE RESOURCES AGENCY PETE WILSON, Governor
DEPARTMENT OF PARKS AND RECREATION
Los Lagos District
17801 Lake Perris Drive
Perris, California 92571

August 15, 1997

Mr. Ray Brantley
County of Orange
300 N. Flower Street
Santa Ana, CA 92702

Re: Saddleback Meadows DEIR 566

Dear Mr. Brantley:

The California Department of Parks and Recreation (CDPR), Los Lagos District office has reviewed the above referenced document; thank you for the opportunity to provide comments.

The CDPR is a trustee agency as defined by CEQA. In addition, a defining tenant of our mission is to help to preserve the state's extraordinary biodiversity. As the office responsible for the stewardship of the natural and cultural resources of Chino hills State Park, we have an interest and concern about land use decisions in the geographic area as they relate to our mission and responsibilities under CEQA.

We view the maintenance of a functional system of interconnected wildland areas throughout the region as vitally important to the preservation of biodiversity. The Santa Ana mountains and the Puente-Chino Hills are an interdependent ecological system. The health of each area is integral to the other. CHSP is located in the Puente-Chino Hills adjacent to the northern end of the Santa Ana Mountains. The Santa Ana Mountains provide a valuable source of genetic material that helps to maintain the health and diversity of CHSP's plant and animal populations.

The importance of the two areas to each other continues to increase as they each become smaller, more isolated, and more fragmented by surrounding development. Fragmentation and isolation portends massive ecosystem collapse that could render all of our other regional conservation efforts nearly pointless.

Given the importance of the Santa Ana Mountains to the maintenance of the diversity of life in CHSP and the Puente-Chino Hills, we are concerned about the potential isolating and fragmenting effects of projects in the vicinity of the mountain range, and conserved lands within it such as the Cleveland National Forest and O'Neill Regional Park. We believe that development adjacent to these protected wildland areas should be designed in a manner that will preserve functional biological corridors and buffer protected lands from more intensive land uses.

After reviewing the alternatives for the project, it appears that Alternative 3 is the most responsible one. It limits development to the western side of the project, thereby protecting connectivity between O'Neill Regional Park and the Cleveland National Forest. It also places new development next to existing residential and commercial areas while providing a significant buffer to the park and forest. It appears that all of the other alternatives in some way fragment the National Forest from the Regional Park, and reduce the buffer to existing wildland.

In the final development decision, we believe it is incumbent on the lead agency to approve an alternative that is responsible to the invaluable natural resources found in the Cleveland National Forest, the County Regional Parks, and throughout the surrounding Region. We appreciate the consideration given to buffers and corridors in the environmental review, and we encourage their full protection. Thank you for the opportunity to comment. If you have any questions, please contact Geary Hund, Doreen Ferguson or myself at (909) 657-0676.

Sincerely,

Bill Berry

Bill Berry
District Superintendent

cc: CDPR, Resource Management Division

Mr. Gail Kobetich, Field Supervisor
United States Fish and Wildlife Service

Ms. Patricia Wolf, Acting Regional Manager
California Department of Fish and Game

RURAL CANYONS CONSERVATION FUND
PO BOX 556
TRABUCO CANYON, CA 92678

(714) 858-8251 (Voice/Fax)

August 18, 1997

County of Orange
Planning and Development Services Department
ATTN: Raymond Brantley
P.O. Box 4048
300 N. Flower Street, Room 321
Santa Ana, CA 92702-4048, VIA MAIL AND FAX: 834-2771

RE: Draft EIR 566 for Saddleback Meadows

Dear Mr. Brantley:

We have reviewed Draft EIR 566 (the DEIR) and comment as follows:

1. DEIR MUST IDENTIFY FEASIBLE MITIGATION MEASURES AND PROJECT ALTERNATIVES

A bizarre disclaimer precedes the body of this DEIR at page 3-8:

> It is therefore understood that the environmental analyses and evaluations contained in this document are largely informational, and not prescriptive in nature in that mitigation measures which would alter features of the final recorded tract map can not be implemented to reduce all project impacts to a level of insignificance. This is attributable primarily to the physical limitations of the site and the inability to deviate from the final recorded tract map. Accordingly, any findings of significant impacts must be offset through the issuance of a statement of Overriding Considerations.

Does this mean that some or all of the mitigation measures listed in the DEIR are "largely informational" and "can not be implemented"? If so, those mitigation measures should be identified, because CEQA requires the EIR to set forth <u>feasible</u> mitigation measures and alternatives to reduce or eliminate the project's identified significant environmental impacts to the extent feasible. Please identify for the decision makers which mitigation measures "can not be implemented," and which can be implemented.

Further, in stating that "any findings of significant impacts must be offset through the issuance of a statement of Overriding Considerations," the disclaimer implies that the County lacks any discretion to deny the grading permit. As explained below, however, the County may deny the grading permit, or approve an alternative to it.

2. THE COUNTY HAS DISCRETION TO DENY THE PROJECT OR APPROVE AN ALTERNATIVE PROJECT.

As acknowledged in the DEIR, the Foothill/Trabuco Specific Plan explicitly mandated environmental review of the project under CEQA, requiring an Initial Study and "additional environmental documentation" "[p]rior to the issuance of any grading permit for the subject property." (FTSP §III.3.2(c).) This provision implies discretion--preparing environmental documentation would simply waste time and paper if it could not be acted upon. CEQA Guidelines classify the issuance of a building permit as discretionary if local ordinance--in this case the FTSP (enacted in 1991 by ordinance)--contains "any discretionary provision." (CEQA Guidelines §15268(b).) §III.3.2(c) recited above appears to constitute such a "discretionary provision" in this case.

As the court noted in Friends of Westwood v. Los Angeles (1987) 191 Cal.App.3d 259, 266-268, preparing environmental documentation for a purely ministerial project would be futile since the approving agency has no discretion to modify such a project to eliminate or reduce environmental impacts.

Nor does any statute or regulation say that the granting of a grading permit is necessarily ministerial. That depends on the particular circumstances. (CEQA Guidelines §15268(a).) The Westwood court held that "doubt whether a project is ministerial or discretionary should be resolved in favor of the latter characterization." (Id. at 191.)

Also, the court in Day v. Glendale (1975) 51 Cal.App.3d 817, 824, held that CEQA may apply even to a governmental approval involving virtually no discretion if that approval "is the only point at which the environmental impact of the project may be publicly considered...."--certainly the case here.

The County's Grading Code also appears to contain several "discretionary provisions" under §7-1-821, "Denial of permit." It says, in part especially

pertinent to this project: "If, in the opinion of the Building Official, the land area for which grading is proposed is subject to geological or flood hazard to the extent that no reasonable amount of corrective work can eliminate or sufficiently reduce the hazard to human life or property, the Grading Permit and the Building Permits for habitable structures shall be denied." (O.C. Grading Code, §7-1-821, emphasis added.) Another paragraph provides for denial of the grading permit if the project "cannot be designed in accordance with" the "Orange County General Plan, Specific Plans, Zoning Code or other rules, regulations, or conditions applicable to the project." (§7-1-821(d).) Still another says the "Building Official may require plans and specifications to be modified in order to mitigate anticipated adverse environmental effects of proposed grading projects." (§7-1-821(c).) These ordinances, then, provide considerable discretion for the County in granting or denying the proposed grading permit.

Finally, and contrary to the disclaimer, CEQA provides for reducing or avoiding a project's significant environmental impacts through adoption of an alternative project. The DEIR in fact sets forth two alternative projects, numbers 3 and 4, which mitigate every one of the project's identified significant environmental impacts while still attaining its objectives. (DEIR page 6-22.) The DEIR contains no evidence that either of these two alternatives is not feasible.

3. DEVELOPMENT COSTS MAY RENDER THE PROJECT ITSELF INFEASIBLE.

In making required CEQA determinations, the decision makers will have to compare the project's feasibility with that of the available alternatives. Unfortunately, the DEIR supplies little or no evidence on which to base such findings.

The feasibility of the preferred project, however, seems dubious at best. On the one hand, several factors limit the selling price of the 708 housing units, including the County's affordable housing requirements (Condition 19 of recorded tract map), small lot size, crowded design, and the low market value of manufactured units. The $155,000 average per unit selling price used in the DEIR's fiscal impact report seems unduly optimistic, especially since much larger, conventional houses across El Toro Road have assessed valuations averaging only $200,000 to $250,000.

On the other hand, development costs seem unusually high, due primarily to the extensive amount of required grading (11.5 million cubic yards, DEIR page 4-22). Even for a project having much less grading than proposed here, Larry L. Simon estimated $44 million in site preparation costs in an August 1990 report prepared for Imperial Federal Savings Association (No. RTC-90-000042), or $62,000 per units in site preparation costs alone. Land and construction costs, plus per-unit fees for roads, tollways, bridges, schools, etc. would of course add to the project's costs.

The DEIR should contain the best available information on the feasibility of this project and its alternatives so that the decision makers can make a reasoned choice.

4. THE GRADING PLAN MUST BE PROVIDED FOR REVIEW.

The DEIR seems to contain only a "conceptual" and mostly illegible grading plan" (DEIR page 4-23). Since the project is a grading permit, involving a phenomenal amount of grading,, the grading plan itself must be included in the DEIR to allow the public and responsible agencies to review it.

The grading plan must indicate the location of the 19.77 acres of "offsite grading" (DEIR page 3-8).

We consider this omission sufficiently serious to require supplementation of the DEIR and an extension of the comment period.

5. A FULL FAITHFUL PERFORMANCE BOND SHOULD BE REQUIRED.

Given the project's questionable feasibility and extensive geological instability, it remains a prime candidate for failure during the 18-month grading process. We note that two previous owners and would-be developers of this site went bankrupt. The EIR must assess the potential safety problems resulting from a half excavated site: drainage and erosion, collapse of adjacent properties, collapse of El Toro Road, etc., as well as the possible financial liability to the County in the event of abandonment. As a mitigation measure, the County must impose as a condition of approval of any grading a full faithful performance bond sufficient to restore the site to a safe condition.

6. DEIR MUST ANALYZE REAL EFFECTS ON CIRCULATION--NOT INTERSECTION LEVELS OF SERVICE.

The DEIR analyzes the project's impacts on traffic and circulation by listing the level of service expected at various intersections around the project. These levels of service, based on the number of lanes, roadway geometry, and traffic volumes, generally indicate how many signal changes it will take to get through an intersection.

The County must stop using this methodology, because it does not measure the true impact on transportation--i.e., on people trying to get from one place to another. Not surprisingly, typical developer-prepared EIR's invariably conclude, as does this one, no significant impact on the region's traffic and circulation. Only minor road widenings, restriping traffic lanes, and installation of more traffic signals are normally deemed necessary to avoid such significant impacts.

And yet, the average travel times have dramatically increased in the region, due mainly to the proliferation of traffic signals. For example, in 1983, there were no traffic signals on El Toro Road from Cook's Corner to Trabuco Road. By 1997, there were seven. While each one may operate at level of service "D" or better, they collectively can (and often do) add several minutes to a trip which used to take only five minutes.

The average trip time more effectively measures and summarizes the project's true impact on "traffic and circulation" than does simply tabulating the expected levels of service at a growing number of signalized intersections, and will more realistically reflect the inevitable and increasing conflicting movements of vehicles generated by the sprawling suburban development in this region.

Under CEQA, EIRs must be written in plain language so that the public can understand the potential effects of a project. This DEIR's traffic analysis fails this requirement, as explained above. Typical travel times, with and without the project, should be included in the DEIR.

7. DEIR MUST ASSESS THE ACTUAL IMPACT ON SCHOOLS.

The DEIR gives short shrift to the project's impacts on schools--a single sentence affirming the obvious, that the project would send "400 additional students into the currently overcrowded Saddleback Valley Unified School District." (DEIR page 4-220.) As mitigation,

it proposes only the payment of required school fees of $1.72 per square foot of residential (page 4-224), and then somehow concludes that "[n]o unavoidable adverse impacts would occur to education services" (page 4-226).

This conclusion cannot be supported by the available evidence. As the school district has repeatedly verified, the state-required fees do not suffice to provide required school facilities in the region. The DEIR must list the school facilities to be impacted by the project, describe the existing conditions at these facilities, and then assess the expected impact of the project on each.

These comments are made on behalf of the Rural Canyons Conservation Fund, Ray Chandos as an individual, Bruce Conn as an individual, Sherry Meddick as an individual, and any other person opposed to this project as proposed. These comments and any references contained herein are hereby incorporated into the official record of proceedings of this project and its successors.

Sincerely,

Ray Chandos

Ray Chandos
Secretary/Treasurer

Governor's Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

August 19, 1997

RAYMOND H.C. BRANTLEY
ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY
300 N. FLOWER STREET
SANTA ANA, CA 92702-4048

Subject: SADDLEBACK MEADOWS RESIDENTIAL DEVELOPMENT SCH #: 96121072

Dear RAYMOND H.C. BRANTLEY:

The State Clearinghouse submitted the above named environmental document to selected state agencies for review. The review period is closed and none of the state agencies have comments. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call at (916) 445-0613 if you have any questions regarding the environmental review process. When contacting the Clearinghouse in this matter, please use the eight-digit State Clearinghouse number so that we may respond promptly.

Sincerely,

Antero A. Rivasplata

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

Notice of Completion

See NOTE below

SCH # 96121072

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916-445-0613

Project Title: Saddleback Meadows -- DEIR 566

Lead Agency: County of Orange — **Contact Person:** Ray Brantley/Bill Griema

Street Address: 300 N. Flower Street — **Phone:** (714) 834-3763/834-5175

City: Santa Ana, CA — **Zip:** 92702 — **County:** Orange

Project Location

County: Orange — City/Nearest Community: Cities of Mission Viejo and Lake Forest

Cross Streets: El Toro Rd./Live Oak Canyon Rd. — Zip Code: 92679 — Total Acres: 222

Assessor's Parcel No.: 856-071.81 & 91 — Section: --- — Twp.: --- — Range: --- — Base: ---

Within 2 Miles: State Hwy #: 241 (FTC) — Waterways: Upper Oso Reservoir

Airports: N/A — Railways: N/A — Schools: Portola Hills Elem.

Document Type

CEQA: ☐ NOP ☐ Supplement/Subsequent ☐ Early Cons ☐ EIR (Prior SCH No.) ☐ Neg Dec ☐ Other ☒ Draft EIR

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other

Local Action Type

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan

☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan

☐ Rezone ☐ Prezone ☐ Use Permit ☒ Land Division (Subdivision, Parcel Map, Tract Map, etc.)

☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other

Development Type

☒ Residential: Units 705 Acres 91

☐ Office: Sq.ft. Acres Employees

☐ Commercial: Sq.ft. Acres Employees

☐ Industrial: Sq.ft. Acres Employees

☐ Educational

☐ Recreational

☐ Water Facilities: Type MGD

☐ Transportation: Type

☐ Mining: Mineral

☐ Power: Type Watts

☐ Waste Treatment: Type

☐ Hazardous Waste: Type

☒ Other: Open Space - 131

Project Issues Discussed in Document

☒ Aesthetic/Visual ☒ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☐ Coastal Zone ☒ Drainage/Absorption ☐ Economic/Jobs ☐ Fiscal

☒ Flood Plain/Flooding ☒ Forest Land/Fire Hazard ☒ Geologic/Seismic ☐ Minerals ☒ Noise ☒ Population/Housing Balance ☒ Public Services/Facilities ☒ Recreation/Parks

☒ Schools/Universities ☐ Septic Systems ☒ Sewer Capacity ☒ Soil Erosion/Compaction/Grading ☒ Solid Waste ☐ Toxic/Hazardous ☒ Traffic/Circulation ☒ Vegetation

☒ Water Quality ☒ Water Supply/Groundwater ☒ Wetland/Riparian ☒ Wildlife ☒ Growth Inducing ☒ Landuse ☒ Cumulative Effects ☒ Other

Present Land Use/Zoning/General Plan Use

Residential (Presently Vacant)

Project Description Implement recorded Tract 10692 for the phased development of 705 manufactured single-family residential units and a 1.7 acre neighborhood commercial center on a 222.23-acre site. The gross residential density proposed is 3.17 dwellings per acre, with an average lot size of 3,900 square feet and a minimum lot size of 2,630 square feet.

NOTE: Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft), please use it.

State Clearinghouse Contact: Mr Chris Belsky (916) 445-0613

State Review Began: 7-1-97

Dept. Review to Agency: 8-6

Agency Rev to SCH: 8-13

SCH COMPLIANCE: 8-15

Please note SCH Number on all Comments

96121072

Please forward late comments directly to the Lead Agency

AQMD/APCD 33 (Resources 7/5)

Project Sent to the following State Agencies

- X Resources
- ___ Boating
- ___ Coastal Comm
- ___ Coastal Consv
- ___ Colorado Rvr Bd
- ___ Conservation
- X Fish & Game # 5
- ___ Delta Protection
- ___ Forestry
- 5 Parks & Rec/OHP
- ___ Reclamation
- ___ BCDC
- X DWR
- ___ OES
- ___ Bus Transp Hous
- ___ Aeronautics
- ___ CHP
- 5 Caltrans # 12
- ___ Trans Planning
- X Housing & Devel

Health & Welfare

- ___ Drinking H20
- ___ Medical Waste

State/Consumer Svcs

- ___ General Services
- ___ Cal/EPA
- ___ ARB
- ___ CA Waste Mgmt Bd
- ___ SWRCB Grants
- ___ SWRCB Delta
- X SWRCB. Wtr Quality
- ___ SWRCB: Wtr Rights
- 5 X Reg. WQCB # 8
- ___ DTSC/CTC

Yth/Adlt Corrections

- ___ Corrections

Independent Comm

- ___ Energy Comm
- ___ NAHC
- ___ PUC
- ___ Santa Mn Mtns
- X State Lands Comm
- ___ Tahoe Rgl Plan
- ___ Other:

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STEVEN A NICHOLS
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WILLIAM W WYNDER
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RANDALL M BASSUSH
MARY M GREEN
THOMAS J CRANE
MARK D FRAZIER
M KATHERINE JENSON
DUKE F WAHLQUIST
RICHARD D MONTEVIDEO
LORI BARNES SMITH
ERNEST W KLATTE III
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JEFFREY A GOLOFARB
F KEVIN BRAZIL
LAYNE H MELZER
L SKI HARRISON
ELISE R TRAYNUM
CAROL L DEMMLER
PATRICK D MCCALLA
RICHARD K HOWELL
MICHAEL K SLATTERY
A PATRICK MUÑOZ
DEBRA DUNN STEEL
DAVID M HOCHNER
DAN SLATER
JAMES S WEISZ
PAUL J SIEVERS
S DANIEL HARBOTTLE
JOSEPH L HAGA III
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SCOTT R SANTAGATA
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MILFORD W DAHL, SR (1910-1986)
H ROGGER HOWELL (1925-1983)

*A PROFESSIONAL CORPORATION

OF COUNSEL
GARVIN F SHALLENBERGER
WILLIAM R BIEL
DAVID J GARIBALDI, III

August 21, 1997

Raymond Brantley
Orange County Planning & Development Services
Environmental & Project Planning Services Division
300 N. Flower Street
P. O. Box 4048
Santa Ana, California 92702-4048

Re: Saddleback Meadows; Draft Subsequent EIR No. 566

Dear Mr. Brantley:

This office, and the undersigned in particular, represent St. Michael's Abbey ("Abbey"). As you may be aware, the Abbey is a landowner adjacent to the proposed Saddleback Meadows Project ("Project") for which the above-referenced Draft Subsequent Environmental Impact Report ("DSEIR") has been prepared. The Abbey will be directly affected by this Project.

The Abbey opposes the Project as currently proposed, for many of the same reasons already expressed in connection with the processing of Environmental Impact Report No. 561. That EIR was the subject of numerous letters from our office, raising various objections to CEQA, land use inconsistencies, and other problems with the Project. The provisions of those letters are incorporated herein by reference, and we would request that copies of them be made a part of the administrative record in the processing of this DSEIR.

The Abbey believes there are a number of legal, environmental, planning, and other defects in the currently proposed Project. This letter, and the items incorporated herein by reference, constitute the Abbey's comments under CEQA public comment procedures for DSEIR No. 566.

For ease of reference, the comments are grouped under separate subject headings below.

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1. The Project description and public review of the Project are flawed.

At the outset, the Abbey must note that there is significant confusion regarding exactly what is the Project being reviewed. The Project chronology at DSEIR 2-8 and 2-9 indicate the catalyst for the preparation of this DSEIR was an application for a Phase I grading plan. The Project description at DSEIR 3-1, et seq., seems to indicate the Project is the actual construction of a 705-unit affordable housing project. This project includes a 1.5 acre neighborhood commercial center, which is referenced at DSEIR 3-1, but not analyzed further in other sections of the DSEIR. Moreover, DSEIR 3-15 lists approval of a grading plan and issuance of a grading permit as included within the discretionary actions covered by the environmental review.

Given this, an obvious question arises. Where is the grading information? Neither the DSEIR nor the grading study attached as Appendix D includes any specific grading plan. In fact, page 4 of the grading study indicates that the report was conducted at what it terms a "EIR level," and that more detailed evaluation would occur during 40-scale grading plan review. Given the imminence of the grading activities, and their role as the entire cause for the environmental processing, this is inadequate. Title 14, California Code of Regulations § 15147[1] requires an EIR to include technical information "sufficient to permit full assessment of significant environmental effects by reviewing agencies and members of the public." This Project appears to be at a "construction project" level, as that term is used in CEQA Regs. § 15146(a), and consequently deferred analysis of the full range of all effects from the massive grading proposed is inappropriate.

Further, I am advised that the 40-scale grading plan, and other information required to determine and assess the specific impacts of the proposed grading, has not been publicly available, even up until a few days prior to the announced deadline for submission of DSEIR comments. This is a "construction phase" project proposal; it is not a general plan or program EIR. Consequently, all of the specifics of the grading proposal should have been formulated, and available for public review and comment, prior to Project approval. The DSEIR has failed to follow this process. Attached as Appendix "A" is a listing of all "mitigation measures" which defer analysis on various topics until the time of grading permits. Obviously, no grading permit can issue without a specific grading plan, yet that plan was not proffered for public review and comment. Given the large number of other analyses which hinge on the grading information, such information certainly constitutes "significant new information" as that term is used in CEQA Regs. § 15088.5, without which full, adequate public review is impossible. The DSEIR

[1] Cited herein as "CEQA Regs."

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therefore must be re-noticed and recirculated after all the appropriate grading and other information has been available for the full comment period.

2. Analysis and incorporation of mitigation measures is improperly deferred.

No doubt in large part due to the failure to have specific grading information available, an entire host of items which require environmental analysis has been improperly deferred. Appendix "A" hereto is a chart of deferred analyses listing the various mitigation measures purportedly imposed upon the Project, but which actually reveal that fundamental aspects of the environmental impacts of the Project as yet remain unaddressed. These include key items like mitigation of impacts on endangered species such as the Riverside Fairy Shrimp, impacts on the California Gnatcatcher, acoustical analyses, street configurations and lines of sight, drainage studies, and design of storm drain improvements, to name a few.

The environmental impacts of these components of the Project are neither described or assessed, and no readily identifiable mitigation standard for these impacts is adopted. Given this, the conclusions regarding mitigation of the related impacts to a level of nonsignificance is unsupported by any evidence in the record, and therefore fails to meet the standards imposed upon the lead agency under CEQA Regs. § 15091(b).

3. The available grading information demonstrates the Project should not proceed.

Although incomplete, what grading information is included in the DSEIR clearly indicates the Project should not proceed. The entire Project area is underlain by landslides, and excavations reveal heavy seepage (DSEIR 4-31; Appendix D, p. 7). In addition, the oldest and deepest landslides on the property are merely projected from "necessarily limited exploratory borings." (Appendix D, p. 8, 16.) This is hardly the type of area which is suitable for the projected 11.5 million cubic yards of direct and remedial grading.

Incredibly, the DSEIR identifies 4" to 6" of settlement likely over the graded area. It finds such impacts insignificant, based upon a wildly optimistic presumption that settlement will occur at uniform rate, and occur evenly over a well-distributed area. (DSEIR 4-33.) With all due respect, the courts are filled with multi-party landslide cases, involving millions of dollars of damage, on ground settlement which is considerably less extensive. This effect must be regarded as significant, and must be mitigated.

Indeed, the grading information in the DSEIR is contradictory. At page 4-24, it is indicated that no blasting is anticipated. Mitigation measure AM 2-33 contemplates blasting of hard cemented sandstone beds, however. If the Project proponent and its consultants cannot at

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this phase even uniformly identify the grading measures needed, how is the County or the reviewing public to accurately determine the grading impacts from this proposal?

Last December, the Board determined this site was not appropriate for a 318-unit development. The comments already submitted by St. Michael's Abbey on grading and soils matters in connection with EIR No. 561 remain fully applicable here, are incorporated herein by reference, and show grading impacts will be significant. These effects remain unmitigated. Obviously, the site remains unsuitable for the far more intense 705-unit proposal now proposed.

4. Seismic impacts are improperly assessed.

Appendix D, page 11, seems to dismiss seismic risks to the site, with a generalized discussion of risks inherent throughout Southern California. Given the grading constraints on the property, a more particularized discussion of potential faulting and its potential impacts on the proposed Project are required. Specifically, DSEIR 4-20 lacks any discussion of the El Modena or Norwalk faults, both of which appear sufficiently proximate to the Project site to create seismic disturbances.

5. The DSEIR contains a number of improper or vague mitigation measures.

In order to meet legal requirements, a mitigation measure must have a readily identifiable, performance-based standard which must be met. A number of the mitigation measures in the DSEIR fall short of this requirement.

For example, AM 2-22 merely contains advisory language that certain types of rock are "best not incorporated" in fills. AM 2-27 contains only recommendations, and no requirements. AM 2-45 calls for "precautions in respective expanse of soils," which is vague, and should be further specified.

Mitigation measure SC 2-4 simply cannot be met. The DSEIR recognizes the incompatibility of the Project with O'Neill Regional Park. (See DSEIR 4-12.) The degree of required grading eliminates any compatibility with natural land characteristics of adjacent open space areas, making compliance with this mitigation measure impossible.

6. A number of significant environmental impacts are improperly addressed.

The DSEIR is also rife with inaccurate or contradictory information in assessing environmental impacts, and concludes they are insignificant. For example, the hydrology study listed in Appendix L appears to have been done for a 318-unit proposal, not the 705-unit

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proposal listed in the project description. (See hydrology map and "Discussion" text in Appendix L.) DSEIR 4-39 contains an admission that the drainage analysis is inadequate, in stating that it may need to be updated after review of the 40-scale rough grading plans. The preliminary master plan of storm drain improvements listed in PDF 3-1 (DSEIR 4-41) references a tentative map 15230, not the Project, and is essentially unreadable. This map gives no legible reflection of what drainage facilities will be built where, and no narrative or other graphic summary providing any further explanation appears in the DSEIR. All these studies need to be redone to analyze the Project now proposed.

Regarding noise, DSEIR 4-110 assesses noise from a projected 3,780 daily Project trips. DSEIR 4-52 indicates the daily trip projection is 6,220. The conclusions regarding vehicular noise are therefore suspect, and should be redone. In addition, DSEIR 4-113 indicates that air conditioning units are standard for housing projects, but fails to require such units as a mitigation measure for exterior noise. This should be included as a mitigation measure. In addition, the entire acoustical analysis appears to be deferred (see DSEIR 4-115). It should be conducted now.

Most strikingly, the DSEIR completely "ducks" impacts to the Riverside Fairy Shrimp, Coastal Sage Scrub habitat, and the California Gnatcatcher. DSEIR 4-152 indicates 105 acres of off-site mitigation will be required, but the availability or location of this mitigation property receives no discussion. DSEIR 4-157 delays the Gnatcatcher survey until some future time, and fails to provide the County or the reviewing public sufficient information to determine Gnatcatcher impacts from the Project whose approval is sought.

DSEIR 4-199 indicates a population generation estimate of 2.57 persons per household. The fiscal study, in Appendix G, page 22, uses 2.4. This inconsistency should be reconciled.

Regarding transportation, the DSEIR notes the nearest bus stop is between 2.25 and 2.5 miles from the Project site (DSEIR 4-52.) This is completely inconsistent with the proposed affordable nature of the housing development, whose residents are likely to be more heavily reliant on public transportation. Extension of service or alternative project locations should therefore be analyzed. There is no separate analysis of the traffic, noise, or air quality impacts of the buses which will be required to transport the estimated 399 additional students which will come from the Project, to already overcrowded schools. (DSEIR 4-218.) More fundamentally, the DSEIR appears to simply "will away" the impacts to the local schools from these additional students, all the while acknowledging current classrooms are overcrowded. DSEIR 4-216 contains a number of ambiguous conclusions regarding impacts on sheriff, fire, education, and library services. The double negative wording of these sentences seems to indicate each may have a significant impact, none of which is mitigated.

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7. The alternatives analysis is insufficient.

CEQA Regs. § 15126(d)(5)(B) calls for review of alternative locations, or a finding regarding the infeasibility of alternative locations. The DSEIR fails to address alternative locations.

The alternatives discussion contains inappropriate language suggesting some sort of legal obligation for the County to refund various payments, many of which we understand were made by the Project applicant's predecessor in interest, and not the applicant itself. While we have not conducted a legal analysis of these somewhat unusual claims, we have been informed that many of the water and other development impact credits resulting from these previous payments are fully transferrable, and could be marketed by the owner of the Project at any time. Consequently, the statement regarding any obligation for refunds in the event of consideration of a "No Project" alternative appears incorrect factually, let alone irrelevant to the environmental analysis the DSEIR purports to be undertaking.

The DSEIR makes clear that the "No Project" alternative is the environmentally superior choice. Consistent with prior representations it has made, however, the Abbey has no objection to the 100-unit proposal, currently listed as Alternative 3. The Abbey believes this represents a sound balance between the environmental constraints on the site, and the Project proponent's desire for some degree of development on the property.

8. The DSEIR's land use planning presumptions are inaccurate.

Although not precisely related to environmental impacts, the DSEIR contains a number of statements regarding land use entitlements the Abbey believes are inaccurate. The proposed Project is not, as the DSEIR asserts, essentially exempt from the Foothill Trabuco Specific Plan ("FTSP"). (DSEIR 4-4, 4-11.) The Growth Management Element of the County's General Plan was last revised on October 19, 1993, after the adoption of the Foothill Trabuco Specific Plan in 1991. This element is the self-described "key resource document for growth management concerns." Subsection (E)(6) requires that all new development within the Foothill Trabuco Specific Plan planning area "shall be rural in character, and shall comply with the policies of the [Foothill Trabuco Specific Plan] . . . in order to maintain a buffer between urban development and the Cleveland National Forest." The Project is clearly contrary to these goals, does not comply with FTSP standards, and is therefore inconsistent with the General Plan.

Moreover, the Project is not "exempt" from FTSP requirements even under the terms of the Specific Plan. Section 3.2(c) of the Bridlewood Residential District Requirements specifically indicates CEQA review is required prior to the issuance of grading permits for the

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previously-approved map. Consequently, additional discretionary review and approval was specifically contemplated prior to the time the Project was to be implemented. Any contention of "vested rights" from the filing of the map is therefore inapposite.

In addition, there is some question regarding the validity of the map in the first instance, given the chronology which the DSEIR lists. The map was apparently approved in December of 1979, and recorded some nine years later, in December, 1988. The chronology points out that the last stay was granted only until July 24, 1986. There is no indication, at least in the chronology, that the County approved any further extension. What was recorded therefore very may well have been an expired map, which would vest no development rights whatsoever, regardless of any claimed FTSP "exceptions."

9. Conclusion.

Even without all the defects listed above, the DSEIR concludes a number of significant impacts are unmitigated, including land use impacts and grading impacts. Given this, the Project approval will require a Statement of Overriding Considerations, which the Abbey believes is wholly insupportable in this context.

While advocacy of affordable housing is laudable, the prior history of this project raises question as to whether such housing will ever be built pursuant to this proposal. Further, the inaccessibility of the site and the instability of its soils make it peculiarly inappropriate for high density residential development of any type, including affordable units.

Put simply, the Project is inconsistent with the Abbey and the neighboring Ramakrishna Monastery. With all due respect to housing needs, the Abbey submits that the roles the Abbey and Monastery play, and the services they provide, are unique assets in Orange County. The Abbey would hope that the County would value these assets more than another in what many consider to be all-to-common residential developments, and not issue a Statement of Overriding Considerations condoning the Project's inconsistency with surrounding land uses.

Whether seriously proposed in its own right, however, or merely as a backdrop to make a previously-rejected project appear more palatable, the DSEIR is insufficient to support the Project approval sought. For this reason, the Abbey respectfully requests the County to fail to certify the DSEIR, and to reject any grading applications, or other development permits, which may be sought pursuant to it.

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St. Michael's Abbey thanks the County for the opportunity to respond to this DSEIR, and looks forward to working with the County and the applicant on a more environmentally sound Project proposal.

Very truly yours,

RUTAN & TUCKER, LLP

David B. Cosgrove

DBC/tr
Enclosures

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APPENDIX A

CHART OF MITIGATION MEASURES WHICH DEFER ANALYSIS UNTIL GRADING PERMIT

Measure	Deferred Analysis
SC 2-2	Geotechnical Report.
SC 2-3	Conformity of grading with Grading Plan.
SC 2-4	Compatibility of grading with natural land characteristics of open space.
SC 2-5	Approval of offsite grading.
SC 2-6	Compliance with Grading Plan fill soils and shrinkage/bulking pattern.
SC 2-10	Conformance of proposed grading with Grading Plan's slope heights, slope ratios, and pad elevations.
SC 2-11	Assure affected adjoining landowners have given consent for offsite grading/drainage.
SC 2-12	Determine if vector control measures are necessary.
SC 2-13	Prepare Water Quality Management Plan.
SC 2-16	Determine back cut failure guidelines.
SC 3-2	Provide drainage study for impact on existing drainage facilities.
SC 3-3	Design surface drainage improvements.
SC 3-8	Submit Water Quality Management Plan.
SC 3-9	Identify best management practices for on-site pollution runoff.
SC 3-10	Obtain coverage under NPDES Permit.
SC 4-8	Assure adequate site distance for street intersection.
SC 5-2	Demonstrate compliance with SCAQMD dust suppression requirements.
SC 6-2	Provide acoustical analysis for meeting noise mitigation requirements.

SC 6-9	Produce evidence of compliance of grading and construction activities to County's Noise Control Ordinance.
SC 6-10	Produce evidence that grading equipment has properly functioning mufflers.
SC 6-11	Produce evidence that stockpiling/vehicle storage areas will be located as far as practicable from dwellings.
SC 7-2	Obtain Streambed Alteration Agreement from CDFG.
SC 7-3	Obtain 404 Permit from ACOE.
SC 7-4	Provide NCCP accounting summary of Coastal Sage Scrub impact.
SC 7-5	Obtain USFWS approvals for Coastal Sage Scrub impacts.
SC 7-7	Assure compliance with Federal Endangered Species Act.
SC 7-8	Submit landscape and tree preservation plan.
SC 7-11	Conduct Gnatcatcher survey to determine if this endangered species will be impacted.
SC 7-12	Provide appropriate measures to mitigate impact on wildlife movement.
SC 7-14	Prepare mitigation plan for Riverside Fairy Shrimp.
SC 8-6	Design privately maintained landscape areas.
SC 8-9	Design graded areas to be compatible with natural landform characteristics.
SC 9-1	Retain certified archaeologist to survey site for cultural resources.
SC 9-5	Identify all potential archeological sites.
SC 9-9	Retain certified paleontologist for survey site.
SC 9-18	Retain historian to implement final mitigation measures.
SC 11-8	Determine if vector controls are necessary.
SC 11-12	Submit preliminary plans for private streets.

SFC Consultants

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AUG 22 1997
Environmental & Project Planning

August 22, 1997

Mr. Ray Brantley
Orange County Planning and Development Services Department
Environmental and Project Planning Services Division
300 N. Flower, Room 321
Santa Ana, CA 92702-4048

Subject: Saddleback Meadows – Comments on Draft Subsequent EIR 566

Dear Mr. Brantley:

SFC Consultants (SFC) has reviewed the Saddleback Meadows Draft Subsequent EIR 566 ("DSEIR 566" or "EIR") for CEQA compliance and consistency. SFC understands that the County of Orange required DSEIR 566 to be prepared as a result of a grading permit application having been submitted by the developer of the Saddleback Meadows project for the construction of grading improvements for 705 manufactured single family dwelling units with concomitant infrastructure and utilities on approximately 222 acres.

Before getting into the details of the EIR adequacy, some very basic concerns about this DSEIR 566 should be enumerated. First, although the filing of the grading permit application appears to have been the event which triggered the preparation of DSEIR 566, the 40-scale grading plans upon which the permit application is based have not been made available for public review, nor has the geotechnical review of those plans been made available. In addition, these materials have not been addressed in or made a part of DSEIR 566. As a result, a full assessment of the construction level impacts of the project has not been done as required by CEQA.

Second, whether or not the project analyzed in this DSEIR 566 is a grading plan application or the basic development plan, it is extremely important for this EIR to provide as much detail as possible in discussing environmental impacts and providing relevant mitigation measures. Gathering further information and complying with resource agencies in the future is not proper mitigation. However, this type of mitigation is listed throughout the EIR. Exactly 51 of the 200 EIR mitigation measures are based on "Prior to Grading Permit" timing. It is important for the Planning Commission to realize that at this late stage in the development, many of the required mitigation measures should be formulated and be subject to public scrutiny now, not at a later date after the EIR has already been certified.

Third, the geotechnical section of the EIR is also riddled with references to "gathering future information as mitigation measures". This may be acceptable if the environmental issue remains significant after mitigation; however, the EIR states that the geotechnical mitigation will mitigate any future and unknown impacts to less than significant levels. This is not a realistic conclusion considering future unknown impacts. A geotechnical review of the grading plans is the mechanism with which we can be assured that the mitigation measures recommended will actually work.

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Fourth, the traffic section of the DSEIR arbitrarily limits its review and impact analysis of intersections to the El Toro Road/ Santa Margarita Parkway intersection and intersections to the north thereof. No analysis has been presented for critical intersections to the south. Also, there is no indication in the traffic study if the traffic calculations have been adjusted to account for the difference in projected use versus actual use of the Foothill Corridor. Published reports indicate that the San Joaquin Corridor's projected usage was overestimated by nearly 50%. The DSEIR should include all intersections that will be impacted by 705 units, including El Toro Road and the San Diego Freeway (I-5), and especially if the Foothill Corridor estimates are similarly overstated. In addition, not withstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the traffic impacts from the reuse of the El Toro MCAS as a commercial airport. It is also not clear from the DSEIR if the regional traffic model utilized for the project impacts, and cumulative project impacts, actually incorporate the regional changes to the traffic resulting from a commercial airport at El Toro.

Fifth, the DSEIR provides a baseline discussion of the impacts from the El Toro MCAS fly-overs. However, the impact section of the EIR fails to identify a noise analysis or potential CNEL contours as a result of the base reuse plan as an active commercial airport. No mitigation measures are included for a multiple fly-over commercial airport. Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the noise impacts from the reuse of the El Toro MCAS as a commercial airport or the regional traffic noise associated with the commercial airport. The DSEIR states "Depending upon future site re-use, aircraft noise may or may not be an important issue." The aircraft noise from a commercial airport at El Toro will be an important issue and must be addressed in the DSEIR.

Sixth, it is also important to note that the biological mitigation for ACOE and CDFG coordination may change the site plan, which would then require a revised EIR. If site plan redesign is not feasible, then the EIR should point out where the off site mitigation locations will be. In addition, the EIR indicates in several places that mitigation measures cannot be implemented by changes to the grading plan because this proposed project is a legally recorded tract map. However, under the Federal Endangered Species Act, all "take" must be accommodated, regardless of tract recordation or not.

Seventh, the alternatives in the EIR should reflect alternative grading scenarios together with the comparable grading impacts associated with them. DSEIR 566 alternatives currently compare alternative land uses or densities, although these tend to be limited to different grading scenarios. Also, CEQA requires an alternative location to be discussed. This issue is missing in the EIR and should be included.

Eighth, the EIR mitigation measures are also plagued with the word "should" instead of "shall". "Should" mitigation measures will become "shall" upon certification of the EIR. If the lead agent is not sure of a mitigation measure's applicability at this stage of approval, then perhaps the lead agent does not really want to implement important mitigation measures, but simply provide the necessary environmental paper work for a recorded tract map.

Finally, the Planning Commission should keep in mind, that this recorded map for 705 units does not tie the County to instant EIR certification, in which CEQA simply becomes a necessary evil. CEQA allows for a public agency to not approve a project as proposed, if there are feasible alternatives or mitigation measures available that would substantially lessen any significant effects that the project would have on the environment (CEQA Guideline Section 15021). The Planning Commission can only override unavoidable adverse impacts if it finds that there are legitimate social, economic, or other considerations which truly outweigh such impacts. Simply implying that affordable housing is an overriding consideration is insufficient to justify the significant environmental effects of the project.

I look forward to your timely response. Please call me at my office if you have any questions.

Sincerely,

SFC Consultants

Saundra F. Jacobs, REA
Principal

SFJ/sg

Attachments

cc: City of Mission Viejo – City Council, Mayor Craycraft
Orange County Board of Supervisors – Todd Spitzer
California Department of Fish and Game – Liam Davis
Trabuco Canyon Water District – Bruce Bonner
Saddleback Valley News

SFC Consultants

COMMENTS TO DRAFT SEIR 566

The following comments are listed in same order as the EIR sections for convenience:

Section 1.0 Executive Summary

CEQA Guidelines Section 15161 indicates that "The EIR shall examine all phases of the project including planning, construction, and operation". A phased project must be evaluated in light of each phase. The first sentence of Section 1.0 Executive Summary, Subsection 1.1, page 1-1, describes the project as "the phased development of 705 manufactured single family housing units..." yet the EIR states on page 3-16, Section 3.4 Project Phasing that grading will occur in one phase. This statement, in turn, appears to be at odds with the reference (in Table 3 on page 2-8 of the EIR) to the developer's submittal of an application for "Phase I Grading Plan" on December 3, 1996. Therefore is the grading being phased, or is the construction being phased? If the grading is phased, a phasing plan should be submitted with the EIR distribution and review. DSEIR 566 should describe what the grading phases are, including how much grading in Phase I, II, III etc. A Phasing Plan should be included as part of this DSEIR, and not just be made another condition of approval. Moreover, if residential construction is also being phased in addition to the grading, this needs to be spelled out and addressed in the DSEIR. The Planning Commission cannot certify a DSEIR having such piece-meal information on grading and phasing.

Section 2.0 Introduction

Technical error: Page 2-7, Table 3 chronology of June 13, 1984: Ordinance 3486 should read – Ordinance 3468.

Section 3.0 Project Description

Page 3-8, first paragraph. The project description indicates that the removal of the mandated Inclusionary Housing Program requirements could undermine the County-wide calculations used to eliminate the affordable housing mandate. This statement on the surface may seem valid enough, but there is no factual evidence in the EIR to support such speculation. Instead of mere speculation, the DSEIR should include a thorough discussion of housing issues, including the possibility of eliminating the need for affordable units and allowing for a more environmentally sensitive project to be considered.

Page 3-8, Project Features, indicates that a 1.4 million-gallon water tank would be required for this project of 705 units. EIR 561, which analyzed 318 units, also required a 1.4 million-gallon water storage tank. The quantity of fire flow, and stored water necessary for the 705 units therefore appears inconsistent. If two 1.4 million-gallon tanks, or one 2.8 million gallon tank are required, this would significantly increase either the size of the tank location for two tanks, or the amount of grading and screening that would be needed for an increased tank size. The water tank site is owned by the Trabuco Canyon Water District, however, Mr. Bruce Bonner, General Manager of the

District was not aware of the discrepancy, and was planning to comment on the EIR for the proper information. Without the proper water storage available for 705 units, the project could not be developed and the DSEIR could not be certified. The extent of grading for the increased tank size and its location must be addressed in the DSEIR. Changing the size of the tank size will also require an amendment to the original Recorded Tract Map. Once the County receives this information, a revised section for review and comment by the public should be prepared.

Page 3-16, Project Phasing: Project grading is noted as being implemented in one phase, but this does not square with the fact that the developer has only submitted 40-scale grading plans for "Phase I" of the project which, apparently, only involves a portion of the proposed 705 units. This inconsistency should be resolved because, obviously, if the grading is to occur in several stages, instead of in "one phase," then the grading impacts would occur over a much longer period of time than the 18-month estimate set forth in the DSEIR.

Moreover, if the EIR shows and states the grading in one phase, then the entire grading plan at 40 scale should be made part of the Appendices to the EIR or, at the very least, the grading plans (and the geotechnical reports needed to fully understand them) should be incorporated by reference so that members of the public could review them. Either solution will require DSEIR 566 to be revised and recirculated in accordance with CEQA Guidelines Section 15088.5.

The Project Description has inaccurately depicted the project phasing. CEQA Section 15126 requires a complete project description, including all phases, and should be included for review with this DSEIR. Since it appears that the grading will be in phases, this project description is not consistent with CEQA Guidelines Section 15126 and cannot be certified as adequate.

Section 4.0 Existing Conditions, Project and Cumulative Impacts, Mitigation Measures and Level of Significance After Mitigation:

Section 4.1 Land Use/Housing

Notwithstanding the requirements of CEQA Guidelines section 15126(c), the EIR makes no attempt to explore feasible measures to mitigate land use impacts to surrounding areas. Suggested land use mitigation should include: Setback criteria, buffer zones of vegetation, pet restrictions, ridgeline protection, project phasing coupled with an Annual Monitoring Report under Zoning Code section 7-9-103.2(a)(12) to identify imbalances between development and infrastructure, etc. These new mitigations should be included in a revised draft EIR and recirculated for public review and input.

CEQA Guidelines Section 15131 (b) expressly recognizes that construction can adversely impact religious practices: "if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment". While the Land Use/Housing section of the EIR indicates

that the impacts would remain significant, unavoidable and adverse, there is no attempt to mitigate impacts on surrounding religious uses to any level at all.

Section 4.2 Soils and Geology

Although SFC was not able to gain access to any of the current grading plans at the County, SFC has learned that, for a price, the developer made copies of such plans available to certain interested parties and that the plans showed only half of the grading that is proposed for the 705-unit project. As stated above, if the rough grading (including all remedial grading) is to be accomplished in one phase, then the plans showing all the grading work to be performed should be made available for public review and DSEIR 566 should be revised and recirculated to incorporate such plans and all related geotechnical reports. This is particularly important with respect to the remedial grading improvements, (which account for the vast majority of the rough grading operations) because mitigation measures, such as shear keys, cannot be properly evaluated without the grading plans and soils reports, and cannot be constructed in a piecemeal fashion without the risk of slope instability.

Page 4-16, Ground Water: It appears from the State Water Resources Board map of wells in the area that there are at least five wells located northerly, westerly and southerly of the site and landslide areas. These wells depend on the groundwater supplies to remain in operation. During remedial grading, perched groundwater and saturated zones will be encountered (according to the geotechnical study). This excess groundwater will require pumping to a point to where the bottom layer of the 120-foot key cut will need to be cleaned out. The EIR does not discuss the high probability that this excessive pumping may impact groundwater and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells is considered a significant impact in CEQA Guidelines Appendix G(h) and (i). The EIR provides neither discussion of this important issue, nor any mitigation for potential impacts to these wells. While the EIR preparer, or the geotechnical engineer for the project, may speculate that the surrounding wells are being fed by Aliso Creek or "other groundwater", **there is no factual basis to support the conclusion that there will be "no significant groundwater impact" caused by project grading and development.** The Planning Commission must be provided with complete information on this issue before passing on the adequacy of DSEIR 566, and gathering groundwater information during remedial grading for future decisions, and complying with the water resource agencies, is not the proper way to proceed.

Page 4-24, last two paragraphs. These paragraphs state that "unfavorable conditions *(i.e. "some ground water")* can be mitigated by implementing corrective grading concepts". Yet the DSEIR only speculates on the mitigation necessary to truly lessen future impacts to the development from groundwater and postpones for future analysis whatever specific mitigation measures might eventually be proposed by the soils engineer for the project (see page 4-25). This is not in keeping with CEQA.

Once the shear keys are cut on the project site, the DSEIR indicates that subdrains will be required. Subdrains and dewatering facilities are permanent features, and are notoriously

unreliable. This was the case in the Hidden Hills development located immediately adjacent to the south of this site, and is the proposed location of the emergency access to Saddleback Meadows. In this study, the buttress subdrains failed, or in most cases the subdrains were missing and groundwater backed up behind the buttress fill, severely impacting the residences and infrastructure.[1] To truly mitigate geotechnical impacts to less than significant levels, and to a degree that will ensure the Planning Commission that CEQA has been satisfied, additional detailed recommendations should be included in this DSEIR prior to certification. In addition, if in fact the subdrains are only to work temporarily, the DSEIR does not explain to where these subdrains will drain. It is presumed that these features will drain to Los Alisos Creek, which is shown as a blue line on the USGS Quad Map. The EIR should discuss the impact of a permanent alteration to the flow of Los Alisos Creek. A higher degree of specificity on this important issue is required prior to EIR certification.

Page 4-25, Mitigation Measure 2-1, state that "A comprehensive remedial grading mitigation plan has been designed to stabilize the project site..." yet on page 4 of the G.A. Nicoll and Associates report in Technical Appendix D, Mr. Nicoll's firm indicates that "a more detailed evaluation" of slope stability issues has yet to be completed and will be conducted as part of the geotechnical review of the 40-scale grading plans. This underscores the fact that only vague and general "concepts" about grading mitigation measures are referenced in DSEIR 566 even though CEQA Guidelines Section 15146 would require a much more detailed and specific discussion of grading impacts and mitigation at this construction-level stage of the project. The mitigation measures listed in this section of the DSEIR are general, boilerplate statements about what information is yet to be gathered and they **do not** represent "a comprehensive remedial grading mitigation plan". The seminal question which remains unanswered is whether DSEIR 566 is intended to be used as the environmental documentation to support the issuance of one or more grading permits for the project or does the County intend to require yet another Supplemental EIR to be prepared to address the grading mitigation measures which are still being analyzed by the project soils engineer? If DSEIR 566 is intended to support the issuance of grading permits, then the construction-level plans and reports necessary for the permits to be issued must be in the EIR itself, instead of being the subject of speculation as to what will be determined at some future date.

Page 4-27, Mitigation Measure 2-3. This mitigation is unnecessarily vague as to who the "decision-maker" is (the Board of Supervisors? the Planning Commission? someone else?), and it is also misleading for the public. CEQA Guidelines Section 15162 states that a subsequent EIR is necessary if "Substantial changes are proposed in the project..." (In this case any substantial change to the grading plan). If the applicant "deviates" from the recorded tract map grading to such an extent that the project has changed and a new application must be submitted per the zoning code, then a subsequent EIR will be required for pubic review of the changed project. In addition, as the current geotechnical mitigation measures are worded, a subsequent EIR would be

[1] *Nolte and Associates, Inc. Geotechnical Study for Seepage, Slope and Pavement Distress, Portion of Tentative Tract 12272, Orange County, California, 1993;and Geotechnical Report of Slope and Street Repair, and Subdrain Installation, A Portion of Tentative Tract 12272, Orange County, California. Both prepared for EPAC Housing Corporation.*

required if conditions are exposed during grading which are significantly different from those described in the project description or geotechnical report. As indicated on page 16 of the Nicoll report: "In the event that during construction, conditions are exposed which are significantly different from those described in this report, they should be brought to the attention of the Soil Engineer." Preparing a Subsequent EIR for changed conditions during remedial grading would not be feasible, therefore sufficient detail must be included with the DEIR and recirculated for public review. The mitigation measure should be revised to reflect this change.

Page 4-27, Mitigation Measure 2-4, is not enforceable unless the Planning Commission requires that the EIR show how the graded areas will be compatible with natural land characteristics of the adjacent open space. Future gathering of information is not proper mitigation for a significant impact.

Page 4-29, Mitigation Measure 2-16, the back cut failure guidelines should be provided now for a construction-level grading permit application EIR. This project is already approved with a recorded map. Therefore, a higher level of detail is essential to demonstrate the overall feasibility of the recommended grading techniques. The criterion the project applicant has to follow is to mitigate impacts to less than significant levels and demonstrate that the mitigation measures are adequate under CEQA. The DSEIR has not accomplished this yet.

Page 4-29, Mitigation Measure 2-20. Ponding will be necessary as part of the dewatering process and within Best Management Practices for Regional Water Quality Control Board requirements. This mitigation measure should be amended to reflect actual ponding that will be necessary and the possibility of Vector Control Permits.

Page 4-31, Mitigation Measure 2-34. Ironically, this so-called "mitigation measure" provides more detailed information regarding groundwater problems and dewatering than any discussion set forth in the text of DSEIR 566. Although page 4-24 of the text merely alludes to "some" ground water that might be encountered during grading, this mitigation measure paints a far more graphic and alarming picture, **"Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher elevations as well as in cuts made late in the year."** As indicated above, groundwater wells are located adjacent to the site and landslide areas. Impacts to surrounding groundwater and groundwater wells from required pumping and dewatering are not even discussed in the text of the DSEIR, yet this mitigation measure appears to expect it. Again, the DSEIR does not, but certainly should, discuss the extreme likelihood that this excessive pumping may impact groundwater wells and groundwater recharge to these surrounding wells. Impacts to groundwater and surrounding wells are considered a significant impact under CEQA. The Planning Commission must be provided with enough factual information before it is asked to certify this EIR. Gathering groundwater information during remedial grading is not proper mitigation. To truly mitigate geotechnical and groundwater impacts to less than significant levels,

and to a degree that will ensure the Planning Commission that CEQA has been satisfied, additional detailed recommendations on grading, dewatering and impacts to groundwater and groundwater wells should be included in this DSEIR prior to EIR certification. This DSEIR requires a higher degree of specificity on this important issue prior to EIR certification.

Page 4-33, Section 4.2.7 of **the DEIR should be changed to read "Implementation of this proposed project, with the mitigation measures outlined above will result in unavoidable adverse geotechnical impacts."** At a minimum, there are significant groundwater impacts and slope stability issues that have not been adequately discussed or mitigated in DSEIR 566 and revision and recirculation of the DSEIR is in order to allow public comment on these matters when they are completed.

Within the Technical Appendix D, page 4, Mr. Nicoll's firm indicates that this geotechnical review is for an EIR level of analysis, and that subsequent analysis will be necessary. However, the "EIR level" soils report in Appendix D does not provide the required specificity for the considerations outlined in the DSEIR, including impacts of dewatering during and following construction, slot cutting or staged excavation to assure on-going support of landslide masses to be stabilized, backcut and forecut slope inclinations, and dewatering criteria. A grading plan review report should include all recommendations and geotechnical criteria necessary to undertake and complete all remedial grading improvements and measures, and it should be included as part of DSEIR 566 and circulated to the public. The Planning Commission cannot, without uncertainty, approve this project under the premise that the impacts are mitigated to less than significant levels. If planning staff chooses to amend the DSEIR to show that significant grading impacts will remain after mitigation, then the introduction of new information will trigger recirculation of the EIR per CEQA Guideline Section 15088.5(a).

Section 4.3 Water/Hydrology

EIR 566 appears to utilize the hydrology map from EIR 561 without changing the underlying site plan. While the existing drainage will not change regardless of the site plan, the post development drainage will change from EIR 561 to EIR 566. DSEIR 566 does not include post development drainage calculations. The DSEIR needs to correlate existing versus post-development change in cfs and % in order for the Planning Commission to base its decision on the storm drain improvement plans that were approved in 1988. This subsequent EIR should incorporate all pertinent information and re-verify the prior calculations and not rely solely on County approvals from 1988.

Page 4-39, Table 10 does not correspond with Exhibit 22 as far as proper labeling of the storm drains. If there are not accurate, the Planning Commission should require updated concepts to verity mitigation measures.

Page 4-38 The EIR states that alterations of the rate of flow of groundwater or impacts to groundwater quality are considered to be insignificant. The geotechnical report indicates that

groundwater and saturated zones will require dewatering during grading and excavation of the sheer key. Groundwater from these slide planes will require pumping for an undetermined period of times (as demonstrated in Mitigation Measure 2-34). At least five (5) groundwater wells are located near this project site, directly in the path of the groundwater flow. The geotechnical report has completely disregarded the impacts that may be incurred downstream during construction dewatering. **This EIR section should consider impacts to groundwater as significant**, otherwise the Planning Commission should not certify this EIR with an incorrect impact finding.

Page 4-41, Mitigation Measure 3-1 indicates that the master drainage concept is included as Appendix L. However, upon closer evaluation of the site plan in Appendix L, it appears that the post development calculations are for the smaller 318 units (EIR 561) project. This EIR cannot be certified as adequate with erroneous information pertaining to a much smaller project.

Page 4-42, Mitigation Measure 3-5. How and why is this mitigation important to reducing hydrologic impacts to less than significant levels? What if the upstream and down stream property owners do not sign or agree to a letter of consent? Does the Manager, PDS/Subdivision and Grading Services Division override the property owner and allow consent? The mitigation measure is not enforceable and does not reduce impacts in any way. It should be deleted.

Page 4-42, Mitigation Measure 3-6 indicates participation in a Master Plan of Drainage prior to issuance of any building permits. Preparing a master plan of drainage after the grading has been completed does not allow the County or the public to comment on proper hydrologic calculations. As indicated in the above comment to mitigation measure 3-1, the master drainage concept included in Appendix L was prepared for the smaller 318 units (EIR 561). The master plan of drainage should be submitted with and incorporated into the DSEIR for recirculation and public review.

Page 4-42, Mitigation Measure 3-7 indicates that impacts to the site's hydrology shall be reduced to a level of insignificance through engineering design and construction techniques. However, the mitigation measures and analysis leading to the measures must be commensurate with the specificity required for a construction-level grading permit application EIR. There is no guarantee that implementation of this mitigation measure will result in insignificant impacts to this environmental issue. Therefore **this impact should be changed to potentially significant after mitigation** because the mitigation measure is not specific enough to conclude otherwise. The mitigation measure is too speculative for future hydrology of a site, particularly with the wrong hydrology report in the DEIR. In addition, there is no timing associated with implementation of this mitigation measure.

Page 4-43, Section 4.3.7 indicates that implementation of the proposed mitigation measures would result in no unavoidable adverse impacts to groundwater hydrology, yet there is no information on impacts to downstream wells from excessive dewatering to support the less than significant impact. This conclusion should be changed to **potentially significant impacts will result after**

implementation of the mitigation measures. In addition, the new information associated with the new finding will require recirculation of DSEIR 566.

Section 4.4 Transportation/Circulation

The traffic section of the DSEIR unfairly limits its review of intersection impacts to El Toro Road/ Santa Margarita Parkway and north. No explanation is given in the DSEIR for this limiting factor, and no analysis is included for the intersections along El Toro south to the San Diego Freeway (I-5). The DSEIR should include all intersections that will be impacted by 705-unit project. This lack of analysis raises another unanswered question: Have the traffic calculations been adjusted to account for the difference in projected use versus actual use of the Foothill Corridor? (The San Joaquin Corridor's projected usage was substantially overestimated by nearly 50%). This difference in projected use versus actual use should be incorporated into the project and regional buildout traffic calculations of the area. With an over estimation of the Foothill Corridor usage, there will need to be an analysis and discussion of traffic along El Toro Road from the Foothill Corridor south to the San Diego Freeway. The intersection of El Toro at the 5-Freeway north and south is virtually impassable during peak hours and the addition of Saddleback Meadows will only exacerbate this growing problem.

Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the traffic impacts from the reuse of the El Toro Marine Corp Air Station as a commercial airport. In addition, it is not clear from the DSEIR if the regional traffic model utilized for the project impacts, and cumulative project impacts, actually incorporates the regional changes to the traffic resulting from a commercial airport at El Toro. CEQA Guidelines Section 15130(b)(1)(B) provides the cumulative impact elements necessary for an adequate discussion include: "A summary of projections contained in an adopted general plan or related planning document (in this case the Draft Reuse Plan EIR) which is designed to evaluate regional or areawide conditions. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency." The El Toro Reuse Plan and EIR should be included in the regional analysis and cumulative impacts, incorporated by reference, and made available for public review during the recirculation process. Without such an analysis, **the DSEIR cannot conclude that this traffic issue will have less than significant impacts.**

It appears as though the traffic study has distributed residential trips to the commercial area from the project internally via Valley Vista Way. The traffic analysis does not take into account that Valley Vista is closed to through traffic and is to be used as an emergency access only. According to the grading plan, the only way to the commercial area will be from either El Toro Road or Valley Vista. If Valley Vista is to be blocked off, all trips in the traffic study that were to use Valley Vista will now use El Toro Road. This inconsistency should be resolved.

Review of the traffic count data shows that the information was gathered after schools in the District had been let out for summer. Updated counts should be included after school has started, but before the Christmas holiday season.

Page 4-52, Traffic Impact Modeling section of DSEIR 566 indicates that the proposed project of 705 units will generate 6,220 trip-ends per day with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the PM peak hour. However, the Traffic Report in Technical Appendix E states on page 27 that "The Saddleback Meadows (TT-10692) development is projected to generate a total of approximately 8,340 trip-ends per day with 540 vehicles per hour during the AM peak hour and 825 vehicles per hour during the PM peak hour". **Why is there nearly a 25% discrepancy with respect to trip-end figures?** Even with the inclusion of passby/diverted trip reductions (as calculated on Table 4, page 29 of the Traffic Report in Appendix E), the total project trip-ends is 7,530, nearly 20% greater than what is stated in the DSEIR. The traffic section of the DSEIR should be reanalyzed and recirculated for public review.

Page 4-52, Section 4.4.2 Effects Found To Be Insignificant. This section concludes that the proposed project would not result in insufficient parking capacity onsite or offsite. This is not consistent with the traffic report in Appendix E which indicates on page 10 that "Verification of adequate parking should be analyzed for the project in conjunction with approval of the site plan." The site plan for Saddleback Meadows is already approved. Lack of available parking for high density housing such as this is the number one Home Owner Association complaint and the subject of many homeowner lawsuits against the developer. The DSEIR should discuss what constitutes a significant parking impact, however, in order to do that, parking verification must be performed first. In order for the traffic engineer's recommendation to be consistent with the DSEIR's finding of insignificance for this parking issue, a parking analysis for the site should be performed prior to certification.

Page 4-82, Mitigation measures 4-12 and 4-13 seem to contradict each other. MM 4-12 requires the applicant to design and construct roadway improvements for El Toro Road, including deceleration lanes and entrance pockets, whereas MM 4-13 requires the applicant to provide only a cash deposit for the difference in cost of designing and constructing the roadway improvements of the project compared to the costs associated with the ultimate configuration of El Toro Road. The question that remains, therefore, is whether the project has to pay for or build its fair share of the traffic improvements to El Toro Road?

Page 4-83, Mitigation measure 4-15 states that "Verification of adequate parking shall be analyzed for the site in conjunction with approval of the site plan". This mitigation measure should be revised based on the comments from page 4-52, Section 4.4.2.

None of the mitigation measures listed in the traffic section of the DSEIR provides for reasonable contributions to the regional impacts on traffic from the proposed El Toro commercial airport.

Section 4.5 Air Quality

Page 4-94, Mobile Source Impacts. The Air Quality section for Mobile Source Impacts has based its calculation on 5,410 daily vehicle trips, the DSEIR traffic section states a calculation of 6,222 daily trips, while the Traffic Report in Appendix E of the DSEIR states a daily trip calculation of

8,340, a total difference of 35%. Therefore it would appear that the air quality calculations are underestimated. Any CEQA calculations that differ by a factor of 10%, let alone 35% or more, cannot be considered similar and therefore, the Air Quality analysis should be updated with the proper information before certification by the Planning Commission.

Page 4-110; It appears that the applicant has chosen to utilize the project related vehicle trips from the previous noise study prepared for 318 units (EIR 561), rather than updating EIR 566 to reflect more than double the number of units associated with the manufactured housing project. This study should be updated with the proper information pnor to certification of the EIR.

Page 4-118, Section 4.6.7 indicates that the project in conjunction with proposed mitigation measures would not result in any unavoidable adverse operational impacts. However, the EIR fails to analyze the noise impacts the project would have, at buildout, on the surrounding religious organizations to the north and south of the site.

Section 4.6 Noise

Notwithstanding the requirements of CEQA Guidelines Section 15130(b)(1)(B), the DSEIR fails to provide a cumulative analysis of the noise impacts from the reuse of the El Toro Marine Corp Air Station as a commercial airport or the noise from traffic associated with the commercial airport. Once this information has been included in this DSEIR, this document should be recirculated for public review.

Page 4-102, Baseline Noise Levels. The Noise section of the DSEIR provides a baseline discussion of the current impacts from the El Toro MCAS fly-overs which exist at present, but the impact section of the EIR fails to identify potential CNEL contours as a result of the base reuse plan as an active commercial airport.

Page 4-103, the first paragraph discusses an area of proposed open space as the project location where the 62 dB CNEL contour falls. This may have been true for the previous EIR 561, however, page 7 of the noise study provided in Appendix G states that the 62dB CNEL location is in an area of proposed commercial development. The proper location of the 62 dB CNEL should be verified prior to EIR certification.

Technical Error: Page 4-103, first paragraph, last sentence: The DSEIR incorrectly uses the 62 dB CNEL as "over productive". Correct terminology from the Noise Study, page 7, first paragraph: the use of 62 dB CNEL is "overpredictive".

Page 4-103, third paragraph, states "Depending upon future site re-use, aircraft noise may or may not be an important issue." **The aircraft noise from a commercial airport at El Toro <u>will be an important issue.</u>** Nowhere else in the DSEIR is the El Toro MCAS reuse discussed or incorporated by reference. No commercial aircraft noise impact analysis is provided. The DSEIR should include project related noise impacts as a result of the El Toro reuse plan as a commercial

airport and traffic related impacts. Once this information has been included in this DSEIR, the document should be recirculated for public review.

Page 4-103, fourth paragraph indicates that individual fly-over events may be noise intrusive and mitigation has been provided. However, neither the baseline discussion, impact analysis nor the mitigation measures in the DSEIR include mitigation for a multiple fly-over commercial airport.

Section 4.7 Biological Resources

The Planning Commission should be aware of a note that was included on the preliminary grading plans, that indicates: "Upon issuance of the grading permit by the County, the County will inform the USFWS of the issuance of this permit and any related activity that may potentially involve a CSS "take" resulting from the associated grading activities". This note on the grading plan takes the mitigation monitoring responsibility out of the hands of the County and impermissibly transfers it to the developer and its grading contractor. The note, a copy of which is attached, is an attempt to sidestep the need for coordinating the CDFG and USFWS permits prior to issuance of the grading permit.

No grading permit should even be considered for issuance unit <u>after</u> the gnatcatcher study has been completed per USFWS protocol. Under the Federal Endangered Species Act, all "take" must be accommodated regardless if a recorded tract map is involved. This is a grading permit level of detail EIR, and thus, the studies included should reflect CEQA Guidelines Section: 15146: "The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR." (i.e. grading plan permit). Section 15146 (a) states: "An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy". If USFWS decides that project modifications or on-site mitigation is required, then the final tract map will have to be changed any way.

Between the time when EIR 561 and EIR 566 were both prepared, there seems to have been a change in the vegetation communities on the site, or the biology reports are inconsistent between last year's EIR and this year's EIR. Both EIR 561 and 566 are based on the same site and the same biological study, yet the numbers of plant species have changed without new field work. The only updated biological fieldwork was done April 1996 for the western spadefoot toad. The following discrepancies between the two biological reports prepared for this EIR need to be rectified: EIR 561 indicated 119 plant species where EIR 566 indicates 110; what were the previous other 9 plant species and where are they now?; were any of these 9 disappearing plant species sensitive? EIR 561 indicates 70 native plant species on site, yet EIR 566 indicates 73 native plant species. Were three more native plant species planted in a year or is EIR 566 incorrect? EIR 561 originally indicated 49 non-native species and now EIR 566 indicates only 39 non-native species. Without new fieldwork having been conducted by the consultant, which

biology report is correct? Both Figure 5 in EIR 566 technical appendix and Figure 3 in EIR 561 technical appendix show the same vegetation, yet the vegetation quantities have changed.

Page 4-126, Amphibians. This section states that "No amphibians ere observed during surveys of the site", yet Exhibit No. 50 on page 4-122 lists the Western Spadefoot Toad as present. This discrepancy should be corrected.

Page 4-125, Ephemeral Ponds. The section states that "All of the ephemeral ponds were artificially created a number of years ago..." Given the geological conditions of frequent landslides in the area, these wetlands could have been "slump" or "slope" ponds that underwent human modification at a later time. Further information is needed in the DSEIR regarding the origin of these wetlands.

Page 4-148 of EIR 566, Coastal California Gnatcatcher, indicates that no gnatcatcher survey has been performed with USFWS protocol. Specific surveys for presence or absence must be performed at this level of detail for this construction stage in the project. Combined with the disturbing note on the grading plans, the County will lose the ability to monitor any mitigation for the CCG. In order for this EIR to be deemed adequate under CEQA Guidelines Section 15126 (c), the focused CCG survey must be performed prior to certification of this EIR.

Page 4-148, Raptor Foraging Habitat: Whatever consultant recommended to the developer that project slopes would constitute sufficient raptor foraging habitat did not determine this through any consultation with either CDFG or the USFWS. Consultation on appropriate impact significance should be reflected in this DSEIR prior to certification.

Page 4-151, Section 4.7.6, commences its discussion on mitigation measures by stating as a "given" that there is supposedly no ability on the part of the County to "deviate from the final recorded tract map." However, no legal or factual support is given for this statement, and it appears to be directly at odds with CEGA Guidelines Section 15041 which provides that the "lead agency for a project has the authority to require changes in any or all activities involved in the project in order to lessen or avoid significant effects on the environment." If this statement, which appears to be an excuse for not doing a complete mitigation analysis, is based on some unstated legal assumptions about the rights of the developer, then this analysis should be explained in detail in DSEIR 566 to let the public know why CEQA is not being complied with fully.

Page 4-153, Mitigation Measures SC 7-1 through 7-7 and measures 7-11 through 7-14 would appear to be of no value in light of the note placed on the preliminary grading plans. In addition, although EIR 561 provided the mitigation plans as a component of the EIR, DSEIR 566 only provides mitigation in the form of conditions to prepare mitigation plans in the future. The level of detail of the mitigation measures should be commensurate with the level of detail in a recorded tract map. Therefore this EIR does not adequately satisfy CEQA Guidelines Section 15126 (c) requirements at this time. Gathering further information and complying with resource agencies in

the future is not proper mitigation. Biological mitigation for ACOE and CDFG coordination may change the development plan, which would then require a revised EIR.

Page 4-153, Mitigation Measure 7-2 states that a 1603 application has been submitted to CDFG. What is the status of the application? Has CDFG acknowledged receipt of the application? Was the application deemed complete by CDFG? What additional information did CDFG ask for? This future mitigation would hold more credence as a CEQA mitigation measure if more detail were known about the 1603 permit for this project. CDFG has a very limited staff and processing of the permit may take upwards of nine months to a year or more to complete. Is the County going to wait a year for the 1603 permit prior to issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow the site to be radically altered prior to the issuance of the 1603 permit?

Page 4-153, Mitigation Measure 7-3 states that the applicant will obtain the necessary individual or nationwide permit... According to Page 4-146, second paragraph, the biological consultant states that an individual permit will be necessary. The mitigation measure should accurately state the proper permit necessary. As with the 1603 permit, has the applicant submitted an application for a 404 permit? Has the ACOE acknowledged receipt of the application? Was the application deemed complete by the ACOE? What additional information did the ACOE ask for? The ACOE has even fewer staff than the CDFG, and processing of the permit may take more than a year to complete. Is the County going to wait a year for the 404 permit prior to issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow the site to be permanently stripped of sensitive biological resources prior to the 404 permit being issued?

Page 4-153, Mitigation Measure 7-4 states that the applicant is to provide a summary in acres of coastal sage scrub to be impacted, but this has already been stated in Table 30 of the DSEIR. The mitigation measure only serves to lead the reader back to the beginning of the Impacts section of the DSEIR. The mitigation measure should be specific and consistent with the biological consultants recommendation of "The dedication and long-term preservation of 22.9 acres of habitat of Saddleback Meadows, revegetation of 46.5 acres of Veturan-Diegan transitional coastal sage scrub on site and contribution of the Orange County NCCP".

Page 4-153, Mitigation Measure 7-5 states that the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the USFWS. This mitigation measure is misleading because it fails to state what permit is needed. USFWS may impose additional mitigation measures as part of its review process. In order to assure that USFWS mitigations do not conflict with any other measures in the DSEIR, the consultation with USFWS should be conducted prior to certification of the DSEIR. As with the 1603 and 404 permit, has the applicant submitted a request for USFWS consultation or filed an application? Has the USFWS acknowledged receipt of the application? Was the application deemed complete by the USFWS? What additional information did USFWS ask for? The USFWS has the fewest staff of all three agencies, and processing of the permit and consultation may take more than a year to complete. Is the County going to wait a year for the Section 10a permit prior to

issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow clearing and grubbing of the site prior to the 10a permit?

Page 4-154, Mitigation Measure 7-6 could in effect override mitigation measure 7-5, if the Administrator, Planning and Zoning so desired. This mitigation measure should be deleted.

Page 4-154, Mitigation Measure 7-7. If there are additional permits required by the USFWS, the DSEIR should list those specific permits. Consultation with the USFWS, as indicated on page 4-151 last paragraph of the DSEIR, states that input has been received from the USFWS. Why didn't the EIR preparer ask what additional permits may be necessary for native vegetation?

Page 4-155, Mitigation Measure 7-8, F, states that an experienced nursery or other landscape contractor shall care for the transplanted trees for only six (6) months. The biological report states on page 49, second paragraph, **"In order to ensure the success of mitigation, the Project proponent should enter into a five year secured agreement with the County of Orange to cover the Projected cost to install, monitor, and report on the mitigation Project. This agreement will be in the form of a 100 percent bond."** This extremely important mitigation measure is found nowhere in the DSEIR. If the DSEIR does not reflect the recommendations of the expert biologist, then mitigation measure 7-8 F is ineffective and invalid. The DSEIR cannot be certified without amending this measure to reflect the biologist's recommendation.

Page 4-157, Mitigation Measure 7-11 states that the applicant shall provide additional evidence that onsite CSS habitat is not occupied by California Gnatcatchers. The survey for the CCG should be performed now to rule out any occupied habitat. What the mitigation measure is trying to say is that if CCG is found on site, the applicant will be required to file an application for a Federal Section 10(a)(1)(B) permit. If CCG is found, the USFWS will commences their consultation and additional mitigation measure may be imposed by the USFWS. **In order to assure that USFWS mitigations do not conflict with any other measures in the DSEIR, the CCG survey should be performed prior to certification of the DSEIR.** The mitigation measure should accurately state the proper permit necessary. As with the 1603 and 404 permit, has the applicant submitted a request for USFWS consultation or filed an application for a Section 10a permit? Has the USFWS acknowledged receipt of the application? Was the application deemed complete by the USFWS? What additional information did USFWS ask for? The processing of the permit and consultation may take more than a year to complete. Is the County going to wait a year for the Section 10a permit prior to issuing the grading permit, as indicated in the mitigation? Or will they issue the preliminary grading permits to allow clearing and grubbing of the site prior to the 10a permit?

Page 4-158, Mitigation Measure 7-12, is not enforceable as a mitigation measure. The mitigation for the wildlife movement corridor should be included as part of the DSEIR for public review. The mitigation measure should list the onsite or off site options for the movement corridor. This measure should be deleted, and an alternative mitigation measure should be provided.

Page 4-158, Mitigation Measure 7-14. This measure in not enforceable as a mitigation measure. The relocation and establishment of a mitigation plan should be included as part of this DSEIR as it was with EIR 561.

Page 4-158, Mitigation Measure 7-15. This measure is not enforceable not does it further minimize impacts with wording such as **"Where possible..."**, "Lighting within development projects adjacent to conserved habitat **"should"** be selectively placed...", ..."lighting from homes abutting conserved habitat **"should"** be screened...", and, "These lighting restrictions **"should"** be incorporated into the project's CC&R's". All of these "should" mitigation will become "shall" upon certification. If the Planning Commission is not sure that it wants to implement these measures, they should either be deleted them or change all "shoulds" to "shalls".

Page 4-159, Section 4.7.7 Unavoidable adverse impacts. Under CEQA Guidelines Section 15126(c) all mitigation must be enforced that will "minimize the significant effects" prior to EIR certification. The comment that the County will issue a letter of insignificance once the Interim Loss Habitat Mitigation Plan is approved has no meaning in terms of CEQA. The public has a right to review the ILHMP prior to EIR certification. Also, the second bullet item under this same section discusses future mitigation. A future survey is not mitigation according to the Federal EPA. This is a recorded tract map and a construction level grading permit application EIR. The biological report in the EIR should be the basis of any biological opinion.

Section 4.8 Aesthetics

Page 4-174. Although aesthetic impacts will remain significant, even after mitigation, the Project Design Feature mitigation measures 8-1 through 8-4 are only standard conditions of approval for any development project. Mitigation measure 8-1 requires public utilities to be undergrounded, but the County would require this "Design Feature" anyway. Mitigation measures 8-2 and 8-3 would only truly be design features if the applicant were required to underground all drainage swales. This is more costly, but in order for these aesthetic mitigation measures to be compatible with the biological mitigation of the manufactured slopes providing rapture foraging habitat, the cost would be justified by both mitigations that would be accomplished.

Page 4-174, Mitigation Measure 8-4 in not enforceable as a Project Design Feature. If the Trabuco Canyon Water District owns the tank site, the District will be responsible for the landscape screening, not the developer or the County. This mitigation measure should include additional monetary compensation to the Water District for additional landscape screening.

Section 4.9 Cultural/Scientific Resources

Page 4-178. The DSEIR makes no attempt to analyze either the direct or indirect environmental impacts of the project on the religious or sacred uses within the potential impact area. In this case,

the potential impact area extends outside of the property boundary. This important issue should be discussed in the DSEIR prior to certification.

Section 4.12 Public Services

Page 4-216, Section 4.12.2, Effects Found to be Insignificant. The EIR preparer should look at this section again. The EIR incorrectly reads, "The Initial Study prepared for the proposed project did **not** identify any (sheriff, fire, education, and library) related effects as **insignificant**". Therefore, all the effects were significant.

Page 4-217, Section 4.12.3, Fire. The 1.4 million-gallon tank was the same quantity tank utilized in EIR 561 for 318 homes. The EIR should reflect the proper fire flow amount for 705 units and the proper tank size or number. New impacts to the tank site will require recirculation of the EIR prior to certification.

Page 4-222, Mitigation Measure 12-4, should be corrected to reflect the proper tank size.

Section 4.13 Utilities and Service Systems

Page 4-235, Water. While the project description indicates the need for a 1.4 million-gallon tank, the Draft EIR Section 4.13.6, does not mention the need to fire flow storage for a 1.4 million-gallon tank. With the inconsistency between the two EIRs, this EIR is not certifiable under CEQA unless the information presented to the Planning Commission is accurate, factual and current.

Section 6.0 Alternatives to the Proposed Project

The EIR has failed to identify an alternative location for this project, and is therefore inconsistent with CEQA. DSEIR 566, without a discussion of an alternative location cannot be certified as adequate. Should the Final EIR for 566 choose to include an alternative location analysis, the EIR should be recirculated with the new information for public review. Section 15126 (B) 2 states that "If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR". However disclosure, at this time, of a new location would constitute new information and require recirculation of the DEIR.

ATTACHEMENT

SFC Consultants

ROUTE. INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT THOSE SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THE PROTECTION OF, AND ANY DAMAGE TO, THESE LINES OR STRUCTURES.

ALL RETAINING WALLS SHOWN ON THESE PLANS ARE SHOWN FOR REFERENCE ONLY, AND ARE TO BE CONSTRUCTED PER SEPARATE PERMIT.

CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

HWORK QUANTITIES

T	FILL
740 C.Y	60 030 C.Y
260 C.Y	797,990 C.Y
	113,100 C.Y.
	11,880 C.Y
3,000 C.Y.	983,000 C.Y.

CK MEADOWS RD.

MAP DATE IDENTIFIER
DATE OF LATEST CHANGE TO THIS MAP
1-13-95

DATE : 4-1-94

R J.A.G.

J.A.G.

PRELIM. GRADING PLAN
FOR
TRACT NO. 10692

LOTS : 1-203, 229-244, 280-288, 315-378
708-710, 714, 715, 717, PORT. A, C, D, E, F, G, & L.

SHEET **1** OF 13 SHEETS

W.O. 12896-1 TR 10692 GRADING 12of
BIN 171 E DOC # 376617

50. STOCKPILING AND/OR VEHICLE STAGING AREAS SHALL BE LOCATED AS FAR AS PRACTICABLE FROM DWELLINGS.

51. EROSION CONTROL DEVICES WILL BE MODIFIED AS NEEDED AS THE PROJECT PROGRESSES. AND PLANS OF THESE CHANGES SUBMITTED FOR PLAN CHECK AS REQUIRED.

52. THE PLACEMENT OF ADDITIONAL DEVICES TO REDUCE EROSION DAMAGE WITHIN THE TRACT IS LEFT TO THE DISCRETION OF THE FIELD ENGINEER.

53. A GUARD WILL BE POSTED ON THE SITE WHENEVER THE DEPTH OF WATER IN ANY DEBASIN EXCEEDS TWO (2) FEET.

54. MITIGATION:

A) PRIOR TO THE ISSUANCE OF A GRADING PERMIT, A NOTE SHALL BE PLACED ON THE GRADING PLAN WHICH STATES THE FOLLOWING:

ON MARCH 25, 1993, THE U.S. FISH AND WILDLIFE SERVICE (USFWS) LISTED THE CALIFORNIA GNATCATCHER AS A "THREATENED SPECIES". THE FEDERAL ENDANGERED SPECIES ACT (ESA) PROHIBITS ANYONE FROM "TAKING A GNATCATCHER, WHICH INCLUDES KILLING, HARMING, OR HARASSING THE SPECIES. NO COASTAL SAGE SCRUB VEGETATIVE RESOURCES SHOULD BE REMOVED WITHOUT APPROVAL FROM THE USFWS. ISSUANCE OF THIS PERMIT BY THE COUNTY OF ORANGE DOES NOT MEAN OR IMPLY THAT THE PROPOSED DEVELOPMENT IS IN COMPLIANCE WITH THE ENDANGERED SPECIES ACT. IT IS THE RESPONSIBILITY OF THE PROPERTY DEVELOPER TO CONSULT WITH AND RESOLVE A "TAKE" ISSUE WITH AND OBTAIN THE APPROPRIATE PERMITS FROM THE USFWS.

IT SHOULD ALSO BE NOTED THAT ANY PERSON WHOSE ACTIVITIES RESULT IN A "TAKE" IN ACCORDANCE WITH SECTION 9 OF THE ESA MAY BE SUBJECT TO CRIMINAL PROSECUTION AND THAT A "TAKE" MAY RANGE FROM REMOVAL OF COASTAL SAGE SCRUB SUCH AS CLEARING, GRUBBING, MOWING, FUEL MODIFICATION, DISCING, TRENCHING, OR OTHER RELATED CONSTRUCTION ACTIVITIES, TO THE OPERATION OF EQUIPMENT OR THE MERE PRESENCE OF CONSTRUCTION PERSONNEL IN CLOSE PROXIMITY TO COASTAL SAGE SCRUB RESOURCES THAT MAY CONSTITUTE HARASSMENT THROUGH THE GENERATION OF DUST, NOISE, ETC.

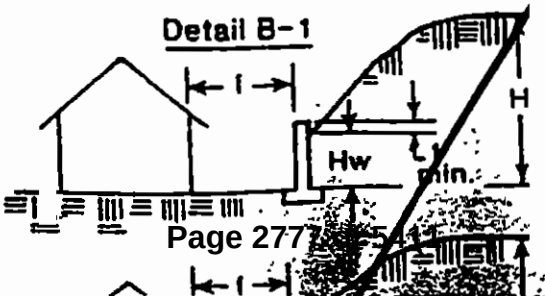
UPON ISSUANCE OF THE GRADING PERMIT BY THE COUNTY, THE COUNTY WILL INFORM THE USFWS OF THE ISSUANCE OF THIS PERMIT AND ANY RELATED ACTIVITY THAT MAY POTENTIALLY INVOLVE A CSS "TAKE" RESULTING FROM THE ASSOCIATED GRADING ACTIVITIES. ALL QUESTIONS AS TO WHETHER OR NOT YOUR PROJECT MAY BE IN VIOLATION OF THE ENDANGERED SPECIES ACT SHOULD BE DIRECTED TO THE U.S. FISH AND WILDLIFE SERVICES AT (619) 431-9440.

BIOLOGICAL RESOURCES

B) All grading activities shall be avoided within the drip line (outer edge of the tree canopy) of any oak tree designated for in-place preservation.

C) Storage of heavy equipment or building materials shall not occur within 25 feet of any oak tree area.

D) Temporary fencing shall be placed around individual trees and oak woodlands to be preserved for the duration of construction. Fencing shall be placed at the drip line of oak trees and shall not constitute an impediment to wildlife circulation.



CAUTIONS TO PREVENT PUBLIC TRESPASS ON TO AREAS WHERE IMPOUN
WATER CREATES A HAZARDOUS CONDITION.

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3 PLAN

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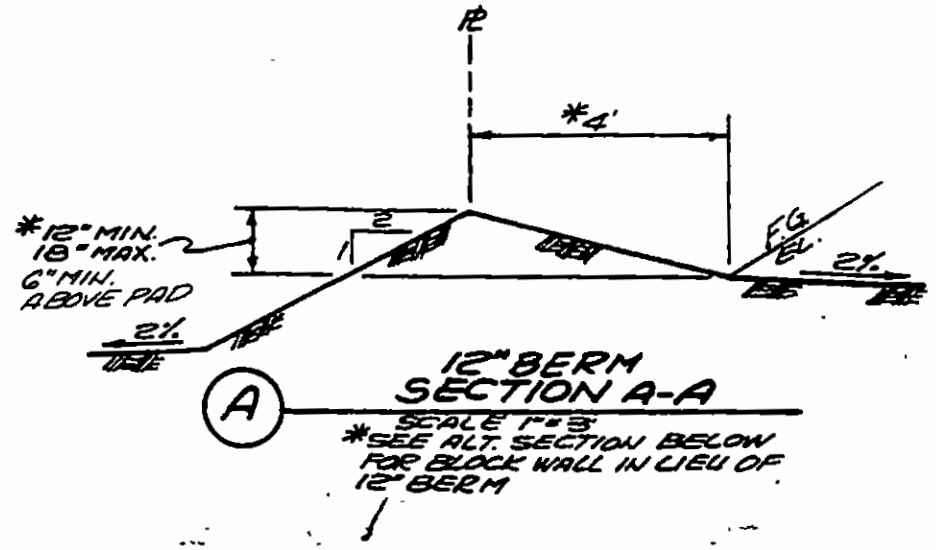
54 THE PERMITTEE SHALL NOTIFY ALL GENERAL CONTRACTORS, SUBCONTRACTORS, MATERIAL SUPPLIERS, LESSEES, AND PROPERTY OWNERS THAT DUMPING OF CHEMICALS INTO THE STORM DRAIN SYSTEM OR THE WATERSHED IS PROHIBITED.

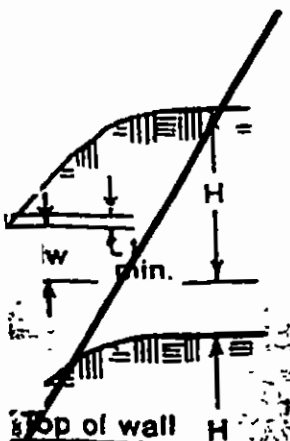
55 PERMITTEE SHALL MAINTAIN CONSTRUCTION SITE IN SUCH A CONDITION THAT AN ANTICIPATED STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS, WASTES FROM PAINTS, STAINS, SEALANTS, GLUES, LIMES, PESTICIDES, HERBICIDES, WOOD PRESERVATIVES AND SOLVENTS, ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS, LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; FERTILIZERS, VEHICLE/EQUIPMENT WASH WATER AND CONCRETE WASH WATER, CONCRETE, DETERGENT OR FLOATABLE WASTES, WASTES FROM ANY ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING, AND SUPER CHLORINATED POTABLE WATER LINE FLUSHING.

DURING CONSTRUCTION, PERMITTEE SHALL DISPOSE OF SUCH MATERIALS IN A SPECIFIED AND CONTROLLED TEMPORARY AREA ON-SITE, PHYSICALLY SEPARATED FROM POTENTIAL STORM WATER RUNOFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS

56 PERMITTEE MAY DISCHARGE MATERIAL OTHER THAN STORM WATER ONLY WHEN NECESSARY FOR PERFORMANCE AND COMPLETION OF CONSTRUCTION PRACTICES AND WHERE THEY DO NOT. CAUSE OR CONTRIBUTE TO A VIOLATION OF ANY WATER QUALITY STANDARD, CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR NUISANCE; OR CONTAIN A HAZARDOUS SUBSTANCE IN A QUANTITY REPORTABLE UNDER FEDERAL REGULATIONS 40 CFR PARTS 117 AND 302

57. DEWATER OF CONTAMINATED GROUNDWATER, OR DISCHARGE CONTAMINATED SOILS VIA SURFACE EROSION IS PROHIBITED. DEWATERING OF NON-CONTAMINATED GROUNDWATER REQUIRES A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FROM THE RESPECTIVE STATE REGIONAL WATER QUALITY CONTROL BOARD.





℄ WHERE SHOWN

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AUG 22 1997
Environmental & Project Planning

August 22, 1997

Mr. Raymond H.C. Brantley
Environmental Planning Section
Orange County Planning & Development
Services Department
300 North Flower Street, Room 321
Santa Ana, CA 92702-4048

VIA HAND DELIVERY

Re: Saddleback Meadows/Comments on DSEIR 566

Dear Mr. Brantley:

As you know, our firm represents the Vedanta Society of Southern California (the "Society") which, for over five decades, has owned and maintained the Ramakrishna Monastery (the "Monastery") in an area of Trabuco Canyon which is immediately adjacent to the southeastern portion of the Saddleback Meadows property (the "Property"). On behalf of the Society, and pursuant to the 10-day extension of time granted in the August 12 letter which I received from Tom Mathews, Director of the Orange County Planning & Development Services Department (the "Department"), we are submitting written comments on Draft Subsequent Environmental Impact Report No. 566 ("DSEIR 566" or the "DSEIR").

A. Regrettably, The Society Is Compelled To Submit Its Comments Under Protest.

The Society must note for the record that it is submitting its comments under protest because of the Department's refusal to accommodate the Society's request, as set forth in my letters of August 6 and 8, 1997, that the Society, and all members of the public, be provided with adequate time to comment on DSEIR 566 *after* the grading plans and the grading plan review which are the subject of Grading Application GA960048 (the

"Grading Application") have been made a part of DSEIR 566 and the DSEIR has been recirculated for public comment Because of the Department's decision to deprive the public of access to the very documents upon which the Grading Application is based, i.e., the 40-scale grading plans and the detailed review of those plans by the soils engineer of record, the geotechnical consultants engaged by the Society to comment on DSEIR 566 have been thwarted in their efforts to fully and properly assess the adverse environmental impacts and feasible mitigation measures associated with the rough grading operations for the construction of the 705 units of manufactured housing which were supposedly authorized by Final Tract Map 10692 (the "Tract Map")

If we were at the general plan amendment stage or the zone change stage in the development of the Saddleback Meadows project (the "Project"), the Society could better understand the Department's decision not to make the grading plans and the grading plan review available to the public in connection with a CEQA analysis of the Project, but, since we are now at the "point of no return" in the Project and the scrapers and bulldozers are about to be unleashed to permanently alter the topography, and to forever destroy the environmentally sensitive features of the Property, there seems to be no justification for withholding from the public *any* of the important documents that the County of Orange will necessarily rely upon in deciding whether to grant the Grading Application and to issue a grading permit to Aradi, Inc., dba California Quartet (the "Applicant").

The Department need look no further than the front cover page of DSEIR 566 to see that "Grading Application GA960048" is the subject of the DSEIR. Accordingly, if the Department intends to recommend that DSEIR 566 be certified by the Planning Commission and be used as the environmental documentation to support the granting of the Grading Application, then -- in equity and in good conscience -- the Department must "play fair" and share with the public all of the documents needed to fully assess the impacts and mitigation measures associated with the Grading Application.

Although more will be said about this point below, suffice it to say at this juncture that the Society will attempt to do the best that it can with the limited information which the Department has made available to date. Most of the soils reports referenced in DSEIR 566 are of little help in analyzing the grading impacts of the Project because they are based upon a 318-unit project which was *not* approved by the Planning Commission or the Board of Supervisors and which does *not* involve the same extent of mass grading, or the same remedial grading improvements, required for the construction of the 705-unit manufactured housing Project which is the subject of the Grading Application Moreover, the *only* soils report in the DSEIR which addresses the 705-unit Project expressly concedes that it is *incomplete* and that the most important aspects of the remedial grading operations for the 705-unit Project will be analyzed *later* in connection with the grading

plan review that is to "accompany' the Grading Application (*See*, DSEIR 566, Appendix D, p 4, ¶ 4.)

Without being allowed access to the basic documents that will, in fact, "accompany" the Grading Application, it is hardly fair that the Society, or any other members of the public, be required to submit comments on the adequacy of the environmental documentation prepared to evaluate the effects of the Grading Application. However, the Society will endeavor to do so without waiving its objections to the inherent unfairness of the CEQA review process that is currently being conducted by the Department The Society urges the Department to reconsider its decision to push ahead with the review of DSEIR 566 without allowing the public to see documents which are crucial to the approval of the Grading Application. Indeed, the Society believes that the fairness and disclosure problems which presently exist can easily be corrected by simply recirculating DSEIR 566 after all of the grading plans and the grading plan review have been made a part of the DSEIR or, at the very least, have been incorporated by reference in the DSEIR and have been made available for public review.

Of course, the Society also believes that, if the Department persists in its refusal to make important project documents available to the public, a court of law would certainly find that the Department's actions in this regard were exceedingly unfair and not at all in keeping with either the letter or the spirit of CEQA.

B. <u>DSEIR 566 Fails To Comply With The Specificity Requirements Of CEQA Guidelines Section 15146</u>.

The Society will give credit where credit is due and will commend the Department for determining that a Subsequent EIR under CEQA Guidelines section 15162 would have to be prepared and certified before the Grading Application submitted by the Applicant in December 1996 could be approved.

In requiring the preparation of a Subsequent EIR, the Department was not only complying with the dictates of the Foothill/Trabuco Specific Plan (*see*, FTSP, p. III-20, § III.D.3.2c), but it was also adhering to the legal analysis set forth in the landmark case of *Day v. City of Glendale* (1975) 51 Cal.App.3d 817 In *Day*, the Court of Appeal held that a grading permit application is a "project of mixed ministerial-discretionary character [which] should be treated as a discretionary project" for purposes of CEQA review, especially in cases in which the applicable grading code affords staff a great deal of discretion in issuing, or conditioning the issuance of, a grading permit (51 Cal.App.3d at pp. 823-824)

However, having correctly determined that a Subsequent EIR should be prepared, the Department must now ensure that the environmental documentation prepared by the Applicant's consultant fully complies with the requirements of CEQA and the State CEQA Guidelines which govern the preparation and review of a construction-level EIR. Unfortunately, in its present form, DSEIR 566 does not comply with these requirements because it postpones for *future* analysis the specific details of the very activity which it was supposedly prepared to address, i.e., the rough grading of the Project

There can be no doubt that DSEIR 566 was supposed to analyze the impacts and mitigation measures relating to the Grading Application. As stated on page 2-8 of DSEIR 566, the Department determined, on December 16, 1996, that "a Subsequent EIR is required to evaluate the effects of the *grading application*" (Emphasis added) In addition to what is stated in the DSEIR, Mr. Mathews also confirmed in his August 12 letter to me that the Applicant's grading permit application was "the *initiating activity* which resulted in the determination that Draft EIR 566 be prepared" (Emphasis added.)

Since it is clear, therefore, that the Grading Application was the project approval which *initiated* and *necessitated* the preparation of DSEIR 566, it is only logical that the DSEIR analyze the impacts of the rough grading operations not in mere general and conceptual terms, but in the *specific* and *detailed* terms that CEQA requires CEQA Guidelines section 15146 is very explicit on this point and requires far more specificity than is evidenced in DSEIR 566. As stated in section 15146, "[a]n EIR on a construction project will necessarily be *more detailed* in the *specific effects* of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the *effects of construction* can be predicted with greater accuracy." (Emphasis added.)

CEQA Guidelines section 15146 further provides that the degree of specificity required in an EIR must correspond to "the degree of specificity involved in the underlying activity which is described in the EIR." What this means with reference to DSEIR 566 is that, since the DSEIR was expressly prepared to evaluate the effects of the Grading Application, the *specific details* of the rough grading activities for the construction of the 705-unit Project must be analyzed in DSEIR 566. In order to do that, of course, the documents which County staff will necessarily review and comment on *before* approving the Grading Application -- which will include, at a minimum, the grading plans and the geotechnical review of those grading plans -- must be made a part of, or at least incorporated by reference into, the DSEIR so that all the detailed information that is available to the County is likewise made available to the public through the CEQA review process.

C. **DSEIR 566 Fails To Comply With The Technical Detail Requirements Of CEQA Guidelines Section 15147.**

In the letter which I sent to you on August 8, 1997, a copy of which is attached as Exhibit "A" hereto and is incorporated herein, the point was made that both California case law and the provisions of CEQA Guidelines section 15147 make it abundantly clear that all technical data, maps, plans, diagrams, etc., which are necessary to make a "full assessment" of the environmental impacts of the project being evaluated must be contained in the EIR or in the Appendices thereto In this case, therefore, since DSEIR 566 was expressly prepared to evaluate the environmental effects of the Grading Application, the 40-scale grading plans and the geotechnical review of those plans should have been made part of the DSEIR *before* it was circulated for public comment.

In his August 12 letter to me, Mr Mathews disagreed with the above-stated position and stated that "[s]ufficient detailed grading and geotechnical information is available in the Draft EIR." This is simply not the case. Indeed, without the grading plans and the geotechnical grading plan review which G.A. Nicoll indicates will "accompany" the Grading Application, the information regarding grading impacts and mitigation measures in DSEIR 566 is entirely inadequate. The only grading plan set forth in the DSEIR is a *conceptual* grading plan which has been photocopied and reduced to such a level that it is completely unreadable. Although the DSEIR makes reference to soils reports that were prepared in connection with DEIR 561, these reports were prepared in connection with a *different* project and do *not* address the same rough grading operations involved in constructing the 705 units of manufactured housing which are the subject of the Grading Application

The *only* soils report referenced in DSEIR 566 which addressed the 705-unit Project is the one found in Appendix D to the DSEIR. However, that report makes no bones about the fact that it was only "prepared at an EIR level" (whatever that means). In fact, the Geotechnical Environmental Impact Report prepared by G.A. Nicoll & Associates, dated March 14, 1997, expressly states that a "*more detailed evaluation* of the slope stability, including analysis of buttress backcuts and forecuts, individual cut slope buttresses, etc., will be conducted during the 40-scale grading plan review to accompany the grading permit application " (Appendix D, p. 4, ¶ 4; emphasis added.)

The March 1997 report prepared by Nicoll & Associates also states at page 16 that "*[c]omplete details* of the corrective grading will be illustrated in the final geotechnical report for the site, which will be submitted for *grading plan permitting* purposes." This is obviously a concession by the soils engineer of record for the Project that more detailed geotechnical analysis must be performed before the County will be in a position to approve the Grading Application and issue a grading permit to the Applicant.

The question which naturally arises, therefore, is *why* is DSEIR 566 being processed for certification *before* this more detailed information has been made available to the County?

The above question must be answered by the Department and cannot be dismissed as a mere hypertechnical inquiry relevant only to lawyers and judges Indeed, the question goes to the very heart of the problem facing anyone who tries to determine -- *without* the benefit of the 40-scale grading plans for the entire Project and the geotechnical review of those plans -- how extensive, how costly, and how time-consuming the grading operations for the Project will be.

D. Important Details Regarding The Nature And Extent Of The Proposed Grading Must Be Provided In Order To Determine The Cost And Duration Of The Grading And To Ascertain Whether The Affordable Housing Condition Imposed On The Project Is Still Achievable.

Without knowing certain basic details regarding the nature and extent of the millions and millions of cubic yards of corrective or "remedial" grading that will need to be undertaken in constructing the Project -- such as, for example, the estimated depth of the removals (possibly up to 120' deep in places!), the limits of the backcut that may be left open at any one time without increasing the risk of slope failure beyond the 10% estimated failure rate, the recommended procedures for controlling groundwater encountered during excavation, etc. -- it is *not* possible to develop a reliable estimate of the cost or duration of the grading activities to be performed at the Project site.

According to section 4.2 of DSEIR 566, all of the rough grading at the Project is to be "completed in one *continuous* phase." (DSEIR, at p. 4-22, emphasis added.) Assuming this is true,[1] then all of the persons living in close proximity to the Property, including the monks at the Monastery, the priests and students at St. Michael's Abbey, and the residents of the Hidden Ridge and Portola Hills developments, would be keenly interested in knowing how many months or *years* they could expect to be subjected to the noise, dust, diesel smells, and bare-dirt conditions which would be caused by the veritable army of large earth-moving equipment (e.g., scrapers, dozers, blades, compactors, trucks, etc.) that would have to be deployed at the Project site.

However, without being allowed access to the 40-scale grading plans for the entire Project and the grading plan review containing all of the soils engineer's

[1] After being compelled to make separate arrangements with the Applicant to pay for copies of the 40-scale grading plans relating to the Grading Application, the Society was surprised to learn that the plans made available by the Applicant cover only a *portion* of the Project referred to as "Phase I." This would clearly seem to suggest that the statement in DSEIR 566 that all grading will be completed in one continuous phase is not true.

specifications and recommendations for undertaking the proposed 8.9 million cubic yards of remedial grading work, including the construction of buttresses, shear keys, stabilization fills, and subdrain systems, no grading contractor in Orange County could even begin to estimate the amount of labor, material, and equipment that would be required to rough grade the Project in one continuous phase. In fact, to even project an average daily production rate for the remedial grading operations without knowing the soils engineer's recommendations contained in the grading plan review would be nothing short of wild speculation.

Interestingly, without providing any explanation or breakdown of any kind, the Applicant's consultant has projected an average daily production rate of 30,000 cubic yards per day for the "total project-related grading," amounting to 11.5 million cubic yards. (DSEIR, at p 4-22.) Based on this projected rate, it has been estimated in DSEIR 566 that all of the rough grading at the Project "would require approximately 18 months to complete" (Id.) To say the least, this estimate strains credulity, and raises serious questions about whether the duration of the Project grading has been purposely understated in the DSEIR.

Since almost 80% of the grading (8.9 out of a total of 11 5 million cubic yards) will consist of slow, costly, and very difficult remedial work to stabilize the proposed slopes by means of landslide shear keys, buttresses, and stabilization fills, it is nothing short of incredible that anyone could even suggest that this work -- which will involve deep slot-cutting that will have to be performed by using special excavating equipment and extremely conservative backcutting procedures -- could be accomplished at anything close to 30,000 cubic yards per day on *average*.

In fact, the Society has engaged the chief estimator of a local grading contracting firm as a consultant, but, without having access to all the grading plans and to the grading plan review to know what the soils engineer will be recommending regarding how the remedial grading work will have to be performed at the Project, he has been unable to formulate any reasonable estimates of the time or cost that will be involved in the grading -- except to note that the 18-month projection set forth in DSEIR 566 appears to be grossly *underestimated*, possibly by a factor of 100% or more.

The reason that it is important to know the approximate *cost* of the rough grading is that, unless one knows what kind of dollars are involved, one cannot determine whether the measures proposed in DSEIR 566 to mitigate the geotechnical hazards at the site (e.g., landslide shear keys, buttresses, stabilization fills, etc) are truly *feasible*, within the meaning of CEQA section 21061.1, and can be "accomplished in a successful manner within a reasonable period of time, taking into account economic . factors" In other words, the costs of the remedial grading work could turn out to be so prohibitively

expensive in light of the economics of the Project that the mitigation measures proposed in the DSEIR might not be feasible and thus could not be used to "substantially lessen" the significant impacts of the grading, within the meaning of CEQA Guidelines section 15091.

Moreover, without knowing the *cost* of the proposed mitigation measures for the grading (i.e., the 8.9 million cubic yards of remedial work), one cannot determine whether the economics of the Project would make it even remotely possible for the Applicant to meet the 66.6% affordable housing requirement which was imposed as a condition of approval on the Tract Map when it was originally approved in 1979. Although there is a passing reference to this requirement on page 4-11 of DSEIR 566, there is no discussion of whether the requirement of selling 470 of the 705 units of manufactured housing "in the affordable range" would be achievable, even in part, considering the cost of developing the Project at today's prices for labor, equipment, and material.

For CEQA compliance purposes, it is imperative that a comprehensive discussion regarding the feasibility of achieving the affordable housing requirement be included in DSEIR 566 and that the document then be recirculated so that the public can see and comment on what evidence there might be, if any, to support any proposed findings or statement of overriding considerations prepared by the Department which attempted to cite the affordable housing component of the Project as a "benefit" which might outweigh the unavoidable adverse impacts of the Project, within the meaning of CEQA Guidelines section 15093.

If the Department were to supply the Society with the information it has requested -- specifically, the 40-scale grading plan for the *entire* Project and the geotechnical review of all the grading plans -- the Society would be willing to perform the economic analysis necessary to determine whether it would be economically feasible, in light of land acquisition and debt service costs, taxes, planning costs, grading costs, and construction costs, for the Applicant to develop 705 units of manufactured housing and to sell two-thirds of these units as affordable housing. This analysis could then be made a part of DSEIR 566 and the document could be recirculated for public review and comment

E. <u>The Discussion Of Soils Impacts And Grading Mitigation Measures In DSEIR 566 Is Seriously Deficient And Fails To Address Significant Adverse Impacts Which Will Be Caused By The Rough Grading</u>.

To assist it in analyzing and commenting on the "Soils and Geology" section of DSEIR 566, the Society has engaged the services of Kenneth R. King, a registered civil engineer, and John R. Byerly, a registered geotechnical engineer.

Unfortunately, the assistance provided by these two consultants has been severely limited due to their inability to obtain access to the 40-scale grading plans and the accompanying grading plan review.

Despite not being able to review the essential documents relating to the Grading Application, Messrs King and Byerly have nonetheless found serious deficiencies in how important geotechnical issues have been analyzed, or overlooked, in DSEIR 566. In the hope that DSEIR 566 will be revised and recirculated with the appropriate documentation and a more complete analysis of the true impacts and feasible mitigation measures associated with the rough grading of the Project, the Society is providing the comments received to date from Messrs. King and Byerly.

1. **Comments From Ken King.**

Attached as Exhibit "B" hereto and incorporated herein by reference is a copy of Mr King's preliminary review of section 4 2 "Soils and Geology" of DSEIR 566 The Society requests that each of the points raised in Mr. King's report be carefully considered and responded to by the Department. In addition, the Society asks that DSEIR 566 be revised and recirculated with the information necessary to address the deficiencies cited in Mr. King's report, particularly with respect to the failure of the DSEIR to analyze the devastating and potentially irremedial impacts which the excavation and dewatering activities will have on the water wells surrounding the Project site.

A recent article appearing in the *Los Angeles Times*, a copy of which is attached as Exhibit "C" hereto and is incorporated herein by reference, supports the concerns raised by Mr King, for it reports on how the tunneling and dewatering activities for the construction of the Los Angeles subway system have dried up local streambeds and so drastically depleted groundwater resources that once lush plants and vegetation have died off. DSEIR 566 should address whether the environmental parade of horribles discussed in the *L.A. Times* article could occur as a result of the grading activities to be undertaken in constructing the Project. This requires a careful study -- not simply a response to comments -- and the Society requests that it be undertaken *before* any further action is taken to process the Grading Application.

2. **Comments From John Byerly.**

The comments received from Mr Byerly regarding section 4.2 of DSEIR 566 may be summarized as follows:

(a) Perched groundwater was encountered in the geotechnical investigations on this site at various elevations in many of the test borings by G.A. Nicoll

& Associates and others. DSEIR 566 alludes to "potential dewatering activities." Remedial grading will require the construction of buttresses and extensive shear keys, involving an estimated 8.9 million cubic yards of earth The excavations for the shear keys will surely intercept water bearing soil and bedrock layers The potential effect of the disruption of these water bearing layers on water wells located downstream of this project site has not been evaluated in the DSEIR.

(b) During construction, dewatering will remove significant quantities of groundwater and discharge the collected water into existing surface drainage systems The potential impact of the discharge of the removed groundwater, including turbidity, chemical water quality, and potential for erosion and pollution of streams and other riparian areas subject to regulation by state and federal authorities has not been addressed in the DSEIR.

(c) When the shear keys are completed, they will provide a permanent barrier to the lateral transmission of the presently existing groundwater flow The groundwater will tend to accumulate behind the shear keys, and could surface unless permanent dewatering systems are provided The analysis of the practicality of permanent dewatering systems, whether passive or requiring well points and pumps, and the long term effect of dewatering system discharge has not been evaluated in the DSEIR.

(d) Approximately 2.6 million cubic yards of excavation is estimated to "achieve planned elevations and profiles." An additional 8.9 million cubic yards of remedial grading is also described, including 7.5 million cubic yards for shear key and buttress construction. The DSEIR concludes that this grading "would not result in any impact on the stability of adjacent properties." While engineering analysis may show that the *completed* grading improvements would not have an adverse impact on the stability of adjacent property, the actual *construction* of these grading improvements may have immense impacts on neighboring properties such as the Monastery and the Abbey. For example, the excavation for shear keys will remove support for existing landslide masses, and will expose landslide shear planes. No discussion of the details of assuring adequate support for the landslides extending onto adjacent properties during the excavation and backfilling of shear keys has been provided in the DSEIR.

(e) Currently, both the Monastery and the Abbey are experiencing ongoing distress due to land slippage. As such, the risk of activating existing landslides and triggering catastrophic land movement on these adjacent properties, particularly during the shear key excavation and backfill process, should be addressed in great detail in the DSEIR.

(f) An average daily grading rate of 30,000 cubic yards per day is projected in the DSEIR. However, it is inconceivable that the excavation and filling for the shear keys and buttresses, which constitute at least two-thirds of the total grading anticipated for the Project site, can be accomplished at a grading rate of anything more than 10,000 cubic yards per day at best. Even at the rate of 10,000 cubic yards per day (which is *optimistic* because, if wet material is required to be top-loaded, then only a rate of 5,000 cubic yards per day could be achieved), the grading for the shear key and buttress construction alone will require 35 months to complete -- which is nearly *twice* the duration estimated in the DSEIR. This extended period of grading will also expose the inherently unstable conditions at this site during grading to at least three, if not four, rainy seasons and this has not been accounted for in the DSEIR.

(g) Appendix D of DSEIR 566 ("Geotechnical Environmental Impact Report") presents a brief commentary regarding the geotechnical conditions at this site, and a brief review of recommendations for mitigating and remediating adverse conditions. The County of Orange Grading Manual (Board of Supervisors Resolution No. 81-1358) and current geotechnical practice require a geotechnical review of 40-scale grading plans to be prepared by the developer's geotechnical consultant. The grading plan review report is required when there is a need for an updated preliminary report. The original preliminary geotechnical investigation was performed in 1994, but was done in connection with a different project that involved less extensive grading. Subsequent investigations have focused on EIR issues, and have not provided the required specificity to analyze the significant effects of the grading, including impact of dewatering during and following construction, slot cutting or staged excavation to assure ongoing support of landslide masses to be stabilized, backcut and forecut slope inclinations, and groundwater water control criteria. The grading plan review report should include all recommendations and geotechnical criteria necessary for a grading contractor to prepare a bid to accomplish the rough grading, and this report should be made part of the DSEIR.

(h) Proposed mitigation measure AM-47 on page 4-33 of the DSEIR references total settlements of 4 to 6 inches or more in some areas, and suggests "the degrees and rates of settlement shall be analyzed during the final design phase." The grading plan review report is an appropriate document for this analysis. However, the report should be prepared now, instead of later, and should be made part of the DSEIR.

(I) A cursory review of the "Phase I" grading plans for a portion of the Project underscores the need for access to the grading plan review. For example, with respect to the proposed buttress excavation near the intersection of El Toro Road and the proposed main entrance road to the Project (Saddleback Meadows Drive), the main question to be answered by the grading plan review is how much back slope can be open at any one time to ensure only the 10% slope failure rate predicted in the DSEIR?

(j) Since the remedial grading quantities are 3.5 times greater than the onsite cut/fill quantities, a large, accessible area will be needed for stockpiling and drying operations, but the grading plans are silent on this point Will off-site areas be needed for stockpiling and for processing wet material? Another question to be answered is how will the slope rights beyond the limits of grading shown on sheet 4 of 13 of the grading plans be obtained in order to construct the buttress? These questions must be answered before the Grading Application can be approved, and thus they should be addressed in the DSEIR.

In conclusion, the Society sincerely hopes that, in light of the important questions and issues raised above regarding the geotechnical impacts of the Project, the Department will request the Applicant to substantially revise and supplement the "Soils and Geology" section of DSEIR 566 so that the DSEIR can be recirculated for public review and comment once all of the grading plans and the grading plan review have been made part of the DSEIR. At that point, the Society and its consultants will be in a much better position to understand and comment on the true environmental effects of the proposed grading and the feasibility of the mitigation measures designed to lessen such impacts Thank you in advance for the Department's anticipated cooperation in this regard

Very truly yours,

Edmond M. Connor

cc John B. Buzas
Frank McGill
William Greiman

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VIA TELEFACSIMILE
AND FIRST CLASS MAIL
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Re: Saddleback Meadows/Draft EIR 566
Request for Re-Noticing of Public Comment Period

Dear Nick:

This will confirm this afternoon's telephone conversation during which you kindly agreed to provide my client, the Vedanta Society of Southern California (the "Society") with an extension of time, to and including next Friday, August 15, 1997, within which to submit comments on Draft EIR 566. You explained that you had consulted with John Buzas and had concluded that, since various County personnel were unavailable to make a final decision on the requests set forth in my August 6 letter to Messrs. Brantley and Greiman, a three-day extension of time seemed to be an appropriate "stop-gap" remedy under the circumstances.

I understand that, when the appropriate personnel are available at the County next week, I will receive a definitive answer to the requests set forth in my August 6 letter. I certainly appreciate receiving the three-day extension, but my firm and the Society's geotechnical consultants still need more time to review the grading plans and the grading plan review before any of us will be in a position to submit comments on Draft EIR 566. Although the public review provisions of CEQA and the State CEQA Guidelines would suggest that we should not have been required to do so, we have already been compelled to make separate arrangements with, and to pay money to, the

developer's agent to obtain the right to review the grading plans for which a grading permit is being sought.

However, even if we were willing to pay additional money for the right to gain access to the grading plan review by the soils engineer of record, we could not do so because that report has not even been completed as of this date. Of course, Appendix D to Draft EIR 566 expressly states that a geotechnical review of the 40-scale grading plans will be prepared to accompany the grading permit application, but, for whatever reason, the grading plan review has not been finalized and is not available for any member of the public to even see it, much less study it in detail. That really puts the Society, and all other members of the public, at a tremendous disadvantage in being able to adequately comment on the Draft EIR.

As I explained to you in my earlier phone message, section 15146 of the State CEQA Guidelines requires that the degree of specificity to be found in Draft EIR 566 must be commensurate with the stage of development that is being evaluated. In other words, since the construction of grading improvements is being analyzed in conjunction with a grading permit application, the *specific* details of the grading, and the impacts and mitigation measures associated therewith, must be addressed in the Draft EIR. Moreover, under section 15147 of the CEQA Guidelines, all technical data, maps, plans, etc., which are necessary to make a "full assessment" of the environmental impacts of the project must be set forth in the appendices to the Draft EIR, and such appendices "shall be *readily available* for public examination." (Emphasis added.)

The California courts have not hesitated to enforce the above requirements by striking down EIRs which have omitted important technical information, even if the information was found to be available from other sources. As stated by our own Fourth District Court of Appeal, "whatever is required to be considered in an EIR must be *in that formal report*; what any official might have known from other writings or oral presentations cannot supply what is lacking *in the report*." (*See, Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 727.)

As the above authorities indicate, both the grading plans and grading plan review should have been (1) set forth in the Appendices to Draft EIR 566 and (2) readily available to all members of the public during the entire 45-day comment period. Since the County will not issue any grading permit to the developer without the grading plans and the grading plan review having been approved by County staff, these documents should not have been *excluded* from the CEQA review process. However, since these documents were, in fact, omitted from Draft EIR 566 and have never been available at the

County for public review, I think it only fair that the County take quick action to correct these problems.

My proposal would be that the County request the developer to (1) complete the grading plans and the grading plan review and submit them to County staff as soon as possible and (2) revise Draft EIR 566 to not only include these documents as part of the Appendices, but also to adequately address them in Volume I of the EIR. Once the grading plans and grading plan review have been made "readily available" for public review, then a new 45-day period for submitting comments on Draft EIR 56 should be re-noticed.

Again, I apologize for burdening you with this issue in Ben de Mayo's absence, but I sincerely believe, Nick, that fundamental fairness, not to mention the strict dictates of the State CEQA Guidelines, requires the County to remedy the problems which have occurred as a result of the grading plans and grading plan review not having been available for public review prior to the expiration of the comment period on Draft EIR 566. The problems are easily corrected as I have suggested above, and I hope the County will do just that. Thank you for your courtesy and cooperation in doing what you can to make that a reality.

Very truly yours,

Edmond M. Connor

cc John B. Buzas
Frank McGill
Raymond H.C. Brantley
William Greiman

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AN INDEPENDENT REVIEW OF THE DRAFT SUBSEQUENT EIR No. 566 FOR THE SADDLEBACK MEADOWS PROJECT

INTRODUCTION:

The purpose for this report is to document the results of a review of engineering and geotechnical data provided in Section 4.2 SOILS AND GEOLOGY of the Draft Subsequent EIR No. 566.

COMMENTS:

1. Page 4-19 Ground Water - Ground water will be exposed as the deep shear keys excavated. Dewatering will be required. The impact of dewatering this land mass has not been addressed. Several issues which must be addressed include the following:
   a. The northerly, westerly and southerly sides of the project site are ringed by water wells. These wells depend on the ground water supplies for their very existence. There is a high probability that the excavation and dewatering of the slide plane shear keys will dry up the surrounding wells. Once drained, these wells will never come back.
   b. Dewatering of the shear keys will become a permanent operation. To avoid build-up of water behind the shear keys, it is mandatory that permanent dewatering facilities be installed. It is presumed that these dewatering facilities will drain to Los Alisos Creek, which is shown as a blue line on the USGS Quad Map. The impact of a permanent alteration to the flow in Los Alisos Creek has not been addressed.

2. Page 4-22 Grading, last two paragraphs - The proposed average daily grading of 30,000 cubic yards/day does not meet the test for reasonableness. The bulk of the 11.5 million cubic yards of earth moving takes place in the slide plane shear key excavations, as much as 120 feet deep, with ground water flowing in from the uphill side. The soil must be excavated, hauled up the slope to the top, spread for drying, re-excavated, hauled to the bottom of the trench, and compacted. If the true rate of earth moving is 12,000 cubic yards/day, the 18 month designated time frame for earthwork becomes 44 months, or 3.7 years. The impact of 3.7 years of heavy earth moving equipment next door to the Ramakrishna Monastery and St. Michael's Abbey has not been addressed.

3. Page 4-29 AM 2-16 - Remedial grading of the buttresses and shear keys is proposed in a simplistic fashion without any consideration of the risks to adjoining properties. Several issues related to remedial grading need to be addressed:
   a. The mere act of excavation a deep trench in front of a slide plane which is already known to be active is potential suicide. Removal of the confining soils may trigger the slide to move. Once the landslide is allowed to move, the slide takes on a life of its own. There is no way for man to stop it.
   b. Back cut failures have been estimated at 10%. This failure rate is not realistic in a deep trench with water bearing strata at numerous locations along the cut face. The magnitude of back cut failures will directly impact the quantity of earth to be moved, the time it takes to complete the grading, and the risk to adjoining properties. A realistic assessment of back cut failures and related consequences must be addressed.

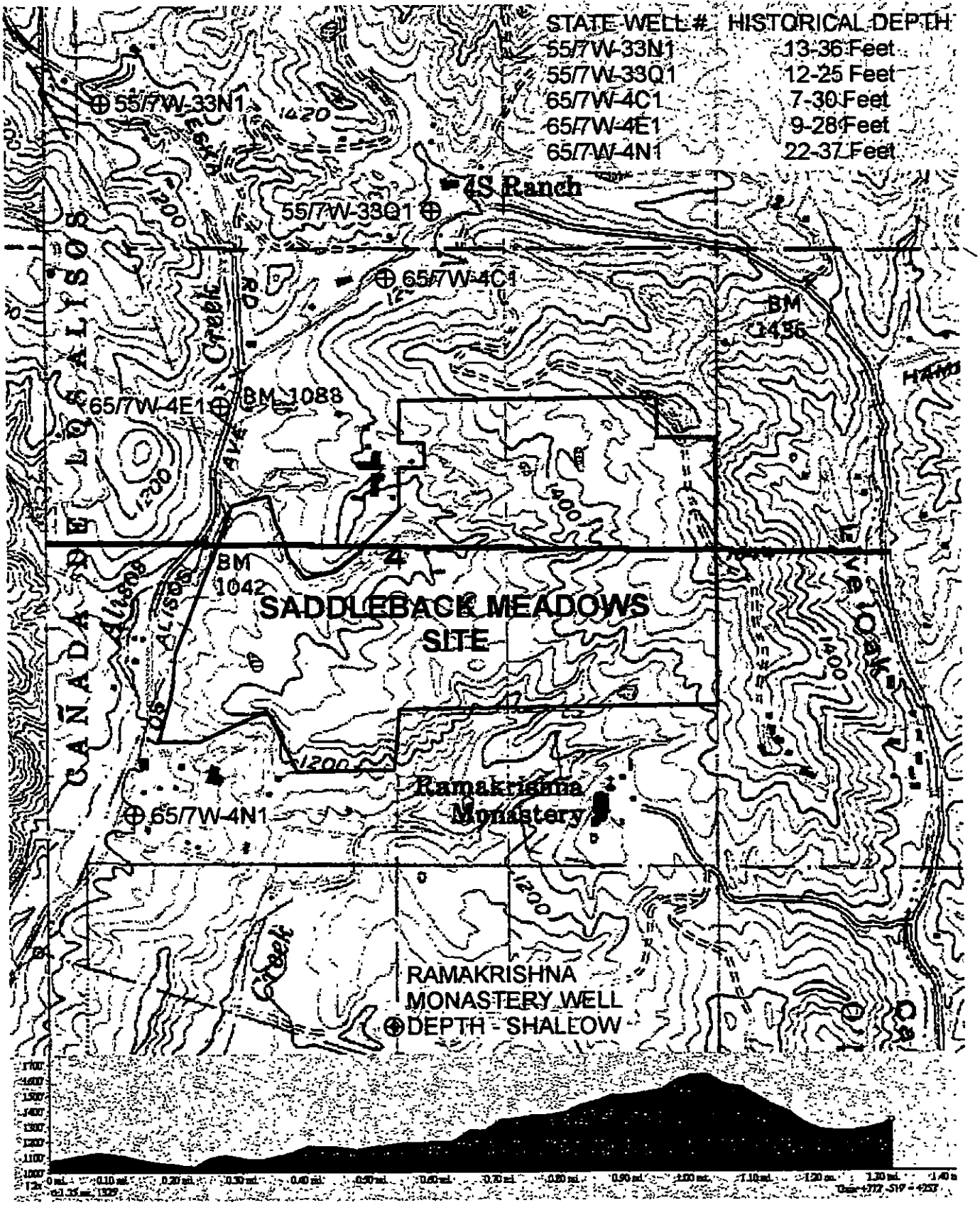
4. Page 4-29 AM 2-18 - The installation of permanent subdrain systems is mandatory at stability fills and shear keys. The consequences of installing these drain systems have been ignored:
   a. The impact on adjoining water wells.
   b. The impact on Los Alisos Creek.

5. Page 4-31 AM 2-32 - Subsidence shall be assumed as ¾ to 1½ inches for grading design purposes. This is in direct conflict with Page 4-33 AM 2-47 which predicts settlements of 4 to 6 inches or more. Settlements of 4 to 6 inches or more are a virtual guarantee for lawsuits.

Kenneth R. King, Civil Engineer

Attachment F

A COMPILATION OF WATER WELL LOCATIONS SURROUNDING THE SADDLEBACK MEADOWS PROJECT



SECTION A-A

COMPILED BY KENNETH R. KING, CIVIL ENGINEER
AUGUST 8, 1997

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EXHIBIT C

LOS ANGELES TIMES

Tunneling Is Drying Up L.A. Canyons, Experts Caution

SUNDAY, AUGUST 10, 1997

Subway: Waterfall, streams vanish as MTA pumps out water. Agency admits concern but also cites lack of rain.

By FRANK CLIFFORD and RICHARD SIMON
TIMES STAFF WRITERS

LOS ANGELES—Even in Los Angeles, where ocean beaches and snowcapped mountains are part of the everyday landscape, a 50-foot waterfall in the neighborhood is a wonder to behold.

At least it was. The waterfall, which spilled from a rock precipice high over John Chickering's house in Nichols Canyon in the Hollywood Hills, has dried up. So have several streams that watered the canyon and the hills nearby that residents say had run uninterrupted for at least 50 years.

Although it has been a dry year, some fear that the weather has less to do with it than the subway.

The drying up of springs and streams in Nichols Canyon and neighboring hillsides over the last few months, experts say, is evidence that boring subway tunnels through the splintered, porous bedrock of the Hollywood Hills just west of Cahuenga Pass is having a much greater impact on the natural environment than predicted.

For the thousands of people like Chickering living in the verdant hills above the subway route, the of the streams is more than a matter of aesthetics. The year-round flow supports deep-rooted trees and plants that retard the spread of fire and bolster the slopes against erosion and mudslides. The lush vegetation also supports deer, coyotes and a variety of smaller animals.

"It was unbelievable," Chickering said. "I looked out of my window one morning, and the falls were no more. The water had stopped. It was like a curse. Then I remembered the subway and what people had been saying about all the underground pumping going on."

As powerful pumps drain the advancing tunnels of unwanted moisture at a rate of nearly 1 million gallons a day, the water table that fed the waterfall and the streams, as well as the area's abundant vegetation and wildlife, dropped as much as 134 feet, officials say.

Pumping has been draining an untapped water source—the Hollywood basin—of up to one-third of its annual capacity. Virtually all the water pumped out of the tunnels winds up in Santa Monica Bay.

The area most affected by the pumping is a stretch of canyons and hillsides between Laurel Canyon and the Cahuenga Pass that includes one of the city's most popular urban parks, 133-acre Runyon Canyon.

The tunneling, which is passing 165 feet to 900 feet under the Santa Monica Mountains on its way from Universal City to Hollywood, has gone more slowly than expected. The boring machines are expected to reach Hollywood this fall.

Late in July, MTA consultants noted "a substantial decrease" in the water flowing from two streams in Runyon Canyon.

Nichols Canyon, where three year-round streams have dried up, is just to the west. The beauty of the area—which has been the subject of paintings by artist David Hockney—has not been lost on MTA officials.

"It's spectacular. The water comes down from two different directions. If you've driven up Nichols Canyon, part of it looks like a rain forest," said James Sowell, the MTA's manager of environmental compliance.

Los Angeles County supervisor and MTA board member Zev Yaroslavsky, who represents the area, points out that some of the streams in the area dry up every year and that this year is an especially dry one.

"We haven't had any rain since January. You can find dry creek beds and brown hillsides all over the Santa Monica Mountains," Yaroslavsky said.

"But some of the problem is undoubtedly due to the tunneling," he added.

Although MTA officials say they aren't sure what is causing the springs and streams to dry up, they are paying to replace a portion of the lost flow with water from the Los Angeles Department of Water and Power.

"You can acknowledge an effect without having any clue as to what the cause is," Sowell said. "We are responding to the community's concerns. They see MTA as the cause. . . . We're attempting to be good neighbors."

Replacing the Flow

In recent weeks, the MTA began tapping into several mains, allowing up to 34 gallons per minute of DWP water to flow into the stream beds and over Chickering's waterfall.

Chickering and his neighbors say the supplemental flow is a thin stream compared to what it was.

"It's enough water to provide an illusion of normalcy," said Nichols Canyon Assn. President Herschel Gilbert. "But it doesn't replenish natural flows, even at this time of year. And if the springs don't come back, these canyons will lose the rich array of plants and animals that make them special."

Unfortunately, there is no record of what the normal flow has been, according to Yaroslavsky's office.

"People are saying everything should be returned to normal, but nobody knows what normal is," said Howard Katz, a land-use lawyer retained by Yaroslavsky to monitor the impact of the tunneling.

The pumping beneath the Hollywood Hills is part of the ongoing dewatering of the subway route that in the past has sucked out as much as 380 million gallons a year.

That's about the same amount of water consumed by 2,300 families in a year.

The loss of that water in a city frequently battling other communities over water rights has not gone unnoticed by state officials, who asked the MTA to look into ways to conserve the water that the agency is pumping into the ocean.

In a study conducted last year, the MTA stated that it would be prohibitively expensive to recycle water into the hills.

Transit officials made up their minds more than a decade ago that tunneling under the Hollywood Hills wouldn't have much of an environmental consequence.

"By confining ground-water control activities to the immediate area of excavation, the Metro Rail project will avoid potential adverse impacts on urban flora ca by lowered water table," said t project's environmental impact r port.

MTA officials now say that a impact from pumping will be te porary and predict that affect stream flows will resume after t excavation is done.

But officials also acknowled that some dewatering will contin indefinitely to relieve hydrosta pressure on the tunnel walls.

And no one, including the MT is certain what the effects of th pumping will be.

Effect on Plants Could Be Severe

But if the water table does r rise and perennial streams do r come back, the effects on t adjacent hills could be severe, a cording to a consultant hired by coalition of residents.

The most deeply rooted tre and plants, among them Weste sycamore, acacia, laurel sumac a

'I looked out of my window one morning, ar the falls were no more. . . . Then, I remembered the subwa and what people had been saying about all th underground pumping going on.'

JOHN CHICKERING
Lives in Nichols Canyon

California holly—which stabili the steep hillsides—would be har pressed to survive. In addition, lu canyon bottoms that depend year-round stream flows will l the verdure that has made the oases for wildlife.

"The flora which draws its wat from the springs will be severe stressed," said a 1996 report MHB Technical Associates of S Jose.

"Effects could include increas dieback of deep-rooted plants li laurel sumac, which could result increased erosion, slides and floo ing," said the report. "Mamm and some bird life will eith migrate, diminish in abundance die."

PUMPING: Streams Drying Near the Subway Tunneling

The study predicted that if the water table was lowered by more than 50 feet, streams in Runyon Canyon and adjacent canyons "would most certainly dry up."

Armed with those findings, the neighborhood coalition sued the MTA to require the agency to conduct another environmental impact report. The suit was settled last year, with the MTA agreeing to take a variety of measures to prevent the underground pumping from harming streams, plants or wildlife.

All along, MTA officials said they could seal water out of the tunnels by using grout to plug fractures in the rock. After the consent decree, the agency augmented the grouting operation, working both ahead of and behind the tunnel-boring machines.

In early March, about nine months after the MTA had begun tunneling under the hills, Chickering first noticed a change in the waterfall that spilled dramatically down a stairway of rocky ledges to a stream flowing to the mouth of Nichols Canyon at Hollywood Boulevard, about two miles south.

By midsummer, the falls, the stream and two tributary streams in Nichols Canyon had dried up.

For the first time, the free-flowing water supply that ran the length of the three-mile canyon had stopped, said Gilbert, who has lived in the canyon for 47 years.

Meanwhile, two canyons away, Vivian Harrison was observing a similar phenomenon. A spring that bubbled out of the ground on her property for the 23 years she has lived there had suddenly gone dry.

MTA May Spend $50,000 a Year

Officials estimate that the MTA will spend about $50,000 a year replacing water that nature used to supply to Chickering's waterfall, Harrison's spring and two other streams.

In addition, the MTA is watching at least 30 other streams in the area. Some are seasonal and dry up every year during the summer and fall.

But the MTA is not promising to monitor springs or supply replacement water indefinitely.

Agency officials say they are hopeful that once the tunneling is finished and the rock walls are thoroughly grouted, there won't be any more need to pump. The drawdown will cease, and with the help of winter rains, springs and streams will be recharged.

"A lot depends on the effectiveness of the grouting program," said Sowell, who conceded that figuring out where to grout is something of a guessing game. "It's a difficult art. It's not a science, by any means."

And what will the agency do if the springs don't return?

The consent decree requires the MTA to take remedial action for five years. After that, Sowell said, "we have the option to continue to grout over time. What is a reasonable amount of time? We're going to try to get a handle on that."

Yaroslavsky took a harder line.

"If the tunnels have to be pumped forever and that causes a problem, why assume we couldn't pump the water back up into the hills? I wouldn't have any reservation in requiring that."

AL SEIB / Los Angeles Times

Vivian Harrison, above, sits at now-dry site of a spring that had flowed freely for at least 23 years. Below, a creek bed in Nichols Canyon that recently went dry.

AL SEIB / Los Angeles

Herschel Gilbert, president of Nichols Canyon Assn., walks near 50-foot waterfall in John Chickering's backyard that had dried up until the MTA gan using city water to partially replenish the f

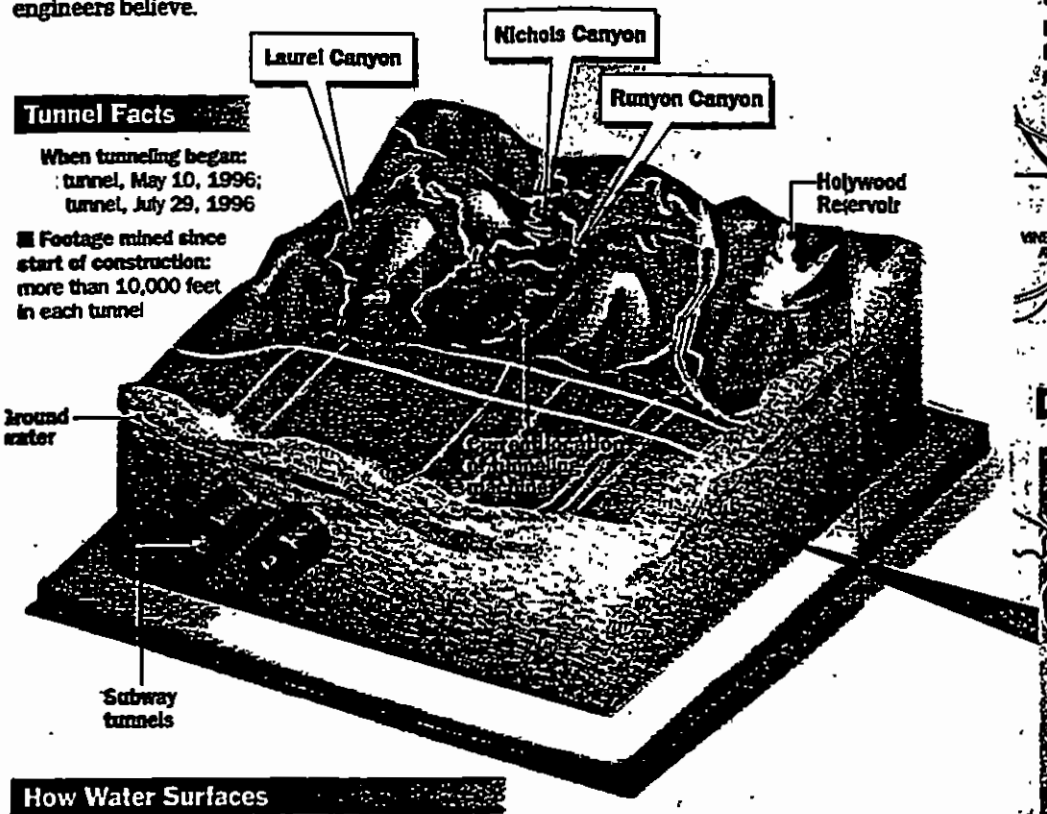
Water and the Subway

A drop in ground water levels near construction of the MTA's Red Line is suspected to have caused some natural waterfalls and springs to cease flowing. The MTA is replenishing the falls, pumping fresh water through a pipe at the site. When tunnel construction is finished, ground water levels will return to normal, MTA engineers believe.

Tunnel Facts

When tunneling began:
tunnel, May 10, 1996;
tunnel, July 29, 1996

■ Footage mined since start of construction: more than 10,000 feet in each tunnel

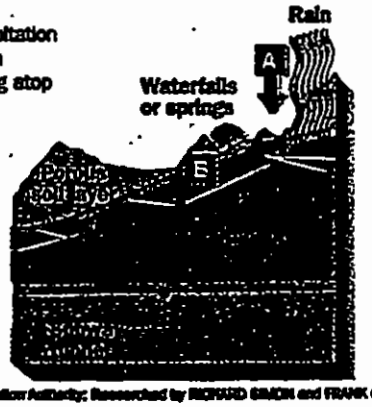


How Water Surfaces

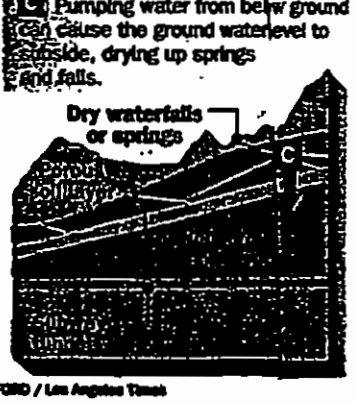
The MTA is pumping 850,000 to 1.5 million gallons of water per day from its tunnel sites. This water flows into drainage channels and on to the L.A. River, eventually emptying into the ocean. Here's how a change in ground water levels can affect springs:

A Water from precipitation seeps down through porous soil, collecting atop a nonporous layer.

B Pushed by gravity or pressure, water flows underground, surfacing through cracks or faults.



C Pumping water from below ground can cause the ground water level to recede, drying up springs and falls.



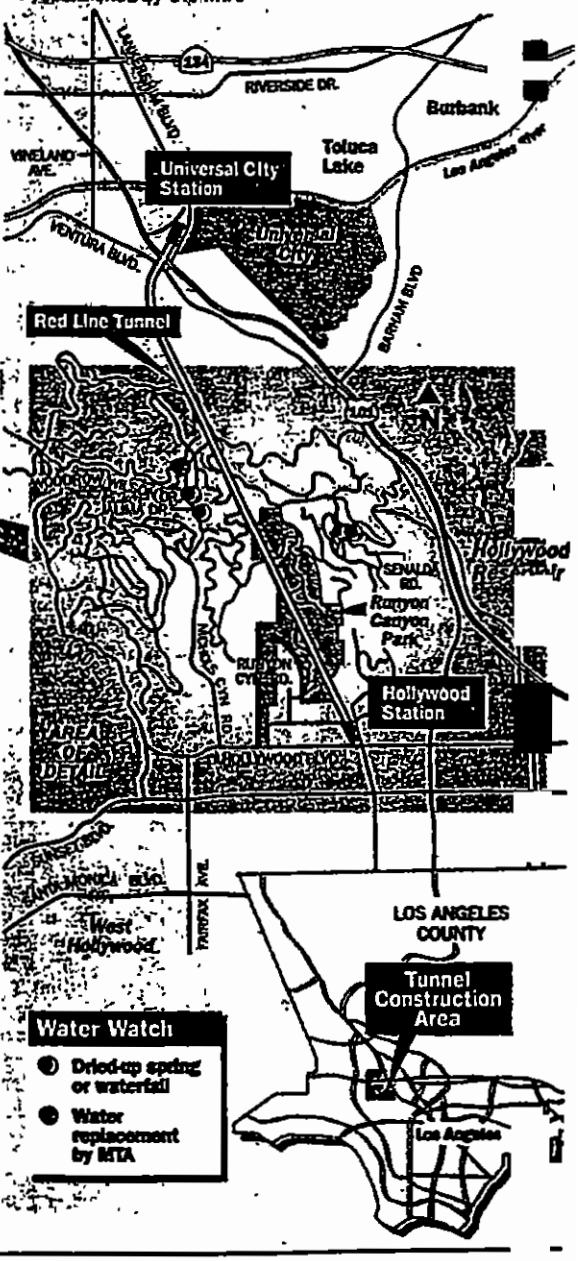
Source: Metropolitan Transportation Authority; Researched by RICHARD SIMON and FRANK CLIFFORD / Los Angeles Times

The MTA's Monitoring Program

MTA workers had been monitoring 37 streams in the vicinity of tunnel construction and are now widening the monitoring area.

■ The level of the water table above the tunnels has dropped as much as 134 feet since the start of construction.

■ Of the 37 streams and springs under observation, five have dried up. In several locations, water is being replenished by the MTA.



County of Orange
Planning & Development Services Department

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August 12, 1997

Vedanta Society of Southern California
c/o Connor, Culver, Blake & Griffin, LLP
Mr. Edmond M. Connor, Attorney
2600 Michelson Drive, Ste. 1450
Irvine, California 92612

Subject: Saddleback Meadows DEIR 566 - Request for an Extension of Time

Mr. Connor:

This letter is a followup to your correspondence to offices of the Planning & Development Services Department and County Counsel dated August 6 and August 8, 1997. You have requested a 30-day extension of time to submit comments on Draft EIR 566, based upon your position that the grading plans for the proposed project have not been available for your consideration. You also recommended that a new 45-day review be established for the project with copies of grading plans and grading plan review be provided to the public.

The Planning & Development Services Department has reviewed your request in light of the California CEQA Statutes and Guidelines and County of Orange environmental procedures. This review has led to the following conclusions:

1. Although a grading permit application is the initiating activity which resulted in the determination that Draft EIR 566 be prepared, grading is only a part of the issues addressed in the CEQA document. The County's CEQA action will consider the whole of the action, which in this case, is the development of a 705-unit manufactured housing subdivision and small retail site on the 222± acre site. Other major considerations include the impacts to biological resources and land use compatibility.

2. Sufficient detailed grading and geotechnical information is available in the Draft EIR. On Page 2-5 of Draft EIR 566, the County incorporates by reference, Draft EIR 561. In Section 4.2, Soils and Geology, beginning on Page 4-13 of Draft EIR 566, the discussions are based upon Volume 2 Technical Appendices of DEIR 566, Appendix D, and the extensive Geotechnical Reports and investigations contained in Draft EIR 561, Volume 2 Technical Appendices, Appendix D, which are specifically incorporated into the current project. The Vedanta Society was provided all three volumes of Draft EIR 561 during the circulation of that document.

3. Draft EIR 566, including the geotechnical information from Draft EIR 561, Appendix D of Volume 2, Technical Appendices, meets standard practice of the County of Orange, which requires sufficient grading information for a planning decision. The planning level of detail includes the location of landslides, faults and other geological hazards, the types of soil and proposed grading concepts being considered. The 40-scale grading plans which you request are the level of detail required for consideration by the Subdivision and Grading Services Division. Such detail is premature at this time.

Based upon the foregoing, we feel that sufficient grading information is and has been available to the public to make comments on the adequacy of Draft EIR 566 in addressing the grading impacts related to the proposed project. Therefore, we must deny the request for an extension of time to review Draft EIR 566.

Please note, however, that, in the spirit of cooperation and your special request in light of the contiguity of your client's property with the Saddleback Meadows site, and the apparent time pressures you and your client are suffering, the County will accept and respond to your late comments, provided they are received by our offices no later than 4:00pm on August 22, 1997.

Thank you for your interest and participation in the planning process. If you have questions or need additional clarification regarding this letter, please contact Ray Brantley at (714) 834-3763.

Very truly yours,

Thomas B. Mathews, Director

TBM/RHCB:rhcb

cc: Bill Ross
TPG Management
Nick Chrisos
Jack Golden

County of Orange
Planning & Development Services Department

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TRANSMITTED VIA FAX

August 14, 1997

SFC Consultants
Sandra F. Jacobs
26012 Marguerite Parkway
Suite H424
Mission Viejo, California 92692

Subject: Saddleback Meadows DEIR 566 - Request for an Extension of Time

Ms. Jacobs:

This letter is a followup to your communication to the Planning & Development Services Department dated August 5, 1997 requesting an extension of time in which to comment on the subject Draft EIR.

The Planning & Development Services Department feels that sufficient information is and has been available to the public to facilitate informed comments concerning the adequacy of Draft EIR 566. Therefore, we must deny the request for an extension of time to review Draft EIR 566.

Please note, however, that, in the spirit of cooperation and in light of your special interest in the Saddleback Meadows project, the County will accept and respond to your late comments, provided they are received by our offices no later than 4:00pm on August 22, 1997.

Thank you for your interest and participation in the planning process. If you have questions or need additional clarification regarding this letter, please contact Bill Grieman at (714) 834-5175 or Ray Brantley at (714) 834-3763.

Very truly yours,

Ray Brantley

George Britton, Manager
Environmental & Project Planning Division

RHCB/WG:wg

cc: TPG Management
Urban Vision
Nick Chrisos
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County of Orange
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TRANSMITTED VIA FAX

August 14, 1997

Saint Michael's Abbey
c/o Rutan & Tucker, LLP
Mr. David B. Cosgrove, Attorney
611 Anton Boulevard
Suite 1400
Costa Mesa, California 92628-1950

Subject: Saddleback Meadows DEIR 566 - Request for an Extension of Time

Mr. Cosgrove:

This letter is a followup to your communication to offices of County Counsel dated August 11, 1997 requesting an extension of time in which to comment on the subject Draft EIR.

The Planning & Development Services Department feels that sufficient information is and has been available to the public to facilitate informed comments concerning the adequacy of Draft EIR 566. Therefore, we must deny the request for an extension of time to review Draft EIR 566.

Please note, however, that, in the spirit of cooperation and in light of your client's special interest in the Saddleback Meadows project, the County will accept and respond to your late comments, provided they are received by our offices no later than 4:00pm on August 22, 1997.

Thank you for your interest and participation in the planning process. If you have questions or need additional clarification regarding this letter, please contact Bill Grieman at (714) 834-5175 or Ray Brantley at (714) 834-3763.

Very truly yours,

Ray Brantley /for

George Britton, Manager
Environmental & Project Planning Division

RHCB/WG:wg

cc: TPG Management
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Nick Chrisos
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TRANSMITTED VIA FAX

August 14, 1997

Saddleback Valley
Unified School District
Mary Lou Smith
25631 Diseno Drive
Mission Viejo, California 92691

Subject: Saddleback Meadows DEIR 566 - Request for an Extension of Time

Ms. Smith:

This letter is a followup to your communication to the Planning & Development Services Department dated August 13, 1997 requesting an extension of time in which to comment on the subject Draft EIR.

The Planning & Development Services Department feels that sufficient information is and has been available to the public to facilitate informed comments concerning the adequacy of Draft EIR 566. Therefore, we must deny the request for an extension of time to review Draft EIR 566.

Please note, however, that, in the spirit of cooperation and in light of your special interest in the Saddleback Meadows project, the County will accept and respond to your late comments, provided they are received by our offices no later than 4:00pm on August 22, 1997.

Thank you for your interest and participation in the planning process. If you have questions or need additional clarification regarding this letter, please contact Bill Grieman at (714) 834-5175 or Ray Brantley at (714) 834-3763.

Very truly yours,

Ray Brantley

George Britton, Manager
Environmental & Project Planning Division

RHCB/WG:wg

cc: TPG Management
Urban Vision
Nick Chrisos
Jack Golden

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

NO. 566

STATE CLEARINGHOUSE NO. 96121072

SADDLEBACK MEADOWS

RECORDED TRACT MAP 10692

GRADING APPLICATION GA960048

VOL. 1

Orange County
Planning & Development Services Department

June 1997

URBAN VISION

Screencheck DEIR Submittal:	_____
Draft EIR Circulation:	_____
Response to Comments Submittal:	_____
Final EIR Submittal:	_____
Final EIR Certified:	_____

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT NO. 566

SADDLEBACK MEADOWS

Recorded Tract Map 10692
Grading Application GA960048

State Clearinghouse No. 96121072

Prepared for:

ORANGE COUNTY PLANNING &
DEVELOPMENT SERVICES DEPARTMENT

Prepared by:

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June 1997

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT NO. 566
State Clearinghouse No. 96121072

SADDLEBACK MEADOWS
Recorded Tract Map No. 10692
GA 960048

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June 1997

TABLE OF CONTENTS

Section			Page
1.0	EXECUTIVE SUMMARY		
	1.1	Project Synopsis	1-1
	1.2	Executive Summary	1-1
	1.3	Project Alternatives	1-1
2.0	INTRODUCTION		
	2.1	Purpose of the EIR	2-1
	2.2	Environmental Procedures	2-2
	2.3	Incorporation by Reference	2-5
	2.4	Background	2-6
	2.5	Matrix of Project Approvals	2-9
	2.6	Related Projects	2-9
	2.7	Areas of Controversy/Issues to be Resolved	2-9
	2.8	Mitigation Measure Structure	2-10
	2.9	Effects Found Not to be Significant	2-12
3.0	PROJECT DESCRIPTION		
	3.1	Geographical Setting	3-1
	3.2	Project Description	3-1
	3.3	Development Objectives	3-15
	3.4	Project Phasing	3-16
4.0	EXISTING CONDITIONS, PROJECT AND CUMULATIVE IMPACTS, MITIGATION MEASURES AND LEVEL OF SIGNIFICANCE AFTER MITIGATION		
	4.1	Land Use/Housing	4-1
	4.2	Soils and Geology	4-13
	4.3	Water/Hydrology	4-33
	4.4	Transportation/Circulation	4-44
	4.5	Air Quality	4-83
	4.6	Noise	4-101
	4.7	Biological Resources	4-118
	4.8	Aesthetics	4-159
	4.9	Cultural/Scientific Resources	4-178
	4.10	Recreation	4-197
	4.11	Hazards	4-203
	4.12	Public Services	4-213
	4.13	Utilities and Service Systems	4-227

TABLE OF CONTENTS (con't)

Section			Page
5.0	LONG TERM IMPLICATIONS OF THE PROPOSED PROJECT		
	5.1	Significant Irreversible Environmental Changes Which Would be Involved in the Proposed Action Should it be Implemented	5-1
	5.2	Growth Inducing Impact of the Proposed Project	5-1
6.0	ALTERNATIVES TO THE PROPOSED PROJECT		
	6.1	Alternative 1 - No Project / No Development	6-4
	6.2	Alternative 2 - 150-20,000 SF Lots	6-4
	6.3	Alternative 3 - 100 SFD Units on 30 Acres	6-8
	6.4	Alternative 4 - OCPDS Staff Alternative, 299 SFD Units on 5,000 SF Lots	6-12
	6.5	Alternative 5 - Cluster/Reduced Development Footprint - 318 SFD	6-17
	6.6	Summary of Alternative Findings	6-21
7.0	INVENTORY OF MITIGATION MEASURES		7-1
8.0	INVENTORY OF UNAVOIDABLE ADVERSE IMPACTS		8-1
9.0	MITIGATION MEASURE MONITORING PROGRAM		9-1

APPENDICES

APPENDIX A - Organizations and Persons Consulted
APPENDIX B - References
APPENDIX C - Notice of Preparation (NOP) Application
APPENDIX D - Geotechnical Evaluation
APPENDIX E - Traffic Report
APPENDIX F - Air Quality Calculations
APPENDIX G - Noise Calculations
APPENDIX H - Biological Resources Assessment
APPENDIX I - Cultural Resources Assessment
APPENDIX J - Fiscal Impact Report
APPENDIX K - Oak Tree Inventory
APPENDIX L - Hydrology Report

LIST OF EXHIBITS

Exhibit		Page
1.	Related Project Map	2-11
2.	Regional Location Map	3-3
3.	Regional Aerial Photograph	3-4
4.	Vicinity Map	3-5
5.	Project Site Aerial Photograph	3-6
6.	Existing Topography	3-7
7.	Site Plan	3-11
8.	Landscape Cross Sections	3-12
9.	Cross Section Key Map	3-13
10.	Conceptual Residential Manufactured Home Elevations	3-14
11.	Countywide General Plan Designations	4-5
12.	Foothill-Trabuco Specific Plan Planning Areas	4-6
13.	Foothill-Trabuco Specific Plan Land Use Designations	4-7
14.	Surrounding Land Use	4-8
15.	Slope Map	4-15
16.	Geotechnical Resources	4-18
17.	Regional Seismicity	4-21
18.	Conceptual Grading Plan	4-23
19.	Geotechnical Hazard Mitigation Plan	4-26
20.	Regional Hydrology	4-35
21.	Existing Hydrology	4-37
22.	Conceptual Drainage Plan	4-40
23.	Regional Circulation System	4-46
24.	Orange County Master Plan of Arterial Highways	4-47
25.	OCMPAH Cross Sections	4-48
26.	Existing Average Daily Traffic (ADT)	4-49
27.	Existing AM Peak Hour Intersection Volumes	4-53
28.	Existing PM Peak Hour Intersection Volume	4-54
29.	Existing Intersection Lanes	4-55
30.	Project Residential Trip Distribution	4-59
31.	Project Commercial Trip Distribution	4-60
32.	Project Average Daily Traffic (ADT)	4-65
33.	Project AM Peak Hour Intersection Volumes	4-66
34.	Project PM Peak Hour Intersection Volumes	4-67
35.	Other Development Trip Distribution	4-68
36.	Existing Plus Project Average Daily Traffic (ADT)	4-69
37.	Future Baseline Average Daily Traffic Volume (Year 2000)	4-70
38.	Future Baseline with Project Average Daily Traffic Volumes	4-71
39.	Future Baseline with Project Peak Hour Volumes	4-72
40.	Year 2020 Average Daily Traffic (ADT) Without Project	4-73

LIST OF EXHIBITS (con't)

Exhibit	Page
41. Year 2020 Average Daily Traffic (ADT) With Project	4-74
42. Existing Plus Project A.M. Peak Hour Intersection Volumes	4-75
43. Existing Plus Project P.M. Peak Hour Intersection Volumes	4-76
44. OCMPAH Cross Sections/El Toro Road	4-77
45. Circulation Recommendations	4-78
46. Project Street Sections	4-79
47. California Noise and Land Use Compatibility Guidelines	4-104
48. El Toro MCAS Noise Contours	4-105
49. Typical Construction Equipment Noise Levels	4-108
50. Vegetation Communities/Sensitive Resources	4-122
51. Proposed NCCP Southern Subregional Planning Area	4-131
52. FTSP Wildlife Movement Corridors	4-132
53. Jurisdictional Wetlands and Waters of the United States	4-136
54. Impacted Vegetation Map	4-159
55. Photograph Location Map	4-160
56. Existing Views (A & B)	4-161
57. Existing Views (C & D)	4-162
58. Existing Views (E & F)	4-163
59. Existing Views (G)	4-164
60. Post-Development Visual Simulation from Portola Hills at 1300' Elevation	4-165
61. Post-Development Visual Simulation from St. Michael's Abbey	4-166
62. Post Development Visual Simulation from Hidden Hills at Yellowpine Lane	4-167
63. Regional Parks and Trails	4-200
64. Fuel Modification Zone Plan	4-208
65. Fuel Modification Zone Cross-Section	4-209
66. Alternative No. 2 - Site Plan	6-6
67. Alternative No. 3 - Site Plan	6-10
68. Alternative No. 4 - Site Plan	6-15
69. Alternative No. 5 - Site Plan	6-19

LIST OF TABLES

Table		Page
1.	Project Alternatives and Grading Summary	1-2
2.	Summary of Project Impacts and Mitigation Measures	1-3
3.	Saddleback Meadows Project Chronology	2-6
4.	Land Use Summary	3-10
5.	Surrounding Project Comparison Summary	3-16
6.	Surrounding Land Use Summary	4-1
7.	Regional Seismicity	4-20
8.	Remedial Grading Quantities	4-22
9.	Existing Onsite Drainage	4-36
10.	Proposed Drainage Facility Summary	4-39
11.	Existing Intersection ICU/LOS	4-50
12.	Roadway Fee Programs	4-51
13.	Existing Plus Project Intersection ICU/LOS	4-56
14.	Santiago Canyon Road Project Share Analysis	4-58
15.	Year 2000 Intersection ICU/LOS, With/Without Project, With/Without Improvements	4-61
15a	Year 2020 Intersection ICU/LOS, With/Without Project, With/Without Improvements	4-63
16.	Ambient State and Federal Air Quality Standards	4-86
17.	Existing Air Quality Summary - El Toro Monitoring Station (1988-1994)	4-87
18.	SCAQMD Recommended Significance Threshold Criteria	4-90
19.	Project Related Operational Emissions	4-94
20.	Microscale CO Air Quality	4-97
21.	Orange County Residential Noise Standards	4-102
22.	Existing Onsite Noise Levels	4-106
23.	Orange County Land Use/CNEL Compatibility Matrix	4-107
24.	Existing and Project Roadway Noise Levels (65 dB [A] at 100' to Centerline)	4-111
25.	Existing and Project CNEL Distance (65 dB CNEL Contour)	4-112
26.	Onsite Vegetation	4-120
27.	Sensitive Animal Species with the Potential for Occurrence Onsite	4-140
28.	Impacted Vegetation Summary	4-143
29.	Impacted Wetlands/Waters of the United States	4-146
30.	Biological Mitigation Plan Summary	4-151
31.	Existing Onsite Archaeology Sites	4-181
32.	Existing and Planned School Enrollment/Capacity	4-214
33.	Project Related Student Generation	4-218

LIST OF TABLES (con't)

Table	Page
34. Project Related Solid Waste Generation	4-219
35. Project Related Water Demand	4-230
36. Project Related Wastewater Generation	4-231
37. Project Related Electrical Consumption	4-231
38. Project Related Natural Gas Consumption	4-232
39. Alternatives Land Use Plan Comparison	6-3
40. Alternative No. 2 Land Use Summary	6-5
41. Alternative No. 3 Land Use Summary	6-9
42. Alternative No. 4 Land Use Summary	6-13
43. Alternative No. 5 Land Use Summary	6-18
44. Alternative Findings Summary	6-22

1.0 EXECUTIVE SUMMARY

1.1 PROJECT SYNOPSIS

The project proposes the phased development of 705 manufactured single family housing units and a 1.5 acre, neighborhood commercial center and associated infrastructure, on a 222.23 acre site on the easterly side of El Toro Road. The gross residential density is 3.17 du/ac, with minimum lot sizes of 2,630 square feet. Fourteen (14%) percent of the project site is proposed to remain in undisturbed, natural open space and 57.6% of the site will remain in total open space. In addition to the residential component, the project also proposes eight private park sites, regional riding/hiking trail connections, and construction of a water tank site dedicated to and accepted by, the Trabuco Canyon Water District. Project implementation requires the approval of a grading plan. The grading permit application (GA960048) is based on Tract 10692, which was recorded December 16, 1988.

The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan approximately ½-mile south of the El Toro Road/Live Oak Canyon Road intersection. Implementation of the proposed project would directly effect 191.39 acres of the project site, including remedial grading and fuel modification requirements and 19.77 acres offsite, for a total impact area of 211.16 acres.

A total of 2.6 million cubic yards of conventional grading and 8.9 million cubic yards of remedial grading would be required to implement the project.

The project site is designated as "Bridlewood Residential District" in the Foothill-Trabuco Specific Plan and "1B", Suburban Residential, in the Countywide General Plan Land Use Element. Project site zoning is "S", Specific Plan.

Table 5 summarizes major features for the proposed project and current surrounding residential developments:

1.2 EXECUTIVE SUMMARY

A summary of the environmental impact analysis, mitigation measures, level of significance after mitigation and the mitigation monitoring program is shown on pages 1-3 through 1-64.

1.3 PROJECT ALTERNATIVES

Pursuant to CEQA, the Subsequent EIR must assess a reasonable range of alternatives to the project action or location (Section 15126 {d} of the CEQA Guidelines). The discussion must focus on opportunities for eliminating any significant adverse environmental effects, or reducing them to a level less than significant "...even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly..." (Section 15126 {d}{1} of the CEQA Guidelines).

The EIR must identify an environmentally superior alternative among other alternatives. As with cumulative impacts, the discussion of alternatives is governed by the "rule of reason". The EIR need not consider an alternative whose effect cannot be reasonably ascertained, or does not contribute to an informed decision making and public participation process.

The following alternatives to the proposed project are evaluated in this Subsequent Environmental Impact Report.

- **Alternative No. 1 - No Project/No Development.** Alternative No. 1 examines the impacts/benefits of not proceeding with the proposed project. This alternatives is required under Section 15126{d}{2} of the CEQA Guidelines, and warrants further analysis.

- **Alternative No. 2 - Foothill-Trabuco Specific Plan - Staff Alternative A.** Alternative No. 3 was included in the Foothill-Trabuco Specific Plan as Staff Alternative "A", and proposes 150 minimum 20,000 sf lots. Under this alternative, 138 acres of the site would be disturbed by grading requirements.

- **Alternative No. 3 - Foothill-Trabuco Specific Plan - Staff Alternative B.** Alternative No. 4 was also included in the Foothill-Trabuco Specific Plan, as Staff Alternative "B", and proposes limiting development to 100 single family detached dwelling units on a 31.7 acre portion of the site.

- **Alternative No. 4 - 299 Unit Single Family Housing Alternative.** This alternative is the proposed project recommended by the OCP&DS staff during public hearings for EIR 561.

- **Alternative No. 5 - Cluster/Single Family/Multifamily Residential:** Alternative No. 5 evaluates a 318 detached and attached unit project, within a reduced development impact area (110.5 ac). Benefits of this alternative would include a substantial increase in undisturbed open space, including a wider wildlife corridor.

Table 1
PROJECT ALTERNATIVES AND GRADING SUMMARY

Alt. No.	Alternative Description	Onsite Acres of Disturbance	Offsite Acres of Disturbance	Total Acres of Disturbance
1	No Project/No Development	0.0 ac	0.0 ac	0.0 ac
2	150 SFD - 20,000 sf Lots	158.0 ac	6.6 ac	144.6 ac
3	100 SFD - 30 Acres	31.7 ac	2.5 ac	34.2 ac
4	299 Unit Single Family Housing	156.6 ac	7.86 ac	164.46 ac
5	Cluster/Single Family/Multifamily (318 DU)	110.5 ac	2.5 ac	113.0 ac

Table 2
SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES

4.1 LAND USE	
Standard Conditions of Approval	
SC 1-1	Prior to the issuance of any building permits for residential construction, the developer shall comply with Board of Supervisors Resolution 82-1368 (Buyer Notification Program) which requires the developer to prepare a map denoting the existing and proposed land uses, arterial highways, and public facilities within the surrounding area for the approval of the Manager, Current Planning Services . The map content, display, and distribution shall be in accordance with the Buyer Notification Program guidelines approved by the Board of Supervisors and available at the Development Processing Center.
SC 1-2	Prior to the issuance of any certificates of use and occupancy, the developer shall provide evidence to the Manager, PDS/Building Inspection Services Division, that the Department of Real Estate has been notified that the project area is within the boundaries of a Community Facilities District (CFD), and will be subject to special taxes for public facilities and/or services.

4.1 LAND USE		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Land Use Compatibility Implementation of the proposed project may result in potential land use compatibility impacts to O'Neill Regional Park, the Ramakrishna Monastery and St. Michael's Abbey, prior to mitigation.	No additional mitigation measures are proposed.	**Land Use:** Implementation of the proposed project would result in unavoidable adverse impacts to land use and wildlife habitat.

4.2 SOILS AND GEOLOGY

Project Design Features

PDF 2-1 A comprehensive remedial grading mitigation plan has been designed to stabilize the project site, in accordance with OCPDS requirements. The plan is depicted in Exhibit 22, included in Appendix D and proposes measures including shear keys, buttresses, removals/recompaction to reduce hazards associated with landslides, erosion and subsidence.

Standard Conditions of Approval

SC 2-2 Prior to the issuance of a grading permit, the applicant shall submit a geotechnical report to the Manager, PDS/Subdivision and Grading Services Division, for approval. The report shall include the information and be in a form as required by the Grading Manual.

SC 2-3 Prior to the issuance of any grading permits, the Manager, PDS/Subdivision and Grading Services Division, shall determine if the proposed grading complies with the grading illustrated in the plans approved by the decision-maker with regard to grading concepts, slope heights, slope ratios, and pad elevations and configuration. Significant deviations shall be reviewed by the decision-maker for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised application per Orange County Zoning Code Section 7-9-139 and 7-9-150.

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, offsite grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

4.2 SOILS AND GEOLOGY

Standard Conditions of Approval

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the onsite material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

Seismic

SC 2-7 Conformance with the Uniform Building Code and Orange County codes will insure that seismic considerations are incorporated into the structural designs. All recommendations of the geotechnical report shall be incorporated and utilized in the final construction plans for the parcels in a manner meeting the approval of the Manager, PDS/Building Permit Services Division. Larger buildings, structures with extraordinary architectural configurations, or those of tilt-up construction may require seismic analysis.

SC 2-8 The seismic exposure of the site shall be considered in the design of the proposed structures in a manner meeting the approval of the Manager, PDS/Building Permit Services Division.

SC 2-9 Geologic inspections shall be required during site grading for each parcel to confirm the absence of major faults in the local area in a manner meeting the approval of the Manager, Subdivision Grading.

SC 2-10 Prior to the issuance of any grading permits, if review of the grading plan for this property by the Manager, PDS/Subdivision and Grading Services Division, indicates significant deviation from the proposed grading illustrated on the approved tentative tract map, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative tract map; or, if a final tract/parcel map has been recorded, a new tentative tract/parcel map or a site development permit application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required.

4.2 SOILS AND GEOLOGY
Standard Conditions of Approval
SC 2-11 Prior to the issuance of any grading permit, and if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or dramage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to recordation of the tract/parcel map or prior to the issuance of any grading permit, whichever comes first.
SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.
SC 2-13 Prior to the issuance of any grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.
SC 2-14 Prior to the issuance of any grading or building permits, the applicant shall provide, in accordance with criteria supply by EMA, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Monitoring Programs Division.

4.2 SOILS AND GEOLOGY		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Slope Stability/Grading Implementation of the proposed project, prior to the application of mitigation measures would result in significant impacts related to slope stability, landslides, mud slides, subsidence and erosion.	The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. **Grading** AM 2-15 Multiple cuts and fills (2.6 million cubic yards) to achieve planned elevations and profiles, and associated access roadways shall be required. AM 2-16 Remedial grading (8.9 million cubic yards) to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills shall be required. Back cut failure guidelines shall be provided to the Grading Services Division prior to issuance of grading permits. AM 2-17 Removal (clean out) of all or major portions of the graben materials and softer alluvium and colluvium under most of the variable thickness fills shall be required. AM 2-18 Installation of appropriate subdrain systems within natural drainage courses and within stability fills prior to fill placement shall be required. AM 2-19 Adequate foundation and slab subgrade conditioning for the proposed development, including over excavation, capping and measures related to expansive soils shall be required. AM 2-20 Achieving suitable surface gradients to preclude ponding anywhere onsite and to control water run-off via paved/closed drainage devices shall be required.	

4.2 SOILS AND GEOLOGY			
Potential Significant Effects of the Proposed Project			
Potential Project Impacts	**Additional Mitigation Measures**		**Unavoidable Adverse Impacts**
Impact: Slope Stability/Grading Implementation of the proposed project, prior to the application of mitigation measures would result in significant impacts related to slope stability, landslides, mud slides, subsidence and erosion.	**Compaction**		None.
	AM 2-21	Wherever structural fills are to be placed, the upper 6 to 8 inches of the exposed subgrade (after stripping and/or over excavation/clean-out) shall first be scarified and reworked. In general, the dry density of the in-situ (native) material shall be at least 85 percent of maximum. In the event that lower densities are determined by field testing to exist, the depth of over excavation will be determined onsite, given due consideration to the geology of the exposed material, as well as its relative location. It is at present expected that typical depths of over excavation will be on the order of 4 to 5 feet.	
	AM 2-22	Fill shall be placed in lifts of 6 to 8 inches (loose) in thickness. Rocks exceeding 4 inches in maximum dimension are best not incorporated within the upper fill zone (say 3 feet) where foundations and most utility systems are expected to be housed.	
	AM 2-23	In all fill areas where active gradients are steeper than 5:1 (horizontal:vertical), those surfaces shall be prepared to receive fill by excavating standard keyways and benches in a stair-step configuration.	
	AM 2-24	Any loosening of reworked or in-place (native material, consequent to weathering and/or passage of construction traffic, shall be made competent.	
	AM 2-25	Temporary fills, typically associated with access ramps built to accommodate grading equipment shall be subject to removal when their use is discontinued.	
	AM 2-26	The depths of excavation shall be subject to onsite monitoring by the Soil Engineer, normally during the actual removal operations. Any surface or subsurface obstructions, or questionable material encountered during grading, shall be brought immediately to the attention of the Soil Engineer, for his determination as to proper exposure, removal and/or processing as directed.	

4.2 SOILS AND GEOLOGY		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Mitigation Measures**	**Unavoidable Adverse Impacts**
	Material Selection	
	AM 2-27 After the site has been stripped of any debris, vegetation and organic soils, such exposed onsite shall be considered satisfactory for reuse in the construction of onsite fills, provided the organic content does not exceed 3% by volume. It is recommended that highly expansive soils not be placed within the upper 4 to 5 feet thick zone underlying final pad and street grades. More importantly, no such soil is to be placed (as backfill)within a horizontal distance equal to the wall height immediately behind retaining walls.	
	AM 2-28 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal offsite.	
	AM 2-29 All borrow sites shall be approved by the Soil Engineer/Geologist prior to onsite delivery. This will permit the timely allocation of such available materials for use on the project site.	
	Compaction Requirements	
	AM 2-30 Reworking/compaction shall include water addition or drying-out as needed, to bring the soils close to their optimum moisture content. All such reworked soils, placed as structural fills, shall be densified to achieve at least 90 percent relative compaction with reference to the laboratory compaction standard. The optimum moisture content and maximum dry density, for each identified soil type, will be determined in the laboratory in accordance with ASTM Test Designation D1557.	
	Shrinkage/Subsidence	
	AM 2-31 For preliminary earthwork computations, an approximate (overall) shrinkage factor of 12 percent shall be required, for the existing site soils. The above value does not include allowance for stripping nor handling losses.	

4.2 SOILS AND GEOLOGY		
Potential Project Impacts	**Mitigation Measures**	**Unavoidable Adverse Impacts**
	AM 2-32 Subsidence shall be assumed as 3/4 to 1-1/2 inches for grading design purposes. **Excavating Conditions** AM 2-33 Excavation of onsite soils shall be accomplished with standard heavy duty earthmoving or trenching equipment. Some hard cemented sandstone beds were encountered during the field exploration on portions of the site and some minor, isolated blasting may be required to remove these hard materials. AM 2-34 Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water (seepage) is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher site elevations as well as in cuts made late in the year. All nuisance water shall be accommodated in accordance with County requirements. **Expansion Potential** AM 2-35 Onsite materials are considered to be moderately expansive, generally. Soils of high and low expansivity are expected to comprise less than 25% of the overall pad areas. The expansivity of the actual soils placed within structural areas shall be verified during grading, prior to construction. **Utility Trenching** AM 2-36 The typical walls of temporary construction trenches shall stand nearly vertical, with only minor sloughing, provided the total depth does not exceed 4 to 5 feet. Shoring of excavation walls and/of flattening of side slopes may be required, if greater depths are necessary.	

4.2 SOILS AND GEOLOGY		
Potential Project Impacts	**Mitigation Measures**	**Unavoidable Adverse Impacts**
	AM 2-37 Trenches shall be located so as not to impair the bearing capacity nor settlement under planned foundations. As a guide, trenches shall be aligned perpendicular to foundations, and the Structural Engineer so informed to modify the foundation at the crossing, as needed. All other trenches shall observe a lateral off-set equal to their total depth. AM 2-38 Existing soils shall be utilized for trench backfill, provided they are essentially free of organic materials and oversized materials (rock, gravel, etc. in excess of 1-inch maximum size, unless within an approved soil matrix). Alternately, select granular materials (sand equivalent of 30 or greater) may be imported as backfill. Compaction should be accomplished entirely by mechanical means, subject to onsite assessment during pipeline installation. **Surface Drainage** AM 2-39 Positive surface gradients shall be provided away from slope tops per approved grading plans and adjacent to the future buildings, so as to direct surface water run-off away from structural areas and toward suitable discharge facilities. **Sulphate Content** AM 2-40 The soils sulphate content shall be ascertained during the concluding stages of rough grading, and the type of cement to be used determined at that time. **Grading Control** AM 2-41 All grading and earthwork shall be subject to on-going testing and observation by the applicants geotechnical consultant, including engineers, engineering geologists and/or technicians.	

4.2 SOILS AND GEOLOGY			
Potential Project Impacts	**Mitigation Measures**		**Unavoidable Adverse Impacts**
	Slabs-on-Grade		
	AM 2-42	Concrete slabs shall be founded on approved (reworked) in-place soils and/or on properly compacted fill. The subgrade shall be proof-rolled just prior to construction to provide a firm, unyielding surface, especially if the surface has been disturbed by the passage of time and/or exposure to construction traffic.	
	AM 2-43	Floor slabs shall be at least 4 inches thick. The Finished Floor Level should be at least 6 inches above highest adjacent exterior grade. Joints shall be provided.	
	AM 2-44	If flooring that would be affected by moisture is to be used, the slab shall be underlain by 2 inches of sand, with a 10-mil plastic sheet between the sand and the subgrade.	
	AM 2-45	Precautions in respect of expansive soils shall be taken.	
	Foundations		
	AM 2-46	The proposed structures shall be supported on conventional spread footings, supported into approved compacted fill and/or reworked native material.	
	Long Term Settlements		
	AM 2-47	The grading concept, as presently proposed, includes several areas where deep fill will result, exceeding 50 feet in depth. These soil masses may experience significant settlements, with time, of 4 to 6 inches or more. Such downward movements can be tolerated by most improvements, provided these occur at a reasonably uniform rate and rather evenly over a well distributed area. However, the degrees and rates of settlement shall be analyzed during the final design phase.	

4.2 SOILS AND GEOLOGY		
Potential Project Impacts	**Mitigation Measures**	**Unavoidable Adverse Impacts**
	Phasing of Earthwork AM 2-48 Unstable Ground Initial stability evaluations have determined that several natural slopes subject to grading are inherently unstable. Removals, therefore, shall be planned and carried out with care in order to minimize deep-seated, in-construction failures. Statistically, about 10 percent of back cuts for buttresses will fail during grading. Allowances for schedule and budget contingencies should be made. AM 2-49 Required Clean-Out Work Prior to improving the gross stability of hillsides, clean-out work will be necessary along their lowest (toe) elevations. Whereas such selective removals are essential prior to placement of additional fill, this process can trigger undesired slippage. Therefore, selective unloading of the slide mass shall be required before stabilization can effectively begin. AM 2-50 Slide Unloading Where existing slope faces are marginally safe in their present condition, the higher portions of each such slide shall require removals toward the top, prior to clean-out, and subsequent loading at the toe.	

4.3 WATER/HYDROLOGY	
Project Design Features	
PDF 3-1	A master drainage concept has been incorporated into the project design to mitigate hydrology impacts to existing OCP&DS requirements and standards. The master drainage concept, shown in Exhibit 22 and contained in its entirety in Appendix L of this EIR, proposes a series of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to control project drainage.

4.3 WATER/HYDROLOGY
Standard Conditions of Approval

SC 3-2 Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

b. Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

SC 3-3 Prior to the issuance of any grading permits, the applicant shall in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. Design and convey construction funds for surface drainage improvements; and

b. Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

c. Dedicate the associated easements to the County of Orange, if determined necessary.

SC 3-4 Prior to the issuance of any certificates of use and occupancy, said improvements shall be constructed in a manner meeting the approval of the Manager, PF&R/Construction Division.

SC 3-5 Prior to the issuance of any grading permit, and if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the upstream and/or downstream property owners permitting drainage diversions and/or unnatural concentrations.

SC 3-6 Prior to issuance of any building permits, the applicant shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division, including payment of fees and the construction of the necessary facilities.

SC 3-7 Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering design and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

4.3 WATER/HYDROLOGY

Standard Conditions of Approval

Water Quality

SC 3-8 Prior to issuance of building permits, or grading permits, whichever come first, permit applicant shall submit for approval of the Manager, PDS/Subdivision and Grading Services Division, a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used onsite to control predictable pollutant runoff. This WQMP shall identify at a minimum the routine structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of the BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association, lessee, etc.); and, shall reference the location(s) of structural BMPs.

SC 3-9 Prior to the issuance of precise grading permits or building permits, whichever comes first, the applicant shall submit and obtain approval from the Manager, PDS/Subdivision and Grading Services Division, of a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on-site to control predictable pollutant runoff. This WQMP shall identify, at a minimum, the routine, structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association shall reference the location(s) of structural BMPs.

Flood Plain Elevation

SC 3-10 Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

Easements

SC 3-11 Prior to the issuance of any certificates of use and occupancy, the applicant shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, PDS/Subdivision and Grading Services Division, for review and approval. Further, a copy of the approved easement shall be furnished to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificate of use and occupancy.

4.3 WATER/HYDROLOGY		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Increased Runoff Implementation of the proposed project will result in the introduction of impervious surfaces (streets, driveways, residential units) and will result in a decrease in the area available for stormwater percolation and a subsequent increase in storm flow runoff. **Impact: Increased Downstream Erosion** Discharge of increased and concentrated runoff volumes into onsite natural drainage courses would result in increased erosion and associated sedimentation, primarily due to the unsuitable condition of drainage course banks. **Impact: Increased Urban Runoff Pollution** Urban runoff (oil, cleaning products, pesticides, etc.) associated with proposed onsite streets, driveways, and manufactured slopes would discharge into onsite drainage courses ultimately ending up in the Pacific Ocean. **Impact: Alteration of Natural Site Drainage** Implementation of the proposed project will result in substantial landform modification, redirecting site drainage throughout the site.		None

4.4 TRANSPORTATION/CIRCULATION

Project Design Features

PDF 4-1 The onsite circulation system is proposed as to accommodate project related traffic generation, including design of the entry street as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median. The entry's cross-section shall be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. Secondary emergency only access will be provided via a gated connection to existing Valley Vista Way. Minimum fire access roadway width of 28 feet shall be required.

PDF 4-2 The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane. The applicant shall provide a cash deposit for the design and construction of the traffic signal.

PDF 4-3 All weather access to the proposed water tank shall be provided by the applicant. This access shall be designed with a minimum 28 foot width and a maximum grade of 10%.

SC 4-4 Prior to the issuance of any building permits, the applicant shall participate in design, construction, and/or financing of the cost of a traffic signal in the project vicinity in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-5 Prior to the issuance of building permits, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, PF&RD/Program Division.

a. Foothill Circulation Phasing Program

b. Prior to recordation of a final tract map, the subdivider shall enter into an agreement with the County of Orange for participation in a fee program (if adopted by the Board of Supervisors) for implementation of the Foothill/Eastern Transportation Corridor. Said agreement shall provide that:

1. The fee shall be $158.00 per trip end times the County standard trip end generation rate for the type of development proposed, times the number of units (footage) proposed, or the fee payable under the program, whichever is less.
2. Subdivider's obligation to pay fees would arise only after the County establishes the fee program, prior to issuance of building permits.
3. Subdivider's obligation to pay the fee would be extinguished if the fee program were not established within three (3) years of the date of issuance of the first building permit for subject development.
4. Subdivider shall furnish surety bond, letter of credit, money or such other security approved by the Director, PF&RD, to assure payment of the fees related to subject development.
5. This condition shall be void if a trial court of competent jurisdiction, in a final judgement, or an appellate court, if the matter is appealed, sets aside a condition imposed by the County which was substantially the same as said condition.

c. El Toro Road

d. Santiago Canyon Road

SC 4-6 Building permit issuance shall be phased in accordance with the Foothill Circulation Phasing Plan (FCPP) Development Phasing Plan, and shall also be subject to any other Board of Supervisors approved growth management phasing plan pertaining to the timely provision of public services and facilities.

4.4 TRANSPORTATION/CIRCULATION

Standard Conditions of Approval

SC 4-7 Building permit issuance shall be phased in accordance with any Board of Supervisors approved Growth Management Phasing Plan perfaining to the timely provision of public services and facilities.

SC 4-8 Prior to the issuance of any grading permits, adequate sight distance shall be provided at all street intersections per Standard Plan 1117, in a manner meeting the approval of the Manager, PF&R/Program Division. This includes any necessary revisions to the plan such as removing slopes or other encroachments from the limited use area.

SC 4-9 Prior to the issuance of any certificates of use and occupancy, the developer shall construct the approved internal circulation improvements in a manner meeting the approval of the Manager, PF&R/Construction Division. Further, a copy of the approved plans shall be furnished to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy.

SC 4-10 When monuments exist which control the location of subdivisions, streets or highways, or provide survey control, the monuments shall be located and referenced prior to any street construction or relocation, and shall be reset after construction as required by Section 8771 of the Business and Professions Code, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-11 Prior to issuance of a building permit, the applicant shall pay a cash fare share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manger, PF&R/Programs Division. In addition, the applicant shall participate in the Santiago Canyon Road Safety Improvement Program.

SC 4-12 Prior to issuance of a building permit, the applicant shall design and construct roadway improvements to El Toro Road including a deceleration lane and a left turn pocket into the project entrance based on a 60 mph minimum design speed in a manner meeting the approval of the Manager, PF&RD/Program Division.

SC 4-13 Prior to issuance of a building permit, the applicant shall provide a cash deposit for the difference in cost of designing and constructing the roadway improvements proposed with the project as compared to the costs associated with the ultimate configuration of El Toro Road, as determined by PDS/Environmental & Project Planning Services Division, all in a manner meeting the approval of the Manager, PF&R/Programs Division.

4.4 TRANSPORTATION/CIRCULATION		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Circulation Implementation of the proposed project would require a traffic signal at the intersection of El Toro Road and the primary project access road. Project generated traffic will add to cumulative regional traffic impacts.	The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, Transportation Planning. AM 4-14 The El Toro Road turn lane improvements needed at the Project Entrance to serve Year 2020 conditions shall be completed in conjunction with development. AM 4-15 Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan. AM 4-16 The project shall participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program. Both existing traffic patterns and SCTM traffic projections for Years 2000 and 2020 indicate the attraction of Glenn Ranch Road, Portola Parkway, and the Foothill Transportation Corridor (SR-241) for increased traffic volumes in the project study area. North of the Foothill Transportation Corridor, El Toro Road can accommodate projected traffic volumes with the proposed project on four travel lanes divided by a raised or striped median. Implementation of a full Major Arterial cross-section is not needed to serve future traffic volumes. This alternative section represents a modification of the typical cross-section for a Primary Arterial. Appropriate transitions would be required between this cross-section and other modified cross-sections along El Toro Road south of Glenn Ranch Road.	None.

4.5 AIR QUALITY
Project Design Features
No air quality PDF's have been proposed.
Standard Conditions of Approval
SC 5-1 Grading and excavation shall be halted during periods of high winds meeting the approval of the Manager, EA, Subdivision and Grading Services Division. According to AQP Measure F-4, high winds are defined as 25 mph or greater. This level occurs only under unusually extreme conditions, such as Santa Ana wind conditions. Notations in the above format, included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.
SC 5-2 Prior to issuance of grading permits, the project applicant shall demonstrate measures to ensure compliance with SCAQMD Rule 403, and shall identify the dust suppression measures, such as regular watering, which shall be implemented to reduce emissions during construction and grading in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. This will help reduce the short-term impacts from particles which could result in nuisances that are prohibited by Rule 403.

4.5 AIR QUALITY		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Construction Related Air Emissions Potentially significant impacts were identified from dust generated by surface disturbance and from construction equipment operations. **Impact: Cumulative Vehicle Air Emissions** Vehicular emissions from project related traffic should be identified as having a cumulatively significant air quality impact.	The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations: AM 5-3 As previously noted, no credit was taken for mobile source emissions reductions either from technology improvements (reformulated gasoline, alternative fuels and/or electric cars), nor from transportation behavior modification in response to programs such as South Coast AQMD Reg. XV or by the trip reduction programs. These programs will mitigate the identified significant growth-related cumulative air quality impact to some extent. Because the projected effectiveness of such programs and because the time frame for technology development is uncertain, the degree of possible mitigation can not be quantified with certainty. Similarly, the buildout date for Saddleback Meadows will depend on economic forces that can not be predicted. The following discussion structures the recommended mitigation as comprehensively as possible, but quantification of mitigation effectiveness is speculative at currently known levels of detail. AM 5-4 Contractors will comply with SCAQMD Rule 403. AM 5-5 Contractors will utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and will wash or sweep the construction access points at El Toro Road on a routine basis on a frequency specified by the County of Orange as well as whenever dirt is visible more than 50 feet from the access point independent of the routine clean-up schedule. AM 5-6 Trucks hauling dirt on public roads to and from the site will be covered or will maintain a six inch differential between the maximum height of any hauled material and the top of the haul trailer. Haul truck drivers will water the load prior to leaving the site to prevent soil loss during transport.	**Construction Related Air Emissions:** None. **Cumulative Vehicle Air Emissions:** Unavoidable adverse until compliance with basin wide AQMP.

4.5 AIR QUALITY		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
	AM 5-7 Construction management procedures required by the County of Orange and other jurisdictions shall be implemented. Contractor personnel responsible for supervision and the appropriate actions to be taken for the following measures shall be identified: • Cessation of activities during a Stage-2 smog episode. Call 1-800-242-4022 for the daily forecast. • Truck routes and schedules for receipt of materials shall be coordinated with County of Orange staff. • Where feasible, on-road vehicles and off-road equipment shall be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes. AM 5-8 Graded surfaces used for off-road parking, materials lay-down or awaiting future construction shall be stabilized for dust control as needed. Frequently accessed unpaved areas shall be paved as early as possible to minimize dirt trackout to public rights of way. AM 5-9 Equipment will be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and use low-sulfur fuel as required by SCAQMD regulation. Flag persons and appropriate traffic control devices will be used as needed to minimize construction activity interference with off-site traffic. AM 5-11 Implementation of the above measures is expected to maintain construction activity air quality impacts at less than significant levels.	

4.5 AIR QUALITY		
Potential Significant Effects of the Proposed Project		
	Operational Activities: • Traffic flow at the project access will be maintained at acceptable levels of service through mitigation measures identified in the project traffic study. • 220v electric power for future use to charge electric-powered vehicles will be made available in homeowner garages. AM 5-12 Emissions calculations and the corresponding ambient air quality impact assessment for project-related construction and Saddleback Meadows operations presumed compliance with SCAQMD rules regarding dust control. The potential for additional emissions reduction beyond the mandatory requirements of existing rules and regulations was evaluated based on Appendix 11 of the SCAQMD Air Quality Handbook which quantifies reduction potential of a variety of project construction and operation emissions control measures. Dust emissions can be controlled from their 50 percent control assumed for Rule 403 compliance by an additional 50-80 percent of the uncontrolled fraction. The net effective dust control level is therefore 75-90 percent. Unless the entire project site is under simultaneous massive grading, attaining the optimum level of dust control will maintain dust impacts at less than significant levels. Operational emissions reduction from mobile sources of 5 percent of their non-TCM implementation level can not reduce the substantial emission level to less than the SCAQMD advisory level significance thresholds. A number of secondary considerations were identified, however, that would either allow for a finding of an individually less than significant air quality impact.	

4.6 NOISE
Project Design Features
No PDF mitigation measures are proposed.
Standard Conditions of Approval

SC 6-1 All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dBA CNEL all habitable rooms and a source specific exterior standard of 65 DBA CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

a. Prior to the issuance of grading permits, as determined by the Manager, PDS/Building Permits Services Division, the applicant shall submit an acoustical analysis report to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report, in which case it may also satisfy "B" below.

b. Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards to the Manager, PDS/Building Permits Services Division, for approval along with satisfactory evidenced which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

c. Prior to the issuance of any building permits, the applicant shall show all freestanding acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-2 Prior to the issuance of grading permits, as determined by the Manager, PDS/Building Permits Services Division, an acoustical analysis report shall be submitted to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report in which case it may also satisfy SC 6-3 below.

SC 6-3 Prior to the issuance of any building permits for residential construction, an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards shall be submitted for review and approval to the Manager, PDS/Building Permits Services Division, along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

4.6 NOISE

SC 6-4 Prior to the issuance of any building permits, all freestanding acoustical barriers must be shown on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-5 Prior to the issuance of any certificates of use and occupancy, the developer shall produce evidence acceptable to the Manager, PDS/Building Inspection Services Division, that information stating this property is subject to the overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station) has been provided to the Department of Real Estate of the State of California for inclusion into the Final Subdivision Public Report.

SC 6-6 Prior to the issuance of any certificates of use and occupancy, the applicant shall post aircraft noise impact notification signs in all sales offices associated with new residential development located within an aircraft 63 dB CNEL contour. The number and location of said signs shall be as approved by the Manager, PDS/Building Permits Services Division.

SC 6-7 Prior to the issuance of any building permit, an aviation easement over this property shall be offered for dedication to the County of Orange in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-8 Prior to the sale, lease or rental of any structure or portion thereof, the applicant/owner shall provide to each prospective purchaser, lessee, or tenant a notice and statement of acknowledgment that the property is subject to overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station). The form and method of distribution of said notice and statement of acknowledgment shall be as approved by the Manager, PDS/Building Permits Services Division.

A. Prior to the issuance of any grading permits, the proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division, that:

(1) all construction vehicles or equipment, fixed or mobile, operated within 1000 feet of a dwelling shall be equipped with properly operating and maintained mufflers.

(2) All operations shall comply with Orange County "Codified Ordinance Division 6 (Noise Control); and

(3) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this requirement.

SC 6-9 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that excavation, grading and other construction-related activities shall be restricted to daytime hours as promulgated in the County's Codifide of Ordinance Division 6 (Noise Control).

4.6 NOISE
Standard Conditions of Approval
SC 6-10 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that all construction equipment, stationary or mobile, shall be equipped with properly operating and maintained mufflers. SC 6-11 Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division, that: a) All construction vehicles or equipment, fixed or mobile, operated within 1,000-feet of a dwelling shall be equipped with properly operating and maintained mufflers. b) All operations shall comply with Orange county Codified Ordinance Division 6 (Noise Control). c) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings. Notations in the above format, appropriately identified and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

4.6 NOISE		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: On and Offsite Noise Impacts Implementation of the proposed project would result in short-term construction related impacts to adjecent land uses including: 1) St. Michael's Abbey; 2) Ramakrishna Monastery; 3) Hidden Ridge planned community. No significant long-term on or offsite noise impacts are anticipated with this project.	The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations, in manner meeting approval of the Manger, Building Permits. AM 6-12 Prior to the issuance of Building Permits, all operative windows exceeding 6 sq ft. of glazing shall be rated SR=25 or greater.	None.

4.7 BIOLOGICAL RESOURCES

Project Design Features No Project Design Features are proposed.

Standard Conditions of Approval

SC 7-1 Pursuant to Section 711.4 of the Fish and Game Code, the applicant shall comply with the requirements of AB 3158, prior to the filing of the Notice of Determination for the project, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services.

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement.

SC 7-3 Prior to the issuance of any grading permits, the applicant shall obtain the necessary individual or nationwide permit (pursuant to Section 404 of the Federal Clean Water Act) covering all affected wetland areas from the U.S. Army Corps of Engineers, Los Angeles District. All wetland areas shall be subject to the specifications of the 404 permit as determined by the Corps of Engineers. A copy of the 404 permit shall be submitted with the first grading permit application for the proposed project to the Manager, PDS/Subdivision and Grading Services Division.

SC 7-4 Prior to the issuance of any grading permits, as required by participation in the Natural Community Conservation Planning/Coastal Sage Scrub (NCCP) agreement signed by the County on May 1, 1992, the project applicant shall provide an accounting summary, in acres or portions thereof, of coastal sage scrub scheduled to be impacted by removal through grading in a manner meeting the approval of the Administrator Planning & Zoning. (See Section 4.7.3.)

SC 7-5 Prior to the issuance of a grading permit, the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the U.S. Fish and Wildlife Service, in a manner meeting the approval of the Administrator, Planning & Zoning and Manager, PDS/Grading Services Division, in consultation with the Administrator, Planning & Zoning.

SC 7-6 Notwithstanding the tentative map, no grading shall occur within the Natural Community Conservation Plan (NCCP) enrolled area except as in a manner meeting the approval of the Administrator, Planning and Zoning.

SC 7-7 Prior to the issuance of any grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. This evidence shall be submitted to the Manager, PDS/Subdivision and Grading Services Division, for review and approval, in consultation with the Administrator, Planning and Zoning.

4.7 BIOLOGICAL RESOURCES

Standard Conditions of Approval

SC 7-8 Prior to the issuance of grading permits the applicant shall submit a landscape and tree preservation plan to the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval in accordance with the following guidelines:

A. To the maximum extent feasible, all existing native and exotic trees and other significant vegetation shall be preserved in conjunction with any development activity.

B. A tree preservation plan shall be prepared by a landscape architect for all development projects which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and one-half feet above ground level) and shrubs having a trunk or branch diameter of 3 inches or greater. The plan shall show which plants are proposed for removal and where transplanted and/or replacement plants will be located. Tree preservation plans shall be approved prior to issuance of grading permits, or where grading permits are not required, prior to issuance of building permits.

C. Trees removed in accordance with an approved tree preservation plan shall be replaced by a combination of transplanting to another location on the subject property and/or replacement by a combination of 1 and 15-gallon plants at a minimum ratio of 5:1. The following sliding scale shall also be used for trees to determine if more than the minimum number of replacement trees are required.

Tree Replacement Scale

Trunk Diameter (inches) of Tree Removed At 4½ Feet Above Ground Level	Total Number of Replacement
5 to 11	5 (1-15 gal / 4-1 gal)
12 to 17	7 (1-15 gal / 6-1 gal)
18 to 23	10 (2-15 gal / 8-1 gal)
24 to 35	12 (2-15 gal / 10-1 gal)

Any oak exceeding 35 inches in diameter should be preserved, transplanted or replaced in accordance with the provisions outlined in Section E of the mitigation measure. In the event that all required replacement trees will not fit on the property, increase in container size will be considered in conjunction with reductions in replacement quality.

D. Significant shrubs removed in accordance with an approved tree preservation plan should be replaced by a combination of transplanting to another location on the subject property and/or replacement by 5-gallon plants at a minimum ration of 3:1.

E. All other plants not specified in Guidelines C and D above that are removed in accordance with an approved tree preservation plan should be either transplanted to another location on the subject property or replaced by 15-gallon plants for trees and 5-gallon plants for shrubs at a minimum ration of 1:1. The two 35" + oak trees impacted by project implementation, will be mitigated by an enhanced replacement ratio (5-15 gal/10-1 gal) to the satisfaction of the Manager, PF&R/Harbors Beaches and Parks Division.

4.7 BIOLOGICAL RESOURCES	
Standard Conditions of Approval	
F.	All transplanting of trees shall be performed by an experienced nursery or other landscape contractor, who shall care for the trees for at least six months after transplanting.
G.	Prior to issuance of final certificates of use and occupancy, all transplanted or replacement trees and shrubs shall be installed in accordance with the tree preservation plan.
H.	Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.
I.	Natural drainage courses and natural grades in proximity of, and providing seasonal irrigation to oak trees shall not be altered.
J.	Grading, placement of fill, storage of building materials and heavy equipment, structural development, and hardscape (e.g., roads, sidewalks, patio slabs and pool decks) shall be prohibited within the drip line (outer edge of branches) of any tree. During grading and construction operations, all trees shall be temporarily fenced off with chain link fencing to protect such areas.
K.	Use of pre-emergent weed killers shall be prohibited within 10 feet of the drip line of any individual tree and within any natural drainage course which seasonally irrigates trees.
L.	Use of soil sterilizers shall be prohibited because they kill everything in the soil.
SC 7-9	Specify areas/lots to be dedicated or irrevocably offered to the County in fee or easement for landscape maintenance purposes, scenic or resource preservation purposes or resource replacement shall be landscaped, equipped for irrigation, and improved in accordance with an approved plan as stated below:
	a) Preliminary Plan -An agreement shall be entered into and financial security posed guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, with a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches and Parks Division. Said plan shall take into account the previously approved landscape plan for AP 95-7, the EMA Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

4.7 BIOLOGICAL RESOURCES	
Standard Conditions of Approval	
	b) Detailed Plan - Prior to the issuance of any building permit(s), a detailed landscape plan shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches and Parks Division. Detailed plans shall show the detailed irrigation and landscaping design.
	c) Installation Certification - Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, said improvements shall be installed and shall be certified by a licensed landscape architect or licensed landscape contractor, as required, as having been installed in accordance with the approved detailed plans. Said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable, shall be furnished in writing to the Manager, PF&R/Construction Division, and the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy.
SC 7-10	Prior to the issuance of precise grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan. The plan shall be certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan (if any), EMA Standard Plans, area plan 95-7, scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures) and Board Resolution 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed by the future homeowners association and be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division.
SC 7-11	Prior to the issuance of grading permits, the applicant shall provide additional evidence that the onsite coastal sage scrub habitat is not occupied by California gnatcatchers, in accordance with current USFWS protocol (7 in season/9 out of season pass surveys) to the satisfaction of the USFWS and the Administrator, Planning and Zoning. Should occupied coastal sage scrub habitat be identified onsite by the surveys consultation shall be initiated with the USFWS, and a coastal sage scrub/gnatcatcher mitigation plan shall be developed to the satisfaction of the USFWS and the Administrator, Planning and Zoning prior to the issuance of grading permits.
SC 7-12	Prior to the issuance of grading permits, the applicant shall provide appropriate measures to mitigate the project related impacts to onsite wildlife movement, to the satisfaction of the USFWS, CDFG and the Administrator, Planning and Zoning. Mitigation shall consider onsite as well as offsite mitigation options, and established fee programs.

4.7 BIOLOGICAL RESOURCES	
Standard Conditions of Approval	
SC 7-13	Prior to the issuance of grading permits, the applicant shall provide assurances to the satisfaction of the County NCCP coordinator and the Administrator, Planning and Zoning, that the proposed project will participate in the NCCP planning process and not preclude the finalization of the Southern Subregional reserve component of the NCCP.
SC 7-14	Prior to the issuance of grading permits, the applicant shall prepare a relocation and establishment mitigation plan, designed to mitigate impacts to Riverside fairy shrimp/pond habitat, wetlands, and southern sycamore woodland, to the satisfaction of the Administrator, Planning and Zoning, in consultation with USFWS and CDFG. Mitigation shall consider onsite as well as offsite mitigation options, as well as, established fee programs.

4.7 BIOLOGICAL RESOURCES			
Potential Significant Effects of the Proposed Project			
Potential Project Impacts		**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Sensitive Vegetation Project implementation would result in the direct impact to: 1) 50.30 acres of Venturan-Diegan transitional costal sage scrub; 2) 14.6 acres of coast live oak woodland; 3) 9.9 acres of southern sycamore riparian woodland; 4) 3.8 acres of mulefat scrub; and 5) 0.60 acres of ephemeral pond. **Impact: Sensitive Animals** Implementation of the proposed project would result in direct impacts to the Riverside fairy shrimp, a Federal endangered species. In addition, impacts to the orange-throated whiptail, coastal whiptail, coastal cactus wren, and Southern California rufous-crowned sparrow.	AM 7-15	The following recommendations are proposed to further minimize some of the proposed impacts. • Where possible, bulbs of individual Catalina Mariposa Lily and Intermediate Mariposa Lily that are to be impacted shall be dug up and transplanted to a suitable habitat with similar soil, slope exposure, etc. • Lighting within development projects adjacent to conserved habitat should be selectively placed, shielded, and directed away from that habitat. In addition, lighting from homes abutting conserved habitat should be screened with vegetation, and large spotlight-type lighting that may affect conserved habitat should be prohibited. These lighting restrictions should be incorporated into the project's CC&Rs.	Project specific and cumulative impacts to coastal sage scrub would remain an unavoidable adverse impact until such time as a section 4(d) interim take is authorized.

4.7 BIOLOGICAL RESOURCES		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Wildlife Movement Implementation of the proposed project would conflict with existing wildlife movement corridors, as depicted in the Foothill-Trabuco Specific Plan. **Cumulative Impacts:** Cumulative impacts to coastal sage scrub habitat, oak woodland and sycamore riparian habitat is considered significant.		

4.8 AESTHETICS	
Project Design Features	
PDF 8-1	All public utilities shall be situated underground.
PDF 8-2	Where feasible, drainage devices (terrace drains, benches, and intervening terraces) shall be bermed and placed in swales.
PDF 8-3	Concrete drainage swales and other similar drainage infrastructure shall be tinted with an appropriate earth tone to effectively conceal them from surrounding view.
PDF 8-4	The water tank shall be bermed, landscaped and painted to blend with the surrounding environment.

Standard Conditions of Approval	
SC 8-5	Prior to the issuance of any building permits, an agreement shall be entered into and financial security posted guaranteeing landscape improvements and the maintenance thereof based upon a detailed landscape plan showing landscape design and irrigation with a cost estimate for the landscape improvements approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division. Said plan shall take into account previously approved landscape plan(s), PF&RD Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, water conservation measures contained in Board Resolutions 90-487 (Water Conservation Measures), and 90-1341 (Water Conservation Implementation Plan).
SC 8-6	Prior to the issuance of preliminary grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan(s), PF&RD Standard Plans, area plan 95-7 scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolutions 90-487 (Water Conservation Measures) and 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed and approved by Manager, PDS/Building Permits Services Division, Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, Environmental and Projects Planning Division.
SC 8-7	Prior to the issuance of certificates of use and occupancy and release of financial security, applicant shall install the approved landscaping and irrigation system and shall have a licensed landscape architect or licensed landscape contractor, as applicable, certify that it was installed in accordance with the certified plan. Said certification, including an irrigation management report for each landscape irrigation system, and any other implementation report determined applicable, shall be furnished in writing to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy.
SC 8-8	Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

4.8 AESTHETICS		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Aesthetic Impact to Surrounding Land Use Implementation of the proposed project, prior to application of the recommended mitigation measures would result in potential aesthetic impact to the following surrounding land use: O'Neill Regional Park, Ramakrishna Monastery, St. Michael's Abbey. These significant impacts would be related to the following visible project features: 1) grading, including cut and fill slopes; 2) units; 3) drainage improvements; 4) native vegetation removal; and 5) night lighting.	The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations: AM 8-9 Prior to issuance of any grading permit, the project proponent shall provide evidence to the Manager, PDS/Subdivision and Grading Services Division that indicates that graded areas will be compatible with natural landform characteristics. Criteria to achieve the desired effect shall include: a) Recontouring the existing landforms to provide a smooth and gradual transition between graded slopes and existing grade while preserving the basic topographic character of the site. b) Variation and combination of slopes 2:1, 3:1 and 4:1 to create a more natural character wherever possible within the graded areas. c) Attempting to balance between cut and fill within the overall area to eliminate an offsite and import/export situation. d) Obscuring slope drainage structures with a variety of plant materials. e) Incorporation of architectural and design techniques into the project in order to minimize grading and enhance offsite views (e.g., split levels, clustering). f) Preservation of visual opportunities from hillsides by providing for panoramic views from selected locations (e.g., view corridors, sensitive landscape placement).	As the first large tract proposed within the Specific Plan area, the project will contribute to the cumulative impacts to existing rural and natural open space, and to a continuing urbanization of foothill areas in south Orange County.

4.8 AESTHETICS		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Mitigation Measures**	**Unavoidable Adverse Impacts**
	AM 8-10 Manufactured slopes shall be replanted with vegetation native to the site to blend the new topography with existing natural on site vegetation, immediately following precise grading operations. AM 8-11 Fuel modification areas shall be planted with fire resistant vegetation. AM 8-12 Use of the California Sycamore or other species similar to trees currently existing onsite shall be used in appropriate common area and street landscape locations where feasible. AM 8-13 Common area landscaping and habitat transition zones shall utilize the FTSP recommended plant palette (appendix E) when selecting plant material. AM 8-14 Slope landscaping shall occur as soon as feasible after grading and be maintained by the applicant until a homeowners association has been organized and assumes long term maintenance responsibility. **Light and Glare** AM 8-15 Prior to issuance of any certificate of use and/or occupancy, the potentially adverse impact of night lighting on surrounding land use shall be mitigated to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division by the following measures: a) Street lights shall only be installed at intersections and as required to insure public safety. b) Low intensity halogen street lamps shall be used. c) Street lights shall be shielded to direct the light beam downward and to avoid direct glare into open space areas and adjacent property.	Permanent viewshed alteration will occur even after the incorporation of the recommended mitigation measures. In addition, night lighting glare will change night views from an unlit dark open space area to an urban night environment.

4.9 CULTURAL/SCIENTIFIC RESOURCES

Project Design Features

No project design features were included in this project.

Standard Conditions of Approval

Archaeology

SC 9-1 Prior to the issuance of any grading permit, a County-certified archaeologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified archaeologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records search and the field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division. Mitigation measures may be required depending upon the recommendations of this report. This mitigation measure has been completed as part of the Draft EIR.

SC 9-2 Prior to issuance of any grading permit, a county-certified archaeologist shall be retained by the applicant to perform a subsurface test level investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PF&R/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

SC 9-3 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained to conduct pre-grade salvage excavation of the archaeological resources in the permit area. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. A final report of the salvage operation shall submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, prior to any grading.

SC 9-4 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained, shall be present at the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeological observer shall determine appropriate actions, in cooperation with the project developer, for exploration and/or salvage. The archaeologist shall submit a follow-up report to the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, an analysis of any artifacts found and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, PF&R/Harbors Beaches and Parks Division.

4.9 CULTURAL/SCIENTIFIC RESOURCES		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	Additional Mitigation Measures	Unavoidable Adverse Impacts

Impact: Archaeological and Paleontological Resources Cultural, archeological and paleontological resources are non-renewable in character and can be lost forever unless adequate mitigation measures are taken to ensure their recovery and preservation. The project is known to contain significant deposits of artifacts and fossils, as well as a ranch house ruin circa 1920.	**Additional Mitigation Measures** The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations in a manner acceptable to the Manager, PF&R/Harbors Beaches and Parks Division Facilities. AM 9-5 Prior to site grading the project site shall be examined by a qualified archeologist, all potential archeological sites identified, and surface collection and documentation of artifacts be conducted. AM 9-6 As indicated by the project archeologist, sites warranting further study shall be disced to ascertain the extent and significance of the deposit. If the project archeologist determines that a site is potentially of cultural worth, then additional excavation in a manner determined by the project archeologist shall occur prior to further grading or construction activities at these locations. AM 9-7 During initial grading, the project site shall be monitored by a qualified archeologist who shall have the authority to order a temporary cessation of grading activities and take appropriate action to preserve any culturally significant materials if uncovered. AM 9-8 If human remains of Native American origin are encountered during the project the County Coroner's Office and the Native American Heritage Commission shall be contacted for preservation and protection of the remains. **Paleontology** SC 9-9 Prior to the issuance of any grading permit, a County-certified paleontologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified paleontologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records search and field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, Future mitigation shall depend upon the recommendations of the report. This mitigation measure has been completed.	None.

4.9 CULTURAL/SCIENTIFIC RESOURCES			
Potential Significant Effects of the Proposed Project			
Potential Project Impacts	**Mitigation Measures**		**Unavoidable Adverse Impacts**
	SC 9-10	Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pre-grade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalog of artifacts, and their present repository. This mitigation measure has been completed.	
	SC 9-11	Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first-refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, PF&R/Harbors Beaches and Parks Division.	

4.9 CULTURAL/SCIENTIFIC RESOURCES		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
	Additional Mitigation Measures The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner acceptable to the Manager, a Coastal and Historical Facilities. AM 9-12 A qualified paleontologist shall be retained to perform periodic inspections of excavations and, if necessary, salvage exposed fossils. The frequency of inspections will depend on the rate of excavation, the materials being excavated, and the abundance of fossils. Initially, monitoring shall be on a full time basis in all excavations because of the high potential for the discovery of fossils in all the rock units present in the study area. AM 9-13 The paleontologist shall be allowed to divert or direct grading in the area of an exposed fossil to facilitate evaluation and if necessary, salvage. AM 9-14 To recover small fossils, it will be necessary to collect sediment samples from promising horizons discovered during grading monitoring for processing through fine mesh screens. Once the samples have been screened, they will be examined microscopically for small fossils. AM 9-15 Fossils shall be prepared to the point of identification and catalogued before they are donated to their final repository. AM 9-16 All fossils collected should be donated the County of Orange's designated repository. AM 9-17 A report detailing the results of these efforts, listing the fossils collected, and naming the repository shall be submitted to the lead agency at the completion of the project.	None.

4.9 CULTURAL/SCIENTIFIC RESOURCES		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Mitigation Measures**	**Unavoidable Adverse Impacts**
	Historical Resources SC 9-18 Prior to issuance of a grading permit, project applicant shall provide written evidence to Manager, PF&R/Harbors Beaches and Parks Division that an historian has been retained by the applicant to implement final mitigation measures. A final report shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area. SC 9-19 Development adjacent to a place, structure, or object of historic significance shall be designed so that permitted uses and architectural design will protect the visual setting of the historic site. Such design shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area.	None.

4.10 RECREATION	
Project Design Features	
PDF 10-1	The Live Oak and Aliso Creek riding and hiking trail shall be located on the Project Site as shown in Exhibit 7 and Exhibit 63 Site Plan.
PDF 10-2	Live Oak Canyon Trail shall be constructed onsite, connecting O'Neill Regional Park to the Aliso Creek riding and hiking trail, as shown in Exhibit No. 7, Site Plan.
PDF 10-3	Eight onsite private parks shall be constructed as shown on Exhibit 7 Site Plan, to offset project demand.

4.10 RECREATION	
Standard Conditions of Approval	
SC 10-4	The developer or his assigns and successors in interest shall maintain offered park site(s) until such time as the County or its designer accepts the offer of dedication, all in a manner of meeting the approval of the Manager, PF&R/Harbors Beaches & Parks Division.

4.10 RECREATION		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Local Park Demand Implementation of the proposed project, prior to mitigation would result in significant impact to existing local park demand. The Foothill/Trabuco Specific Plan indicates that a proposed view park is to be located on a prominent ridge top near the northeast corner of the site. Current plans do not include provisions for this park.	The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations: AM 10-5 Prior to the first building occupancy, the applicant shall pay all park mitigation as required by the Department Manager, PF&R/Harbors Beaches & Parks Division. AM 10-6 Prior to final building occupancy the applicant shall dedicate and construct all required regional trail connections and improvements as approved and required by the Department Manager, PF&R/Harbors Beaches & Parks Division.	None.

4.11 HAZARDS	
Project Design Features	
PDF 11-1	Implement a comprehensive fuel modification program in accordance with Section 27 of Appendix II-A of the 1994 Uniform Fire Code as adopted by County Ordinance 3954 (the Wildland Urban Interface Task Force report was not adopted and is not enforced by the OCFA). Exhibits 9 and 64 illustrate the fuel modification zones and, although adequately described, it should be noted that the distances are horizontal measurements rather than vertical and, therefore, may actually be larger zones as measured vertically up or down a slope (based on topography).
PDF 11-2	Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.
PDF 11-3	Provide for the construction of a water tank off site to ensure adequate on site water supply and OCFA fire flow requirements. The minimum fireflow requirements for this project of 1500 gpm for a minimum of 2 hours at 20 psi residual pressure. This flow must be available 24 hours per day .
PDF 11-4	Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.
PDF 11-5	Residential structures shall be constructed of fire-resistant material, including but not limited to "Class A roof assemblies", closed eaves and offsets, double paned or dual glazed windows, and the exterior walls of structures will be constructed of " 1-hour fire resistant materials", and all structures will have fire sprinklers.
PDF 11-6	All residential structures shall be required to have automatic interior fire sprinkler systems.
PDF 11-7	The interface area between residential lots and open space areas within the project boundary shall be wrought iron fenced to minimize intrusion of wildlife into the built portions of the project site.
Standard Conditions of Approval	
SC 11-8	Prior to the issuance of any preliminary grading permits, applicant shall request that the Manager, HCA/Environmental Health, determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, HCA/Environmental Health.
SC 11-9	Prior to the issuance of any building permits for combustible construction, a letter and plan from the developer shall be submitted stating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site. Said letter shall be approved by the Fire Chief prior to the issuance of any building permits.

4.11 HAZARDS	
Standards Conditions of Approval	
SC 11-10	Prior to the issuance of any building permits on those lots determined applicable by the Fire Chief, plans for an automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. This system shall be operational prior to the issuance of a certificate of use and occupancy.
SC 11-11	Prior to the issuance of any building permits, the applicant shall submit a detailed letter of intended use for each building to the Fire Chief for review and approval.
SC 11-12	Prior to the issuance of any grading permits, preliminary plans for all street and courts, public or private, shall be submitted to and approved by the Fire Chief. The plans shall include the plan view, sectional view, and indicate the width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be clearly marked.
SC 11-13	Prior to the issuance of any certificates of use and occupancy, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief. The plans shall indicate the locations of red curbing and signage, and provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color.
SC 11-14	Prior to the issuance of any grading permits, construction details for any emergency access gate shall be submitted to and approved by the Fire Chief Contact the Orange County Fire Department at (714)744-6623 for a copy of the "Guidelines for Fire Department Emergency Access".
SC 11-15	Prior to the issuance of any grading permits, a fuel modification plan and program shall be submitted and approved by the Fire Chief in consultation with the Manger, Environmental and Project Planning. The Planning and Development Section shall be contacted at 744-0403 for requirements to be met and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation, include the method (mechanical or hand labor) for removal of flammable vegetation and provide for the planting of drought tolerant fire resistant plants.
SC 11-16	Prior to the issuance of any building permits, the developer shall have completed, under the supervision of the Fire Chief, that portion of the approved fuel modification plan determined to be necessary by the Fire Chief before the introduction of any combustible construction material into the project area.
SC 11-17	Prior to the issuance of any certificates of use and occupancy, the remaining fuel modification shall be installed and completed under the supervision of the Fire Chief. Further, the installed fuel modification shall be established to a degree meeting the approval of the Fire Chief.

4.11 HAZARDS		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Wildfire Due to topography, biology, and weather conditions the project site is located in an area classified as a "Special Fire Protection Area" by the Orange County Fire Authority. **Impact: Emergency Access** Only one main access roadway can be provided to the eastern portion of the site which is of concern since this roadway can become obstructed in emergency situations creating an impact to public safety. **Impact: Wildlife Interaction** Conflict between wildlife and project residents and pets is an associated project risk due to the proximity of wild areas to the subject site.		**Wildfire Impacts:** None. **Emergency Access:** None. **Wildlife Interaction:** None.

4.12 PUBLIC SERVICES	
Project Design Features	
Sheriff	
PDF 12-1	The Orange County Sheriff's Department shall be consulted during final project design to minimize security related impacts.
Fire	
PDF 12-2	Implement a comprehensive fuel modification program in accordance with the guidelines established by the Wildland Urban Interface Task Force, July 1994, as approved by the Orange County Fire Authority (OCFA).
PDF 12-3	Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.
PDF 12-4	Provide for the construction of a 1.4 million gallon water tank offsite to ensure adequate onsite water supply for water supply and fire flow use.
PDF 12-5	Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.
PDF 12-6	Residential structures shall be constructed of fire resistant material as approved by the OCFA. In addition, no ventilation openings shall be allowed on the side of residential structures facing natural areas.
PDF 12-7	OCFA shall have the ability to enter the property through the secondary access road located off of Valley Vista Way.

4.12 PUBLIC SERVICES	
Project Design Features	
Education	
No PDF proposed.	
Library	
PDF 12-8	The developer shall pay any development fees required by the County of Orange Development Fee Program for libraries.
Solid Waste	
No PDF proposed.	
Standard Conditions of Approval	
SC 12-9	Prior to issuance of building permits, the applicant shall pay development fees for general County facilities if an applicable fee program has been adopted by the Board of Supervisors pursuant to Section 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange, and such fee program is in effect at the time of issuance of building permits, all, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services.
Sheriff	
SC 12-10	Prior to the issuance of the first building permit, the project proponent shall enter into an agreement to (a) participate in funding the provision of the Saddleback Sheriff's Station; and (b) fund the provision of patrol and investigator cars needed to serve the project.

4.12 PUBLIC SERVICES	
Standard Conditions of Approval	
Fire	
SC 12-11	Prior to the issuance of any certificates of use and occupancy, all onsite fire protection devices, including fire sprinklers, fire hydrants, alarm systems and fire suppression facilities, shall be installed and maintained in good condition by the property owner in a manner meeting the approval of the Fire Chief.
SC 12-12	Prior to issuance of any building permits for combustible construction, a plan from the developer shall be submitted to and approved by the Fire Chief indicating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site.
SC 12-13	Prior to issuance of certificates of use and occupancy, emergency access shall be constructed in a manner meeting the approval of the Fire Chief.
SC 12-14	The approved fuel modification plan shall be installed prior to the issuance of building permits, under the supervision of the Fire Chief, and completed prior to the issuance of any use and occupancy permits. The CC&R's shall contain provision for maintaining the fuel modification zones including the removal of all dead and dying vegetation and the inspection and correction of any deficiencies in the irrigation system three times a year.
SC 12-15	Prior to the issuance of any grading permits, as part of the area plan, a fuel modification plan and program shall be submitted and approved by the Fire Chief. Contact the Wildland Fire Defense Planning Section at 744-0498 for requirements and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of flammable vegetation and the planting of drought tolerant fire resistant plants.

4.12 PUBLIC SERVICES	
Standard Conditions of Approval	
SC 12-16	Prior to the issuance of any grading permits, the applicant shall submit a list of the quantities of all hazardous, flammable and combustible materials, liquids or gases. These materials shall be classified according to the "Orange county Fire Department Chemical Classification Handout", including a summary sheet listing each hazard class, the total quantity of chemicals stored per class and the total quantity of chemicals used in that class, all in a manner meeting the approval of the Fire Chief.
SC 12-17	Prior to the issuance of any certificate of use or occupancy, all fire hydrants shall have a "Blue Reflective Pavement Marker" indicating its location on the street or drive per the Orange County Fire Authority Standard. On private property these markers are to be maintained in good condition by the homeowners association.
SC 12-18	Prior to the issuance of any building permits, plans for the automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. The system shall be operational prior to the issuance of the certificate of use and occupancy.
SC 12-19	Prior to the issuance of any grading permit, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief indicating the locations of red curbing and signage. Provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color. The CC&R's shall contain a fire lane map, provisions which prohibit parking in the fire lanes, and a method of enforcing fire lane requirements by the homeowners association.
Education	
SC 12-20	Prior to the issuance of building permits, the applicant shall pay all applicable school fees required in accordance with State law. Current school impact fees are $1.72 per square-foot of residential.
Library	
No Standard Conditions of Approval Mitigation Measures proposed.	

4.12 PUBLIC SERVICES

Standard Conditions of Approval

Solid Waste

SC 12-21	The potential for the proposed project to impact solid waste collection and disposal has been reduced to a level of insignificance through engineering design and construction techniques. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.
SC 12-22	Prior to the issuance of any building permits, a plot plan delineating the capacity, number, and location of all proposed solid waste collection areas shall be submitted to the Manager, HCA/Environmental Health, for review and acceptance. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.
SC 12-23	Prior to the approval of a building permit the applicant shall submit a Recycling/Source Reduction Plan to the Manager, PDS/Environmental and Project Planning Services Division, for review and approval. Said plan shall provide a strategy to facilitate compliance with waste diversion levels as mandated by AB 939, and may include elements which demonstrate commitment to a project specific operation, coordination with existing local or regional programs, and the use of recycled materials during and following construction of the project. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.
SC 12-24	Prior to the issuance of any certificates of use and occupancy, the applicant shall provide verification that the solid waste plan delineating the capacity, number, and location of all proposed solid waste collection areas, previously reviewed and accepted by the Manager, HCA/Environmental Health, has been implemented/incorporated into the project, in a manner meeting the approval of the Manager, PDS/Building Inspection Services.
SC 12-25	Prior to the approval of a Site Development Permit the applicant shall submit a Recycling/Source Reduction Plan to the Manager, EMA/Project Planning Services Division, for review and approval. Said plan shall provide a strategy to facilitate compliance with waste diversion levels as mandated by AB 939, and may include elements which demonstrate commitment to a project specific operation, coordination with existing local or regional programs, and the use of recycled materials during and following construction of the project.
SC 12-26	Prior to the issuance of any certificates of use and occupancy, the applicant shall provide verification that the solid waste plan delineating the capacity, number, and location of all proposed solid waste collection areas, previously reviewed and accepted by the Manager, HCA/Environmental Health, has been implemented/incorporated into the project, in a manner meeting the approval of the Manager, PDS/Building Inspection Services Division.

4.12 PUBLIC SERVICES		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Additional Mitigation Measures**	**Unavoidable Adverse Impacts**
Impact: Public Services **Sheriff:** Based on an officer/population ratio of 2:1000, three additional officers would be required by the project, however, no significant impact is anticipated. **Fire:** The project site is located within an area classified as a "Special Fire Protection Area" by the OCFA. Because the project is designed with numerous lots being served by a single access road the OCFA has expressed concern that public safety will be compromised should this road become impassable. **Education:** Implementation of the proposed project would add 399 additional students to an already overcrowded school system.		Sheriff: None. Fire: None. Education: None. Library: None. Solid Waste: None.

4.12 PUBLIC SERVICES		
Potential Significant Effects of the Proposed Project		
Potential Project Impacts	**Mitigation Measures**	**Unavoidable Adverse Impacts**
Library: Implementation of the proposed project would result in additional demand for library services in the project area, however this increase is not considered significant. **Solid Waste:** The project adds to the cumulative waste generation demand for the County.		

4.13 PUBLIC UTILITIES AND SERVICE SYSTEMS

Project Design Features

Water

PDF 13-1 The new booster pump station shall be paid for by the applicant and designed and function according to TCWD's guidelines and standards.

PDF 13-2 Operational capacities and pressure parameters for design of the booster pump station (approved by OCFA) shall be determined at design stage and should incorporate but not be limited to the following requirements:

- It shall meet the maximum day demand for the "stand alone" zones of Saddleback Meadows with an operating time of 24 hours and without its largest unit in service.
- It shall be designed with a back-up generator for the booster pump, as well as fuel and maintenance provisions.
- It shall incorporate the typical 3 or 4 pump system with an alternating state sequence
- It shall pump from TCWD's El Toro Road zone (1,165 feet HWL) to the storage facility (reservoir) proposed.
- It shall have the ability to refill the proposed reservoir, if it were empty, within 72 hours while also providing for maximum day demands on the water system during that time.

PDF 13-3 Water conservation measures to be implemented consist of water-conserving features in the design and construction of residential homes and uses, plus use of drought-tolerant plant materials in the slope and streetscape plantings. Proposed water conservation measures also include:

- Supply line pressure: Water pressure greater than 50 pounds per square inch (psi) reduced to 50 psi or less by means of pressure-reducing valves.
- Ultra-low-flush toilets: 1.5 gallon-per-flush toilets installed in all new construction.
- Landscape with low-water-using plants wherever feasible.

4.13 PUBLIC UTILITIES AND SERVICE SYSTEMS	
Project Design Features	
	• Grouping of plants of similar water use to reduce over-irrigation of low-water-using plants. • Extensive use of mulch as top cover to improve water-holding capacity of the soil. • Installation of efficient irrigation systems that minimize runoff and evaporation, and maximize the amount of water reaching plant roots. Drip irrigation, soil moisture sensors, and automatic irrigation systems are proposed methods of increasing irrigation efficiency.
PDF 13-4	All design and landscape features shall comply with TCWD's guidelines and standards.
Wastewater	
PDF 13-5	All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.
Electricity	
PDF 13-6	All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.
Natural Gas	
PDF 13-7	All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.
Cable	
PDF 13-8	All utilities shall be installed by Cox Cable in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.
Communications	
PDF 13-9	All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

4.13 PUBLIC UTILITIES AND SERVICE SYSTEMS			
Potential Project Impacts	**Standard Conditions and Mitigation Measures**		**Unavoidable Adverse Impacts**
All utility providers have indicated that increased service demands created by the project are within present or projected operating capacities.	**Water**		
	SC 13-10	Prior to the issuance of any building permit(s), the applicant shall provide a report to the Manager, PDS/Building Permits Services Division, indicating that plans showing the location of all proposed reclaimed water lines used to irrigate open spaces, parks, and other landscaped areas, have been submitted to and approved by the Trabuco Canyon Water District.	None
	SC 13-11	Prior to the issuance of building permits, water conservation measures shall be incorporated into the development design plans and which shall be submitted for approval to the Trabuco Canyon Water District.	None
	Wastewater		
	SC 13-12	Prior to the issuance of a certificate of use and occupancy, sewer lines, connections, and structures shall be installed in a manner meeting the approval of the Manager, HCA/Environmental Health. A. All waste water facilities and line shall be constructed and maintained to meet TCWD standards and requirements. B. All sewer lines shall be underground facilities. C. The project shall comply with all State of California Health and Safety Codes.	None
	Electricity		
	SC 13-13	Prior to the issuance of a building permit, project proponent shall consult with the local gas and electric companies regarding feasible energy conservation features that should be included in the design of the proposed project. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	None

4.13 PUBLIC UTILITIES AND SERVICE SYSTEMS			
Potential Project Impacts	**Standard Conditions and Mitigation Measures**		**Unavoidable Adverse Impacts**
	SC 13-14	Prior to the issuance of a building permit, the project proponent shall incorporate passive or natural heating and cooling opportunities in the design of the proposed project including but not limited to the following: solar energy use; thermal insulation; tinted or solar reflective glass; orientation to sunlight; use of deciduous trees in landscaping; installation of roof fans; utilize fluorescent lighting, switches and thermostat, utilize time-controlled lighting; and, utilize AC units with 100% outdoor air economize. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	
	Natural Gas		
	SC 13-15	The applicant shall provide for all lines and mains necessary to provide natural gas to the project.	None
	SC 13-16	The applicant shall obtain all required permits and follow all SCG, State and County regulations and requirements regarding natural gas service.	None
	Cable		
	No standard condition requirements.		None
	Communications		
	SC 13-17	Applicant shall comply with the requirements of the California Public Utilities Commission and Pacific Bell Telephone Company for the provision of telephone service.	None

2.0 INTRODUCTION

2.1 PURPOSE OF THE SUBSEQUENT EIR

The purpose of this Draft Subsequent Environmental Impact Report (SEIR) is to provide substantive information to the decision makers (Planning Commission), responsible and trustee agencies, and the public regarding the potential adverse environmental effects associated with implementation of the proposed project and related actions. Section 15162 of the CEQA guidelines states:

(a) *When an* EIR has been *certified or a negative declaration adopted for a project* no *subsequent* EIR shall be prepared *for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:*

1) *Substantial* changes are proposed in the project which will require *major* revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental *effects or a substantial increase in the severity of previously identified significant effects;*

2) Substantial changes occur with respect to the circumstances under which the project is undertaken, which will require *major* revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental *effects or a substantial increase in the severity of previously identified significant effects; or*

3) New information of substantial importance, which was not known and could not have been known *with the exercise of reasonable diligence,* at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows (sic) any of the following:

(A) The project will have one or more significant effects not discussed in the *previous* EIR *or negative declaration;*

(B) Significant effects previously examined will be substantially more severe than shown in the *previous* EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, *but the project proponents decline to adopt the mitigation measure or alternative; or*

(D) Mitigation measures or alternatives which *are considerably different from those analyzed* in the *previous* EIR would substantially *reduce* one or more significant effects on the environment, *but the project proponents decline to adopt the mitigation measure or alternative.*

(b) *If changes to a project or its circumstances occur or new information becomes available after adoption of a negative declaration, the lead agency shall prepare a subsequent EIR if required under subsection (a). Otherwise the lead agency shall determine whether to prepare a subsequent negative declaration, and addendum, or no further documentation.*

(c) If the project was approved prior to the occurrence of the conditions described in the subsection

(a) the subsequent EIR *or negative declaration* shall be prepared by the public agency which grants the next discretionary approval for the project. In this situation no other Responsible Agency shall grant an approval for the project until the subsequent EIR has been *certified or subsequent negative declaration adopted.*
(d) *A subsequent EIR or subsequent negative declaration shall be given the same notice and public review as required under Section 15087 or Section 15072. A subsequent EIR or negative declaration shall state where the previous document is available and can be reviewed.*

In addition, the EIR identifies mitigation measures to reduce potential adverse impacts to a less than significant level and evaluates alternatives to the proposed project which would result in less adverse environmental effects than the proposed project. Mitigation measures will be incorporated into conditions of approval and serve as the basis for the mitigation monitoring program.

This Subsequent EIR will also be used by the agencies identified in Section 3.2 during project review and issuance of discretionary permits.

The Draft EIR has been prepared in accordance with the California Environmental Quality Act (CEQA), California Public Resources Code Section's 21000, et seq, the State CEQA Guidelines, Title 14, California Code of Regulations 15000, et seq, and the Orange County Planning and Development Services (PDS), "EIR Handbook - Guidelines for Preparing Environmental Impact Reports," July '91.

2.2 ENVIRONMENTAL PROCEDURES

On December 24, 1996 the Orange County Planning and Development Services Department (PDS) issued a Notice of Preparation (NOP) initiating the pre-circulation review period during which interested parties were requested to provide comments on the scope and content of the Draft EIR. On February 6, 1997, the PDS issued a revised NOP to the same parties. The NOP was revised to include a description of the commercial component of the project and an updated description of project alternatives. A list of NOP commentators and a summary of their comments are included in Appendix C of the Draft Subsequent EIR. The Initial Study circulated with the Notice of Preparation identified the following twelve (12) environmental factors to be evaluated in the Draft EIR:

- Land Use and Planning
- Geophysical
- Water
- Transportation/Circulation
- Air Quality
- Noise
- Population & Housing
- Energy & Mineral Resources
- Biological Resources
- Aesthetics
- Cultural\Scientific Resources
- Recreation
- Hazards
- Public Services/Utilities
- Utilities & Service Systems

The following public agencies submitted comments on the NOP:

- City of Mission Viejo, Community Development, 1/27/97
- City of Lake Forest, Community Developments Departments, 4/23/97

- Southern California Association of Governments, Intergovernmental Review, 12/31/96 2/13/97
- Southern California Association of Governments, 1/10/97
- Southern California Gas Company, 1/10/97, 2/18/97
- State of California, Dept. of Fish & Game, 1/30/97, 3/7/97, 3/12/97
- State of California, Governor's Office of Planning & Research, 12/31/96
- State of California, Dept. of Transportation, 1/21/97, 3/5/97
- Trabuco Canyon Water District, 1/21/97, 2/25/97
- Transportation Corridor Agencies, Environmental Services, ½/97
- United States Marine Corps, 1/7/97, 2/26/97
- U.S. Fish and Wildlife Service, 1/30/97, 3/7/97

A complete list of responsible and trustee agencies who received the NOP is included in Appendix C.

The following private organizations and individuals submitted comments on the NOP:

- Diequeno/Coastal Gabrieleno, Jim Velasques, 3/7/97
- Donald Finn, 2/26/97
- VerLyn Jensen Esq.(St. Michael's Abbey), 3/5/97
- James Loeper, Dawn Loeper, 2/17/97
- Charles Mitchell & Associates (Vedanta Society), 1/27/97
- William D. Ross Esq., 2/28/97
- Rutan & Tucker LLP, David B. Cosgrove Esq.(St. Michael's Abbey), 1/3/97
- Bernard Siegel, Cynthia Siegel, 2/28/97
- Vedanta Society of Southern California, Richard Jennings, 1/20/97
- Elizabeth Wallace (Portola Hills), 3/10/97

A summary of NOP comment letters is contained in a matrix in Appendix C of this document. Issues raised include the following:

- EIR Preparation
- MCAS El Toro Noise Impacts
- Land Use Compatibility
- Extensive Grading
- Wildlife Movement
- Endangered Species
- Mitigation Measures
- Road Access
- Air Quality
- Noise and Glare
- Fuel Modification Requirements
- Housing Affordability Guidelines
- Soil Erosion
- Aesthetics/Visual Impacts
- School Overcrowding
- Park Facilities
- Traffic Generation
- Overburdened Public Services
- Remedial Grading
- Water Quality
- Inconsistency with Other Plans
- Findings in Previous EIR
- Geophysical Stability
- Cumulative Impacts
- Inadequate Water Supply

Although not specifically addressed in the current set of NOP comments, a number of letters received from private organizations and individuals concerning the preceding EIR identified preparation process as a concern. Of particular concern is the issue of who can prepare an EIR. Section 21082.1 of the Public Resources Code states:

> *(a) Any draft environmental impact report, environmental impact report, or negative declaration prepared pursuant to the requirements of this division shall be prepared directly by, or under contract to, a public agency.*
>
> *(b) This section is not intended to prohibit, and shall not be construed as prohibiting, any person from submitting information or other comments to the public agency responsible for preparing an environmental impact report, draft environmental impact report, or negative declaration. The information or other comments may be submitted in any format, shall be considered by the public agency, and may be included, in whole or in part, in any report or declaration.*
>
> *(C) The lead agency shall do all of the following:*
>
> *(1) Independently review and analyze any report or declaration required by this division.*
>
> *(2) Circulate draft documents which reflect its independent judgement.*
>
> *(3) As part of the adoption of a negative declaration or certification of an environmental impact report, find that the report or declaration reflects the independent judgement of the lead agency.*

In Friends of La Vina v. County of Los Angeles (2d Dist. 1991) 232 Cal. App. 3d 1446 [284 Cal. Rptr. 171], the court analyzed CEQA Guidelines Section 15084, subdivision (d), which expressly allows agencies to "accept a draft prepared by the applicant, a consultant retained by the applicant, or any other person", recognizing that the same provision requires the agency to subject such a draft to its "own review and analysis." The Court added that any document released to the public must "reflect the independent judgement" of the agency, and that the agency is "responsible for the adequacy and objectivity of the Draft EIR." The Court held that this standard of "independent review," which has been cited in previous published CEQA cases, is consistent with the statutory language. (The 1991 amendments to section 21082.1 now require agencies to "independently review and analyze any report or declaration" required by CEQA, to "circulate documents which reflect their independent judgement," and to find, in approving a negative declaration or certifying a Final EIR, that the document in question "reflects the independent judgement of the lead agency.")

As lead agency, the County of Orange Planning & Development Services Division, although allowing the project applicant to contract for a consultant for the preparation of the Draft Environmental Impact Report and proposed responses to public comments, retains at all stages of the proceedings the right to independently evaluate the information set forth.

Following completion of the Draft Subsequent EIR, the document will be circulated to the State Clearinghouse, Office of Planning and Research, and responsible and trustee agencies for review and

comments. All comments received on the Draft Subsequent EIR will be responded to and incorporated into the Final Subsequent EIR. The Response to Comments document will be recirculated to commenting agencies and individuals at least ten (10) days prior to conducting a public hearing on the project.

2.3 INCORPORATION BY REFERENCE

In accordance with Section 15150 of the CEQA Guidelines, the Draft Subsequent EIR hereby incorporates analysis contained in the following documents by reference:

- Foothill-Trabuco Specific Plan Final EIR No. 531, December 1991, SCH No. 9001143;
- Saddleback Meadows Final EIR No. 059, May 1978;
- EIR No. 061 [Final EIR for Glenn Ranch (Portola Hills) dated November 13, 1979];
- EIR No. 439 [Final Focused EIR for the Morton W. Herrmann property (Hidden Ridge, dated December 12, 1984)]; and,
- FEIR No. 459 [Final Program EIR for Portola Hills (Glenn Ranch) dated December 17, 1986].
- DEIR No. 561 [Draft EIR for Saddleback Meadows dated October 1995, SCH No. 95081033]

Incorporation by reference assists in reducing the size of EIRs through including descriptive materials which do not contribute directly to the analysis at hand. The above noted documents are available for review at the Orange County Planning & Development Services Department/ Environmental and Project Planning Division.

The Foothill/Trabuco Specific Plan EIR evaluated the environmental effects of implementation of the Specific Plan on a programmed level consistent with the development goals, objectives and policies of the Specific Plan. The EIR contains a full scope analysis of environmental factors associated with the project area. The Foothill-Trabuco Specific Plan EIR states:

> *EIR 531 has been prepared as a Program EIR as part of a tiered EIR process. "Tiering," according to CEQA, means the coverage of general matters and environmental effects in an EIR prepared for a policy, plan, program or ordinance followed by narrower or site-specific EIRs which incorporate by reference the discussion in any prior EIR (CEQA Section 21068.5). Subsequent environmental documentation, if necessary, required for subsequent discretionary approvals (area plans, site plans, use permits, subdivision maps, etc.) will rely on the finding in EIR 531 as the basis for more detailed analysis and will incorporate these findings and all supporting documentation by reference. An Initial Study will be conducted per CEQA for each subsequent discretionary approval to determine whether additional*

environmental documentation is needed.

This Subsequent Environmental Impact Report contains a focused and specific analysis of impacts on the environment associated with implementation of the project.

2.4 BACKGROUND

The proposed project is the culmination of planning efforts with the County of Orange over a eighteen (18) year period. The following chronology identifies key dates in the projects' history:

Table 3
SADDLEBACK MEADOWS PROJECT CHRONOLOGY

DATE	PROJECT RELATED EVENT
August 8, 1978	- The Orange County Board of Supervisors adopted GPA 78-1, Item 4, the "Saddleback Meadows Mobile Home Subdivision" which granted a change in the Land Use Element designation for the site from 5.4 Other Open Space to 1.22 Medium Low Density Residential and 2.1 Local Commercial. Maximum number set at 617 dwelling units. Triggering mechanism to revert land use designation to original after 2 years commenced. EIR 059 certified.
February 6, 1979	- Board adopted Site Plan conditions as requirements for implementing the subject amendment. Draft EIR 059, which was the CEQA documentation for the site plan, identified major grading impacts as project related impacts; these impacts were also shown on grading plans for Tentative Tract Map TT10692, prepared for the project.
March 7, 1979	- Zone change application, Tentative Tract Map and Initial Study requests submitted to County for a maximum of 617 mobile home units and a neighborhood convenience commercial center on the project site.
March 29, 1979	- Determination of requirement for an EIR transmitted to applicant by Environmental Services Division (ESD).
June 5, 1979	- Appeal of EIR requirement by Cliff Russell, representing Worthington/McNiff.
June 11, 1979	- The Orange County Planning Commission denied the appeal. Supplemental EIR required for proposed 617 unit tentative tract map.
June 25, 1979	- Zone Change 79-24 submitted to County. The project proposed at this time consisted of 617 units.
August 7, 1979	- Revised Tentative Tract Map was submitted to the County for Screencheck reflecting some design modifications requested by County staff as well as an increase of 145 dwelling units added to the project by the proponent.
August 17, 1979	- Revised Tentative Tract Map and Supplemental Environmental Information

submitted to Environmental Services (ESD). Submittal raised many questions with ESD in that the project had been revised substantially with a 23.5% increase in total number of units and intensity of land use.

August 21, 1979 - Revised Zone Change 79-24 received by the County reflecting the revised project proposal of 762 units, with 25% in affordable range.

November 28, 1979 - Revised TT10692 filed with Environmental Management Agency depicting 727 lots, including 714 residential lots, 1 commercial lot and several open space and utility lots.

December 13, 1979 - TT10692 approved by the Planning Commission with recommendation that Zone Change ZC79-24 be approved by Board of Supervisors.

January 9, 1980 - Saddleback Meadows properties placed in the PC "Planned Community" District and adopted by Board of Supervisors, Ordinance Number 3177. Final EIR 203 certified.

October 28, 1981 - Two year extension of time to record to expire December 12, 1983 approved by the Subdivision Committee.

December 7, 1981 - Appeal to deny two year extension of time affirmed by Planning Commission. One year extension of time to record to expire December 12, 1982 granted by Planning Commission.

November 17, 1982 - An additional one year extension of time to record to expire December 12, 1983 approved by Subdivision Committee.

July 13, 1983 - Saddleback Meadows Planned Community District Regulations amended by Planning Commission, and adopted by Board of Supervisors, Ordinance Number 3398 (ZC82-63P).

October 26, 1983 - Third one year extension of time to record approved.

June 13, 1984 - Saddleback Meadows Planned Community District Regulations amended by Planning Commission, and adopted by Board of Supervisors, Ordinance 3486 (ZC84-3P).

October 24, 1984 - 589-day stay of time in which to record a final tract map approved by Subdivision Committee. Expiration date extended to July 24, 1986.

July 24, 1986 - Water district could not provide sewer service; recordation not allowed until sewer capacity available.

September 21, 1988 - Execution between Southmark and the Trabuco Canyon Water District of "Agreement for Designing Construction of Master Plan Facilities, Tract No. 10692";

September 21, 1988 - Execution between Southmark and the Trabuco Canyon Water District as a

		document entitled "Agreement for Construction of Onsite Water and Sewer Facilities, Tract No. 10692";
December 16, 1988	-	Tract Map 10692 recorded.
February, 1989	-	Payment of $973,528.58, purchase of sewer treatment capacity rights in Trabuco Canyon Water District's Chiquita Wastewater System Facilities by predecessor to Applicant;
1989	-	Payment by predecessor to applicant to the Trabuco Canyon Water District in the amount of $904,475.00 for capital improvement charges based on the Equivalent Density Units of Recorded Tract No. 10692;
December 10, 1991	-	Foothill/Trabuco Specific Plan approved and Final EIR 531 certified by Orange County Board of Supervisors. The Specific Plan incorporated the Saddleback Meadows Planned Community Regulations as the Bridlewood Residential District.
April, 1994	-	Grading Permit Application GA940031 submitted for Phase I, Grading (98.3 acres) of the site.
August, 1994	-	Initial Study completed and Environmental Impact Report Determination Letter is issued.
August 11, 1994	-	Letter of Appeal filed with County.
November, 1994	-	Appeal Hearing postponed to January 7, 1995.
January 31, 1995	-	Applicant withdraws appeal. Planning Commission directs applicant to develop a more compatible project in response to public testimony, staff concerns, and Planning Commission's direction.
July 27, 1995	-	Revised 318-unit Site Development Plan, zone change and area plan submitted to County of Orange.
August 11, 1995	-	Notice of Preparation circulated for EIR 561
October 17, 1995	-	Screencheck Draft EIR 561 submitted to OCPDS for review.
July 30, 1996	-	Orange County Planning commission recommended EIR 561 for certification and recommended applications for Vesting Tentative Tract Map No. 15230, area plan 95-7 and zone change 95.5 be denied.
October 22, 1996	-	Board of Supervisors denied project and did not certify EIR 561.
December 3, 1996	-	Applicant submitted application for Phase 1 Grading Plan for 705 unit Tract 10692 (GA960048).
December 16, 1996	-	EMA determined that a Subsequent EIR is required to evaluate the effects of the

grading application.

December 24, 1996 - Notice of Preparation issued for Subsequent DEIR 566.

February 6, 1997 - Notice of Preparation re-issued for Subsequent DEIR 566.

2.5 MATRIX OF PROJECT APPROVALS

All relevant actions, responsible agencies and decision making bodies which have discretionary or advisory authority over the proposed project are shown in Appendix A. In addition to the County of Orange, the following agencies have regulatory authority over various aspects of the proposed project:

- U.S. Army Corps of Engineers
- U.S. Fish & Wildlife Service
- California Department of Fish & Game
- California Regional Water Quality Control Board
- South Coast Air Quality Management District

2.6 RELATED PROJECTS

The California Environmental Quality Act (CEQA) requires that all EIRs consider the environmental impacts of a project, along with the impacts from other projects in the vicinity. These impacts, referred to as cumulative impacts, are defined as the "effects of two or more individual effects that, when considered together, are considerable or which compound or increase other environmental impacts. The discussion should include either a list of past, present and reasonably anticipated future projects producing related or cumulative impacts or a summary of projections contained in an adopted General Plan or related planning document that is designed to evaluate regional or areawide conditions." (CEQA, Section 15355).

The County has determined that one related project (Live Oak Plaza, PA 960095) has been identified within the Foothill-Trabuco Specific Plan which would contribute to cumulative impacts. In the surrounding area, the following related projects have been identified. Exhibit 1 identifies the location of these related projects.

- Portola Hills Planned Community Buildout
- PA 11 GPA - 625 du - City of Mission Viejo

2.7 AREAS OF CONTROVERSY

Several potential areas of controversy were identified by NOP response letters. Following is a listing of these areas of controversy and the location where these are evaluated and analyzed in this DEIR:

- Land Use/ Aesthetic Compatibility - Section 4.8
- Foothill-Trabuco Specific Plan Conformance - Land Use, Section 4.1

- Emergency Access Requirements - Public Services, Section 4.13
- Wildlife Corridor Design Width - Biological Resources, Section 4.8
- Project Specific Affordable Housing Requirements - Land Use/Housing, Section 4.1
- EIR Preparation Process/Procedures - Introduction, Section 2.0
- Loss of Wildlife Habitat/NCCP Reserve, Section 4.7
- Geophysical Stability, Section 4.2
- Traffic/ Circulation, Section 4.4

2.8 MITIGATION MEASURE STRUCTURE

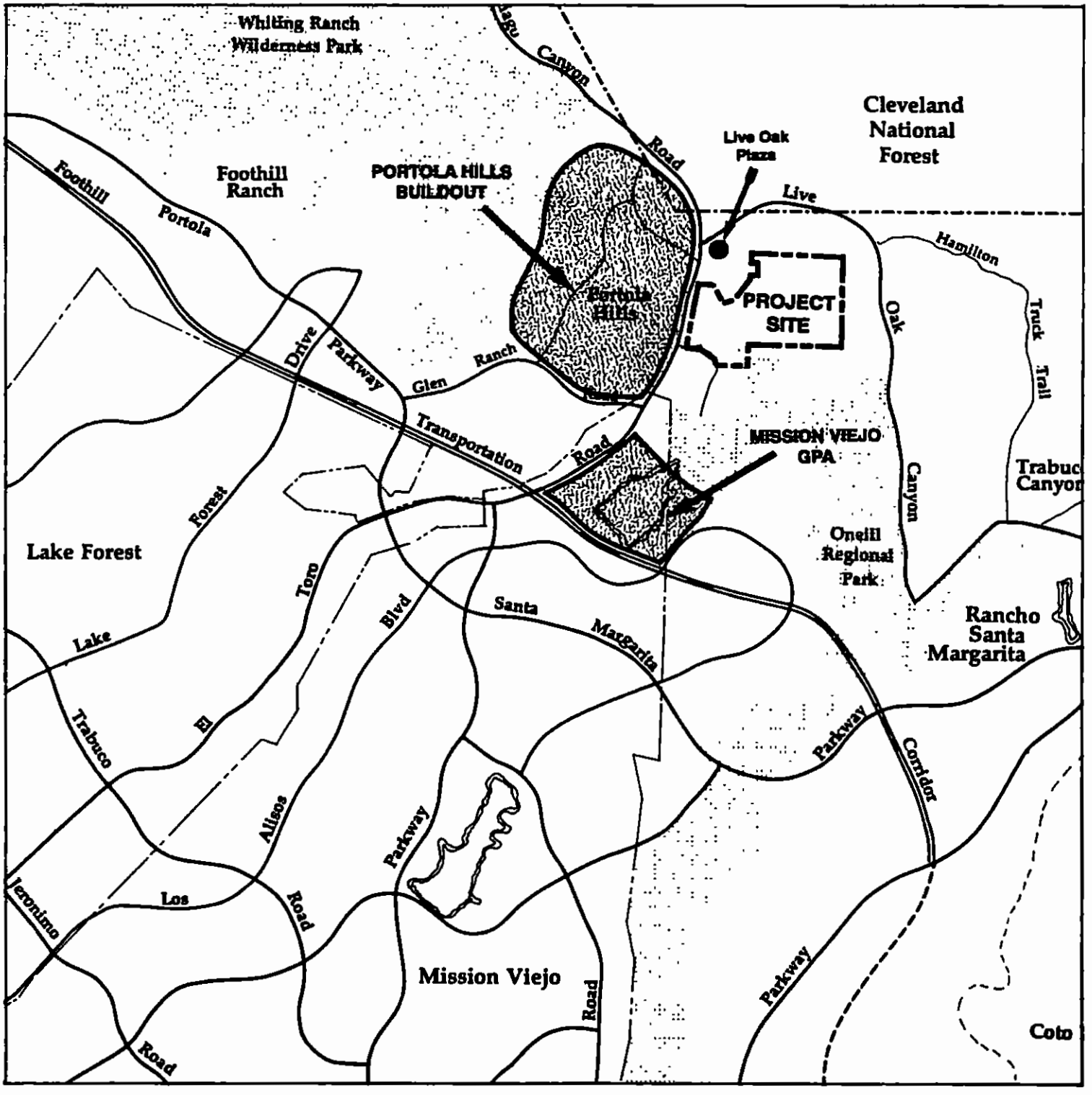
Mitigation measures identified in Sections 1.0, 4.0 and 7.0 of this Draft Subsequent EIR are included in one or more of the following three categories, 1) Project Design Features (PDF), 2) Standard County Conditions (SC), or 3) Additional Mitigation Measures (AM). Each mitigation measure is identified with one of these acronyms. All mitigation measures outlined in Sections 4.0 and 7.0 are also included in the Mitigation Monitoring Program, set forth in Section 9.0 of the DEIR.

The environmental analyses and evaluations contained in this document are largely informational, and not prescriptive in nature in that mitigation measures which would alter features of the final recorded tract map cannot be implemented to reduce all project impacts to a level of insignificance. This is attributable primarily to the physical limitations of the site and the inability to deviate from the final recorded tract map. Accordingly, any findings of significant impact must be offset through the issuance of a Statement of Overriding Considerations.

Project Design Features

Specific design features of the project proposed by the applicant to reduce potential environmental impacts are referred to as project design features (PDF). The PDFs that apply to each environmental topic are listed in each sub-section of Section 4.0. These features provide mitigation through avoidance, reduction or offset of impacts. Because these features are part of the project design, they do not constitute additional mitigation measures, but are in effect mitigation through project design. In order to ensure accountability for implementation, the PDFs specify timing mechanisms, responsible parties, and other related information, as appropriate.

It should be noted, environmental documentation for previously approved Tract Map No. 10692 and/or the Foothill-Trabuco Specific Plan may have identified relevant mitigation measures and conditions of approval to reduce and/or avoid potential significant impacts. These mitigation measures and other conditions of approval imposed in connection with prior approvals have been incorporated into the design of the proposed project as PDFs.



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Related Project Map

EXHIBIT No. 1

URBAN VISION

County of Orange P&DS

Scale:

Source: *Saddleback Meadows - Draft Subsequent EIR No. 566*

N

2-11.

When a significant impact occurs, and the PDF does not mitigate the impact to a level of insignificance, the EIR will identify that impact as being significant and, in addition to the PDF, will either 1) identify mitigation measures proposed by the County to mitigate the impact; 2) note that responsibility for mitigation of this impact rests with another Responsible or Trustee Agency; or 3) identify the significant impact as an "unavoidable adverse impact, which will necessitate the adoption of a Statement of Overriding Considerations if the project is approved."

The Orange County PDS will ensure compliance with all PDFs through its standard procedures for the approval of permits and applications. The Mitigation Monitoring and Reporting Program, which must be adopted with the Final EIR, will include specific implementation components, similar to mitigation measures, for each PDF.

Standard Conditions of Approval and Mitigation Measures

The EIR also lists Standard Conditions of Approval and additional project specific mitigation measures for reduction of project impacts. Standard Conditions (SC) include project requirements mandated by the County of Orange and State and federal agencies with authorization for environmental regulations. Standard Conditions typically include project compliance with the County of Orange Standard Conditions of Approval, the Uniform Building Code, South Coast Air Quality Management District, school fees, Alquist-Priolo Act, requirements and other standard measures for hillside residential development projects, various development fees including fire, sheriff, schools, parks and transportation.

Additional Mitigation Measures

Project specific mitigation measures are prescribed as necessary to further mitigate project impacts beyond the mitigation provided by the PDFs and applicable Standard Conditions. For those impacts with no County Standard Conditions, project specific mitigation measures, will be imposed to reduce project impacts to the maximum extent possible. Each environmental factor evaluated in Section 4.0 provides a conclusion as to whether or not the project impacts are mitigated to below the level of significance with the combination of available PDFs, Standard Conditions and additional mitigation measures.

2.9 EFFECTS FOUND NOT TO BE SIGNIFICANT

As required in CEQA Guidelines, Section 15128, this Subsequent EIR identifies effects of the project determined to be insignificant or less than significant. The Initial Study conducted by the County of Orange (included in Appendix A) determined that certain environmental effects, including secondary effects, of the project will not be significant. Therefore, they are not discussed in detail in this EIR. The effects found not to be significant or less than significant in the Initial Study are summarized below, and briefly discussed in each topical section. All other environmental topics required by CEQA are analyzed for potential impacts in the EIR.

Population

The proposed project is not expected to cumulatively exceed adopted regional or local population projections. It will not induce substantial growth in the immediate area either directly or indirectly, nor extend major infrastructure into a previously undeveloped area. The project would not displace existing housing.

Energy and Mineral Resources

The Saddleback Meadows project site is primarily in a natural state. None of the site's potential mineral resources have been disturbed. Previous EIR Nos. 059, 203 and 531 did not identify energy and/or mineral resources on the site. The Orange County General Plan/Foothill-Trabuco Specific Plan does not designate the site as having a potential for mineral resources.

3.0 PROJECT DESCRIPTION

3.1 GEOPHYSICAL SETTING

The project site is situated on 222.23 acres of vacant land located on the easterly side of El Toro Road, approximately ½-mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County. The incorporated cities of Mission Viejo and Lake Forest lie approximately three (3) miles to the south and southwest, with the Cleveland National Forest boundary located approximately ½-mile north of the project site. Aliso Creek is located adjacent to the northwest portion of the project site. In addition, a small strip of County owned land is located between the project site and El Toro Road.

The project site is surrounded by residential development, with the Portola Hills and Foothill Ranch planned communities to the west, the Hidden Ridge/Hidden Hills community and a nursery to the south, and scattered low-density residential uses to the north and east. O'Neill Regional Park is located adjacent to the southerly boundary of the site with St. Michael's Abbey immediately to the northwest and the Ramakrishna Monastery located immediately to the southeast. The project's location in relationship to the surrounding land uses is shown in Exhibit 2. Regional location and vicinity maps are shown in Exhibits 2 and 4 respectively. Regional aerial photographs are shown in Exhibit 3 and aerial site photographs in Exhibit 5. Onsite elevations range from 1,000 feet near El Toro Road to 1,550 near the eastern portion of the site (see Exhibit 6).

3.2 PROJECT DESCRIPTION

The proposed project would construct the previously approved and Recorded Tract Map 10692. The project was originally approved in December of 1979 and recorded in December of 1988. The original project has been re-analyzed in consideration of changed circumstances and new information on environmental significance not previously considered.

The proposed project, is consistent with Tract Map No. 10692, and proposes the phased development of 705 manufactured single family housing units and a 1.5-acre, neighborhood commercial center and associated infrastructure, on a 222.23-acre site on the easterly side of El Toro Road. The gross residential density is 3.17 du/ac, with minimum lot sizes of 2,630 square feet.

The following Plans have ben approved associated with Recorded Tract Map 10692:

- Tract 10692 Record of Survey 5/88
- Improvement Plans for Widening of El Toro Road - Tract 10692 - Approved 11/17/88 Encroachment Permit No. 88-14451-RT
- Preliminary Grading Plan for Tract 10692 - Prepared 4/1/94, Revised 1/12/95 (Phase Only)
- OCPDS Plans for construction of Aliso Creek Channel - Facility J01 - 11/16/88

- OCPDS - Private Storm Drain Improvements for Tract 10692 - 11/15/88 Encroachment Permit No. 88-00728-FC, tributary to Aliso Creek.
- Street Improvement Plans
  - Recorded Streets - (Quiet Creek Terrace, Grassland Terrace, Oak Grove Terrace, Scenic Canyon Terrace, Indian Summit, Quail Run, Priory, Wildflower and Ridgecrest Way.

The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan approximately ½-mile south of the El Toro Road/Live Oak Canyon Road intersection. The project site is designated as "Bridlewood Residential District" in the Foothill-Trabuco Specific Plan and "1B, Suburban residential, in the Countywide General Plan Land Use Element. Project site zoning is "S", Specific Plan.

As discussed previously, Tract Map 10692 was recorded (after a series of extensions) in December of 1988. Since project approval preceded the adoption of the Foothill-Trabuco Specific Plan (FTSP) by several years, the project is exempt from its goals, objectives and policies in relation to the area designated as "Bridlewood Residential District", as per the FTSP itself. The Foothill Trabuco Specific Plan references this project as follows:

As long as the site is developed in accordance with the existing Saddleback Meadows Planned Community zoning (Zone Change 84-3P) and Recorded tract 10692, the project site shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.[1] (Emphasis added)

The Bridlewood Residential District is established to recognize the existing zoning and tract map approvals for the Bridlewood (Saddleback Meadows) property which permit the development of 705 manufactured homes on the site. While the Board of Supervisors does not believe that these approvals are consistent with the Goals and Objectives of the Specific Plan, the property owner has recently declared bankruptcy. A legal stay precludes the Board of Supervisors from taking any action related to the property that would affect its value. However, the provisions of this District require that the Specific Plan be amended to determine an appropriate density cap and District Regulations for the property in the event that it cannot be developed in a manner which is consistent with the approved zoning and tract map.

Prior to the most recent submittal of a grading permit application for Tract Map 10692, the project site was proposed for 318 single-family dwelling units. Proposed FEIR 561 was prepared to evaluate environmental impacts resulting with this development proposal. It is noted in DEIR 561 that though the 318-unit project was identified as "environmentally superior" to the 705 unit project currently being proposed, the 318-unit proposal was denied. No action was taken to certify Proposed FEIR 561 at the time of the denial of the 318 unit project. Furthermore, EIR 561 identified the currently proposed 705-unit project (Alternative No. 2 in Proposed FEIR 561) as one of two environmentally inferior alternatives considered.

The project site can be presently serviced by sewer lines and treatment capacity predicated on the density authorized by Recorded Tract Map 10692.

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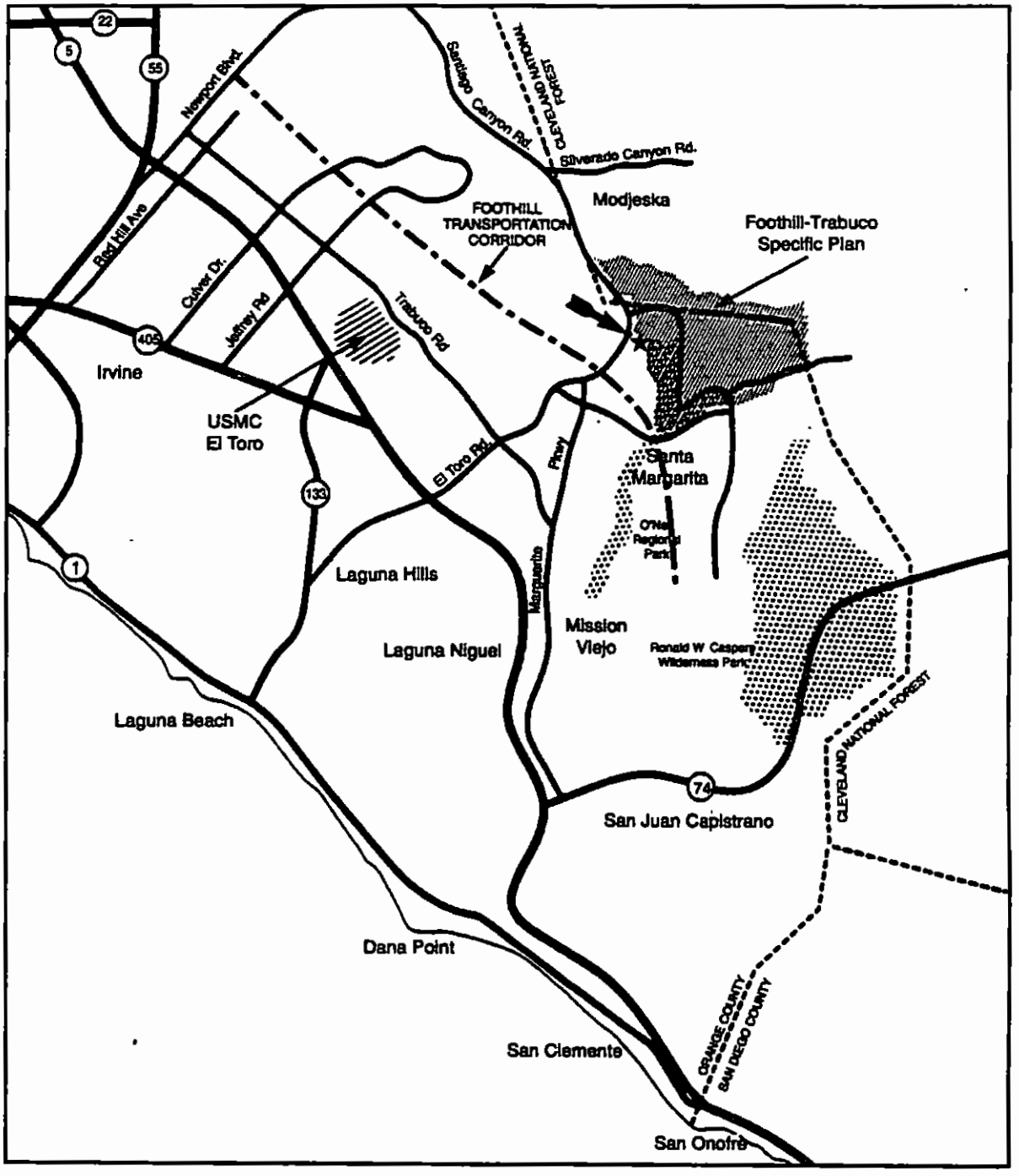
[1] *Foothill-Trabuco Specific Plan p. III-20*



SADDLEBACK MEADOWS - - - -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Regional Location Map

EXHIBIT No. 2

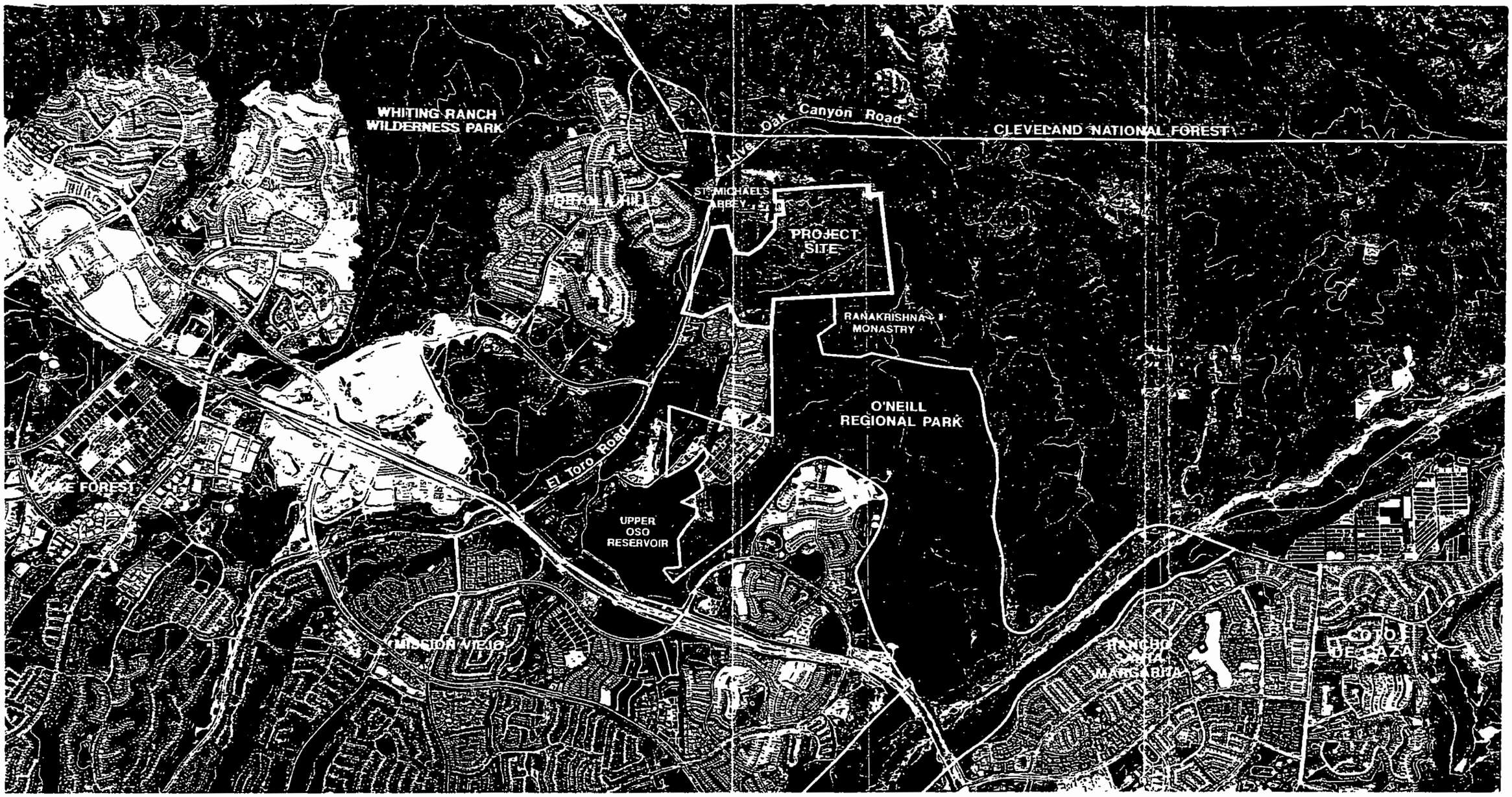
URBAN VISION

County of Orange P&DS

Scale:

Source:

N



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

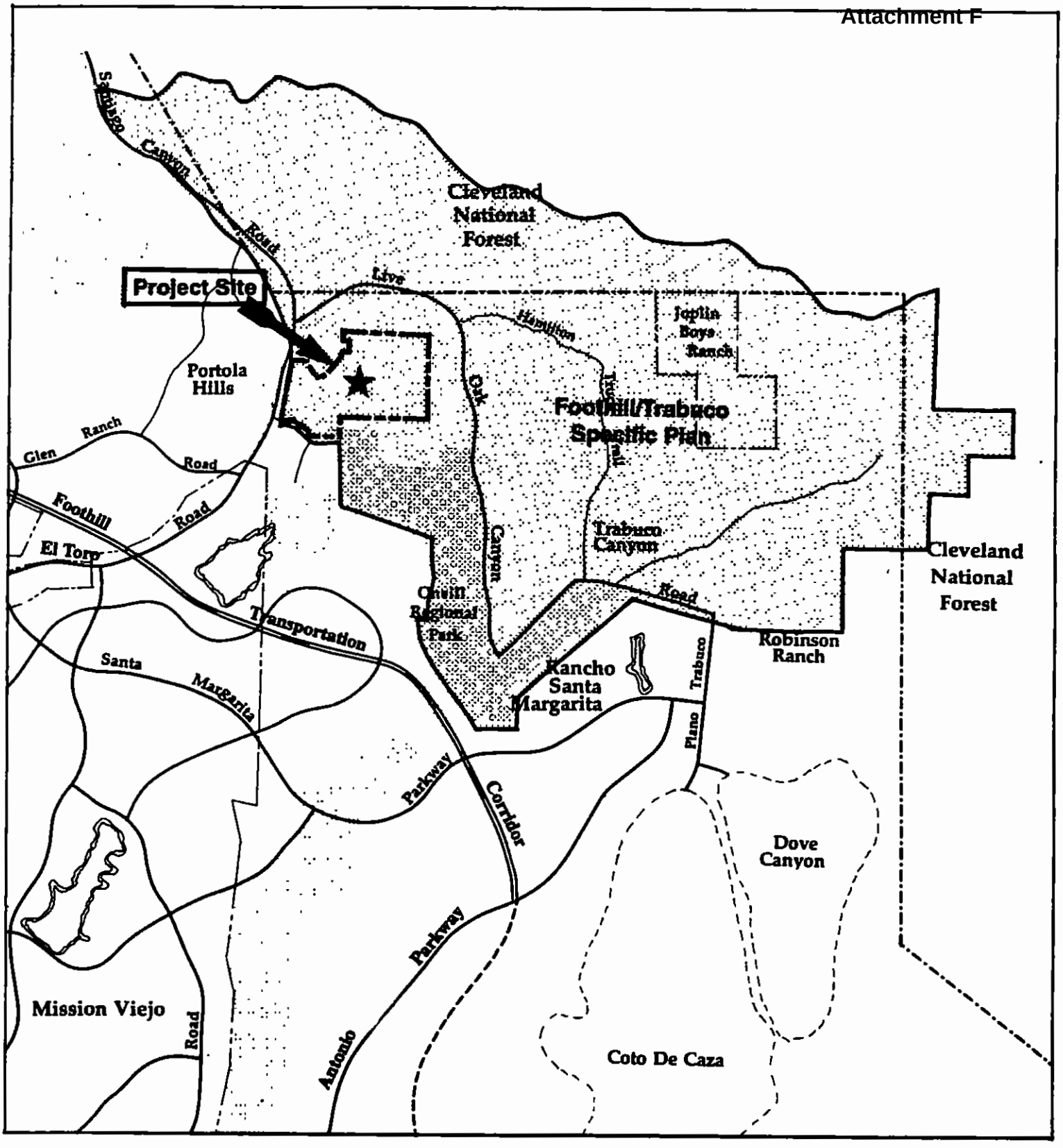
URBAN VISION

County of Orange P&DS
Scale: Not to Scale
Source: N/A

N

Regional Aerial Photograph

EXHIBIT No. 3



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Vicinity Map

EXHIBIT No. 4

URBAN VISION

County of Orange P&DS

Scale:

Source: *Saddleback Meadows - Draft Subsequent EIR No. 566*

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS

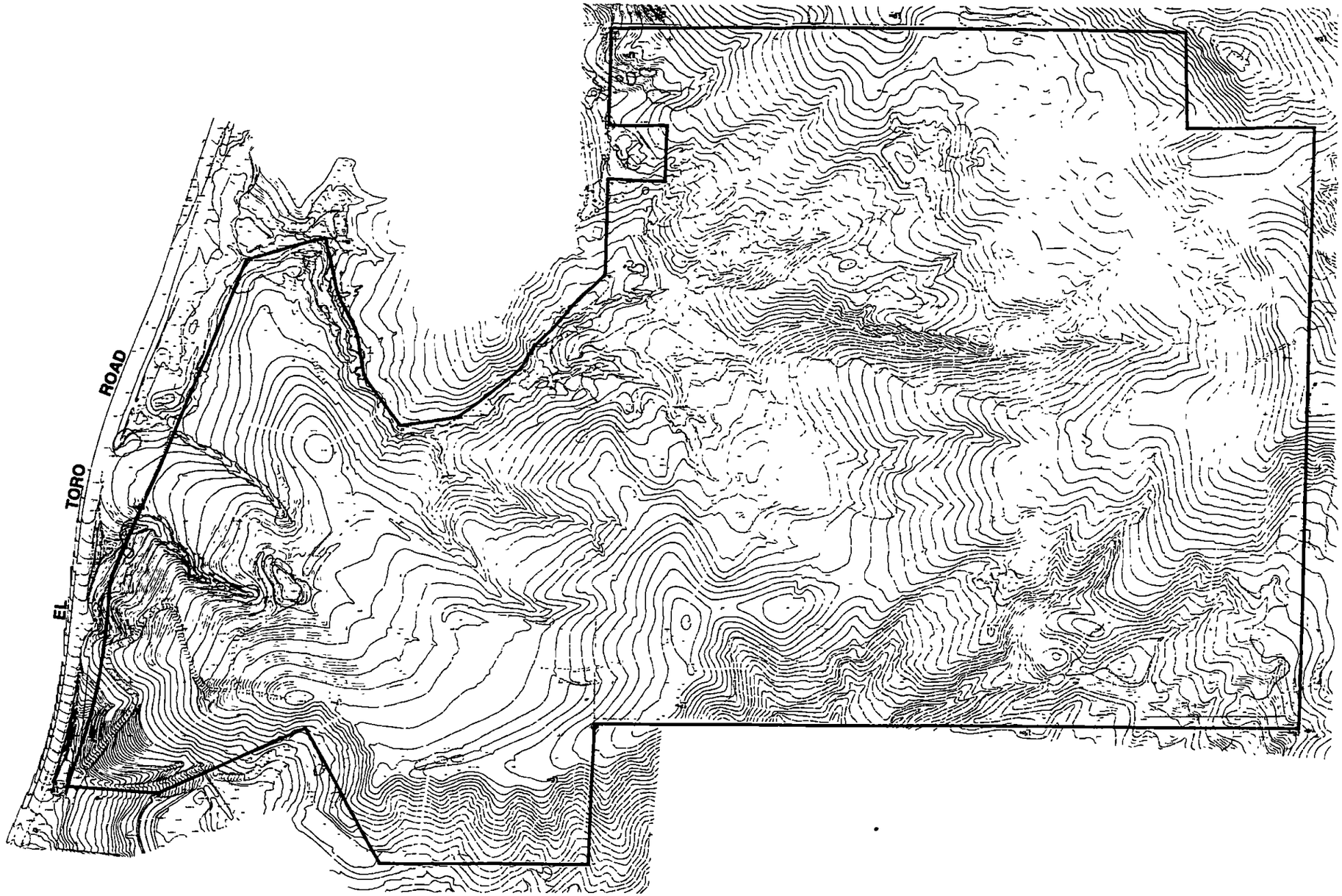
Scale: Not to Scale

Source: N/A

N

Project Site Aerial Photograph

EXHIBIT No. 5



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: 1"=400'
Source: N/A

N

Existing Topography

EXHIBIT No. 6

It is therefore understood that the environmental analyses and evaluations contained in this document are largely informational, and not prescriptive in nature in that mitigation measures which would alter features of the final recorded tract map can not be implemented to reduce all project impacts to a level of insignificance. This is attributable primarily to the physical limitations of the site and the inability to deviate from the final recorded tract map. Accordingly, any findings of significant impacts must be offset through the issuance of a Statement of Overriding Considerations. Additionally, to the extent that the County included Tentative Tract Map 10692 in its determination to provide adequate affordable housing in 1979, the removal of the mandated Inclusionary Housing Program (IHP) requirements could undermine the County-wide calculations used to eliminate the affordable housing mandate.

Project Features

The proposed project, consistent with Final Tract Map 10692, would construct 705 manufactured single-family detached dwelling units on minimum 2,630 square foot lots as shown in Exhibit 7. Gross density would be 3.17 du/ac.

Project implementation would directly affect 156.55 acres of the project site, not including remedial grading and fuel modification requirements. Total development footprint area would affect 86 percent or about 191.39 acres of the project site. In addition to onsite grading 19.77 acres of offsite area would be used for access road construction and remedial grading, fuel modifications, water tank site, creek channel and slope area. A total of 2.6 million cubic yards of conventional grading and 8.9 million cubic yards of remedial grading would be required to implement the project. Areas disturbed by remedial grading activities, outside of lots/manufactured slope, are proposed to be landscaped with native-compatible plant materials. Project features are summarized in Table 4.

Thirty-nine percent (39%) of the project site is proposed to remain in open space, including community slope area. In addition to the residential component, the project also proposes commercial uses; eight private park sites; regional equestrian, hiking, and bicycle trail connections; and construction of a water tank site dedicated to and accepted by, the Trabuco Canyon Water District. Table 4 presents project land uses, by acreages and percentages. Proposed bicycle trail would be located along El Toro Road and would connect with the existing underground crossing. Hiking and equestrian trails would be provided along the southern perimeter, connecting with the neighboring O'Neill Regional Park. The equestrian trail would also continue along El Toro Road. It is expected that these trails would ultimately connect with the County's regional system. A 1.5-acre commercial pad would be located along El Toro Road near Valley Vista Way.

As part of the proposed project, the portion of Aliso Creek adjacent to the project site will be fully improved with a concrete trapezonal channel and its associated maintenance road, in accordance with improvement plans prepared for Recorded Tract Map No. 10692.

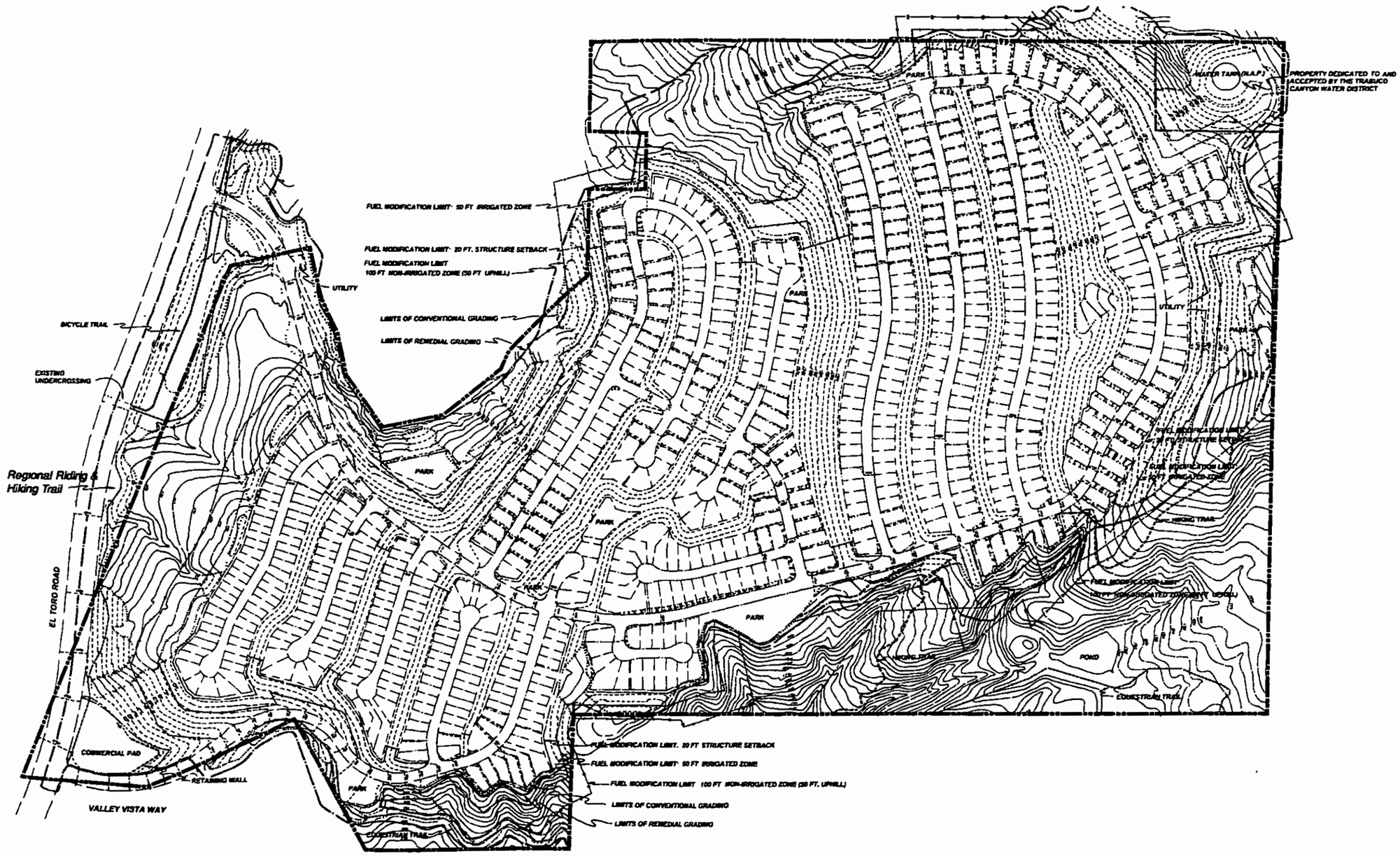
A 1.4 million gallon water tank and associated access road is proposed offsite adjacent to the northeast corner of the project site to provide water service to the proposed project. The water tank site is currently owned by the Trabuco Canyon Water District. This water tank site was dedicated under the Recorded Tract Map 10692. The water tank is proposed to be 29-feet tall, bermed, and

painted a complimentary color to the surrounding landscape. The water tank would be constructed by Trabuco Canyon Water District.

Project access will be off of El Toro Road; a second gated access at Valley Vista Way will also be provided. The entry street will be designed as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median. The Collector cross-section should be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane. Onsite circulation is proposed with a primary spine street and a series of cul-de-sacs.

Table 4
LAND USE SUMMARY TABLE

Onsite Land use	Acres	% of site
Residential Lots	69.11	31.1
Private Streets	22.23	10.0
Park Sites	3.67	1.7
Equestrian Trails	0 85	0.4
Hiking Trails	0.13	0.1
Manufactured Slopes	57.26	25 8
Remedial Grading (outside of lots/slopes)	29.11	13.0
Fuel Mod. Zone (outside of grading limits)	5.73	2.6
Undisturbed Open Space	31.38	14.0
El Toro Road R.O.W	1.28	0.6
Commercial Lot	1.48	0.7
Total Onsite	**222.23**	**100.0**
Total Onsite Impact Area	**191.39**	**86.1**
Offsite land Use	**Acres**	
El Toro Road R.O.W.	2.60	
Aliso Creek Channel, Maintenance Road and Bike Trail	1.86	
Private Street	0.60	
Water Tank Site	3.83	
Equestrian Trails	0.52	
Bike Trail	--	
Manufactured Slope	4.84	
Fuel Modification Zone (outside of grading limits)	2.11	
Remedial Grading (outside of slopes)	3.41	
Total Offsite	**19.77**	
Total Impact Area (onsite/offsite)	**211.16**	



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

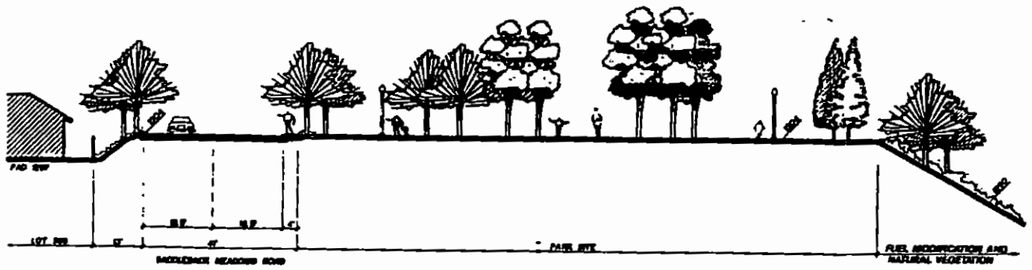
County of Orange P&DS

Scale: 1"=400'
Source: N/A

N

Site Plan

EXHIBIT No. 7



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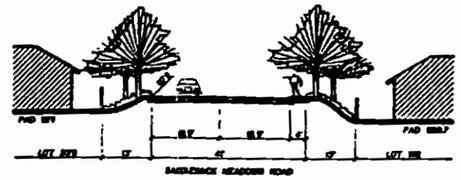

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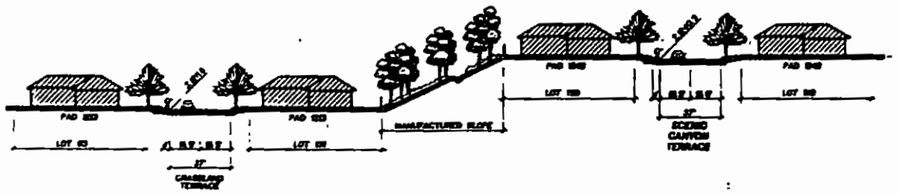

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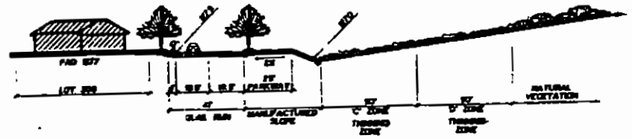

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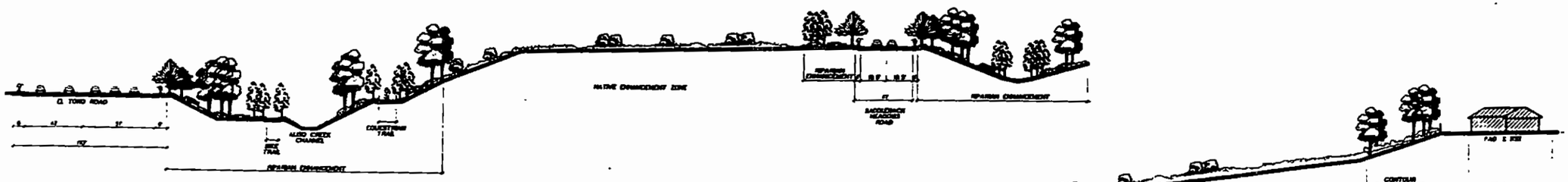


SECTION EE 1"=20'-0"

SECTION FF 1"=20'-0"

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

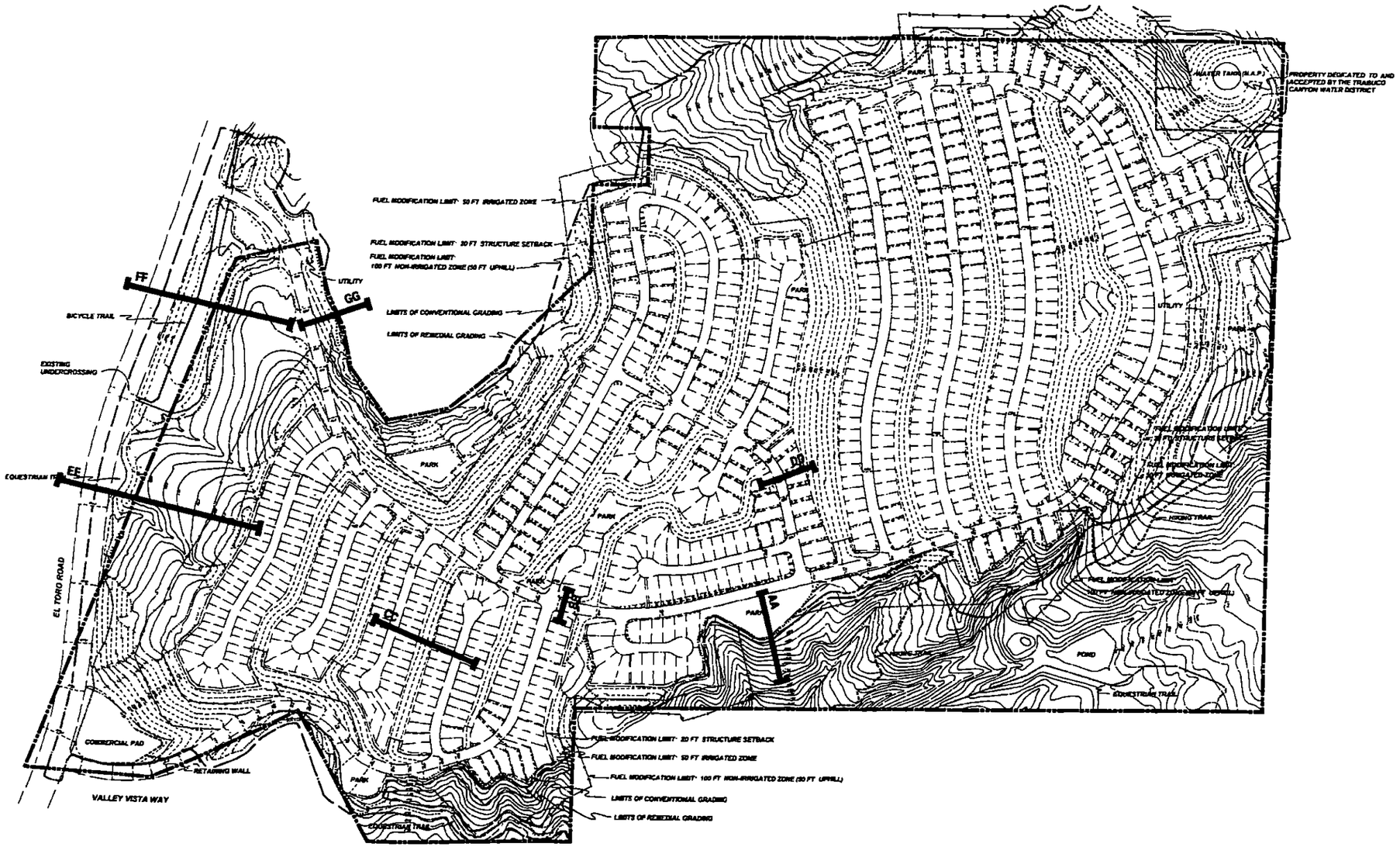
URBAN VISION

County of Orange P&DS

Scale: Not to Scale
Source: N/A

Landscape Cross Sections

EXHIBIT No. 8



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS

Scale: Not to Scale
Source: N/A

N

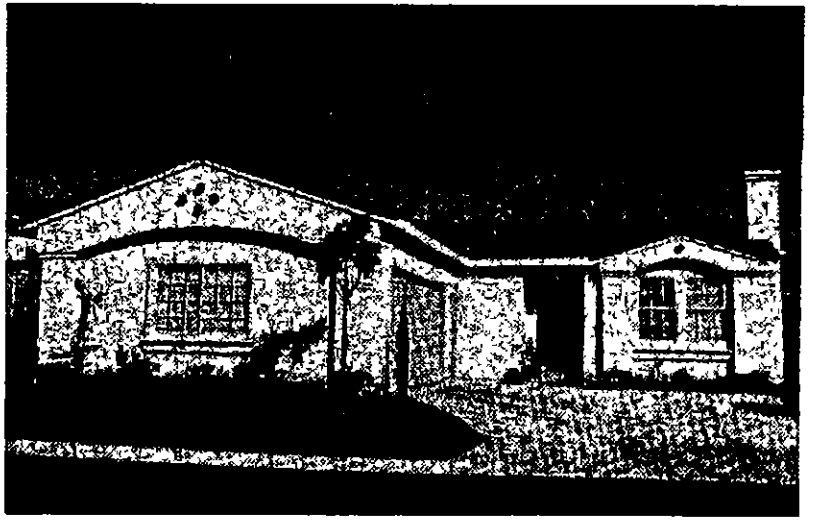
Landscape Cross Section Key Map

EXHIBIT No. 9

Manufactured Home No. 1

Manufactured Home No. 2

Manufactured Home No. 3



Manufactured Home No. 4

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Conceptual Residential Manufactured Home Elevations

EXHIBIT No. 10

URBAN VISION

County of Orange P&DS

Scale: Not to Scale

Source: N/A

Discretionary Actions

Approval of a grading plan and issuance of a grading permit are required.

The following discretionary permits and clearances are required prior to project implementation:

Agency		Permit
• California Department of Fish & Game	-	1603 Streambed Alteration Agreement
• U.S. Fish & Wildlife Service	-	Section 7 Consultation/4(d) Rule
• U.S. Army Corps of Engineers	-	Section 404 Permit Action
• California Regional Water Quality Control Board	-	NPDES Construction Stormwater Discharge Permit
• California Regional Water Quality Control Board	-	Section 401 Water Quality Certification
• South Coast Air Quality Management District	-	Authority to Construct/Operate Permit

3.3 DEVELOPMENT OBJECTIVES

The following objectives have been established for the proposed project to serve as a basis for comparing alternative development plans and for the evaluation of associated environmental impacts.

- Develop a residential community which implements recorded Tract Map No. 10692 for the construction of 705 manufactured housing units.

- Minimize visual affects on surrounding properties to the extent feasible given the constraints of Recorded Tract Map No. 10692, through the provision of perimeter open space lots and landscape screening.

- Remediate and provide geotechnical stabilization for onsite landslide areas affecting the proposed development area.

- Implement the policies contained in the General Plan and the Air Quality Management Plan to the extent feasible given the constraints of Recorded Tract Map No. 10692.

- Minimize adverse effects on surrounding properties, O'Neill Regional Park and Aliso Creek through the provision of buffer/setback zones and design features, to the extent feasible given the constraints of Recorded Tract Map No. 10692.

- Conduct preliminary grading and stabilization for the ultimate El Toro Road right of way.

- Create a fire safe community through incorporation of an area-wide fuel modification program.

- Provide trail connections to the regional riding and hiking trail system, to the extent feasible given

the constraints of Recorded Tract Map No. 10692.

3.4 PROJECT PHASING

Preliminary project grading is proposed to be implemented in one phase. Project grading would require approximately 18 months[2] to complete. All grading, including remedial grading will be completed in one phase and be balanced onsite. Residential units are planned to be constructed in a series of phases based on market demand. The water tank will be completed prior to Phase I models. Project buildout is estimated to occur approximately five (5) years after completion of grading. Primary infrastructure (roads, water/sewer mains, and utility stub-outs) will be completed in Phase I. Resource enhancement and riding/hiking trail construction will be completed prior to the final phase of the proposed project.

Table 5
SURROUNDING PROJECT COMPARISON SUMMARY

Feature	Proposed Project	Portola Hills	Hidden Hills Hidden Ridge
Acreage	222.23	1,399	74
Dwelling Units	705	2,818	230
Minimum Lot Size	2,630 sf	3,000 sf	5,000 sf
% Open Space	14%	39%	31%
Gross Density	3.17 du/ac	2.0 du/ac	3.1 du/ac
Total Grading/Lot (conventional and remedial)	16,312 cy	7,450 cy	5,850 cy
Wildlife Corridor	No	No	No
Regional Trail Connections	Yes	Yes	Yes

[2] *Based on an average of 30,000 cubic yards/day. 21 work days per month.*

4.0 EXISTING CONDITIONS, PROJECT AND CUMULATIVE IMPACTS, MITIGATION MEASURES, AND LEVEL OF SIGNIFICANCE AFTER MITIGATION

4.1 LAND USE/HOUSING

4.1.1 EXISTING ENVIRONMENTAL SETTING

Existing and Planned Land Use

The project site is currently functioning as natural open space with the exception of the remains of an abandoned ranch structure, geotechnical investigation and cattle grazing activities. A mobile home is located onsite in support of the cattle grazing. Approximately 50 percent of the project site is currently being utilized for cattle grazing activities. Existing surrounding land uses are shown in Exhibit 14 and summarized in Table 6.

Table 6
SURROUNDING LAND USE SUMMARY

Direction	Land Use
North	St. Michael's Abbey, Cooks Corner, Natural Open Space, Cleveland National Forest, Live Oak Plaza, and low density residential.
South	Hidden Hills and Hidden Ridge Developments, O'Neill Park, and Ramakrishna Monastery
East	Low Density Single-Family Residential, Church and Natural Open Space
West	Portola Hills Planned Community and Aliso Creek

North

St. Michael's Abbey is located on a 35-acre parcel north and west of the project site and contains the following facilities: a church, prep school/dormitory, abbey, refectory, library, a swimming pool, small sports field and associated parking areas. In addition to Abbey facilities, a vacant single-family dwelling unit is located in the eastern portion of the property. The abbey was constructed in 1960 and opened as a prep school in 1961. The prep school serves grades 9-12 and has a current enrollment of approximately 75 students.[1]

[1] *Personal communication, Farther Vincent - St. Michael's Abbey - 9/8/95.*

Cook's Corner is located at the northeast corner of the intersection of El Toro Road, Santiago Canyon Road, and Live Oak Canyon Road. Cook's Corner is a popular restaurant/bar attracting large crowds on the weekends.

Directly north of the project site, south of Cleveland National Forest, is private property referred to as the Edgar 4-S Ranch South. The property is primarily natural open space, with scattered large lot single-family dwellings. Live Oak Plaza is also located to the north.

South

To the south land uses include the existing Hidden Ridge/Hidden Hills development, O'Neill Regional Park and the Ramakrishna Monastery. Hidden Ridge/Hidden Hills contains 230 residential detached and attached dwelling units on 74 acres. Gross residential density is 3.1 dwelling units/acre. The Hidden Ridge/Hidden Hills community is not included in the Foothill-Trabuco Specific Plan.

O'Neill Regional Park was first opened in 1948 and provides a variety of recreational opportunities including active day use areas, overnight camping, wilderness hiking areas and interpretive programs. The park encompasses approximately 2,000 acres, with the northern third of the acreage located within the Foothill-Trabuco Specific Plan The portion of the park adjacent to the project site is designated as wilderness area and contains the Live Oak Trail, providing for connection from park headquarters to the Aliso Creek Trail and points west.

The Ramakrishna Monastery is located adjacent to the southeast portion of the project site and was constructed in 1942. (Note: Building constructed in 1942, the Ramakrishna's took over the site in 1946.) The monastery facilities include a series of structures for worship, residence area, a kitchen, and storage facilities. Additional features include shrine areas, hiking trails, a small reservoir, gardens and parking area. A portion of the views of the project site from the monastery are screened by mature pine and oak trees.

East

The area east of the site is visually screened by a major ridgeline and consists of natural open space, scattered single-family dwelling units and a church. Access to this area is provided off of Live Oak Canyon Road.

West

West of the project site is the Portola Hills Planned Community, of which the residential component is primarily built out. Ultimately the community will have 2,200 detached and attached dwelling units, a County fire station, elementary school, and natural open space. The gross residential density is 1.6 dwelling units per acre. The Portola Hills Planned Community is not located within the Foothill-Trabuco Specific Plan.

Table 5 in Section 3.2 contains a comparative statistical analysis of existing surrounding developments. As shown, both Portola Hills and Hidden Hills/Ridge have a lower gross density than

the proposed project.

In addition, a small strip of County owned land is located between the projects western boundary and El Toro Road.

Orange County General Plan

Land Use Element

The Orange County General Plan Land Use Element (Adopted June, 1982), designates the project site as 1B (Suburban Residential - 0.5 to 18 du/ac). The Community Profile, which is not a part of the General Plan, designates the site as 1.2 low density residential (0.5 to 2.0 du/ac.) In addition to the Land Use Element, the project site is subject to policies contained in the Circulation Element, Housing Element, Public Services and Facilities Element, Noise Element, Recreation and Safety Element.

Housing Element

The Orange County General Plan Housing Element was adopted September 13, 1993 and is a comprehensive statement of broad and specific policies to facilitate development of housing in the County. The project site is located in Regional Statistical Area (RSA) 43-C. RSA 43-C had a 1995 population of 190,700 with a year 2000 population projection of 212,700 (2.3 percent growth). RSA 43-C had a 1995 jobs to housing ratio of 3.80, the highest in the County.

In 1979, the County adopted the Inclusionary Housing Program (IHP), which required developers to provide 25 percent of all new dwellings within the affordable category (i.e., 120 percent or less of median income). In 1983, the IHP was replaced by the Housing Opportunities Program (HOP), which phased out mandatory requirements over a three-year period in favor of voluntary compliance with affordable housing objectives encouraged by County incentives and market forces. Adoption of the HOP did not rescind prior approvals of mandatory affordable housing requirements placed on projects as conditions of approval under the IHP.

A total of 26,907 mandatory affordable units have been required to date as part of General Plan amendments or zone changes. The vast majority of these (24,268) are found within planned communities, with the remainder scattered in conventionally-zoned parcels.

The previously approved and recorded Final Tract Map 10692 was required in the IHP/HOP to provide 66 2/3 percent of total construction as affordable housing (mobile homes). Since it was an original Condition of Approval, this requirement still applies to the project even though the County-mandated affordable housing requirements have since been rescinded

Foothill-Trabuco Specific Plan

In December 1991, the Foothill-Trabuco Specific Plan was adopted by the County Board of

Supervisors, and replaced the Foothill-Trabuco Feature Plan. This action converted the then policy level Foothill-Trabuco Feature Plan into a regulatory-zoning level Specific Plan. The Specific Plan sets forth goals, policies, land use district regulations, development guidelines, and implementation programs designed to preserve the area's rural character and to guide future development in the Foothill-Trabuco area.

To facilitate planning efforts, three (3) individual planning areas were created within the overall Specific Plan Area: 1) Upper Aliso Planning Area; 2) Trabuco Canyon Planning Area, and 3) Plano Trabuco Planning Area. The project site is located within the Upper Aliso Planning Area and is designated, the "Bridlewood Residential District".

While the Foothill-Trabuco Specific Plan was adopted with the intent of guiding future land use within the Specific Plan area, its approval post-dated that of Tract Map 10692 by some 12 years. Accordingly, the current project, originally approved in 1979, is effectively exempt from the provisions of the Foothill-Trabuco Specific Plan.

The following passages are excerpted from the Land Use Regulations section of the Specific Plan:

> *As long as the site is developed in accordance with the existing Saddleback Meadows Planned Community zoning (Zone Change 84-3P) and Recorded tract 10692, the project site shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.*[2] (Emphasis added)

> *The Bridlewood Residential District is established to recognize the existing zoning and tract map approvals for the Bridlewood (Saddleback Meadows) property which permit the development of 705 manufactured homes on the site. While the Board of Supervisors does not believe that these approvals are consistent with the Goals and Objectives of the Specific Plan, the property owner has recently declared bankruptcy. A legal stay precludes the Board of Supervisors from taking any action related to the property that would affect its value. However, the provisions of this District require that the Specific Plan be amended to determine an appropriate density cap and District Regulations for the property in the event that it cannot be developed in a manner which is consistent with the approved zoning and tract map.*[3]

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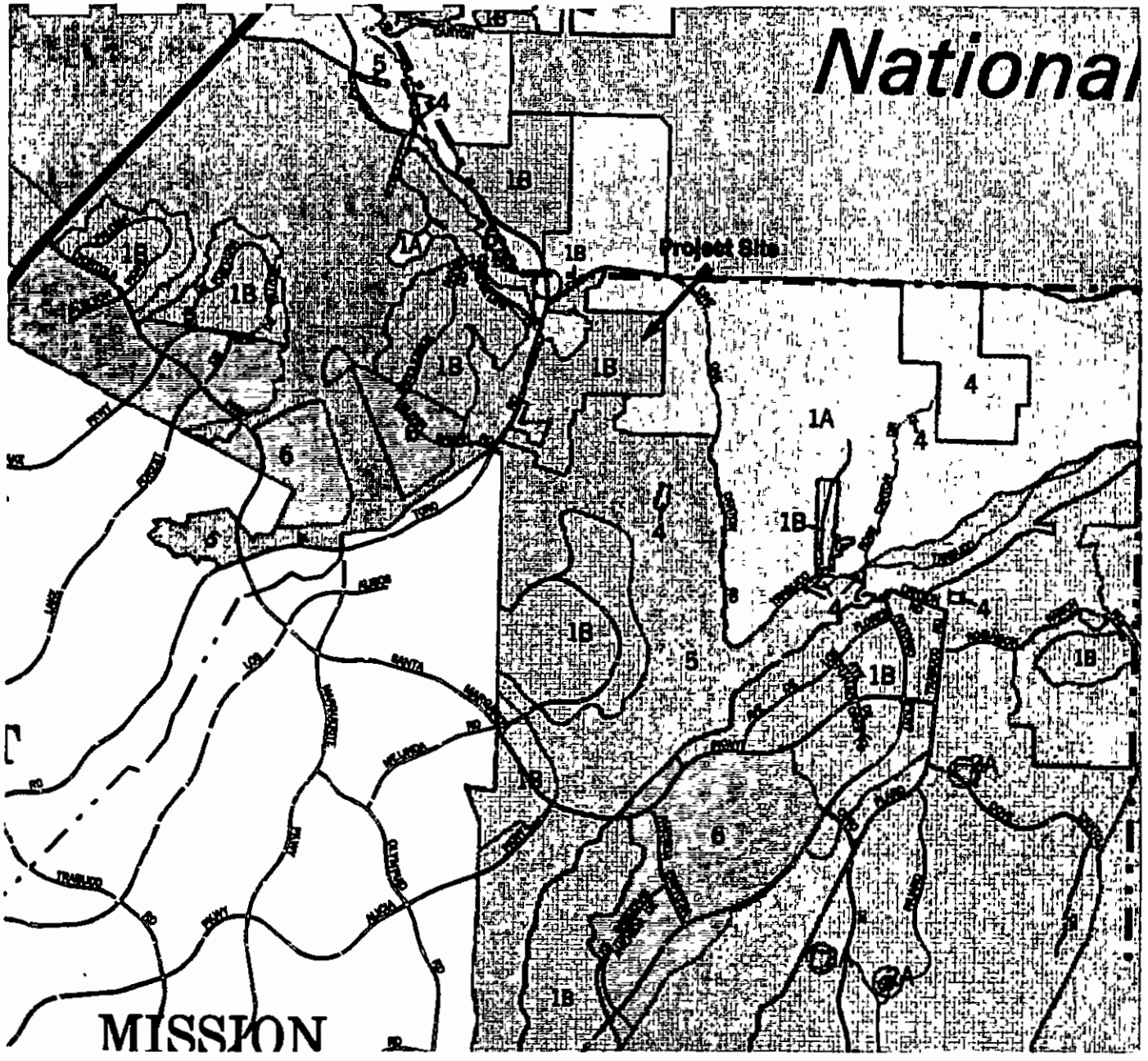
2 *Foothill-Trabuco Specific Plan p. III-20*

3 *Ibid.*



RESIDENTIAL

1A RURAL RESIDENTIAL COMMUNITIES
(.025 - .5 DU /AC)
(COMPONENT III CATEGORY - 1.1)

1B SUBURAN RESIDENTIAL COMMUNITIES
(.5 - 18 DU /AC)
(COMPONENT III CATEGORIES /1.2 - 1.52)

URBAN RESIDENTIAL COMMUNITIES
(18 AND ABOVE DU /AC)
(COMPONENT III CATEGORIES /1.6 - 1.62)

COMMERCIAL

COMMUNITY COMMERICAL
(COMPONENT III CATEGORY /2.1)

REGIONAL COMMERICAL
(COMPONENT III CATEGORY /2.2)

EMPLOYMENT

3 EMPLOYMENT
(COMPONENT III CATEGORIES III/3.1 - 3.2)

PUBLIC FACILITIES

4 PUBLIC FACILITIES
(COMPONENT III CATEGORIES /4.1)

(LS) LANDFILL SITE
(AN OVERLAY DESIGNATION)

OPEN SPACE

5 OPEN SPACE
(COMPONENT III CATEGORIES /5.1 - 5.4)

URBAN ACTIVITY CENTER

6 URBAN ACTIVITY CENTER
(COMPONENT III CATEGORY /6.1)

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Countywide General Plan Designation

EXHIBIT No. 11

URBAN VISION

County of Orange P&DS

Scale: Not to Scale

Source: N/A

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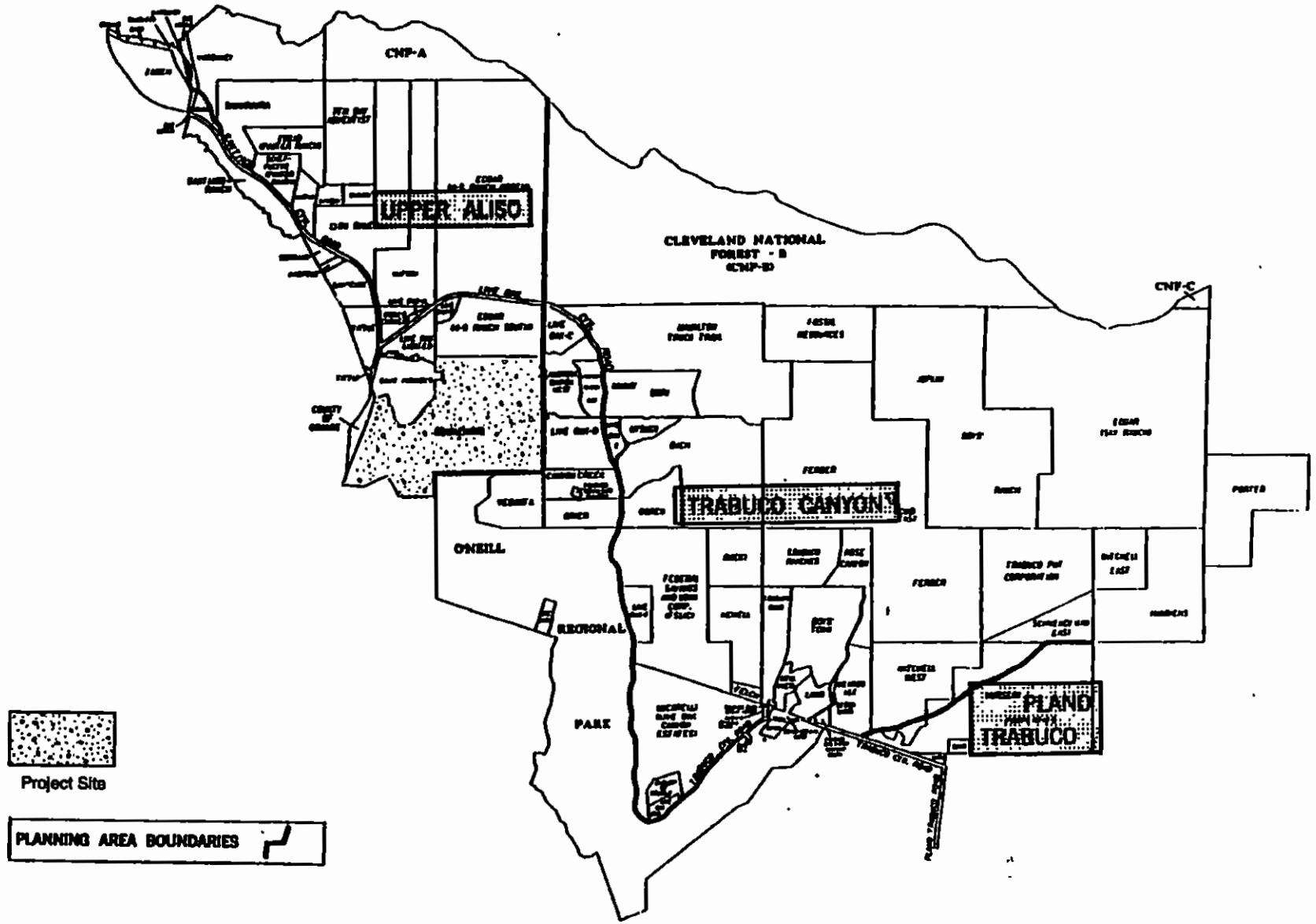


SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Foothill Trabuco Specific Plan Planning Areas

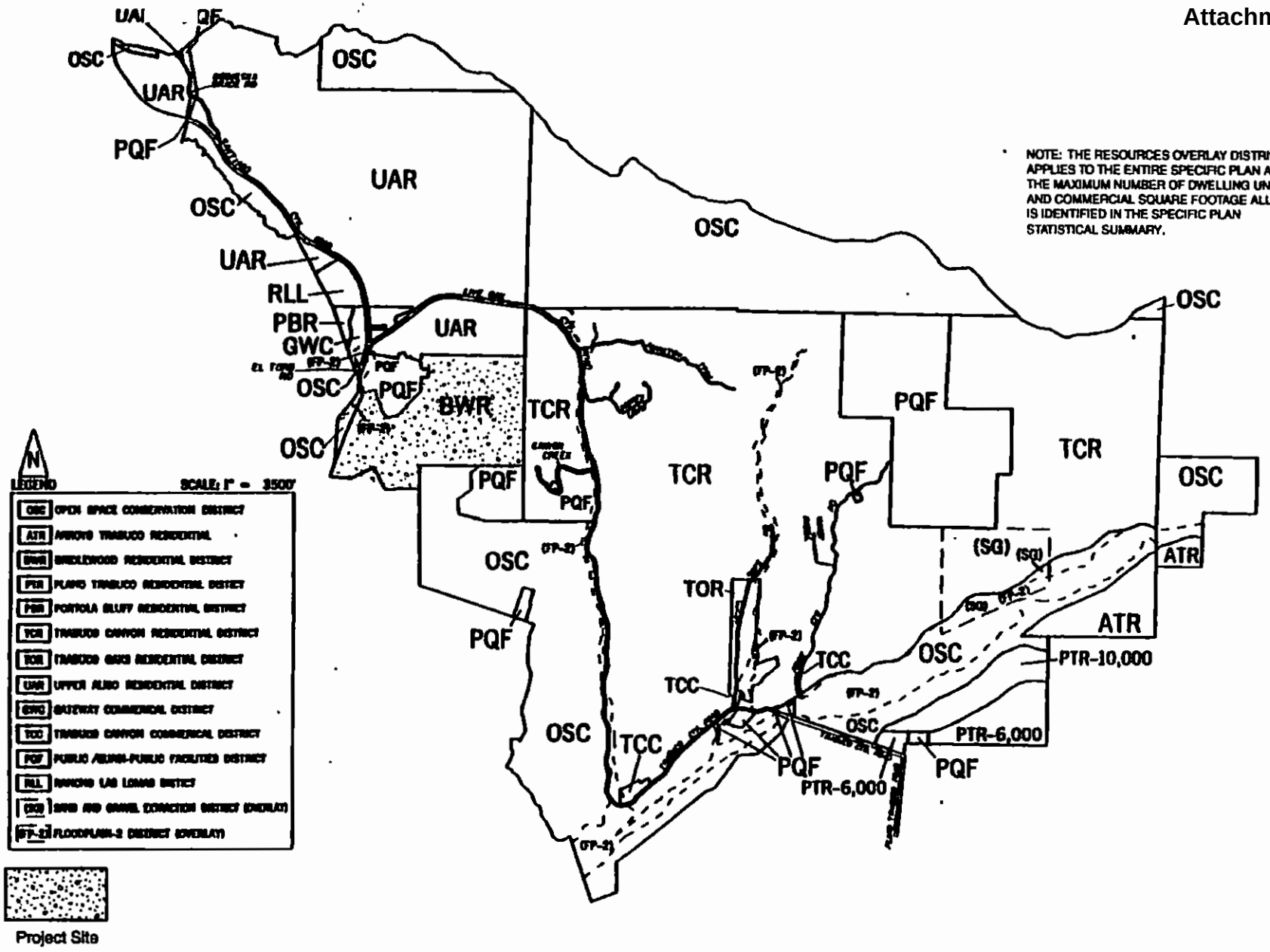
EXHIBIT No. 12

URBAN VISION

County of Orange P&DS

Scale: 1"=3500'

Source: Foothill/Trabuco Specific Plan

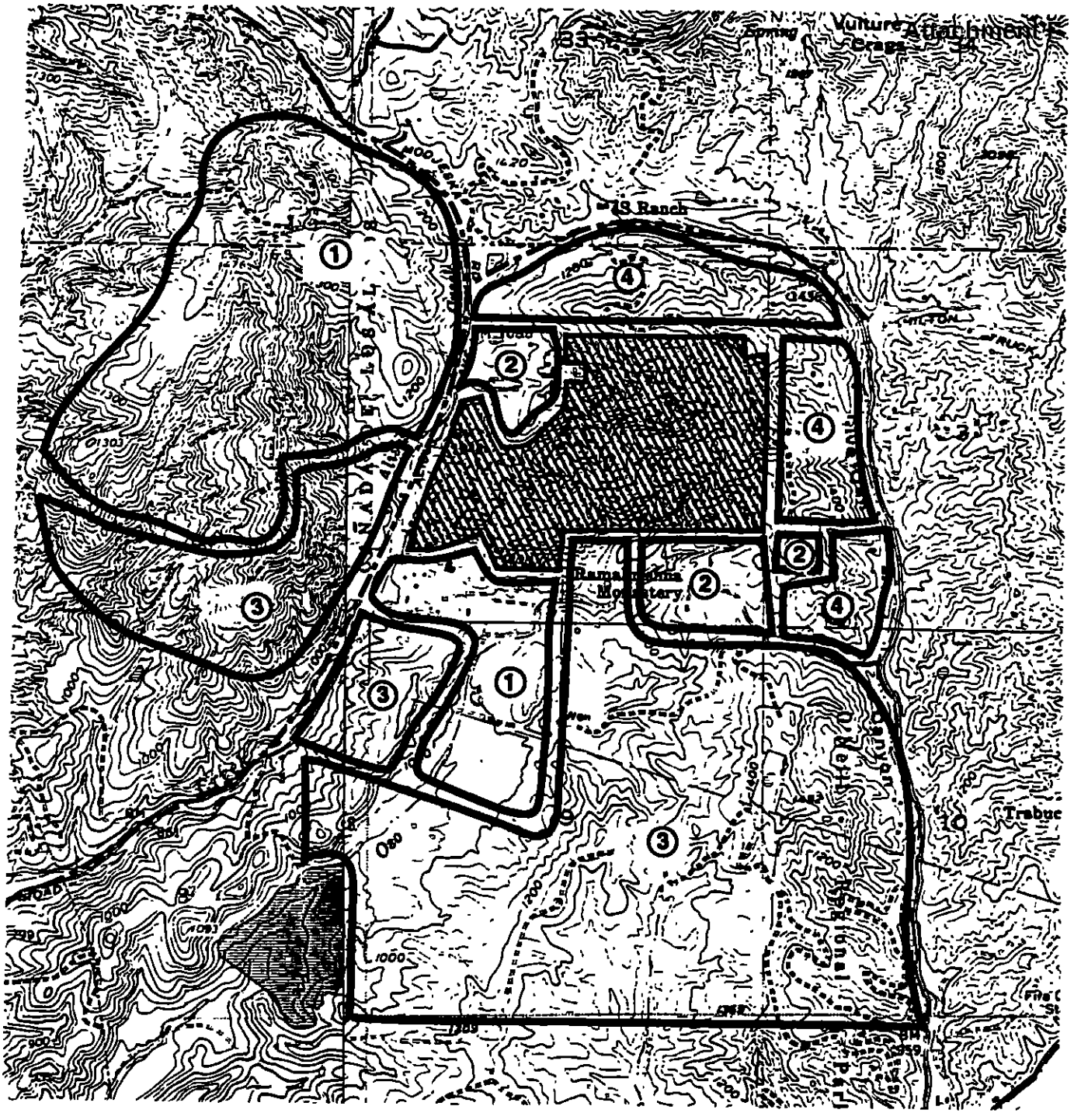


SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Foothill-Trabuco Specific Plan Land Use Designations

EXHIBIT No. 13

County of Orange P&DS
Scale: 1"=3500'
Source: Foothill/Trabuco f le Plan



① RESIDENTIAL

② CHURCH

③ RECREATION / OPEN SPACE

④ ESTATE RESIDENTIAL

SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
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Surrounding Land Use

EXHIBIT No. 14

URBAN VISION

County of Orange P&DS

Scale: N/A

Source: N/A

N

Aliso Creek Corridor Specific Plan

The Aliso Creek Corridor Specific Plan (concept) was adopted in July 1978 and outlines open space and recreational policies and programs for Aliso Creek and proximal surrounding areas, from it's headwaters in the Cleveland National Forest to its outlet into the Pacific Ocean at Laguna Beach. The goals of the Aliso Creek Corridor Specific Plan area as follows:

- The preservation of the natural character of the Aliso Creek Corridor from the forest to the sea, including the creek course and banks, irreplaceable resources and environmental features.
- The utilization of the Aliso Creek Corridor as an organizer for various systems including, but not limited to, recreation, circulation, public service and development.
- The provision of opportunities to provide for alternative means of transportation and recreation within the Aliso Creek Corridor utilizing bicycle, pedestrian, and equestrian trails, while minimizing conflicts with vehicular traffic along and across the corridor.
- The utilization of the Aliso Creek Corridor as a regional recreation/open space amenity providing a variety of recreation opportunities.
- Provision of a well-organized program designed to implement the Aliso Creek Corridor Specific Plan.

The project site is partially located within the Aliso Creek Corridor Specific Plan, with the Specific Plan's boundary formed by the Aliso Creek watershed limits. The site is located within Planning Unit 5 and more specifically Sub-area 33. Sub-area 33 is designated for open space and recreation land uses. In addition, the Concept Plan shows a regional bike trail onsite.

Zoning

The entire project site is currently zoned "S"-Foothill-Trabuco Specific Plan with "SR"-Sign Restriction overlay district. The Bridlewood/Saddleback Meadows Residential District was established within the Foothill-Trabuco Specific Plan, adopted December, 1991, to recognize the existing zoning and tract map approvals for the Bridlewood/Saddleback Meadows property.

4.1.2 EFFECTS FOUND TO BE INSIGNIFICANT

The following land use/housing effect was found to be less than significant, as determined by the Initial Study contained in Appendix C of this EIR:

- The project will not displace existing housing

4.1.3 PROJECT IMPACTS

Land Use Compatibility

Project implementation would construct manufactured single-family detached dwelling units, streets, slopes and associated infrastructure on the currently vacant project site. Minimum lot size for the proposed project would be about 2,630 sf., which is smaller than the 3,000 sf. and 5,000 sf. required for the neighboring Portola Hills and Hidden Ridge single family detached residential communities, respectively. Both Hidden Ridge and Portola Hills also have attached residential units. A comparison of surrounding project gross densities is shown in Table 5 of Section 3. As shown, the proposed project has a somewhat higher gross density than surrounding area projects.

O'Neill Regional Park is located adjacent to and directly south of the proposed project. The portion of the park adjacent to the site is primarily devoted to wilderness activities. As a result, implementation of the proposed project would not be compatible with existing and planned park uses.

The Ramakrishna Monastery is also located adjacent to the southern boundary of the project site. This religious facility is occupied by seven resident monks and serves a limited number of visitors. Due to the contemplative purposes for which this facility exists, the proposed project would not be compatible with the Ramakrishna Monastery.

Scattered estate density residential land uses are located adjacent to the eastern and northern project boundaries, although they would be physically separated from the proposed project by an intervening ridgeline. These surrounding areas contain minimum one and 2.5-acre lots, and would not be considered compatible with the proposed project.

St. Michael's Abbey is located north and west of the project site and functions as a religious and educational facility. Introduction of the proposed project adjacent to the Abbey would result in a land use incompatibility. The incompatibility between the proposed project and the Ramakrishna Monastery and St. Michael's Abbey is partially offset by some natural open space buffering and topographic landscape screening.

Orange County General Plan

Land Use Element

The proposed project is in conformance with all elements of the County General Plan, including the Land Use Element, Noise Element, Transportation Element, Housing Element, Growth Management Element, Safety Element, Public Services and Facilities Element, Recreation Element, and Resource Element.

Housing Element

The proposed project would supply 705 manufactured single-family residential dwelling units into RSA 43-C, a jobs-rich, housing-poor area. This represents a significant addition to the County's

existing stock of affordable housing units. This is noteworthy because the project was conditionally approved in 1979 with a 66 2/3 percent affordable housing requirement in accordance with the County's Inclusionary Housing Program (IHP). Although this mandate has since been rescinded, the original affordable housing requirements are still attached to Final Recorded Tract Map 10692.[4] As per the Conditions of Approval originally placed on Tentative Tract 10692, a total of 470 lots are to be sold in the affordable range. This figure is further broken down as follows: 188 low/ moderate, and 282 Medium I, as defined by the County.

Foothill-Trabuco Specific Plan

As stated above, the project is inconsistent with many of the goals, objectives, and policies of the Foothill-Trabuco Specific Plan which generally calls for the preservation of the rural character and natural habitat of the Foothill-Trabuco area. The proposed site has been designated "Bridlewood Residential District" by and was made a part of the Specific Plan. Accordingly, the project is exempt from provisions of the Specific Plan. The Specific Plan reads as follows:

> *The Bridlewood (Saddleback Meadows), Lyon Ranch (Saddleback Community Church), Santiago Ranch and Zadeh properties currently have approved or recorded tract maps in effect. Except in the event that proposed development on these individual properties cannot be found consistent with previous approvals, the subject properties shall be exempt from all of the Regulations and Guidelines included in this Specific Plan and shall be subject to the zoning in effect at the time of . . . project approval.*[5]

Although the project is deemed exempt from the goals, objectives and policies of the Foothill-Trabuco Specific Plan, there are certain features of the project which attempt to satisfy community amenities and standards for development. Specifically, these include the incorporation of riding, hiking and bicycle trails, and eight private park sites. Additionally, as required by the original Conditions of Approval, the project also adds significantly to the County's supply of affordable housing stock and helps alleviate the sub-region's current jobs/housing imbalance.

Conversely, the proposed project conflicts with the Foothill-Trabuco Specific Plan specifically with regard to the preservation of a regionally contiguous wildlife corridor. Furthermore, the Specific Plan states that the type of homes being proposed would be incompatible with site topography and biological resources. The Specific Plan reads as follows:

> *It is recognized that the Specific Plan Area, due to its steep terrain and sensitive biological resources, is inappropriate for the provision of affordable housing. The provision of (high*

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[4] *It is noted that the County's prior decision to withdraw its own affordable housing mandate may have been based, in part, on the premise that sufficient affordable housing units already existed, or were planned County-wide. However, to the extent that the County included Tentative Tract Map 10692 in its determination to provide adequate affordable housing in 1979, the removal of the mandated IHP requirements could jeopardize the County-wide calculations used to eliminate the mandate.*

[5] *Ibid. p. III-4*

density) affordable housing conflicts with the goals and objectives of the Specific Plan which include maintaining the rural character of the area, providing a buffer between urban development and the Cleveland National Forest and preserving significant biological resources and natural landforms.[6]

Aliso Creek Corridor Specific Plan

The proposed project does incorporate regional riding and hiking trail connections into its design, however, it does conflict with several other aspects of the Aliso Creek Corridor Specific Plan. For example, the project would not preserve recreational open space or conserve the natural features of the Aliso Creek Corridor as it proposes to replace an existing natural creek with a trapezonal channel. Similarly, the project is in direct conflict with the Natural Communities Conservation Planning Program (NCCP) in that it would further disturb a sensitive wildlife habitat area.

Zoning

The proposed project is in conformance with County zoning standards. No conflicts would result.

Impact Significance Criteria

The effects of a project on existing or planned land uses are considered to be significant if the proposed project conflicts with one or more of the following:

A. Conflicts with General Plan land use or zoning designations or policies;

B. Conflicts with existing or planned land uses onsite or adjacent to the project site, e.g., disrupts the physical arrangement of an established community or causes development within or adjacent to open space preserved for habitat value;

C. Results in conversion of prime agricultural land to non-agricultural uses, or impairs the productivity of prime agricultural land;

D. Causes significant urban growth.

These criteria are derived from the County PDS Environmental Analysis Checklist (Initial Study is contained in Appendix C).

4.1.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project would result in significant land use compatibility impacts to O'Neill Regional Park, the Ramakrishna Monastery St. Michael's Abbey, and surrounding residential communities. The project would also conflict with policies of the Aliso Creek Corridor Specific Plan.

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[6] *Ibid. P. III-1*

4.1.5 CUMULATIVE IMPACTS

Implementation of the proposed project in conjunction with the identified related projects, would result in additional urban intensity development within and adjacent to the Foothill-Trabuco Specific Plan area.

4.1.6 MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

SC 1-1 Prior to the issuance of any building permits for residential construction, the developer shall comply with Board of Supervisors Resolution 82-1368 (Buyer Notification Program) which requires the developer to prepare a map denoting the existing and proposed land uses, arterial highways, and public facilities within the surrounding area for the approval of the Manager, PDS/Current Planning Services Division. The map content, display, and distribution shall be in accordance with the Buyer Notification Program guidelines approved by the Board of Supervisors and available at the Development Processing Center.

SC 1-2 Prior to the issuance of any certificates of use and occupancy, the developer shall provide evidence to the Manager, PDS/Building Inspection Services Division, that the Department of Real Estate has been notified that the project area is within the boundaries of a Community Facilities District (CFD), and will be subject to special taxes for public facilities and/or services

4.1.7 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project, with the implementation of the above outlined mitigation measures, would result in unavoidable adverse impacts to land use compatibility.

4.2 SOILS AND GEOLOGY

Geotechnical studies have been prepared for the proposed project by G.A. Nicoll and Associates and are included in Appendix D of this Draft EIR in their entirety. In addition, a Phase I Environmental Assessment has been prepared for the proposed project by Centec Engineering and is included in Appendix O. This section of the Draft EIR summarizes the findings of the following studies:

- G.A. Nicoll and Associates, Geotechnical Environmental Impact Report for Draft EIR No. 566 for Final Tract Map 10692, Saddleback Meadows Development, Orange County, California, March 14, 1997.

- G.A. Nicoll and Associates, Geotechnical Environmental Impact Report, Tentative Tract No. 15230, El Toro Road, Orange County, California, November 27, 1995.

- G. A. Nicoll and Associates, Progress Report, Grading Limits/Quantities, Saddleback

Meadows, Orange County, California, November 6, 1995.

- G.A. Nicoll and Associates, Supplemental Geotechnical Investigation - Saddleback Meadows, Tentative Tract 10692, County of Orange, California, September 1995.

- G.A. Nicoll and Associates, Geotechnical Investigation - Saddleback Meadows, Tentative Tract 10692, County of Orange, California, January 6, 1994.

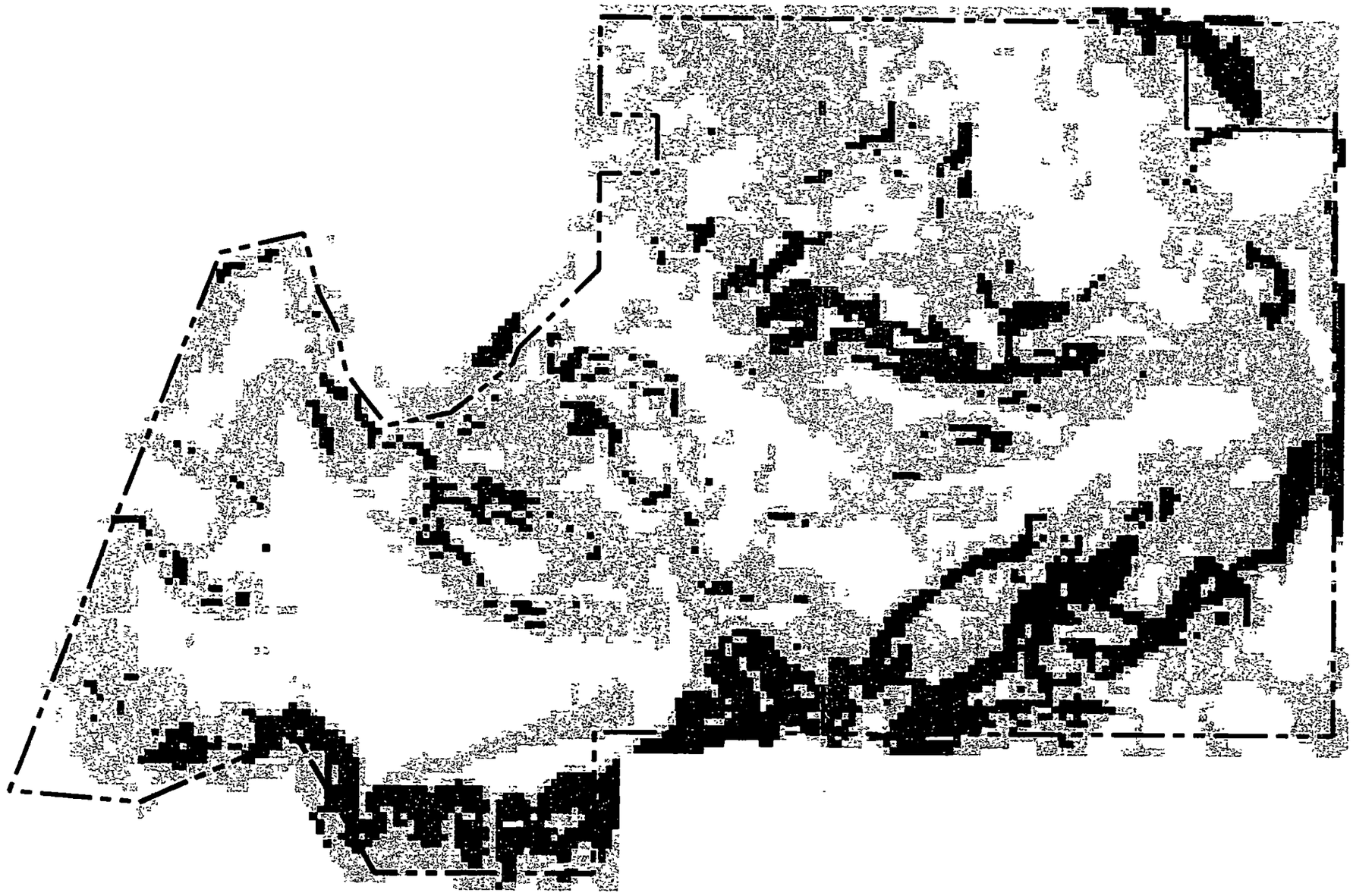
4.2.1 EXISTING ENVIRONMENTAL SETTING

The project site has been subjected to numerous geotechnical investigations since the mid 1970's, associated with a variety of development proposals. The above investigations build upon this analysis (13 studies) and evaluate the geotechnical aspects of the proposed project in detail.

The project site is located within a re-entrant of Canada De Los Alisos. Ridges, ravines and gullies form the dominant physiographic features, providing moderate to high topographic relief. Elevations above Mean Sea Level range from approximately 1,000 to 1,550 feet. Natural slope gradients range from nearly level along some ridge crests and valley bottoms to 1:1 (horizontal: vertical) within deeply incised gullies. The site drains generally toward the west and southwest into Aliso Creek and Oso Creek tributaries of San Juan Creek. A slope map is shown in Exhibit 15.

As shown on the Slope Map in Exhibit 15, 95.5 acres or 43 percent of the project site is in the 0-25 percent slope category, 94.9 acres or 43 percent is in the 26-50 percent slope category and 31.8 acres or 14 percent of the project site has slopes exceeding 50 percent.

Man-made structures on the property include an abandoned ranch house, barn and related structures; several ponds for watering livestock were constructed during the period the ranch was operated, which are still in use for grazing livestock.



SLOPE ANALYSIS

- 0% to 25% : 43% - 95.5 Acres
- 25% to 50%: 42.7% - 94.9 Acres
- 50% and greater: 14.3% - 31.8 Acres

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS

Scale: 1"=400'
Source: Forma

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Slope Map

EXHIBIT No. 15

The subject site is located within Canada De Los Alisos in the low coastal foothills of the Santa Ana Mountains. These hills are part of the Peninsular Ranges Geomorphic Province and are generally underlain by sedimentary bedrock of Tertiary Age.

Onsite bedrock consists of a thick sequence of interbedded, fine- to coarse-grained sandstone and siltstone of the Tertiary Age Vaqueros-Sespe Undifferentiated and Sespe Formations. Ancient to active landslides underlie much of the project area. Recent and older alluvial deposits are confined to the major gullies and Aliso Creek drainage. Topsoil and colluvium mantel the bedrock and landslides throughout most of the site. Fill soils underlie areas where man-made features, such as roads and berms associated with livestock ponds, were constructed. Existing onsite geology is shown in Exhibit 16.

Earth Materials

Sespe Formation (TS)

The late Eocene to early Miocene Sespe Formation is generally confined to the northwest corner of the tract where it is in fault contact with the undifferentiated Vaqueros-Sespe Formation. These rocks, where they were observed, consisted of red-brown to gray sandstone and interbedded, greenish-gray, clayey siltstone.

Vaqueros-Sespe Formation, Undifferentiated (TVS)

The bedrock underlying the majority of the site exhibits characteristics similar to both the Vaqueros and Sespe Formation. Therefore, these rocks have been classified together as an undifferentiated formation. The rocks consisted of a rhythmic sequence of orange-brown, red-brown, gray to gray-green, sandstone and siltstone with thin interbeds of bentonite-like clay and less weathered volcanic ash and/or tuff. The bentonitic clay beds are generally very soft and plastic in consistency, whereas the sandstone and siltstone units were more often found to be dense and stiff, respectively. Occasionally, fossil-rich beds consisting mainly of broken clam shells were encountered.

Landslide Material (Qls)

The site is occupied by an interrelated collection of active and inactive slides. The extent of the slides is comparable to other sites in the general area which have accommodated residential development, such as the nearby Portola Hills Site. Between prehistoric and recent times, it appears that there were several episodes of slide movement. The larger slides generally failed as block slides, usually along 3- to 12-inch thick clay beds. Some of the smaller, more recent slides have failed as rotational-type failures, following oversteepening of the flanks of major drainage. The characteristics of the observed landslide materials varied from a soft, intensely fractured, sheared and weathered condition to nearly intact, unweathered blocks of displaced, interbedded sandstone and siltstone.

Disturbed Older Alluvium [Qls (Qalo)

Disturbed Older Alluvium is present along the east side of El Toro Road at the toe of the major slides. This material consists of disturbed sand, silt and clay layers containing some gravel that were mixed with blocks of displaced sandstone and siltstone during landsliding.

Older Alluvium (Qalo)

Quaternary Alluvium Deposits are present along the lower portions of the slopes located on the west side of the project site. These deposits consist of moist to wet, moderately dense to loose/soft, silty sand, sandy silt, sandy clay, clay and occasional layers of gravel.

Alluvium (Qal)

Alluvium of recent origin is present in Canada De Los Alisos and its tributaries that enter the project site. The Alluvium consists of interbedded deposits of predominately sand and silt with some clay and layers of gravel. These soils range from dry to wet and are generally poorly consolidated. Alluvial depths range from less than one foot to approximately 12 feet in the tributary drainage, to roughly 20 feet in Canada De Los Alisos which borders the site on the west.

Soil Slumps (Ss)

A number of soil slumps are present. These features represent downhill movement and slumping of topsoil, colluvial soil and weathered bedrock material generally to a depth of 5 to 10 feet.

Structural Geology

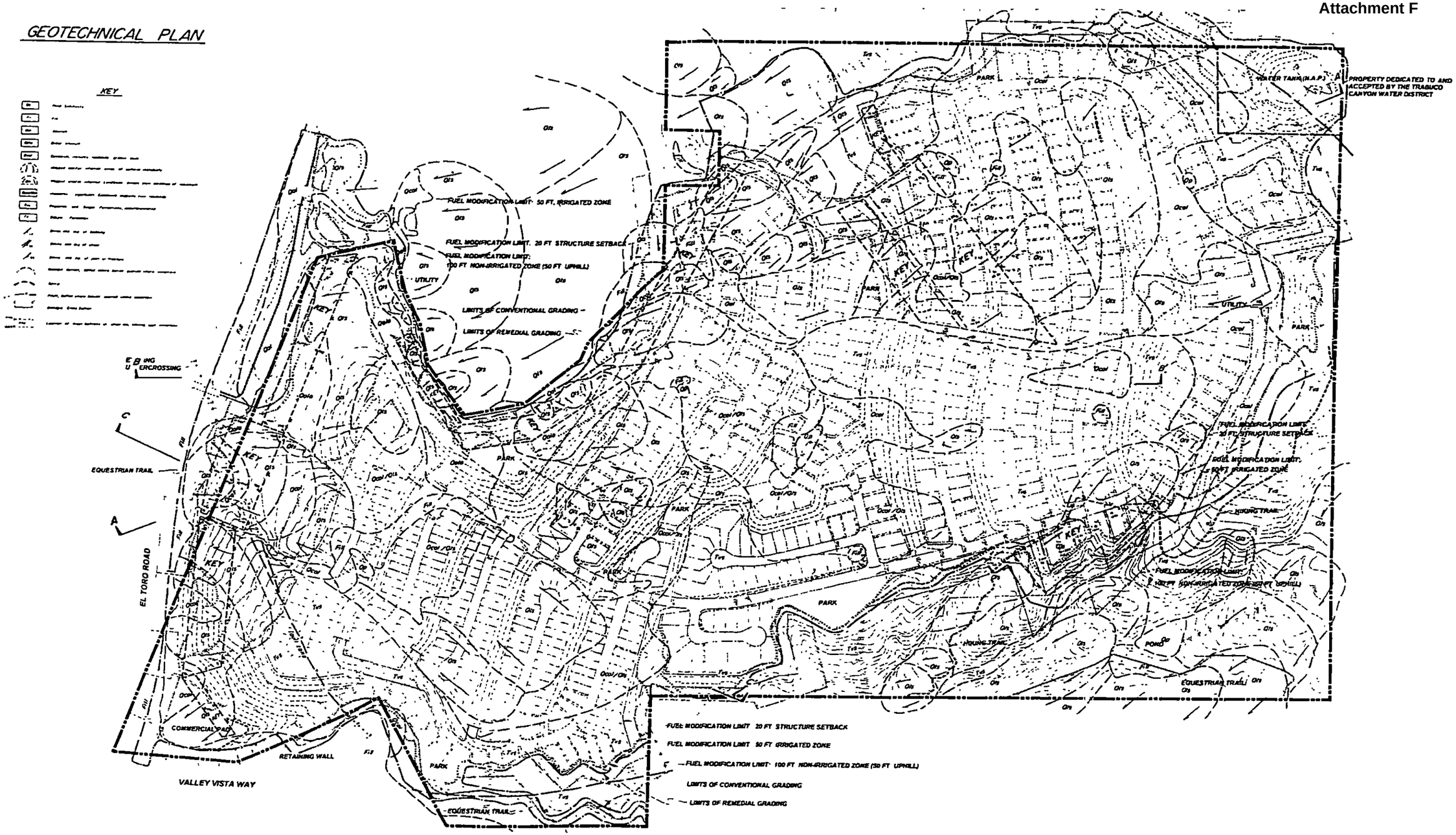
The project site is bordered on the north and south by generally west to northwest trending prehistoric faults. Between these faults, the bedding appears to be warped gently downward, resulting in generally southwest-dipping strata in the central and northern portions of the site and northeast-dipping bedding in the southern areas. Bedding planes under landslides dip at shallow angles (predominantly 6-17 degrees). This synclinal feature, which appears asymmetric, probably governed the configuration and direction of movement of the landslides on the subject property.

Fracturing or jointing was most prevalent in the landslide blocks and in areas within close proximity to faults. Nearly vertical open fractures were observed in some borings. Jointing, in general, dips steeply (between 45 and 90 degrees).

Colluvium (Qcol)

Colluvial deposits cover most of the slopes on the site to average depths of 2 to 3 feet. Within depressions related to landsliding and along the margins of ancient landslides, colluvial depths

GEOTECHNICAL PLAN



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: G.A. Nicholl & Assoc.

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Geotechnical Resources

EXHIBIT No. 16

range from 15 to over 40 feet. The colluvium consists of brown to black, most to very moist, soft to stiff, some areas, the colluvial deposits contain cobble to boulder-size cemented sandstone class.

Fill (Fill)

The soil placed in association with the construction of cattle watering ponds and/or access roads on the subject property is considered Uncertified Fill. The method and effort of compaction is not known. Fill placed essentially on St. Michael's Priory property for landslide stabilization is certified fill. However, since the certified fill is outside the subject property, no distinction between the two types of fill was made on the Geologic Map. Fill is also present beneath the completed portion of El Toro Road.

Ground Water

Ground water occurs on the site as free ground water within the alluvial deposits and bedrock, and as perched ground water within the various landslide blocks. The amount of ground water observed in several of the borings indicates that potential dewatering activities may require coordination with the Regional Water Quality Control Board.

Seismicity

Seismic risk in Southern California is a well recognized factor, and is directly related to geologic fault activity. Seismic damage potential depends on the proximity to active or potentially active fault zones, and on the type of geologic structures. In relative terms, seismic damage is generally less intense in consolidated formations, i.e., bedrock, than in unconsolidated materials, such as alluvium.

In Southern California, most of the seismic damage to man-made structures results from ground shaking and to a lesser degree from liquefaction and ground rupture caused by earthquakes along active fault zones. In general, the greater the magnitude of the earthquake, the greater the potential damage.

Seismic hazards at this site are attributed to ground shaking as a result of an earthquake epicentered on a nearby active fault. Ground rupture is not expected to occur on the property as a consequence of regional faults.

Exhibit 17 shows the geographical relationships of the site with respect to major earthquakes and active faults in Southern California. Regional seismicity is summarized in Table 7.

Hazardous Materials

No hazardous or toxic materials have been identified onsite.

Table 7
REGIONAL SEISMICITY

Fault System	Magnitude	Approximate Distance From Site in Miles
Fort Tejon	8.0+	70
Newport/Inglewood	6.3	15
Sierra Madre	6.5	35
San Gabriel	6.5	40
Raymond Hill	7.0	50
Tujunga	6.5	50
San Andreas	8.3	50
Cucamonga	6.5	40
Northridge	6.7	70

Some areas of the project site are underlain by unconsolidated alluvium which tends to amplify earthquake produced ground motion. However, these materials are planned to be removed within proposed structural areas of the site. Nevertheless, buildings should be designed to resist seismic lateral loads.

The potential for liquefaction at the site is considered to be relatively low, since poorly consolidated materials are to be removed.

4.2.2 EFFECTS FOUND TO BE INSIGNIFICANT

The following geotechnical effects were found to be less than significant as determined by the Initial Study/Environmental Assessment contained in Appendix C of this EIR. These factors are not evaluated in this EIR.

- The project site does not contain any active or potentially active faults. Onsite fault rupture hazards are considered insignificant.

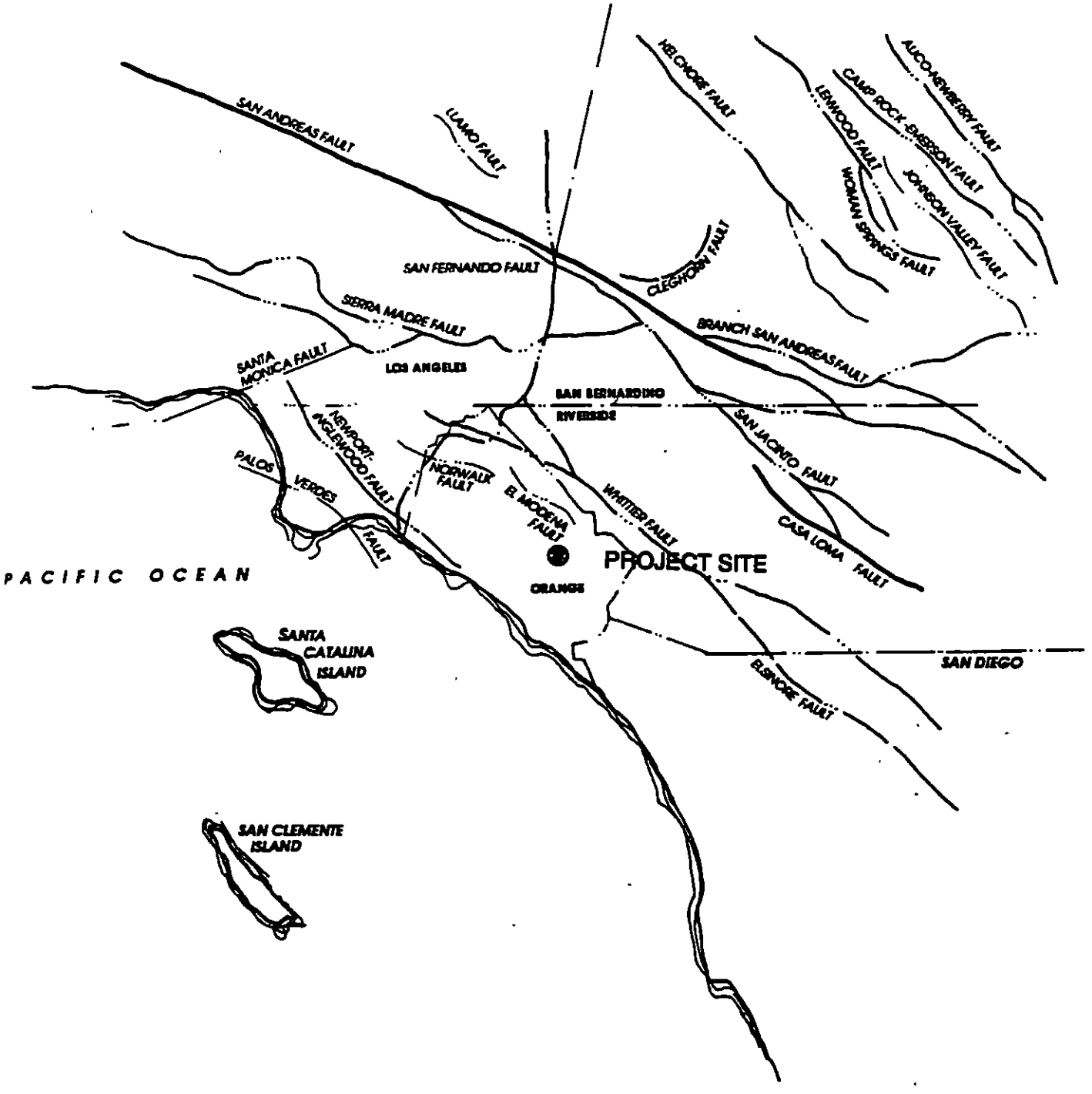
- The project site is not located adjacent to the Pacific Ocean or a large body of water and as such, is not subject to seiche or tsunami hazards.

4.2.3 PROJECT IMPACTS

Grading

Implementation of the proposed project will require the following grading actions:

- Multiple cuts and fills (2.6 million cubic yards) to achieve planned elevations and profiles, and associated access roadways.



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: N/A
Source: N/A

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Regional Seismicity

EXHIBIT No. 17

- Remedial grading (8.9 million cubic yards) to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills;

- Removal (clean out) of all or major portions of the graben materials and softer alluvium and colluvium under most of the variable thickness fills;

- Installation of appropriate subdrain systems within natural drainage courses and within stability fills prior to fill placement;

- Adequate foundation and slab subgrade conditioning for the proposed development, including overexcavation, capping and measures related to expansive soils;

- Achieving suitable surface gradients, to preclude ponding anywhere onsite and to control water run-off via paved/closed drainage devices.

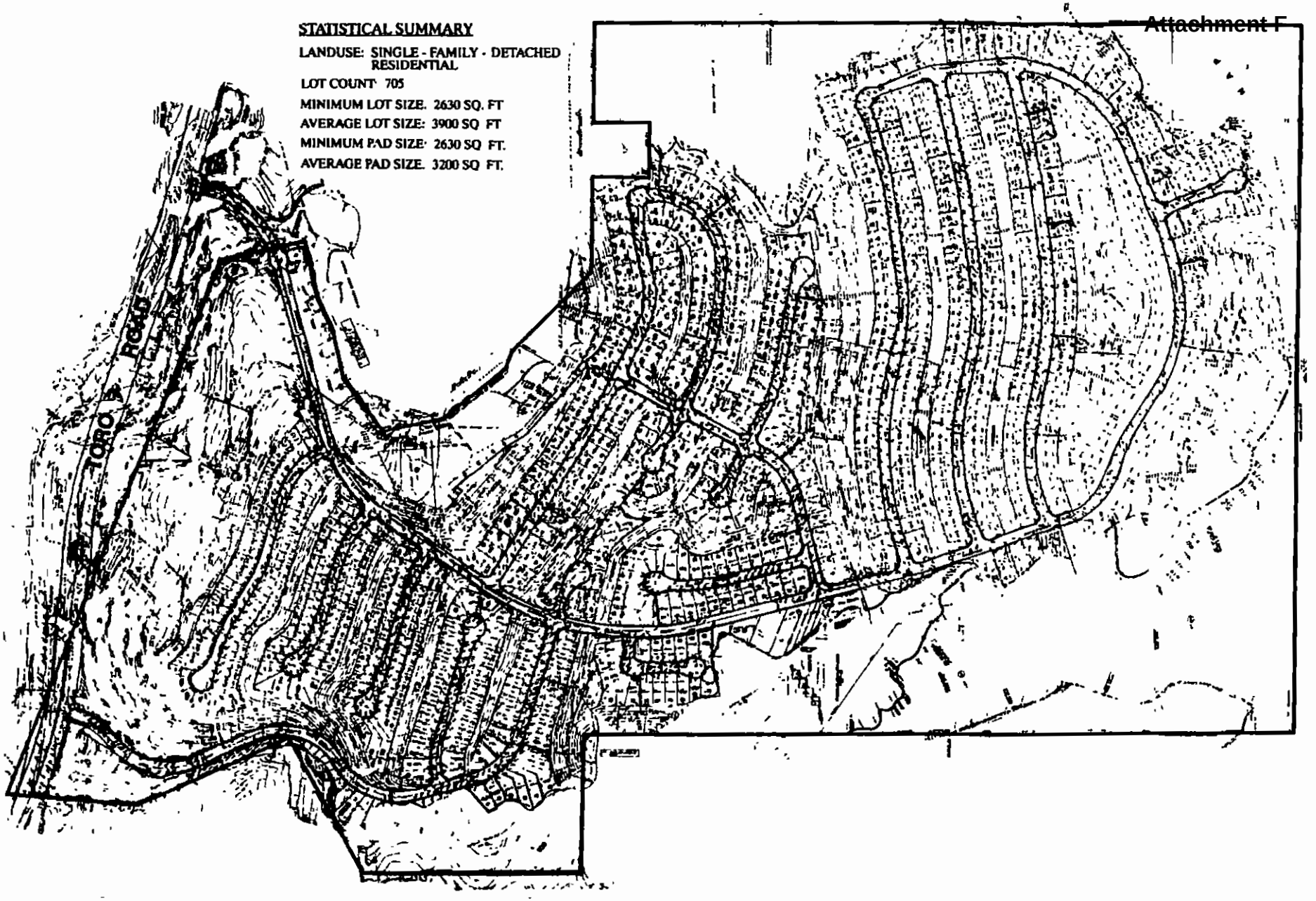
The conceptual grading plan is shown in Exhibit 18, with the limits of remedial grading depicted. Remedial grading volumes are summarized in Table 8.

Table 8
REMEDIAL GRADING QUANTITIES

Landslide Shear key	6,763,900 cy
Removals	1,315,210 cy
Buttresses	762,030 cy
Pad Over Excavation	40,440 cy
Total	**8,881,580 cy**

Implementation of the proposed remedial grading features, including removals/cleaners, buttress construction, subdrain systems, and temporary stockpiling would not result in any impact to the stability of adjacent properties.

Based on average daily grading of 30,000 cubic yards/day, total project-related grading (11.5 million cubic yards) would require approximately 18 months to complete. All preliminary grading would be completed in one continuous phase.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Conceptual Grading Plan

EXHIBIT No. 18

URBAN VISION

County of Orange P&DS

Scale: Not to Scale
Source: N/A

Geotechnical Conditions

The document entitled "Geotechnical Environmental Impact Report for Draft EIR No. 566 for Final Tract Map 10692 Saddleback Meadows Development" concludes that the site is geotechnically suitable for the proposed project. This conclusion is based on the following conditions:

1. Onsite bedrock and large landslide blocks have low settlement potential.

2. There is sufficient low to non-expansive materials to generate select fills

3. Onsite liquefaction is not expected.

4. Bedrock can be excavated; no blasting is anticipated.

5. Grading east of the Abbey property will produce fill in the gully area which will stabilize slopes on the Abbey property.

6. No known active faults are present at the site and surface rupture during earthquakes is not expected.

7. Planned remedial grading will reduce the potential for earthquake-induced landsliding.

8. The site does not lie within the 100-year flood zone.

9. Subsidence at the site due to fluid withdrawal should not occur since no major ground water aquifers or petroleum reservoirs are known to underlie the site.

10. Site grading will reduce the potential for surficial erosion and the consequential siltation of nearby Alisos Creek.

The geotechnical report also describes several unfavorable geotechnical conditions that could compromise the site's ability to support the project. Mitigation measures are recommended however, to correct these conditions and ensure that future development would be adequately supported. The geotechnical report identifies the following conditions as being unfavorable: presence of unstable landslides, occurrence of some moderately to highly expansive soils and bedrock units, and presence of adverse bedding conditions and some ground water.

These unfavorable conditions can be mitigated by implementing corrective grading concepts, such as the construction of buttresses and shear keys, placement of expansive materials in deep fills, buttressing of cut slopes where necessary, construction of canyon subdrains and back drains to minimize or eliminate the affects of ground water, removal of compressible materials and replacement with compacted fill, and construction of large buttress cuts in segments to reduce the possibility of backcut failure.

Impact Significance Criteria

Earth resource impacts resulting from the proposed project could be considered significant if it causes any of the following impacts:

A. Changes in the geologic substructure or unstable earth conditions.

B. Exposures of people of property to geological hazards like landslides, mudslides, ground failure or similar hazards.

C. Substantial disruptions, displacements, compaction or overcovering of the soil.

D. Substantial increase in wide erosion of soils.

E. Changes in siltation, deposition or erosion that may modify the channel of a river or stream, or the bed of any bay, inlet or lake.

4.2.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to the application of mitigation measures would result in significant impacts related to slope stability, landslides, mudslides, subsidence and erosion.

4.2.5 CUMULATIVE IMPACTS

Geotechnical impacts are not considered on a cumulative basis.

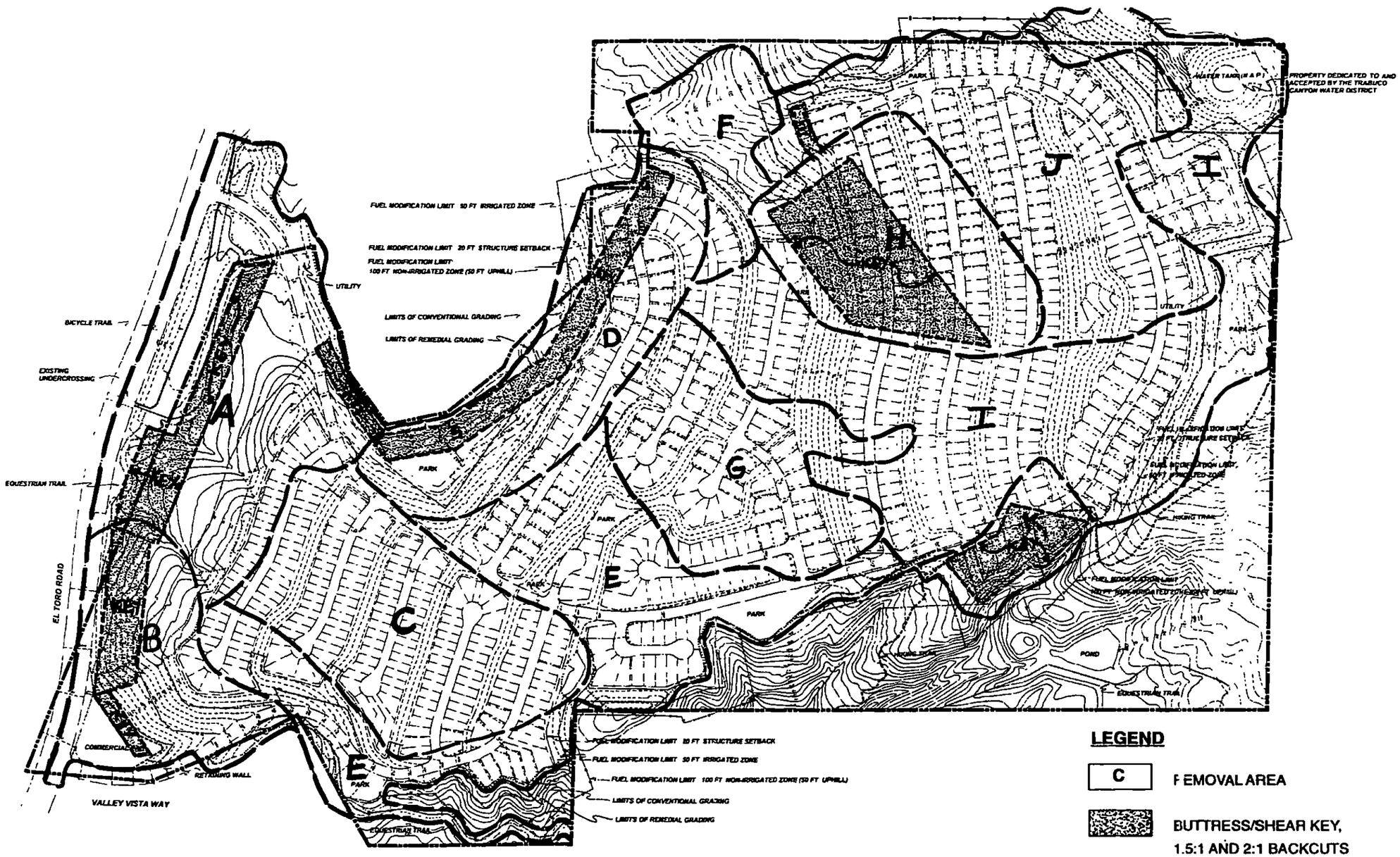
4.2.6 MITIGATION MEASURES

Project Design Features

PDF 2-1 A comprehensive remedial grading mitigation plan has been designed to stabilize the project site, in accordance with OCPDS requirements The plan is depicted in Exhibit 19, included in Appendix D and proposes measures including shear keys, buttresses, removals/recompaction to reduce hazards associated with landslides, erosion and subsidence.

Standard County Conditions and Mitigation Measures

SC 2-2 Prior to the issuance of a grading permit, the applicant shall submit a geotechnical report to the Manager, PDS/Subdivision and Grading Services Division for approval. The report shall include the information and be in a form as required by the Grading Manual.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: G.A. Nicoll & Associates, Inc.

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Geotechnical Hazard Mitigation Plan

EXHIBIT No. 19

SC 2-3 Prior to the issuance of any grading permits, the Manager, PDS/Subdivision and Grading Services Division, shall determine if the proposed grading complies with the grading illustrated in the plans approved by the decision-maker with regard to grading concepts, slope heights, slope ratios, and pad elevations and configuration. Significant deviations shall be reviewed by the decision-maker for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised application per Orange County Zoning Code Section 7-9-139 and 7-9-150.

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, offsite grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the onsite material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

Seismic

SC 2-7 Conformance with the Uniform Building Code and Orange County codes will insure that seismic considerations are incorporated into the structural designs. All recommendations of the geotechnical report shall be incorporated and utilized in the final construction plans for the parcels in a manner meeting the approval of the Manager, PDS/Building Permit Services Division. Larger buildings, structures with extraordinary architectural configurations, or those of tilt-up construction may require seismic analysis.

SC 2-8 The seismic exposure of the site shall be considered in the design of the proposed structures in a manner meeting the approval of the Manager, PDS/Building Permit Services Division.

SC 2-9 Geologic inspections shall be required during site grading for each parcel to confirm the absence of major faults in the local area in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-10 Prior to the issuance of any grading permits, if review of the grading plan for this property by the Manager, PDS/Subdivision and Grading Services Division, indicates significant deviation from the proposed grading illustrated on the approved tentative tract map, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative tract map; or, if a final tract/parcel map has been recorded, a new tentative tract/parcel map or a site development permit application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required.

SC 2-11 Prior to the issuance of any grading permit, if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to recordation of the tract/parcel map or prior to the issuance of any grading permit, whichever comes first.

SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-13 Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading

Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-14 Prior to the issuance of any grading or building permits, whichever comes first, the applicant shall provide, in accordance with criteria supply by EMA, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Monitoring Programs Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

Grading

AM 2-15 Multiple cuts and fills (2.6 million cubic yards) to achieve planned elevations and profiles, and associated access roadways shall be required.

AM 2-16 Remedial grading (8.9 million cubic yards) to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills shall be required. Back cut failure guidelines shall be provided to the Grading Services Division prior to issuance of grading permits.

AM 2-17 Removal (clean out) of all or major portions of the graben materials and softer alluvium and colluvium under most of the variable thickness fills shall be required.

AM 2-18 Installation of appropriate subdrain systems within natural drainage courses and within stability fills prior to fill placement shall be required.

AM 2-19 Adequate foundation and slab subgrade conditioning for the proposed development, including over excavation, capping and measures related to expansive soils shall be required.

AM 2-20 Achieving suitable surface gradients to preclude ponding anywhere onsite and to control water run-off via paved/closed drainage devices shall be required.

Compaction

AM 2-21 Wherever structural fills are to be placed, the upper 6 to 8 inches of the exposed

subgrade (after stripping and/or over excavation/clean-out) shall first be scarified and reworked. In general, the dry density of the in-situ (native) material shall be at least 85 percent of maximum. In the event that lower densities are determined by field testing to exist, the depth of over excavation will be determined onsite, given due consideration to the geology of the exposed material, as well as its relative location. It is at present expected that typical depths of over excavation will be on the order of 4 to 5 feet.

AM 2-22 Fill shall be placed in lifts of 6 to 8 inches (loose) in thickness. Rocks exceeding 4 inches in maximum dimension are best not incorporated within the upper fill zone (say 3 feet) where foundations and most utility systems are expected to be housed.

AM 2-23 In all fill areas where active gradients are steeper than 5:1 (horizontal:vertical), those surfaces shall be prepared to receive fill by excavating standard keyways and benches in a stair-step configuration.

AM 2-24 Any loosening of reworked or in-place (native material, consequent to weathering and/or passage of construction traffic, shall be made competent.

AM 2-25 Temporary fills, typically associated with access ramps built to accommodate grading equipment shall be subject to removal when their use is discontinued.

AM 2-26 The depths of excavation shall be subject to onsite monitoring by the Soil Engineer, normally during the actual removal operations. Any surface or subsurface obstructions, or questionable material encountered during grading, shall be brought immediately to the attention of the Soil Engineer, for his determination as to proper exposure, removal and/or processing as directed.

Material Selection

AM 2-27 After the site has been stripped of any debris, vegetation and organic soils, such exposed onsite shall be considered satisfactory for reuse in the construction of onsite fills, provided the organic content does not exceed 3% by volume. It is recommended that highly expansive soils not be placed within the upper 4 to 5 feet thick zone underlying final pad and street grades. More importantly, no such soil is to be placed (as backfill)within a horizontal distance equal to the wall height immediately behind retaining walls.

AM 2-28 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal offsite.

AM 2-29 All borrow sites shall be approved by the Soil Engineer/Geologist prior to onsite delivery. This will permit the timely allocation of such available materials for use on the project site.

Compaction Requirements

AM 2-30 Reworking/compaction shall include water addition or drying-out as needed, to bring the soils close to their optimum moisture content. All such reworked soils, placed as structural fills, shall be densified to achieve at least 90 percent relative compaction with reference to the laboratory compaction standard. The optimum moisture content and maximum dry density, for each identified soil type, will be determined in the laboratory in accordance with ASTM Test Designation D1557.

Shrinkage/Subsidence

AM 2-31 For preliminary earthwork computations, an approximate (overall) shrinkage factor of 12 percent shall be required, for the existing site soils. The above value does not include allowance for stripping nor handling losses.

AM 2-32 Subsidence shall be assumed as 3/4 to 1-1/2 inches for grading design purposes.

Excavating Conditions

AM 2-33 Excavation of onsite soils shall be accomplished with standard heavy duty earthmoving or trenching equipment. Some hard cemented sandstone beds were encountered during the field exploration on portions of the site and some minor, isolated blasting may be required to remove these hard materials.

AM 2-34 Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water (seepage) is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher site elevations as well as in cuts made late in the year. All nuisance water shall be accommodated in accordance with County requirements.

Expansion Potential

AM 2-35 Onsite materials are considered to be moderately expansive, generally. Soils of high and low expansivity are expected to comprise less than 25% of the overall pad areas. The expansivity of the actual soils placed within structural areas shall be verified during grading, prior to construction.

Utility Trenching

AM 2-36 The typical walls of temporary construction trenches shall stand nearly vertical, with only minor sloughing, provided the total depth does not exceed 4 to 5 feet. Shoring of excavation walls and/of flattening of side slopes may be required, if greater depths are necessary.

AM 2-37 Trenches shall be located so as not to impair the bearing capacity nor settlement under planned foundations. As a guide, trenches shall be aligned perpendicular to foundations, and the Structural Engineer so informed to modify the foundation at the crossing, as needed. All other trenches shall observe a lateral off-set equal to their total depth.

AM 2-38 Existing soils shall be utilized for trench backfill, provided they are essentially free of organic materials and oversized materials (rock, gravel, etc. in excess of 1-inch maximum size, unless within an approved soil matrix). Alternately, select granular materials (sand equivalent of 30 or greater) may be imported as backfill. Compaction should be accomplished entirely by mechanical means, subject to onsite assessment during pipeline installation.

Surface Drainage

AM 2-39 Positive surface gradients shall be provided away from slope tops per approved grading plans and adjacent to the future buildings, so as to direct surface water run-off away from structural areas and toward suitable discharge facilities.

Sulphate Content

AM 2-40 The soils sulphate content shall be ascertained during the concluding stages of rough grading, and the type of cement to be used determined at that time.

Grading Control

AM 2-41 All grading and earthwork shall be subject to on-going testing and observation by the applicants geotechnical consultant, including engineers, engineering geologists and/or technicians.

Slabs-on-Grade

AM 2-42 Concrete slabs shall be founded on approved (reworked) in-place soils and/or on properly compacted fill. The subgrade shall be proof-rolled just prior to construction to provide a firm, unyielding surface, especially if the surface has been disturbed by the passage of time and/or exposure to construction traffic.

AM 2-43 Floor slabs shall be at least 4 inches thick. The Finished Floor Level should be at least 6 inches above highest adjacent exterior grade. Joints shall be provided.

AM 2-44 If flooring that would be affected by moisture is to be used, the slab shall be underlain by 2 inches of sand, with a 10-mil plastic sheet between the sand and the subgrade.

AM 2-45 Precautions in respect of expansive soils shall be taken.

Foundations

AM 2-46 The proposed structures shall be supported on conventional spread footings, supported into approved compacted fill and/or reworked native material.

Long Term Settlements

AM 2-47 The grading concept, as presently proposed, includes several areas where deep fill will result, exceeding 50 feet in depth. These soil masses may experience significant settlements, with time, of 4 to 6 inches or more. Such downward movements can be tolerated by most improvements, provided these occur at a reasonably uniform rate and rather evenly over a well distributed area. However, the degrees and rates of settlement shall be analyzed during the final design phase.

Phasing of Earthwork

AM 2-48 Unstable Ground
Initial stability evaluations have determined that several natural slopes subject to grading are inherently unstable. Removals, therefore, shall be planned and carried out with care in order to minimize deep-seated, in-construction failures. Typically, about 10 percent of back cuts for buttresses will fail during grading. Allowances for schedule and budget contingencies should be made.

AM 2-49 Required Clean-Out Work
Prior to improving the gross stability of hillsides, clean-out work will be necessary along their lowest (toe) elevations. Whereas such selective removals are essential prior to placement of additional fill, this process can trigger undesired slippage. Therefore, selective unloading of the slide mass shall be required before stabilization can effectively begin.

AM 2-50 Slide Unloading
Where existing slope faces are marginally safe in their present condition, the higher portions of each such slide shall require removals toward the top, prior to clean-out, and subsequent loading at the toe.

4.2.7 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project, with the mitigation measures outlined in Section 4.2.6, would not result in any unavoidable adverse geotechnical impacts.

4.3 WATER/HYDROLOGY

The Hydrology Report has been prepared for the proposed project by Hunsaker and Associates and is included in its entirety in Appendix L of the Draft EIR.

4.3.1 EXISTING ENVIRONMENTAL SETTING

The project site is located within the boundaries of two primary watershed areas: 1) Aliso Creek and 2) Oso Creek. Approximately 75% of the site currently drains into Aliso Creek, with 25% draining to Oso Creek. Regional hydrology is shown in Exhibit 20.

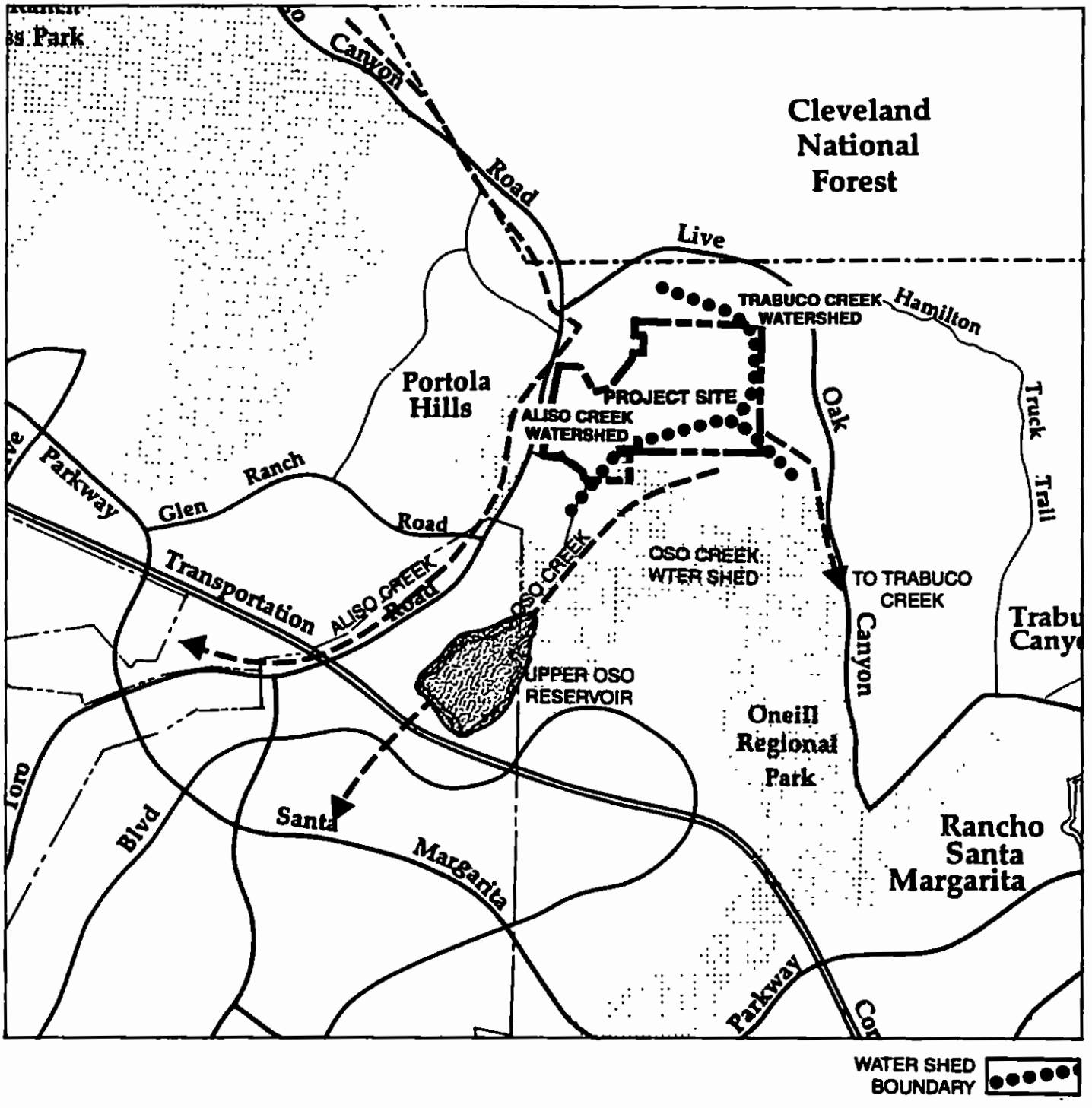
Regional Hydrology

Aliso Creek originates in the Cleveland National Forest, extending for 19 miles to its outlet into the Pacific Ocean, at Aliso Beach. Aliso Creek's watershed encompasses 23,000 acres, and includes natural open space, urban development, regional parks and other recreational facilities. Aliso Creek is formally designated an "impaired" in terms of water quality by the State Water Quality Assessment.

Aliso Creek is located immediately west of the project site, east of El Toro Road adjacent to the northwest portion of the site, crossing under El Toro Road, and west of El Toro Road adjacent to the southwest portion of the site. Aliso Creek has a Q_{100} flow of 3135 cfs at the project's northern boundary.

Existing onsite drainage to Aliso Creek flows from the north and west portion of the property to the west property boundary in a generally westerly direction into three separate facilities which cross under El Toro Road: (a) in the north, these flows are conveyed southwest through a double 96-inch corrugated steel pipe facility (existing Q_{100} is 3,135); (b) in the south, near Valley Vista and El Toro Road, flows are concentrated into a 24-inch reinforced concrete pipe and then conveyed into a 30-inch reinforced concrete pipe; (c) in an area located between (a) and (b), additional offsite flows are collected into a 24-inch reinforced concrete pipe. Flows from each of these three facilities (a, b and c) outlet on the west side of El Toro Road into the natural drainage course of Aliso Creek. Aliso Creek flows southwest through a series of natural courses and man-made facilities eventually outletting into the Pacific Ocean.

The southerly 25% of the project site is located within, and drains into, the Oso Creek watershed. South of the project site, Oso Creek flows are concentrated into a concrete pipe system which increases in size from 42-inch to 54-inch. This system runs in a southwesterly direction through Tract 12724 (Hidden Ridge) beneath Yellow Pine Lane and Meadow Ridge Drive. Flows then outlet onto a concrete energy dissipater and thence back into the natural drainage course of Oso Creek which delivers its flow into the upper Oso Reservoir. Flows collected within the reservoir are then directed either over or through a spillway facility and continue southwest in Oso Creek (which alternates as a natural course or concrete lined channel) to south flowing facilities on the west side of the Golden State Freeway (Interstate 5). Eventually these flows drain into San Juan Creek which outlets into the Pacific Ocean at Doheney State Beach. A small area at the extreme eastern portion of the site drains into the Trabuco Creek watershed.



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Regional Hydrology

EXHIBIT No. 20

URBAN VISION

County of Orange P&DS

Scale: N/A

Source: N/A

Onsite Drainage

The majority of existing onsite drainage currently sheet flows to one of four (4) defined onsite drainage courses as shown in Exhibit 21. Existing onsite drainage is summarized in Table 9.

Table 9
EXISTING ONSITE DRAINAGE

Sub Area	Watershed	Q_{100} cfs
A	Aliso Creek	374.5
B	Aliso Creek	19.3
C	Aliso Creek	42.3
D	Oso Creek	103.5

Drainage Area A

The primary onsite drainage drains the northern half of the project site (Drainage Area A) in a generally east to west direction along the northern project boundary. This drainage has been highly eroded during previous winter storm events, and shows evidence of unstable banks. Drainage Area A has a total contributory Q_{100} of 374.5 cfs at the El Toro road 96-inch double pipe undercrossing.

Drainage Area B

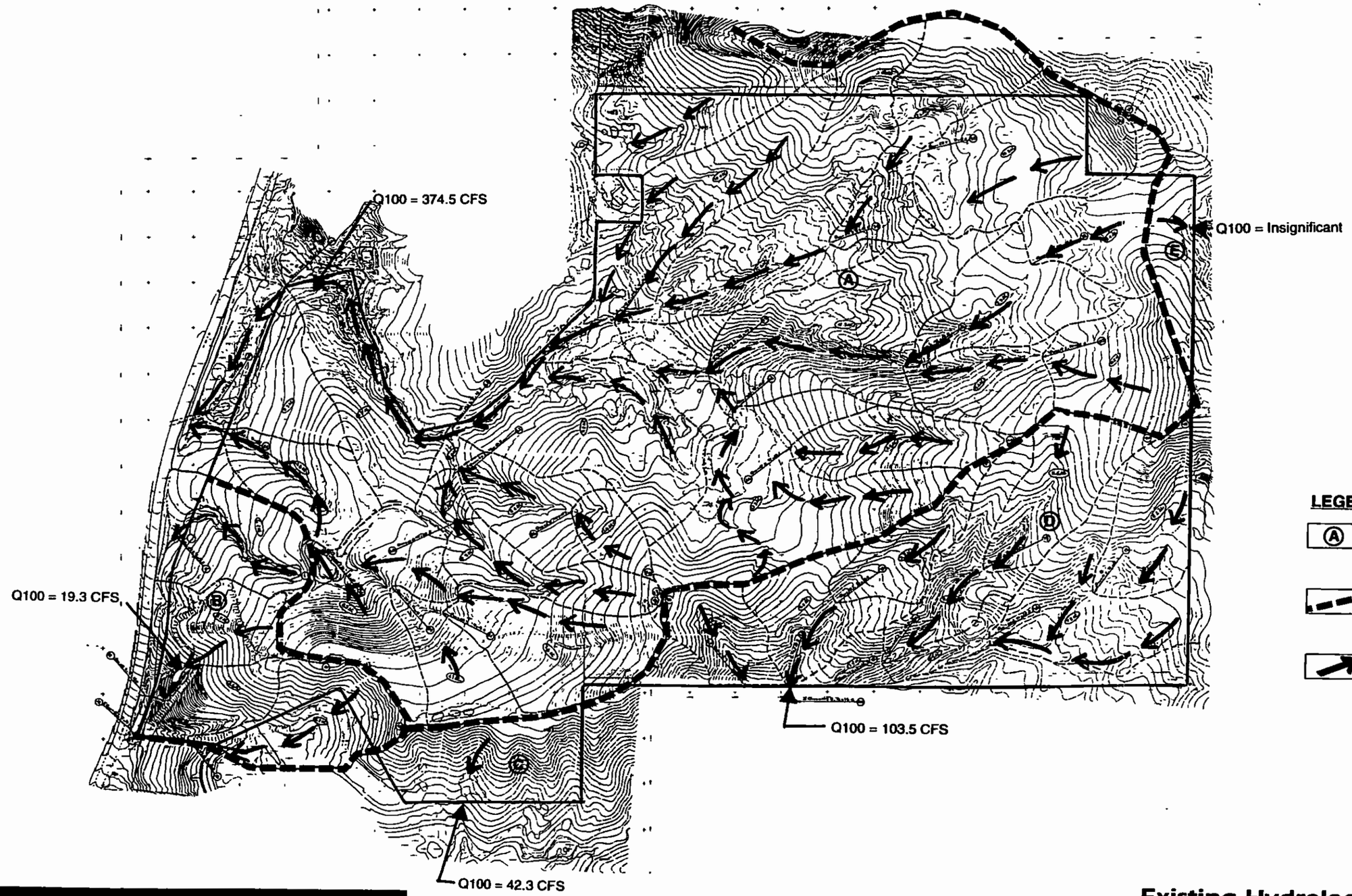
Drainage Area B drains a 6.0 acre portion of the project site to a sump condition south of the primary drainage course. A Q_{100} of 19.3 cfs drains under El Toro Road in a 24-inch RCP, discharging to Aliso Creek, west of El Toro Road.

Drainage Area C

Drainage Area C drains the southwest portion of the site to the southwest corner of the site, where stormwater crosses under El Toro Road in a 24-inch RCP with a Q_{100} cfs stormflow volume of 42.3 cfs.

Drainage Area D

Drainage Area D drains the southeastern portion of the site to Oso Creek in a natural drainage course. Area D has an existing Q_{100} stormflow volume of 103.5 cfs.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: 1"=400'
Source: Hunsaker & Associates

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Existing Hydrology

EXHIBIT No. 21

Livestock Ponds

Eight (8) ephemeral livestock watering ponds are located on the project site and were created by damming tributary drainages in the early 1920's. These ponds serve to retain storm flows until full, until they breach existing earthen dams and continue downstream.

Drainage Assessment Fees

A drainage assessment fee of $74,000 was paid to the County at the time Tract Map 10692 recorded in 1988, and covered the project's pro-rata share of regional drainage facilities.

4.3.2 EFFECTS FOUND TO BE INSIGNIFICANT

The following hydrology effects were found to be less than significant as determined by the Initial Study/Environmental Assessment contained in Appendix C of this EIR. These factors are not evaluated in this EIR.

- Implementation of the proposed project would not result in exposure of people or property to flood hazards.
- The project would not result in changes in the amount of surface water in a water body, changes in currents of the direction of water movement.
- The project would not result in the quantity of groundwater through direct additions or withdrawals, alteration of the rate of flow of groundwater or impacts to groundwater quality.

4.3.3 PROJECT IMPACTS

Implementation of the proposed project will result in the introduction of impervious surfaces (streets, driveways, residential units) and will result in a decrease in the area available for stormwater percolation and a subsequent increase in stormflow runoff. Implementation of the proposed project will result in substantial landform modification, redirecting site drainage throughout the site.

Post development drainage is proposed to be accommodated through a series of storm drains, catch basins and inlet/outlet structures designed to accommodate a 100 year storm event. The proposed storm drain facilities parallel to El Toro Road will join the existing dual 96-inch diameter CSP storm drain which currently crosses underneath El Toro Road. The proposed Orange County Flood Control District facility J01 storm drain plans were approved and signed by the County of Orange on November 16, 1988. The storm drain facilities consist of extending the dual 96-inch CSP storm drain to connect with an open channel riprap facility and a 14-foot by 12-foot reinforced concrete box culvert (RCB) that will run underneath the proposed entry road to Saddleback Meadows.

The on-site private storm drain improvement plans were approved and signed by the County of Orange on November 15, 1988. All of the proposed storm drain system is to be constructed of reinforced concrete pipe (RCP) ranging in size from 18 inches to 48 inches.

All hydraulic calculations and the related hydrology have been previously approved by the County of Orange. Minor updating of the hydrology might be needed in the future depending on input from the County during review of the 40-scale rough grading plans. Proposed drainage facilities are shown in Exhibit 22 and summarized in Table 10.

Table 10
PROPOSED DRAINAGE FACILITY SUMMARY

Storm Drain	Size	Q_{25} cfs (Discharge	Q_{100} cfs (Discharge)	Outlet Location / Connector
A	27-48 inch	277	300	Aliso Creek
B	18-24 inch	68.2	--	Line "A"
E	30 inch	48.5	--	Line "A"
H	27 inch	41.2	--	Line "A"

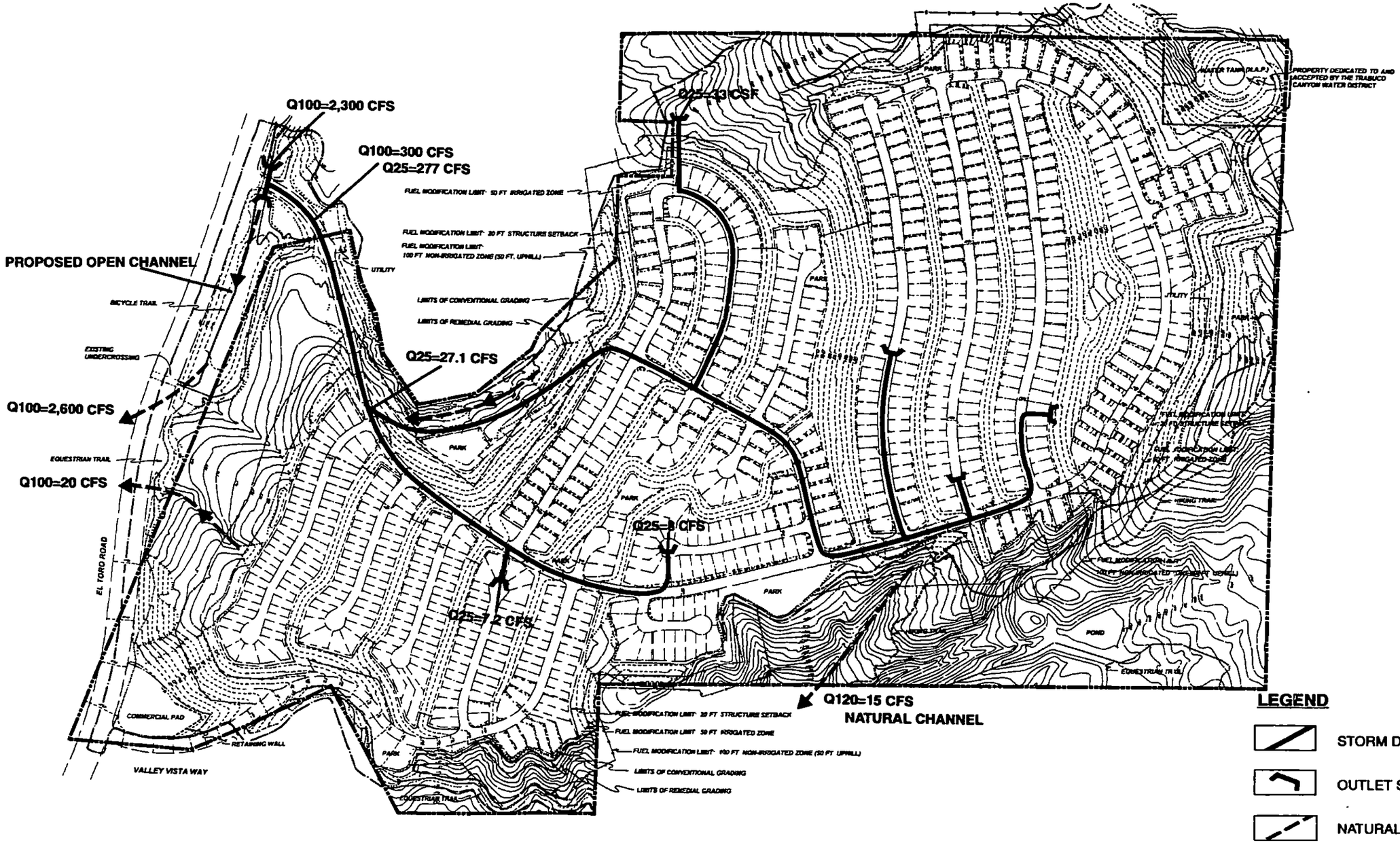
Water Quality

Onsite surface and groundwater quality has not been evaluated from an analytical constituent standpoint due to: 1) its location at the headwaters of Aliso Creek and Oso Creek, 2) the undeveloped nature of the project site and upstream areas, and 3) the lack of pollutant generation sources. Ongoing livestock grazing activities have resulted in continued contamination of the onsite watering ponds with cattle manure. All organic material will be removed during grading operations.

Discharge of increased and concentrated runoff volumes into onsite natural drainage courses would result in increased erosion and associated sedimentation, primarily due to the unstable condition of drainage course banks.

Urban runoff associated with proposed onsite streets, driveways and manufactured slopes would be directly discharged into onsite drainage courses ultimately discharged to Aliso and Oso Creeks and the Pacific Ocean. Urban runoff constitutes would typically include oil, grease, cleaning products, herbicides, pesticides and fertilizers. Project urban runoff would be subject to an National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Discharge Permit, issued by Regional Water Quality Control Board (RWQCB). In addition, the proposed project is subject to the County's NPDES requirements.

Project related post-development urban runoff would incrementally impact the ability of Aliso Creek to recover from its currently impaired designation.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: Hunsaker & Associates

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Conceptual Drainage Plan

EXHIBIT No. 22

Impact Significance Criteria

An impact is considered significant if:

A. There will be substantial and adverse increased inundation, sedimentation and/or damage from water forces to the subject property or downstream areas; the project will adversely affect the collection and conveyance of runoff and sediment. The design hydrologic standard is the 100 year storm event with an 85 percent (85%) confidence level.[7]

B. Runoff from the completed project area would adversely impact the designated beneficial uses in the runoff receiving watershed, or would substantially impact Public Agency effects to improve any currently recognized conditions of water quality impairment.

4.3.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project would increase onsite storm flows by 17-54% over existing Q_{100} levels. Discharge of urban runoff, discharge of post development runoff into onsite natural drainage courses would result in increased erosion and sedimentation. Urban runoff would be directly discharged into onsite natural drainage courses, resulting in impacts to downstream water quality in Aliso Creek and ultimately the Pacific Ocean.

4.3.5 CUMULATIVE IMPACTS

Implementation of the proposed project, in conjunction with related projects located within the watershed of both Aliso Creek and Oso Creek, would result in increased flows and increased urban runoff, ultimately discharging into the Pacific Ocean. Cumulative impacts to Oso Creek would also effect surface flows and water quality in San Juan Creek. These related projects are located within several jurisdictions, including the County of Orange, the Cities of Mission Viejo, Lake Forest, Aliso Viejo, Laguna Niguel, San Juan Capistrano, Dana Point and Laguna Beach, and Doheney State Park.

4.3.6 MITIGATION MEASURES

Project Design Features

PDF 3-1 A master drainage concept has been incorporated into the project design to mitigate hydrology impacts to existing OCPDS requirements and standards. The master drainage concept, shown in Exhibit 22, and contained in its entirety in Appendix L of this EIR, proposes a series of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to control project drainage.

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[7] *These criteria represent refinements of CEQA Criteria that address flooding and runoff that have been utilized in other County of Orange EIRs.*

Standard County Conditions and Mitigation Measures

SC 3-2 Prior to the issuance of any grading permits the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. Prepare a drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

b. Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

SC 3-3 Prior to the issuance of any grading permits the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. Design and convey construction funds for surface drainage improvements; and

b. Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

c. Dedicate the associated easements to the County of Orange, if determined necessary.

SC 3-4 Prior to the issuance of any certificates of use and occupancy, said improvements shall be constructed in a manner meeting the approval of the Manager, PF&R/Construction Division.

SC 3-5 Prior to the issuance of any grading permit, and if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the upstream and/or downstream property owners permitting drainage diversions and/or unnatural concentrations.

SC 3-6 Prior to issuance of any building permits, the applicant shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division, including payment of fees and the construction of the necessary facilities.

SC 3-7 Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering design and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

Water Quality

SC 3-8 Prior to issuance of building permits, or grading permits, whichever come first, permit

applicant shall submit for approval of the Manager, PDS/Subdivision and Grading Services Division, a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used onsite to control predictable pollutant runoff. This WQMP shall identify at a minimum the routine structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of the BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association, lessee, etc.); and, shall reference the location(s) of structural BMPs.

SC 3-9 Prior to the issuance of precise grading permits or building permits, whichever comes first, the applicant shall submit and obtain approval from the Manager, PDS/Subdivision and Grading Services Division, of a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on-site to control predictable pollutant runoff. This WQMP shall identify, at a minimum, the routine, structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association shall reference the location(s) of structural BMPs.

Flood Plain Elevation

SC 3-10 Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

Easements

SC 3-11 Prior to the issuance of any certificates of use and occupancy, the applicant shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, PDS/Subdivision and Grading Services Division, for review and approval. Further, a copy of the approved easement shall be furnished to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificate of use and occupancy.

4.3.7 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project, in conjunction with the above outlined mitigation measures, would result in no unavoidable adverse impacts to surface or groundwater hydrology.

Implementation of identified Best Management Practices mitigation measures would reduce potential adverse water quality impacts to less than significant levels.

4.4 TRANSPORTATION/CIRCULATION

The traffic analysis entitled, "Saddleback Meadows (TT 10692) Growth Management/CMP Traffic Analysis (revised), Orange County, California", dated May 19, 1997, has been prepared for the proposed project by Robert Kahn, John Kain (RKJK) Associates, and is included in its entirety in Appendix F of this Draft EIR.

4.4.1 EXISTING ENVIRONMENTAL SETTING

Site Access

Access to the project site is currently provided from El Toro Road, and Valley Vista Way, located within the Hidden Ridge/Hidden Hills Community. The regional circulation system is shown in Exhibit 23.

Regional Transportation Facilities

The Orange County Master Plan of Arterial Highways shows the location and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan and serves to coordinate future arterial highways between local jurisdictions. Exhibit 25 illustrates the typical Orange County cross-sections and design capacity values for various roadway classifications.

Existing roadways in the project area include the Foothill Transportation Corridor (SR-241), Santiago Canyon Road, El Toro Road, Marguerite Parkway, Portola Parkway, Santa Margarita Parkway, Live Oak Canyon Road, Ridgeline Road, Saddleback Ranch Road and Glenn Ranch Road. The Orange County Master Plan of arterial highways is shown in Exhibit 24.

Foothill Transportation Corridor (SR-241) has recently been extended southerly to Antonio Parkway. This corridor, in conjunction with Portola Parkway and Irvine Boulevard, now provides a connection from the communities of Coto de Caza and Santa Margarita to the City of Tustin. SR-241 is a limited access toll road facility, with on-ramps/off-ramps located near the project at Portola Parkway and Los Alisos Boulevard. Once completed, SR-241 will traverse inland Orange County from San Clemente at the south to its intersection with the Eastern Transportation Corridor on the north, in the City of Tustin.

Santiago Canyon Road is classified as a Primary (four-land divided) Arterial highway on the Orange County Master Plan of Arterial Highways (MPAH). It is currently two lanes in the vicinity of the site. Santiago Canyon Road currently accommodates approximately 10,000 to 14,000 average daily trips (ADT) in the project area.

El Toro Road is classified as a Major Arterial highway south of Live Oak Canyon Road on the

Orange County MPAH. It is partially constructed to its Master Plan classification near Santa Margarita Parkway and has yet to be improved (two lanes) in the vicinity of the project site. El Toro Road currently accommodates approximately 13,000 to 23,000 ADT in the project area.

Marguerite Parkway is classified as a Primary (four-lane divided) Arterial highway south of El Toro Road on the Orange County MPAH. Marguerite Parkway in the project area has been fully constructed and currently carries approximately 12,000 ADT in the project area.

Portola Parkway is classified as a Major (six-lane divided) Arterial highway north of El Toro Road to Alton Parkway on the Orange County MPAH. It is fully improved and currently accommodates approximately 20,000 to 22,000 ADT in the project area.

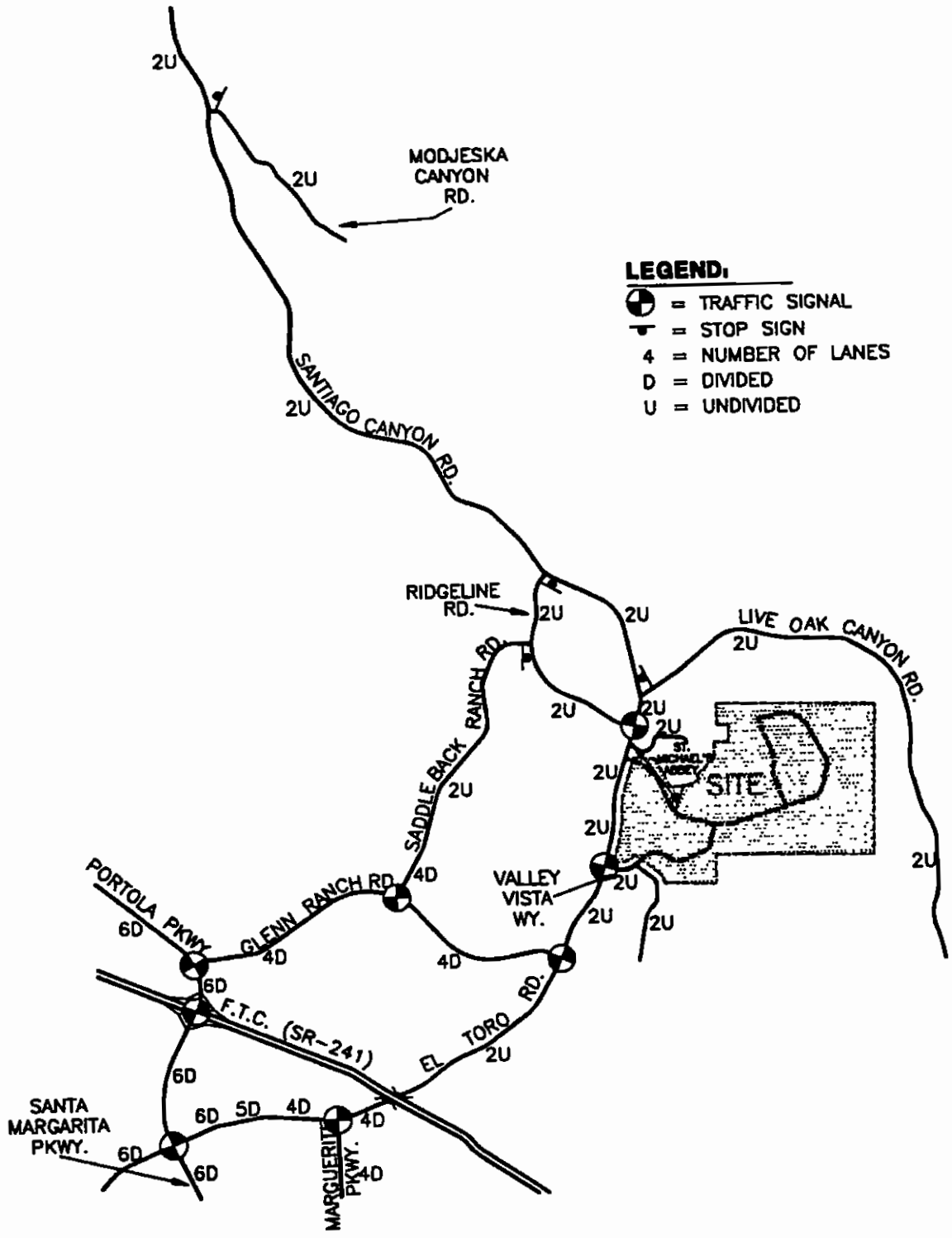
Santa Margarita Parkway is classified as a Major (six-lane Divided) Arterial highway on the Orange County MPAH. It has been fully improved to its Master Plan of Arterial Highways classification in the project area. Traffic volumes on Santa Margarita Parkway are approximately 26,000 ADT in the project area.

Live Oak Canyon Road is currently two lanes east of El Toro Road. It currently carries approximately 5,000 ADT in the project area.

Ridgeline Road is currently two lanes west of El Toro Road. It currently carries approximately 1,000 to 2,000 ADT in the project area.

Saddleback Ranch Road is currently two to four lanes in the project area. It currently carries approximately 3,000 ADT.

Glenn Ranch Road has recently been completed to provide a direct connection between El Toro Road south of the project site and Portola Parkway north of the Foothill Transportation Corridor (SR-241). Glenn Ranch Road is classified as a Primary (four-lane divided) Arterial highway on the Orange county MPAH. It is fully constructed and currently carries approximately 5,000 ADT in the project area.



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Regional Circulation System

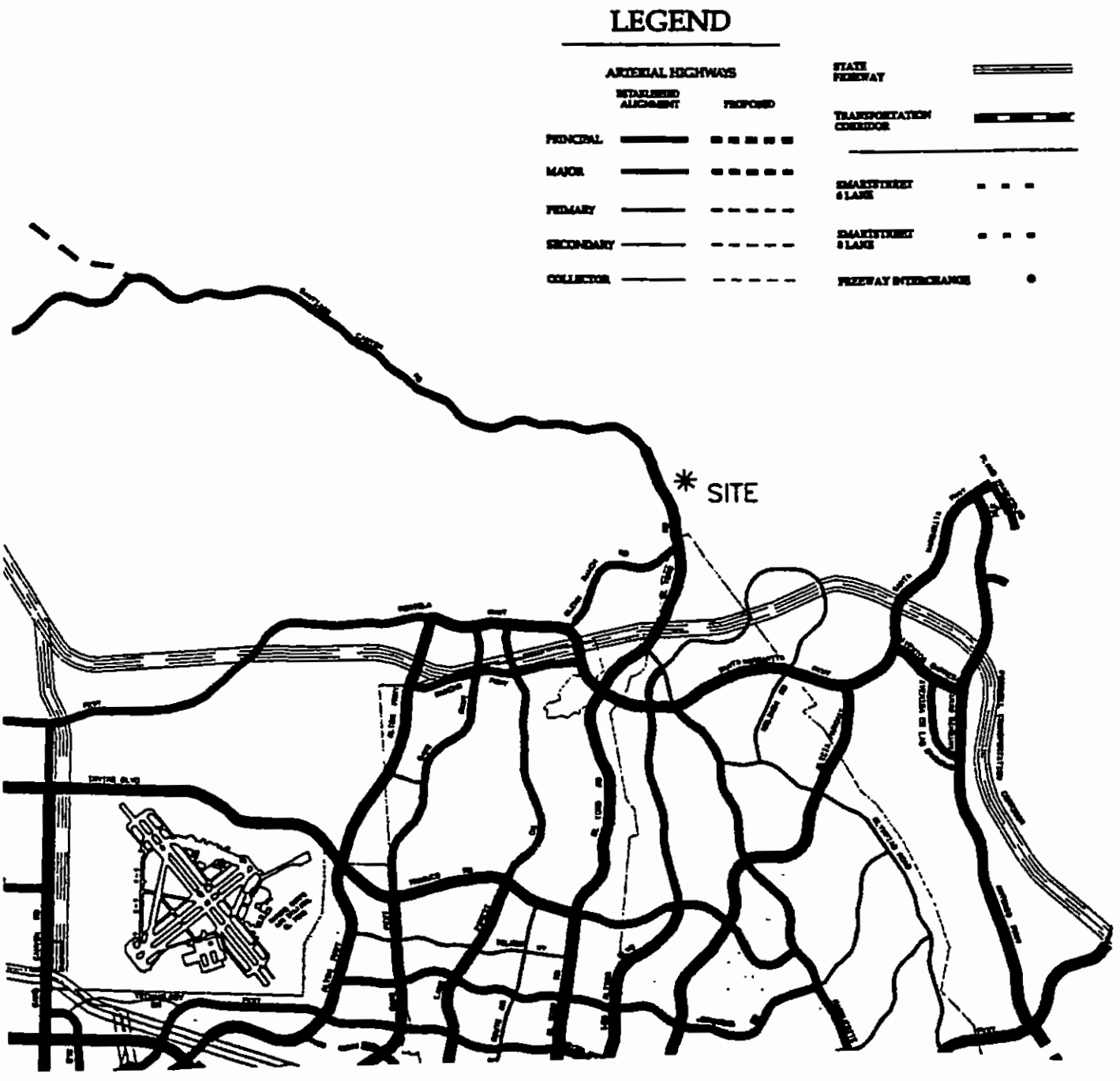
EXHIBIT NO. 23

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Orange Co. Master Plan of Arterial Highways

EXHIBIT No. 24

URBAN VISION

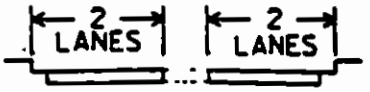
County of Orange P&DS

Scale: N/A
Source: RKJK

CLASSIFICATION

PRINCIPAL
8 Lane Divided Roadway
Accommodates 45,000 to 60,000 ADT

MAJOR
6 Lane Divided Roadway
Accommodates 30,000 to 45,000 ADT



PRIMARY
4 Lane Divided Roadway
Accommodates 20,000 to 30,000 ADT

SECONDARY
4 Lane Undivided Roadway
Accommodates 10,000 to 20,000 ADT

COMMUTER
2 Lane Undivided Roadway
Accommodates 7,500 to 10,000 ADT

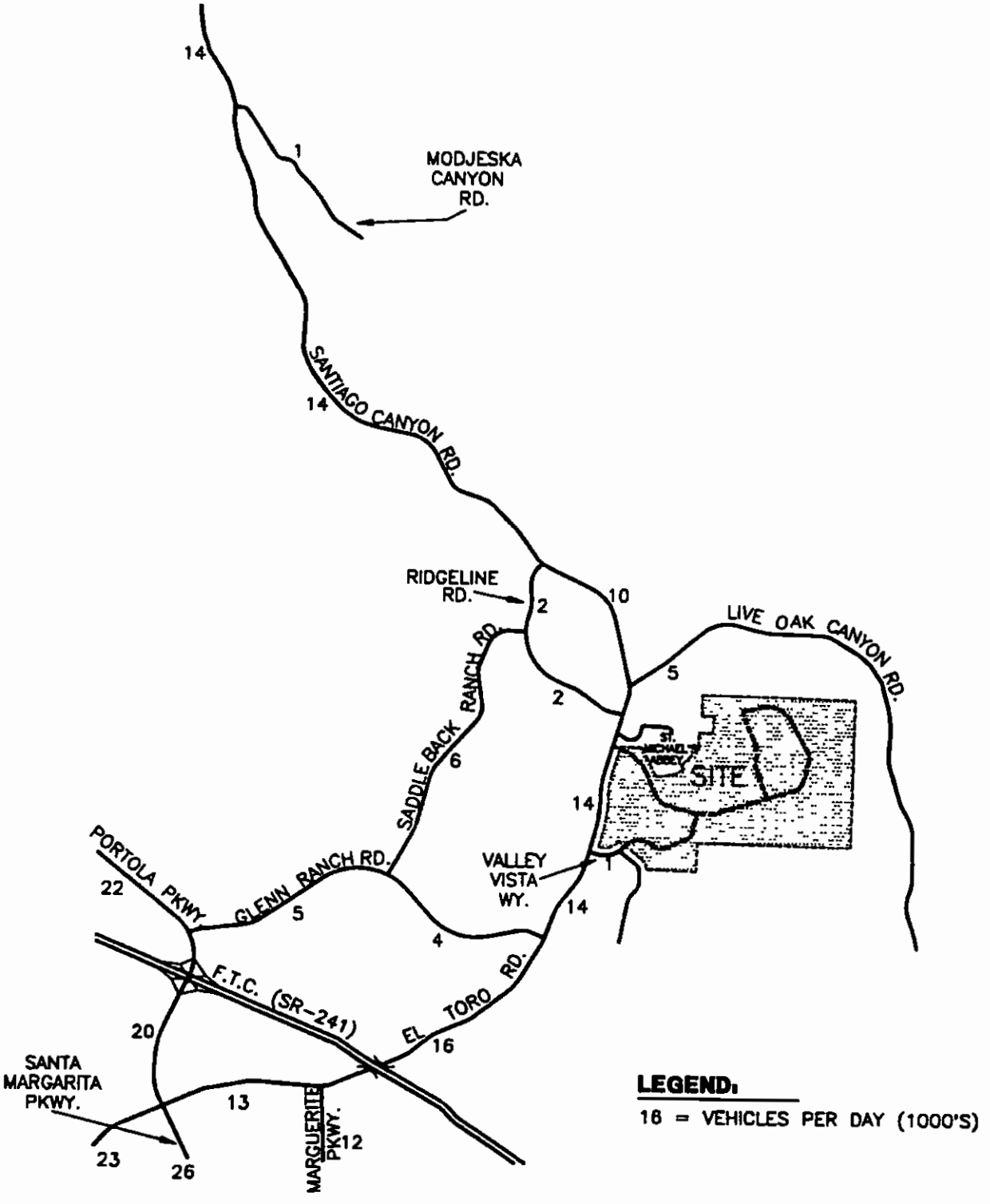
SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Orange Co. Cross Sections & Level of Service "C" Values

EXHIBIT No. 25

URBAN VISION

County of Orange P&DS
Scale: N/A
Source: RKJK



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Existing Average Daily Traffic (ADT)

EXHIBIT No. 26

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

N

Traffic Volumes and Conditions

Existing average daily traffic volumes on arterial highways throughout the project area are shown in Exhibit 26. ADT volumes are based upon the traffic data collected by the County of Orange and counts made by the traffic engineer in June, 1995. Existing ADT and Level of Service (LOS) information for project area roadways is contained in Table 11.

Table 11
EXISTING INTERSECTION ICU and LOS

Intersection	PEAK HOUR ICU		PEAK HOUR LOS	
	AM	PM	AM	PM
Santiago Canyon Road (NS) at:				
• Modjeska Canyon Road (EW)	0.82	0.57	D	A
• Ridgeline Road (EW)	0.78	0.55	C	A
El Toro Road (NS) at:				
• Live Oak Canyon Road (EW)	0.74	0.45	C	A
• Ridgeline Road (EW)	0.62	0.53	B	A
• Valley Vista Way (EW)	0.58	0.45	A	A
• Glenn Ranch Road (EW)	0.54	0.56	A	A
Saddleback Ranch Road (NS) at:				
• Glenn Ranch Road (EW)	0.29	0.33	A	A
Marguerite Parkway (NS) at:				
• El Toro Road (EW)	0.32	0.43	A	A
Portola Parkway (NS) at:				
• Glenn Ranch Road (EW)	0.54	0.45	A	A
• Foothill Transportation Corridor (EW)	0.40	0.55	A	A
• El Toro Road (EW)	0.40	0.49	A	A

As shown, all project area intersections are operating at an acceptable level of service.

Traffic signals appear to presently be warranted at the following unsignalized intersections:

Santiago Canyon Road at:

- Ridgeline Road

El Toro Road at:

- Live Oak Canyon Road

The project site is presently located within four roadway fee programs, as summarized in Table 12.

Table 12
ROADWAY FEE PROGRAMS

Program	Cost
• Eastern/Foothill Transportation Corridor Road Fee Program	$ 3,594/du - residential $4.99/sf - commercial
• Santiago Canyon Road Major Thoroughfare and Bridge Fee Program and Safety Improvement Program	$ 510/du - residential $0.45/sf - commercial
• El Toro Road Fee Program	$ 1,026/du - residential $5,948/ac - commercial
• Foothill Circulation Phasing Program Including Special FTC Fees	$ 2,914/du - residential $2.62/sf - commercial
Total	**$ 8,044/du - residential** **$8.34/sf - commercial**

Bikeways

The Master Plan of Countywide Bikeways contained in the General Plan Transportation Element identifies El Toro Road and Live Oak Canyon Road as Class 1 trails. OCTA recently adopted a *Commuter Bikeways Strategic Plan* (CBSP) which identifies a network of proposed regional bikeways that link residential areas with activity centers and intermodal transfer points. The CBSP replaces the County's Master Plan of Countywide Bikeways as the countywide commuter bike plan.

The CBSP identifies El Toro Road as a Class I bikeway and Live Oak Canyon Road as a Class II bikeway. Funding for regional bikeways on the Strategic Plan is provided by the SB-821 Bicycle and Pedestrian Facilities Program which is administered by OCTA. Funds for regional bikeways are allocated on a competitive basis to bikeway projects that are on the Commuter Bikeways Strategic Plan.

Scenic Highway

Both El Toro Road and Live Oak Canyon Road are identified as scenic highways on the County Master Plan of Scenic Highways and in the Foothill-Trabuco Specific Plan.

Public Transit

Orange County Transportation Authority (OCTA) representatives have indicated that the proposed project site is not currently served by an existing bus route extending adjacent to the site on El Toro Road. Two bus routes are located in the project vicinity. Route #309, with the nearest bus stop located at the intersection of Santa Margarita Parkway and Marguerite Parkway (near Trabuco Hills Center) is approximately 2.25 miles southwest of the project site. Route #93, with the nearest bus stop located at the intersection of Santa Margarita Parkway and Los Alisos Boulevard (Portola Plaza) is located approximately 2.5 miles southwest of the subject site.

The nearest Park and Ride parking lot (Park and Ride lots are provided by the OCTA to facilitate ride sharing and car pooling) is located at Saddleback Valley Community Church near the intersection of El Toro Road and Portola Parkway, approximately 2.0 miles southwest of the project site.

4.4.2 EFFECTS FOUND TO BE INSIGNIFICANT

The following transportation/circulation effects were found to be less than significant as determined by the Initial Study/Environmental Assessment contained in Appendix C of this EIR. These factors are not evaluated in this EIR.

- The proposed project would not result in insufficient parking capacity onsite or offsite.
- The proposed project would not conflict with alternative transportation policies (e.g., bus turnouts or bicycle racks).

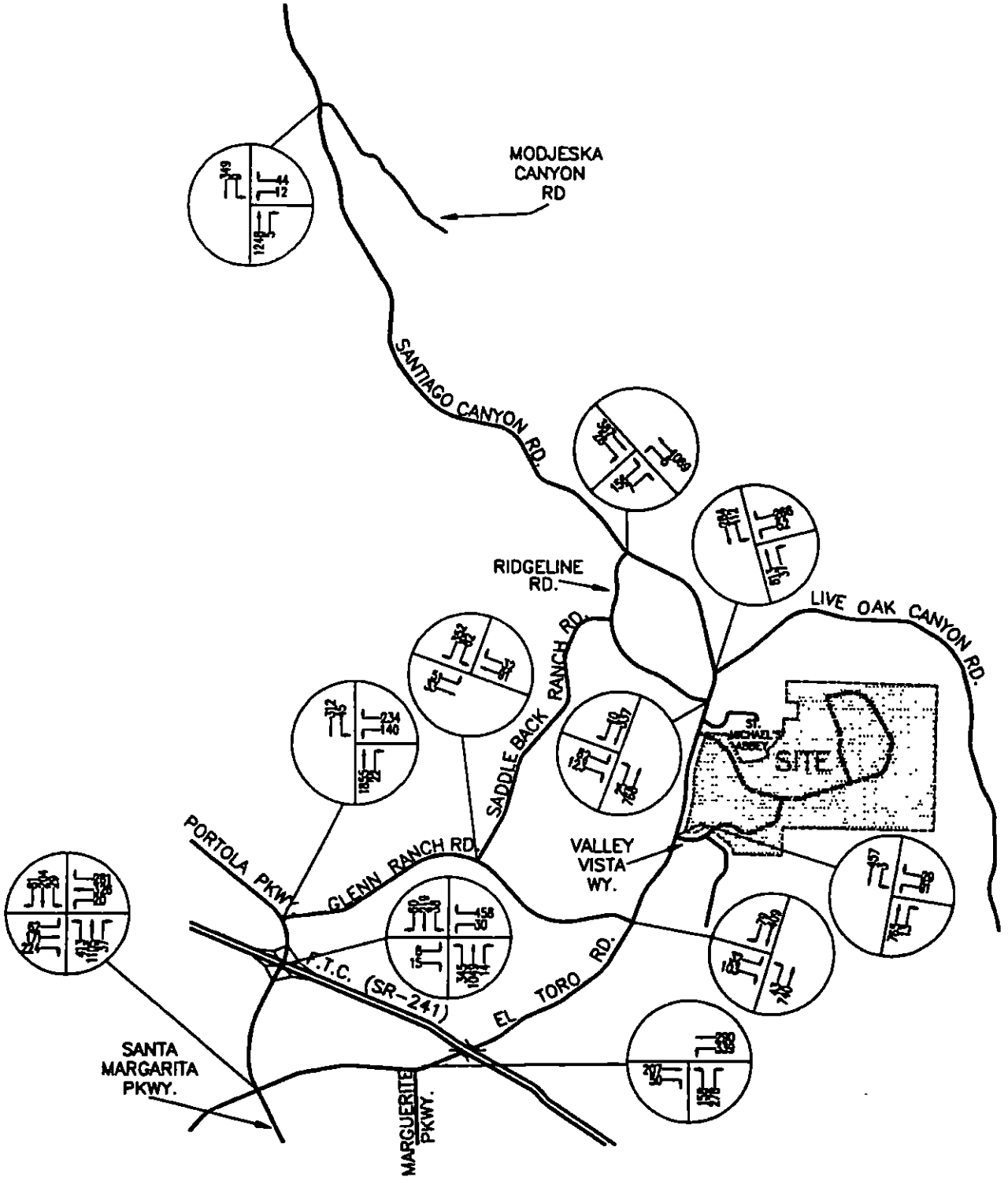
4.4.3 PROJECT IMPACTS

Project access will be off of El Toro Road; an emergency access only/gated access at Valley Vista Way will also be provided. The entry street will be designed as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median. The Collector cross-section should be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane.

Traffic Impact Modeling

The current modeling source for traffic projections in the study area is the Orange County Transportation Analysis Model (OCTAM), Version 2.5, South County Subarea (SCTM). The Year 2000 and 2020 daily forecasts were projected to include the project, therefore, Year 2000 and 2020 traffic conditions without the project involved subtracting project volumes from the SCTM model volumes.

The Year 2000 and 2020 peak hour forecasts were developed using the previously described daily forecasts, along with peak hour traffic count data collected at each analysis location. Future baseline ADT volumes are shown in Exhibit 37. The proposed project is projected to generate approximately 6,220 trip-ends per day with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the PM peak hour.



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Existing A.M. Peak Hour Intersection Volumes

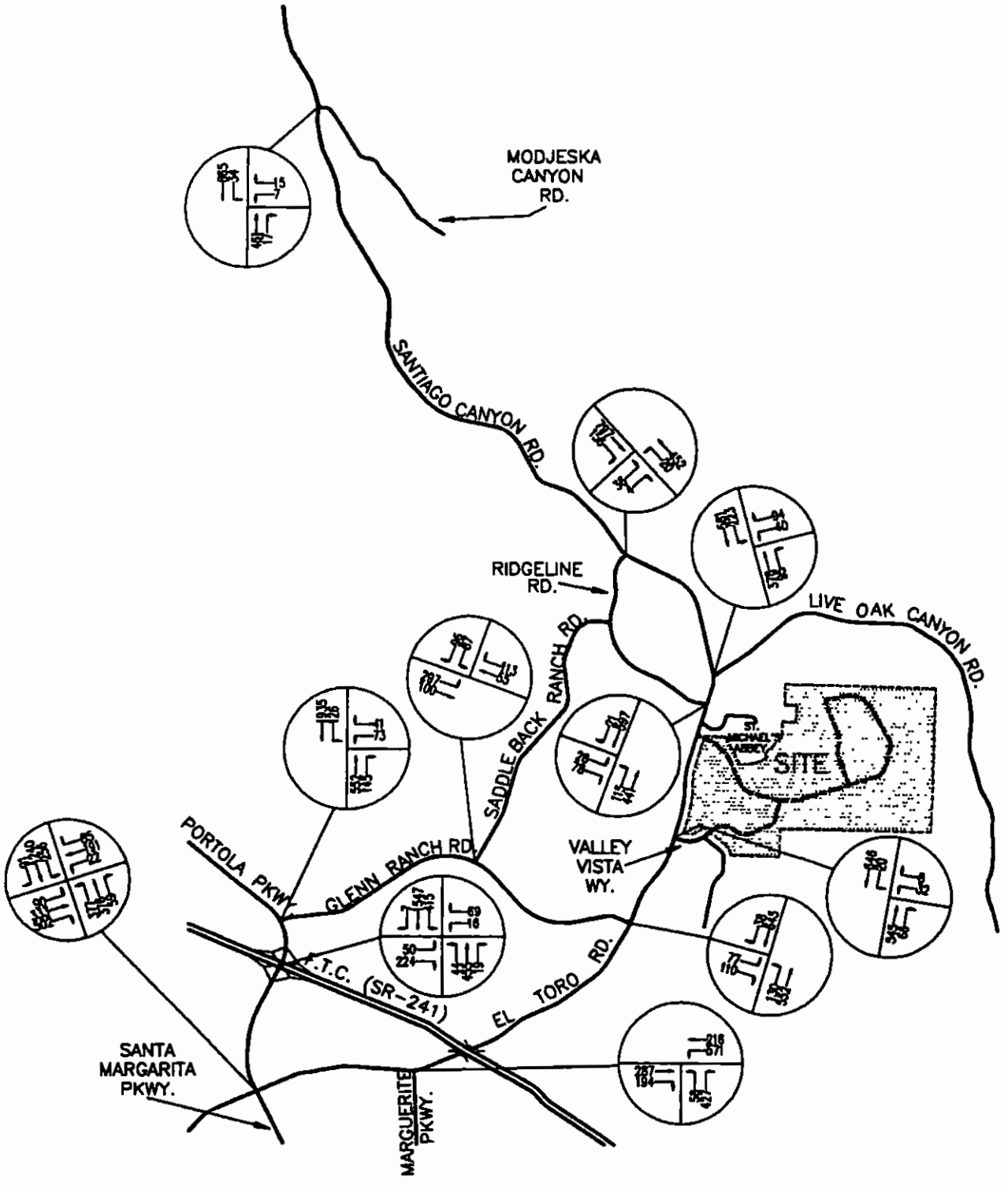
EXHIBIT No. 27

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RK/JK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Existing P.M. Peak Hour Intersection Volumes

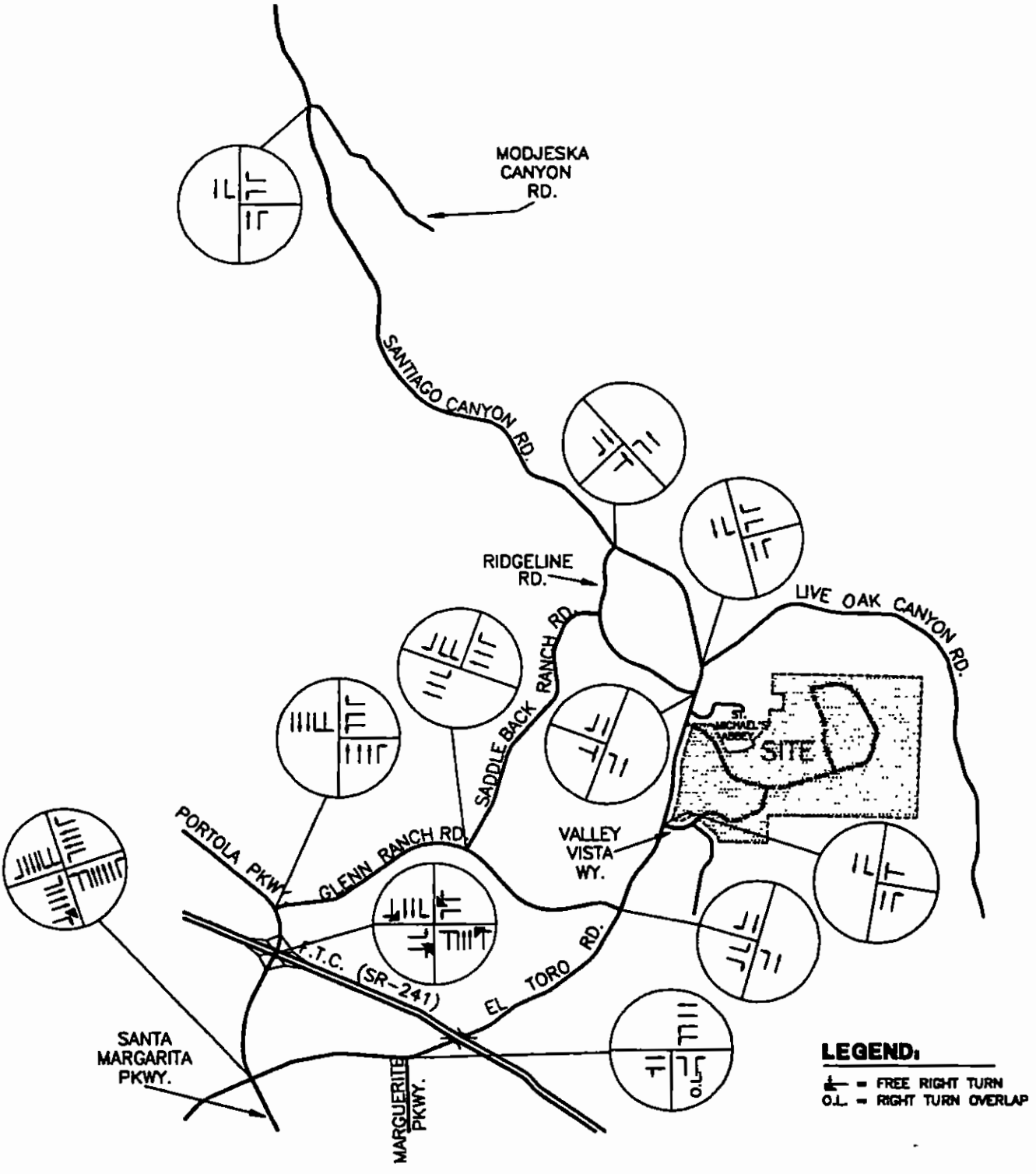
EXHIBIT No. 2

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Existing Intersection Lanes

EXHIBIT No. 29

URBAN VISION

County of Orange P&DS
Scale: N/A
Source: RKJK

Trip Distribution/Assignment

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the proximity to the regional freeway system, existing/future residential development, other commercial and community facilities. The directional orientation of traffic was determined by evaluating existing and proposed land uses within the community and the Master Plan of Arterial Highways (MPAH).

Existing plus project intersection ICU/LOS is shown in Table 13.

Table 13
EXISTING PLUS PROJECT ICU/LOS

Intersection	PEAK HOUR ICU		PEAK HOUR LOS	
	AM	PM	AM	PM
Santiago Canyon Road (NS) at:				
• Modjeska Canyon Road (EW)	0.87	0.61	D	B
• Ridgeline Road (EW)	0.82	0.60	D	A
El Toro Road (NS) at:				
• Live Oak Canyon Road (EW)	0.78	0.49	C	A
• Ridgeline Road (EW)	0.68	0.62	B	B
• Project Entrance (EW)	0.62	0.57	B	A
• Valley Vista Way (EW)	0.64	0.59	B	A
• Glenn Ranch Road (EW)	0.57	0.69	A	B
Saddleback Ranch Road (NS) at:				
• Glenn Ranch Road (EW)	0.32	0.33	A	A
Marguerite Parkway (NS) at:				
• El Toro Road (EW)	0.34	0.49	A	A
Portola Parkway (NS) at:				
• Glenn Ranch Road (EW)	0.57	0.46	A	A
• Foothill Transportation Corridor (EW)	0.40	0.58	A	A
• El Toro Road (EW)	0.41	0.50	A	A

Trip distribution for this study has been based upon near-term conditions, based upon those highway facilities which are in place. The trip distribution patterns for the project are graphically depicted on Exhibit 30, 31. This assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distribution and proposed arterial highway and local street systems. The Projected ADT volumes along El Toro Road in the vicinity of the site do not exceed 30,000 vehicles per day. The projected ADT's along El Toro Road between the Foothill Transportation Corridor (SR-241) and Live Oak Canyon Road are well within the Level of Service "C" volumes for a Primary (four-lane divided) Arterial highway facility.

As shown in Table 13. Intersections in the vicinity of the site are projected to continue to operate at Level of Service "D" or better during peak hours. A traffic signal is projected to be warranted at the intersection of El Toro Road/Project Entrance for existing plus project traffic conditions.

Year 2000 intersection ICU/LOS projections with and without the project and with and without improvements are shown in Table 15. As shown in Table 15, all intersections will operate at LOS D or better, except for the intersection of Portola Parkway at Foothill Transportation Corridor, which will operate at LOS E during morning peak hours for the with project/without improvements scenario. A traffic signal would be warranted at the intersection of Santiago Canyon Road at Modjeska Canyon Road for the Year 2000 without project traffic conditions.

Year 2020 intersection ICU/LOS projections with and without the project and with and without improvements are shown in Table 15a. As shown in Table 15a several intersections would operate at unacceptable levels of service in Year 2020 without improvements in place. With project improvements in place, all intersections would operate at acceptable levels of service. Improvements would include the ultimate widening of El Toro Road and Santiago Canyon Road to four through travel lanes (two in each direction)

Santiago Canyon Road Analysis

Pursuant to the County of Orange Growth Management Plan (GMP), segments of Santiago Canyon Road are required to function at a Level of Service "C" Capacity improvements along Santiago Canyon Road will be required in conjunction with future growth to achieve Level of Service "C". The Santiago Canyon Road Major Thoroughfare and Bridge Fee Program has been designed to provide up to $34 million in improvements to Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road. However, the March, 1994 Project Report for improvements to Santiago Canyon Road indicates that the total cost of improvements is approximately $52.3 million for a "limited project" scenario. To address the difference between the ultimate cost of $52.3 million and the fee program allocation of $34 million, the project must provide an additional contribution beyond the payment of normal fees based upon its traffic share. Santiago Canyon Road Project Share Analysis is shown in Table 14.

Table 14
SANTIAGO CANYON ROAD PROJECT SHARE ANALYSIS

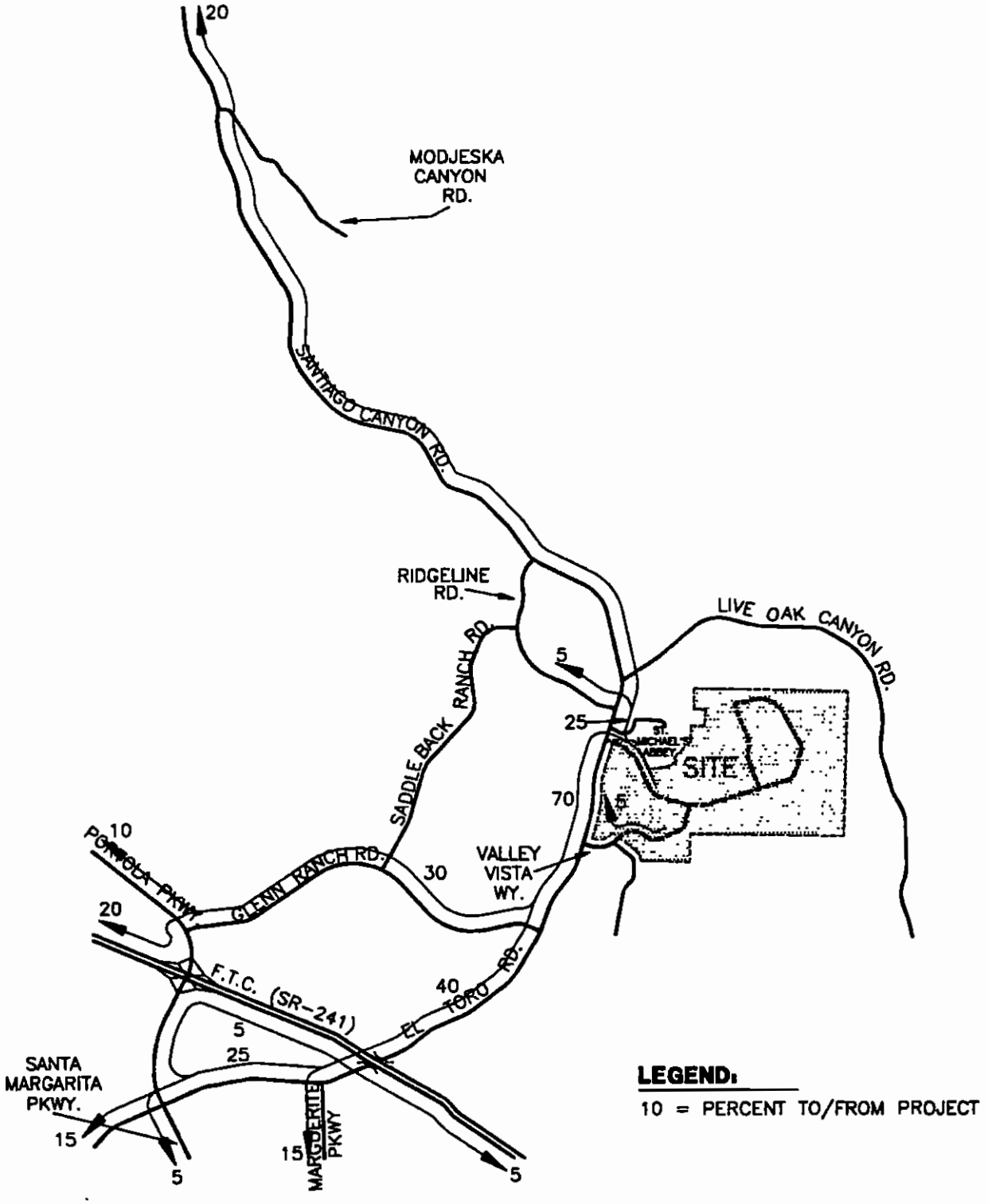
Volume Component	Roadway Segment					
	Live Oak Cyn. Rd. to Ridgeline Rd.		Ridgeline Rd. to Modjeska Cyn. Rd.		North of Modjeska Cyn. Rd.	
	AM	PM	AM	PM	AM	PM
Existing Volume (two way)	1,478	1,276	1,640	1,441	1,650	1,375
Project Volume (two way)						
-Residential	95	117	85	117	95	117
-Commercial	8	32	6	24	4	16
Project Increases						
-Residential	6.4%	9.2%	5.8%	8.1%	5.8%	8.5%
-Commercial	0.5%	2.5%	0.4%	1.7%	0.2%	1.2%

Impact Significance Criteria

The impact evaluation in this analysis focuses on intersection capacity, and uses peak hour intersection capacity utilization (ICU) values to express level of service (LOS). For the year 2010 evaluation, the GMP requires an evaluation of intersections where the project impact is greater than one percent. Satisfactory intersection operation is expressed as LOS D or better (ICU values from 0.00 to 0.90). Therefore, a significant circulation impact would occur if the project caused any intersection to exceed LOS D.

4.4.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Under existing plus project intersection ICU/LOS conditions, the surrounding circulation would continue to operate at acceptable levels of service.



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Project Residential Trip Distribution

EXHIBIT No. 30

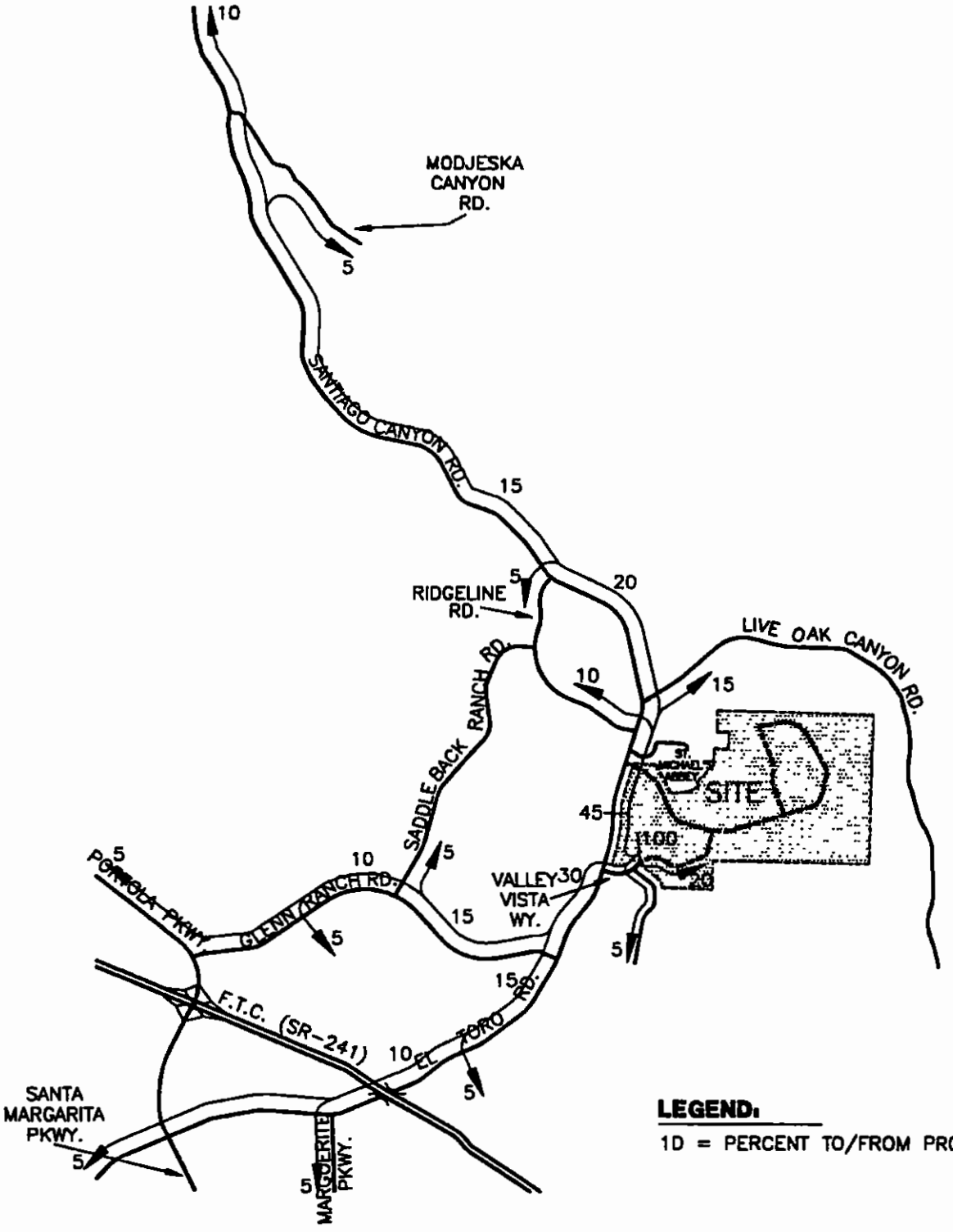
URBAN VISION

County of Orange P&DS

Scale: N/A

Source: RKJK

N



LEGEND:

1D = PERCENT TO/FROM PROJECT

SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Project Commercial Trip Distribution

EXHIBIT No. 31

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

Table 15
YEAR 2000 INTERSECTION ICU/LOS
WITH/WITHOUT PROJECT, WITH/WITHOUT IMPROVEMENTS

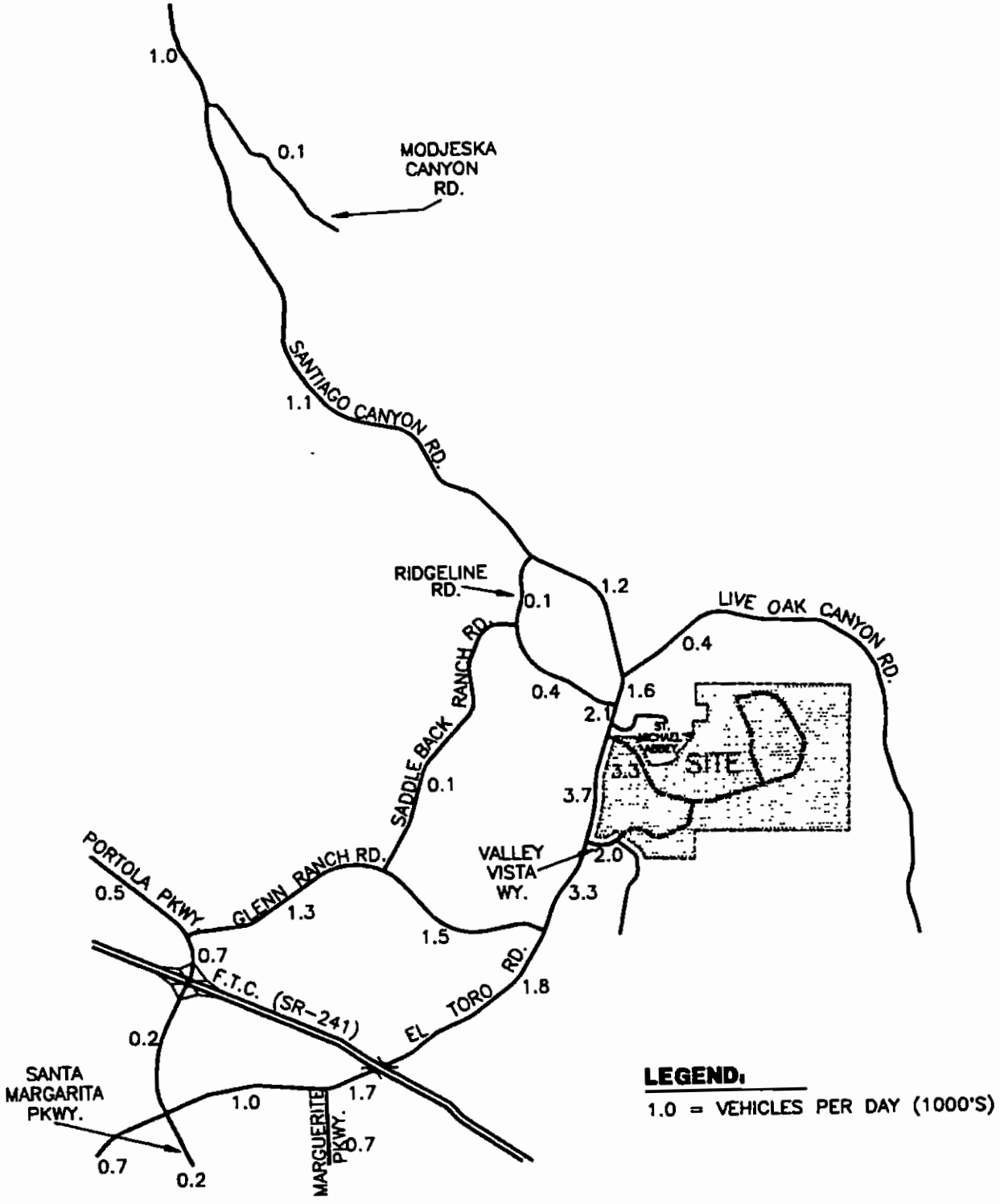
Intersection	Without Project Without Improvements				With Project Without Improvements				With Project With Improvements			
	Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Santiago Canyon Road (NS) at.												
• Modjeska Canyon Road (EW)	0.86	0.69	D	B	0.90	0.74	D	C	0.90	0 74	D	C
• Ridgeline Road (EW)	0.87	0 72	D	C	0.92	0.78	E	C	0.56	0.78	A	C
El Toro Road (NS) at:												
• Live Oak Canyon Road (EW)	0 80	0.60	C	A	0.84	0 63	D	B	0.84	0.63	D	B
• Ridgeline Road (EW)	0 70	0.62	B	B	0.75	0 69	C	B	0.75	0.69	C	B
• Project Entrance (EW)					0.74	0.62	C	B	0.74	0.62	C	A
• Valley Vista Way (EW)	0.67	0.52	B	A	0.73	0.65	C	B	0 73	0.65	C	B
• Glenn Ranch Road (EW)	0.62	0.75	B	C	0.65	0.83	B	D	0 65	0.83	B	D
Saddleback Ranch Road (NS) at:												
• Glenn Ranch Road (EW)	0.59	0.70	A	B	0.63	0.71	B	C	0.63	0.71	B	C

Intersection	Without Project Without Improvements				With Project Without Improvements				With Project With Improvements			
	Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Marguerite Parkway (NS) at:												
• El Toro Road (EW)	0 49	0.73	A	C	0.52	0.79	A	C	0.52	0.79	B	C
Portola Parkway (NS) at:												
• Glenn Ranch Road (EW)	0.90	0.75	D	C	0.93	0.76	E	C	0.85	0.75	D	C
• Foothill Trans Corridor (EW)	0.73	0.87	C	D	0.74	0.90	C	D	0.74	0.90	C	D
• El Toro Road (EW)	0.80	0.79	C	C	0.80 1	0.80	C	C	0.81	0.80	D	C

Table 15a
YEAR 2020 INTERSECTION ICU/LOS
WITH/WITHOUT PROJECT, WITH/WITHOUT IMPROVEMENTS

Intersection	Without Project Without Improvements				Without Project With Improvements				With Project Without Improvements				With Project With Improvements			
	Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Santiago Canyon Road (NS) at:																
• Modjeska Canyon Road (EW)	1.16	1.00	F	E	0.66	0.54	B	A	1.20	1.05	F	F	0.68	0.556	B	A
• Ridgeline Road (EW)	1 18	0 98	F	E	0.72	0 56	C	A	1.22	1.02	F	F	0.74	0.589	C	A
El Toro Road (NS) at:																
• Live Oak Canyon Road (EW)	1.07	0.79	F	C	0.74	0.60	C	A	1.12	0.83	F	D	0 76	0.62	C	B
• Ridgeline Road (EW)	0.89	0 92	D	E	0.59	0.62	A	B	0.94	1.00	E	E	0.61	0.667	B	B
• Project Entrance (EW)	-	-	-	-	-	-	-	-	0.90	0.83 8	D	D	0.58	0538	A	A
• Valley Vista Way (EW)	0.87	0.79	D	C	0.53	0.45	A	A	0.93	0.94	E	E	0.57	0 54	A	A
• Glenn Ranch Road (EW)	0 94	1.24	E	F	0 54	0.82	A	C	0 97	1 31	E	F	0 56	0.82	A	D
Saddleback Ranch Road (NS) at:																
• Glenn Ranch Road (EW)	0.77	0.96	C	E	0.72	0.69	C	B	0.80	0.96	C	E	0 75	0 69	C	B

Intersection	Without Project Without Improvements				Without Project With Improvements				With Project Without Improvements				With Project With Improvements			
	Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS		Peak Hour ICU		Peak Hour LOS	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Marguerite Parkway (NS) at:																
• El Toro Road (EW)	0.74	1.33	C	F	0.65	0.78	B	C	0 77	1.38	C	F	0.68	0.79	B	C
Portola Parkway (NS) at:																
• Glenn Ranch Road (EW)	1.21	1 04	F	F	0.90	0 88	D	D	1.22	1 10	F	F	0.90	0.87	D	D
• Foothill Trans Corridor (EW)	1.04	1.44			0.75	0.88	C	D	1.05	1.48	F	F	0.76	0.90	C	D
• El Toro Road (EW)	1.20	1.14	F	F					1.21	1 14	F	F				
with improvements	-	-	-	-	0.84	.095	D	E	-	-	-	-	0.86	0.97	D	E
with additional improvements	-	-	-	-	0.84	087	D	D	-	-	-	-	0.86	0.89	D	D



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

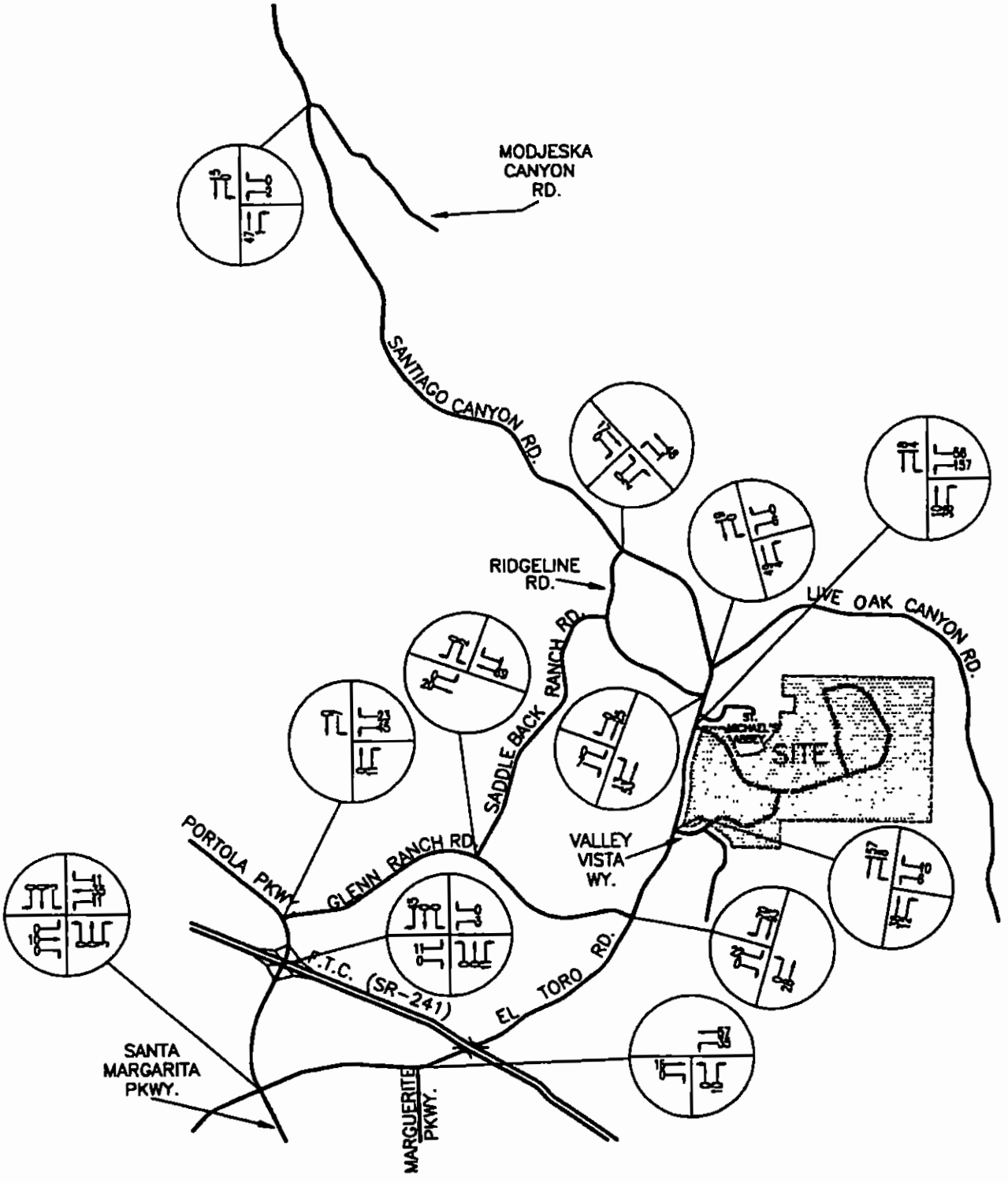
Project Average Daily Traffic (ADT)

EXHIBIT No. 32

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

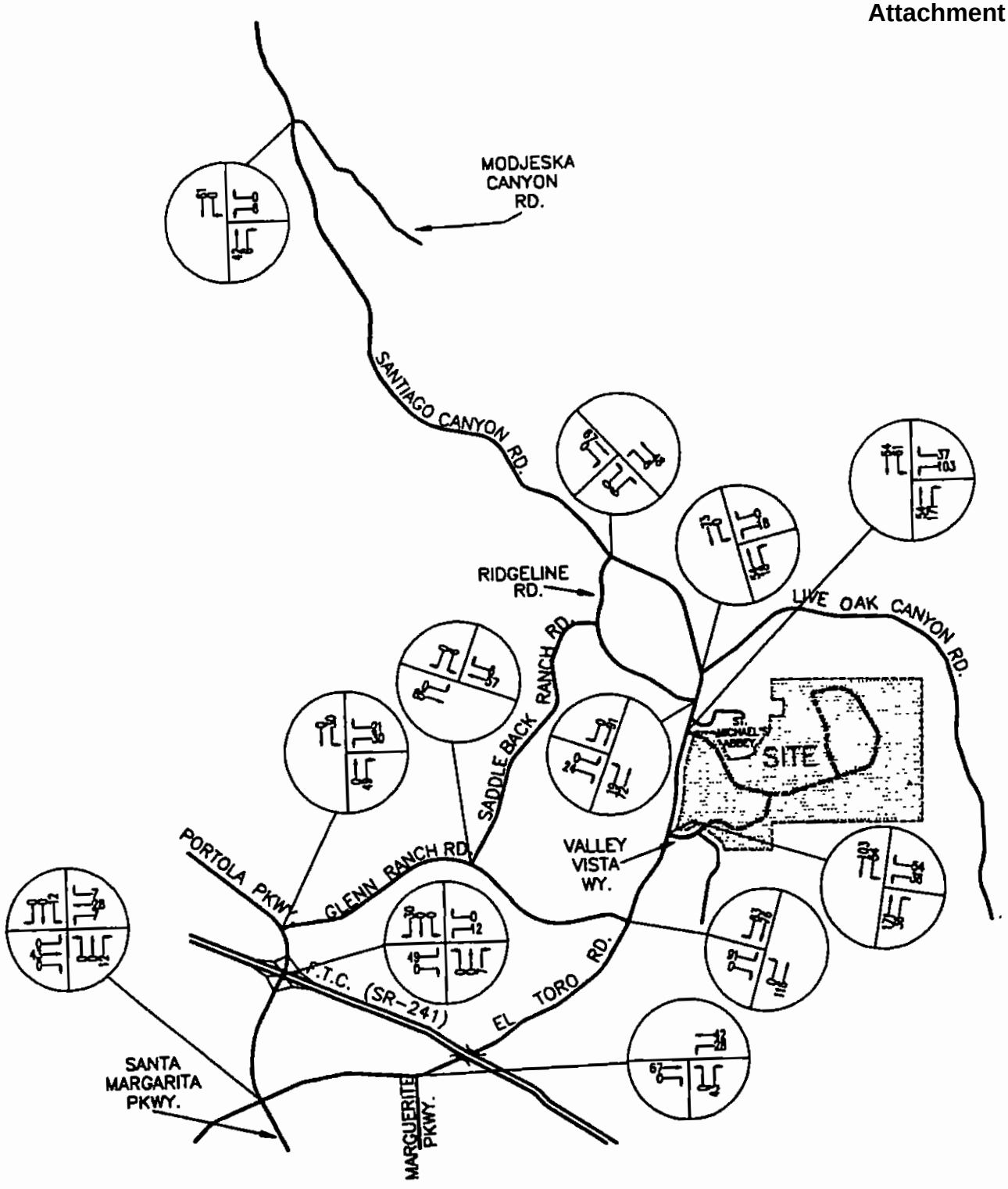
Project A.M. Peak Hour Intersection Volumes

EXHIBIT No. 3

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Project P.M. Peak Hour Intersection Volumes

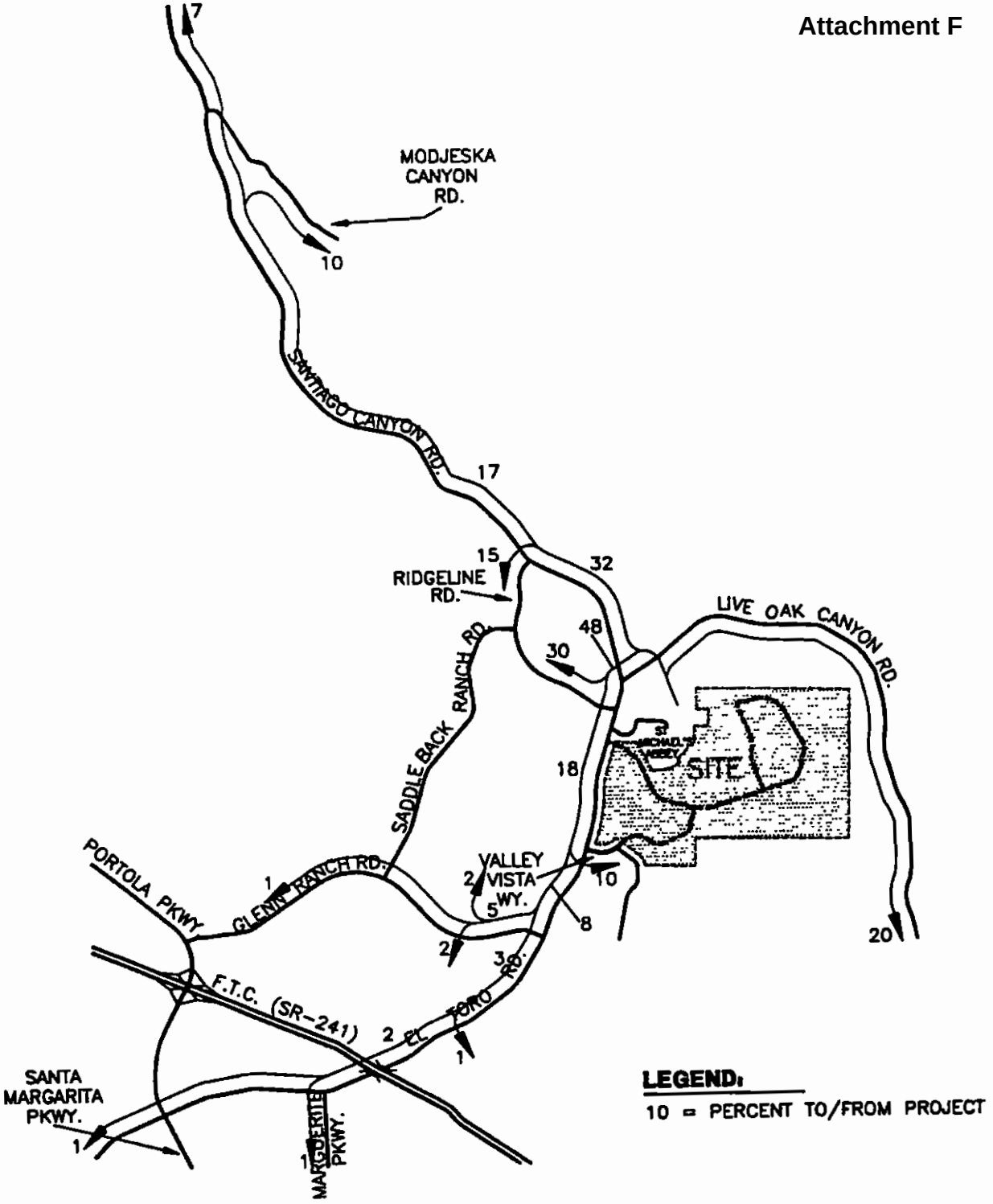
EXHIBIT No. 34

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

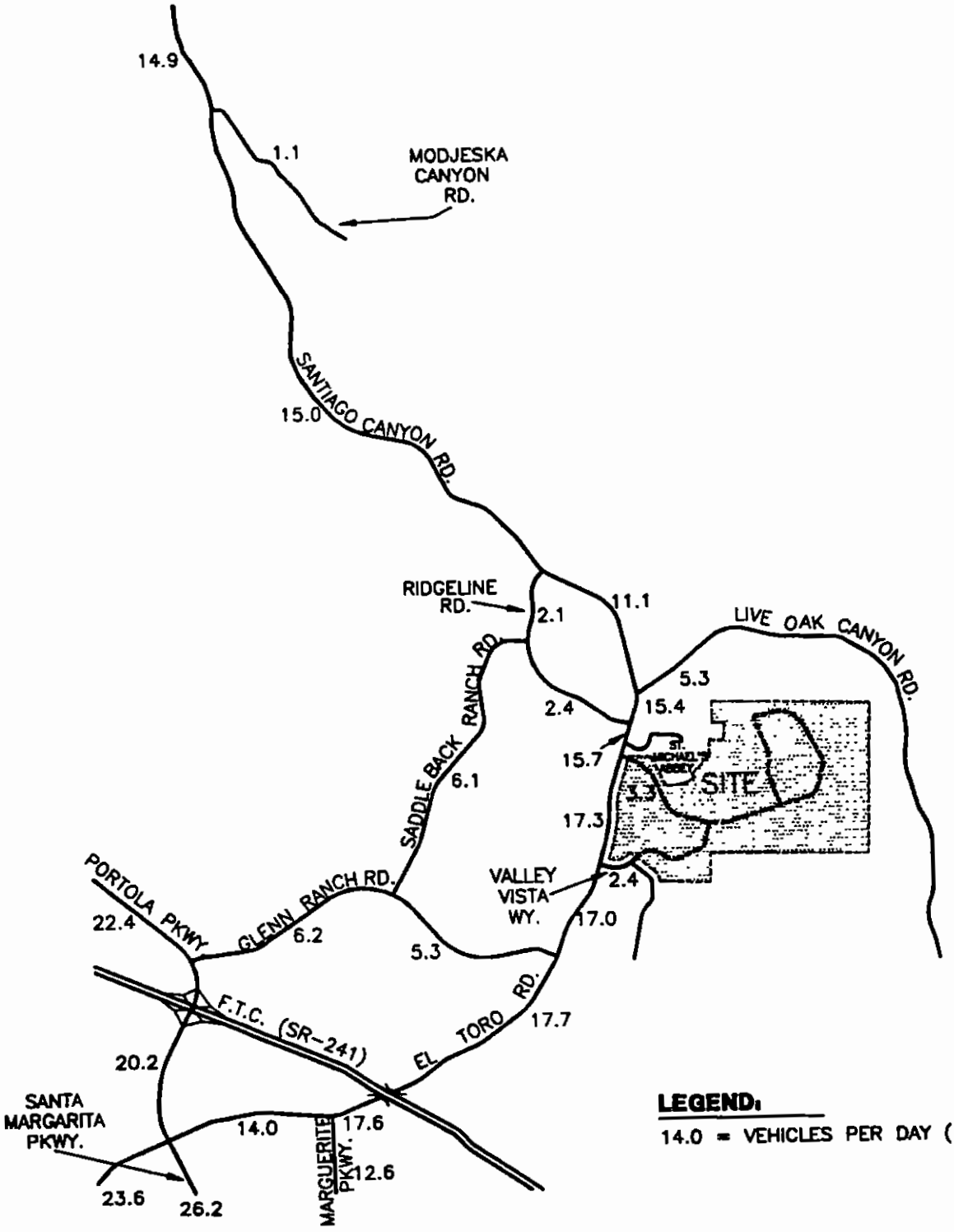
Other Development Trip Distribution

EXHIBIT No. 35

URBAN VISION

County of Orange P&DS
Scale: N/A
Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Existing Plus Project Average Daily Traffic (ADT)

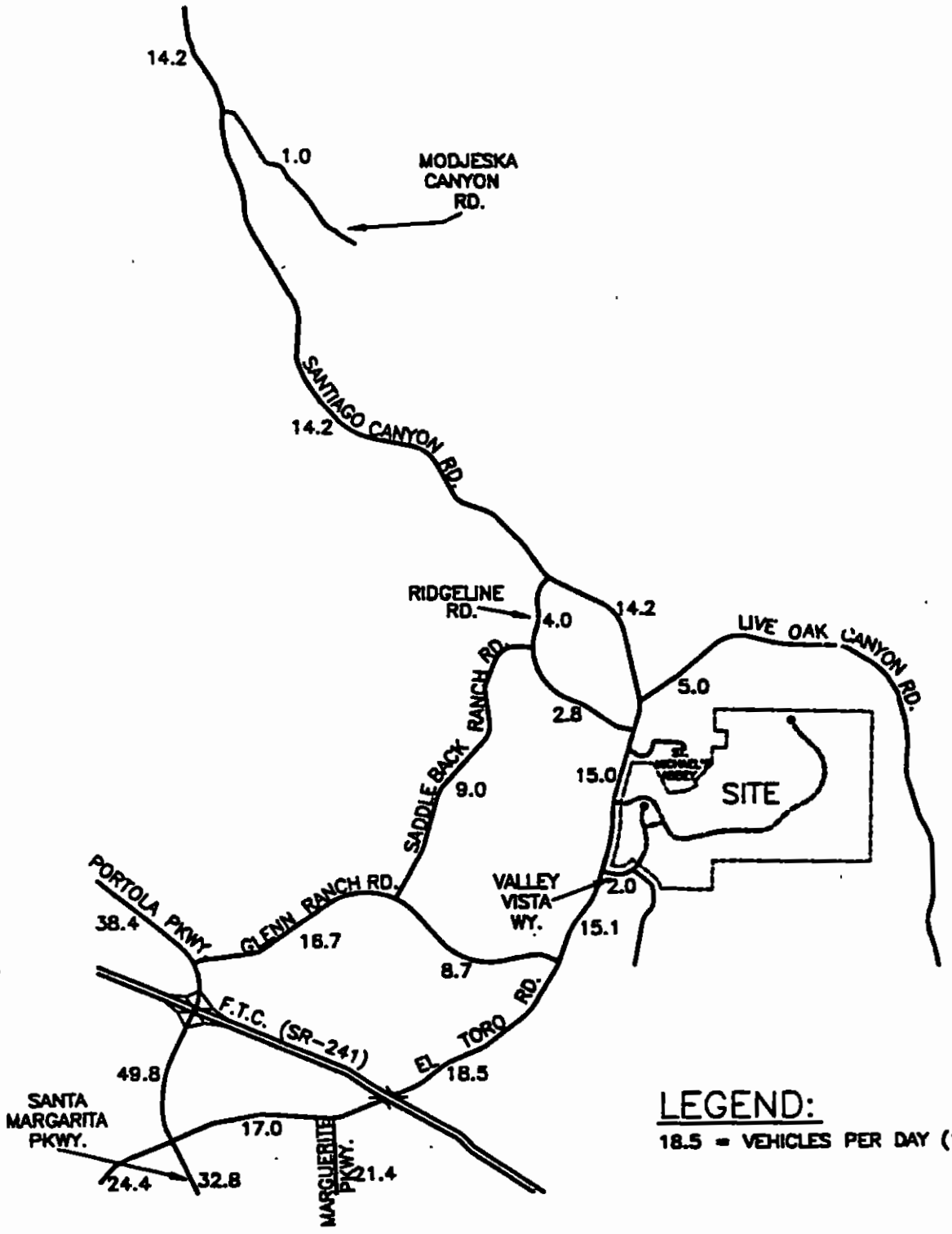
EXHIBIT No. 36

URBAN VISION

County of Orange P&DS

Scale: N/A

Source: RKJK



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

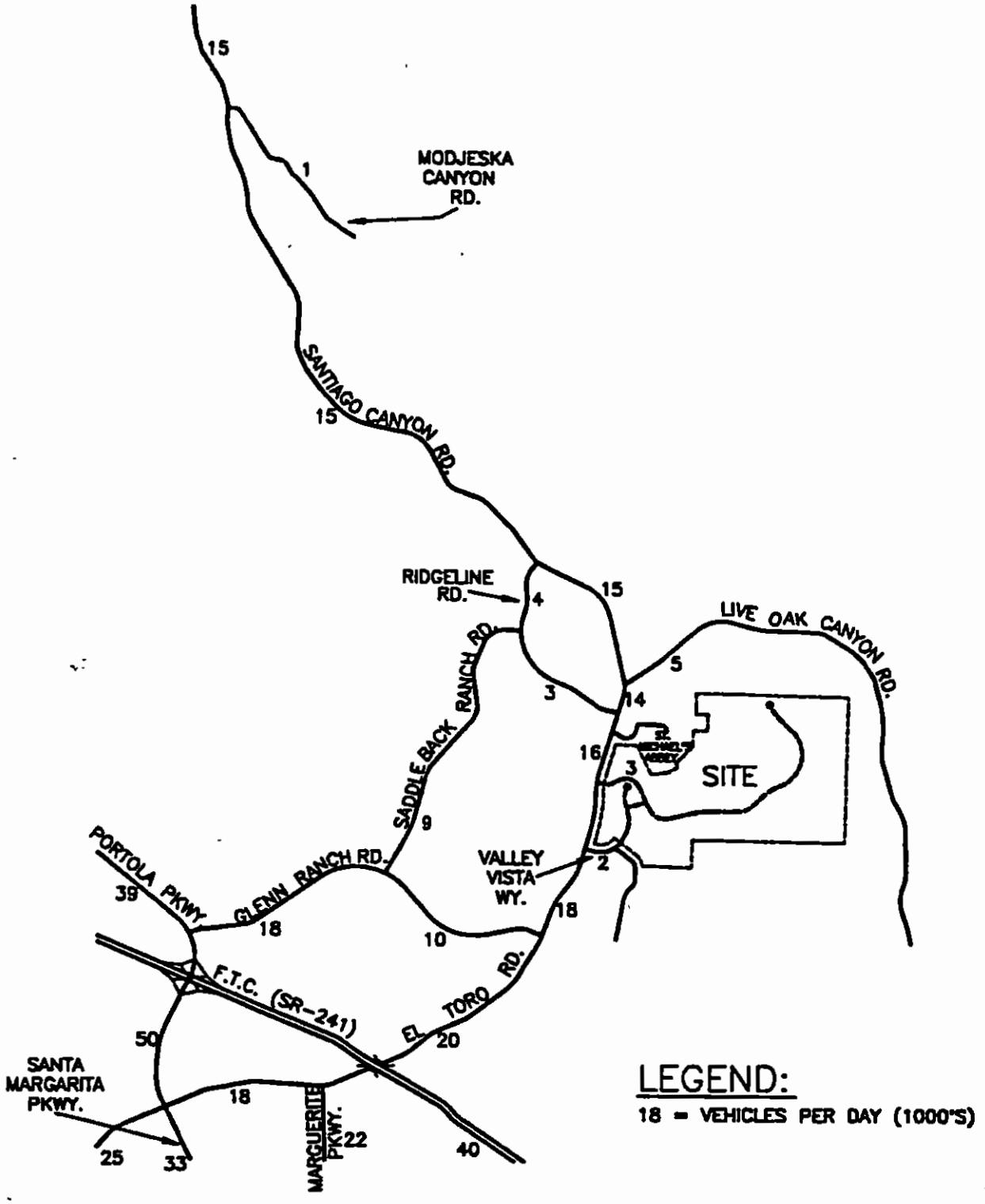
Future Baseline Average Daily Traffic Volumes (Year 2000)

EXHIBIT NO. 37

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Future Baseline with Project Average Daily Traffic Volumes

EXHIBIT No. 38

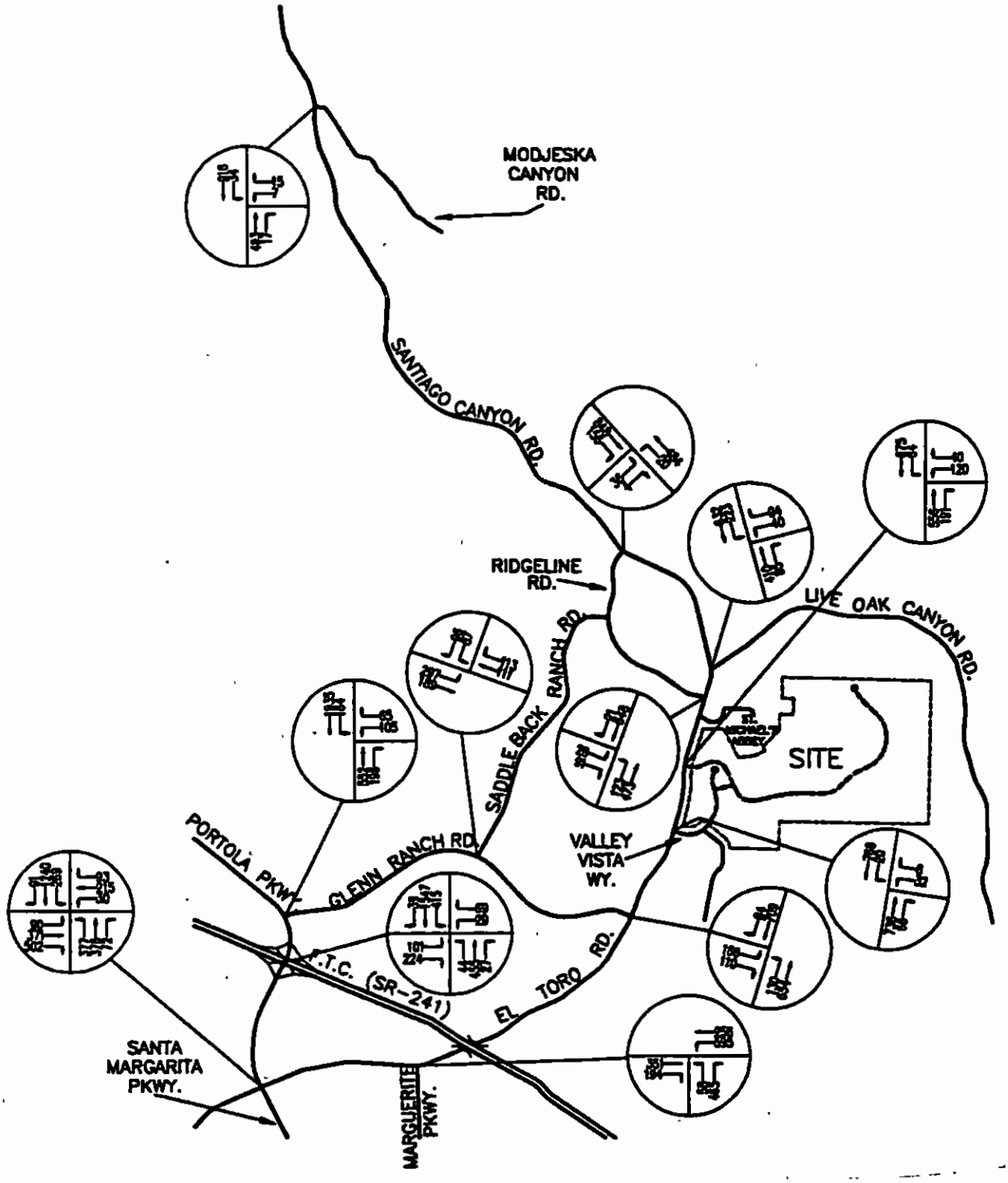
URBAN VISION

County of Orange P&DS

Scale: N/A

Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Future Baseline with Project Peak Hour Volumes

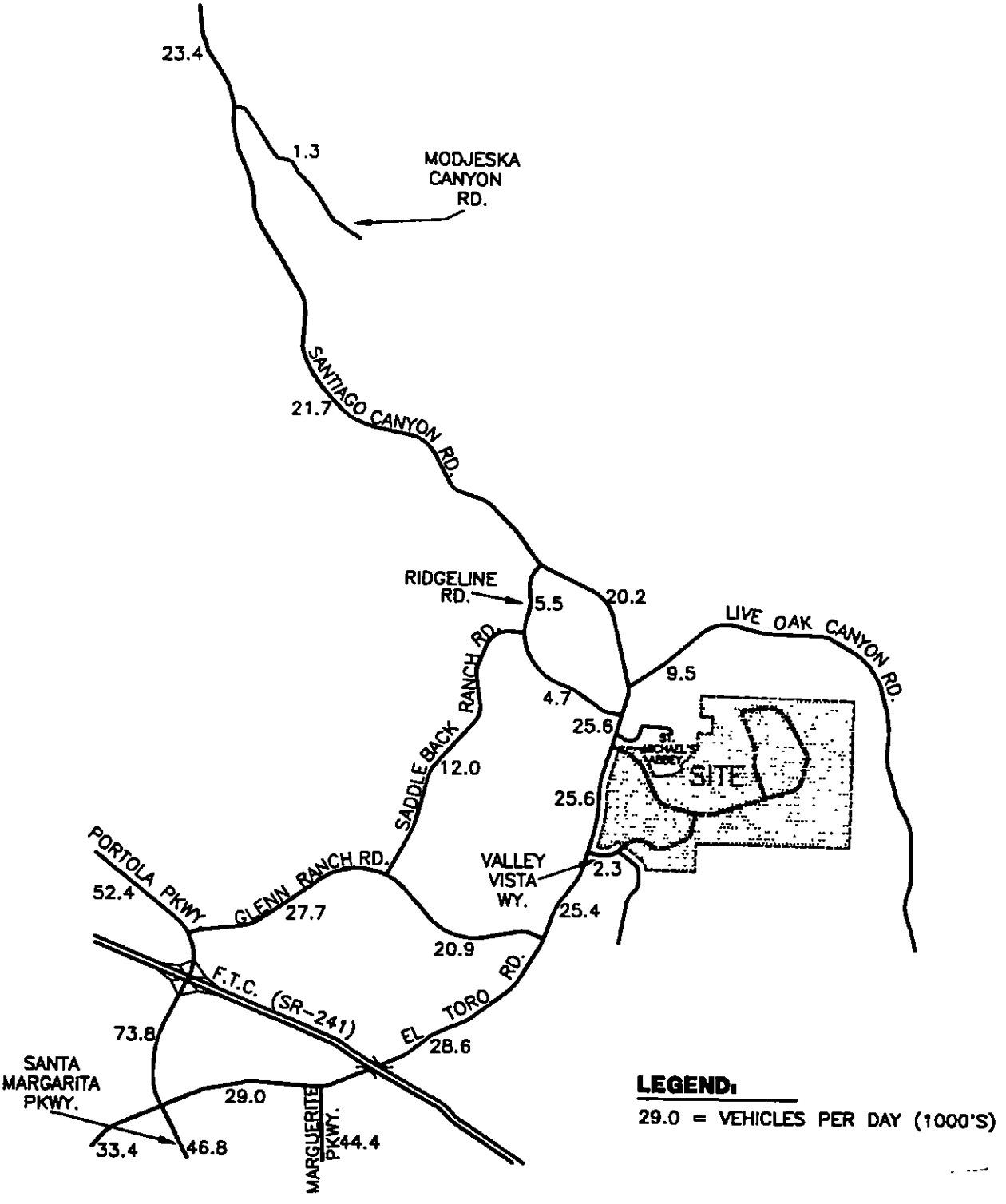
EXHIBIT No. 39

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Year 2020 Average Daily Traffic (ADT) Without Project

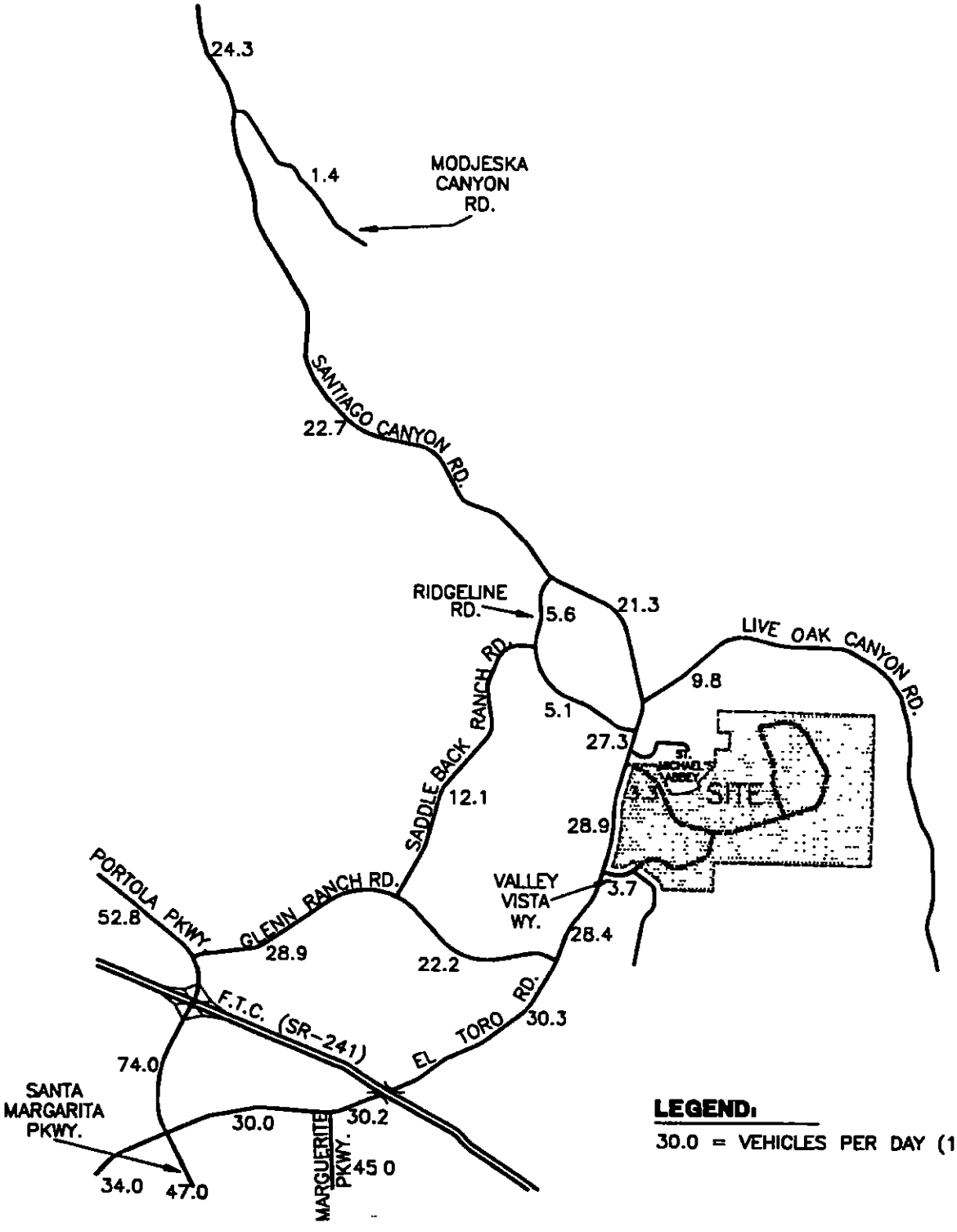
EXHIBIT No. 40

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Year 2020 Average Daily Traffic (ADT) With Project

EXHIBIT No. 4.1

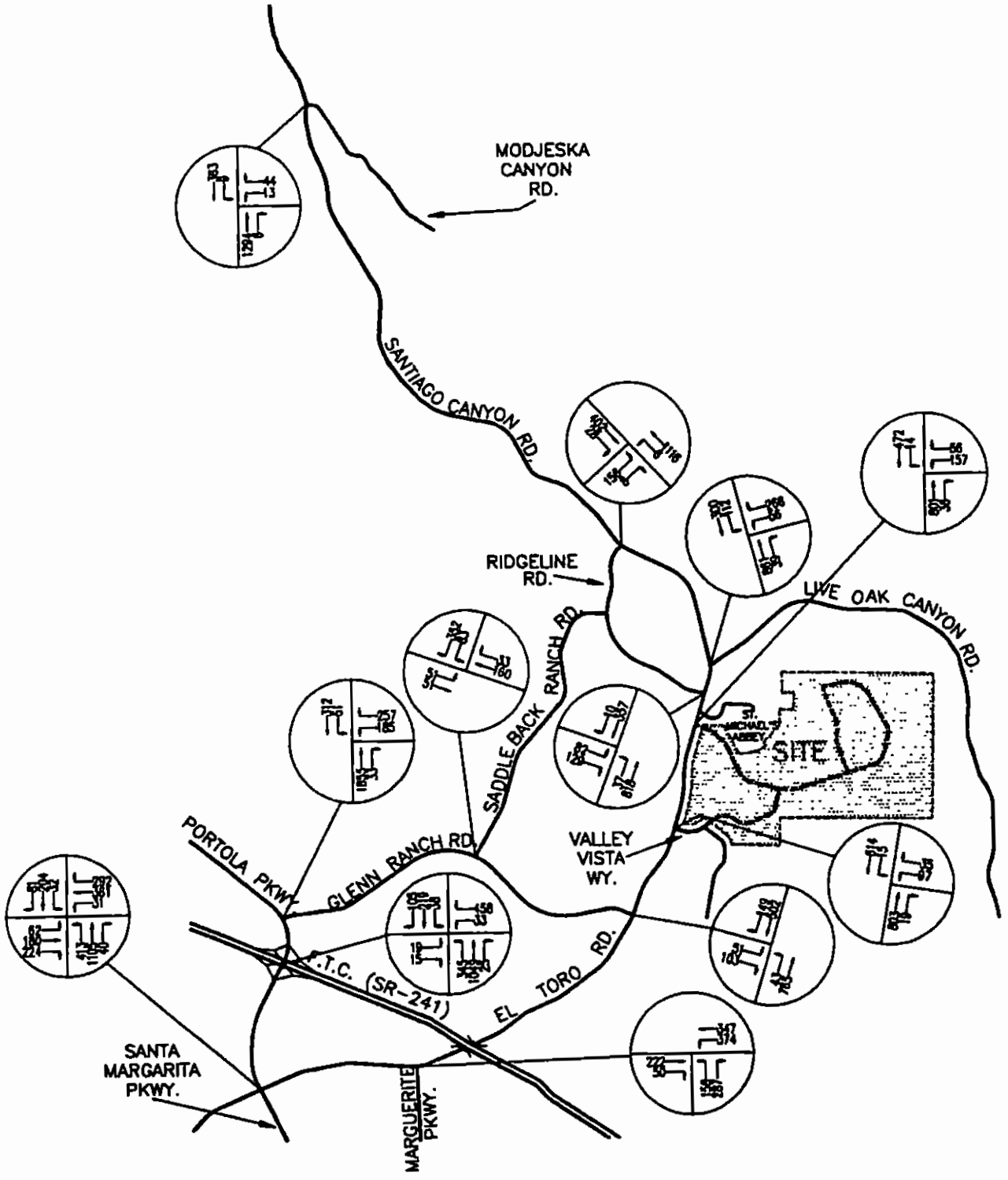
URBAN VISION

County of Orange P&DS

Scale: N/A

Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Existing Plus Project A.M. Peak Hour Intersection Volumes

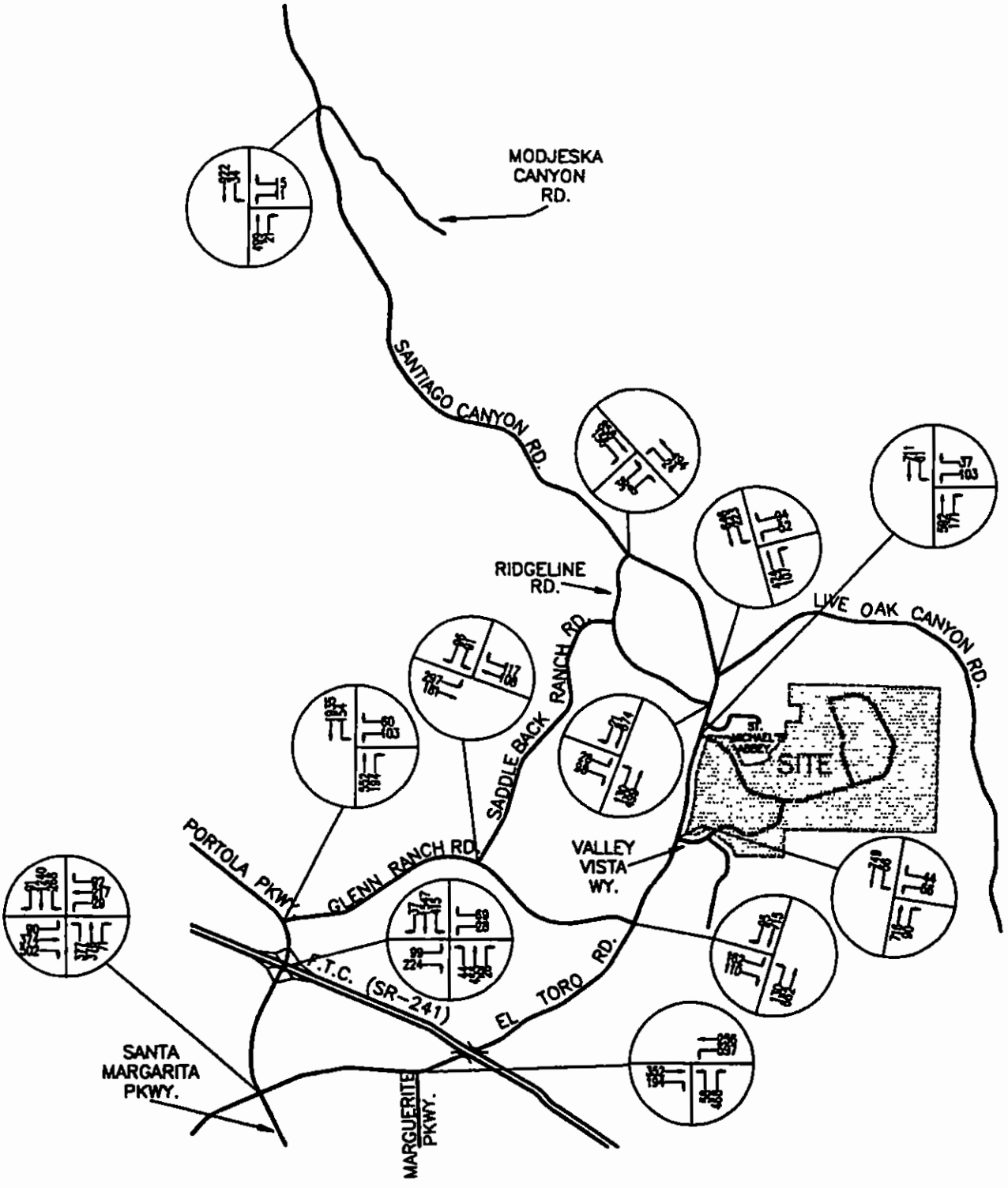
EXHIBIT No. 42

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

N



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Existing Plus Project P.M. Peak Hour Intersection Volumes

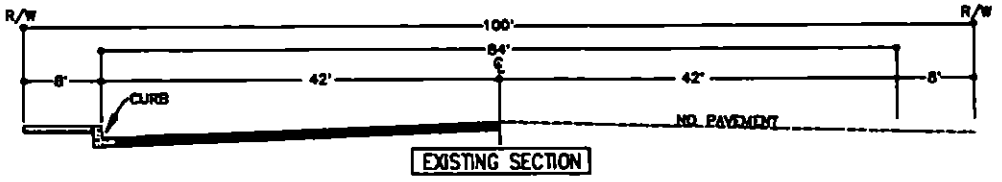
EXHIB No. 43

URBAN VISION

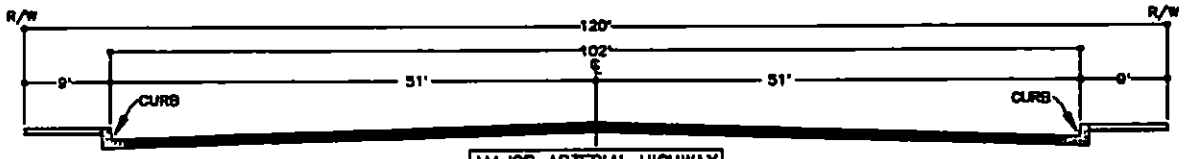
County of Orange P&DS

Scale: N/A
Source: RKJK

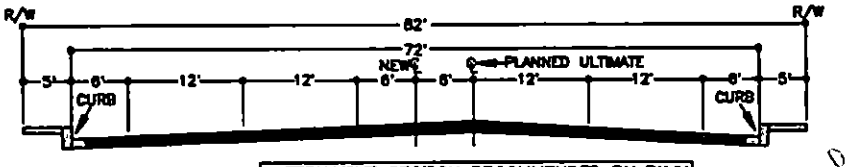
N



EXISTING SECTION



MAJOR ARTERIAL HIGHWAY



ALTERNATIVE SECTION RECOMMENDED BY RKJK

SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

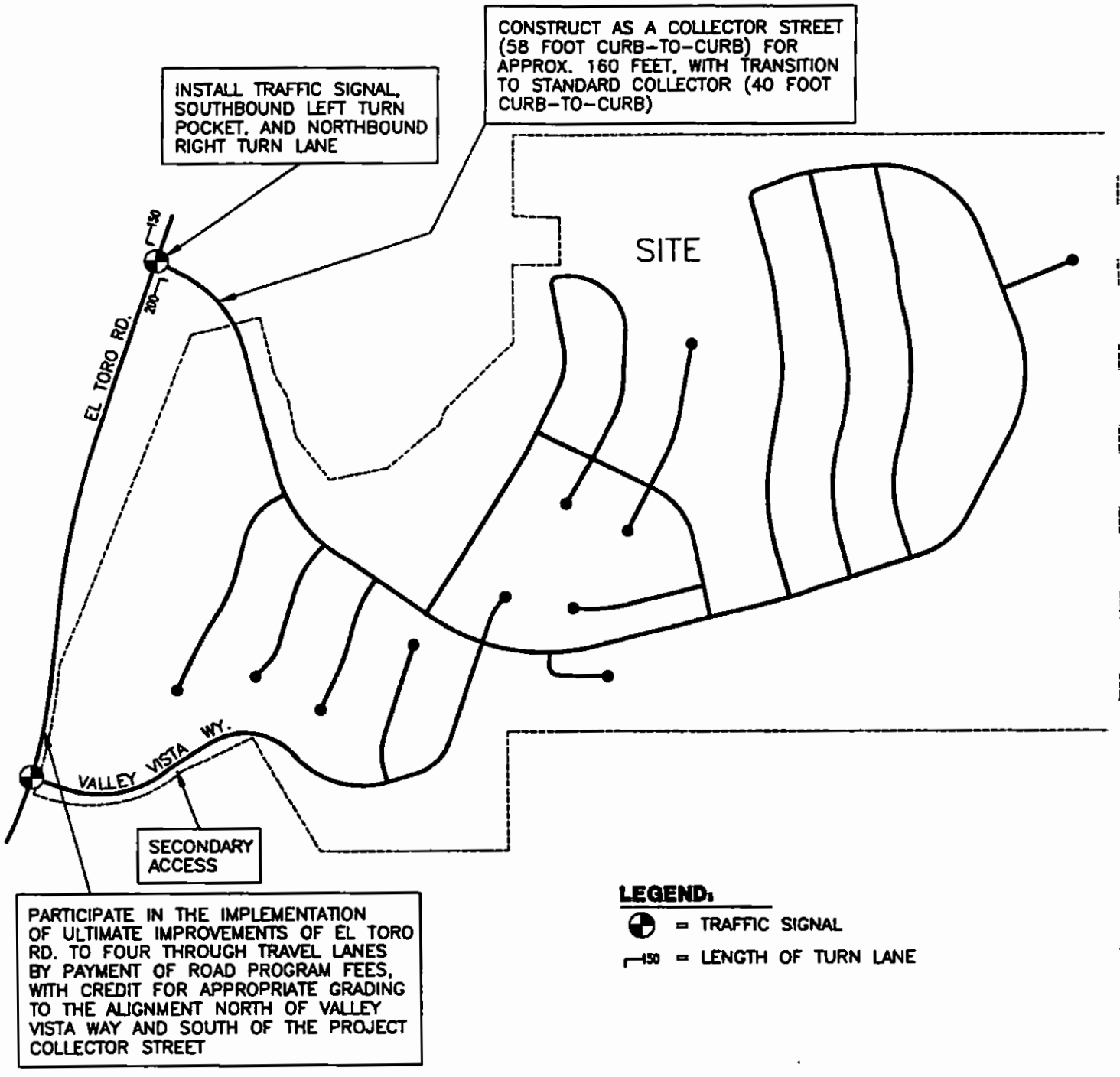
OCMPAH Cross Sections / El Toro Road

EXHIBIT No. 44

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Circulation Recommendations

EXHIBIT No. 45

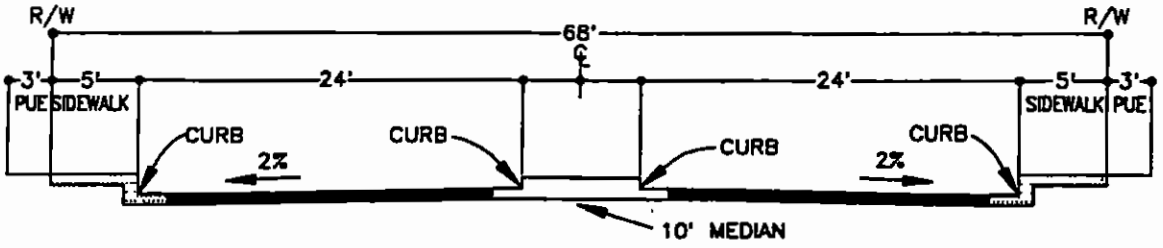
URBAN VISION

County of Orange P&DS

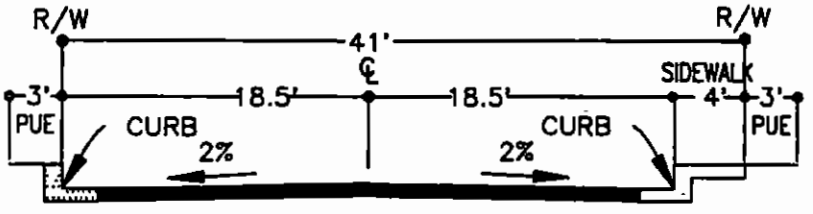
Scale: N/A

Source: RKJK

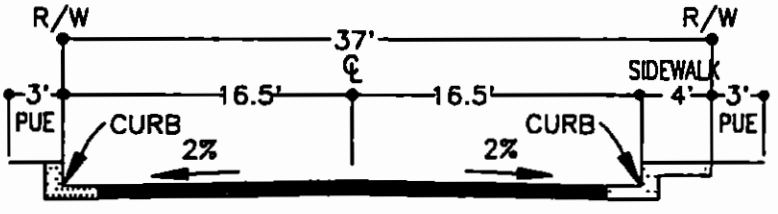
N



ENTRY RECOMMENDED BY RKJK



INTERIOR STREET



INTERIOR STREET

SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Project Street Sections

EXHIBIT No. 46

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: RKJK

Year 2000 intersection conditions, without mitigation measures, would exceed Level of Service "D" significance criteria at the following intersection:

- Santiago Canyon Road at Modjeska Canyon/ Ridgeline Road
- Portola Parkway at Foothill Transportation Corridor
- El Toro Road at Live Oak Canyon Road/Glenn Ranch Road
- Portola Parkway at Glenn Ranch Road

Year 2020 intersection conditions, without mitigation measures, would exceed Level of Service "D" significance criteria at the following intersections:

- Santiago Canyon Road at Modjeska Canyon Road
- Santiago Canyon Road at Ridgeline Road
- El Toro Road at Live Oak Canyon Road
- El Toro Road at Ridgeline Road
- El Toro Road at Project Entrance
- El Toro Road at Glenn Ranch Road
- El Toro Road at Valley Vista Way
- Saddleback Ranch Road at Glenn Ranch Road
- Marguerite Parkway at El Toro Road
- Portola Parkway at Glenn Ranch Road
- Portola Parkway at Foothill Transportation Corridor
- Portola Parkway at El Toro Road

4.4.5 CUMULATIVE IMPACTS

The OCTAM/SCTM Year 2000/2020 model accounts for all cumulative projects within the region which could affect future traffic conditions. Refer to Section 4.4.3 for a complete analysis of cumulative impacts.

4.4.6 MITIGATION MEASURES

Project Design Features

Primary project access will be off of El Toro Road with an emergency access at Valley Vista Way.

PDF 4-1 The onsite circulation system is proposed as shown in Exhibit 45 to accommodate project related traffic generation, including design of the entry street as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median. The entry's cross-section shall be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. Secondary emergency only access will be provided via a gated connection to existing Valley Vista Way. Minimum fire access roadway width of 28 feet shall be required.

PDF 4-2 The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane. The applicant shall provide a cash deposit for the design and construction of the traffic signal.

PDF 4-3 All weather access to the proposed water tank shall be provided by the applicant. This access shall be designed with a minimum 28 foot width and a maximum grade of 10%.

Standard County Conditions and Mitigation Measures

SC 4-4 Prior to the issuance of any building permits, the applicant shall participate in design, construction, and/or financing of the cost of a traffic signal in the project vicinity in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-5 Prior to the issuance of building permits, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Programs listed below, in a manner meeting the approval of the Manager, PF&R/Programs Division.

a. Foothill Circulation Phasing Program

b. Prior to recordation of a final tract map, the subdivider shall enter into an agreement with the County of Orange for participation in a fee program (if adopted by the Board of Supervisors) for implementation of the Foothill/Eastern Transportation Corridor. Said agreement shall provide that:

1. The fee shall be $158.00 per trip end times the County standard trip end generation rate for the type of development proposed, times the number of units (footage) proposed, or the fee payable under the program, whichever is less.

2. Subdivider's obligation to pay fees would arise only after the County establishes the fee program, prior to issuance of building permits.

3. Subdivider's obligation to pay the fee would be extinguished if the fee program were not established within three (3) years of the date of issuance of the first building permit for subject development.

4. Subdivider shall furnish surety bond, letter of credit, money or such other security approved by the Director, PF&RD, to assure payment of the fees related to subject development.

5. This condition shall be void if a trial court of competent jurisdiction, in a final judgement, or an appellate court, if the matter is appealed, sets aside a

condition imposed by the County which was substantially the same as said condition.

c. El Toro Road

d. Santiago Canyon Road

SC 4-6 Building permit issuance shall be phased in accordance with the Foothill Circulation Phasing Plan (FCPP) Development Phasing Plan, and shall also be subject to any other Board of Supervisors approved growth management phasing plan pertaining to the timely provision of public services and facilities.

SC 4-7 Building permit issuance shall be phased in accordance with any Board of Supervisors approved Growth Management Phasing Plan pertaining to the timely provision of public services and facilities.

SC 4-8 Prior to the issuance of any grading permits, adequate sight distance shall be provided at all street intersections per Standard Plan 1117, in a manner meeting the approval of the Manager, PF&R/Programs Division. This includes any necessary revisions to the plan such as removing slopes or other encroachments from the limited use area.

SC 4-9 Prior to the issuance of any certificates of use and occupancy, the developer shall construct the approved internal circulation improvements in a manner meeting the approval of the Manager, PF&R/Construction Division. Further, a copy of the approved plans shall be furnished to the Manager, Building Inspection Services, prior to the issuance of any certificates of use and occupancy.

SC 4-10 When monuments exist which control the location of subdivisions, streets or highways, or provide survey control, the monuments shall be located and referenced prior to any street construction or relocation, and shall be reset after construction as required by Section 8771 of the Business and Professions Code, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-11 Prior to issuance of a building permit, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manger, PF&R/Programs Division. In addition, the applicant shall participate in the Santiago Canyon Road Safety Improvement Program.

SC 4-12 Prior to issuance of a building permit, the applicant shall design and construct roadway improvements for El Toro Road including a deceleration lane and a left turn pocket into the project entrance based on a 60 mph minimum design speed in a manner meeting the approval of the Manager, PF&R/Programs Division.

SC 4-13 Prior to issuance of a building permit, the applicant shall provide a cash deposit for

the difference in cost of designing and constructing the roadway improvements proposed with the project as compared to the costs associated with the ultimate configuration of El Toro Road, as determined by PDS/Environmental & Project Planning Services Division, all in a manner meeting the approval of the Manager, PF&R/Programs Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, Transportation Planning.

AM 4-14 El Toro Road lane improvements needed at the Project Entrance to serve Year 2000 and 2020 conditions shall be completed in conjunction with development.

AM 4-15 Traffic signing/striping shall be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking shall be analyzed for the project site in conjunction with approval of the site plan.

AM 4-16 The project shall participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program.

Both existing traffic patterns and SCTM traffic projections for Years 2000 and 2020 indicate the attraction of Glenn Ranch Road, Portola Parkway, and the Foothill Transportation Corridor (SR-241) for increased traffic volumes in the project study area. North of the Foothill Transportation Corridor, El Toro Road can accommodate projected traffic volumes with the proposed project on four travel lanes divided by a raised or striped median.

4.4.7 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project, with the above outlined mitigation measures, would reduce all traffic/circulation impacts to less than significant. No unavoidable adverse impacts would occur.

4.5 AIR QUALITY

An Air Quality Impact Assessment has been prepared for the proposed project by Giroux & Associates; and is included in Appendix F.

4.5.1 EXISTING ENVIRONMENTAL SETTING

Meteorology/Climate

The project site's climate, as with all of Southern California, is dominated by the strength and position

of the semi-permanent high pressure center over the Pacific Ocean near Hawaii. It creates cool summers, mild winters, infrequent rainfall, it drives the cool daytime sea breeze, and it maintains comfortable humidities and ample sunshine. Unfortunately, the same atmospheric processes that create the desirable living climate combine to restrict the ability of the atmosphere to disperse the air pollution generated by the large population attracted in part by the comfortable climate. Portions of the Los Angeles Basin therefore experience some of the worst air quality in the nation for certain pollutants.

Temperatures in El Toro average 62°F annually. Daily and seasonal oscillations of temperature are small because of the moderating effects of the nearby oceanic heat reservoir. In contrast to the steady temperature regime, rainfall is highly variable, and confined almost exclusively to the "rainy" period from early November to mid-April. Rainfall in the project area averages around 12 inches annually with January typically the wettest month of the year.

Winds near the project site, based on long-term monitoring from nearby El Toro MCAS, display several characteristic regimes. During the day, especially in summer, winds are from the west at 7-9 miles per hour. At night, especially in winter, the land becomes cooler than the ocean and an offshore wind of 3-5 miles per hour develops. After sunrise, the wind direction rotates through the southeast and south at 5-7 miles per hour until the west wind again becomes dominant in the early afternoon. Such light winds lead to limited local ventilation and resulting in possibly elevated pollution levels near freeways, shopping centers and other traffic concentrations. The project site is, however, sufficiently separated from traffic stagnation conditions as to preclude the formation of any local pollution "hot spots." One other important wind regime occurs when a high pressure center forms over the western United States and creates strong, hot, dry, gusty, Santa Ana winds from the northeast and east across El Toro.

The net effect of the area wind pattern is that any locally generated air pollutant emissions will be carried from east to west at night, and then reverse from west to east by day. Although the daytime wind speeds are generally stronger and therefore better ventilate the project area, the offshore flow, once well-organized late in the evening and during the night, is also strong enough to minimize any significant localized air stagnation. The least ventilated period is typically during the morning and evening directional transition when winds become near calm until the new flow component becomes fully established.

In addition to winds that govern the horizontal rate and trajectory of any air pollutants, Southern California experiences several characteristic temperature inversions that control the vertical depth through which pollutants can be mixed.

Ambient Air Quality Standards (AAQS): In order to assess the air quality impact of any proposed new development such as Saddleback Meadows, that impact, together with baseline air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered adequate to protect the public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress or infection, such as asthmatics, the elderly, the very young, people weak from other disease or illness, and persons engaged in heavy work or exercise, called "sensitive receptors". Healthy adults can tolerate periodic exposure to air

pollution levels well above these standards before adverse health effects are observed. Recent research has shown, however, that adverse health effects may occur from life-long chronic exposure to ozone concentrations that just meet the hourly standard. Barely meeting clean air standards may, therefore, not be enough to insure public health protection until some additional margin of safety is established to overcome chronic exposure health effects.

The Clean Air Act Amendments of 1970 established national AAQS with states retaining the option to adopt more stringent standards or to include other pollution species. Because California already had standards in existence before federal AAQS were established, and because of unique meteorological problems in California, there is considerable diversity between state and federal standards currently in effect in California as shown in Table 16.

Baseline Air Quality: The project site is located within the South Coast Air Basin, which is currently classified as non-attainment status. Existing and probable future levels of air quality in the project area can be best inferred from ambient air quality measurements conducted by the South Coast Air Quality Management District (AQMD) at its El Toro monitoring station. Monitoring at this station include both regional pollutants such as dust and smog, as well as primary vehicular pollution levels such as carbon monoxide. Table 17 summarizes the last seven years of published data from this monitoring station. Although the entire spectrum of air pollutants is not monitored at the El Toro station, the following conclusions can be drawn from this data:

a. Photochemical smog (ozone) levels continue to exceed standards by a wide margin. However, the frequency of first stage smog episodes has ranged from 0-2 per year with a noticeable trend toward fewer episodes within the last several years. First stage smog episodes have dropped by 90% in 1987-93 from 1981-86. 1990 was the first year without a first-stage smog alert (one hour $\geq$ 0.20 ppm) since ozone monitoring began at El Toro. 1992-94 was the first consecutive three-year period without a first-stage smog episode.

b. Annual maximum ozone levels rose in the early 1980's to close to the second stage alert level of 0.35 ppm for 1 hour, but they since dropped sharply to the sub-0.20 ppm level. For several years, El Toro had the worst smog of any station in Orange County. In the last several years, however, El Toro, and by inference all of the South County, had some of the lowest smog readings on record.

Table 16
AMBIENT AIR QUALITY STANDARDS

AIR POLLUTANT	STATE STANDARD CONCENTRATION/ AVERAGING TIME	FEDERAL PRIMARY STANDARD CONCENTRATION/ AVERAGING TIME	MOST RELEVANT EFFECTS
Ozone	0.09 ppm, 1-hr. avg. >	0.12 ppm, 1-hr avg.>	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg > 20 ppm, 1-hr avg. >	9 ppm, 8-hr avg > 35 ppm, 1-hr avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease, (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1-hr avg. >	0 053 ppm, ann. avg >	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes, (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0 04 ppm, 24-hr avg.> 0.25 ppm, 1-hr. avg. >	0.03 ppm, ann. avg > 0.14 ppm, 24-hr avg.>	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})	30 $\mu g/m^3$, ann. geometric mean > 50 $\mu g/m^3$, 24-hr average>	50 $\mu g/m^3$, annual arithmetic mean > 150$\mu g/m^3$, 24-hr avg >	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Sulfates	25 $\mu g/m^3$, 24-hr avg >=		(a) Decrease in ventilatory function, (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 $\mu g/m^3$, 30-day avg. >=	1.5 $\mu g/m^3$, calendar quarter>	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70 percent, 8-hour average (10am - 6pm)		Visibility impairment on days when relative humidity is less than 70 percent

Table 17
Air Quality Monitoring Summary - El Toro Monitoring Stations (1989-95)
(Number of Days Standards Were Exceeded, and Maximum Levels During Such Violations
Entries shown as ratios = samples exceeding standard/samples taken)

Pollutant/Standard	1989	1990	1991	1992	1993	1994	1995
Ozone:							
1-Hour > 0 09 ppm (a)	30	32	29	31	22	16	15
1-Hour > 0.12 ppm (b)	7	11	10	9	7	5	1
1-Hour ≥ 0.20 ppm ©	2	0	1	0	0	0	0
Max 1-Hour Conc. (ppm)	0.23	0.19	0.24	0.16	0.16	0.18	0.15
Carbon Monoxide:							
1-Hour > 20. ppm (a)	0	0	0	0	0	0	0
8-Hour > 9. ppm (a,b)	0	0	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	9	9	8	10	7	8	6
Max. 8-Hour Conc. (ppm)	5.1	5.6	4.8	7.3	4.1	5.4	4.1
Inhalable Particulates: (PM-10)							
24-Hour > 50 $\mu g/m^3$ (a)	20/60	16/55	9/59	5/60	7/61	7/59	11/60
24-Hour > 150 $\mu g/m^3$ (b)	0/60	0/55	0/59	0/60	0/61	0/59	0/60
Max. 24-Hour Conc. ($\mu g/m^3$)	88.	88.	94.	83.	115.	91.	122.

Source: South Coast Air Quality Management District, El Toro Monitoring Station, El Toro Road @ Jeronimo Road.

(a) = California ambient air quality standard
(b) = National ambient air quality standard
(c) = California first-stage smog episode alert level.

c. Measurements of carbon monoxide have shown relatively low baseline levels for a monitoring station located near two busy arterials (El Toro Road and Jeronimo Road). With lower traffic volumes and more complex terrain reducing stagnation potential, CO levels near Saddleback Meadows are probably even lower than the AQMD readings at the El Toro monitoring station.

d. Respirable dust (PM-10) levels periodically exceed the state standard, but the less stringent

federal PM-10 standard has never been violated since PM-10 measurements began at El Toro.

Air Quality Planning

The Federal Clean Air Act (1977 Amendments) stated that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan that demonstrates the steps needed to bring the area into compliance with all national standards by December 31, 1987. In the South Coast Air Basin (SCAB), the agencies designated to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies adopted an Air Quality Management Plan (AQMP) in 1979 and revised it in 1982 to project attainment of the standards in 2000. However, the EPA was required to disapprove the 1982 AQMP because it had not shown attainment by 1987, as required by the 1977 Clean Air Act Amendments (1977 CAAA).

Under court order, another AQMP revision was adopted by SCAG and the SCAQMD in 1989. The 1989 AQMP projected attainment of all national standards by the year 2007. The 1989 AQMP was again not approved by the federal Environmental Protection Agency (EPA) for incorporation in the State Implementation Plan (SIP) because the 2007 deadline for compliance was inconsistent with the 1977 CAAA.

The 1989 AQMP relied in part on technology which had not yet been invented to meet its year 2007 target. It called for stricter controls on automobiles, paints and coatings, new industries, and transportation usage. The plan was divided into three tiers, with Tier I representing measures which were available for immediate implementation, Tier II consisting of measures that needed further development but were based on known technology, and Tier III representing emission reduction measures that were dependent on the development of new technology, including heavy reliance on clean fueled vehicles.

In 1988, the California Legislature enacted the California Clean Air Act (CCAA). The CCAA requires that regional emissions be reduced by 5 percent per year, averaged over 3 year periods, until attainment can be demonstrated. Each area that does not currently meet a national or state ambient air quality standard is to prepare a plan which demonstrates how the 5 percent reductions will be achieved.

In July 1991, the SCAQMD adopted a new AQMP which was prepared to meet the CCAA requirements. Although the 1991 AQMP deferred the attainment date to 2010, consistent with the 1990 federal Clean Air Act, it contained fewer Tier III measures, relying on the adoption of new motor vehicle controls by the California Air Resources Board (ARB) which will result in cars by 2003 which are 80 percent cleaner than those sold in 1990.

The 1990 Federal Clean Air Act requires that revised SIPs be prepared with a sliding schedule of attainment dates depending upon the severity of existing air quality. Southern California has the worst smog in the country, and therefore has the longest amount of time to achieve clean air (2010). The 1991 AQMP was modified in 1994 and submitted in November, 1994 as the SCAB portion of the California SIP. A court-ordered requirement for substitution of a more draconian Federal

Implementation Plan (FIP) was reversed by the U. S. Congress in 1995. The 1994 SIP submittal is therefore the currently operable air quality plan for the region.

A residential development project such as Saddleback Meadows relates to the air quality planning process through the growth forecasts that were used as inputs into the regional transportation model. If a proposed development is consistent with those growth forecasts, and if all available emissions reduction strategies are implemented as effectively as possible on a project-specific basis, then the air quality impact on a regional basis should be considered as less than significant. The AQMP also contains a number of land use and transportation control measures (TCMs). Many of these measures can not be implemented on any single development basis because they require an integration of all development and all transportation planning. The effectiveness of many TCMs is expected to increase over the next decade AQMP consistency on a single development basis is thus more a matter of facilitating or providing the infrastructure for TCM implementation than of actually specifically being solely responsible to carry out regionally comprehensive AQMP measures.

4.5.2 EFFECTS FOUND TO BE INSIGNIFICANT

The following air quality effects were found to be less than significant as determined by the Initial Study/Environmental Assessment contained in Appendix C of this EIR. These factors are not evaluated in this EIR.

- The project would not create objectionable odors.

4.5.3 PROJECT IMPACTS

The analysis methodology utilized procedures outlined in the SCAQMD 1993 "CEQA Air Quality Handbook" where appropriate. In areas where more site-specific information was available beyond the default values recommended in the handbook, they were used to supplement the SCAQMD-suggested input parameters.

Vehicular emissions were calculated using the SCAQMD "MAAQI" computer model. Microscale emissions impacts were calculated using one generic run of the CALINE4 computer model adjusted for site-specific traffic volumes, travel speeds and emission data for intersections near Saddleback Meadows potentially affected by project-related traffic.

Many air quality impacts from dispersed mobile sources, i.e., the dominant pollution generators in the basin, often occur hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual source is generally immeasurably small.

Significance Impact Criteria

Criteria for determining the potential significance of new air quality impacts are based on Federal, state and local pollution standards/regulations. Impacts are considered potentially significant if project emissions meet any of the following criteria:

A. If the project is capable of an increase in daily emissions that exceeds the following SCAQMD recommended threshold criteria:

Table 18
SCAQMD RECOMMENDED SIGNIFICANCE THRESHOLD CRITERIA[8]

Pollutant	Operational Emissions	Construction Emissions
Reactive Organic Gases (ROG)	55 lbs/day	75 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Suspended Particulates (PM_{10})	150 lbs/day	150 lbs/day
Nitrogen Oxides (NO_x)	55 lbs/day	100 lbs/day
Sulphur Oxides (SO_x)	150 lbs/day	150 lbs/day

B. If project emissions increase ambient carbon monoxide levels from below the NAAQS/CAAQS to above these standards.

C. If project emissions result in the accedence of any State, Federal or local ambient standards.

These thresholds do not take into account several important considerations, namely:

1. Emission levels from one large project may exceed thresholds while those from numerous smaller projects with identical emissions might not, even though the regional impact is the same.

2. Large developments have a greater opportunity to effectively implement TCMs because of a greater potential participant pool in trip/VMT diversion programs.

3. Project-related emissions and their regional impact may already have been incorporated into regional growth projections.

4. Emissions generated in or near El Toro have essentially the same regional air quality impact if they were released in a nearby community. If the anticipated demand for residential use is not met at Saddleback Meadows but in some other community, the no-project alternative will have basically the same regional air quality impact.

Additional indicators should be used as screening criteria to evaluate the need for further analysis with

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[8] *The SCAQMD recommended significance thresholds listed above are found in the District's revised CEQA Air Quality Handbook, adopted in February, 1993*

respect to air quality. Whenever possible, the project should be evaluated in a quantitative analysis; otherwise a qualitative analysis is appropriate. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation;
- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP;
- Project could generate vehicle trips that cause a CO hot spot;
- Project might have the potential to create or be subjected to objectionable odors;
- Project could have hazardous materials on site and could result in an accidental release of air toxic emissions;
- Project could emit an air toxic contaminant regulated by District rules or that is on a federal or state air toxic list;
- Project could involve disposal of hazardous waste;
- Project could be occupied by sensitive receptors near a facility that emits air toxics or near CO hot spots;
- Project could emit carcinogenic air contaminants that could pose a cancer risk.

Project-Related Sources of Potential Impact

Intensification of land uses in Orange County potentially impacts ambient air quality on two scales of motion. As cars drive throughout Southern California, the small incremental contribution to the basin air pollution burden from any single vehicle is added to that from several million other vehicles. The impact from this project, even if it generates a significant number of new vehicle trips, is very small on a regional scale. Basin-wide air quality impacts are, therefore, addressed in terms of project compatibility with regional air quality plans. If any given project or plan has been properly incorporated into basin-wide growth projections which are the basis for regional air quality/transportation planning, then the basin-wide impact of any proposed development is presumed, by definition, to be less than significant.

Locally, changes in the location of any collection of automotive sources, or changes in the number of vehicles or travel speeds may impact the microscale air quality around any given development site. Traffic increases not only contribute air pollutants in direct proportion to their cumulative percentage of traffic volume growth, but they may slow all existing traffic to slower, more inefficient travel speeds. The development traffic/air quality impact is thus potentially compounded.

Temporary construction activity emissions will occur during project buildout. Such emissions include

on-site generation of dust and equipment exhaust, and off-site emissions from construction employee commuting and/or trucks delivering building materials. Because of their temporary nature, air quality impacts from construction have often been considered as individually less than significant. Also, construction activity emissions are difficult to quantify, since the exact type and amount of equipment that will be used or the acreage that may be disturbed on any given day in the future is not known with any reasonable certainty. The emphasis in environmental documents relative to construction activity emission impacts has therefore been to minimize the emissions as fully as possible through comprehensive mitigation even if the precise amount of emissions can not be precisely quantified.

Historical use of agricultural pesticides or herbicides on the project site may have left residues within the soil that may be lofted during site development. Such concern, however, are more common for cultivated fields where DDT or other chlorinated compounds were used than for open rangeland such as the project site.

Construction workers, and to some extent the public at large, could also be exposed to any spores, viruses or other materials in the soil released during site grading. Grading activities are not likely to create any unacceptable health impacts from biological organisms in that organisms such as Valley Fever are not endemic to the El Toro area. Thousands of acres of Orange County have been tilled for many years or graded for new development with minimal evidence of any health impacts from soil-borne pathogens.

Construction Activity Impacts

Dust is normally the primary concern during construction of new buildings and infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Because of such variations, regulatory agencies use one universal factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into mid-range average values.

The PM-10 fraction of fugitive dust emissions are predicted to be around 55 pounds per day per acre disturbed in the absence of any dust control measures being applied.[9] Mandatory measures required by South Coast AQMD Rule 403 (Fugitive Dust) are generally assumed to reduce this rate by 50%. Average daily PM-10 emissions during site grading and other disturbance are stated in the SCAQMD Handbook to be 26.4 pounds/ acre. Enhanced dust control procedures such as continual soil wetting, use of supplemental binders, early paving, etc. can theoretically achieve a 90% PM-10 control efficiency, or around 5.3 pounds per day per acre.

With "normal" dust control procedures, daily PM-10 emissions during construction of any individual project would exceed the SCAQMD emissions significance threshold of 150 pounds per day if more than 5.7 acres (150 lb ÷ 26.4 lb/acre = 5.7 acres) were under simultaneous disturbance. With

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9 *AQMD CEQA Handbook, Table 9-2*

assumed maximum achievable dust control, up to 28.4 acres (150 ÷ 5.7 = 28.4) could be under simultaneous disturbance.

The proposed project would be mass graded in one phase, with a total area of disturbance of 211 acres Project development would exceed the PM-10 emissions significance threshold if a very substantial fraction of the project area were under simultaneous construction. It is highly doubtful, however, that heavy equipment operations will cover more than 25 acres because it would take an armada of equipment moving furiously to cover that much ground on any given day. It is possible, however, that more than 5.7 acres may be under simultaneous disturbance as the significance threshold for standard dust abatement. Enhanced dust control procedures thus need to be implemented during construction. With an effective dust control program implemented during construction, PM-10 impacts can be maintained at a less-than-significant level.

In addition to the fine particulates that remain suspended in the air semi-indefinitely, soil disturbance during construction may release considerable amounts of larger particles that have short atmospheric residence times. These larger particulates are generally inert silicates that are readily filtered out in the upper respiratory tract. They therefore have no adverse health effects. They may, however, create a soiling nuisance as they settle out on parked cars, landscaping foliage or other horizontal surfaces. Clouds of such dust may also locally impair visibility. Soiling nuisance at St. Michael's Abbey during daytime on-shore flow or in Hidden Hills during nocturnal drainage winds is therefore a possible concern that further prompts the use of efficient dust control.

It is through these larger particulates that the public is aware of a dust problem in a construction area rather than through PM-10. Because such large particles are more readily lofted by turbulence during strong winds, extra dust control or cessation of soil disturbance activities is recommended when wind speeds exceed a heavy particulate lofting threshold of around 25 mph.

Construction also entails use of internal combustion engines to power on-road trucks and off-road mobile, semi-mobile and semi-stationary equipment. Such sources are mainly diesel-powered and are poorly regulated in terms of allowable emission levels. Off-road sources are sometimes not well maintained because there is no regulatory mechanism to enforce efficient combustion as there is for on-road sources. The SCAQMD has calculated the total area under construction that would cause the significance thresholds to be exceeded from construction-related equipment combustion emissions. For single family residences, the threshold is 1.3 million square feet of gross floor area (SCAQMD Handbook, Table 6-2). For 705 units even at 2,630 square feet per unit, total improved footage from simultaneous construction of the entire project will be less than the stated threshold. With the use of a comprehensive dust control program, construction activity air quality impacts in the project vicinity can be maintained at less than significant levels.

Construction activities are concentrated at the construction site, but they also spill over into the adjacent community. Spill-over may be physical spillage, or it may be from off-site congestion effects. Vehicles may track dirt off-site, lane closures may create congestion on public roadways and construction worker vehicles and supply trucks may compete with the general public for sometimes inadequate roadway capacity. Trucks may be left idling near off-site sensitive receptors while waiting to load or unload. Each of these small impacts nevertheless may be cumulatively significant when

spread over several years of project area buildout. As with the on-site impacts, a heightened level of impact mitigation will need to be utilized to maintain an overall tolerable level of impact from site activity construction. Housekeeping and construction activity management procedures are identified in the impact mitigation discussion relative to "spill-over" minimization.

Mobile Source Impacts

The bulk of the proposed project's impact will derive from the approximately 5,410 daily trips that will be generated at full site buildout. At a typical trip length of around 9 miles per trip, project implementation would add around 50,000 vehicle miles traveled (VMT) to the basin-wide mobile source emissions burden.

The emissions associated with project buildout can be readily calculated using the SCAQMD's MAAQI computer model. Emissions from project-related travel were calculated for a buildout year of 1997 as the earliest likely project completion year. The results of these calculations are summarized in Table 19. The computer output from the emissions model is contained in Appendix G of this document.

Table 19
PROJECT-RELATED OPERATIONAL EMISSIONS (POUNDS/DAY)*

Land Use	CO	ROG	NO_x	SO_x	PM-10
750 D.U. (Mfg. Housing	1311.8	107.7	149.0	10.3	15.2
20 KSF Commercial	397.3	34.0	43.1	3.2	5.1
Total	1709.1	141.7	192.1	13.5	20.3
SCAQMD	550.0	55.0	55.0	150.0	150.0
Proj. Share of Threshold	311%	258%	349%	9%	14%

Source: MAAQI Computer Model (output in Appendix)

* Assuming a 1998 buildout.

** Stationary source emissions are slightly over predicted because project size was artificially modified upward to force MAAQI model trip projections to match the project traffic study forecasts.

Mobile Source Emissions

As shown in Table 19, mobile source emissions for the three primary exhaust pollutants (ROG, CO and NO_x) exceed the SCAQMD significance threshold by a wide margin. This conclusion is generally consistent with the SCAQMD Handbook ... which, in Table 6-2, states that single family residential projects of 166 units or more may have a significant environmental impact. Although the SCAQMD Air Quality Handbook states strongly that such emission levels will have a significant impact on the environment, that finding is not necessarily binding. The SCAQMD is only an advisory agency on this project, such that the Lead Agency must evaluate whether there will actually be a measurable degradation of the regional air quality environment resulting from project implementation. While the proposed project would cause the suggested AQMD emissions threshold to be exceeded by a wide margin, several considerations may mitigate against considering the resulting air quality impact as individually significant as follows:

1 Similar emissions would result from development of the same project in an adjacent jurisdiction or elsewhere in Orange County.

2. The project is consistent with growth assumptions that were used for regional emissions forecasts in the AQMP. The AQMP forecasts regional attainment of the federal ozone standard by 2010 as long as the rate of predicted regional growth is not exceeded. The Saddleback Meadows project is only a minute part of predicted Orange County growth.

3. The transportation infrastructure is in place to efficiently service the site with good access to multiple transportation modes.

4. The project is located near the Foothill Transportation Corridor that provides good linkage between the Orange County concentrated employment centers and the project site.

The above considerations would allow for the Lead Agency to find that the air quality impact is individually less than significant despite the considerable emissions magnitude. If the emissions total alone were to be judged as sufficient evidence for a finding of significance, then the above considerations should be incorporated into a statement of overriding consideration.

Relative to a finding of (in)significance for the mobile source emissions, it should also be noted that the calculations do not take into account mandatory conversion of the basin travel fleet to methanol or a similar "clean" fuel. Clean fuel market penetration is mandated to be 25 percent by 1997 and then rise steadily into the early 21st Century. Zero emissions vehicle (ZEV) availability is also currently mandated under state law by the end of this decade with accelerated market penetration expected in the first decade of the next century. The assumption of 100 percent use of gasoline and diesel fuel in the analysis thus overstates project regional air quality impacts. However, independent of any reason to reduce the stated burden, traffic from all future growth will contribute significantly to the sub-regional and regional air pollution burden, and, therefore, creates a cumulatively significant air quality impact, regardless of project size. This is a function of growth and the dependence upon

the single occupant fossil-fueled vehicle as the primary means of transportation. All growth delays the ultimate attainment of regional clean air standards. This project, within a loose definition of "cumulative projects", would contribute to that impediment to clean air. Regardless of any finding of individual impact significance, the proposed Saddleback Meadows development should be identified as having a cumulatively significant air quality impact.

Because vehicular sources from all combined growth will contribute so substantially to regional emissions total, it correspondingly represents a significant opportunity to reduce that contribution. A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) will achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end.

Orange County has been extensively involved in trip/VMT reduction programs through the trip reduction ordinances (TRO) and various geographically focused transportation management programs. Several countywide programs that monitor city and county response to AQMP TCMs have shown that the county collectively has exceeded the 1994 trip reduction target of the 1991 AQMP when the county is allocated its fair share of the basin-wide reduction target. While progress toward reducing the dependence on the single occupant vehicle (SOV) is slow, continued progress toward higher average vehicle ridership (AVR) is to be expected during the Saddleback Meadows buildout time frame.

While regional mobile source emissions do not have a very direct impact on local El Toro air quality, the incremental addition of growth-related traffic over a wide area may change microscale air quality distributions. To determine whether future traffic changes will create an adverse air quality impact, a microscale air quality analysis was performed for the traffic analysis grid around the project site. A screening procedure based on the California line source roadway dispersion model CALINE4 was run for a number of traffic scenarios to evaluate any changes due to changes in patterns of growth anticipated as part of the Saddleback Meadows development.

The model combines the results of the traffic analysis with very restrictive dispersion conditions in order to generate a worst-case impact assessment. Carbon monoxide (CO) was used as an indicator of any "hot spot" potential because CO, unlike regional pollutants such as ozone, is directly related to source activity immediately adjacent to the receptor (a primary, unreacted pollutant impact). Calculations were made for an hourly exposure in the immediate vicinity of 10 roadway intersections where baseline traffic volumes were calculated in the traffic analysis.

The results of the microscale impact analysis are summarized in Table 20. The values in Table 20 must be added to any non-local background CO distribution. If one assumes that the maximum level measured near the El Toro and Jeronimo Roads intersection is the regional background, and that the worst-case, one-hour level of 6 ppm observed in 1995 occurs at the exact same hour as any worst-case project impact, then it would take a local contribution of 14 ppm to threaten the one-hour California CO standard of 20 ppm. Microscale hourly CO levels, both without and with the proposed project are forecast to be below the 14 ppm threshold. Combined CO concentrations will thus remain below the California 1-hour CO standard of 20 ppm, and far below the federal standard of 35 ppm.

Table 20
MICROSCALE AIR QUALITY IMPACT ANALYSIS
(Hourly CO concentration [ppm] above non-local background at edge of each indicated intersection).

	-- Existing --		2020			
Intersection	**Base**	**+Proj.**	**No. Proj.**	**Mitig.**	**W/Proj.**	**Mitl.**
Portola Pkwy/Glenn Ranch Road	3.2	3.3	6.5	3.7	6 5	3.8
El Toro Road/Valley Vista Way	1.7	2.4	1.1	0 6	1 2	0.6
Portola Pkwy/El Toro Road	2.9	3.0	5.3	3.0	5.3	3.0
El Toro Road/Glenn Ranch Road	1.7	1.9	1.7	0.4	1.9	0.8
El Toro Road/Live Oak Canyon Road	2.9	3 0	2.1	0.9	2.2	1.0
Santiago Canyon Road/Modjeska Canyon Road	4.7	4 9	2.6	0.9	2.6	0.9
El Toro Road/Ridgeline Road South	2.1	2.3	1.1	0.5	1.5	1.0
Portola Pkwy/Foothill T.C.	2.4	2.4	5.7	2.5	5.7	2.5
Marguerite Pkwy/El Toro Road	1.7	1.9	1.7	1.3	2 0	1.5
Santiago Canyon Road/Ridgeline Road North	2.6	4.5	2 5	1.1	2.6	1.1
Saddleback Ranch Road/Glenn Ranch Road	0 8	0.8	0.9	0 9	1.0	1.2
El Toro Road/Project Entrance	---	2.4	--	---	1.2	0.6

Source: Screening Procedure based upon CALINE4 Model; Caltrans Air Quality Technical Analysis Notes (AQTAN), 1988.

Project-related CO contributions are seen in Table 20 to range from 0.0 to 1.9 ppm. The only increase exceeding 1 ppm occurs at El Toro Road and Ridgeline, where a change in level of service increases queuing times for all vehicles. The average increase at all intersections is 0.2 ppm compared to the most stringent standard of 20 ppm (1.0 percent average change). There are not now, nor will there be with the project, any microscale air pollution "hot spots" at any project area intersections.

Increased area-wide traffic and associated congestion is offset by continued improvements in vehicular CO emissions per average vehicle. Future (2020) CO levels with the proposed project and with anticipated intersection improvements are generally less than in 1997. At no intersection are 2020 "with project" levels greater than in 1997 by no more than 1.0 ppm. SCAQMD Rule 1303 identifies a CO increment of less than 5 percent of the hourly standard of 20 ppm, i.e., 1.0 ppm, to

be a de minimis increment requiring no further impact analysis. The findings of the microscale impact assessment are therefore that CO levels under theoretical worst-case conditions do not exceed clean air standards and the Saddleback meadows traffic will add an insignificant amount to the total CO exposure. Microscale impacts are less than significant.

4.5.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project prior to the application of mitigation measures would result in significant impacts to short term dust (PM-10) generation, and operational emissions. Potentially significant impacts were identified during construction from dust (PM-10) generated by surface disturbance and from construction equipment operations. Operational emissions will be in excess of thresholds of significance for regionally significant pollutants as identified by the South Coast AQMD. As a minimum, vehicular emissions from project-related traffic should be identified as having a cumulatively significant air quality impact.

4.5.5 CUMULATIVE IMPACTS

Cumulative impacts are evaluated in Section 4.5.3 of this document. Regardless of any finding of individual impact significance, the proposed project would have an unavoidable adverse cumulative impact on air quality.

4.5.6 MITIGATION MEASURES

A number of mitigations, as related to the project, are already incorporated into rules, regulations or ordinances. They are included in the following list of mitigation measures in that compliance mitigates a potentially adverse impact. They are not discretionary measures, however, which a developer can implement or the County of Orange can additionally require since compliance is already assumed in the impact analysis.

Project Design Features

No air quality PDF's have been proposed.

Standard Conditions and Mitigation Measures

SC 5-1 Grading and excavation shall be halted during periods of high winds meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. According to AQP Measure F-4, high winds are defined as 25 mph or greater. This level occurs only under unusually extreme conditions, such as Santa Ana wind conditions. Notations in the above format, included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

SC 5-2 Prior to issuance of grading permits, the project applicant shall demonstrate measures to ensure compliance with SCAQMD Rule 403, and shall identify the dust

suppression measures, such as regular watering, which shall be implemented to reduce emissions during construction and grading in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. This will help reduce the short-term impacts from particles which could result in nuisances that are prohibited by Rule 403.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations:

AM 5-3 As previously noted, no credit was taken for mobile source emissions reductions either from technology improvements (reformulated gasoline, alternative fuels and/or electric cars), nor from transportation behavior modification in response to programs such as South Coast AQMD Reg. XV or by the trip reduction programs. These programs will mitigate the identified significant growth-related cumulative air quality impact to some extent. Because the projected effectiveness of such programs and because the time frame for technology development is uncertain, the degree of possible mitigation can not be quantified with certainty. Similarly, the buildout date for Saddleback Meadows will depend on economic forces that can not be predicted. The following discussion structures the recommended mitigation as comprehensively as possible, but quantification of mitigation effectiveness is speculative at currently known levels of detail.

AM 5-4 Contractors will comply with SCAQMD Rule 403.

AM 5-5 Contractors will utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and will wash or sweep the construction access points at El Toro Road on a routine basis on a frequency specified by the County of Orange as well as whenever dirt is visible more than 50 feet from the access point independent of the routine clean-up schedule.

AM 5-6 Trucks hauling dirt on public roads to and from the site will be covered or will maintain a six inch differential between the maximum height of any hauled material and the top of the haul trailer. Haul truck drivers will water the load prior to leaving the site to prevent soil loss during transport.

AM 5-7 Construction management procedures required by the County of Orange and other jurisdictions shall be implemented. Contractor personnel responsible for supervision and the appropriate actions to be taken for the following measures shall be identified:

- Cessation of activities during a Stage-2 smog episode. Call 1-800-242-4022 for the daily forecast.

- Truck routes and schedules for receipt of materials shall be coordinated with County of Orange staff.

- Where feasible, on-road vehicles and off-road equipment shall be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes.

AM 5-8 Graded surfaces used for off-road parking, materials lay-down or awaiting future construction shall be stabilized for dust control as needed. Frequently accessed unpaved areas shall be paved as early as possible to minimize dirt trackout to public rights of way.

AM 5-9 Equipment will be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and use low-sulfur fuel as required by SCAQMD regulation.

Flag persons and appropriate traffic control devices will be used as needed to minimize construction activity interference with off-site traffic.

AM 5-11 Implementation of the above measures is expected to maintain construction activity air quality impacts at less than significant levels.

Operational Activities:

- Traffic flow at the project access will be maintained at acceptable levels of service through mitigation measures identified in the project traffic study.

- 220v electric power for future use to charge electric-powered vehicles will be made available in homeowner garages.

AM 5-12 Emissions calculations and the corresponding ambient air quality impact assessment for project-related construction and Saddleback Meadows operations presumed compliance with SCAQMD rules regarding dust control. The potential for additional emissions reduction beyond the mandatory requirements of existing rules and regulations was evaluated based on Appendix 11 of the SCAQMD Air Quality Handbook which quantifies reduction potential of a variety of project construction and operation emissions control measures.

Dust emissions can be controlled from their 50 percent control assumed for Rule 403 compliance by an additional 50-80 percent of the uncontrolled fraction. The net effective dust control level is therefore 75-90 percent.

Unless the entire project site is under simultaneous massive grading, attaining the optimum level of dust control will maintain dust impacts at less than significant levels.

Operational emissions reduction from mobile sources of 5 percent of their non-TCM implementation level can not reduce the substantial emission level to less than the SCAQMD advisory level significance thresholds. A number of secondary considerations were identified, however, that would either allow for a finding of an individually less than significant air quality impact.

4.5.7 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project, in conjunction with the above outlined mitigation measures, would result in unavoidable adverse impacts to cumulative operational emissions.

4.6 NOISE

A Noise Impact Analysis has been conducted for the proposed project by Giroux & Associates, and is included in Appendix H of the DEIR.

4.6.1 EXISTING ENVIRONMENTAL SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally described as unwanted sound. Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Several rating scales have been developed for the analysis of adverse effects of community noise on human beings. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. Upon this premise, a number of noise scales have been developed including the Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL).

LEQ is the sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over a given sample period. LEQ is the "energy" average noise level. CNEL is similar to LEQ but is based on a 24 hour period, and applies a time-weighting factor that places greater significance on noise events occurring during the evening and night hours (when sleep disturbance is a concern). "Time-weighted" refers to the fact that noise occurring during certain sensitive time periods is penalized for occurring at these times. The evening period (7 p.m. to 10 p.m.) penalizes noises by 5 dB, while nighttime (10 p.m to 7 a.m.) noises are penalized by 10 dB. The CNEL scale is specified by the County of Orange for community noise analysis.

An interior CNEL of 45 dB(A) has been required by the State noise insulation standards (Title 24 of the California Code of Regulations) for all multiple family dwelling units and hotel/motel rooms since 1974. In 1988, the State Building Standards Commission expanded that standard to include all habitable rooms, including single family or low density residential uses. All development in close

proximity to automotive traffic, rail or industrial noise sources with baseline levels exceeding 60 dB CNEL must undergo an analysis to verify that the 45 dB interior standard is attainable.

Exterior to interior noise attenuation is typically 20 dB for all windows closed. A 65 dB CNEL exterior noise exposure thus generally allows the 45 dB CNEL interior standard to be met as long as windows can normally be closed to shut out the noise. A level of 65 dB is also the threshold where noise begins to intrude significantly into normal activities such as having a conversation. Although people may express annoyance if traffic noise levels in usable exterior space such as yards, patios, porches, etc. are below 65 dB, the percentage of "highly annoyed" people increases dramatically when noise exceeds 65 dB.

Noise/land use compatibility standards for various classes of land uses are generally expressed in the Noise Element of the General Plan to insure that noise exposure is considered in any development decisions. Local noise suitability criteria are based on state model guidelines shown in Exhibit 47.

Exhibit 47 contains four classes of acceptability and has a number of overlapping compatibility noise levels within several criteria. In order to reduce the potential ambiguity of various conditional acceptabilities, Orange County developed a more clear-cut matrix of acceptable noise levels shown in Table 21 and explained in Table 26.

Noise standards for residential projects are shown in Table 25:

Table 21
ORANGE COUNTY RESIDENTIAL NOISE STANDARDS

Exterior Level	Requirement
<60 dB CNEL	None
60-65 dB CNEL	Indoor Level <45 dB CNEL
>65 dB CNEL	Outdoor Level Mitigated to <65 dB CNEL Indoor Level <45 dB CNEL

Baseline Noise Levels

Existing noise levels on the project site are normally low except in close proximity to El Toro Road. Periods of quiet are interspersed with occasionally noisy periods of aircraft overflights. The project site also is near a flight corridor for military helicopter training operations in Santiago, Black Star and other interior canyons.

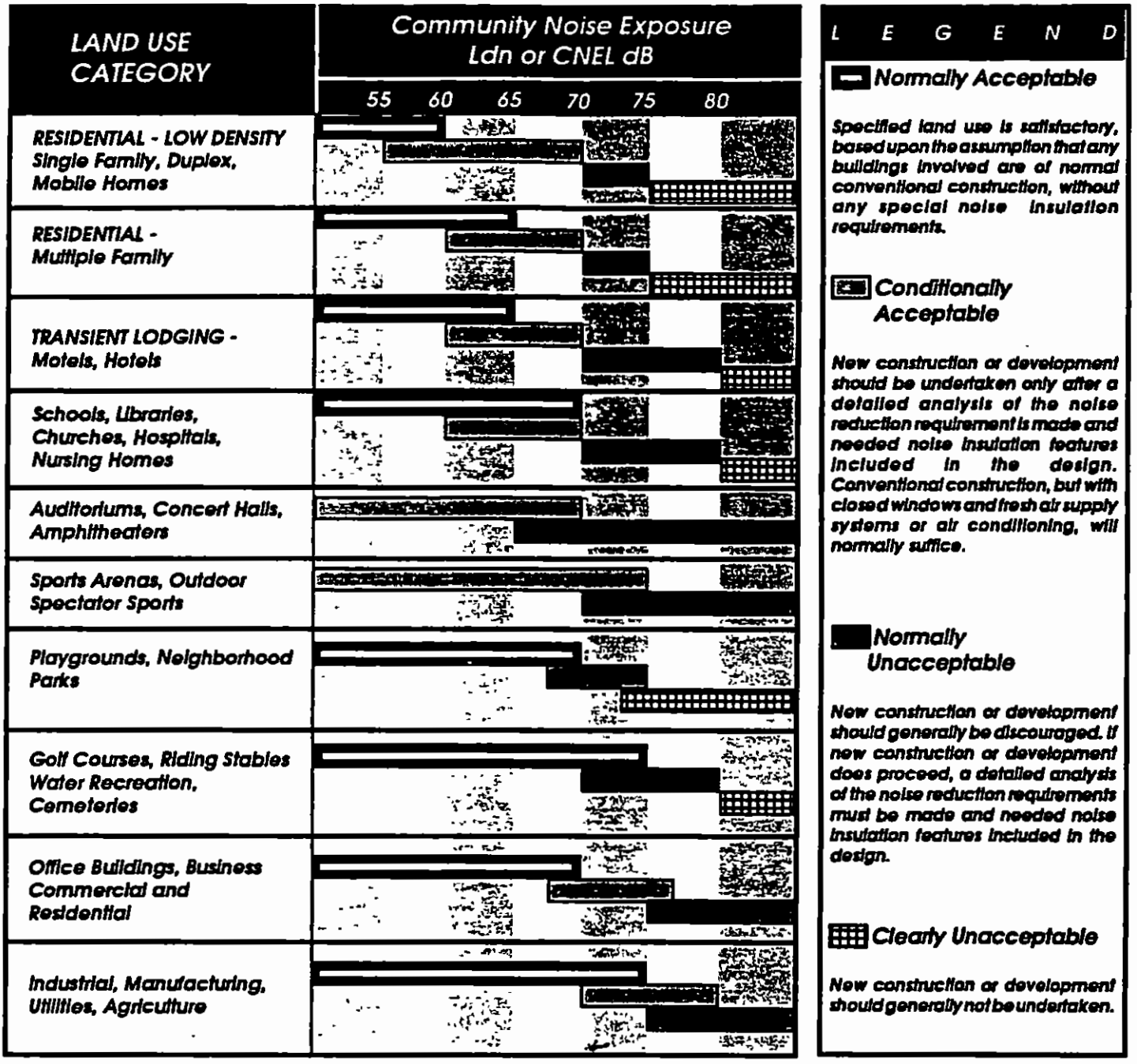
The project site is located near one of the primary landing/takeoff routes from El Toro MCAS. Aircraft above the site, however, are sufficiently high such that the noise exposure is only marginally degraded. Exhibit 48 shows that the site is traversed by the 60 dB CNEL contour, shown in the

Orange County Noise Element. The 60 dB contour just touches a small area in the southwestern corner of the project site. Almost all of the project site is outside the 60 dB CNEL contour. However, County policy relative to aircraft noise exposure is to use the highest exposure anywhere on the property as the noise reference level. At the property line adjacent to Valley Vista Way in an area of proposed open space, the maximum El Toro MCAS noise exposure is 62 dB CNEL. To be consistent with County policy, this level was thus used as an impact evaluation/mitigation criterion with the understanding that its use is over productive to varying degrees across the project site.

Aircraft fleet conversion since the element was adopted have slightly reduced the project site noise exposure. The project site is shown as being traversed by the 60 dB CNEL contour near the southwest corner of the property in the County Noise Element. Its current actual exposure is around 2 dB less with the 60 dB CNEL contour just off the project site. However, small differences (2 dB) are generally indistinguishable. Aircraft noise will thus be a project constraint as long as aviation operations continue at El Toro. Depending upon future site re-use, aircraft noise may or may not be an important issue.

Because aircraft noise contours are constructed based upon average annual operations, and because the contours represent extended periods of quiet with isolated noise peaks, CNEL is not necessarily the best indicator of noise nuisance potential. Individual fly-over events may thus be intrusive even if the CNEL is below levels considered unacceptable for noise-sensitive uses. Mitigation for single event intrusion has therefore been incorporated For this project in addition to complying with the uniforms building code adopted by the State of California and the practices of the Orange County Environmental Management Agency.

In order to characterize existing project site noise levels, a brief noise measurement program was undertaken on August 28, 1995. Noise levels were measured for 30-minute periods near El Toro Road, and again near the caretaker's trailer by the cattle corral. The observed levels (in dB) were as follows:



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

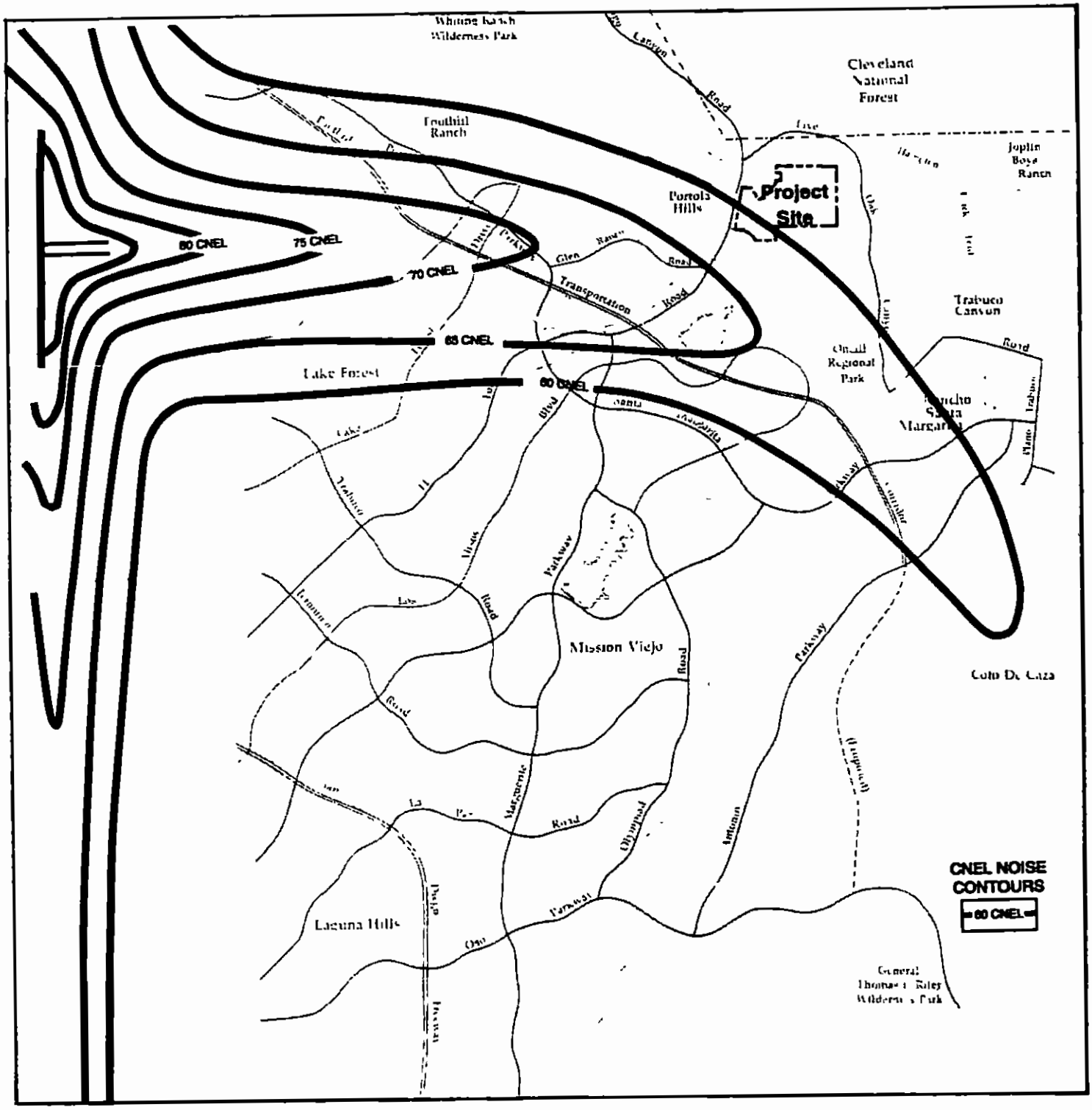
County of Orange P&DS

Scale: N/A
Source: N/A

N

California Noise & Land Use Compatibility Guidelines

EXHIBIT No. 47



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

El Toro MCAS Noise Contours

EXHIBIT No. 48

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: N/A

Table 22
EXISTING ONSITE NOISE LEVELS

Parameter	50' to El Toro Rd.	Cattle Corral [a]	Cattle Corral [b]
LEQ	67.8	62.4	48.0
Lmax	86.5	86.5	—
Lmin	38.0	39.0	—
L10	71.0	55.5	—
L50	59.5	46.0	—
L90	43.5	42.5	—

[a] - with helicopter overflights

[b] - without helicopter activity

The dramatic effect of just a few single loud noise events skewing the average is seen in the difference between periods of helicopter traffic versus flight-free periods. Without the helicopters, the site interior has a semi-rural noise character. With the flight activity, the average noise level, as expressed by LEQ, is only around 5 dB less than directly adjacent to El Toro Road. As noted above, average noise exposure alone is therefore not a completely sufficient criterion for evaluating possible impacts of the ambient acoustic environment on development plans for the project.

4.6.2 EFFECTS FOUND TO BE INSIGNIFICANT

The following noise effects were found to be less than significant as determined by the Initial Study/Environmental Assessment contained in Appendix C of this EIR. These factors are not evaluated in this EIR.

- None of the effects listed in the Initial Study are insignificant.

Tat e 23

ORANGE COUNTY LAND USE/CNEL COMPATIBILITY MATRIX[10]

Type of Use	65+ dB CNEL	60-65 dB CNEL
Residential	3a, b, e	2a, e
Commercial	2c	2c
Employment	2c	2c
Open Space		
• Local	2c	2c
• Community	2c	2c
• Regional	2c	2c
Educational Facilities		
• School (K through 12)	2c, d, e	2c, d, e
• Preschool, college, other	2c, d, e	2c, d, e
Places of Worship	2c, d, e	2c, d, e
Hospitals		
• General	2a, c, d, e	2a, c, d, e
• Convalescent	2a, c, d, e	2a, c, d, e
Group Quarters	1a, b, c, e	2a, c, e
Hotels/Motels	2a, c	2a, c
Accessory Uses		
• Executive Apartments	1a, b, e	2a, e
• Caretakers	1a, b, c, e	2a, c, e

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10 *Explanation and Definitions:*

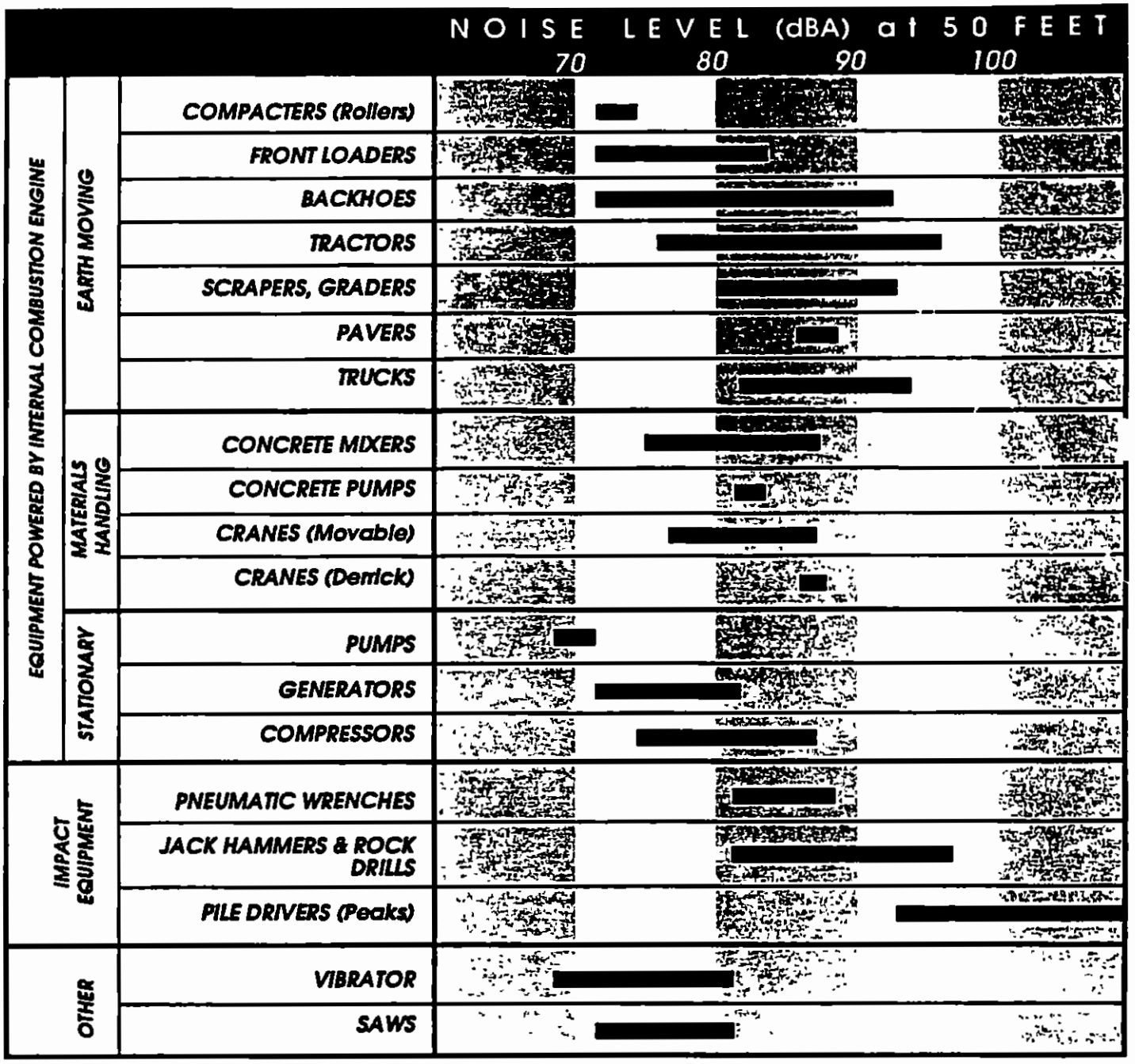
1. *Allowed if interior and exterior community noise levels can be mitigated.*
2. *Allowed if interior levels can be mitigated.*
3. *New residential uses are prohibited in areas within the 65-decibel contour from any airport or air station; allowed in other areas if interior and exterior community noise levels can be mitigated. The prohibition against new residential development excludes limited "infill" development within an established neighborhood.*

Standards Required for Compatibility of Land Use and Noise

a. *Interior Standard. CNEL of less than 45-decibels (habitable rooms only)*
b. *Exterior Standard: CNEL of less than 65-decibels in outdoor living areas*
c. *Interior Standard: LEQ(h) = 45 to 65 decibels interior noise level, depending on interior use*

Typical Use	*LEQ(h)*
• *Private Office, Church Sanctuary, College, Preschool, Schools (Grade K-12), Board Room, Conference Room, etc.*	*45*
• *General Office, Reception, Clerical, etc.*	*50*
• *Schools (Grades K-12)*	*52*
• *Bank Lobby, Retail Store, Restaurant, Typing Pool, etc.*	*55*
• *Manufacturing, Kitchen, Warehousing, etc.*	*65*

d. *Exterior Standard: LEQ(h) of less than 65 decibels in outdoor living areas.*
e. *Interior Standard: As approved by the Board of Supervisors for sound events of short duration such as aircraft fly-overs or individual passing railroad trains.*



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Typical Construction Equipment Noise Levels

EXHIBIT No. 4

URBAN VISION

County of Orange P&DS

Scale: N/A
Source: N/A

N

4.6.3 PROJECT IMPACTS

Three noise concerns are typically identified with land use intensification such as that proposed for the project area. Construction activities, especially heavy equipment, will create short-term noise increases near the project site. Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the El Toro area. Since, however, the number of trips generated by this small housing project is limited, the impact of ambient noise on the project site, rather than project traffic noise impacts on the rest of the community, is the important noise environment concern.

Construction Noise Impacts

Temporary construction noise impacts will vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by site clearing and grading, then by foundation construction, and finally for finish construction. The earth-moving (grading) activities are anticipated to be the noisiest sources during construction with equipment noise ranging from 75 to 90 dB(A) at 50 feet from the source.

Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. The quieter construction noise sources will, therefore, drop below 60 dB by about 300 feet from the source while the loudest sources might still be detectable above the local background beyond 1,000' from the construction area. With hilly topography in the project vicinity, the terrain shielding effects will limit the "noise envelope" around each construction site to considerably less than its theoretical maximum.

Construction noise sources are not strictly relatable to a noise standard because they occur only during selected times and the source strength varies sharply with time. The penalty associated with noise disturbance during quiet hours and the nuisance factor accompanying such disturbance usually leads to time limits on grading activities imposed as conditions on grading permits. The weekday (including Saturday) hours from 7 a.m. to 8 p.m. are the times allowed in the Orange County Noise Ordinance for construction or grading. Division 6 (Sec. 4-6-1, et seq.) of the County Code also contains standard requirements related to the distance separation between construction activities and any occupied dwellings. EMA's "Standard Condition for Approval" N10 requires:

1. All powered equipment operating within 1,000 feet of a dwelling must have a properly operating and maintained muffler.

2. Stockpiling and staging activities must be located as far as practicable from dwellings.

Construction activities in areas of noise-sensitive biotic habitats such as coastal sage scrub containing gnatcatchers may affect bird behavior. Little actual evidence of noise effects on gnatcatchers has been documented, but many wildlife management agencies believe such effects exist. In San Diego County, a standard of 60 dB Leq (one hour average) derived from studies on least Bells Vireo has been applied to gnatcatchers. Use of this standard ignores the fact that a large number of successful breeding pairs have been found directly under the take-off end of major airport runways or next to freeways where peak hourly noise levels reach almost 80 dB. Many San Diego County grading projects have nevertheless been conditioned to avoid the breeding season for possibly noise-sensitive birds, or to erect temporary berms or other buffers to reduce avian noise exposure if seasonal avoidance is not practical.

Development-Related Vehicular Noise Impacts

Long term noise concerns from the increased urbanization of the project area center primarily on mobile source emissions surrounding the project site. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal highway noise prediction model (FHWA-RD-77-108) in a computerized version of the model developed by Caltrans. The model calculates the Leq noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.

Project-related traffic may incrementally contribute to the noise exposure of off-site receiver locations. Of the 3780 daily project-generated trips, 75% will travel southwestward on El Toro Road, while the other 25% will turn right at El Toro Road to travel inland. At each subsequent turning opportunity, fractions of each traffic stream will split into different directions and thus dilute any off-site project traffic noise impact. The CNEL at 100 feet from area roadways for various scenarios is shown in Table 24.

As shown in Table 24, Valley Vista Way and Glenn Ranch Road would experience noise increases exceeding 2 dB noise level increases of 1 dB or greater are considered distinguishable. However, as shown in the Table 25, the 65 dB CNEL contour will remain within 50 feet of the roadway centerline when project traffic noise is superimposed upon existing noise levels. This offsets any degree of noise impact occurring on these roadways. It should also be noted that in areas of concentrated traffic, such as at the project area, the high noise levels already experienced will substantially mask most project noise contribution. The project is too limited in scope to create a discernible change in offsite traffic noise levels. Noise impact on the ambient acoustic environment is judged to be less than significant.

Table 24
CNEL (dB[A]) at 100' to CENTERLINE

Link	Existing	Exist. + Project	2000 No Project	2000 W/Project	2020 Cumul.
Santiago Canyon Road:					
• N of Modjeska Canyon Road	65	65	65	65	67
• Modjeska Canyon Rd. to Ridgeline	65	65	65	66	67
• Ridgeline Rd. to Live Oak Cyn. Rd.	63	64	65	66	67
Modjeska Canyon Road:	53	54	55	55	55
• East of Santiago Cyn. Rd.					
El Toro Road:					
• Ridgeline Road to Project	65	66	65	66	68
• Project to Valley Vista	65	66	65	67	68
• Valley Vista - Glenn Ranch	65	66	65	66	68
• Glenn Ranch Rd. to SR-241	66	66	66	67	68
• SR-241 to Santa Margarita Parkway	66	66	66	67	68
• Marguerite Pkwy to Santa Marg Pkwy	65	65	66	66	68
• West of Santa Margarita Parkway	67	67	67	67	69
Portola Parkway:					
• North of SR-241	67	67	69	69	71
Santa Margarita Parkway:					
• SR-241 to El Toro Road	66	67	70	70	72
• South of El Toro Road	68	68	69	69	70
Ridgeline Road:					
• Santiago Cyn Rd to Saddleback Ranch	56	57	60	60	61
• Saddleback Ranch Rd. to El Toro Rd	56	57	59	60	60
Saddleback Ranch Road:					
• Ridgeline Rd. to Glenn Ranch Road	61	61	63	63	64
Glenn Ranch Road:					
• Portola Pkwy to Saddleback Rnch Rd	60	62	66	66	68
• Saddleback Ranch Rd. to El Toro Rd	59	61	63	64	67
Live Oak Canyon Road:					
• East of El Toro Road	60	61	62	62	63
Valley Vista Way:					
• East of El Toro Road	53	57	57	59	59
Marguerite Parkway:					
• South of El Toro Road	64	64	67	67	70
Project Access Road:					
• East of El Toro Road	N/A	59	N/A	61	61

N/A = no data available

Table 25

DISTANCE FROM CENTERLINE TO 65 dB CNEL CONTOUR (feet)

Link	Existing	Exist. + Project	2000 No Project	2000 W/Project	2020 Cumul.
Santiago Canyon Road:					
• N. of Modjeska Canyon Road	100	105	100	105	140
• Modjeska Canyon Rd. to Ridgeline	100	105	100	110	135
• Ridgeline Rd. to Live Oak Cyn Rd.	80	85	105	110	130
Modjeska Canyon Road:					
• East of Santiago Cyn. Rd.	<50	<50	<50	<50	<50
El Toro Road:					
• Ridgeline Road to Project	100	110	105	115	155
• Project to Valley Vista	110	120	105	122	165
• Valley Vista - Glenn Ranch	100	120	105	125	165
• Glenn Ranch Rd. to SR-241	110	115	120	130	165
• SR-241 to Santa Margarita Parkway	110	115	120	130	165
• Marguerite Pkwy to Santa Marg. Pkwy	100	100	110	120	165
• West of Santa Margarita Parkway	135	140	140	145	180
Portola Parkway:					
• North of SR-241	130	135	190	195	240
Santa Margarita Parkway:					
• SR-241 to El Toro Road	125	125	230	230	295
• South of El Toro Road	150	150	175	175	220
Ridgeline Road:					
• Santiago Cyn Rd to Saddleback Rnch Rd	<50	<50	<50	<50	55
• Saddleback Ranch Rd. to El Toro Rd	<50	<50	<50	<50	50
Saddleback Ranch Road:					
• Ridgeline Rd. to Glenn Ranch Road	55	55	75	75	90
Glenn Ranch Road:					
• Portola Parkway to Saddleback Ranch	<50	60	110	120	160
• Saddleback Ranch Rd. to El Toro Rd	<50	50	70	80	135
Live Oak Canyon Road:					
• East of El Toro Road	<50	50	65	65	75
Valley Vista Way:					
• East of El Toro Road	<50	<50	<50	<50	<50
Marguerite Parkway:					
• South of El Toro Road	90	95	130	135	215
Project Access Road:					
• East of El Toro Road	N/A	<50	N/A	<50	50

N/A = no data available

Source: FHWA-RD-77-108 (Calveno mod.)

The roadway that could affect project onsite noise exposure is El Toro Road. At the maximally exposed lot at around 400 feet from El Toro Road, the traffic noise level will be 63.5 dB CNEL at area buildout. Inclusion of a 60 dB CNEL aircraft contribution increases the noise exposure to 65.0 dB CNEL at the nearest property line This just meets the County exterior noise standards and requires no extensive noise mitigation. This calculation assumes a semi-infinite line of sight to El Toro Road. Terrain irregularities will reduce the actual noise exposure to well below the worst-case maximum. There, is, therefore, no required exterior noise mitigation because of adequate setback from El Toro Road.

Mitigation in the form of exterior to interior noise attenuation will be required to meet the 45 dB CNEL interior standard for all units within the development since a 62 dB CNEL aircraft noise contour will cover the site as long as El Toro MCAS operations occur. Meeting the interior standard requires the option to close the window. Such ability, in turn, requires that there is supplemental mechanical ventilation to replace the natural draft eliminated by such closure. For new homes in inland valleys of Orange County, air conditioning is normally a standard feature meeting this requirement.

Noise reduction of 20 dB is normally attainable with closed windows, which will reduce any aircraft-related CNEL from 62 to 42 dB. As previously noted, however, CNEL is not the best predictor of noise annoyance due to single event phenomena such as individual overflights. Measured peak noise levels from helicopter operations were 86.5 dB in the center of the project site. A comparable level would likely occur from El Toro jet aircraft operations. A 20 dB attenuation would create a 65+ dB single event level that may be annoying to occupants even with windows closed. Most new developments within the fringes of the El Toro noise impact envelope thus have been built with acoustically enhanced windows.

Use of windows rated with a sound transmission class (STC) of 25 or better is recommended to reduce noise annoyance potential from single events. Such windows reduce single event noise, reduce vibration response (rattle) to aircraft noise often found in single-pane windows and are more energy efficient.

Residential activities may affect adjacent noise-sensitive land uses such as contemplative religious facilities. These facilities are, however, already exposed to single event aircraft noise that is much louder than a distant barking dog, lawnmower or auto horn associated with project residential use. The combination of irregular terrain, distance buffering and normally quiet residential activities are not expected to create a significant noise impact on any adjacent abbey or monastery uses.

Impact Significance Criteria

According to CEQA guidelines, a significant noise impact is one that substantially increases the ambient noise levels for adjoining or nearby sensitive receptors. For purposes of community noise assessment, changes in noise levels of three dB or greater are typically identified as significant, while changes of less than one dB are not discernable. In the one dB to three dB range, residents sensitive to noise may perceive a slight change.

Transportation related noise standards have been established for noise sensitive land use areas (e.g., residences, schools, hospitals, churches, etc.) in the Orange County Noise Element. These standards are 65 dB CNEL for exterior noise sensitive areas and 45 dB CNEL for interior areas.

Thus, a noise impact will be considered potentially significant if the project results in a noise level increase of greater than three dB, and if that increase, or a lesser increase, causes the County noise standard of 65 dB CNEL to be exceeded.

A significant noise impact would occur if residential units are located within the MCAS El Toro 65 dB CNEL contour or higher.

4.6.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project would result in short-term construction related impacts to adjacent land uses including: 1) St. Michael's Abbey; 2) Ramakrishna Monastery; 3) Hidden Hills planned community.

No onsite or offsite significant noise impacts would occur since 1) onsite residential lots would not be affected by 65 CNEL plus noise levels, 2) offsite roadway CNEL levels would not increase by more than 2 dB at 100 feet from the roadway centerline, and 3) the project site is outside of the MCAS 65 dB CNEL contour.

4.6.5 CUMULATIVE IMPACTS

Cumulative noise impacts are evaluated in Section 4.6.3 of the EIR.

4.6.6 MITIGATION MEASURES

Project Design Features

No PDF mitigation measures are proposed.

Standard County Conditions and Mitigation Measures

SC 6-1 All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dBA CNEL all habitable rooms and a source specific exterior standard of 65 DBA CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

a. Prior to the issuance of grading permits, as determined by the Manager, PDS/ Building Permit Services Division, the applicant shall submit an acoustical analysis report to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report, in which case it may also satisfy "B" below.

b. Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards to the Manager, PDS/Building Permits Services Division, for approval along with satisfactory evidenced which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

c. Prior to the issuance of any building permits, the applicant shall show all freestanding acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-2 Prior to the issuance of grading permits, as determined by the Manager, PDS/Building Permits Services Division, an acoustical analysis report shall be submitted to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report in which case it may also satisfy SC 6-3 below.

SC 6-3 Prior to the issuance of any building permits for residential construction, an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards shall be submitted for review and approval to the Manager, PDS/Building Permits Services Division, along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

SC 6-4 Prior to the issuance of any building permits, all freestanding acoustical barriers must be shown on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-5 Prior to the issuance of any certificates of use and occupancy, the developer shall produce evidence acceptable to the Manager, PDS/Building Inspection Services Division, that information stating this property is subject to the overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station) has been provided to the Department of Real Estate of the State of California for inclusion into the Final Subdivision Public Report.

SC 6-6 Prior to the issuance of any certificates of use and occupancy, the applicant shall post aircraft noise impact notification signs in all sales offices associated with new residential development located within an aircraft 63 dB CNEL contour. The number and location of said signs shall be as approved by the Manager, PDS/Building Permits Services Division.

SC 6-7 Prior to the issuance of any building permit, an aviation easement over this property shall be offered for dedication to the County of Orange in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-8 Prior to the sale, lease or rental of any structure or portion thereof, the applicant/owner shall provide to each prospective purchaser, lessee, or tenant a notice and statement of acknowledgment that the property is subject to overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station). The form and method of distribution of said notice and statement of acknowledgment shall be as approved by the Manager, PDS/Building Permits Services Division.

A. Prior to the issuance of any grading permits, the proponent shall produce evidence acceptable to the Manager, Building Permit, that:

(1) all construction vehicles or equipment, fixed or mobile, operated within 1000 feet of a dwelling shall be equipped with properly operating and maintained mufflers.
(2) All operations shall comply with Orange County "Codified Ordinance Division 6 (Noise Control); and
(3) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this requirement.

SC 6-9 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that excavation, grading and other construction-related activities shall be restricted to daytime hours as promulgated in the County's Codified Ordinance Division 6 (Noise Control).

SC 6-10 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that all construction equipment, stationary or mobile, shall be equipped with properly operating and maintained mufflers.

SC 6-11 Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division, that:

a) All construction vehicles or equipment, fixed or mobile, operated within 1,000-feet of a dwelling shall be equipped with properly operating and

maintained mufflers.

b) All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

c) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

Notations in the above format, appropriately identified and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations, in manner meeting approval of the Manager, PDS/Building Permits Services Division.

AM 6-12 Prior to the issuance of building permits, all operative windows exceeding 6 sq.ft. of glazing shall be rated SR=25 or greater.

4.6.7 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project in conjunction with proposed mitigation measures would not result in any unavoidable adverse short term, operational or aircraft overflight impacts.

4.7 BIOLOGICAL RESOURCES

This section is based on the most recent biological assessments conducted for the project site by Sweetwater Environmental Biologists (SEB) in March, 1997 and December, 1995 and other previous studies conducted by SEB in August, 1995 and 1994 and Pacific Southwest Biological Services (PSBS) in 1989, 1993 and 1994. These studies can be found in their entirety in Appendix I of Draft EIR No. 561. In addition, an Oak Tree Inventory is included in Appendix K of this EIR and a Pond Mitigation Plan in Appendix K of Draft EIR No. 561.

4.7.1 EXISTING ENVIRONMENTAL SETTING

Prior to evaluating the onsite biological resources, a literature search was conducted to determine sensitive species which may potentially occur onsite. This included an evaluation of information from the Natural Diversity Data Base (NDDB) maintained by the California Department of Fish and Game (CDFG) and review of previous biological reports completed for the project site (PSBS 1993;1994).

A total of eight previous surveys for wildlife were completed by PSBS, including surveys for the coastal California gnatcatcher, including two general wildlife surveys in 1989, a general wildlife survey (which included a gnatcatcher survey) and two gnatcatcher surveys in 1993, and three gnatcatcher surveys in 1994. The 1993 and 1994 surveys for gnatcatchers satisfied U.S. Fish and Wildlife Service (USFWS) protocol for presence/absence surveys for the preparation of DEIR 561, and the overall wildlife data appear adequate for assessing the general presence and distribution of the various groups of vertebrates on the project site. Current (May 1997) USFWS survey protocol for determining the presence/absence of gnatcatchers requires seven in-season or nine out-of-season field surveys, conducted at one week intervals. These surveys have not been completed for the currently proposed project, and as required by the USFWS, the onsite coastal sage scrub habitat must be considered occupied by the coastal California gnatcatchers until proven otherwise The PSBS surveys had limitations in coverage, most of which were identified in their 1994 report when they stated that for detection of certain species (i.e., nocturnal, underground-living, or seasonal species) certain focused surveys would be required. Taped vocalizations of the coastal California gnatcatcher were played in all of the coastal sage scrub habitats onsite. Field investigators spent more than one hour per 25 acres of habitat during the surveys. This is consistent with the Natural Community Conservation Program (NCCP) Scientific Review Panel Guidelines (SRP 1992) for gnatcatcher presence/absence surveys.

A site visit to assess the potential onsite wildlife movement corridors was made on October 12, 1994. This survey was conducted on foot, with the majority of the time spent in areas with native vegetation. On June 1994, PSBS documented the presence of Riverside fairy shrimp and the potential for additional fairy shrimp in all onsite ponds. In April 1996, a survey for the western spadefoot toad was conducted in all the onsite ponds by SEB.

Vegetation mapping and sensitive plan surveys were conducted in June and July 1995. Vegetation was mapped using an aerial photograph and then transferred to the same scale topographic map. Botanical survey emphasis was placed on those species that have the potential to occur the habitats onsite.

A wetland delineation was completed for the project site in August 1995 in accordance with the 1987 U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual (Environmental Laboratory 1987).

Vegetation Communities

Five types of native vegetation occur on the project site: Venturan-Diegan transitional coastal sage scrub, coast live oak woodland, southern sycamore riparian woodland, mulefat scrub, and southern mixed chaparral (onsite vegetation is shown in Exhibit 50). Portions of the venturan-diegan coastal sage scrub are disturbed. Annual grassland, agricultural land, and ephemeral ponds also occur on the site. The ephemeral ponds onsite are not vernal pools, but rather are holding ponds for watering cattle which graze on the site.

Table 26
ONSITE VEGETATION

Vegetation Community	Acreage
Venturan-Diegan Transitional Coastal Sage Scrub	64.8
Disturbed Venturan-Diegan Transitional Coastal Sage Scrub	2.3
Coast Live Oak Woodland	14.5
Southern Sycamore Riparian Woodland	0.5
Mulefat Scrub	2.9
Southern Mixed Chaparral	5.4
Annual Grassland	125.3
Agriculture	4.6
Ephemeral Ponds	0.8
Disturbed	1.1
Total	**222.2**

A total of 110 plant species, 73 (66 percent) of which are native, were observed during surveys. The presence of 39 non-native plant species on the project site reiterates the disturbed nature of most of the site. A common plant species in much of the site is the cardoon, an artichoke-like plant that grows in areas where soils, especially clay soils, have been highly disturbed and compacted. This aggressive plant species often dominates areas that have been heavily grazed. The undisturbed native vegetation communities onsite support a typical diversity of plant species common to central, cismontance Orange County.

Venturan-Diegan Transition Coastal Sage Scrub

Coastal sage scrub is a general habitat found in coastal areas of California from the San Francisco Bay Area to the Mexican border. The coastal sage scrub community is composed of low stature, drought-deciduous shrubs.

Four floristic associations are recognized within coastal sage scrub plant formation and these occur in distinct geographical areas along the California coast with the Diegan association occupying an area from Orange County to northwestern coastal Baja California, Mexico (O'Leary 1990). The Venturan association occupies an area from San Luis Obispo County to Orange County. Venturan-Diegan transitional coastal sage scrub is found throughout Orange County and is a transitional scrub community between two floristic associations of coastal sage scrub, Venturan and Diegan. Approximately 67.1 acres of this plant community occur onsite, 2.3 acres of which is currently disturbed.

LEGEND

CSS	Venturan-Diegan Transitional Coastal Sage Scrub
CSS-D	Venturan-Diegan Transitional Coastal Sage Scrub-Disturbed
OW	Coast Live Oak Woodland
SW	Southern Sycamore Riparian Woodland
MFS	Mulefat Scrub
SMC	Southern Mixed Chaparral
EP	Ephemeral Ponds
AG	Annual Grassland
CULT	Agricultural
DIS	Disturbed
RUD	Ruderal

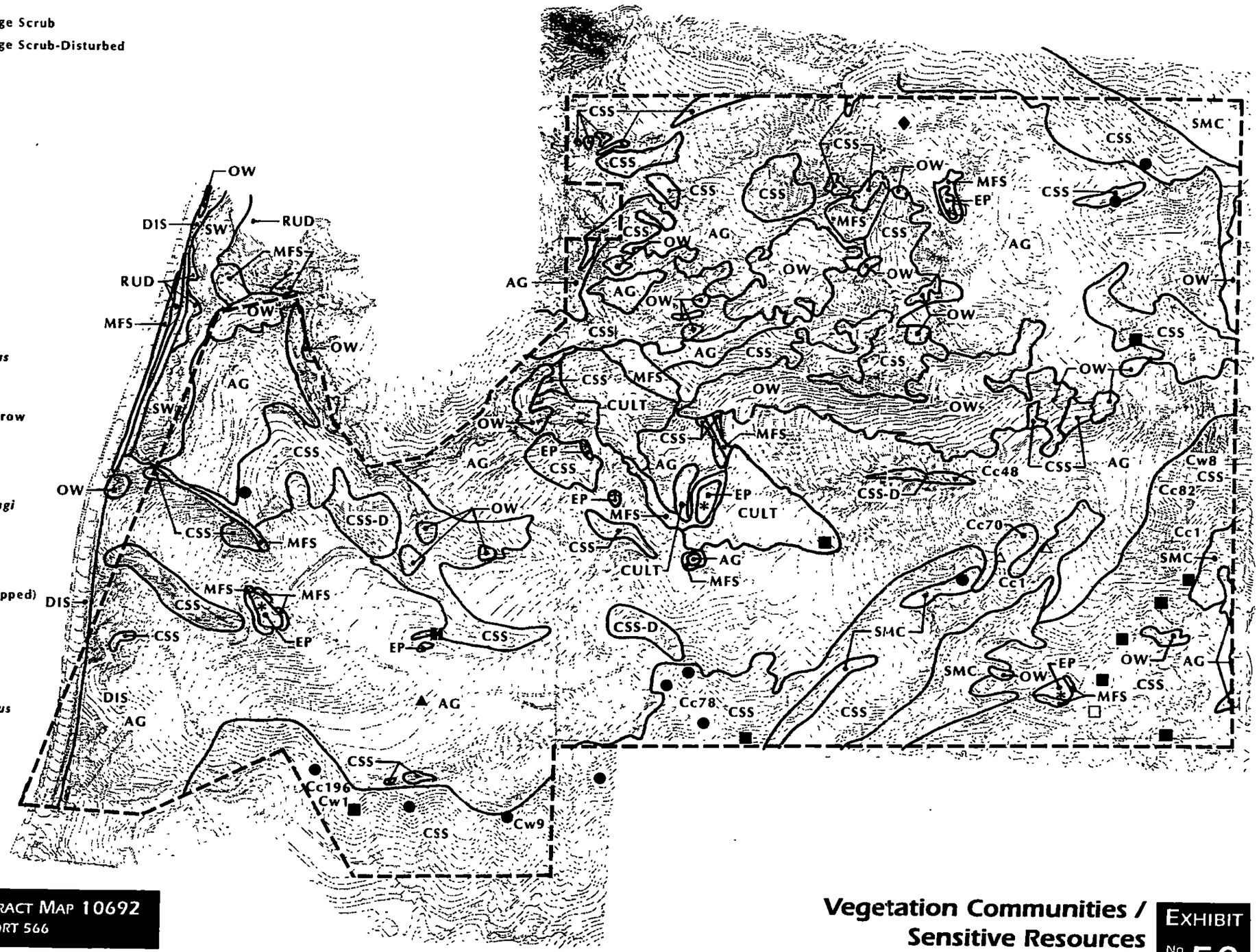
SENSITIVE ANIMALS

- * Riverside Fairy Shrimp *Streptocephalus woottoni*
- ▲ Coastal Whiptail *Cnemidophorus tigris multiscutatus*
- ■ Cactus Wren *Campylorhynchus brunneicapillus*
- ● Southern California Rufous-Crowned Sparrow *Aimophila ruficeps canescens*
- ◆ Cooper's Hawk *Accipiter cooperii*
- △ Orangethroat Whiptail *Cnemidophorus hyperythrus beldingi*
- □ Western Spadefoot *Spea hammondi*

Loggerhead Shrike *Lanius ludovicianus* (observed by PSBS in 1989, not mapped)

SENSITIVE PLANTS

- Cc Catalina Mariposa Lily *Calochortus catalinae*
- Cw Intermediate Mariposa Lily *Calochortus weedii ssp. intermedius*



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: 1"=400'
Source: Sweetwater Environmental Biologists, Inc.

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Vegetation Communities / Sensitive Resources

EXHIBIT No. 50

Typical plants found within the onsite coastal sage scrub community include California sage brush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), black sage (*Salvia mellifera*), and coastal prickly-pear (*Opuntia littoralis*). Disturbed portions of coastal sage scrub (2.3 acres) have a higher component of annual grasses and noticeably less shrub cover than undisturbed coastal sage scrub areas. Much of the coastal sage scrub onsite is unconnected and subject to continued degradation because of the cattle grazing.

Coastal sage scrub is the primary habitat of concern associated with the development of the Natural Communities Conservation Planning Program, currently being prepared.

Coast Live Oak Woodland

Coast live oak woodlands occur in the outer portion of the central California coastal mountain ranges and extend south into Baja California, Mexico occurring between 500 and 4,500 feet in elevation. In Orange County, this community is found mainly along the foothills of moderate, north-facing slopes and shaded ravines. The structure of this woodland typically consists of a canopy which reaches a height of 12 to 70 feet, incompletely closed, with an understory herbaceous layer approaching 80 percent cover. Approximately 14 5 acres of coast live oak woodland occur onsite, restricted to the central and northeastern quadrant of the site. A total of 298 coast live oak (*Quercus agrifolia*) and two scrub oak (*Quercus dumosa*) trees with calipers greater than 8-inches, are located onsite. Specific characteristics of each tree are evaluated in the Oak Tree Inventory contained in Appendix K of this EIR.

On the project site, the coast live oak woodland has a fairly open canopy and is dominated by coast live oak (*Quercus agrifolia*). Areas within small drainages or swales (central portion of the site) have the most dense canopy. The understory is, for the most part, dominated by annual grassland and has been heavily grazed, making the woodland of an overall moderate quality.

Southern Sycamore Riparian Woodland

Southern sycamore riparian woodland is composed of tall, open, broad-leaved, winter-deciduous trees that require water near the soil surface. Western sycamore (*Platanus racemosa*) is the dominant species forming an open, medium height woodland. Associated understory species include mulefat (*Baccharis salicifolia*), Mexican elderberry (*Sambucus mexicana*), and poison oak (*Toxicodendron diversilobum*). This habitat occurs along very rocky streambeds subject to seasonally high-intensity flooding (Holland 1986) and occurs along large intermittent streams in Orange County. An estimated 0.5 acres of this habitat occur onsite, along Aliso Creek near El Toro Road on the western boundary of the site.

Mulefat Scrub

Mulefat scrub is a depauperate, tall, herbaceous, riparian scrub community that often occurs along intermittent stream channels but is also found around ponds or other wet areas. This early seral community thrives in areas that are subject to flooding and other disturbances; the absence of which could lead to a riparian woodland or forest (Holland 1986). On the Saddleback Meadows site, mulefat scrub occurs around the ephemeral pond habitat and in areas where there is not enough water to support riparian tree species. Approximately 2.9 acres of mulefat scrub occur onsite.

Southern Mixed Chaparral

Southern mixed chaparral is composed of broad-leaved sclerophyllous shrubs that grow to about 6 to 10 feet tall and form dense often nearly impenetrable stands. The plants of this association are typically deep-rooted. Some of the dominant species of this community include lemonadeberry (*Rhus integrifolia*), toyon (*Heteromoles arbutifolia*), chamise (*Adenostoma fasciulatum*), and mission manzanita (*Xylococcus bicolor*). Southern mixed chaparral occurs on canyon slopes in the extreme northeast and southeast quadrants of the site. Approximately 5.4 acres of southern mixed chaparral occur onsite.

Annual Grassland

Annual grassland is a dense to sparse cover of mostly non-native grasses, often associated with numerous species of showy-flowered, native, annual forbs. This association occurs on gradual slopes with deep, fine-textured soils. Characteristic species include cardoon (*Cynara cardunculus*), oats (*Avena* sp.), red brome (*Bromus madritensis* ssp. *rubens*), ripgut (*B. diandrus*) and mustard (*Brassica* spp.). Most of the biomass within non-native grassland originated from the Mediterranean region, an area with a long history of agriculture and a climate similar to California. In conjunction with agriculture and grazing in California, many of these plants were imported. Approximately 125.3 acres of annual grassland occur throughout the site. Annual grassland is in every quadrant of the site, but the most dense coverage is on the less steeply sloped portions of the western half of the site.

Agriculture

Approximately 4.6 acres onsite consists of olive trees planted for agricultural purposes. These trees are found in the central portion on the site.

Ephemeral Ponds

All of the ephemeral ponds were artificially created a number of years ago to provide water for cattle. Some earthen dams are partially breached causing the ponds to shrink in size. Others are deteriorating and could soon breach. Winter storms have also taken their toll. Existing use of the ponds by cattle severely impact vegetation and water quality. The ponds were found to support Riverside fairy shrimp (*Streptocephalus wootoni*) a federally listed endangered species. Eight ponds, totaling 0.8 acre in size, occur on the site.

None of the plant species observed in the ephemeral ponds are primarily or typically found in vernal pools in southern California. Several species observed onsite can occur in vernal pools but typically occur elsewhere. These species include salt-grass (*Distichlis spicata*) and curly dock (*Rumex xrispus*). Salt-Grass is a species typically found in salt marshes, and moist, alkaline areas. Curly dock is a species typically found in disturbed places. The typical habitats of the plant species observed in or near the ponds include fresh or salt water marsh, riparian, moist places, and disturbed areas. Furthermore, spring surveys conducted in 1995 did not detect any vernal pool species on the site.

Based on the absence of vernal pool indicator species and the presence of species typically found in other wetland or disturbed habitats, the vegetation of the ephemeral ponds is considered atypical of vernal pools. This finding is consistent with observing vernal pool species which may occur in standing water and the drying pool beds.

The physical setting of these ponds also differs from most other southern California vernal pools (Zedler 1987). Vernal pools typically occur on relatively flat mesas, situated in low lying areas between mounds. This contrasts sharply with the lay of the land at Saddleback Meadows where few areas of the property are flat. Furthermore, the ponds do not occur in the few flat areas that do exist. They occur primarily in drainages which have been dammed. The disturbance associated with their formation and ongoing disturbance from cattle grazing are probably responsible for the low species diversity and high percentage of weed species. Based on vegetation, species composition, and physical setting, it is reasonable to conclude that the onsite ponds are not vernal pools.

Disturbed

A portion of the site is considered disturbed, which includes roads and other paved areas.

Animals

A total of 63 animal species were observed during the surveys. The animal species observed represent a somewhat lower diversity than is usually observed in the western foothill region of the Santa Ana Mountains, probably due to the disturbed nature of the site and the presence of cattle and man.

Invertebrates

Both the native and non-native plant communities onsite probably play host to a wide variety of invertebrate species, especially insects. Invertebrates are important features of an ecosystem because of their role in food chains and as decomposers. Specific surveys for invertebrates focused on the presence of Riverside fairy shrimp, which was known to occur onsite. Hundreds of additional invertebrates are expected to use the site.

Amphibians

No amphibians were observed during the surveys of the site. At least two species, the black-bellied salamander (*Batrachoseps nigriventris*) and California slender salamander (*Batrachoseps attenuatus*), are expected to occur. The disturbed conditions that exist throughout most of the site have likely restricted these species to the steeper slopes where vegetative coverage is most dense.

Reptiles

Four reptiles--the western fence lizard (*Sceloporus occidentalis*), coastal whiptail (*Cnemidophorus tigris multiscutatus*), orangethroat whiptail (*Cnemidophorus hyperythrus beldingi*), and side-blotched lizard (*Uta stanisburiana*) were observed onsite. Although the site has many disturbed areas, much reptile habitat still occurs throughout the site. Additional lizards and snakes would be expected, especially in the undisturbed portions of coastal sage scrub on the steeper slopes.

Birds

Bird species were most abundant and conspicuous during the surveys and undoubtedly exhibit the highest vertebrate diversity. Most of the birds were observed within the coastal sage scrub, southern mixed chaparral, and coast live oak woodland habitats onsite. A few of the resident birds which were most abundant onsite include California quail (*Calipepla californica*), Anna's hummingbird (*Calypte anna*), mourning dove (*Zenaida macroura*), California towhee (*Pipilo crissalis*), house finch

(*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*). Other bird species were observed foraging on the site but probably reside elsewhere including cliff swallow (*Hirundo pyrrhonota*), northern rough-winged swallows (*Stelgidopteryx serripennis*), red-tailed hawks (*Buteo jamaicensis*), and American kestrels (*Falco sparverius*). The barn owl (*Tyto alba*) was observed nesting in the coast live oak woodlands possibly as recently as 1989.

Mammals

Eight mammals were detected onsite including the California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), woodrat (*Neotoma* spp.), coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cineroargenteus*), mule deer (*Odocoileus hemionus*), and domestic cattle. Several rodents and additional medium-sized mammals are expected to use the site as well. Some expected species include the Virginia opossum (*Didelphus virginiana*), striped skunk (*Mephitis mephitis*), and deer mouse (*Peromyscus maniculatus*). Many of the species which may occur were not observed during the diurnal surveys because they are nocturnal.

Natural Communities Conservation Planning (NCCP) Program

The NCCP program's goal is to permanently safeguard dozens of California's native plants and animals, and the land and water on which they depend, in reserves and open spaces, while also accommodating needed economic activity. The protected areas in Southern California are being designed pursuant to long-term conservation plans created under the program. They will provide both long-term protection for habitat and increased certainty in the land-use planning process for holders of private property within the range of the program.

The coastal sage scrub habitat, the first area in which the NCCP program has been implemented, is home to the California gnatcatcher and approximately 90 other potentially threatened or endangered species. This much-fragmented habitat is scattered over more than 6,000 square miles and encompasses large parts of Orange, San Diego, and Riverside counties, and smaller portions of Los Angeles and San Bernardino counties. Fifty-nine local government jurisdictions, scores of landowners from across these counties, other private interests, federal wildlife authorities, and the environmental community are actively participating in the program.

As conceived, the NCCP program differs fundamentally from the California and federal Endangered Species Acts (ESA). These laws are designed to identify and protect individual species whose numbers have declined in number significantly. By contrast, the primary objective of the NCCP program is to conserve natural communities before their constituent species have declined to the point

that protection under the ESAs is necessary and to accommodate compatible land use. The State seeks to anticipate and prevent the controversies and conflicts in Southern California caused when species are listed by focusing on the long-term stability of wildlife and plant communities and by making the stakeholders in these issues voluntary and fully cooperative partners in the planning process.

In Orange County, two conservation planning study areas comprise a total of approximately 340,000 acres and involve over a dozen cities and five major landowners. The southern subregional NCCP Plan (within which this project is located) is in the planning process. The central subregional plan has been approved and is operational. The two plans envision two reserves totaling 39,000-40,000 acres each and covering several habitat types and as many as 25 species. Both of these subregions have large areas of undeveloped coastal sage scrub habitat.

NCCP Program Goals

The NCCP program builds on, supplements, and improves conventional administration of the existing species protection laws. Whereas the ESA represent efforts at "critical care," NCCP is a preventative approach to conservation.

The NCCP program is designed to:

- Safeguard prime habitat for wildlife while allowing for compatible development. This is achieved when localities, landowners, and others work cooperatively to develop an NCCP that covers an entire region or area. Once approved, an NCCP will provide both guidance and certainty regarding habitat preservation and land use for many decades.

- Protect and preserve the rich biological diversity of an entire habitat.

- Enable compatible economic growth to proceed both during and after habitat planning.

- Conserve wildlife habitat within approved NCCP areas in an amount and configuration that will provide for listed species, minimize or preclude the need to list additional species under the State and federal laws, or eliminate any additional restrictions if additional species are listed later.

- Facilitate recovery efforts by encouraging conservation for multiple species, not merely separate habitat conservation plans for individual listed species under the federal ESA, and

eliminate the need for separate recovery plans.

- Create certainty regarding biological issues for private landowners as they seek changes in land use for their property in exchange for adherence to long-term conservation commitments.

- Maximize local control in habitat conservation and encourage local governments to fully integrate conservation planning and impacts to biological resources into decision-making on land-use issues and mitigation requirements.

- Encourage sufficient funding at all levels of government for habitat conservation and multi-species planning.

- Reduce state, federal and local redundancy in wildlife management pursuant to the State and federal ESA and the NCCP Act.

- Incorporate into law and State wildlife management the advances in conservation biology, landscape ecology, and biogeography that have been made in recent years.

The southern subregion is summarized as follows:

Southern NCCP

Total acreage in planning process:	131,000 acres
Coastal sage scrub acreage:	26,500 acres
Estimated css that will go into preserves:	18,000 acres
Habitat acres in planning areas:	95,000 acres
Habitat acres in proposed preserves:	40,000 acres
Jurisdictions included: County, 3 utilities and 3 private landowners	
Habitats covered:	12
Number of species covered:	25

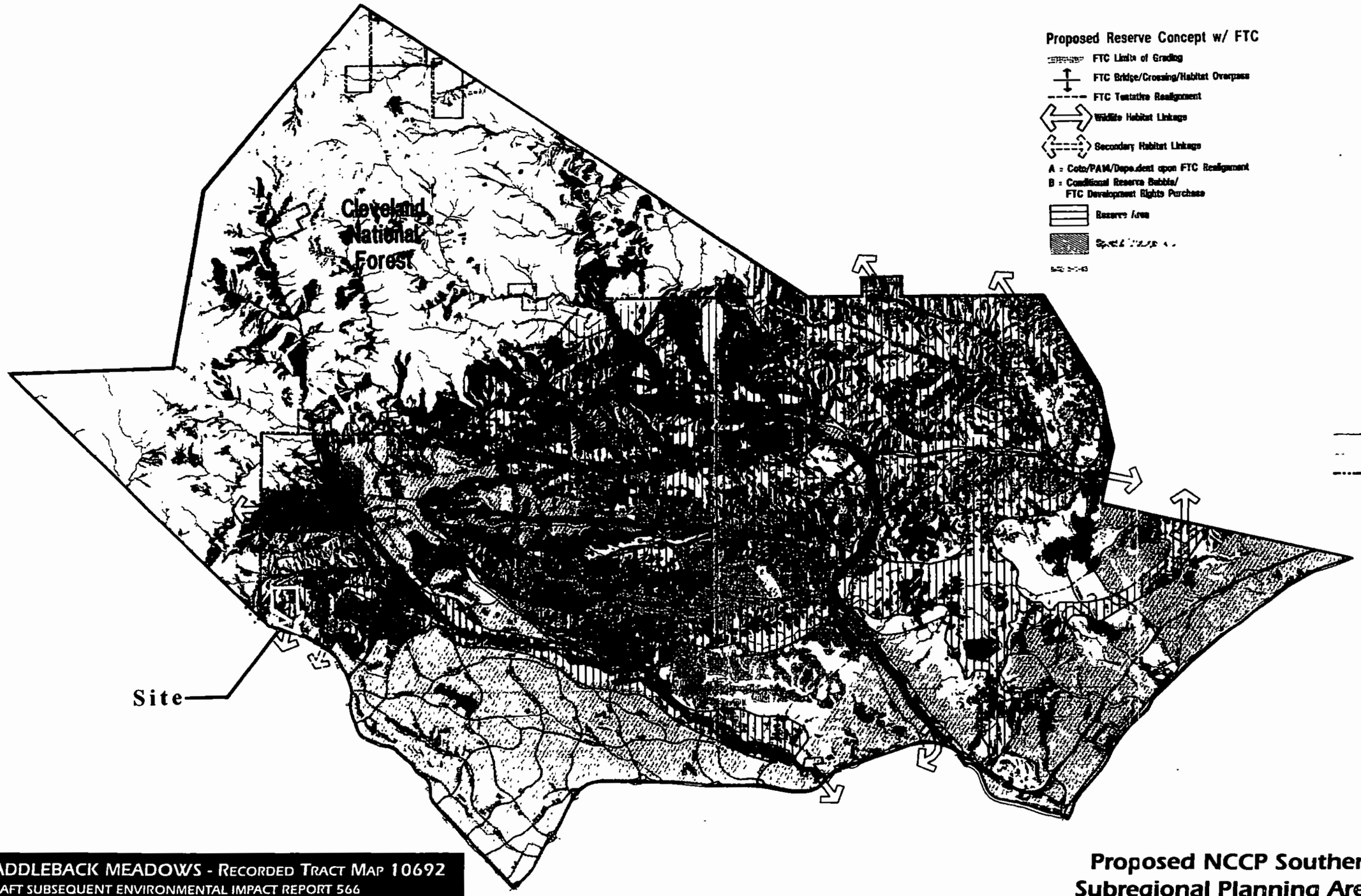
It is anticipated that the 131,000-acre plan will include 65% of the coastal sage scrub and approximately 75% of the areas in which gnatcatcher and cactus wren sightings have occurred in the subregion. The plan will cover approximately 25 species. Local participants are focusing their efforts to identify external preserve linkages and corridors where proposed development is anticipated. The subregion will incorporate public lands of the Cleveland National Forest.

The Natural Communities Conservation Planning Program (NCCP) was initiated by the State of California under the special Section 4(d) Rule of the federal Endangered Species Act (ESA). This pilot program focuses on conserving coastal sage scrub in order to avoid the need for future federal and state listing of coastal sage scrub dependent species. The coastal California gnatcatcher (*Polioptila californica californica*) is presently listed as threatened under the federal ESA, although not found onsite, while several additional species inhabiting coastal sage scrub are candidates for federal listing.

Orange County's Southern Subregional NCCP is currently in preparation and is expected to be completed in late 1997 or early 1998. Six possible design alternatives for the southern subregional preserve are currently under consideration. The central subregional NCCP has been approved. The project site occupies a linkage area between the Central and Southern NCCP Subregional preserves, where a wildlife corridor is needed. Projects surrounding the site received approval prior to the NCCP process, reducing the flexibility of open space strategy in the area. The proposed southern subregional NCCP planning area is shown in Exhibit 51.

Wildlife Movement

Orange County is developing its NCCP preserve system for maintaining a viable coastal ecosystem. Open space configuration in the vicinity of the project site is a key planning element for an effective wildlife corridor between the planned Central and Southern Regional NCCP preserve areas. However, the project site, because of the topography, the disturbed nature of the site, and existing open space and development patterns in the project vicinity, would not serve to entirely fulfill wildlife corridor needs in the area. Existing FTSP designated corridors are shown in Exhibit 52.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=9400'
Source: Sweetwater Environmental Biologists, Inc.

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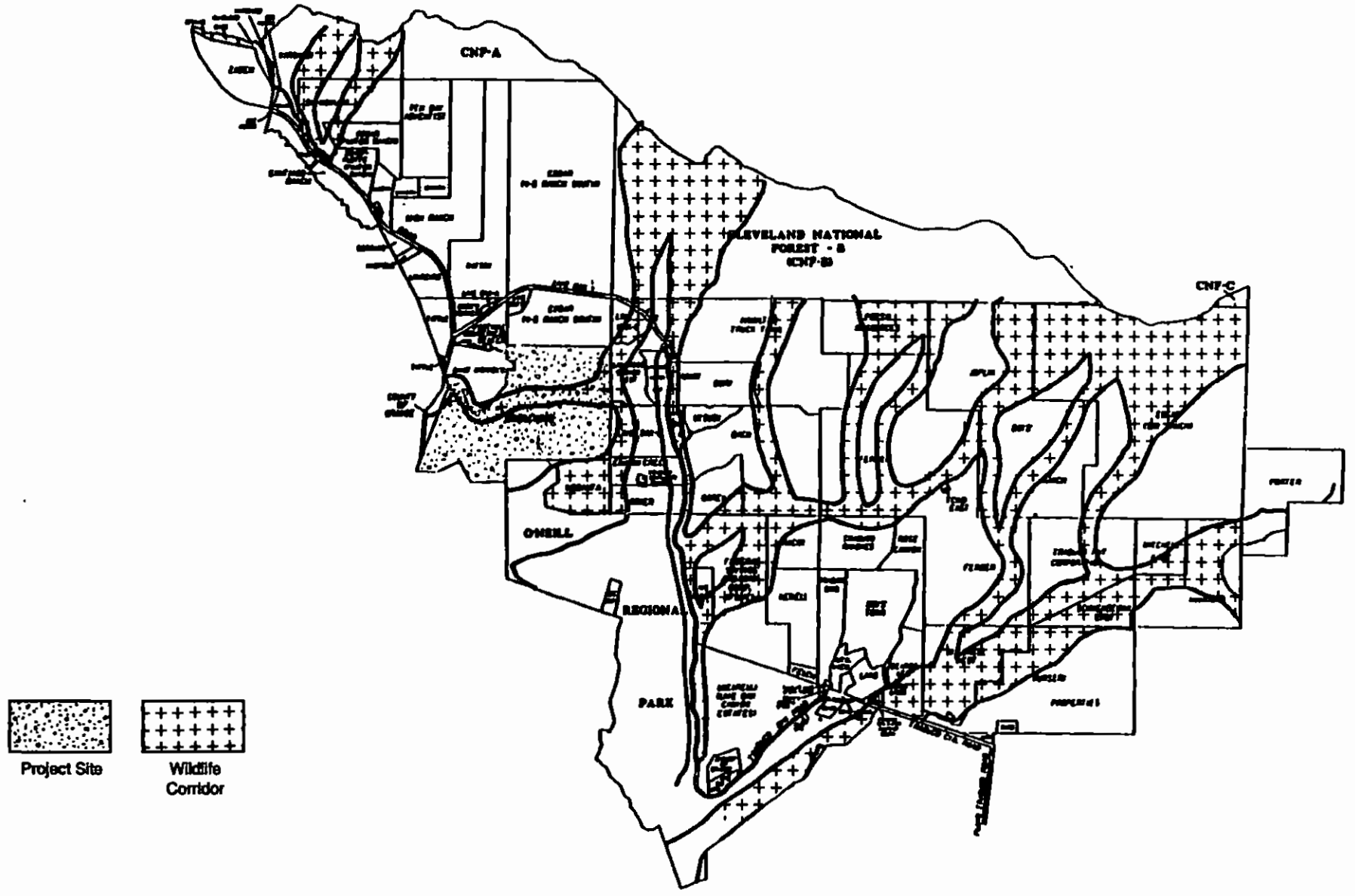
Proposed NCCP Southern Subregional Planning Area

EXHIBIT No. 51



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Foothill Trabuco Specific Plan Wildlife Movement Corridors

EXHIBIT No. 52

URBAN VISION

County of Orange P&DS

Scale: 1"

Source: Foothill/Trabuco Specific Plan

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Sensitive Resources

The following is a description of sensitive biological resources found on the project site. These resources represent different levels of constraints for the project's implementation.

Habitats

Venturan-Diegan Transitional Coastal Sage Scrub

Coastal sage scrub is considered a sensitive habitat because it supports a number of state and federally listed endangered, threatened, and rare vascular plants as well as several reptile, bird, and mammal species that are federally listed or are candidate species for federal listing. Loss estimates for coastal sage scrub habitat in California range from 36 to 85 percent, but since these estimates were made in 1979 to 1981, additional losses have since occurred (O'Leary 1990). The primary cause for the loss of coastal sage scrub within California has been habitat conversion to agriculture and urban development.

The California NCCP has established an Evaluation Logic Flow Chart for determining the potential value for long-term conservation of coastal sage scrub. According to this flowchart, the coastal sage scrub on the project site is considered to have intermediate value for long-term conservation because it is not the densest coastal sage scrub in the subregion, but is close to a higher value district (O'Neill, Whiting Ranch Regional parks and Cleveland National Forest). The fragmented nature of much of the coastal sage scrub onsite makes it low quality. The highest quality coastal sage scrub occurs on the steep slopes that connect with O'Neill Regional Park in the southeast quadrant of the site. This area supports the highest native plant component and the highest diversity of animal species.

Coast Live Oak Woodland

Coast live oak (*Quercus agrifolia*) woodland and individual oaks are protected by the tenets of CEQA because of their scarcity, wildlife values, and ability to provide watershed protection. The major factors contributing to the decline of oak woodlands in southern California include livestock grazing, recreational use, and urban and rural development. The coast live oak woodland onsite is of moderate quality because of the extensive grazing which has eliminated the natural understory.

A total of 298 coast live oak trees and two large scrub oaks (*Quercus dumosa*) are located on the project site. Specific characteristics of each tree are categorized in the Biological Resources Assessment in Appendix H of this EIR.

Southern Sycamore Riparian Woodland

Southern sycamore riparian woodland is considered sensitive because it is a riparian habitat. Riparian habitats serve as movement corridors, water sources, shelter/shaded areas, and the unique microclimate supports a variety of wildlife at all taxonomic levels. Many bird, fish, and amphibian species are completely restricted to riparian habitats and are dependent on them for breeding. Amphibians, reptiles, birds, and mammals also move back and forth across riparian habitats into adjacent upland or wetland habitats. Riparian systems are intimately linked with adjacent upland areas, and many species that are restricted to riparian habitats for breeding use upland areas surrounding riparian habitats for foraging. In addition, several insect and plant species are restricted to riparian habitats.

Ephemeral Ponds

Although this community by itself is not considered sensitive, it is recognized as sensitive in this case because it supports the Riverside fairy shrimp, a federal endangered species.

Wetlands and Waters of the United States

Wetlands and Waters of the United States are regulated by the State of California and the U.S. Army Corps of Engineers. Onsite, Waters of the United States occur in ephemeral pond habitat and intermittent streams that cross several areas of the site. Wetland habitat is associated with southern sycamore riparian woodland and mulefat scrub. Jurisdictional Wetlands and Waters of the United States are shown in Exhibit 53.

Sensitive Plants

Two sensitive plants, Catalina mariposa lily (*Calochortus catalinae*) and intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), were detected onsite.

Catalina mariposa lily

Listing: USFWS: None; CDFG: None; CNPS: List 4, 1-2-3

Distribution: This species is distributed in all coastal counties from Santa Cruz County to San Diego, except Monterey County.

Habitat(s): The Catalina mariposa lily grows on heavy soils, usually in open grassland or scrubland.

Conservation Status: This lily is uncommon throughout its range. The main threat is development. The Catalina mariposa lily blooms from February through May (Skinner and Pavlik 1994).

Status Onsite: Eight stands were detected onsite (435 individuals), six of which (428 individuals) were in coastal sage scrub along the southern boundary of the site. The two additional stands (seven individuals) were in coastal sage scrub patches in the northeastern quadrant of the site.

Intermediate mariposa lily

Listing: USFWS: Category 2; CDFG: None; CNPS: List 1B, 2-2-3

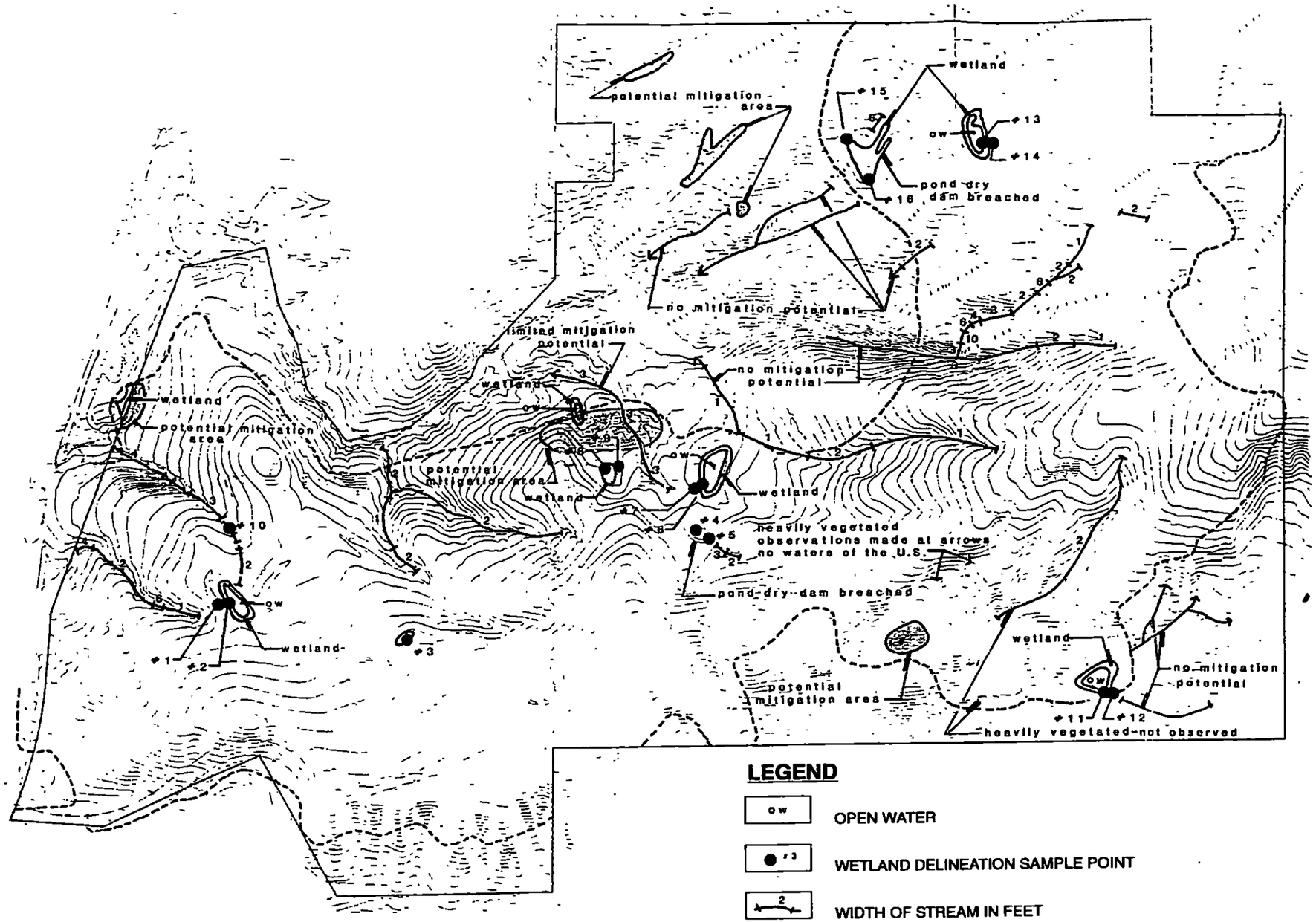
Distribution: This mariposa lily has only been recorded from Los Angeles, Orange, and Riverside counties.

Habitat(s): Dry, rocky slopes are the habitat of this species.

Conservation Status: The main threats are development, fuel modification, and road construction. The intermediate mariposa lily blooms from May through July (Skinner and Pavlik 1994).

Status Onsite: Three stand were detected onsite, totaling 18 individuals. Two stands are in the southwest quadrant of the site, while the remaining stand is in the southeast quadrant.

Since the surveys had adequate coverage to detect potentially occurring sensitive plant species, no additional plant species are expected to occur onsite. The plants which were determined originally to have a potential to occur onsite included Palmer's grappling-hook (*Harpogonella palmeri*), many-stemmed dudleya (*Dudleya multicaulus*), and prostrate spineflower (*Chorizanthe procumbens*).



LEGEND

ow	OPEN WATER
● #3	WETLAND DELINEATION SAMPLE POINT
2	WIDTH OF STREAM IN FEET
	LIMIT OF REMEDIAL GRADING

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: Sweetwater Environmental Biologists, Inc.

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Jurisdictional Wetlands and Waters of the United States

EXHIBIT No. 53

Sensitive Animals

Eight sensitive animals were observed during the most recent (1993/1994) site surveys. Riverside fairy shrimp, western spadefoot toad, coastal whiptail, orangethroat whiptail, Cooper's hawk (*Accipiter cooperii*), coastal cactus wren (*Campylorhynchus brunneicapillus*), loggerhead shrike (*Lanius ludovicianus*) and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). No coastal California gnatcatchers were observed onsite during the 1993/1994 surveys. Current 1997 surveys for the coastal California gnatchatcher have not been conducted to USFWS protocol, and as such, onsite coastal sage scrub habitat must be considered occupied by gnatcatchers until proven otherwise.

Riverside fairy shrimp

Listing: USFWS Endangered

Distribution: Extremely limited distribution in Riverside, Orange, and San Diego counties; and northern Baja California, Mexico. In Riverside County, known only from five vernal pools, in San Diego County, known only from two vernal pool complexes.

Habitat(s): Vernal and ephemeral pool habitats that are relatively deep and have low values for alkalinity and chloride presence. The Riverside fairy shrimp is considered a warm water species of fairy shrimp, and it hatches at water temperatures of 15 to 17°C.

Status Onsite: Six of the ponds and two recently dried ponds (their dams have been breached) have evidence of Riverside fairy shrimp. These locations represent a significant expansion of the shrimp's typical habitat range.

Western Spadefoot toad

Status: USFWS Regionally sensitive

Distribution: California Central Valley and San Francisco Bay area south along the coast to northwestern Baja California, Mexico.

Habitat: Mesa tops, valleys, low hills, floodplains, and washes. Southern California habitats include coastal sage scrub, chaparral, and grassland. Important habitat components include temporary pools (which form during winter and spring rains) for breeding and friable soils for burrowing.

Status Onsite: During focused surveys, western spadefoot tadpoles were observed in two of the ephemeral ponds onsite.

Coastal whiptail

Status: USFWS Regionally sensitive

Distribution: Ventura County south, in cismontane California, to south-central Baja California, Mexico.

Habitat(s): Open Venturan-Diegan transitional coastal sage scrub, grasslands, chaparral, and woodlands. Frequently found along the edges of dirt roads traversing habitat. Important habitat components include open, sunny areas for basking, plant litter, and an abundance of invertebrate prey, particularly termites.
Status Onsite: One was observed.

Orangethroat whiptail
Status: USFWS Regionally sensitive; CDFG CSC
Distribution: Southern Orange County and southern San Bernardino County (Colton), south to the cape of Baja California, Mexico.
Habitat: Venturan-Diegan transitional coastal sage scrub, chaparral, edges of riparian woodlands, and washes. Also found in weedy, disturbed areas adjacent to these habitats. Important habitat requirements include a mosaic of open, sunny areas and shade for thermoregulation, and an abundant invertebrate prey base, particularly termites.
Status Onsite: Two individuals were observed on a slope in the southeast quadrant of the site, adjacent to O'Neill Regional park.

Cooper's Hawk
Status: Nesting; CDFG CSC
Distribution: Throughout the continental United States excluding Alaska, parts of Montana, and parts of the Dakotas. Winters south to Mexico and Honduras.
Habitat: In San Diego County tends to inhabit lowland riparian areas and oak woodlands in proximity to suitable foraging areas such as scrublands or fields.
Status Onsite: One individual was observed hunting in grassland on the northern half of the site.

Coastal cactus wren
Status: USFWS Regionally sensitive/CDFG CSC
Distribution: This coastal cactus wren's range extends from Southern Orange County (San Juan Creek) south through San Diego County into northwestern Baja California, Mexico.
Habitat: This wren of the coastal slope is restricted to clumps of prickly-pear (*Opuntia littoralis and O. oricola*) or cholla (*O. prolifera*) growing in coastal sage scrub or along washes. Because of this restriction to cactus patches, the coastal cactus wren naturally occurred in small isolated populations scattered throughout the coastal lowlands.
Status Onsite: A total of 10 individuals was observed in the southern half of the project site, with most (seven) occurring on the slopes contiguous habitat in O'Neill Regional Park.

Loggerhead shrike

Status: CDFG CSC

Distribution: Widespread, but declining, throughout North America. Winters south to Central America.

Habitat: Open habitats including grasslands, scrublands, and ruderal areas with adequate perching locations.

Status Onsite: Observed in 1989 but not mapped.

Southern California rufous-crowned sparrow

Status: USFWS Regionally sensitive; CDFG CSC

Distribution: This coastal species occurs from Ventura County across to Los Angeles county and southeast through Orange, Riverside and San Diego counties to northwestern Baja California, Mexico.

Habitat: Mainly inhabit Venturan-Diegan transitional coastal sage scrub where it occurs in rocky hillsides and canyons, but they also may be found in open sage scrub/grassy areas of successional growth (e.g., after a fire, etc.).

Status Onsite: Ten individuals were observed on the southern half of the site, mostly (seven) on the slopes of habitat contiguous with O'Neill Regional Park. Two additional individuals occur just offsite near the southern half of the site and in the northeast corner.

coastal California gnatcatcher

Status: USFWS threatened

Distribution: The coastal California gnatcatcher occurs throughout specified habitat types in Orange, San Diego, Western Riverside and coastal Los Angeles counties.

Habitat: Mainly coastal sage scrub, with limited slope characteristics.

Status Onsite: None observed onsite based on previous 1993/1994 surveys, although current 1997 presence/absence surveys have not been conducted per USFWS protocol. As such, onsite coastal sage scrub habitat must be considered occupied by coastal California gnatcatchers until proven otherwise.

Table 27

SENSITIVE ANIMAL SPECIES WITH THE POTENTIAL FOR OCCURRENCE ONSITE

Species	Status	Potential/Habitat
Invertebrates		
Quino checkerspot *Euphydryas editha quino*	USFWS FE	Low; Habitat highly variable, but primarily coastal sage scrub. Food plants (*Plantago* ssp.) present. Focused surveys are needed for detection but are not warranted. This species is extremely rare in Orange County.
Reptiles		
San Diego Horned lizard *Phrynosoma coronatum blainvilii*	USFWS Regionally sensitive CDFG; CSC	High; chaparral, coastal sage scrub, food source (harvester ants [*Pogonomyrmex* sp.]) not seen but probably present. Focused surveys may be needed for detection but are not warranted. Expected but not seen during surveys.
San Diego ringneck snake *Diadophus punctatus similis*	USFWS Regionally sensitive CDFG; CSC	Low to moderate; coastal sage scrub, chaparral, oak woodlands. Prefers moist habitats. Focused surveys needed for detection but are not warranted.
Coastal rosy boa *Lichanura trivirgata roseofusca*	USFWS Regionally sensitive	Low; rocky areas in coastal sage shrub, chaparral, and cactus scrub. Focused surveys needed for detection but are not warranted.

Table 27 (con't)
SENSITIVE ANIMAL SPECIES WITH THE POTENTIAL FOR OCCURRENCE ONSITE

Species	Status	Potential/Habitat
Birds Prairie falcon *Falco mexicanus*	CDFG CSC	Low; an uncommon visitor to grasslands and scrublands of Orange County.
Northern harrier *Ciscus cyaneus*	CDFG CSC	Moderate; habitat includes open areas, such as grasslands and adjacent habitats. Would have been observed if it consistently uses the site. Nevertheless, this rupture probably occurs in the site vicinity due to the amount of open habitat, especially to the southeast.
Burrowing owl *Speotyto cunicularia*	CDFG CSC	Low; often found in disturbed sites where ground squirrel burrows are present, but would have been observed if present.
Bell's sage sparrow *Amphispiza belli belli*	USFWS C2 CDFG CSC	Moderate; habitat is coastal sage scrub and chaparral. Not common and apparently absent from much of Orange County. Would likely have been detected if present.
Tricolor blackbird *Agelaius tricolor*	USFWS Regionally sensitive CDFG; CSC	Moderate potential as a winter visitor and as a migrant; mostly in grasslands and wetlands
coastal California gnatcatcher *Poplioptila californica*	USFWS threatened	Low potential based on previous onsite field surveys/coastal sage scrub.

Table 27(con't)
SENSITIVE ANIMAL SPECIES WITH THE POTENTIAL FOR OCCURRENCE ONSITE

Species	Status	Potential/Habitat
Mammals		
Pallid bat *Antrozous pallidus pacificus*	CDFG CSC	Moderate; habitat highly variable, could forage throughout the site, but roosting sites are likely elsewhere. Focused surveys needed for detection but not warranted.
Greater western mastiff bat *Eumops perotis californicus*	USFWS Regionally sensitive CDFG; CSC	Moderate; could forage in any habitat onsite, but roosting sites are likely elsewhere. Focused surveys needed for detection but not warranted.
Dulzura California pocket mouse *Chaetodipus californicus femoralis*	USFWS Regionally sensitive CDFG CSC	Low to moderate; dense chaparral, but occasionally other scrublands. Trapping necessary for detection but not warranted.
San Diego desert woodrat *Neotoma lepida intermedia*	USFWS Regionally sensitive CDFG; CSC	Moderate; woodrat sign was found, but it could have been dusky-footed woodrat. Habitat is coastal sage scrub and other xeric habitats. Trapping necessary for detection but not warranted.

Several additional animal species may occur onsite. The majority of these species have a low to moderate potential for occurring onsite. None of the species warrant further surveys because they are of a generally low level of sensitivity and adequate mitigation can be accomplished by mitigating for their habitats.

4.7.2 EFFECTS FOUND TO BE INSIGNIFICANT

All of the effects on biological resource factors were determined to be potentially significant.

4.7.3 PROJECT IMPACTS

Vegetation communities

Implementation of the proposed project results in the direct removal of 191.4 acres (86 percent) of onsite and 19.8 acres of offsite vegetation as shown in Table 28. A total of 30.8 acres (14 percent) of undeveloped land will remain in open space.

Table 28
IMPACTED VEGETATION (ACRES) SUMMARY

Habitat	Existing	Onsite Impacts	Percent Impact (%)	Preserved Onsite	Percent Impact (%)	Offsite Impacts	Total
• Venturan-Diegan Transitional Coastal Sage Scrub (disturbed and undisturbed)	67.1	44.2	66	22.9	34	6.1	50.3
• Southern Mixed Chaparral	5.4	1.8	33	3.6	67	1.9	3.7
• Coast Live Oak Woodland (acreage/individuals)	14 5/298	14.0/284	97	0.5/14	3	0.6/5	14.6
• Southern Sycamore Riparian Woodland	0.5	0.5	100	0.0	0	2.8	3.3
• Mulefat Scrub	2.9	2 8	97	0.1	3	1.0	3.8
• Ephemeral Pond	0.8	0.6	75	0.2	25	0	0.6
• Annual Grassland	125.3	121 8	97	3.5	3	4.8	126.0
• Agriculture	4.6	4.6	100	0.0	0		
• Disturbed	1 1	1.1	100	0.0	0	2.6	3.7
TOTAL	222 2	191 4	84	30.8	16	19.8	211.19

Venturan-Diegan Transition Coastal Sage Scrub/NCCP

A total of 50.3 acres of coastal sage scrub would be impacted by implementation of the proposed project. The Natural Communities Conservation Planning (NCCP) program Southern Subregions is currently in preparation and is anticipated to be completed in late 1997 or early 1998. The USFWS/CDFG have developed interim loss procedures for coastal sage scrub habitat, which may occur during preparation of the subregional NCCP. Under the requirements of the Interim Take 4(d) Rule and guidelines, up to 5% of the coastal sage scrub habitat may be impacted during preparation of the southern subregional NCCP. In addition, the following NCCP findings must be made prior to coastal sage scrub impacts:

1) The proposed habitat loss is consistent with the interim loss criteria in the Conservation Guidelines.

   a) The habitat loss does not cumulatively exceed the five percent guideline for loss of CSS within a subregion.
   b) The habitat loss will not preclude connectivity between areas of high habitat values.
   c) The habitat loss will not preclude or prevent the preparation of the subregional NCCP.
   d) The habitat loss has been minimized and mitigated to the maximum extent practicable, in accordance with the Interim Mitigation Criteria of the NCCP Process Guidelines.

2) The habitat loss will not appreciably reduce the likelihood of the survival and recovery of listed species in the wild.

3) The habitat loss is incidental to otherwise lawful activity.

Implementation of the proposed project would not result in the cumulative exceedance of the five percent loss of coastal sage scrub in the southern subregion. When added to the current total loss to date of 296 acres (authorized and pending), and 274 acres recorded from non-NCCP authorized projects, the maximum loss of 50.3 acres associated with this project would bring the total loss to 620 acres, which is about 2.4% of the 26,315 acres of coastal sage scrub in the Southern Subregional NCCP program area.[11]

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[11] *Personal Communications - Gary Medieros, EMA, Environmental Planning 10/23/95.*
- Written Communication, Timothy Neely, Administrator, Planning & Zoning, 5-13-97.

Southern Mixed Chaparral

Approximately 1.8 acres (33 percent) of southern mixed chaparral would be directly impacted onsite by the project, and an additional 1.9 acres would be impacted offsite. These impacts are not considered to be significant because of the small amount of impact and the fact that southern mixed chaparral is not considered a sensitive habitat

Mulefat Scrub and Southern Sycamore Riparian Woodland

Mulefat scrub (3.8 acres) would be impacted where it is associated with three of the ephemeral ponds and in three intermittent streambeds, and southern sycamore riparian woodland (3.3 acres) would be impacted by remedial grading along the western boundary of the site. These impacts would be significant because of the two habitats' values as wildlife habitats and because of their function as wetlands or Waters of the United States. Impacts to these habitats would require permitting as discussed below.

Coast Live Oak Woodland

A total of 14.6 acres (97 percent) of coast live oak woodlands (312 individuals) would be impacted by the proposed project, while 0.5 acres (14 individuals) will be preserved. Impacts to oak woodlands are considered significant because of their wildlife values, their function in watershed protection and, in the case of the project site, their function as part of the planned NCCP regional wildlife corridor.

Ephemeral Ponds

0.6 acres of the existing ephemeral ponds would be impacted as a result of project implementation. The 0.6 acres of impact to ephemeral ponds is significant due to the presence of Riverside fairy shrimp. In addition, impacts to portions of this habitat would require permitting as discussed below because of its function as a Waters of the United States.

Agriculture and Annual Grassland

Approximately 4.6 acres (100 percent) of agriculture, 121.79 acres (97 percent) of annual grassland, and 1.1 acres of disturbed land (100 percent) will also be impacted. An additional 4.8 acres of annual grassland and 2.6 acres of disturbed land will be impacted offsite These impacts are not considered significant because the habitats are not sensitive.

Wetlands and Waters of the United States

Implementation of the proposed project would result in impacts to jurisdictional Wetlands/Waters of the United States, as regulated by the U.S. Army Corps of Engineers, summarized in Table 29.

Table 29
IMPACTED WETLANDS/WATERS OF THE UNITED STATES

Type of Habitat	Acres
Wetlands (0.84 ac Mulefat/0.81 ac Sycamore Woodland)	1.65
Non-Wetlands Waters of the U.S. (Intermittent Streams and Man-Made Stock Ponds)	1.78
Total	**3.43**

A Federal Clean Water Act section 404 individual permit issued by the U.S. Army Corps of Engineers would be necessary for direct impacts to 1.65 acres of wetlands (0.84 acre of mulefat scrub and 0.81 acre of southern sycamore riparian woodland) and 1.78 acres of Waters of the United States (intermittent streams and ephemeral ponds). As part of the permitting process, there may be required mitigation measures independent of the requirements of CEQA for impacts to wetlands. Only a portion of the mule fat scrub being impacted was delineated as a wetland (0.84 acres), although the total impact to this community is 3.8 acres. Only a portion of the southern sycamore riparian woodland being impacted was delineated as a wetland (0.81 acres), though the total impact to this community is 3.3 acres (0.5 acres onsite and 2.8 acres offsite). A Streambed Alteration Agreement with CDFG will also be required for the 8.1 acres of impacts to wetland habitats (southern sycamore riparian woodland, mule fat scrub, and ephemeral pond).

Sensitive Plants

Seven of the eight stands of Catalina mariposa lily, including approximately 314 (72 percent) of the estimated 435 individuals, would be eliminated by the proposed project. Approximately 121 individuals of the remaining stand would remain in open space. Impacts to this species are not considered to be significant due to its relatively low level of sensitivity, the relatively small population size onsite, and the relatively board distribution of this species throughout its range.

Two of the three stands of intermediate mariposa lily would be totally impacted by the proposed

project. Only one of the estimated 18 individuals (5 percent) would be directly impacted. Impacts to this species are considered to be adverse but not significant due to the small size of the total site population and, therefore, low regional significance of the onsite population.

Sensitive Animals

Riverside Fairy Shrimp

Impacts to all ponds where fairy shrimp were detected are significant because of the limited distribution of the species, and because it is federally-listed as endangered.

Western Spadefoot Toad

One of the two ponds where larvae were found will be impacted by the project. The impact to this species is not significant because of the species low level of sensitivity and because the population onsite is not of regional significance due to its small size.

Orangethroat Whiptail, Coastal Whiptail, Coastal Cactus Wren, and Southern California Rufous-Crowned Sparrow

The orangethroat whiptail and coastal whiptail prefer the open coastal sage scrub and southern mixed chaparral areas of the site. Two orangethroat whiptails and one coastal whiptail were observed, although many more are expected. Approximately 54.0 acres of combined coastal sage scrub and chaparral would be directly impacted (including offsite impacts), leaving 26.5 acres in open space. Ten coastal cactus wrens and twelve southern California rufous-crowned sparrows are distributed throughout the coastal sage scrub onsite and just offsite. Approximately 50.3 acres of potential nesting and foraging habitat (coastal sage scrub) would be impacted on and offsite, including at least portions of areas occupied by all twelve pairs of sparrows and at least six pairs of coastal cactus wrens. Impacts to these four species combined are considered significant but mitigable.

Cooper's Hawk

No direct impacts to known Cooper's hawk nesting habitat are anticipated, because no nests were observed during the surveys. Impacts to foraging habitat onsite are considered adverse but not significant since it is unlikely that any active nests would be disturbed. Should Cooper's hawks breed on the site, the loss of foraging habitat could affect, at most, a portion of one territory of

one pair of Cooper's hawks, and this impact would not be considered significant.

Loggerhead shrikes were observed onsite, but it is unknown how many or whether they were breeding onsite. Assuming that they still use the site, the project impacts will still not be significant because of the low sensitivity of this species.

Coastal California Gnatcatcher

Previous field surveys (1993/1994) have determined that onsite coastal sage scrub habitat is not occupied by coastal California gnatcatchers, although current 1997 gnatcatcher surveys have not been completed to USFWS presence/absence protocol. As such, onsite coastal sage scrub habitats must be considered occupied by coastal California gnatcatcher until proven otherwise.

Raptor Foraging Habitat

Impacts to all habitats onsite would total 206.2 acres, while offsite impacts would total 7.0 acres. These impacts would generally add to the loss of raptor foraging areas in the region. However, because of the disturbed nature of most of the present habitat and the restoration of oak woodland and project slopes, sufficient habitat would remain so that these impacts are not considered significant.

Potentially Occurring Species

A list of potentially occurring mammals and additional species is shown in Table 27. Additional focused surveys (that is, small mammal trapping) would be required to determine the status of potentially occurring sensitive mammal species onsite. Given the low sensitivity of the potentially occurring species, their distribution throughout other parts of Orange County, and the low amount of anticipated impacts to their respective habitats, these impacts are considered to be adverse but not significant.

Wildlife Movement

Implementation of the proposed project would directly impact wildlife movement through the project site, as it does not contain any design features which seek to facilitate wildlife movement. It can not be assumed that wildlife would be able to move through the project site as currently designed. The project, as currently proposed, may hinder or preclude the preparation of the southern subregional preserve, due to restricted wildlife movement.

Impact Significance Criteria

The impact significance criteria listed below, are based on a combination of the following: the Natural Community Conservation Planning (NCCP) information from the County of Orange, including acreages of habitat types proposed to be included in the Southern Subregion reserves; significance criteria, adopted regulations and stated policies of the California Department of Fish and Game, California Resources Agency, U.S. Army Corps of Engineers, and the U.S. Department of the Interior Fish and Wildlife Service.

The criteria listed below have been developed with the knowledge of the habitat resources on the project site. They have been focused to address the project site, including the context of this site within the NCCP Southern Subregion.

The project will have a potentially significant effect if it results in one of the following:

- For the federally listed coastal California gnatcatcher, other NCCP "target and identified species," coastal sage scrub (CSS) habitat, and wildlife movement corridors, the project would impair the ability of the Lead Agency (the County of Orange) to prepare an effective subregional NCCP consistent with the requirements of the Special 4(d) Rule for the coastal California gnatcatcher, FESA Section 10, and the NCCP Planning guidelines.

  The California Resources Agency and Department of Fish and Game have stated their intent to declare that significant impacts for individual projects addressed by a NCCP should be evaluated and determined based on the above standard (consistency with the subregional NCCP). Once a subregional NCCP has been approved by State and Federal agencies, a project whose CSS impacts have been addressed by the approved NCCP should be considered to be mitigated to below a level of significant effect.

- For other species of limited distribution in a subregion, or otherwise of high sensitivity; a) loss of habitat such that the potential benefits of any current or expected process to maintain viable levels of the species, through study, listing or a proposal to list the species would be diminished by a loss of the habitat at this time; b) the loss would be a non-recoverable loss during a time when the species and its habitat are undergoing a rapid decline; or c) loss of a consequential portion of a known population in the subregion.

- Project implementation results in notable net loss of a biotic community that is subject to local, State and/or Federal regulations (e.g., riparian communities) or that is otherwise of

very limited occurrence in the subregion (e.g., oak woodland and native grassland).

- Project implementation results in the direct impairment of wildlife movement on a local or regional scale.

4.7.4 SIGNIFICANT IMPACTS OF PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to application of outlined mitigation measures, would result in significant impacts to the following resources:

Sensitive Vegetation

Project implementation would result in the direct impact to : 1) 50.3 acres of Venturan-Diegan transitional coastal sage scrub; 2) 14.6 acres of coast live oak woodland; 3) 5.0 acres of southern sycamore riparian woodland; 4) 3.8 acres if mulefat scrub; and 5) 0.6 acres of ephemeral pond.

Sensitive Animals

Implementation of the proposed project would result in direct impacts to the Riverside fairy shrimp, a Federal endangered species. In addition, impacts to the orange-throated whiptail, western spadefoot toad, coastal whiptail, coastal cactus wren, and Southern California rufous-crowned sparrow, cooper's hawk, and loggerhead shrike will also result. Based on the absence of a current (1997) coastal California gnatcather survey conducted to USFWS presence/absence survey protocol requirements, impacts to coastal California gnatcatchers must be considered significant until proven otherwise by future surveys.

Wildlife Movement

Implementation of the proposed project would conflict with existing wildlife movement corridors, as depicted in the Foothill-Trabuco Specific Plan, Exhibit 52 and is identified in Section 4.7.1 of this EIR.

4.7.5 CUMULATIVE IMPACTS

Contributions to Cumulatively Significant Impacts

Considered alone, many impacts associated with implementation of a single project may not meet the

criteria of significance, either because project implementation impacts a relatively small area or because the resources impacted are only moderately sensitive; many candidates for federal listing fall under this category. However, when considered in the context of past and ongoing development of the region, a single project's impacts can be seen as a contribution to cumulatively significant effects.

In light of the fact that the Southern Subregional NCCP preserve has not been finalized, cumulative impacts to coastal sage scrub habitat are considered significant.

- Implementation of the proposed project in conjunction with other projects would result in cumulative impacts to oak woodland and sycamore riparian habitat.

- Implementation of the proposed project would contribute to cumulatively significant impacts to wildlife movement in the vicinity of the proposed project.

- Implementation of the proposed project would contribute significant impacts to the coastal California gnatcatcher, until such time as future field surveys, conducted to 1997 USFWS presence/absence protocol, demonstrates that onsite coastal sage scrub habitat is not occupied by California gnatcatchers.

- Implementation of the proposed project would contribute to cumulatively significant impacts to Riverside fairy shrimp.

- Implementation of the proposed project would contribute to cumulatively significant impacts to coast live oak and southern sycamore/riparian woodland.

- Implementation of the proposed project would contribute to cumulatively significant impacts the completion of the NCCP Southern Subregional reserve.

4.7.6 MITIGATION MEASURES

Conceptual Mitigation Program

As outlined in Section 2.8, mitigation measures which would result in, or require physical change to, the layout of the proposed project as shown on recorded tract map 10692, are not possible due to the inability to deviate from the final recorded tract map.

The following conceptual mitigation program has been developed based on input from the USFWS

and CDFG. During the public review process for EIR 561 and the N.O.P. comment period for EIR 566.

Impacts to Venturan-Diegan transitional coastal sage scrub habitat will require a mitigation ratio of 1.5:1 because although it is ranked as intermediate value habitat (under the NCCP), in its current condition much of the habitat being impacted is fragmented, is at least partially disturbed, and it may not support the coastal California gnatcatcher. According to the NCCP Evaluation Logic Flow Chart, the coastal sage scrub on the project site is considered intermediate value for long-term conservation because although it is not the most dense coastal sage scrub in the region, it is located next to a higher value district (O'Neill Regional Park). Impacts to mulefat scrub will be mitigated at 1:1 because of the poor quality of the existing habitat, and because it is surrounded by agriculture and annual grassland habitats. Southern sycamore riparian woodland will be mitigated at a ratio of 3:1 because of its high habitat quality. Oak woodland habitat will be mitigated at a ratio of 1:1, due to its moderate habitat values. Ephemeral pond habitat will also need to be replaced at a 2:1 ratio. Refer to Table 30 for a summary of the biological mitigation requirements.

Table 30
CONCEPTUAL BIOLOGICAL MITIGATION PLAN REQUIREMENTS

Habitat	Sensitive Habitat Impact Acreage	Mitigation Ratio	Mitigation Acreage
Venturan-Diegan Coastal Sage Scrub	50.3	1.5:1	75.5 Acres
Mulefat Scrub	3.8	1:1	3.8 Acres
Southern Sycamore Riparian Woodland	3.3	3:1	9.9 Acres
Oak Woodland	14.6	1:1	14.6 Acres
Ephemeral Pond	0.6	2:1	1.2 Acres
Total	**72.6**		**105.0 Acres**

The biological resource mitigation measure outlined above and summarized in Table 30, can not be implemented onsite and must be implemented offsite. Specific standard county conditions and mitigation measures have been developed to ensure that a comprehensive biological resources mitigation program is devised and approved by the County of Orange, in conjunction with USFWS and CDFG prior to the issuance of grading permits.

Project Design Features

No PDFs proposed.

Standard County Conditions and Mitigation Measures

SC 7-1 Pursuant to Section 711 4 of the Fish and Game Code, the applicant shall comply with the requirements of AB 3158, prior to the filing of the Notice of Determination for the project, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services Division.

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement.

SC 7-3 Prior to the issuance of any grading permits, the applicant shall obtain the necessary individual or nationwide permit (pursuant to Section 404 of the Federal Clean Water Act) covering all affected wetland areas from the U.S. Army Corps of Engineers, Los Angeles District. All wetland areas shall be subject to the specifications of the 404 permit as determined by the Corps of Engineers. A copy of the 404 permit shall be submitted with the first grading permit application for the proposed project to the Manager, PDS/Subdivision and Grading Services Division.

SC 7-4 Prior to the issuance of a grading permit, as required by participation in the Natural Community Conservation Planning/Coastal Sage Scrub (NCCP) agreement signed by the County on May 1, 1992, the project applicant shall provide an accounting summary, in acres or portions thereof, of coastal sage scrub scheduled to be impacted by removal through grading in a manner meeting the approval of the Administrator, Planning & Zoning. (See Section 4.7.3.)

SC 7-5 Prior to the issuance of a grading permit, the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the U.S. Fish and Wildlife Service, in a manner meeting the approval of the Administrator, Planning & Zoning and Manager, PDS/Grading Services Division, in consultation with the Administrator, Planning & Zoning.

SC 7-6 Notwithstanding the tentative map, no grading shall occur within the Natural Community Conservation Plan (NCCP) enrolled area except as in a manner meeting the approval of the Administrator, Planning and Zoning.

SC 7-7 Prior to the issuance of any grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. This evidence shall be submitted to the Manager, PDS/Subdivision and Grading Services Division, for review and approval, in consultation with the Administrator, Planning and Zoning.

SC 7-8 Prior to the issuance of grading permits the applicant shall submit a landscape and tree preservation plan to the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval in accordance with the following guidelines:

A. To the maximum extent feasible, all existing native and exotic trees and other significant vegetation shall be preserved in conjunction with any development activity.

B. A tree preservation plan shall be prepared by a landscape architect for all development projects which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and one-half feet above ground level) and shrubs having a trunk or branch diameter of 3 inches or greater. The plan shall show which plants are proposed for removal and where transplanted and/or replacement plants will be located. Tree preservation plans shall be approved prior to issuance of grading permits, or where grading permits are not required, prior to issuance of building permits.

C. Trees removed in accordance with an approved tree preservation plan shall be replaced by a combination of transplanting to another location on the subject property and/or replacement by a combination of 1 and 15-gallon plants at a minimum ratio of 5:1. The following sliding scale shall also be used for trees to determine if more than the minimum number of replacement trees are required.

Tree Replacement Scale

Trunk Diameter (inches) of Tree Removed At 4½ Feet Above Ground Level	Total Number of Replacement
5 to 11	5 (1-15 gal / 4-1 gal)
12 to 17	7 (1-15 gal / 6-1 gal)
18 to 23	10 (2-15 gal / 8-1 gal)
24 to 35	12 (2-15 gal / 10-1 gal

Any oak exceeding 35 inches in diameter should be preserved, transplanted or replaced in accordance with the provisions outlined in Section E of the mitigation measure. In the event that all required replacement trees will not fit on the property, increase in container size will be considered in conjunction with reductions in replacement quality

D. Significant shrubs removed in accordance with an approved tree preservation plan should be replaced by a combination of transplanting to another location on the subject property and/or replacement by 5-gallon plants at a minimum ration of 3:1.

E. All other plants not specified in Guidelines C and D above that are removed in accordance with an approved tree preservation plan should be either transplanted to another location on the subject property or replaced by 15-gallon plants for trees and 5-gallon plants for shrubs at a minimum ration of 1:1. The two 35" + oak trees impacted by project implementation, will be mitigated by an enhanced replacement ratio (5-15 gal/10-1 gal) to the satisfaction of the Manager, PF&R/Harbors Beaches and Parks Division.

F. All transplanting of trees shall be performed by an experienced nursery or other landscape contractor, who shall care for the trees for at least six months after transplanting.

G. Prior to issuance of final certificates of use and occupancy, all transplanted or replacement trees and shrubs shall be installed in accordance with the tree preservation plan.

H. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

I. Natural drainage courses and natural grades in proximity of, and providing seasonal irrigation to oak trees shall not be altered.

J. Grading, placement of fill, storage of building materials and heavy equipment, structural development, and hardscape (e.g., roads, sidewalks, patio slabs and pool decks) shall be prohibited within the drip line (outer edge of branches) of any tree. During grading and construction operations, all trees shall be temporarily fenced off with chain link fencing to protect such areas.

K. Use of pre-emergent weed killers shall be prohibited within 10 feet of the drip line of any individual tree and within any natural drainage course which seasonally irrigates trees.

L. Use of soil sterilizers shall be prohibited because they kill everything in the soil.

SC 7-9 Specify areas/lots to be dedicated or irrevocably offered to the County in fee or easement for landscape maintenance purposes, scenic or resource preservation purposes or resource replacement shall be landscaped, equipped for irrigation, and improved in accordance with an approved plan as stated below:

a) Preliminary Plan -An agreement shall be entered into and financial security posed guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, with a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFR/Harbors Beaches and Parks Division. Said plan shall take into account the previously approved landscape plan for AP 95-7, the EMA Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

b) Detailed Plan - Prior to the issuance of any building permit(s), a detailed landscape plan shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFR/Harbors Beaches and Parks Division. Detailed plans shall show the detailed irrigation and landscaping design.

c) Installation Certification - Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, said improvements shall be installed and shall be certified by a licensed landscape architect or licensed landscape contractor, as required, as having been installed in accordance with the approved detailed plans. Said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable, shall be furnished in writing to the Manager, PFR/Construction Division, and the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy.

SC 7-10 Prior to the issuance of precise grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan. The plan shall be certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan (if any), EMA Standard Plans, area plan 95-7, scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures) and Board Resolution 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed by the future homeowners association and be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division.

SC 7-11 Prior to the issuance of grading permits, the applicant shall provide additional evidence that the onsite coastal sage scrub habitat is not occupied by California gnatcatchers, in accordance with current USFWS protocol (7 in season/9 out of season pass surveys) to the satisfaction of the USFWS and the Administrator, Planning and Zoning. Should occupied coastal sage scrub habitat be identified onsite by the surveys consultation shall be initiated with the USFWS, and a coastal sage scrub/gnatcatcher mitigation plan shall be developed to the satisfaction of the USFWS and the Administrator, Planning and Zoning prior to the issuance of grading permits.

SC 7-12 Prior to the issuance of grading permits, the applicant shall provide appropriate measures to mitigate the project related impacts to onsite wildlife movement, to the satisfactin of the USFWS, CDFG and the Administrator, Planning and Zoning. Mitigation shall consider onsite as well as offsite mitigation options, and established fee programs.

SC 7-13 Prior to the issuance of grading permits, the applicant shall provide assurances to the satisfactin of the County NCCP coordinator and the Administrator, Planning and Zoning, that the proposed project will participate in the NCCP planning process and not preclude the finalization of the Southern Subregional reserve component of the NCCP.

SC 7-14 Prior to the issuance of grading permits, the applicant shall prepare a relocation and establishment mitigation plan, designed to mitigate impacts to Riverside fairy shrimp/pond habitat, wetlands, and southern sycamore woodland, to the satisfaction of the Administrator, Planning and Zoning, in consultation with USFWS and CDFG. Mitigation shall consider onsite as well as offsite mitigation options, as well as, established fee programs.

Additional Mitigation Recommendations

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner acceptable to the Manager, Environmental and Project Planning Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division.

AM 7-15 The following recommendations are proposed to further minimize some of the proposed impacts.

- Where possible, bulbs of individual Catalina Mariposa Lily and Intermediate Mariposa Lily that are to be impacted shall be dug up and transplanted to a suitable habitat with similar soil, slope exposure, etc.

- Lighting within development projects adjacent to conserved habitat should be selectively placed, shielded, and directed away from that habitat. In

addition, lighting from homes abutting conserved habitat should be screened with vegetation, and large spotlight-type lighting that may affect conserved habitat should be prohibited. These lighting restrictions should be incorporated into the project's CC&Rs.

4.7.7 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project, in conjunction with all of the identified mitigation measures, would reduce all impacts to less than significant, with the exception of the following:

- Project specific and cumulative impacts to coastal sage scrub, mulefat scrub, southern sycamore woodland, oak woodland and ephemeral ponds will remain significant and unavoidable. Once an Interim Loss Habitat Mitigation Plan has been approved, OCPDS will issue a letter determining that the impact to coastal sage scrub has been reduced to less than significant.

- Impacts to the Riverside fairy shrimp would remain unavoidable and adverse, until such time as the U.S. Fish and Wildlife Service completes a Section 7 (Endangered Species Act) consultation as part of the ACOE Section 404 process, resulting in a biological opinion, which indicates that the mitigation plan would not jeopardize the survival of the species.

- Impacts to wildlife movement would remain unavoidable and significant.

4.8 AESTHETICS

4.8.1 EXISTING ENVIRONMENTAL SETTING

The project site is located approximately ½ of a mile south/southeast of the intersection of El Toro and Live Oak Canyon Roads, in the foothills of the Santa Ana Mountains, within the boundaries Foothill/Trabuco Specific Plan area. The project site is located in the northwest portion of the Specific Plan area within the district designated as the Upper Aliso Planning Area. Specific Plan goals and regulations are intended to guide future development with the overriding purpose of preserving the area's rural character and abundant natural and scenic resources.

Containing approximately 222.23 acres, the irregularly shaped project site is surrounded by the following land uses: north - Saint Michael's Abbey and School and low density residential and ranch

land uses, east - widely spaced low density single family residential and a rural church, south - the Ramakrishna Monastery, O'Neill Regional Park, and the Hidden Ridge medium/high density residential tract, west - Aliso Creek, El Toro Road and the Portola Hills planned community. The Hidden Hills and Portola Hills developments are both located outside the Foothill/Trabuco Specific Plan area. Existing views of the project site from surrounding land uses are shown in Exhibits 56-58.

The project site consists of moderate to steep rolling hills ranging in elevation from approximately 1,000 to 1,550 feet above sea level. General elevation change occurs from a low point (1,015 feet) at the southwest corner of the site to the high point of (1,640 feet) near a proposed water tank located just northeast of the project boundary. A designated major ridgeline located near the eastern portion of the site and running in an essentially north - south direction, crosses the site near the northeast corner. Surrounding topography consists of a similar combination of steep to moderate hills and canyons with generally similar elevation ranges as the project site.

Due to the varied elevations of the project site and surrounding topography, the subject property will be visible from numerous locations in the vicinity. The site is presently undeveloped affording a view of natural rolling topography, grasslands and oak woodlands, which generally are considered to be scenic amenities. Ongoing cattle grazing activities have altered the biological resources onsite and resulted in an overgrazed visual condition for a majority of the site.

4.8.2 EFFECTS FOUND TO BE INSIGNIFICANT

The proposed project will be visible from existing development located south of the site in Mission Viejo (Altisima "Road"). Due to the distance of this location from the project site, aesthetic visual impact of site development is considered insignificant. Altisima is located over one mile south of the site at a slightly higher elevation and has a view of an intervening canyon located within O'Neill Regional Park and the southern ridgeline of the subject property. Nearly the entire proposed project and off site water tank will be visible from this location. Significant potential aesthetic impact will be mitigated however, by the distance of this location from the project site. Further, screening mitigation is also anticipated from the replanting of graded slopes with native vegetation and common area landscaping.

Live Oak Canyon Road is a designated scenic highway located approximately 1/4 mile north, northeast and east of the project site. Partial public view of the project will be possible from a small portion of this roadway near its intersection with the Harris Truck Trail northeast of the site; however, only a few homes are potentially visible from this location. Therefore, potential impact to the public's enjoyment of the aesthetic resources visible from this scenic highway is not anticipated

to be significant.

4.8.3 PROJECT IMPACTS

Substantial alteration of the existing onsite aesthetic visual resources will occur with the development of the proposed project. Viewshed impacts will be primarily due to substantial direct and remedial site grading and the subsequent construction of 705 manufactured single family residences on site. Grading volumes are estimated at approximately 11.5 millions of cubic yards (2.6 millions of cubic yards of conventional and 8.9 millions of cubic yards of remedial). Significant change to existing landforms, due to the substantial cut and fill required to create flat buildable pad areas from the steep rolling terrain on site, will generate permanent alteration to the natural topography and have an associated aesthetic impact to the site's viewshed. Visual impact is not limited to topographic alteration, but will also include loss of a portion of an oak woodlands, onsite ponds, and annual grasslands. Approximately 211.12 acres of the site (191.4 onsite and 19.8 offsite) will be altered or disturbed by project development. 14% of the site will remain in undisturbed open space.

In addition, site development will change the surrounding property's viewshed of the site from essentially undisturbed natural rolling rangeland and oak woodland to an urban/suburban environment. Though approximately 14% of the site will be retained in a natural open space, the predominant view will be of man-made slopes, roads, manufactured single family residences, and planted landscaping. This impact is permanent and unavoidable with site development.

The project proposes development of 705 manufactured residential units on minimum 2,630 square foot pads. This intensity and scale of development could be perceived as aesthetically objectionable by nearby residents.

Another potential impact of site development is glare from night lighting of project streets and residences. The site currently generates no night lighting. As a result, adjacent land use experience a more natural night sky and view of the site. Glare from night lighting may impact the ability to view stars and the visual aesthetic resource of a naturally lit environment.

Potential impacts to visual and aesthetic site resources have been evaluated from the following specific locations listed below. Exhibits 60 - 62 show computer generated post development views and cross-sections from the following locations:

Saint Michael's Abbey and School - Located northwest and adjacent to the project site. Views of the project site from the main abbey compound are generally screened by intervening buildings on the

abbey property, mature vegetation and topography (see Exhibit 61). Proposed residences would be located approximately 300 feet from existing Abbey facility. A significant portion of the proposed development will be visible however, from other parts of the abbey grounds including the pool, recreation field and Stations of the Cross knoll. Views of the project from these various locations on the abbey grounds are considered potentially significant. Glare from night lighting will directly impact this property due to its proximity and its lower elevation from the project site allowing street and residence lighting to shine directly down on the abbey property.

Ramakrishna Monastery - The Ramakrishna Monastery has occupied this location directly adjacent to the southeast portion of the project site since 1946. Normally the monastery is occupied by seven resident monks and an occasional small number of short term visitors. Due to the contemplative purposes for which this facility exists, potential visual impact of site development may be particularly intrusive to monastery residents. Existing on site vegetation near the main monastery buildings and revegetation and common area landscaping of the project's graded slopes may provide additional screening of the site from the monastery property. Nevertheless, it appears that complete site screening will not be possible due to the project site's higher elevation and its proximity to the monastery grounds. Therefore, even with extensive project site landscaping a significant number of residences will remain visible from the monastery, particularly the shrine trail surrounding the monastery property.

Night lighting glare may also have a significant aesthetic impact on monastery residents from both street and normal residence lighting. Resident monks have indicated that night lighting glare from recently constructed residential development in the vicinity has already negatively impacted the quality of life at their facility.

A church and two dwellings are located immediately north of the Ramakrishna Monastery, and would be impacted to the same degree as the outlying areas of the monastery.

O'Neill Regional Park - Residential elevations and man-made slopes located near the south project property line will be visible to the public from the Live Oak Trail within O'Neill Regional Park. The trail view points are located over ½ mile approximately 2,900 feet from the project boundary. Though project views will be far enough away so that elevation details are not apparent, the mere visual presence of a large number of homes from a wilderness hiking trail is considered a significant aesthetic impact.

Portola Hills - Portola Hills is a 2,200 unit planned community located directly west of the project site, across El Toro Road at a similar elevation. Views of the project site will be extensive as

indicated in the viewshed analysis, and will encompass the entire proposed project and off site water tank (see Exhibit 60). Due to Portola Hills' elevation, mitigation of potential visual impacts to a level of insignificance is not possible.

Portola Hills residents night views of the site are currently of a dark naturally lit area. Subsequent project buildout will change their view of natural open space to a view of an artificially lighted urban hillside development. As with all aesthetic impacts, some individuals may find this night lighting change to be a negative impact, while others may consider night lighting when viewed from a higher elevation to be aesthetically pleasing.

Hidden Hills - Hidden Hills is located directly adjacent to the southwest portion of the project site. Viewshed analysis indicates that residents of this tract will have significant uphill view of residences constructed along the southern boundary of the proposed project (see Exhibit 62). This visual impact is considered potentially significant because of the close proximity of the proposed project to existing residences built at a lower elevation. This proximity between the two tracts may generate a feeling to existing residents that Saddleback Meadow homes are looming over their Hidden Hills tract, creating a sense of crowding and associated loss of privacy.

El Toro Road - The proposed project will be visible to motorists on El Toro Road and to bicyclists, equestrians and hikers utilizing the regional trail located parallel to El Toro Road and Aliso Creek west of the project site.

Live Oak Canyon Road - A small portion of the upper portions of the project will be visible from the intersection of Live Oak Canyon Road and Harris Truck Trail. Views of the project site from Live Oak Canyon Road north of the site are partially screened by intervening topography.

LEGEND

CSS	Venturan-Diegan Transitional Coastal Sage Scrub
CSS-D	Venturan-Diegan Transitional Coastal Sage Scrub-Disturbed
OW	Coast Live Oak Woodland
SW	Southern Sycamore Riparian Woodland
MFS	Mulefat Scrub
SMC	Southern Mixed Chaparral
EP	Ephemeral Ponds
AG	Annual Grassland
CULT	Agricultural
DIS	Disturbed
RUD	Ruderal

SENSITIVE ANIMALS

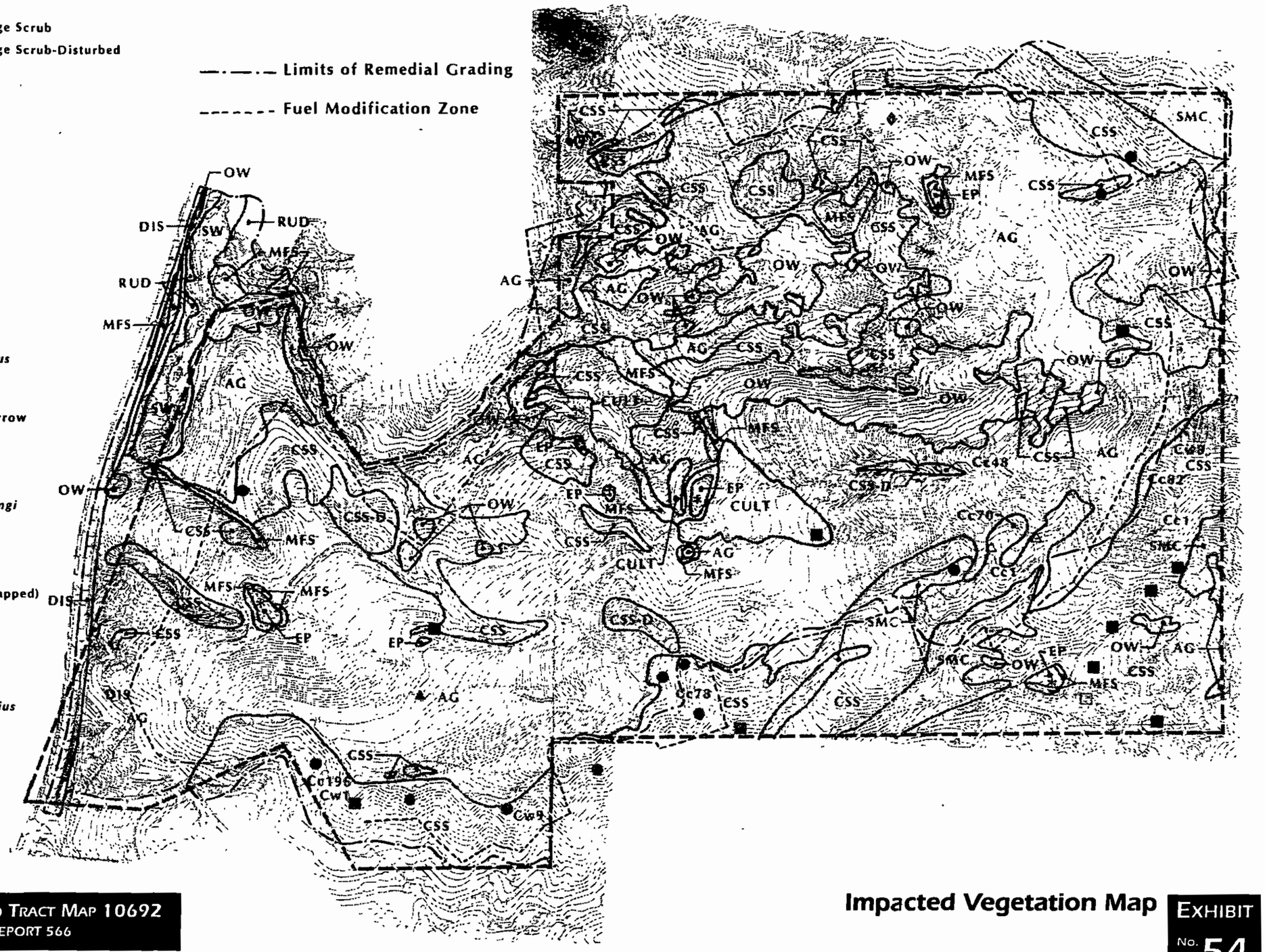
*	Riverside Fairy Shrimp *Streptocephalus woottoni*
▲	Coastal Whiptail *Cnemidophorus tigris multiscutatus*
■	Cactus Wren *Campylorhynchus brunneicapillus*
●	Southern California Rufous-Crowned Sparrow *Aimophila ruficeps canescens*
◆	Cooper's Hawk *Accipiter cooperii*
△	Orangethroat Whiptail *Cnemidophorus hyperythrus beldingi*
□	Western Spadefoot *Spea hammondi*
	Loggerhead Shrike *Lanius ludovicianus* (observed by PSBS in 1989, not mapped)

SENSITIVE PLANTS

Cc	Catalina Mariposa Lily *Calochortus catalinae*
Cw	Intermediate Mariposa Lily *Calochortus weedii ssp. intermedius*

— · — · — Limits of Remedial Grading

- - - - - - - Fuel Modification Zone



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS

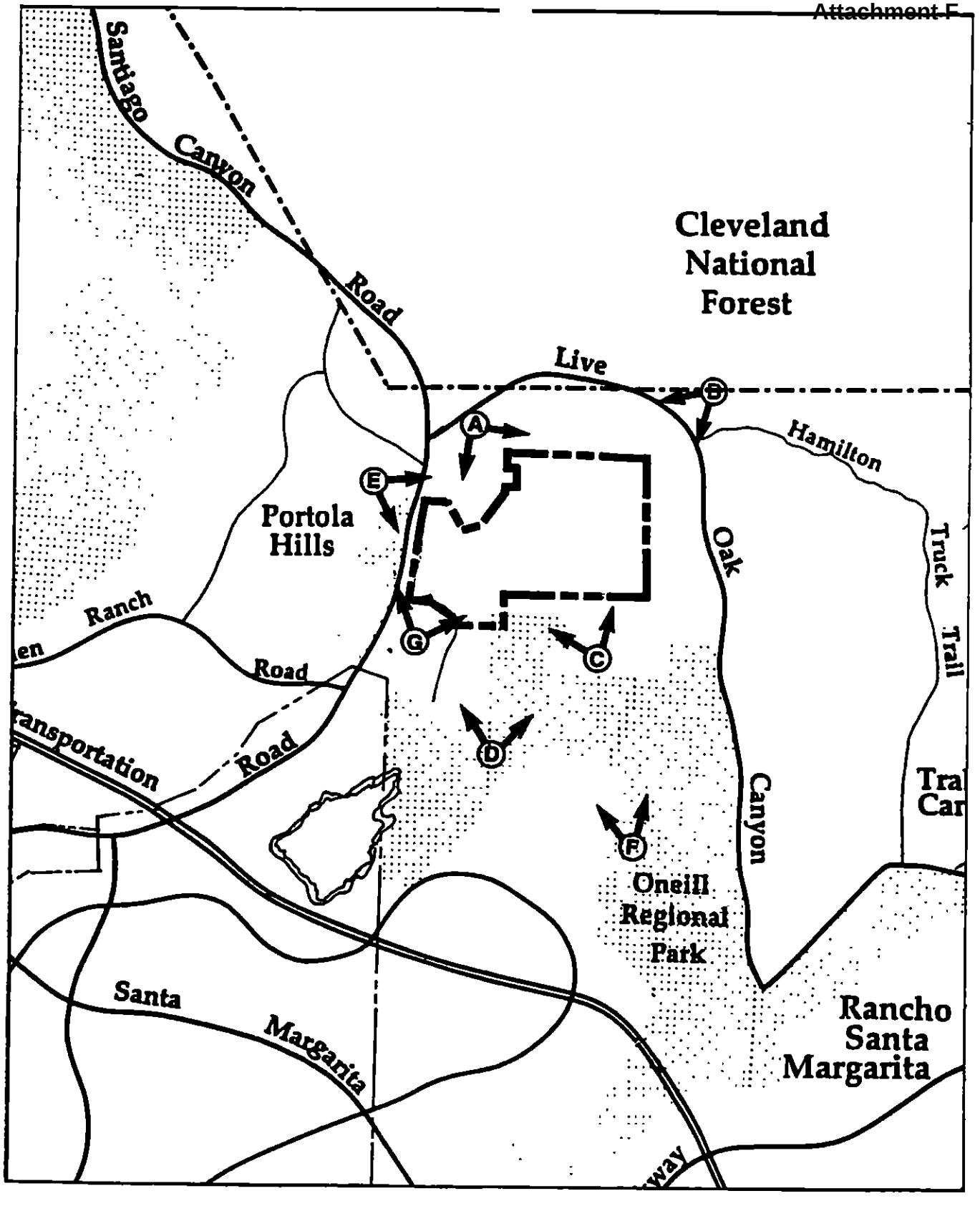
Scale: 1"=400'

Source: Sweetwater Environmental Biologists, Inc.

N

Impacted Vegetation Map

EXHIBIT No. 54



SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Photograph Location Map

EXHIBIT No. 55

URBAN VISION

County of Orange P&DS

Scale: N/A

Source: USGS

N

Ⓐ VIEW OF THE NORTHWESTERN PORTION OF THE PROJECT SITE FORM ST. MICHAEL' ABBEY, SEVEN STATIONS OF THE CROSS.

Ⓑ LOOKING TOWARDS THE PROJECT SITE FROM THE INTERSECTION OF LIVE OAK CANYON ROAD AND HAMILTON TRUCK TRAIL.

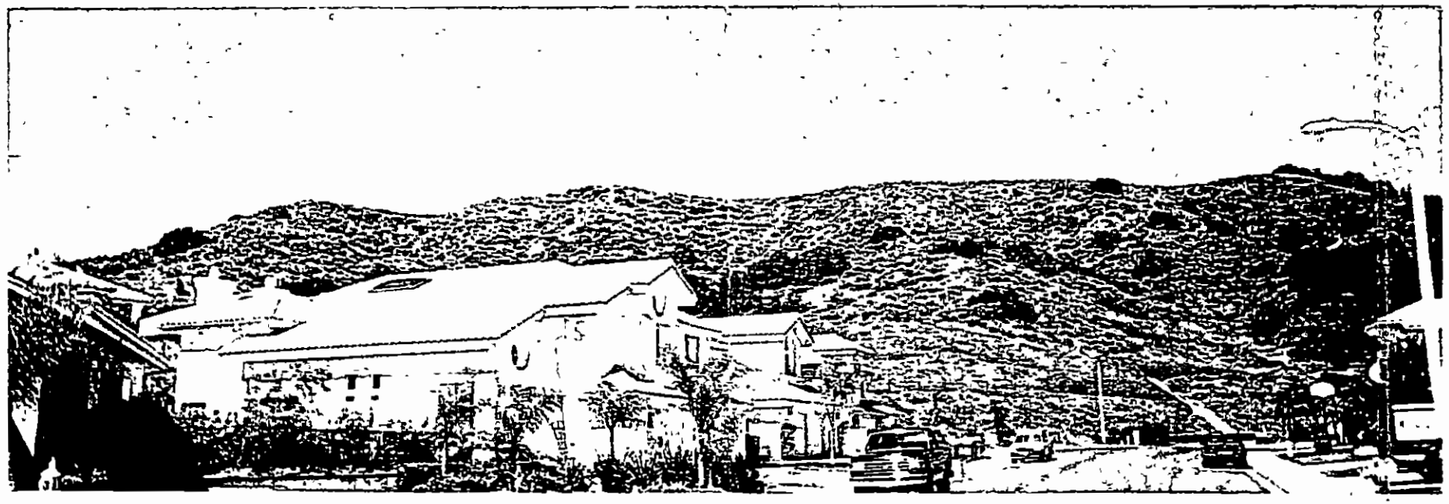
SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: Not to Scale
Source: N/A

Existing Views A & B

EXHIBIT No. 56

© VIEW OF THE SOUTHEASTERN PORTION OF THE PROJECT SITE FROM THE RAMAKRISHNA MONASTERY WATER RESERVOIR.
THE PORTOLA HILLS AND HIDDEN RIDGE COMMUNITIES ARE SEEN IN THE BACKGROUND.



Ⓓ VIEW OF THE SOUTHWESTERN PORTION OF THE PROJECT SITE FROM THE HIDDEN RIDGE COMMUNITY.

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

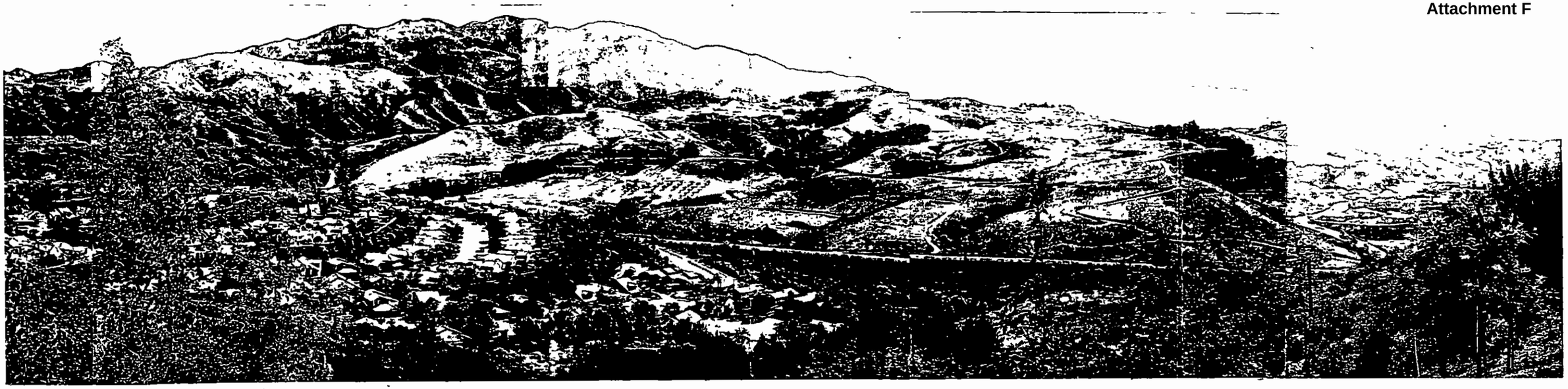
URBAN VISION

County of Orange P&DS

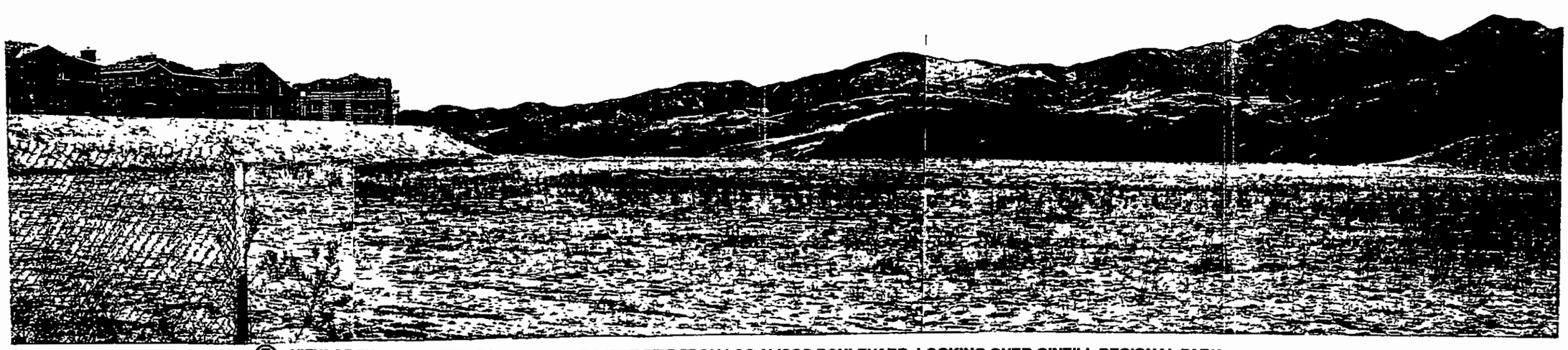
Scale: Not to Scale
Source: N/A

Existing Views C & D

EXHIBIT No. 57



Ⓔ VIEW OF THE PROJECT, SITE SURROUNDING LAND USES, AND THE SANTA ANA MOUNTAINS FROM THE PORTOLA HILLS PLANNED COMMUNITY.



Ⓕ VIEW OF THE SOUTHERN PORTION OF PROJECT SITE FROM LOS ALISOS BOULEVARD, LOOKING OVER O'NEILL REGIONAL PARK.

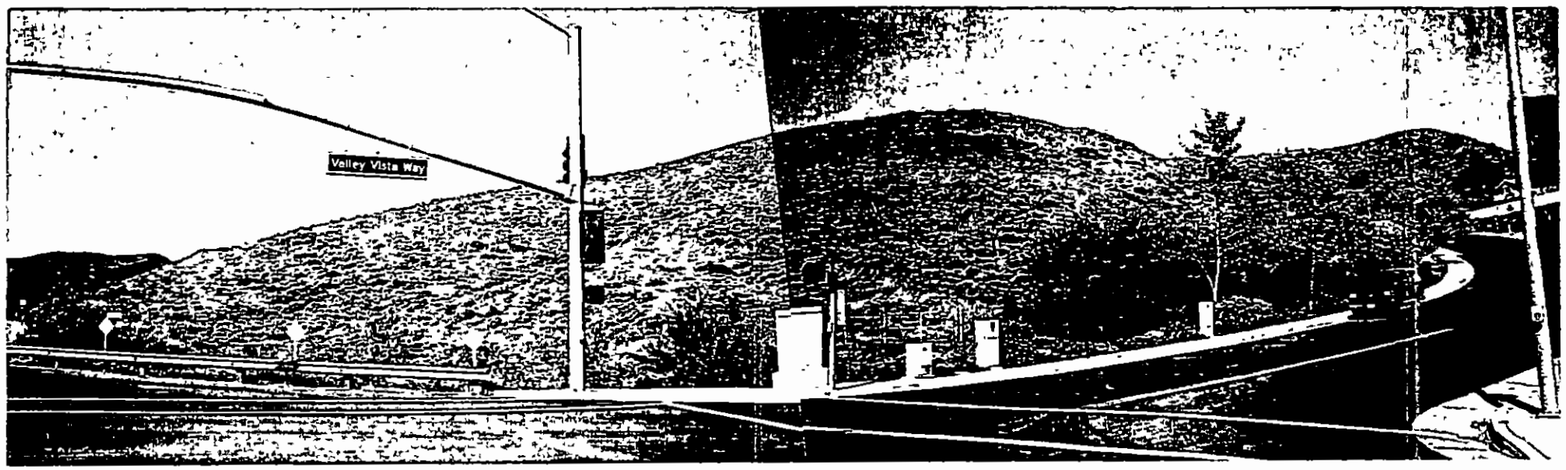
SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: Not to Scale
Source: N/A

Existing Views E & F

EXHIBIT No. 58



VIEW OF THE SOUTHWEST CORNER OF THE PROJECT SITE FROM THE INTERSECTION OF EL TORO ROAD AND VALLEY VISTA WAY.

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

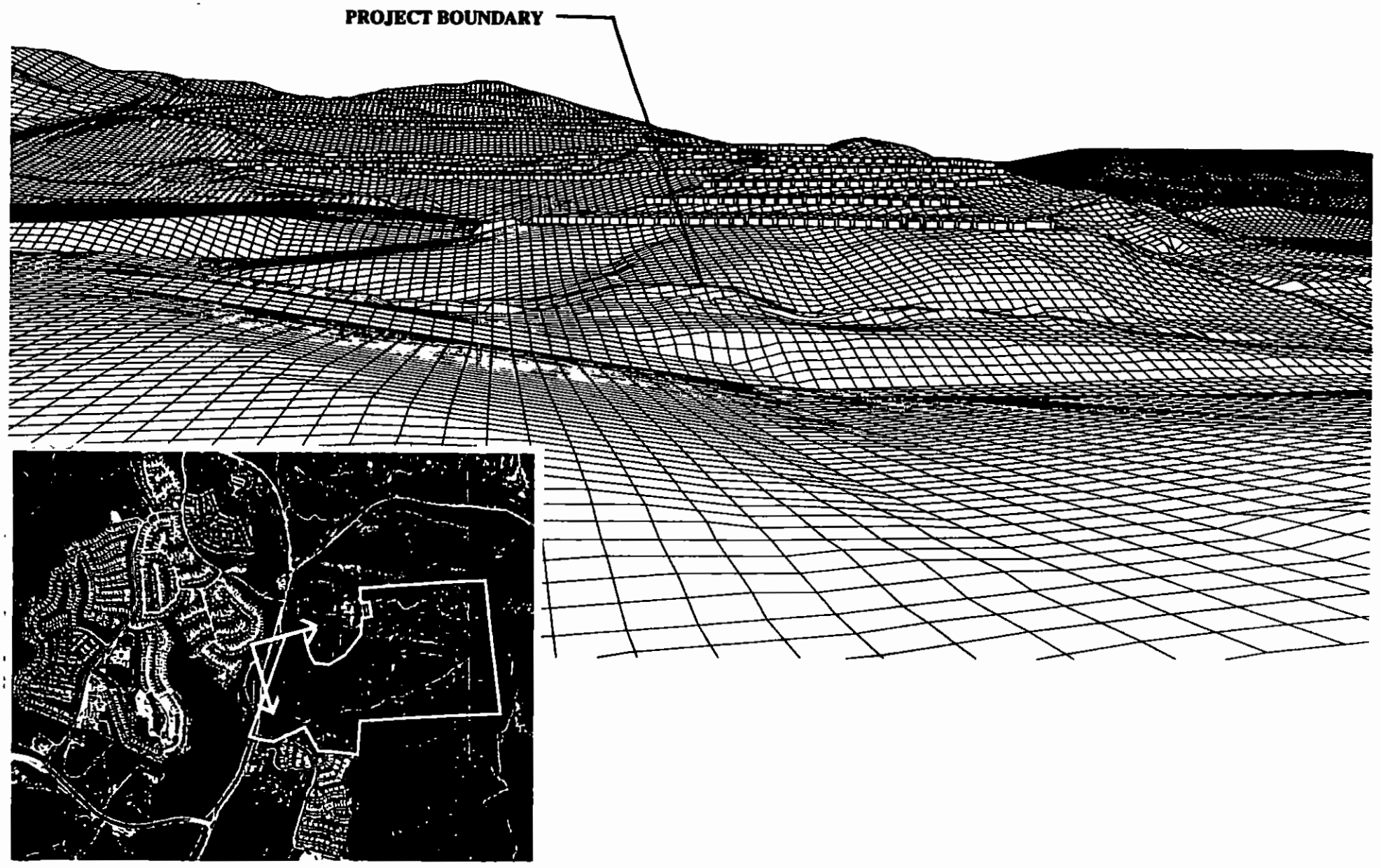
URBAN VISION

County of Orange P&DS

Scale: Not to Scale
Source: N/A

Existing View G

EXHIBIT No. 59



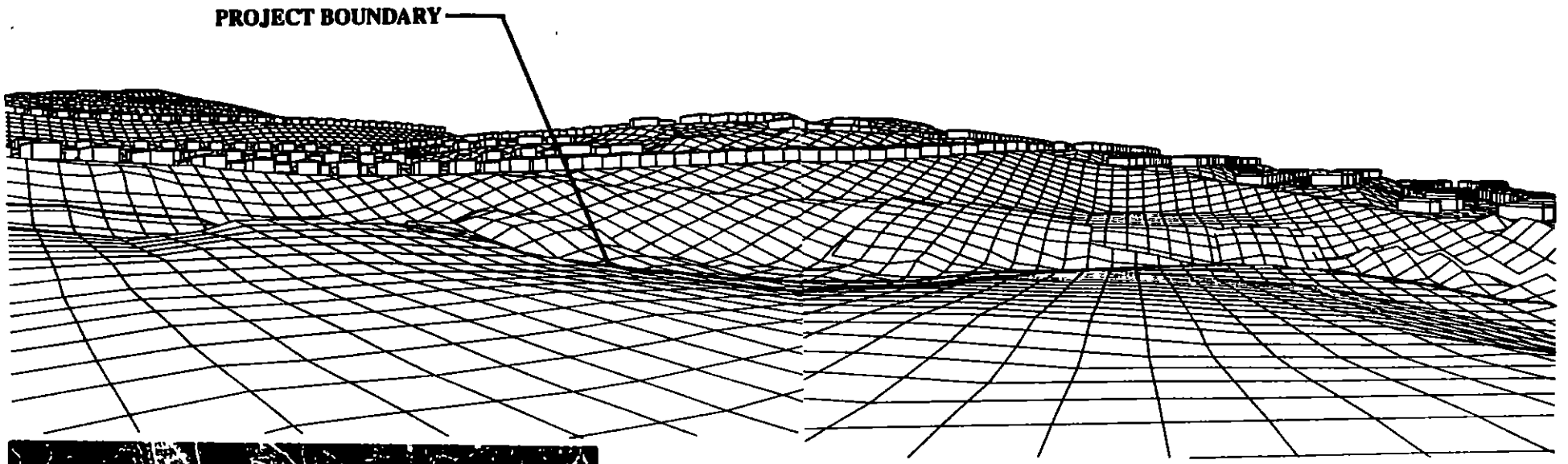
SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

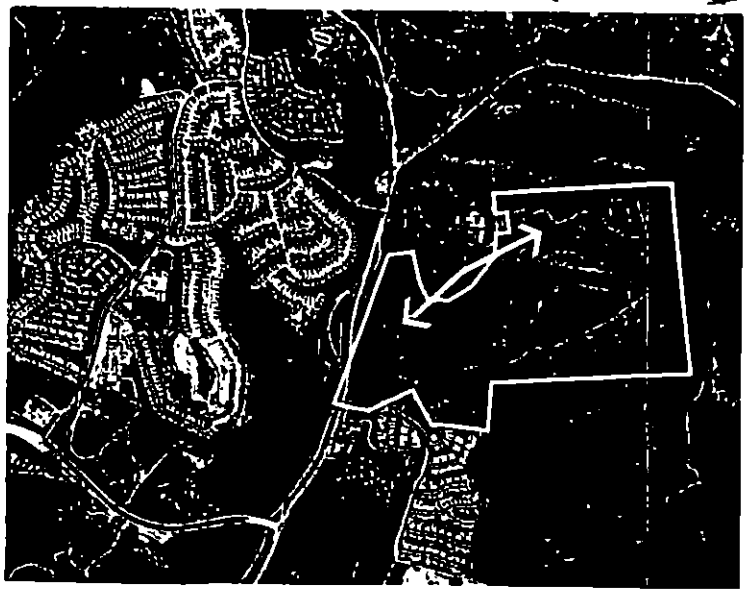
Simulated View from Portola Hills at Elevation 1300'

EXHIBIT No. 6

URBAN VISION
County of Orange P&DS
Scale: Not to
Source: Forms

N





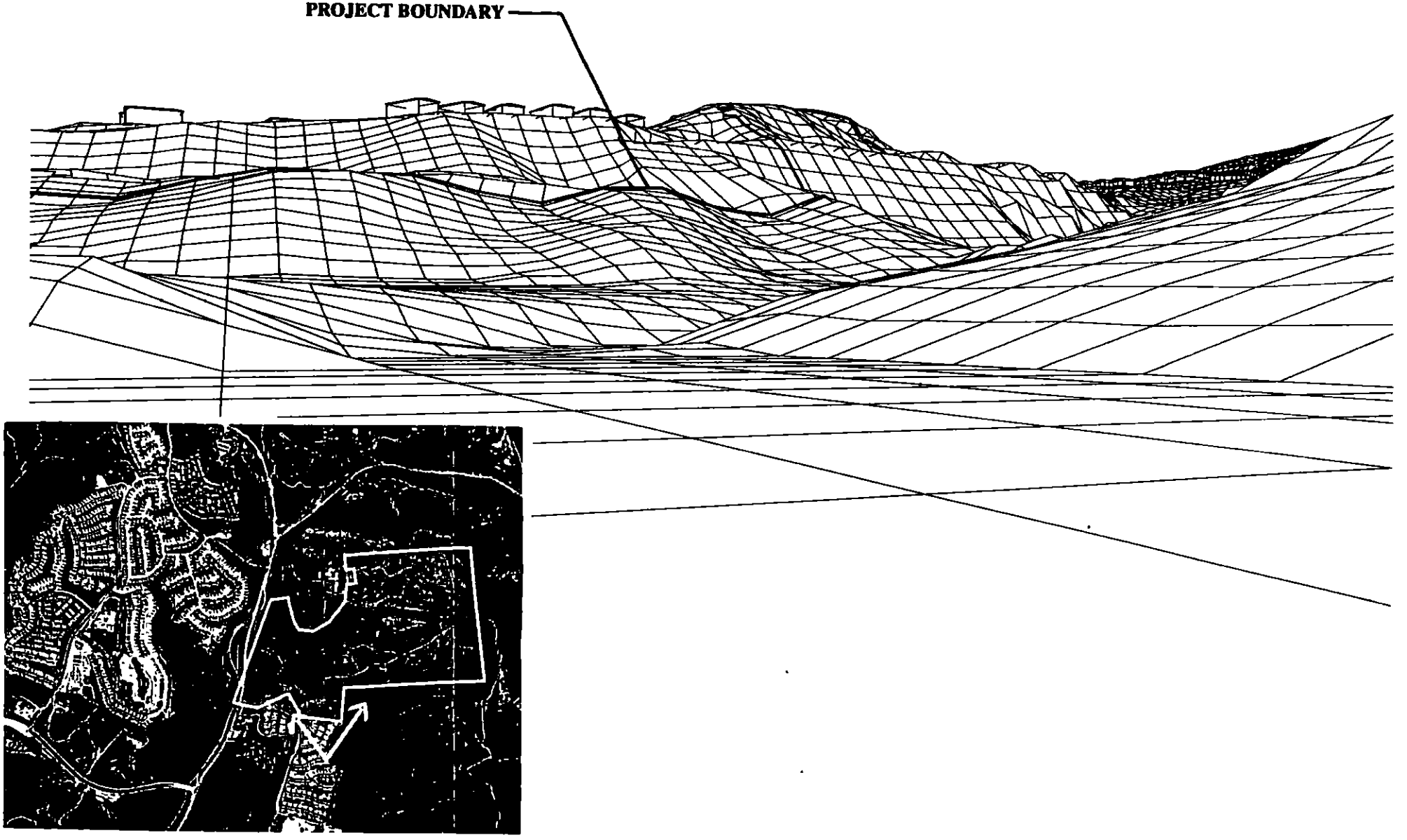
SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Simulated View from Saint Michael's Abbey

EXHIBIT No. 61

County of Orange P&DS

Not to Scale



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Simulated View from Hidden Hills at Yellowpine Lane

EXHIBIT No. 62

County of Orange P&DS

Not to
Fr

N

Impact Significance Criteria

The determination of whether an aesthetic impact is significant or not is subjective, and there is no universally adopted standard or set of criteria for this issue. The impact significance criteria listed below are based on the CEQA Guidelines, Appendix G, and the Foothill Trabuco Specific Plan Development and Design Guidelines.

The project will have a potentially significant aesthetic impact if it results in one of the following:

- Degradation of, or significant interference with, the public's enjoyment of the site's existing visual resources (from designated public open space or public roads).
- Substantial alteration of the site's natural character, including extensive removal/changes or fill of slopes, canyons, rock outcroppings and/or vegetation.
- Impacts visual resources of "Major Ridgelines/Major Rock Outcroppings" as identified in the Foothill-Trabuco Specific Plan.
- Elimination of a unique geologic or physical landform feature.
- Areas where the elevation change along the length of a graded slope meets or exceeds 100 feet.
- Areas where the depth of cut or fill meets or exceeds 50 feet.
- Elimination or modification of a significant landform feature that is part of a larger, contiguous, unmodified offsite landform feature.

4.8.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to application of mitigation measures, would result in significant impacts to the following surrounding land uses:

- O'Neill Regional Park
- Ramakrishna Monastery
- St. Michael's Abbey

These significant impacts would be related to the following visible project features: 1) grading, including cut and fill slopes; 2) proposed residences 3) drainage improvements; 4) native vegetation removal; and 5) night lighting.

4.8.5 CUMULATIVE IMPACTS

The proposed Saddleback Meadows project would result in the encroachment of large scale residential development into rural and undeveloped areas. The project will contribute to the cumulative impacts to existing rural and natural open space, and to a continuing urbanization of foothill areas in South Orange County.

4.8.6 MITIGATION MEASURES

Project Design Features

PDF 8-1 All public utilities shall be situated underground.

PDF 8-2 Where feasible, drainage devices (terrace drains, benches, and intervening terraces) shall be bermed and placed in swales.

PDF 8-3 Concrete drainage swales and other similar drainage infrastructure shall be tinted with an appropriate earth tone to effectively conceal them from surrounding view.

PDF 8-4 The water tank shall be bermed, landscaped and painted to blend with the surrounding environment.

Standard County Conditions and Mitigation Measures

SC 8-5 Prior to the issuance of any building permits, an agreement shall be entered into and financial security posted guaranteeing landscape improvements and the maintenance thereof based upon a detailed landscape plan showing landscape design and irrigation with a cost estimate for the landscape improvements approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division. Said plan shall take into account previously approved landscape plan(s), PF&RD Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, water

conservation measures contained in Board Resolutions 90-487 (Water Conservation Measures), and 90-1341 (Water Conservation Implementation Plan).

SC 8-6 Prior to the issuance of preliminary grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan(s), PF&RD Standard Plans, area plan 95-7 scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolutions 90-487 (Water Conservation Measures) and 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed and approved by Manager, PDS/Building Permits Services Division, Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, and Manager, PDS/ Environmental and Projects Planning Services Division.

SC 8-7 Prior to the issuance of certificates of use and occupancy and release of financial security, applicant shall install the approved landscaping and irrigation system and shall have a licensed landscape architect or licensed landscape contractor, as applicable, certify that it was installed in accordance with the certified plan. Said certification, including an irrigation management report for each landscape irrigation system, and any other implementation report determined applicable, shall be furnished in writing to the Manager, Building Inspection Services, prior to the issuance of any certificates of use and occupancy.

SC 8-8 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the

provisions of existing codes and regulations:

AM 8-9 Prior to issuance of any grading permit, the project proponent shall provide evidence to the Manager, PDS/Subdivision and Grading Services Division indicating that graded areas will be compatible with natural landform characteristics to the greatest extent possible. Criteria to achieve the desired effect shall include:

a) Recontouring the existing landforms to provide a smooth and gradual transition between graded slopes and existing grade while preserving the basic topographic character of the site.

b) Variation and combination of slopes 2:1, 3:1 and 4:1 to create a more natural character wherever possible within the graded areas.

c) Attempting to balance cut and fill within the overall project area to eliminate offsite and import/export related grading operations.

d) Obscuring slope drainage structures with a variety of plant materials.

e) Preservation of visual opportunities from hillsides by providing for panoramic views from selected locations (e.g., view corridors, sensitive landscape placement).

AM 8-10 Manufactured slopes shall be replanted with vegetation native to the site to blend the new topography with existing natural on site vegetation, immediately following precise grading operations.

AM 8-11 Fuel modification areas shall be planted with fire resistant vegetation.

AM 8-12 Use of the California Sycamore or other species similar to trees currently existing onsite shall be used in appropriate common area and street landscape locations where feasible.

AM 8-13 Common area landscaping and habitat transition zones shall utilize the FTSP recommended plant palette (Appendix H) when selecting plant material.

AM 8-14 Slope landscaping shall occur as soon as feasible after grading and be maintained by

the applicant until a homeowners association has been organized and assumes long term maintenance responsibility.

Light and Glare

AM 8-15 Prior to issuance of any certificate of use and/or occupancy, the potentially adverse impact of night lighting on surrounding land use shall be mitigated to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division by the following measures:

a) Street lights shall only be installed at intersections and as required to insure public safety.

b) Low intensity halogen street lamps shall be used.

c) Street lights shall be shielded to direct the light beam downward and to avoid direct glare into open space areas and adjacent property.

4.8.7 UNAVOIDABLE ADVERSE IMPACTS

Construction of 705 manufactured single family residential units on site and water tank just off site, will permanently change the site viewshed from an open space visual amenity to a more typical view of a residential housing tract. Partial mitigation of this visual resource loss is provided by the revegetation of slopes with native and screening vegetation and the existing rolling topography which screens the project site from various locations surrounding the property. The mitigation measures listed above will further reduce the potential aesthetic impacts of project development, but will not eliminate the project's significant adverse effects. Substantial views of project construction and site alteration will remain from Saint Michael's Abbey, the Ramakrishna Monastery, O'Neill Regional Park, Portola Hills, Hidden Hills, and El Toro Road.

In addition, night lighting glare will remain a significant adverse impact even after incorporation of recommended mitigation measures The change from an unlit dark site to an urban night environment is anticipated to be perceived by existing surrounding land use as significant, permanent and unavoidable adverse impact.

4.9 CULTURAL/SCIENTIFIC RESOURCES

A comprehensive cultural/scientific resources investigation has been prepared for the project by RMW Paleo Associates. The technical report is found in Appendix I of this document, with report exhibits on file with OCPDS Services Division.

4.9.1 EXISTING ENVIRONMENTAL SETTING

Archaeology

The project area is inhabited by a Native American group ethnographically known as the Gabrielino. However, the generally accepted boundary with the Juaneno group to the south is Aliso Creek, flowing directly adjacent to the study area along its western margin (Bean and Smith 1978, Kroeber 1925). It is likely that the study area contains traces of both these cultures.

The names the Native American groups applied to themselves are largely unknown; we know them by names the Spanish coined as they moved into Native American territories. The name "Gabrielino" identifies those people who were under the control of the Spanish Mission San Gabriel, while the name "Juaneno" denotes those people who were under the administration of the Spanish at Mission San Juan Capistrano.

The Juaneno and Gabrielino language, as well as that of the Lusieno to the south, was derived from the Takic family, part of the Uto-Aztecan linguistic stock, which can be traced to the Great Basin area (Drive 1969). The timing and extent of the migrations and their impact on indigenous peoples is not well understood and any data related to it represents a valuable contribution to the understanding of local prehistory.

Prehistoric Era: The archaeological heritage of California is quite rich, probably more so than any other North American region north of Mexico. However, the archaeology of California is not well known. The native Californians were generally quite peaceful and did not often offer warlike resistance to European settlement. Consequently, they did not gain great notoriety during the settlement period. Also, the original Californians were first under the control of the Spanish and then the Mexican governments and only later, after much of their culture has been destroyed by disease and displacement, were they subsumed under the United States government. There was only a minor Native American presence remaining in California when it became a United States possession and massive development began. For this reason, very little interest in the natives and their prehistory was initially generated. It was many years later before the size, complexity, and extent of archaeological

deposits in the state became apparent.

Homo Sapiens has been present in the New World since perhaps 10,000 to 11,000 years B.C.E. There is limited evidence that humans were present long before this date, but this is largely inconclusive and has not been accepted by most archaeologists. The earlier sites are all controversial in that they lack definite dateable context and material. Such sites can be interpreted in various ways, particularly in relationship to their age. The few generally accepted remains indicate a very small, mobile population apparently dependant on hunting of large game animals as the primary subsistence strategy. Other sources were certainly exploited, but the bulk of the traces remaining today are related to game hunting. (Chartkoff and Chartkoff 1984, Moratto 1984.)

The surviving material culture of this period consists primarily of large, extremely well made projectile points and large but crude tools such as scrapers and choppers. Encampments were never permanent, based in part of the paucity of significant midden areas that would have degraded to undetectability given the great age, and were probably sited near a major kill. Occupation would have persisted only until the resources of that kill were exhausted. Such an economy, using only a small fraction of the available resources, would not have supported a large population; therefore, it is probable that the Paleo-Indians lived in groups no larger than extended families and that contact with other such groups was infrequent.

The Millingstone Horizon (or Encinitas Tradition, as defined by Wallace (1968)) people (ca. 5500-1500 B.C.E.) practiced a mixed hunting and gathering food procurement strategy. Game hunting still played an important role in the economy, but by this time the Native Americans has learned to exploit the hard seed resources of the coastal sage scrub and chaparral ecological communities. The rapid extinction of the large mammals that the Paleo-Indian had previously been exploiting necessitated this shift in resource exploitation. The principal implements used to process the seeds, manos and metates, appear in large numbers for the first time in this horizon, and are especially numerous near the end of this tradition. Other specialized tools were developed to process the increased resources utilized by Millingstone peoples. Settlement size seems to have increased and an annual round of seasonal migrations was likely practiced as movements coincided with ripening vegetal resources. Some formal burials are also evident.

The Intermediate Horizon, locally known as the Campbell Tradition (ca. 1500 B.C.E. to C.E. 1000), is characterized by a shift away from primarily vegetable food exploitation to a more maritime subsistence strategy. It is during this time that the mortar and pestle were introduced, enabling acorn processing to begin.

In the Late Prehistoric Horizon (or Shoshonean Tradition), groups began to center around trade routes and there was a greater utilization of food resources with more land and sea mammal hunting to complement collecting. The pattern of life in this Late Horizon was more complex. More classes of artifacts were being produced and they exhibited a more sophisticated degree of workmanship. The observation that the bow and arrow was now utilized to a greater extent is based on the recovery of a greater number of small, finely chipped projectile points. Other items include steatite containers, shell fishhooks, perforated stones, bone tools, personal ornaments, asphalt adhesive and elaborate mortuary customs. In addition, the population increased and larger villages evolved (Wallace 1955:223). It is during the Late Prehistoric that the emigrants from the Great Basin appeared in the Los Angeles and Orange County area. These peoples were very quick to adopt most of the local traits, because it is difficult to separate the archaeological assemblages of the emigrants from those of the indigenous peoples on the basis of artifact typology alone.

The first permanent settlement in Orange County came when San Juan Capistrano was selected as the site for a Mission in the spring of 1775. Mission San Gabriel, located in Los Angeles County, was established in 1771.

After 1810, mission population declined faster than it could be replenished. The Mexican Revolution, beginning in 1821, overthrew Spanish control and the new Mexican government had a very different outlook on mission activities. Secularization of the missions, planned under the Spanish was greatly accelerated by the Mexican government. Plans to provide land, training and living quarters for the Indians never developed and the mission lands were soon under the control of a relatively few influential Mexican families.

The project area was never a part of a Spanish or Mexican land grant. The foothill area was not good grazing terrain. Instead, the Santa Ana Mountain area was to be ungranted and for the use of all. The Rancho Canada de los Alisos (Canyon of the Sycamores) abuts a portion of the study area to the west (Morgan 1973).

The Mexican war ended on February 2, 1848, with the signing of the treaty of Guadalupe Hidalgo. The treaty established California as a United States possession.

Several archeological field studies of the Saddleback Meadows site have occurred in conjunction with previous projects, first in 1978 (Tadlock and Tadlock), 1982 (Breece and Pardon) and 1989 (Dillon). These studies indicate that the subject property contains a variety of prehistoric and historic archeological sites consisting mainly of ancient seasonal encampments and a historic ranch house and associated buildings circa 1920. The density of archaeological deposits at the subject property was

initially believed to be high due to the discovery of numerous artifacts during earlier site surveys. These previously discovered artifacts consisted primarily of grinding implements and chipped lithic tools which have already been removed and cataloged by earlier researchers. As part of the cultural resource analysis for the current project, the site was reexamined by RMW Paleo Associates in December, 1995, and then again in February and March of 1997. Existing archaeological sites located on the project site are summarized in Table 31.

Table 31
EXISTING ONSITE ARCHEOLOGY SITES

TRINOMIAL	TYPE	COMMENTS	IMPORTANCE/ SIGNIFICANCE
CA-ORA-710	Prehistoric	Ground and chipped stone tools found over 100x50 m area by Dillon.	Important
CA-ORA-711	Prehistoric	Not relocated.	Important
CA-ORA-712	Prehistoric	Not relocated. Possibly destroyed.	Not Important
CA-ORA-713	Prehistoric	Tadlock & Breece - numerous ground and chipped stone artifacts, 100x100 m; Dillon - cupule in concretion.	Not yet determined
CA-ORA-714	Prehistoric	Two artifacts discovered by Dillon	Not important
CA-ORA-715	Prehistoric	Five artifacts discovered by Dillon. Chipped and groundstone.	Not important
CA-ORA-716	Prehistoric	One artifact discovered by Dillon.	Not important
CA-ORA-1255	Prehistoric	Five artifacts discovered by Dillon. 25x25 m site area.	Not important
CA-ORA-1256	Prehistoric	Two artifacts discovered by Dillon	Not important
CA-ORA-1257	Prehistoric	Bedrock feature and one mano discovered by Dillon.	Not important
CA-ORA-1435H	Historic	Historic ranch and associated structures.	Not yet determined
CA-ORG 1437	Prehistoric	(Maxon 1995) Groundstone, debitage & thermally modified rock.	Not yet determined

It should be noted that two sites, CA-ORG-710 and CA-ORG-711 have been determined to be important and warrant further investigation/ excavation. Evaluation is ongoing and will continue during project construction as monitored by a registered archeologist. If grading operations uncover

additional artifact material, the status of these sites may change and could require further recovery work.

Paleontology

The project site is underlaid by three separate rock units, the Sespe Formation, the undifferentiated Sespe and Vaqueros Formations and the Topanga Formation. The oldest unit in the study area is the late Eocene to early Miocene Sespe Formation deposited when a floodplain covered much of southern California approximately 30 million years ago. The Sespe Formation is found only in the northeast corner of the project site. This geologic unit has produced fossil at numerous locations, most notably in Simi Valley and locally in the Irvine Lake area, however, no fossils were observed in this formation on the subject property.

Overlying and interbedded with the Sespe Formation is the early Miocene age undifferentiated Sespe-Vaqueros Formation (34 to 17 million years ago) indicating a variety of deposition environments along the shifting margins of an ancient sea that once covered this region. Deposits in this unit range from floodplains to deep water off shore sediment. This formation underlies nearly the entire project site except for the northeast corner. Initial site examination has revealed the presence of several distinct fossil horizons of both invertebrate and vertebrates animal groups in this formation.

A small exposure of middle Miocene age Topanga Formation, deposition approximately 15 million years ago is located on the ridge bordering Oso Creek near the southern property boundary. These sandstone deposits which indicate ancient beach deposition, have produced hundreds of vertebrate fossils at several locations within the County, with one of the largest assemblages of middle Miocene age marine vertebrate concentrations found near Upper Oso Dam and also in Mission Viejo. Numerous on site boulders have revealed the fossilized remains of at least two types of whales and a pinniped. The abundance of fossilized remains exposed at these locations indicate that more significant material may be buried on site.

History

A ranch residence and associated out buildings, located near the center of the site within the oak woodlands preservation area, will be directly impacted by the proposed project. These ranch buildings are in an advanced state of decay and have been vandalized to a point where only the roof, chimney and framing of the ranch house remain. Another large out building nearby has collapsed, though a couple of small structures remain standing. Archival research of Orange County records indicates that the structure was not occupied by any person of historical note or by a person who has played

a role in the historic or cultural development of the region.

4.9.2 EFFECTS FOUND TO BE INSIGNIFICANT

The following cultural resources effects were found to be less than significant as determined by the Initial Study/Environmental Assessment contained in Appendix C of this EIR. These factors are not evaluated in this EIR.

- The project does not have the potential to cause a physical change which would affect unique cultural values.

Archaeology

Potential project impact on the following archeological sites is considered insignificant based on the currently known density and extent of the artifacts at these locations.

CA-ORA-712: Located on a prominent knob a short distance southeast of CA-ORA-710, this site was originally recorded to contain chipped lithics uncovered by bulldozing. Subsequent examination has revealed no additional material in this area and no significant impact is anticipated.

CA-ORA-714: The site is located on the ridge west of CA-ORA-713 and was originally reported as a probable quarry containing assayed stones. Subsequent inspection has uncovered no definite artifacts at this location. Since bedrock is near the surface at this area of the project site, extensive subsurface deposits are not anticipated and no further action required.

CA-ORA-716: This site is located off the subject property to the west and has been extensively damaged by previous grading. No monitoring or other action is required.

CA-ORA-1255: Previous site investigation recovered a half dozen artifacts at this location near one of the relatively recently man made vernal pools in the northeast portion of the subject property. No artifacts have been recovered during the current study and the site is not considered significant.

CA-ORA-1256: Original investigation of this site recovered two artifacts whose cultural significance is presently in question. No archeological evidence is otherwise indicated for this site and it will be recommended that this site be redesignated from an archeological site to an isolate.

CA-ORA-1257: Located on a spur in the west central portion of the property, the site originally

yielded a few small artifacts that are currently in doubt with regard to their cultural significance. It is anticipated that the site will not yield any significant artifact deposits.

Paleontology

The geologic formations underlying the project site have produced fossil finds at other locations and it is anticipated that this will hold true for the subject property. Grading associated with site development may impact paleontological resources by disturbing and destroying fossils before they can be recovered. This potential impact to scientific resources is potentially significant unless mitigated.

History

Ranch: The remaining portions of the ranch residence and out buildings will be directly impacted by development since they are not located within an area designated for open space. These structures are not considered to be historically or culturally significant and no impact is anticipated.

4.9.3 PROJECT IMPACTS

Archaeology

A number of the known archeological sites on the subject property were initially found to contain a high density of artifact deposits which for the most part have been removed by previous site researchers. Some of these sites may still contain significant deposits below ground. Without mitigation, potentially culturally significant sites may be destroyed by project development. The recommended course of action for these potentially significant sites is to collect the visible surface artifacts, disk the site to determine if there are significant artifact deposits below current grade, and then if warranted excavate up to 12 one meter by one meter excavation units to determine the extent and cultural significance of the site. Depending on the significance of the find, the site can either be preserved in place, artifacts collected and cataloged, or no further action taken if the site proves unimportant.

CA-ORA-710: The site is located on a relatively flat knoll or terrace, directly east of, adjacent to and 40 feet above Aliso Creek in the northwestern portion of the property. Boundaries of the site are approximately 165 x 245 feet.

The original recorders (Tadlock & Tadlock 1978) reported a wide range of artifacts over a rather

large area. Subsequent archaeologists were not able to locate artifacts to that extent. Dillon (SRS 1989) discovered a chalcedony core, a chert flake and a burned piece of C\chert shatter as well as three "truncated" manos, which he apparently collected and removed from the site during his reconnaissance investigation. Truncated manos are discussed by Van Horn and Murray (1984). These manos were recovered at CA-ORA-486, along Aliso Creek, just a short distance away from site CA-ORA-710. The specimens had been "truncated" or broken off at one end and the rough end pounded smooth. They have been associated with the processing of "cacomites": a Spanish term referring to varieties of edible roots, bulbs and corms (bulb-like stems) that are found in the site vicinity.

Work consisted of a surface examination and surface collection. This resulted in the recovery of 26 artifacts including 16 uni- and bifacial manos (one possibly truncated) and mano fragments composed of porphyry, granite and metavolcanics, and chipped stone implements including three choppers, two hammerstones, one core, and four pieces of debitage. Material types here include metavolcanics, quartzite and quartz. subsequently, a disker pulled by a small bulldozer was employed to turn up the soil to a depth of three to five inches, with the purpose of uncovering near surface artifacts. This method, after a second surface collection, resulted in the recovery of an additional 56 artifacts including 11 groundstone implements; eight manos composed of granite (4) and porphyry (4), and three metate fragments - two of granite and one quartzite. chipped stone implements included 12 cores of metavolcanics, chert and quartzite; two hammerstones; two choppers; three scrapers and 25 pieces of debitage made primarily of chert and metavolcanics.

Eight 1 x 1 meter units were next excavated to determine the spatial extent of the site and verify the existence of a subsurface deposit. Fifty-eight artifacts were recovered and two of the units produced in situ features.

The sites inhabitants were utilizing a range of material types to fashion tools: chert (31%), metavolcanics (23%), granite (15%), porphyry (11%), quartzite (9%), metasedimentary (7%) and smaller percentages of jasper, sandstone and quartz. Some of the chert may have been heat treated.

Based on the characteristics of the artifacts recovered during the course of the test excavation, it is likely that the site is of Millingstone age. The lack of evidence of the mortar and pestle being used at the site further bolsters this hypothesis. The mortar and pestle technology is associated with the later Intermediate period when exploitation of the acorn became widespread.

A large portion of the artifacts were recovered from the western portion of the site in Units 1 through 3. Units 1 and 2 produced the three in situ features; therefore, it is established that this portion of the

site's subsurface remains intact.

It is likely that a substantial subsurface deposit remains relatively undisturbed at the site; therefore, the site is deemed important and further data recovery is warranted during ground disturbing activities.

CA-ORA-711: The site is located on a low, flat ridge directly east of Aliso Creek and just north of a smaller tributary drainage. It measures approximately 170 x 170 feet. The original recorders (Tadlock & Tadlock 1978) reported a "sparse distribution of flakes, cores, and one chopper." Dillon (1989) was unable to relocate the site during his reconnaissance.

Work performed consisted of a surface examination and surface collection. This resulted in the recovery of 30 artifacts including 12 uni- and bifacial manos (one or two possibly truncated) of granite, sandstone, metavolcanics and porphyry. Chipped stone implements recovered include two cores, two hammerstones, one uniface, one biface, one scraper plane and 11 pieces of debitage composed of chert, porphyry, metavolcanics and quartzite. Subsequently surface collection during the course of excavation produced 16 additional artifacts including three manos, one metate, four cores, one hammerstone and seven pieces of debitage. Material types included chert, metavolcanics, granite, porphyry and quartzite.

As with CA-ORA-710, excavation at CA-ORA-711 was limited to a small fraction of the total site area. And similarly, a relatively wide range of tool and material types was recovered. This, again, indicates that a number of activities were probably performed on the site. Lithic tool production activities are evidenced by the recovery of 13 cores and a variety of waste flakes and other debitage, as well as associated hammerstones. The recovery of 39 manos and mano fragments and five metates and metate fragments is strong evidence that processing of the hard seed resources associated with the coastal sage scrub and chaparral communities was being accomplished. Scrapers and choppers were being utilized to process vegetable and wood fibers, as well as for working hides and bone.

CA-ORA-712: The site was described by Tadlock and Tadlock (1978) as being on a relatively flat hill overlooking CA-ORA-710 and 711 and Aliso Creek. It was described as a chipped lithic scatter, heavily damaged by bulldozing. Cultural material could not be relocated by subsequent researchers. The site is therefore not important, but the area should be monitored by a qualified archaeologist during mass grading operations.

CA-ORA-713: The site is located on a ridge between Oso and Aliso Creeks and on the ridge's north facing slopes as well as a relatively flat area at the slopes base. The area measures approximately 500

x 700 feet and could comprise two or more sites.

The original recorders of the site (Tadlock and Tadlock 1978) reported finding flakes, scrapers, cores, choppers and manos. Breece and Padon (1982) reported only three flakes Dillon (SRS 1989) found no "portable artifacts", but discussed a sandstone concretion boulder with a cupulae ground into its upper surface.

Work on the site during the current project consisted of a surface examination and surface collection. This resulted in the recovery of 14 artifacts including two metavolcanic cores, a quartzite flake, a piece of metavolcanic shatter, a granite chopper, eight uni- and bifacial, porphyry and granite manos and a granite basin metate fragment. The cupulae noted by Dillon (SRS 1989) was seen, but the current researchers have serious reservations regarding the cultural nature of the cupulae. Subsequently, a disker pulled by a small bulldozer was employed to turn up the soil to a depth of 3-5 inches to expose near surface artifacts. This method resulted in the recovery of an additional 14 artifacts including three scrapers of metavolcanics (2) and granite, two quartzite cores, three pieces of metavolcanic (2) and quartzite debitage and six manos, uni- and bifacilly ground, composed of granite (4) and porphyry.

Since artifacts were scattered over a large area, a number of unrelated encampments occupied over a period of time may be represented. It is therefore recommended that controlled grading under the guidance of a qualified archaeologist be accomplished before the commencement of mass grading. Should clusters of artifacts be discovered, additional units could be excavated in those specific areas.

CA-ORA-714: The site is located on a domed hill on the ridge between Oso and Aliso Creeks, west of CA-ORA-713 and just to the south of a steep cliff leading down to a large Oso tributary drainage. Tadlock and Tadlock (1978) called the site a probably quarry containing assayed stones and Dillon (SRS 1989) only reported two artifacts. The presence of bedrock near and at the site's surface eliminated the possibility of extensive subsurface deposits. Bleached cow bones litter the ridgeline indicating either a carcass dumping ground or a carnivore feeding area. The site measures some 200 x 90 feet.

Work undertaken at this site was essentially surface examination and surface collection. Twelve artifacts were recovered as a result of this procedure including three unmodified hammerstones of metavolcanics (2) and porphyry, two cores of quartz and chert, four choppers of porphyry (3) and metavolcanics and three uni- and bifacial manos of porphyry.

The site was probably a short term encampment, perhaps the result of a single occurrent and because of the presence of exposed bedrock, a subsurface deposit is not expected.

CA-ORA-715: The site is located on a relatively flat, rounded hill comprising the ridge above the headwaters of Oso Creek, overlooking Aliso Creek. The site measures approximately 180 x 210 feet. A bulldozer cut in the site area establishes that soils have considerable depth.

Work on the site consisted of a surface examination and a surface collection. Thirty two artifacts were recovered including 13 uni- and bifacially ground manos, four of them fragments, composed of porphyry (8), sandstone (2), metavolcanics, quartzite and granite, four choppers of quartzite, metavolcanics, porphyry, and quartz, two bidirectional metavolcanic cores, one metavolcanic anvil, one metavolcanic hammerstone and eleven pieces of debitage of metavolcanics (5), chert (4), jasper and quartzite.

Although few artifacts were recovered from the subsurface, the relatively large number of artifacts recovered during the surface collection indicates that prehistoric activity did take place at the site. The presence of groundstone implements suggests the processing of hard seed resources associated with the area's coastal sage scrub and chaparral. Choppers were used to process vegetable and wood fibers, as well as for working hides and bone. Lithic tool production and/or maintenance is evidenced by the recovery of cores, debitage and associated hammerstones. Material types represented at the site included metavolcanics 33%, porphyry 24%, chert 18%, quartzite 13%, and small percentages of sandstone, quartz, jasper and granite.

CA-ORA-716: The site is located on a high hilltop in the northeastern corner of the project area. Tadlock and Tadlock (1978) reported finding a negligible number of flakes on the westerly portion of the site and flakes, cores and a redeposited chopper on the central and eastern portion. Dillon (SRS 1989), then reports finding just one basalt core at the site area and comments that much of the surface of the site has been graded to and below the surface of bedrock.

Relative to the current project, the site, or what is left of it, lies off the property to the west; therefore, no further action is required.

CA-ORA-1255: The site lies on the lower drainage of a small knoll creating an upland pond and overlooking a steep-sided drainage. It is approximately 80 x 80 feet in size. Dillon (SRS 1989) described the site as lying approximately 50 meters southwest of the pond in a natural amphitheater formed by a series of low, rounded knolls. Artifacts recovered by Dillon include one sandstone

metate fragment, one core, two flakes and quartzite prismatic blade.

Previous work on the site consisted of a surface examination and surface collection. One metavolcanic flake was recovered by this method. Subsequently, two .50 x 1 meter units were excavated on the top of the knoll. Unit 1 was excavated to 20 cm, Unit 2 to 30 cm. The lone artifact recovered was a piece of metavolcanic shatter in the 10-20 cm level of Unit 2. The units were very shallow because a very light colored decomposing bedrock sand was encountered at those levels and the units were abandoned.

CA-ORA-1256: The site lies to the south and downslope from the southwest margin of CA-ORA-715, along a brushy fingerline ridge. Site dimensions are approximately 100 x 16 feet. Dillon (SRS 1989) first recorded the site and reported finding a large, crude, "early" appearing scraper plane and an and site core/scraper. Dillon's photographs leave some doubt as to the cultural nature of the objects.

CA-ORA-1257. The site lies to the west and downslope of a low knoll directly west of Aliso Creek, and north of a steep cliff. Dillon (SRS 1989) recorded the site and reported finding a unifacial granite mano and a sandstone bedrock feature containing two cupules or incipient bedrock mortars. He commented that the mano was not truncated like the other three found at CA-ORA-710, but may have been used in conjunction with the bedrock feature for grinding purposes: therefore he called it an incipient bedrock mortar.

During a prior visit to the site the small boulder containing the purported cupules was seen, and during the current project it was again located.

CA-ORA-1435H (Hausauer Ranch): The site is located at the bottom of a deep drainage in the center of the property. It is surrounded by dense foliage (oak, eucalyptus and pepper trees). The site is a ranch complex comprised of a residence, barn (collapsed), several out structures, a holding pond and a large olive grove numbering nearly 100 trees. The ranch buildings are in an advanced state of decay and have additionally been vandalized. The site complex measures approximately 900 x 330 feet.

CA-ORA-1437: This newly discovered site lies on a rounded knolltop at the northern edge of the property overlooking a small drainage leading south-westward into Aliso Creek. The site is approximately 450 feet northwest of CA-ORA-1255 and measures ca. 60 x 60 feet.

The site was discovered serendipitously as the reconnaissance crew was searching for CA-ORA-1255. Work performed on the site included a surface examination and the subsequent recording of all identified artifacts. Twenty-nine items were identified including mano fragments, metate fragments, cores and flakes. The items were not collected, precluding the possibility of further study (material types, measurements, weights) of the artifacts. Finally, an archaeological site record was prepared for the site.

Paleontology

The rock units underlying the project site have a history of fossil production dating from the 1930's and represent a significant scientific resource. The most abundant concentration of fossils appear to be located in the Topanga and undifferentiated Sespe Vaqueros Formations. Initial project site investigation has uncovered numerous fossil concentrations at various locations within the Sespe-Vaqueros Formation on the subject property. The Topanga Formation has yielded numerous occurrences of vertebrate fossils in boulders which have apparently eroded from higher elevation. One of these boulders contains a portion of a baleen whale skull and another contains what appears to be the skeleton of a large toothed whale. Based on the abundance of observed fossils currently exposed on site, it is anticipated that project grading and construction will unearth additional fossil concentrations which may be destroyed without adequate precaution to document, recover and preserve what is found.

History

The ranch house and out buildings are located in an area that will be directly impacted by the proposed project.

Impact Significance Criteria

If the project may cause damage to an important archaeological resource, the project may have a significant effect on the environment. For the purposes of CEQA, an "important archaeological resource" is one that:

- Is associated with an event or person of: 1) recognized significance in California or American History, or 2) recognized scientific importance in history.

- Can provide information which is both of demonstratable public interest and useful in

addressing scientifically consequential and reasonable or archaeological research questions.

- Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind.

- Is at least 100 years old and possesses substantial stratigraphic integrity.

- Involves important research questions that historical research has shown can be answered only with archaeological methods.

4.9.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Archaeology

The project may have a significant impact on the following archaeological sites: CA-ORA-710, CA-ORA-713, CA-ORA-715 and CA-ORA-1435H unless adequate safeguards are taken to document and recover any artifacts found at these locations. All other archeological sites have been deemed not important/ significant.

Paleontology

Disturbance of potential paleontological resources may occur with project development without adequate mitigation.

History

Project implementation will directly impact CA-ORA-1435H, which may be considered significant.

4.9.5 CUMULATIVE IMPACTS

Archaeology

Cultural archeological resources are non-renewable in character. Once disturbed or destroyed, they can never be recovered. Cumulative impact to archeological and culture resources stems from their irreplaceable loss due to site development. The recommended mitigation measures will reduce the potential impact of site development, particularly to the known archeological sites on the subject

property. Complete mitigation of the potential effects of site development on cultural resources is not fully possible however, because other archeological sites often remain hidden until project grading activities uncover them.

Paleontology

Fossils recovered at other locations from the rock formations underlying the project site have contributed to the understanding of the regions geologic and evolutionary history. Fossils are unique and irreplaceable scientific resources which can be lost forever unless adequate mitigation measures are taken to ensure their recovery and preservation.

Historical

No significant impact is anticipated.

4.9.6 MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

Archaeology

SC 9-1 Prior to the issuance of any grading permit, a County-certified archaeologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified archaeologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records search and the field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division. Mitigation measures may be required depending upon the recommendations of this report. This mitigation measure has been completed as part of the Draft EIR.

SC 9-2 Prior to issuance of any grading permit, a county-certified archaeologist shall be retained by the applicant to perform a subsurface test level investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final

mitigation recommendations and cost estimates and shall be approved by the Manager, PF&R/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

SC 9-3 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained to conduct pregrade salvage excavation of the archaeological resources in the permit area. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. A final report of the salvage operation shall submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, prior to any grading.

SC 9-4 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained, shall be present at the pregrading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeological observer shall determine appropriate actions, in cooperation with the project developer, for exploration and/or salvage. The archaeologist shall submit a follow-up report to the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, an analysis of any artifacts found and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, PF&R/Harbors Beaches and Parks Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations in a manner acceptable to the Manager, PF&R/Harbors Beaches and Parks Division Facilities.

AM 9-5 Prior to site grading the project site shall be examined by a qualified archeologist, all potential archeological sites identified, and surface collection and documentation of

artifacts be conducted.

AM 9-6 As indicated by the project archeologist, sites warranting further study shall be disced to ascertain the extent and significance of the deposit. If the project archeologist determines that a site is potentially of cultural worth, then additional excavation in a manner determined by the project archeologist shall occur prior to further grading or construction activities at these locations.

AM 9-7 During initial grading, the project site shall be monitored by a qualified archeologist who shall have the authority to order a temporary cessation of grading activities and take appropriate action to preserve any culturally significant materials if uncovered.

AM 9-8 If human remains of Native American origin are encountered during the project the County Coroner's Office and the Native American Heritage Commission shall be contacted for preservation and protection of the remains.

Paleontology

SC 9-9 Prior to the issuance of any grading permit, a County-certified paleontologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified paleontologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records search and field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, Future mitigation shall depend upon the recommendations of the report. This mitigation measure has been completed.

SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pregrade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their

present repository. This mitigation measure has been completed.

SC 9-11 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pregrading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage Excavated finds shall be offered to the County of Orange, or its designee, on a first-refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, PF&R/Harbors Beaches and Parks Division.

Additional Mitigation Measures

AM 9-12 A qualified paleontologist shall be retained to perform periodic inspections of excavations and, if necessary, salvage exposed fossils. The frequency of inspections will depend on the rate of excavation, the materials being excavated, and the abundance of fossils. Initially, monitoring shall be on a full time basis in all excavations because of the high potential for the discovery of fossils in all the rock units present in the study area.

AM 9-13 The paleontologist shall be allowed to divert or direct grading in the area of an exposed fossil to facilitate evaluation and if necessary, salvage.

AM 9-14 To recover small fossils, it will be necessary to collect sediment samples from promising horizons discovered during grading monitoring for processing through fine mesh screens. Once the samples have been screened, they will be examined microscopically for small fossils.

AM 9-15 Fossils shall be prepared to the point of identification and catalogued before they are donated to their final repository.

AM 9-16 All fossils collected should be donated the County of Orange's designated repository.

AM 9-17 A report detailing the results of these efforts, listing the fossils collected, and naming the repository shall be submitted to the lead agency at the completion of the project.

Historical Resources

SC 9-18 Prior to issuance of a grading permit, project applicant shall provide written evidence to Manager, PF&R/Harbors Beaches and Parks Division that an historian has been retained by the applicant to implement final mitigation measures. A final report shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area.

SC 9-19 Development adjacent to a place, structure, or object of historic significance shall be designed so that permitted uses and architectural design will protect the visual setting of the historic site. Such design shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area.

4.9.7 UNAVOIDABLE ADVERSE IMPACTS

Archaeology

No significant adverse impact to archeological or cultural resources is anticipated with the proposed project with the incorporation of the recommended mitigation measures.

Paleontology

No significant adverse impact to paleontological resources is anticipated with the proposed project with the incorporation of the recommended mitigation measures.

History

No significant impact is anticipated.

4.10 RECREATION

4.10.1 EXISTING ENVIRONMENTAL SETTING

The project site has access to a number of regional recreational facilities located in the immediate vicinity. Most notable is O'Neill Regional Park located directly south and adjacent to the subject property. Whiting Ranch Wilderness Park is located approximately one mile to the west and the Cleveland National Forest southern boundary is located approximately ½ mile north of the project site. In addition, the project will have access to the Orange County Regional Riding and Hiking Trail System, with an on site connection provided to the Live Oak Canyon Trail (#21) and the Aliso Creek Regional Riding and Hiking Trail (#19), which parallels El Toro Road adjacent to the west project boundary.

O'Neill Regional Park

Encompassing over 2,000 acres of canyon bottom, shrub covered hills and oak and sycamore woodlands, O'Neill Regional Park is the closest recreational facility serving the subject property. The park is known for its native oak and sycamore trees and accompanying woodland habitat and has provided area residents and visitors with camping, day use picnic areas, playground facilities, and riding and hiking trails since its establishment in 1948. Classified as a Natural Regional Park in the Orange County General Plan Recreation Element, the park's primary purpose is to provide an area of limited physical improvement for the public's enjoyment of passive recreational activities, and the aesthetic beauty of the natural environment. The portion of O'Neill Regional Park adjacent to the project site is devoted to wilderness activities, including hiking. The Live Oak Trail is located in this part of the park, approximately 1,000 feet south of the project site.

Whiting Ranch Wilderness Park

Whiting Ranch Wilderness Park is located approximately one mile to the west and is separated from the subject property by the intervening Portola Hills development. As a designated regional wilderness park in the County's General Plan Recreation Element, the 1,557 acre Whiting Ranch Wilderness Park is intended to preserve the natural environment in a primitive unaltered state, conserving the parks natural resources for the future scientific benefit and enjoyment of area

residents. Primary activities include hiking, mountain bicycling, and horseback riding.

Cleveland National Forest

The Cleveland National Forest, encompassing over 450,000 acres, and extending from Orange County south to near the Mexican border, is located north of the project site. Land within the Cleveland National Forest is governed by the U.S. Forest Service who are responsible for the administration of the forest's adopted Land and Resource Management Plan. Plan goals are to provide and maintain biological variety, manage wildlife habitats to maintain viable populations of all existing native vertebrate species, and assure aesthetic values. Recreational opportunities are primarily focused on hiking.

Regional Bikeways

The proposed project abuts the Aliso Creek Bikeway, a regional Class I bikeway that begins in Aliso-Wood Canyons Regional Park and continues northerly along Aliso Creek. The bikeway enters the project vicinity from the west at the existing El Toro Road trail/bikeway underscrossing, and continues northerly, east of El Toro Road, just outside the project boundary (see Exhibits 7 and 63). The bikeway will need to remain open during construction of the subject project. If an interim route is needed, PF&RD, Harbors, Beaches and Parks must review the reroute plan before it is implemented.

Regional Riding and Hiking Trails

The proposed project includes a portion of the Live Oak Canyon Trail and a portion of the Aliso Creek Trail. Both of these are regional riding and hiking trails (see Exhibits 7 and 63). Riding and hiking trails are intended for use by equestrians, bicyclists, and pedestrians (walking, hiking, and jogging).

The Aliso Creek Trail begins in Aliso-Wood Canyons Regional Park and generally follows the same route as the Aliso Creek Bikeway, continuing northerly, east of El Toro Road, within the project boundary.

The Live Oak Canyon Trail traverses the southwestern section of the project site. Live Oak Canyon Trail is an existing and popular regional trail.

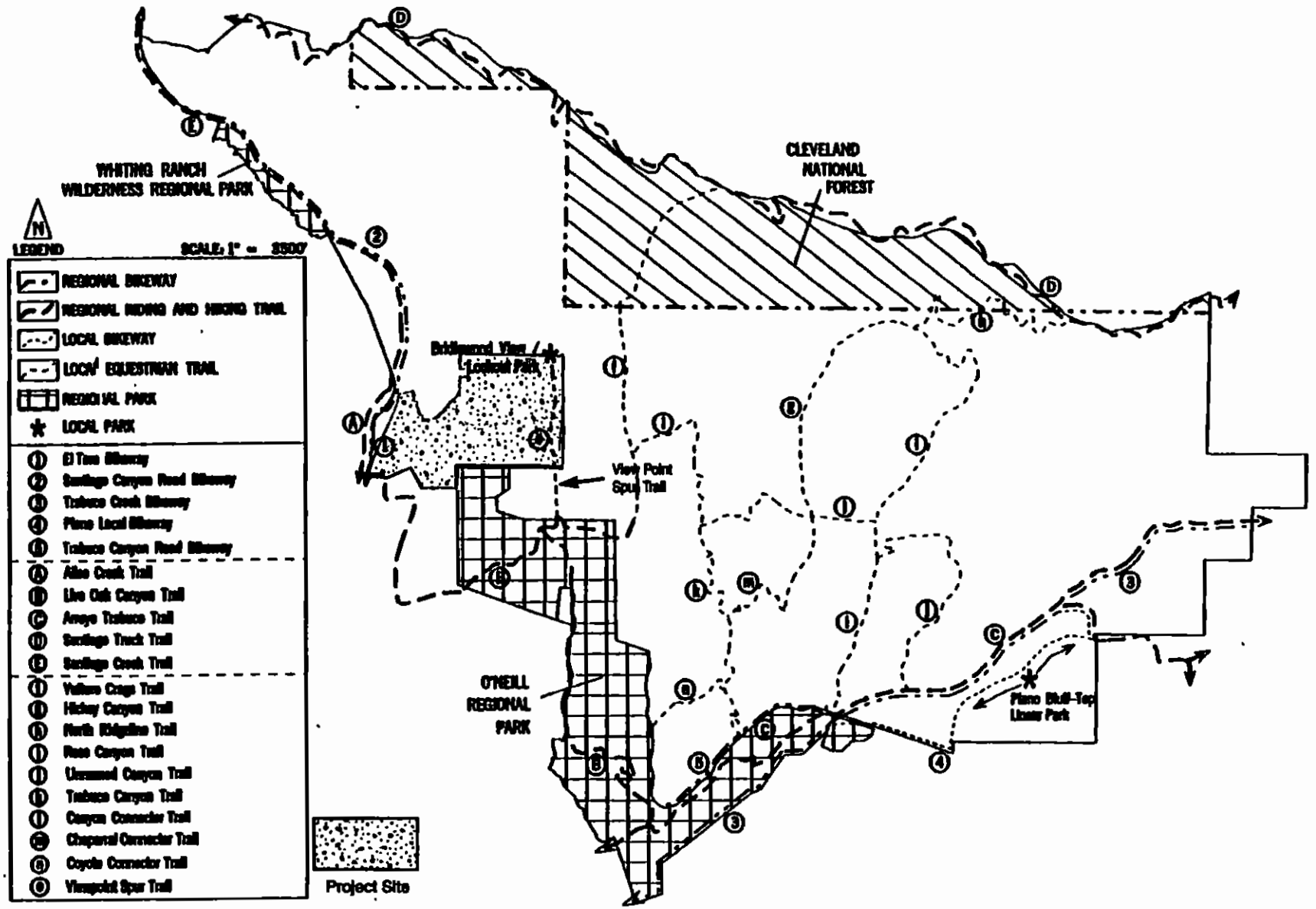
The proposed project will be providing access to the Orange County Regional Riding and Hiking Trail System, which currently includes 348 miles of existing and proposed trails throughout the region. Regional hiking and riding trails are intended for use by equestrian, pedestrian (walking, hiking, and jogging), and bicycling depending on the trail surface and its designated use The project will have access to two components of this trail system, the Aliso Creek Regional Ridding and Hiking Trail (#19) and the Live Oak Canyon Trail (#2). Existing and proposed trails are shown in Exhibit 63.

The Aliso Creek Trail commences east of Laguna Beach and proceeds northeast parallel to El Toro Road adjacent to the subject property. The trail continues past the project site to one mile north of Cook's Corner, where it becomes the Santiago Creek Regional Trail. The Class I El Toro Road Bikeway is adjacent to this trail. The existing onsite trail, which traverses the project site/St. Michael's Abbey boundary is a transferable easement and can be utilized to connect onsite open space areas to the Aliso Creek Trail.

The Live Oak Canyon Trail commences inside the main entrance to O'Neill Regional park west of the Arroyo Trabuco Trail. The trail travels in a northwest direction along a paved park road until it breaks off in a northeast direction along a dirt path. The trail continues heading north to a park summit-vista. On the downward slope, the trail continues northerly to just south of the Ramakrishna Monastery, there it turns westward and extends up the ridgeline through Hidden Ranch (residential tract south of the subject property) until it meets El Toro Raod. At El Toro Road, the trail then travels north adjacent to the western project site boundary until it reaches the Aliso Creek Trail underpass, about ½ mile downstream from Cook's's Corner.

4.10.2 EFFECTS FOUND TO BE INSIGNIFICANT

Potential impact to regional recreational facilities generated by the proposed project are not anticipated to be significant. Adverse impact to recreational facilities in general, and passive parks and wilderness areas in particular, stems primarily from over use by the public. Over use generates a host of problems including habitat disruption (animals avoiding the area due to high human presence), habitat destruction (due to trampling, fire, vandalism), air quality impacts, noise impacts, and loss of solitude. Population generation estimates contained in the County's Recreation Element indicate that the proposed project may increase the number of area residents by approximately 2.57 persons per household or 1,812 persons for the entire project. This population increase will only generate an incidental increase in the use of nearby regional recreation facilities and no significant negative impact is anticipated.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

Foothill-Trabuco Specific Plan Land Use Designation

EXHIBIT No. 63

County of Orange P&DS

URBAN VISION

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RE: Foothill/Trabuco Specific Plan

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Exhibit 63
Regional Parks and Trails

4.10.3 PROJECT IMPACTS

A primary goal in the County's Recreation Element is to provide adequate local park sites to meet the recreation needs of existing and future residents and preserve the natural resources within unincorporated Orange County. To comply with this goal the County acquires park land by requiring residential developers to provide a minimum of 2.5 net useable acres for every prospective 1,000 residents. Based on the projected population, local park requirements would total approximately 4.0 acres.[12]

The project is proposing the construction of eight (8) private local park facilities. The nearest facility containing playground equipment is the Portola Hills Elementary School located approximately 3/4 of a mile west of the site. Playground equipment is also found near the entrance to O'Neill Park located over two miles southeast of the subject property.

Mitigation of project-related local park impacts may be provided by the payment of local park fees as required by the Orange County Department of Harbors, Beaches and Parks. County regulations permit the payment of fees in lieu of actual on site park construction, allowing for the construction and maintenance of local parks at other more appropriate locations.

Although the current project is not proposing to improve the view park site and connecting trail, the project is proposing the construction of other regional recreational facilities which may mitigate this omission. As previously indicated, the applicant will be providing on site relocation and connection to the Aliso Creek Regional Riding and Hiking Trail. Provision of these recreational trail improvements in conjunction with required park fees, will provide mitigation for the lack of onsite park facilities.

Impact Significance Criteria

The effects of a project on recreation are considered to be significant if the project will result in the following:

- The demand generated by the project meets or exceeds the capacity of existing park lands, bicycle trails and hiking trails, or otherwise requires their expansion or requires the construction of major new facilities.

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12 *Memo, Chief, EMA/HBP PF&R/Harbors Beaches & Parks Division, Planning and Acquisition - 11/13/95.*

- The project will cause permanent removal or relocation of existing recreational trails, parks or other facilities in the area.

- The project would be in conflict with existing or planned recreational uses in the project area of effect.

4.10.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to mitigation, would result in significant impacts to existing local public park demand. This impact however will be reduced by the provision of eight (8) private park sites.

4.10.5 CUMULATIVE IMPACTS

The proposed project will increase area population by approximately 1,812 persons which will contribute to the cumulative impact on local and regional recreational facilities. This potential impact is considered incidental given the overall increase of recreational facilities to be provided by other regional development and is not considered significant.

4.10.6 MITIGATION MEASURES

Project Design Features

PDF 10-1 The Live Oak and Aliso Creek riding and hiking trail shall be located on the Project Site as shown in Exhibit 7 and Exhibit 63 Site Plan.

PDF 10-2 Live Oak Canyon Trail shall be constructed onsite, ultimately connecting O'Neil Regional Park to the Aliso Creek riding and hiking trail, as shown in Exhibit 7, Site Plan.

PDF 10-3 Eight onsite private parks shall be constructed as shown on Exhibit 7 Site Plan, to offset project demand.

Standard County Conditions and Mitigation Measures

SC 10-4 The developer or his assigns and successors in interest shall maintain offered park

site(s) until such time as the County or its designer accepts the offer of dedication, all in a manner of meeting the approval of the Manager, PF&R/Harbors Beaches & Parks Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations:

AM 10-5 Prior to first building occupancy, the applicant shall pay all park mitigation as required by the Department Manager, PF&R/Harbors Beaches & Parks Division.

AM 10-6 Prior to final building occupancy the applicant shall dedicate and construct all required regional trail connections and improvements as approved and required by the Department Manager, PF&R/Harbors Beaches & Parks Division.

4.10.7 UNAVOIDABLE ADVERSE IMPACTS

No significant unavoidable adverse impacts to recreation are anticipated with the proposed project with the incorporation of the recommended mitigation measures.

4.11 HAZARDS

4.11.1 EXISTING ENVIRONMENTAL SETTING

Wildfire

A number of natural hazards are inherent in the area of interface between the man made and natural environment which may potentially effect the proposed project. Among these are increased risk from wildfire both to the built and natural environments. Wildfire is a naturally reoccurring part of the ecosystem, periodically burning off old dead growth to allow for a rejuvenation of fresh growth in the recently burned area. A significant threat to life and property is a distinct possibility when development encroaches into this environment. The project site and surrounding topography consist of moderate to steep grass and shrub covered hills interspace with steep sided canyons, typically with riparian habitat along the canyon floor and/or oak woodlands in areas containing sufficient water to support their growth. The project site is located within an area classified by the Orange County Fire

Authority as a high "Special Fire Protection" area due to its combination of natural combustible vegetation, topography, and weather conditions (frequent dry Santa Ana winds), in accordance with California Department of Forestry and Fire Protection (CDF) criteria and State Responsibility Area (SRA) high fire hazard map. The project site is also in the "Special Fire Protection Area" severity zone, as designated by the County of Orange.

Wildlife Interaction

Another possible project related hazard is from the potential increase of contact between wildlife and project residents and their pets. The surrounding wilderness areas are known to contain a high diversity of wildlife including both large and small mammals, birds and insect populations. Of particular concern is the potential conflict between the human environment and the two main top predators of the region, coyotes and mountain lions. Though contact between humans and mountain lions still remain rare, they have occurred previously in this region and the chance for conflict will only increase with more people moving into the area. Contact between project residents and coyotes is a very real possibility since coyotes are typically more numerous in the wild than mountain lions and coyotes are more adaptable to human presence.

Manmade Hazards

In addition to natural hazards, man made hazards also have the potential to effect a development project. With regard to the project site, only two potential man made hazards have been identified. The first is the risk of aircraft accident due to the proximity of the site to the El Toro Marine Corps Air Station (MCAS). The second is due to the remote possibility of flood damage in the event that the proposed water tank, which will be located on the ridgetop northeast of the project site, fails due to earthquake or other structural damage.

No toxic or hazardous materials, or potential sources, have been identified onsite or in the vicinity of the proposed project.

Electromagnetic Fields (EMF)

No high voltage power transmission lines are located in the vicinity of the proposed project, and existing EMF hazards are considered to be low.

4.11.2 EFFECTS FOUND TO BE INSIGNIFICANT

The potential risk from aircraft accident due to use of the El Toro MCAS is considered low and therefore insignificant for this project. The MCAS is located approximately 6.5 miles southwest of the project site. The main aircraft departure corridor crash hazard zone is located approximately 2.5 miles south of the subject property. Aircraft accidents are in general infrequent, and since the site is located 2.5 miles from the take off and landing air corridor, it appears the site will experience minimal risk due to aircraft accident. In addition, the air station is scheduled for closure by 1999, and unless subsequently utilized for commercial or private aircraft use, the risk of aircraft accident generated by this facility is further reduced.

A (1.4 million) gallon water tank will be constructed adjacent to the northeast corner of the project site. This water tank is being provided to ensure that the project has adequate water pressure for everyday use and emergency situations. The risk posed by this tank is due to flooding in the unlikely event of tank failure. Periodic inspection and maintenance by the Trabuco Canyon Water District will ensure the integrity of this structure and potential flood risk from tank failure is considered insignificant.

4.11.3 PROJECT IMPACTS

Impact Significance Criteria

The risks posed to public health and safety are considered to be significant if the project will result in the following:

- Provision of insufficient fire protection measures, and/or design plans inconsistent with the Development/Open Space policies of the LUP (Land Use Plan, Chapter 3M, I-3.35).

- The placement of habitable structures within 1,000 feet of a landfill boundary without monitoring gas migration to the satisfaction of the Local Enforcement Agency (LEA), as specified in Title 14, CC&R 17783.5.

- Exposure of humans to radio frequency (RF) energy that exceeds the standards and guidelines established by the American National Standards Institute (ANSI) or National Council on Radiation Protection and Measurements (NCRP). The Ansi standards are set in the *American National Standard for Safety Levels with Respect to Human Exposure to Radio Frequency*

Electromagnetic Fields, 3 kHz to 300 GHz (ANSI 1992), and are similar to the NCRP maximum personal exposure limits.

4.11.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Wildfire

Due to topography, biology, and weather conditions the project site is located in area classified as a "Special Fire Protection Area" by the Orange County Fire Authority. To help mitigate property damage and risk to project residents in the event of a wildfire in the project vicinity, a number design measures would be incorporated into this project.

First the project site will implement a comprehensive fuel modification program in accordance with County standards. Typically fuel modification consists of a twenty-foot setback zone (Zone A), a minimum of fifty foot irrigated zone (Zone B), with an additional minimum of one hundred feet (100') of brush thinning zone (Zones C and D). Exhibits 64 and 65 illustrate these standards. Manufactured slope and remedial grading areas will be replanted with native low fuel plant species to further reduce the fire risk.

The site is also located ½ mile east of the Portola Hills Fire Station and less than a 30-second flight time from the upper Oso Reservoir, which will be used by OCFA helicopters, and a ten minute flight time to the site from the helicopter station at Fullerton Airport. (Helicopter dispatch is only included in dispatch to Wildland fires not structural fires onsite.) Therefore, during wildfire suppression operations, emergency response times to the subject property are expedite. To ensure fire fighter access to wilderness areas surrounding the site, individual lots around the project perimeter will provide a recorded unobstructed fire access easement through these properties ensuring adequate emergency access to all portions of the project's perimeter. Finally project construction will use alternative fire resistant materials and methods including concrete tile roofs, closed eaves and soffits, double paned/dual glazed windows, and noncombustible exterior building facing. Wet and dry utilities will be located on opposite sides of the street to minimize lane closures during maintenance periods.

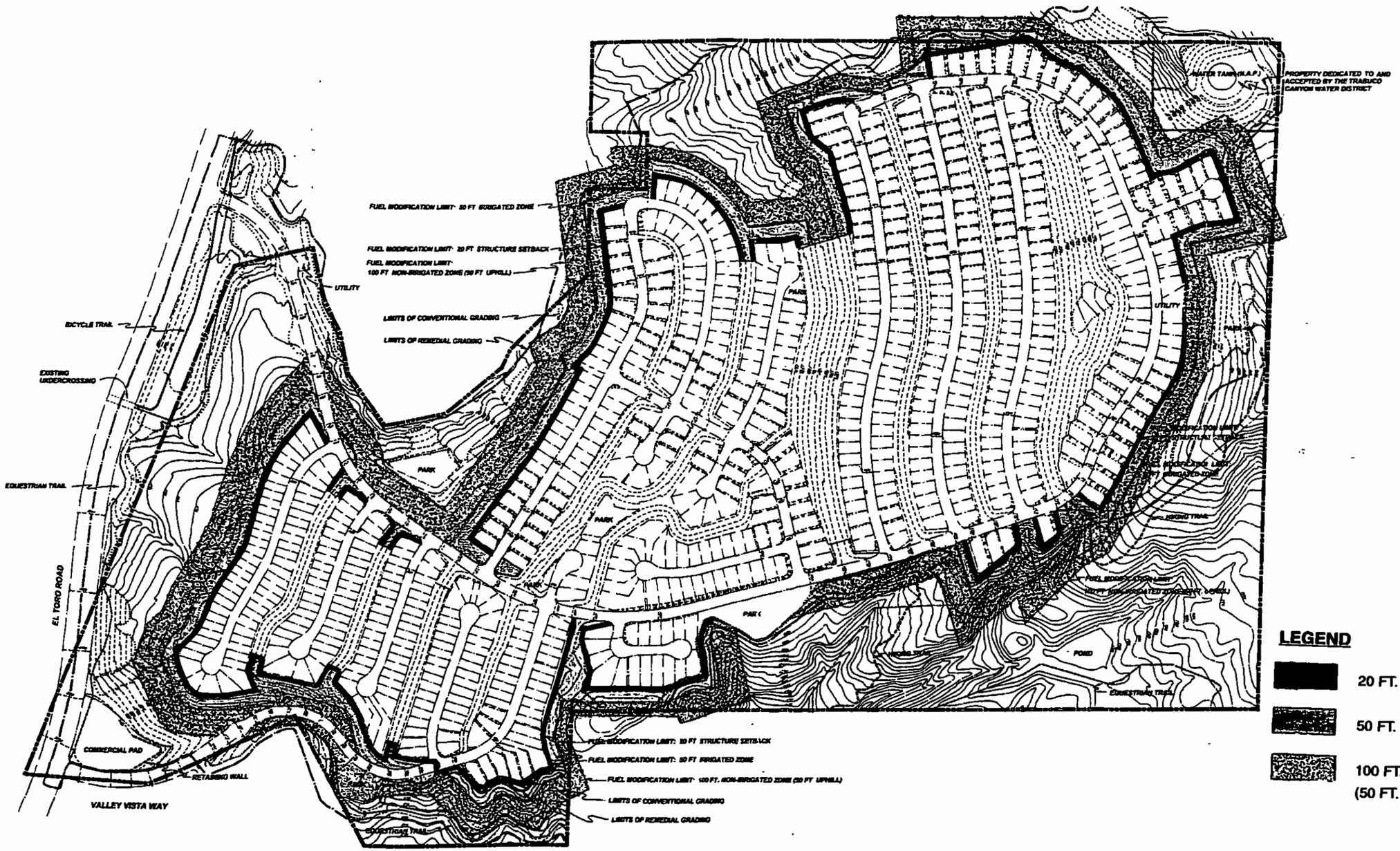
Emergency Access

Due to site constraints, only one primary access roadway can be provided to the eastern portion of the site. The provision of only one main access road is of concern since this roadway could become obstructed and impassible in emergency situations creating an impact to public safety. As indicated

on the site plan, primary project access is provided from El Toro Road by the main spine road extending the length of the site, with secondary access via Valley Vista Way in the Hidden Hills tract south of the project site. This roadway design leaves a majority of the proposed lots with one single access point east of Valley Vista Way. In the event that this east access point is blocked or impassible in an emergency situation, residents and emergency personnel have no other all weather access alternatives. As indicated by the OCFA, mitigation of this restricted access may be provided by the proposed fire mitigation features and by providing internal fire sprinklers for the single access lots in the proposed project.

Wildlife Interaction

Conflict between wildlife and project residents and pets is an associated project risk due to the proximity of wild areas to the subject site. As more residential development occurs at the interface with wilderness areas, the potential for increased contact with dangerous wild animals increases. In the past, when development encroached into previously undeveloped areas, the wildlife would move on to new more remote foraging ranges. Unfortunately, due to developmental encroachment which now encircles the remaining wilderness areas, the ability for animals to relocate to new grounds is limited. A number of animal species, particularly coyotes and raccoons have proved particularly adaptable to human presence, foraging and hunting in proximity to residential housing tracts.



LEGEND

- 20 FT. STRUCTURE SETBACK
- 50 FT. IRRIGATED ZONE
- 100 FT. NON-IRRIGATED ZONE (50 FT. UPHILL)

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: Forma

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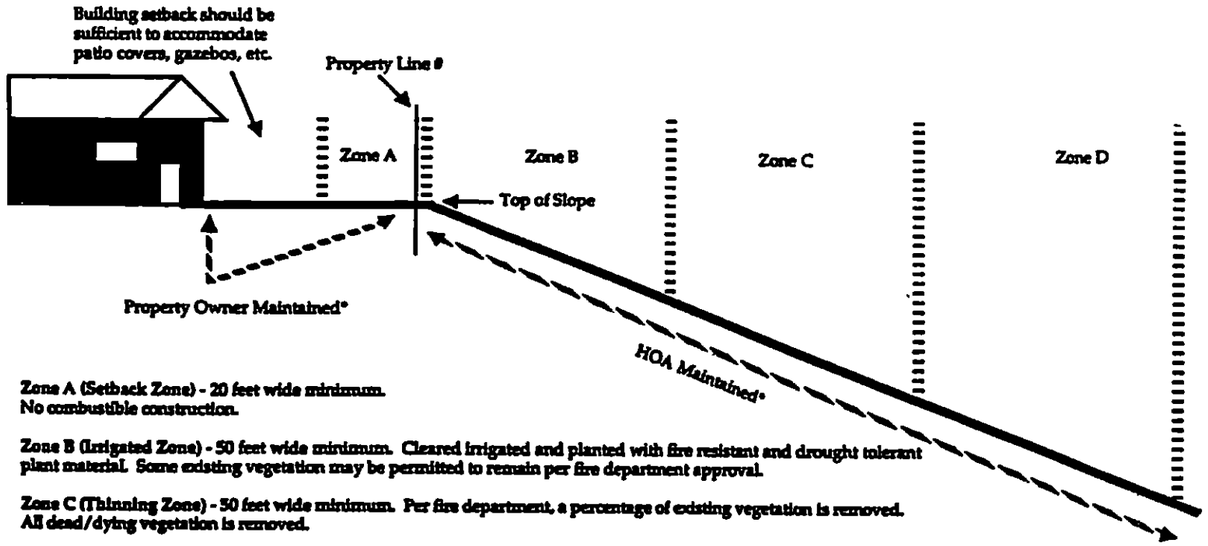
Fuel Modification Zone Plan

EXHIBIT No. 64



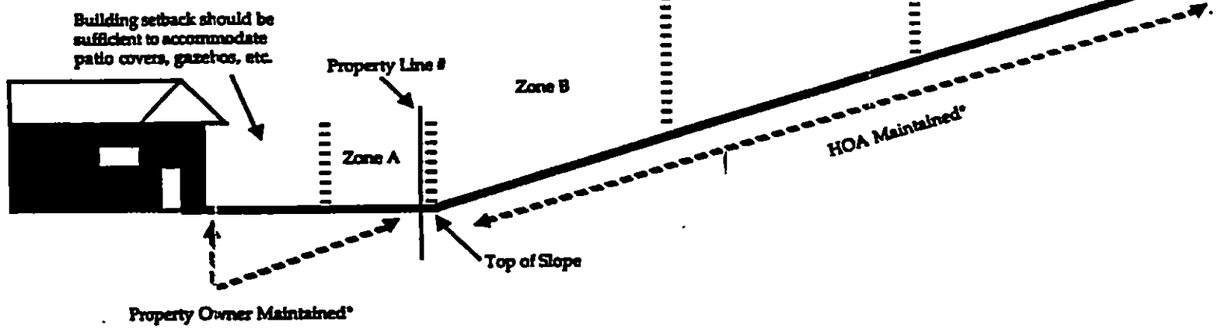
Zone A (Setback Zone) - 20 feet wide minimum.
No combustible construction.

Zone B (Irrigated Zone) - 50 feet wide minimum. Cleared irrigated and planted with fire resistant and drought tolerant plant material. Some existing vegetation may be permitted to remain per fire department approval.

Zone C (Thinning Zone) - 50 feet wide minimum. Per fire department, a percentage of existing vegetation is removed. All dead/dying vegetation is removed.

Zone D (Thinning Zone) - 50 feet wide minimum. Per fire department, a percentage of existing vegetation is removed. All dead/dying vegetation is removed.

DOWNSLOPE CONDITION



Zone A (Setback Zone) - 20 feet wide minimum.
No combustible construction.

Zone B (Irrigated Zone) - 50 feet wide minimum. Cleared irrigated and planted with fire resistant and drought tolerant plant material. Some existing vegetation may be permitted to remain per fire department approval.

Zone C (Thinning Zone) - 50 feet wide minimum. Per fire department, a percentage of existing vegetation is removed. All dead/dying vegetation is removed.

Zone D (Thinning Zone) - 50 feet wide minimum. Per fire department, a percentage of existing vegetation is removed. All dead/dying vegetation is removed.

UPSLOPE CONDITION

SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: Not to Scale
Source: N/A

Fuel Modification Zone Cross Section

EXHIBIT No. 65

4.11.5 CUMULATIVE IMPACTS

Implementation of the proposed project will add to the cumulative encroachment of residential tract development into existing remaining rural and wilderness areas, further reducing the natural foraging habitat area available to area wildlife and increasing the opportunities for human/animal conflict within the interface zone between the built manmade and natural environments.

Project construction within extreme fire risk areas adds to the potential cumulative impact of increased fire frequency and increased property and human loss due to fire events

4.11.6 MITIGATION MEASURES

PDF 11-1 Implement a comprehensive fuel modification program in accordance with Section 27 of Appendix II-A of the 1994 Uniform Fire Code as adopted by County Ordinance 3954 (the Wildland Urban Interface Task Force report was not adopted and is not enforced by the OCFA). Exhibits 9 and 64 illustrate the fuel modification zones and, although adequately described, it should be noted that the distances are horizontal measurements rather than vertical and, therefore, may actually be larger zones as measured vertically up or down a slope (based on topography).

PDF 11-2 Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.

PDF 11-3 Provide for the construction of a water tank off site to ensure adequate on site water supply and OCFA fire flow requirements. The minimum fireflow requirements for this project of 1500 gpm for a minimum of 2 hours at 20 psi residual pressure. This flow must be available 24 hours per day .

PDF 11-4 Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.

PDF 11-5 Residential structures shall be constructed of fire-resistant material, including but not limited to, "Class A roof assemblies", closed eaves and offsets, double paned or dual glazed windows. The exterior walls of structures will be constructed of " 1-hour fire resistant materials" and all structures will have fire sprinklers.

PDF 11-6 All residential structures shall be required to have automatic interior fire sprinkler systems.

PDF 11-7 The interface area between residential lots and open space areas within the project boundary shall be wrought iron fenced to minimize intrusion of wildlife into the built portions of the project site.

Standard County Conditions and Mitigation Measures

SC 11-8 Prior to the issuance of any preliminary grading permits, applicant shall request that the Manager, HCA/Environmental Health, determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, HCA/Environmental Health.

SC 11-9 Prior to the issuance of any building permits for combustible construction, a letter and plan from the developer shall be submitted stating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site. Said letter shall be approved by the Fire Chief prior to the issuance of any building permits.

SC 11-10 Prior to the issuance of any building permits on those lots determined applicable by the Fire Chief, plans for an automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. This system shall be operational prior to the issuance of a certificate of use and occupancy.

SC 11-11 Prior to the issuance of any building permits, the applicant shall submit a detailed letter of intended use for each building to the Fire Chief for review and approval.

SC 11-12 Prior to the issuance of any grading permits, preliminary plans for all street and courts, public or private, shall be submitted to and approved by the Fire Chief. The plans shall include the plan view, sectional view, and indicate the width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be clearly marked.

SC 11-13 Prior to the issuance of any certificates of use and occupancy, street improvement

plans with fire lanes shown shall be submitted to and approved by the Fire Chief. The plans shall indicate the locations of red curbing and signage, and provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color.

SC 11-14 Prior to the issuance of any grading permits, construction details for any emergency access gate shall be submitted to and approved by the Fire Chief. Contact the Orange County Fire Department at (714)744-6623 for a copy of the "Guidelines for Fire Department Emergency Access".

SC 11-15 Prior to the issuance of any grading permits, a fuel modification plan and program shall be submitted and approved by the Fire Chief in consultation with the Manger, Environmental and Project Planning Services Division. The Planning and Development Section shall be contacted at 744-0403 for requirements to be met and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation, include the method (mechanical or hand labor) for removal of flammable vegetation and provide for the planting of drought tolerant fire resistant plants.

SC 11-16 Prior to the issuance of any building permits, the developer shall have completed, under the supervision of the Fire Chief, that portion of the approved fuel modification plan determined to be necessary by the Fire Chief before the introduction of any combustible construction material into the project area.

SC 11-17 Prior to the issuance of any certificates of use and occupancy, the remaining fuel modification shall be installed and completed under the supervision of the Fire Chief. Further, the installed fuel modification shall be established to a degree meeting the approval of the Fire Chief.

4.11.7 UNAVOIDABLE ADVERSE IMPACTS

Due to the proximity of the project to surrounding wilderness areas some contact between the human environment and wildlife is unavoidable, although not considered significant.

4.12 PUBLIC SERVICES

4.12.1 EXISTING ENVIRONMENTAL SETTING

Sheriff

The project is serviced by the Orange County Sheriff-Coroner's Department. The Sheriff's substation is located approximately 17 miles to the southwest at 30331 Crown Valley Parkway in Laguna Niguel. Two to four patrol cars service the area east of I-5, depending on the shift and day of the week.[13] There are currently 186 uniformed deputies assigned to this substation.

The average response time is nine (9) minutes, and varies based on the location of the deputies at the time of the call. Current response times vary from five (5) minutes to fifteen (15) minutes.

Fire

The project site is essentially undeveloped open space. The topography consists of moderately steep grass and shrub covered hillsides. Oak and sycamore woodlands are prevalent along canyon floors. The surrounding area is characterized by clustered residential developments and permanently preserved open space.

The project site is located within the service area of the Orange County Fire Authority (OCFA). OCFA provides fire safety and emergency services to the residents in the area. OCFA maintains a fire station (#42) at 19150 Ridgeline road in Trabuco Canyon approximately one-half mile from the project site and with a projected response time of less than five (5) minutes. The project site is also less than 30 seconds flight time from Upper Oso Reservoir, which can provide water for OCFA helicopters, and a ten minute flight time to the site from the helicopter station at Fullerton Airport. (Helicopter dispatch is only included in dispatch to Wildland fires not structural fires onsite.) Therefore, during wildfire suppression operations, emergency response times to the subject property are expedite.

The Trabuco Canyon Water District maintains a 14-inch water line in El Toro Road. Due to site constraints, the majority of the project site is served by only one access road. A second access road is located south of the project off of Valley Vista Way and is for emergency use only.

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[13] *Kathryn Douglas, South Operations Division, County of Orange, Sheriff-Coroner Department - 11/10/95.*

Because of the topography, vegetation and climatic conditions, the OCFA has classified the project site to be in the Extreme Fire Hazard Severity Zone.

Education

The project site is located within the Saddleback Valley Unified School District which provides educational services to grades K-12. Existing and planned school enrollment and capacities are shown in Table 32.

Table 32
EXISTING AND PLANNED SCHOOL ENROLLMENT/CAPACITY[14]

Grade Level	School	Spring 1997 Enrollment	Capacity
K-6	Portola Hills Elementary 19422 Saddleback Ranch Rd. Trabuco Canyon	828	Near Capacity
7-8	Rancho Santa Margarita Intermediate 21931 Alma Aldia Rancho Santa Margarita	1,305	Near Capacity
9-12	Mission Viejo High School 25025 Chrisanta Drive Mission Viejo	2,085	—

Portable classroom facilities are currently in use at all of the above outlined district schools.

School Funding

The School Facilities Act (Government Code §65995) was enacted to allow school districts to assess developer fees to help cover the cost of constructing or reconstructing school facilities necessary to accommodate increases in student population. It also set out to limit the amount that local agencies

14 *Telephone conversation, Mary Lou Smith, Facilities Department, SVUSD - 4/2/97*

could require of developers to mitigate the impact of development on school facilities. These fees were never intended to cover the full cost of developing new school facilities. The Green-Hughes School Building Lease-Purchase Bond Law of 1976 was approved by the State Legislature to match the developer fees collected by a school district if the district could demonstrate that, even after collection of fees (currently up to $1.72 per square-foot of assessable for residential uses and $0.27 per square-foot for commercial/industrial uses), additional funding was still needed.

Because of the financial difficulties plaguing the State government and substantial demand for funds from school districts statewide, the State Legislature recently enacted a new program for the financing of new school facilities. Senate Bill No. 1287 (SB 1287) took effect on January 1, 1993, with the intent of diverting the primary financial responsibility for school facilities to the school districts and limiting the role of the State to districts with low assessed valuation, those that have met or exceeded their debt capacities, or those that are unable to supply the expected level of local revenues. In doing so, SB 1287 repealed the funding by the State Allocation Board under the Green-Hughes School Building Lease-Purchase Bond Law. It increased the residential developer fees $1.00 up to $2.72 per square-foot (Government Code §65995.3) and identified the developer fees as the exclusive method of mitigating project-related impacts on school facilities under the California Environmental Quality Act for both administrative and legislative acts (Government Code §65996). SB 1287 also prohibited public agencies from either denying approval of a project on the basis of the adequacy of school facilities of imposing conditions, other than the requirement to pay the developer fees, on the approval of a project for the purpose of providing school facilities.

However, the long-term standing of SB 1287 was dependent upon the results of the November 1993 general election when Proposition 170 (Assembly Constitutional Amendment 6) was voted on throughout the state. This proposition failed to receive a majority of votes and, as a result, school districts lost that ability to collect the additional $1.00 per square-foot of residential space and the districts once again have to rely on the State to provide matching funds for new school construction. The current residential school impact fee is $1.72 per square-foot. Also, public agencies may now impose conditions, in addition to the requirement to pay the developer fees, on the approval of a general plan amendment or zone change for the purpose of mitigating impacts on crowded school districts. Public agencies are still prohibited from denying approval of a project on the basis of the inadequacy of school facilities.

Additional mechanisms available to school districts to fund new school construction include community assessment districts and general obligation bonds to help fund new school construction. Because Proposition 170 was rejected by the majority of voters, State law requires a two-thirds

majority vote to pass either of these measures.

Library

The project lies within the service area of the Orange County Public Library System. The closest library branch is the Rancho Santa Margarita Branch Library at 30902 La Promesa in Rancho Santa Margarita. The Silverado Library is located at 28192 Silverado Canyon Road and could also serve the project site.

Solid Waste

Trash pickup in the vicinity of the project site is provided by Waste Management of Orange County which is contracted by the County of Orange and will be providing trash pickup to the project.

4.12.2 EFFECTS FOUND TO BE INSIGNIFICANT

Sheriff

The Initial Study prepared for the proposed project did not identify any sheriff related effects as insignificant.

Fire

The Initial Study prepared for the proposed project did not identify any fire related effects as insignificant.

Education

The Initial Study prepared for the proposed project did not identify any education related effects as insignificant.

Library

The Initial Study prepared for the proposed project did not identify any library related effects to as insignificant.

Solid Waste

Waste Management of Orange County will be able to provide trash pickup and recycling services for the proposed project. The Integrated Waste Management Department has available landfill space for the proposed project.

4.12.3 PROJECT IMPACTS

Sheriff

The Orange County Sheriff's Department has indicated that it can provide adequate police service to the project area. The new response time varies with the location of the deputies at the time of the call, and range from five (5) to fifteen (15) minutes. Based on an officer/population ratio of 2:1000, three additional officers would be required by the project.

Fire

The project proposes 705 manufactured single family residential dwelling units on 222.23 acres of land that is classified as a High Fire Hazard Severity Zone by the OCFA. A 1.4 million gallon water tank will be constructed in the northeast corner of the project site. This tank will be able to meet the water demand and fire flow requirements for the project (860,000 gallon water supply/540,000 gallon fire flow)[15].

The proposed project is residential community with two points of access (spine road at El Toro Road and Valley Vista Way). Valley Vista Way is proposed as an emergency access only. Portions of the project above Valley Vista Way would be served by only one access, El Toro Road. Emergency medical response to areas above Valley Vista Way could be delayed, if the single point of access is blocked or made impassable.

Education

Implementation of the proposed project would add additional students to an already overcrowded system. Project-related student generation is shown in Table 33.

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15 *Fire flow based on 1,500 gallon per minute (GPM) for six (6) hours - Page Dougherty, OCFA.*

Table 33
PROJECT-RELATED STUDENT GENERATION

Grade	Units	Student Generation Factor[16]	Student Generation
K-6	705	0.340/du	240
7-8	705	0.065/du	46
9-12	705	0.160 du	113
Total			**399**

As shown, 399 K-12 students would be generated at buildout of the proposed project.

Library

Implementation of the proposed project would result in additional demand for library services in the project area.

The local branches of the Orange County Public Library System will be able to serve the needs of the project's residents. The system has established the following standards for service:

- .2 square feet of library space per capita;
- 1.3 volumes per capita.

Based on an average of 2.57 persons per dwelling unit countywide, the proposed project will increase population by 1,812 persons using the above figures. Development of the proposed project will require approximately 356 square feet of additional library space and approximately 2,314 additional volumes. Currently, according to the County, most Orange County public libraries are within current service guidelines. However, due to County budget constraints, branch libraries vary their hours and reduce services to cut spending. The County also requires participation in the County's Development

[16] *Saddleback Valley Unified School District*

Fee Program for Libraries. Currently the fee is set at $185.00 per dwelling unit.

Solid Waste

The project will have trash and recycling collection services provided by Waste Management of Orange County (WMOC). WMOC will provide storage containers for refuse collection and recycling bins for recyclable materials. Refuse is collected once a week and recyclable materials will be collected every other week. Currently WMOC charges $13.96 per dwelling unit per month. WOC estimates an average of 65 pounds of refuse per month per household unit in unincorporated Orange County. Table 34 shows the estimated solid waste generation for the proposed project.

Table 34
PROJECT-RELATED SOLID WASTE GENERATION

Land Use	# of Units	Generation Factor	Monthly		Annual	
			Lbs.	Tons	Lbs	Tons
Single Family Residential	705	65 lbs/du/mo	45,825	22.91	549,900	274.95

Refuse will be transported by the County run Integrated Waste Management Department to one of two (2) County owned landfills. They are Prima Deshecha, a 1500 acre facility in San Juan Capistrano and Frank Bowerman, a 725 acre facility in Irvine The Integrated Waste Management Department of Orange County runs five (5) landfills in Orange County and they indicate that they will have available landfill capacity for 50 years.

Recyclable materials are transported to Sunset Environmental in Irvine for processing.

Impact Significance Criteria

The effects of the project on public services is considered significant if the project will result in the following:

- The demand for school facilities, police and fire protection, library services, or solid waste facilities meets or exceeds their capacity.

4.12.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Sheriff

The project will have no significant impact on the Orange County Sheriff's Departments ability to provide adequate police services.

Fire

Due to topography, vegetation and climatic conditions, the project site is located in an area classified as a "Special Fire Protection Area" by the OCFA.

Because much of the project would be served by a single access road, the OCFA has expressed concern that public safety could be compromised should this road become blocked or impassable.

Education

Implementation of the proposed project would result in the generation of about 400 additional students into the currently overcrowded Saddleback Valley Unified School District.

Library

The project will not have a significant impact on the Orange County Public Library System's ability to provide services.

Solid Waste

WMOC would be able to provide refuse collection and Integrated Waste management does have landfill space available. There are no significant impacts from the project.

4.12.5 CUMULATIVE IMPACTS

Sheriff

Anticipated countywide growth combined with the project impacts would have a cumulative impact on Sheriff Department services over time.

Fire

The anticipated countywide growth in combination with the project impacts would have a cumulative impact on fire and emergency services in Orange County.

Education

District-wide growth in combination with project-related impacts would result in cumulative impacts to the Saddleback Valley Unified School District.

Library

This project in combination with regional growth would have a cumulative impact on the Orange County Public Library System.

Solid Waste

The Integrated Waste Management Department indicates that landfill space is available for the next 50 years and the project will not have a significant impact on landfill capacity; however, regional development will have a cumulative impact on available landfill space.

4.12.6 MITIGATION MEASURES

Project Design Features

Sheriff

PDF 12-1 The Orange County Sheriff's Department shall be consulted during final project design to minimize security related impacts.

Fire

PDF 12-2 Implement a comprehensive fuel modification program in accordance with the guidelines established by the Wildland Urban Interface Task Force, July 1994, as approved by the Orange County Fire Authority (OCFA).

PDF 12-3 Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.

PDF 12-4 Provide for the construction of a 1.4 million gallon water tank offsite to ensure adequate onsite water supply for water supply and fire flow use.

PDF 12-5 Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.

PDF 12-6 Residential structures shall be constructed of fire resistant material, as approved by the OCFA. In addition, no ventilation openings shall be allowed on the side of residential structures facing natural areas.

PDF 12-7 OCFA shall have the ability to enter the property through the secondary access road located off of Valley Vista Way.

Education

No PDF proposed.

Library

PDF 12-8 The developer shall pay any development fees required by the County of Orange Development Fee Program for libraries.

Solid Waste

No PDF proposed.

Standard County Conditions and Mitigation Measures

SC 12-9 Prior to the issuance of building permits, the applicant shall pay development fees for general County facilities if an applicable fee program has been adopted by the Board of Supervisors pursuant to Section 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange, and such fee program is in effect at the time of issuance of building permits, all, in a manner meeting the approval of the Manager,

PDS/Environmental and Project Planning Services.

Sheriff

SC 12-10 Prior to the issuance of the first building permit, the project proponent shall enter into an agreement to (a) participate in funding the provision of the Saddleback Sheriff's Station; and (b) fund the provision of patrol and investigator cars needed to serve the project.

Fire

SC 12-11 Prior to the issuance of any certificates of use and occupancy, all onsite fire protection devices, including fire sprinklers, fire hydrants, alarm systems and fire suppression facilities, shall be installed and maintained in good condition by the property owner in a manner meeting the approval of the Fire Chief.

SC 12-12 Prior to issuance of any building permits for combustible construction, a plan from the developer shall be submitted to and approved by the Fire Chief indicating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site.

SC 12-13 Prior to issuance of certificates of use and occupancy, emergency access shall be constructed in a manner meeting the approval of the Fire Chief.

SC 12-14 The approved fuel modification plan shall be installed prior to the issuance of building permits, under the supervision of the Fire Chief, and completed prior to the issuance of any use and occupancy permits. The CC&R's shall contain provision for maintaining the fuel modification zones including the removal of all dead and dying vegetation and the inspection and correction of any deficiencies in the irrigation system three times a year.

SC 12-15 Prior to the issuance of any grading permits, as part of the area plan, a fuel modification plan and program shall be submitted and approved by the Fire Chief. Contact the Wildland Fire Defense Planning Section at 744-0498 for requirements and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of flammable vegetation and the planting of

drought tolerant fire resistant plants.

SC 12-16 Prior to the issuance of any grading permits, the applicant shall submit a list of the quantities of all hazardous, flammable and combustible materials, liquids or gases. These materials shall be classified according to the "Orange county Fire Department Chemical Classification Handout", including a summary sheet listing each hazard class, the total quantity of chemicals stored per class and the total quantity of chemicals used in that class, all in a manner meeting the approval of the Fire Chief.

SC 12-17 Prior to the issuance of any certificate of use or occupancy, all fire hydrants shall have a "Blue Reflective Pavement Marker" indicating its location on the street or drive per the Orange County Fire Authority Standard. On private property these markers are to be maintained in good condition by the homeowners association.

SC 12-18 Prior to the issuance of any building permits, plans for the automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. The system shall be operational prior to the issuance of the certificate of use and occupancy.

SC 12-19 Prior to the issuance of any grading permit, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief indicating the locations of red curbing and signage. Provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color. The CC&R's shall contain a fire lane map, provisions which prohibit parking in the fire lanes, and a method of enforcing fire lane requirements by the homeowners association.

Education

SC 12-21 Prior to the issuance of building permits, the applicant shall pay all applicable school fees required in accordance with State law. Current school impact fees are $1.72 per square-foot of residential.

Solid Waste

SC 12-22 The potential for the proposed project to impact solid waste collection and disposal has been reduced to a level of insignificance through engineering design and

construction techniques. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 12-23 Prior to the issuance of any building permits, a plot plan delineating the capacity, number, and location of all proposed solid waste collection areas shall be submitted to the Manager, HCA/Environmental Health, for review and acceptance. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 12-24 Prior to the approval of a building permit the applicant shall submit a Recycling/Source Reduction Plan to the Manager, PDS/Environmental and Project Planning Services Division, for review and approval. Said plan shall provide a strategy to facilitate compliance with waste diversion levels as mandated by AB 939, and may include elements which demonstrate commitment to a project specific operation, coordination with existing local or regional programs, and the use of recycled materials during and following construction of the project. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 12-25 Prior to the issuance of any certificates of use and occupancy, the applicant shall provide verification that the solid waste plan delineating the capacity, number, and location of all proposed solid waste collection areas, previously reviewed and accepted by the Manager, HCA/Environmental Health, has been implemented/incorporated into the project, in a manner meeting the approval of the Manager, Building Inspection Services Division.

SC 12-26 Prior to the approval of a Site Development Permit the applicant shall submit a Recycling/Source Reduction Plan to the Manager, EMA/Project Planning Division, for review and approval. Said plan shall provide a strategy to facilitate compliance with waste diversion levels as mandated by AB 939, and may include elements which demonstrate commitment to a project specific operation, coordination with existing local or regional programs, and the use of recycled materials during and following construction of the project.

SC 12-27 Prior to the issuance of any certificates of use and occupancy, the applicant shall provide verification that the solid waste plan delineating the capacity, number, and location of all proposed solid waste collection areas, previously reviewed and accepted by the Manager, HCA/Environmental Health, has been implemented/incorporated into the project, in a manner meeting the approval of the Manager, Building Inspection Services Division.

Library No SC mitigation measures proposed.

4.12.7 UNAVOIDABLE ADVERSE IMPACTS

Sheriff

No unavoidable adverse impacts would occur to sheriff services following implementation of all outlined mitigation measures; therefore, cumulative impacts would result.

Fire

No unavoidable adverse impacts from the project regarding OCFA's ability to provide fire and emergency services would occur following implementation of all outlined mitigation measures; therefore, cumulative impacts would result.

Education

No unavoidable adverse impacts would occur to education services following implementation of all outlined mitigation measures; therefore, cumulative impacts would result.

Library

No unavoidable adverse impacts would occur to library services following implementation of all outlined mitigation measures; therefore, cumulative impacts would result.

Solid Waste

No unavoidable adverse impacts would occur to solid waste services following implementation of all outlined mitigation measures; therefore, cumulative impacts would result.

4.13 UTILITIES AND SERVICE SYSTEMS

4.13.1 EXISTING ENVIRONMENTAL SETTING

Water

The project site is located within the service area of the Trabuco Canyon Water District (TCWD). The TCWD maintains a 10-inch and a 14-inch water main along El Toro Road and an 8-inch water main along Live Oak Canyon Road. An existing 12-inch steel water line, serving Tract 12724 at the property's southwest boundary, is a Santa Margarita Water District line. This line is capable of serving the property's building pads below elevation 1,152. However, the property's water system is not permitted to join this SMWD line without prior annexation to SMWD. Water service is not currently provided to the project site.

TCWD's water supply is derived primarily from the Baker Filtration Plan which provides 6 cubic feet per second of untreated water for TCWD use. Alternate water sources are: 1) periodic wells within the district which provide pumped, untreated water; and 2) capacity from the Allen-McCulloch pipeline transported via the Metropolitan Water District of Orange County and the Santa Margarita Water District.

The direct source of water for TCWD's 14-inch ACP water line along El Toro Road is a 63,000 gallon water tank (HWL-1165) located near St. Michael's Abbey at El Toro Road to the north of the property and approximately 200 feet south of the El Toro Road/Live Oak Canyon Road intersection.

Wastewater

The project site is located within the service area of the Trabuco Canyon Water District (TCWD). The TCWD maintain an existing trunk sewer line system which runs as a 15-inch gravity line in El Toro Road near the western project boundary. There is also an existing 8-inch line in Valley Vista Way just south of the project. This gravity line flows to and is connected to the TCWD 15-inch line in El Toro Road.

Sewer capacity in TCWD's system has been guaranteed for this project by means of previous payments made to TCWD through an Assessment District formed to benefit the project. Sewer capacity for over 700 single family dwelling units within sewer facilities downstream of TCWD facilities was previously paid for by the project's former developer.

Project area wastewater is conveyed to the Chiquita Water Reclamation Plan, located south of the project site near Ortega Highway.

The project's wastewater flows south on El Toro Road to a pump station at Santa Margarita Parkway and El Toro Road. It is then pumped east and south under Santa Margarita Parkway, and then gravity flows to the Santa Margarita Water District's (SMWD) Chiquita Water Reclamation Plant located near Ortega Highway.

SMWD's Chiquita Reclamation Plan presently has a total capacity of 6 million gallons daily (MGD) and a daily treatment average of approximately 2.5 MGD during the week. On Sundays the treatment average approaches 3 MGD. During rainy weather 4-5 MGD will be treated, however, such swells in treatment are rare. The plant has an ultimate planned capacity of 21 MGD.

Electricity

The project site is located within the service area of the Southern California Edison Company (SCE). SCE supplies electrical power to the area through an existing 12 kw line extending along Santiago Canyon Road.

Natural Gas

The project site is located within the service area of Southern California Gas Company (SCG). SCG has an existing 6-inch main beneath El Toro Road.

Cable

The project site is located within the service area of Cox Communications, which supplies cable TV service for the area.

Communications

The project site is located within the service area of Pacific Bell, which supplies telephone service for the area.

4.13.2 EFFECTS FOUND TO BE INSIGNIFICANT

Water

The project does not result in the need for new local or regional water distribution facilities. The proposed project is located within the TCWD's service area and they indicate that they will have capacity to serve the site.

Wastewater

TCWD will be able to provide waste water collection services for the proposed project. TCWD indicates that sufficient sewer capacity has been obtained for the property and no new local of regional facilities will need to be constructed.

Electricity

SCE will be able to provide electrical service to the area. The project does not result in the need for new or substantial alterations to existing electrical supply lines.

Natural Gas

SCG Will be able to provide natural gas service for the proposed project. The project will not result in the need for new or substantial alterations to existing natural gas supply lines.

Cable

Cox Communications will be able to supply cable service to the proposed project.

Communications

Pacific Bell will be able to supply telephone service to the proposed project.

4.13.3 PROJECT IMPACTS

Water

TCWD has indicated that the project's water needs can be met. Water demands were estimated using

current Orange County Fire Authority criteria plus current TCWD standard guidelines. TCWD has established the average annual water demand at 450 gallons per dwelling unit (du) per day for residential land uses. Table 35 shows the project-related water demand.

Table 35
PROJECT-RELATED WATER DEMAND

Land Use	#of Units	Generation Factor	Gallons Per Day
Single-Family Residential	705	450 gal/du/day	317,250
Irrigation	69.9 ac	2.5 af/ac/yr	157,900
Total			**475,150**

Water for irrigation has been estimated to require 2.5 acre feet per acre, per year (af/ac/yr). Maximum day demand has been calculated using TCWD's 2.0 multiplier for residential and 2.5 multiplier for irrigation uses.

Since the project will have a single water source it is classified as a "stand alone" zoned water distribution system. Proposed service zones for the project are:

Zone 0	Existing systems at point of connection 865-feet to 1065 feet.
Zone 1	Elevation 1,085 feet to 1,200 feet.
Zone 2	Elevation 1,200 feet to 1,400 feet.
Zone 3	Elevation 1,400 feet to 1,510 feet.

Because of the elevation gain at the project site a booster pump station near the main water line connection is necessary to pump water to a reservoir located just outside the property's northeast tract boundary at pad elevation 1,590 feet. The water tank site was dedicated to TCWD when Tract Map 10092 recorded. In addition, a $904,425 capital improvement charge was paid to the Trabuco Canyon Water District when Tract Map 10692 recorded in 1988. TCWD will construct the water tank concurrent with project development.

Wastewater

TCWD indicates that the project's waste water needs can be met. Most of the project will be served by an 8-inch line which will gravity flow beneath the collector street into the TCWD's 15-inch line

in El Toro Road. The remaining lots in the southwest corner of the project will connect to the 8-inch line in Valley Vista Way and gravity flow into the 15-inch line in El Toro Road.

TCWD has established a discharge factor of 90 gallons per person with 3 persons per unit. Table 36 shows the estimated project-related sewage discharge flow.

Table 36
PROJECT-RELATED WASTEWATER GENERATION

Land Use	# of Lots	Discharge Factor (90 gal/pp @ 3 persons/unit)	Discharge Gallons (per day)
Single Family Residential	705	270 gal/day	190,350

The existing TCWD 15-inch line serving the project has reserved capacity for the project in the amount of approximately 200,000 gallons per day. In addition, a sewer connection fee of $973,528.58 was paid to Trabuco Canyon Water District when the Tract Map recorded in 1988.

Electricity

SCE indicates that the electrical loads of the project are within parameters of the overall projected load growth which SCE is planning to meet.[17] Unless the demand for electrical generating capacity exceeds SCE's estimates, and provided that there are no unexpected outages to major sources of electrical supply, SCE expects to meet the demand for electricity from the project site. SCE's estimates for residential electrical consumption are based on a figure of 700 kilowatt (kwh) hours per dwelling unit (du) per month. Table 37 shows the monthly and yearly project related electrical consumption.

Table 37
PROJECT-RELATED ELECTRICAL CONSUMPTION

Land Use	Number of Units	Generation Factor	Monthly kwh of Electricity	Annual kwh of Electricity
Single-Family Residential	705	700 kwh/month	493,500	5,922,000

[17] *Written communication, Gary Bullard, SCE - 8/23/95.*

Natural Gas

SCG indicates that the project's natural gas needs can be met without major system expansion.

Gas consumption has been estimated by SCG at 1,095 therms per year per single family dwelling unit. Table 38 shows annual project-related natural gas consumption.

Table 38
PROJECT-RELATED NATURAL GAS CONSUMPTION

Land Use	No. of Lots	Generation Factor	Therms Per Year
Single Family Residential	705	1,095 Therms/du/yr	771,975

Note: 1 Therm = 100 cu.ft. of natural gas

Cable

Cox Communications has indicated that it can provide cable service to the area. There will be no charge to the applicant or homeowners to have cable TV services provided to the project site.

Communications

Pacific Bell has indicated that it can provide telephone service to the area. There will be no charge to the applicant or homeowners to have telephone services provided to the project site.

Impact Significance Criteria

The effects of a project on utilities and service systems is considered to be significant if the project will result in the following:

- The demand generated by the project meets or exceeds the capacity of existing, or otherwise requires their expansion, or requires the construction of major new facilities.
- The project's demands for fuel or energy meet or exceed existing supplies, or otherwise cause supply and/or capacity constraints.

- The project's demands exceed the capacity of existing utility systems, or otherwise require the expansion or construction of major new facilities.

- The project causes significant disruption of service.

4.13.4 SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Water

Project implementation would not result in significant impacts on TCWD's ability to provide water service. Due to the elevation change between the water line connection and the reservoir, a booster pump station will be required to provide adequate water supply for the site.

Wastewater

The project will have no significant impacts on TCWD's ability to provide wastewater service to the area.

Electricity

The project will have no significant impacts on SCE's ability to supply electricity to the area.

Natural Gas

The project will have no significant impacts on SCG's ability to provide natural gas service to the area.

Cable

The project will have no significant impact on Cox Communications ability to supply cable TV service to the area.

Communications

The project will have no significant impact on Pacific Bell's ability to supply telephone service to the area

4.13.5 CUMULATIVE IMPACTS

Water

The cumulative impacts of the project are not significant. The project falls within the plans of the TCWD for long range growth.

Wastewater

The cumulative impacts of the project are not significant. The project falls within the plans of the TCWD for long range growth.

Electricity

The cumulative impacts of the project are not significant. The project falls within the plans of SCE for long range growth.

Natural Gas

The cumulative impacts of the project are not significant. The project falls within the plans of SCG for long range growth.

Cable

This project along with other proposed projects would not have a cumulative impact on Cox Communication's ability to provide services to the area.

Communications

This project along with other proposed projects would not have a cumulative impact on Pacific Bell's ability to provide service to the area.

4.13.6 MITIGATION MEASURES

Project Design Features

Water

PDF 13-1 The new booster pump station shall be paid for by the applicant and designed and function according to TCWD's guidelines and standards.

PDF 13-2 Operational capacities and pressure parameters for design of the booster pump station (approved by OCFA) shall be determined at design stage and should incorporate but not be limited to the following requirements:

- It shall meet the maximum day demand for the "stand alone" zones of Saddleback Meadows with an operating time of 24 hours and without its largest unit in service.
- It shall be designed with a back-up generator for the booster pump, as well as fuel and maintenance provisions.
- It shall incorporate the typical 3 or 4 pump system with an alternating state sequence.
- It shall pump from TCWD's El Toro Road zone (1,165 feet HWL) to the storage facility (reservoir) proposed.
- It shall have the ability to refill the proposed reservoir, if it were empty, within 72 hours while also providing for maximum day demands on the water system during that time.

PDF 13-3 Water conservation measures to be implemented consist of water-conserving features in the design and construction of residential homes and uses, plus use of drought-tolerant plant materials in the slope and streetscape plantings. Proposed water conservation measures also include:

- Supply line pressure: Water pressure greater than 50 pounds per square inch (psi) reduced to 50 psi or less by means of pressure-reducing valves.

- Ultra-low-flush toilets: 1.5 gallon-per-flush toilets installed in all new construction.
- Landscape with low-water-using plants wherever feasible.
- Grouping of plants of similar water use to reduce over-irrigation of low-water-using plants.
- Extensive use of mulch as top cover to improve water-holding capacity of the soil.
- Installation of efficient irrigation systems that minimize runoff and evaporation, and maximize the amount of water reaching plant roots. Drip irrigation, soil moisture sensors, and automatic irrigation systems are proposed methods of increasing irrigation efficiency.

PDF 13-4 All design and landscape features shall comply with TCWD's guidelines and standards.

Wastewater

PDF 13-5 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Electricity

PDF 13-6 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Natural Gas

PDF 13-7 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Cable

PDF 13-8 All utilities shall be installed by Cox Cable in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Communications

PDF 13-9 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Standard County Conditions and Mitigation Measures

Water

SC 13-10 Prior to the issuance of any building permit(s), the applicant shall provide a report to the Manager, PDS/Building Permits Services Division, indicating that plans showing the location of all proposed reclaimed water lines used to irrigate open spaces, parks, and other landscaped areas, have been submitted to and approved by the Trabuco Canyon Water District.

SC 13-11 Prior to the issuance of building permits, water conservation measures shall be incorporated into the development design plans and which shall be submitted for approval to the Trabuco Canyon Water District.

Wastewater

SC 13-12 Prior to the issuance of a certificate of use and occupancy, sewer lines, connections, and structures shall be installed in a manner meeting the approval of the Manager, HCA/Environmental Health.

A. All waste water facilities and line shall be constructed and maintained to meet TCWD standards and requirements

B. All sewer lines shall be underground facilities.

C. The project shall comply with all State of California Health and Safety Codes.

Electricity

SC 13-13 Prior to the issuance of a building permit, project proponent shall consult with the local gas and electric companies regarding feasible energy conservation features that should be included in the design of the proposed project. A note on the building plans

and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 13-14 Prior to the issuance of a building permit, the project proponent shall incorporate passive or natural heating and cooling opportunities in the design of the proposed project including but not limited to the following: solar energy use; thermal insulation; tinted or solar reflective glass; orientation to sunlight; use of deciduous trees in landscaping; installation of roof fans; utilize fluorescent lighting, switches and thermostat, utilize time-controlled lighting; and, utilize AC units with 100% outdoor air economize. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

Natural Gas

SC 13-15 The applicant shall provide for all lines and mains necessary to provide natural gas to the project.

SC 13-16 The applicant shall obtain all required permits and follow all SCG, State and County regulations and requirements regarding natural gas service.

Cable

No standard condition requirements.

Communications

SC 13-17 Applicant shall comply with the requirements of the California Public Utilities Commission and Pacific Bell Telephone Company for the provision of telephone service.

4.13.7 UNAVOIDABLE ADVERSE IMPACTS

Water

The project would create additional demand for water in the area. Following implementation of all

recommended mitigation measures and standard code requirements, no significant adverse impacts would result for water supply.

Wastewater

The project will produce no unavoidable adverse impacts.

Electricity

There are no unavoidable adverse impacts from the project regarding SCE's ability to provide electricity.

Natural Gas

The project will produce no unavoidable adverse impacts.

Cable

There are no unavoidable adverse impacts from the project regarding Cox Communications ability to provide service to the area.

Communications

There are no unavoidable adverse impacts from the project regarding Pacific Bell's ability to provide service to the area.

5.0 LONG-TERM IMPLICATIONS OF THE PROPOSED PROJECT

5.1 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES THAT WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The environmental changes which would occur as a result of implementation of the project will occur mainly as a result of alterations to the physical environment. Most likely, once development occurs on the site, the land will not be returned to its current primarily natural state. There will be an incremental increase in air pollution as a result of vehicle emissions. Increased traffic and urban activity will also result in increased noise in the area. This EIR has identified cumulative and project specific air quality impacts, land-form modification, visual effects, and reduction of native habitats and sensitive and non-sensitive species dependent on those habitats on the project site as the significant unavoidable adverse impacts of the project.

5.2 GROWTH INDUCING IMPACTS OF THE PROPOSED ACTION

The proposed project would supply 705 manufactured single-family residential dwelling units into RSA 43-C, a jobs-rich, housing-poor area. This represents a significant addition to the County's existing stock of affordable housing units. Furthermore, per the Conditions of Approval originally placed on Tentative Tract 10692, a total of 470 lots are to be sold in the affordable range. This figure is further broken down as follows: 71 low/ moderate, 70 Medium I, and 329 Medium II as defined by the County.

The project would also be consistent with SCAG's Regional Comprehensive Plan (RCP), Growth Management Chapter. The project, through provision of residential units in a jobs rich region, will assist in meeting the RCP goals of enhancing housing growth in job rich areas, and encouraging local jurisdictions to achieve a balance between the jobs and the cost of available housing. The project also provides housing within close proximity to major employment centers, thus reducing vehicle trips and vehicles traveled. The proposed development, therefore, is consistent with the growth management policies of SCAG's RCP.

Secondary growth inducing impacts will result with the provision of urban services and extension of infrastructure to an undeveloped area within the Foothill-Trabuco Specific Plan. Although the project will result in the extension of urban services, no potential exists to stimulate development on adjacent parcels due to topographic, circulation system and utility sizing constraints. Since the project is consistent with the adopted General Plan, and there is little, if any, unplanned or uncommitted land use in the area, this is a minor effect.

6.0 *ALTERNATIVES*

Pursuant to CEQA, the EIR must assess a reasonable range of alternatives to the project action or location (Section 15126{d}0). The discussion must focus on opportunities for eliminating any significant adverse environmental effects, or reducing them to a level of insignificance "...even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly..." (Section 15126{d}[1]). The EIR must identify an environmentally-superior alternative among other alternatives. As with cumulative impacts, the discussion of alternatives is governed by the "rule of reason." The EIR need not consider an alternative whose effect cannot be reasonably ascertained, or does not contribute to an informed decision-making and public participation process.

The purpose of this section is to describe and evaluate a range of reasonable and feasible alternatives to the proposed project and to determine whether any alternative "may eliminate or reduce to a level of insignificance" adverse impacts associated with the proposed site development. The Foothill-Trabuco Specific Plan EIR identified two alternatives for the project site, staff Alternatives A and B. These alternatives are evaluated in this document as Alternatives 2 and 3 respectively.

Alternatives Objectives:

Pursuant to the requirements of CEQA, the alternatives have been developed to meet the following development objectives of the proposed project.

- Develop a residential community which preserves onsite sensitive biological, cultural and aesthetic resources and conforms to existing landform conditions, to the extent feasible, in response to County and community concerns.

- Minimize visual effects on surrounding properties through the application of sensitive grading design, habitat restoration and landscape screening.

- Remediate and provide geotechnical stabilization for onsite landslide areas affecting the proposed development area.

- Implement the policies contained in the General Plan, Foothill/Trabuco Specific Plan Aliso Creek Corridor Concept Specific Plan and The Air Quality Management Plan.

- Minimize adverse affects to surrounding properties, O'Neill Regional Park and Aliso Creek through buffer/setback zones, design features and landform grading.

- Implement design guidelines and development standards to ensure compliance with current planning and zoning laws requirements through the Area Plan Process.

- Create a fire safe community through incorporation of an area-wide fuel modification program.

- Provide trail connections to the regional riding and hiking trail system.

- Dedicate right-of-way and site stabilization for the widening and improvement of El Toro Road.

The following are alternatives evaluated in this document. Each are summarized in Table 39.

Alternative 1	No Project / No Development
Alternative 2	Foothill-Trabuco Specific Plan Alternative A - 150 Minimum 20,000 sq.ft. lots.
Alternative 3	Foothill-Trabuco Specific Plan Alternative B - 100 SFD Units on 31.7 acres.
Alternative 4	OCP&DS Staff Alternative (EIR 561) - 299 SFD , Minimum 5,000 sq. ft. lots.
Alternative 5	Cluster/Reduced Development Footprint - 318 SFD/MFD.

The alternatives are evaluated based on the following criteria:

1. Identification of specific impacts of each alternative.

2. Comparative analysis of each alternative to the proposed project and the recorded tract map with regard to:

   - Attaining project objectives
   - Feasibility
   - Eliminating/reducing project impacts

3. Identification of the environmentally superior alternatives

Table 39
ALTERNATIVES LAND USE PLAN COMPARISON

ALT NO	DESCRIPTION	NUMBER OF UNITS	MINIMUM LOT SIZE	DEVELOPMENT AREA[1]	REMEDIAL GRADING	CONVENTIONAL GRADING	% OPEN SPACE[2]	WILDLIFE CORRIDOR	TRAIL CONNECTION	COMMENTS
	Proposed Project (705 Lots)	705 Mfd. housing	2,630 sf	156.55 ac	8.9 mcy	2.6 mcy	57%	No	Yes	Increased Level of Impacts
1	No Project / No Development	0	N/A	0 0 ac	0 0 mcy	0 0 mcy	100%	Yes	No	Continuation of Grazing Impacts
2	150 SFD	150 SFD	20,000 sf	138 ac	10 0 mcy	2.5 mcy	52%	No	Yes	Minimum 5,000 sf Pad
3	100 SFD - 30 Acres	100 SFD	4,000 sf	31.7 ac	2.0 mcy	1 0 mcy	92%	Yes	Yes	—
4	299 SFD	299 SFD	5,000 sf	155.2 ac	6,3mcy	2.1mcy	72%	Yes	Yes	72% Open Space
5	Cluster/Reduced Development Footprint	318 SF/MF	4,000 sf/ Condo Pads	105 ac	5.0 mcy	1 5 mcy	69%	Yes	Yes	Multi-family Component

1 Does not include remedial grading or fuel modification requirements.

2 Total open space includes both disturbed, undisturbed, slopes, fuel modifications.

6.1 ALTERNATIVE 1 - NO PROJECT/NO DEVELOPMENT

This alternative is required by CEQA and the County of Orange Environmental Procedures for the Preparation of EIRs. Under the No Project Alternative, the project would remain in natural open space for the foreseeable future, with cattle grazing operations continuing. Implementation of the No Project Alternative would result in no development related impacts to the project site. Ongoing degradation of onsite biological resources related to cattle grazing operations would continue to occur.

The No Project/No Development Alternative would avoid any additional adverse or incremental impacts associated with Earth Resources, Air Quality, Water Resources, Biological Resources, Natural Resources, Land Use, Population/Housing, Transportation/Circulation, Public Services, Public Utilities, Hazards, Noise, Light, Aesthetics, and Cultural Resources.

Selection of the No Project/No Development Alternative would eliminate residential housing opportunities to Orange County and greater Southern California residents and not be in conformity with Orange County General Plan Housing Element goals. Moreover, selection of this alternative would require that the County of Orange refund previously paid developer exactions including water fees of $904,425.00 sewer connection fees of $973,528.00 and drainage assessment fees of $74,000.00. Furthermore, records indicate that $973,528.58 in sewer treatment capacity rights, and $904,475.00 in "capital improvement charges" have also been paid. Finally, the applicant has paid to date, over $9,147,700.00 in premiums for security and improvement bonds as a condition of Recorded Tract Map 10692. This includes $5,657,700.00 for street improvements, $3,240,000.00 for landscaping and $250,000.00 for monumentation. Conservatively, this amounts to just under $13 million in applicant expenditures to date, not including an additional amount for the water tank site dedicated to TCWD which has not yet been appraised. Presumably, all of these monies, including an additional amount for the dedicated water tank site, would have to be refunded to the applicant if the current project is not approved.

The No Project/No Development Alternative does not meet the objectives of the proposed project. Under this alternative, no development, including Recorded Tract 10692 for 705 manufactured homes would occur. In addition, no grading/stabilization for El Toro Road or trail connections would occur.

6.2 ALTERNATIVE 2 - 150-20,000 SQUARE FOOT LOTS (FTSP STAFF ALTERNATIVE A)

Alternative 2 proposes the construction of 150 single family lots, with minimum lot sizes of 20,000 sq.ft. Alternative No. 2 is summarized in Table 40.

Table 40
ALTERNATIVE NO. 2 LAND USE SUMMARY

Land Use	Area	% of Site
Single Family Residential	88.6 ac	40%
Streets	17.9 ac	8%
Manufactured Slope	31.6 ac	14%
Natural Open Space	84.1 ac	38%
Total	**222.2**	**100%**

As indicated on the proposed site plan, site access from El Toro Road will be provided by a double loaded roadway traversing the main ridgeline looping back through the oak woodland canyon, connecting with the access road near mid site. Emergency service access would occur via El Toro Road, through St. Michael's Abbey property. Residential lot access is provided either directly off this main road or from short cul-de-sac streets spaced throughout the site. Approximately 138 acres of the 222.23 acre site will be utilized to accommodate the proposed building sites, road circulation system, and conventional and remedial grading. The Alternative 2 site plan is shown in Exhibit 66.

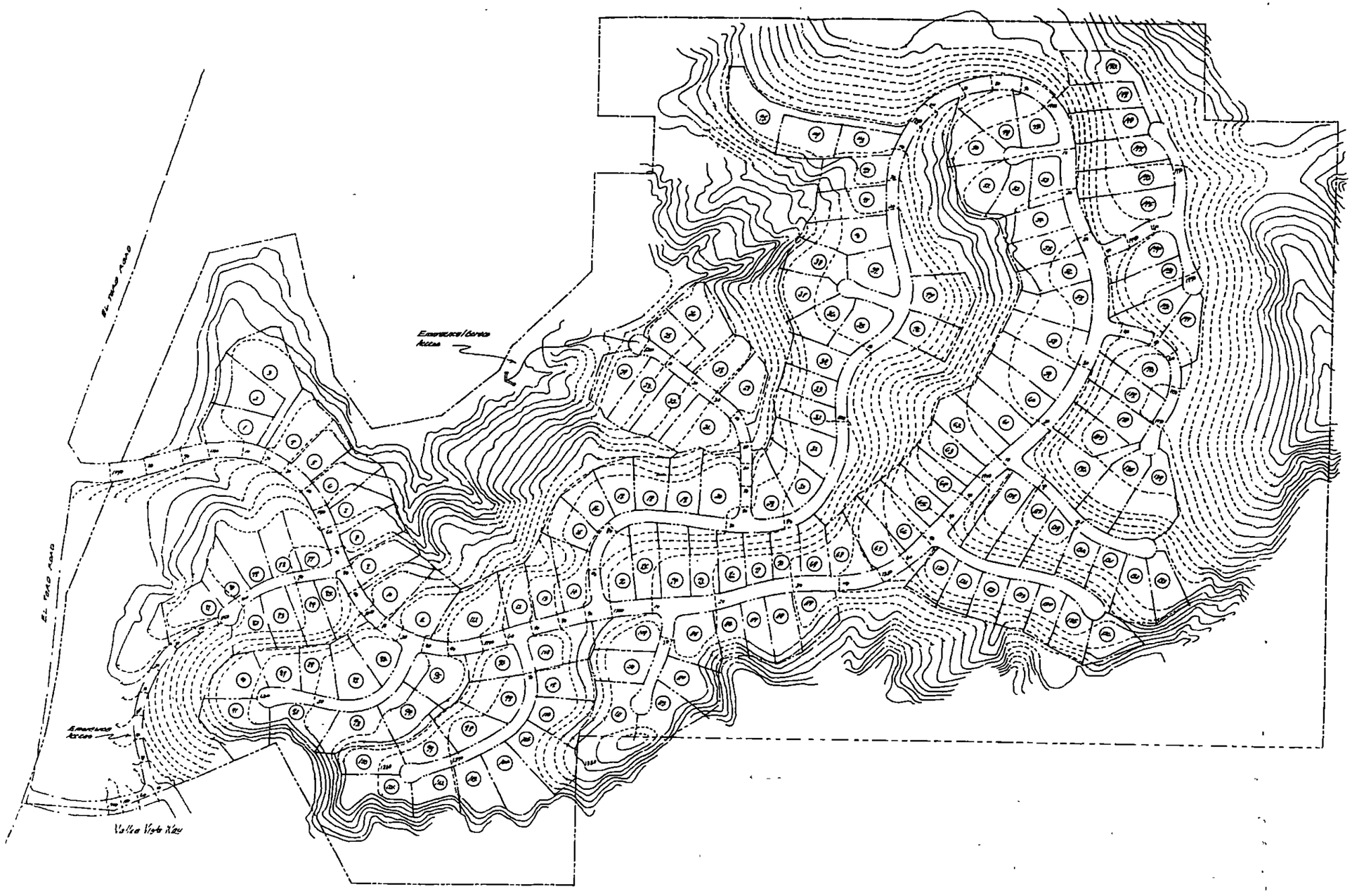
The document entitled "Fiscal Impact Analysis" prepared by Stanley Hoffman & Associates, which is included in this Draft EIR as Appendix J, indicates that this alternative would operate at an annual surplus of $20,667.00 after including fees associated with the Orange County General Fund; County Road Fund; County Library District; and the Harbor, Beaches, and Parks Department.

Land Use/Housing

The project site is located within the FTSP planning area which permits the highest residential density (less than 1 acre/dwelling unit). In terms of gross residential density, this alternative is in compliance with this density standard, however, the Specific Plan also has as an overriding goal which encourages preservation of significant landform, biological and scenic resources, all heavily impacted by this Alternative. However, Alternative 2 would impact a smaller portion of the site (138 acres as opposed to 191 acres for the proposed project), remove less oak woodlands, and provide significantly more open space than the proposed project.

Soils and Geology

To prepare the site for construction, alternative 2 would require a conventional grading volume of 2.5 mcy., not including remedial grading which would contour and blend man-made slopes into the existing natural topography. Remedial grading would amount to 10.0 mcy. Although nearly 75% of the site would experience some form of land alteration, requiring an additional one mcy of grading, this alternative would require less development area than the proposed project.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION
County of Orange P&DS
Scale: 1"=400'
Source: N/A

N

Alternative No. 2 - 150 Single Family Development 20,000 SF Lots

EXHIBIT No. 66

Water/Hydrology

It is estimated that this alternative will generate a domestic water use demand of 60,000 gallons per day which is approximately 88% less than the anticipated domestic water use of the proposed project. In addition, this alternative will require less alteration of natural drainage courses on site, thereby reducing the potential for increased urban runoff impacts as compared to the proposed project. Accordingly, fewer BMP mitigation measures would be required under this alternative.

Transportation/Circulation

Estimated traffic volumes generated by this alternative would be approximately 1,800 vehicle trips per day, about 70% less than the proposed project. A reduction in site generated vehicle trips will have a corresponding reduction in the potential impact of site development on the area circulation system.

Air Quality

Development of 150 residential units as opposed to the proposed 705 units would reduce vehicular air emissions and potential impact to regional air quality by a corresponding percentage. Cumulative emissions would remain significant.

Noise

Surrounding the project site are a number of existing land uses considered sensitive to noise intrusion. Most notably are O'Neill Regional Park, the Ramakrishna Monastery, and St. Michael's Abbey. Since current property use is for grazing land, development of 150 residential units proposed by this alternative will generate an increase in noise levels emanating from the subject site. This change in noise levels, though anticipated to be lower than the proposed project, may still be perceived as intrusive to existing surrounding land use.

Biological Resources

Implementation of Alternative 2 would alter approximately 138 acres of vegetation/habitat on the site to accommodate the construction of 150 single family lots. Site alteration of this magnitude will severely impact onsite biological resources including the elimination of the oak woodlands, ephemeral ponds, coastal sage scrub habitat, and other resources. Alternative 2 would impact the adjacent Aliso Creek riparian habitat similar to the proposed project. A wildlife movement corridor would not be provided with this alternative.

Aesthetics

Similar to the proposed project, this alternative would substantially alter the natural site topography leaving little area of undisturbed open space. Although lot sizes would be much larger under Alternative 2 than with the proposed project, the overriding visual impact will nevertheless be one of an entirely man-made site, thereby imposing a lesser visual impact than the proposed project.

Cultural/Scientific Resources

Alternative 2 would impact a smaller percentage of the site and in turn will potentially have fewer impacts to onsite cultural and scientific resources.

Recreation

Alternative 2 would provide a connection to the regional riding, hiking and biking trail system, thereby creating a similar level of impact to the proposed project.

Hazards

The project site is located in a high fire hazard area. As a result, all future site development is potentially at risk during fire events. The loop circulation system proposed with this alternative provides for improved emergency access as compared with the proposed project, resulting in a higher level of emergency service than the proposed project.

Public Services

Implementation of this alternative would result in incrementally less demand for public services as compared to the proposed project.

Public Utilities

Implementation of this alternative would result in incrementally less demand for public utilities as compared to the proposed project.

6.3 ALTERNATIVE 3 - 100 SFD UNITS ON 30 ACRES (FTSP STAFF ALTERNATIVE B)

Alternative 3 would concentrate all site development on the western third of the project site, reducing the number of dwelling units to no more than 100. Alternative No. 3 is summarized in Table 41.

Table 41
ALTERNATIVE NO. 3 LAND USE SUMMARY

Land Use	Area	% of Site
Single Family Residential	11.3 ac	5%
Streets	5.6 ac	3%
Manufactured Slope	14.8 ac	7%
Natural Open Space	190.5 ac	85%
Total	**222.2**	**100%**

Primary access from El Toro Road would be provided by a two lane 60-foot wide roadway, terminating in a traffic circle which surrounds an overview park. Residential lot access will be provided off secondary cul-de-sac streets located on the south side of the primary tract road. A second emergency access road connection would be provided at Valley Vista Way near the southwest corner of the project site. The proposed development would consist of 100 single family residential lots, minimum lot size 4,000 sq.ft. on 31.7 acres of the site. Estimated conventional grading volumes are approximately 1.0 million cu. yds. Approximately 86% or 190.53 acres will be left as natural open space.

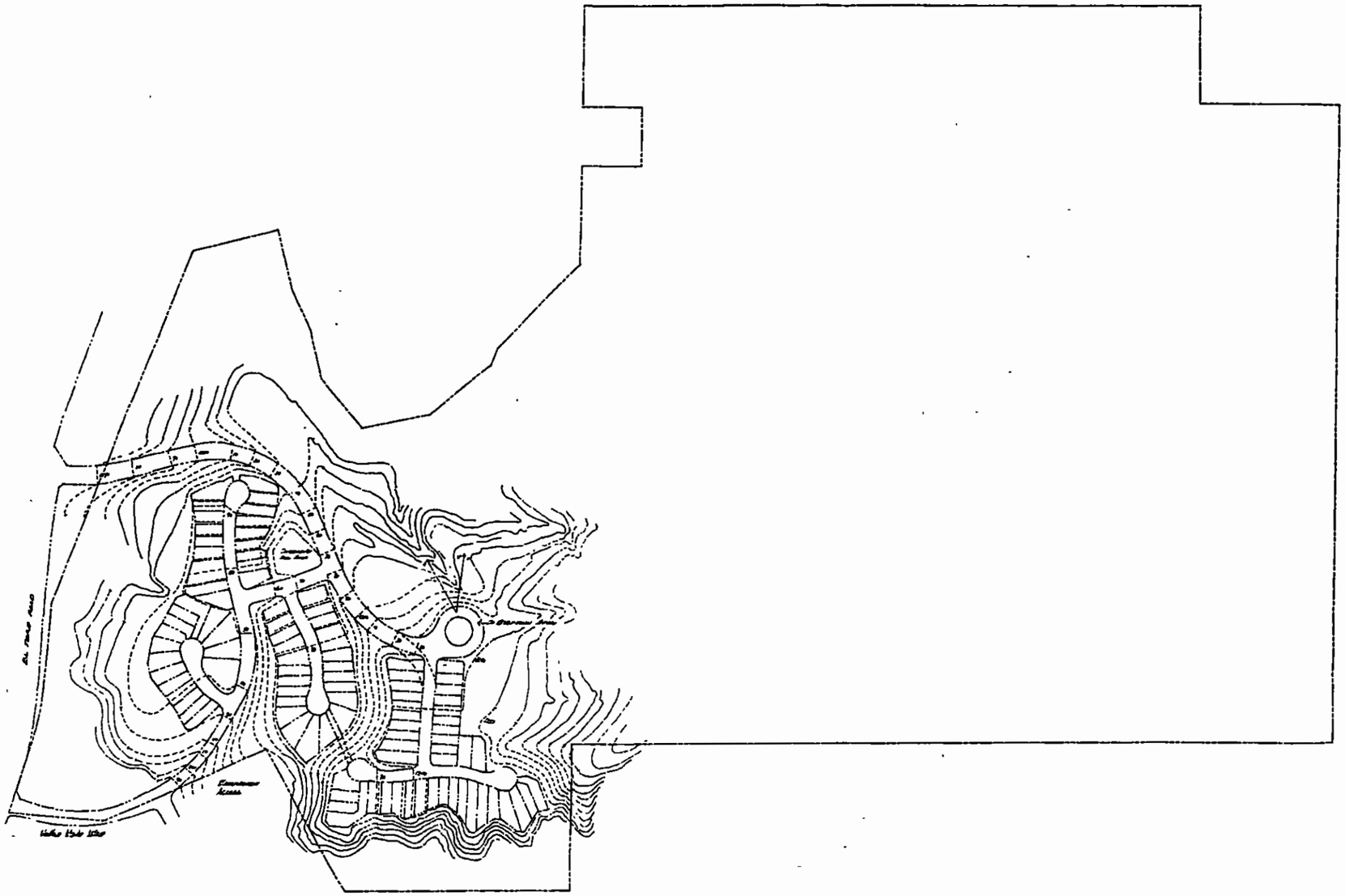
Financial analysis prepared for this project indicates that this alternative would operate at an annual deficit of $4,955.00 after including fees associated with the Orange County General Fund; County Road Fund; County Library District; and the Harbor, Beaches, and Parks Department.

Land Use

This alternative would cluster all development on the lower western portion of the site adjacent to El Toro Road and the Hidden Ridge/Hidden Hills community. Though proposed lots sizes are relatively small, the vast majority of the site will be retained in natural open space. Alternative 3 would preserve more significant landform, biological, cultural, and scenic resources than the proposed project.

Soils and Geology

Potential grading volumes and associated impacts would be approximately 70% less than for the proposed project. In addition, land form alteration will be confined to just 31.7 acres of the site leaving the remaining 190.53 acres of the site in a natural state. By comparison, the proposed project involves approximately 211.0 acres of land alteration leaving 14% of the site as undeveloped open space. Grading impacts associated with site development are thus substantially reduced under this alternative, as compared to the proposed project.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: N/A

N

Alternative No. 3 -
100 Single Family Development
30 Acres

EXHIBIT No. 67

Water/Hydrology

Domestic and common area water demand would be significantly reduced by this alternative. It is estimated that development of 100 residences will generate a domestic water use demand of approximately 40,000 gallons per day. Due to the relatively small area devoted to development, potential urban runoff and drainage impacts are significantly reduced by this alternative, as compared to the proposed project.

Transportation/Circulation

Alternative 3 would generate an estimated 1,200 vehicle trips per day a 80% reduction over proposed project estimates. Potential impacts to the surrounding circulation system would be significantly reduced under this alternative, as compared to the proposed project.

Air Quality

A reduction in the number of vehicle trips would have an associated reduction in auto borne air emissions, a corresponding reduction in potential air quality impacts, and a positive affect on SCAQMD goals.

Noise

Development of 100 residential lots clustered on the western portion of the site adjacent to El Toro Road would substantially reduce the potential noise impact to surrounding existing noise sensitive land uses, as compared to the proposed project.

Biological Resources

Alternative 3 would retain the majority of the subject property in natural open space preserving a majority of the significant biological resources onsite. Connection between wilderness areas south and west of the site would be provided by this large open space area, eliminating the need to provide a wildlife movement corridor through developed portions of the property.

Aesthetics

Development would be clustered on the lower less visible portion of the site, preserving views of the site's rolling topography and scenic oak woodlands, as well as reducing the amount of man-made structures from surrounding viewsheds. Alternative 3 would substantially reduce visual impacts to the Ramakrishna Monastery.

Cultural/Scientific Resources

The resulting smaller area of site disturbance under the alternative would significantly reduce the potential impact to cultural and scientific resources onsite, as compared to the proposed project.

Recreation

As indicated on the site plan, Alternative 3 would provide a community recreation area onsite in addition to the overview park area. Connection to the regional riding, hiking and biking trail system would also be provided with this alternative. Recreation impacts under this alternative would therefore be reduced in comparison to the proposed project.

Hazards

The project site is located in a designated very high fire risk area. All residential development onsite is potentially at risk in a fire event. Due to the proximity of the development to El Toro Road as well as the secondary entry road into the site, emergency access is significantly improved by this alternative, as compared to the proposed project.

Public Services

Public services are adequate to support this alternative with a substantially reduced demand, as compared to the proposed project.

Public Utilities

Public utilities are adequate to support this alternative with a substantially reduced demand, as compared to the proposed project.

6.4 ALTERNATIVE 4 - OCP&DS STAFF ALTERNATIVE, 299 SFD UNITS, ON 5,000 SF LOTS

This alternative has 299 single-family detached dwelling units. The average lot size for this project is approximately 6,400 s.f. Access to the project would be provided via a gate-guarded private street off El Toro Road immediately south of the existing Aliso Creek/Trail undercrossing. An emergency only access connects with Valley Vista Way. The project site is 222.2 acres in size. Total open space is approximately 72% (utilizing EMA's criteria for calculating open space). A total of approximately eight acres of offsite area would be affected as a result of project implementation to accommodate slope area, access roads, related remedial grading, the water tank, and County of Orange fuel modification requirements.

Prepared financial analysis indicates that this alternative would operate with recurring annual surpluses of $39,800.00 after including fees associated with the Orange County General Fund, County Road Fund, County Library District and the Harbor, Beaches, and Parks Department.

Alternative 4 is summarized in Table 42.

Table 42
ALTERNATIVE NO. 4 LAND USE SUMMARY

Onsite	Acreage	% Offsite
Residential Lots	44.7	20%
Streets (private)	18.0	8%
Other Dedicated Natural Open Spaces	91.9	41%
Trail Staging Area	.6	0%
Open Space (dedicated to H.O.A.)	67.0	31%
Subtotal	**222.2**	**100%**

* Acreages and percentages are approximations subject to refinement at the Tentative Map stage.

Land Use

The project has been designed to minimize impact on the existing land form. The homes have been located on the relatively level areas in a broad crescent shape flowing along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off the eastern major ridgeline bordering the property.

Soils and Geology

The grading concept for this alternative reflects a contour grading approach with utilizes techniques emphasizing variations and takes advantage of the curvilinear street and lotting design, rather than repetitive uniformity. This allows the project a more natural and organic ambiance in keeping with the rolling hillside setting. These contour grading techniques consist of the following:

- Integrate grading into the context of existing topography using horizontal rounding of contours;
- Blending of manufactured contours with natural existing contours;
- Rounding at the top and toe of slopes to avoid harsh transitions; and
- Design of development enclaves of varying size and irregular spacing to avoid a uniformly "terraced" appearance.

Earthwork Volumes:

Conventional Grading

- Balanced Cut/Fill (approximate)
  Cut Quantity: 2,100,000 **c.y.**
  Fill Quantity: 2,100,000 **c.y.**

- Total Import Quantity: **0**
  Total Export Quantity: **0**

Remedial Grading

- Total Remedial Grading (Remove & Replace): approximately **6,300,000 c.y.**

Based on the preceding alternative summary, grading volumes and geological impacts are substantially reduced under this alternative as compared to the proposed project.

Water/Hydrology

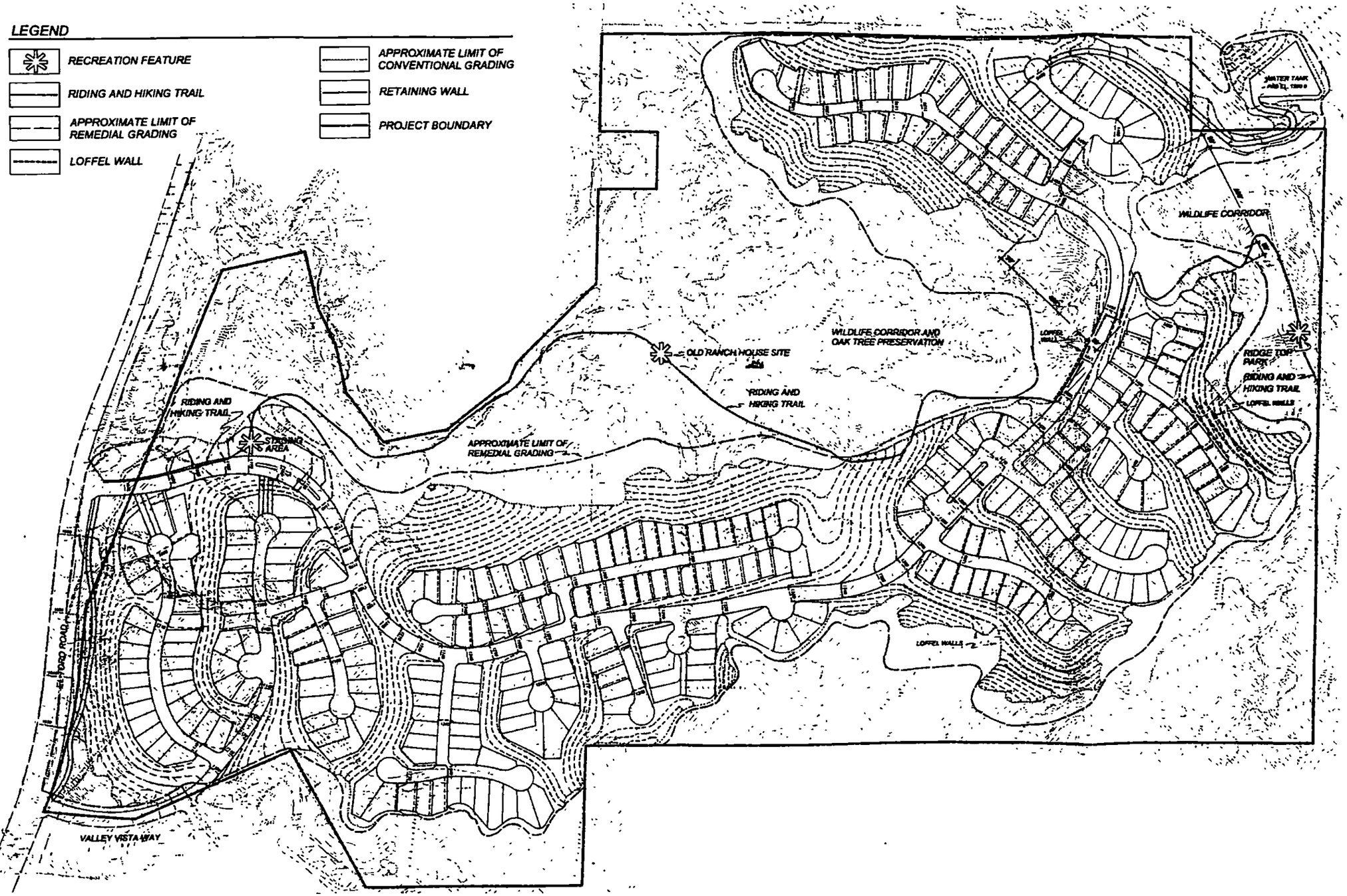
The project acreage (222.2 acres) does not include the adjacent offsite water tank site. A 1.4 million gallon water tank and associated access road is proposed offsite adjacent to the northeast corner of the project site to provide water service to the proposed project. The proposed water tank site was dedicated to the Trabuco Canyon Water District when the existing Final Tract Map was recorded (Tract No. 10692). The water tank will be approximately 30 feet tall, 100 to 110 feet in diameter, bermed, landscape, and painted a complimentary color to the surrounding setting.

Given the reduced residential density, and the substantially smaller development footprint, domestic and common area water demand would be significantly reduced by this alternative. In addition, potential urban runoff and drainage impacts are reduced under this alternative as composed to the proposed project.

Transportation/Circulation

Access to the project would be provided via a gate guarded private street off El Toro Road immediately south of the existing Aliso Creek/Trail undercrossing. An emergency only access connects with Valley Vista Way. Onsite circulation is proposed with a system of private streets consisting of a primary spine street (56-foot r.o.w.) And a series of cul-de-sacs (41-, 45-, and 52-foot r.o.w.). An encroachment easement is required from the County of Orange to accommodate the project access road where it traverses County owned property along the western most boundary of the site.

Given the reduced number of dwelling units under Alternative 4, this alternative would result in a commensurate reduction in vehicle trips as compared to the proposed project.



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: N/A

N

Alternative No. 4 - 299 Single Family Development

EXHIBIT No. 68

Air Quality

A reduction in the number of vehicle trips would have an associated reduction in air emissions, a corresponding reduction in potential air quality impacts, and a positive affect on SCAQMD goals.

Noise

Development of 299 residential lots would substantially reduce the potential noise impact to surrounding noise sensitive land uses as compared to the proposed project.

Biological Resources

Total open space under Alternative 4 would amount to approximately 72% of the site. This represents a 58% increase over the proposed project. In addition, a wildlife movement corridor has been incorporated into the project design to address the importance of regional wildlife movement linkages between regionally important open space areas such as O'Neill Regional Park, Whiting Ranch Wilderness Park and the Cleveland National Forest. Unlike the proposed project, this alternative utilizes and east/west corridor alignment similar to that shown in the Foothill/Trabuco Specific Plan. The wildlife corridor that bisects the project (called the central corridor) is a component of a three corridor concept, which together is designed primarily to accommodate small and medium size mammals and birds, but would not preclude the occasional potential movement of large mammals as well. This corridor is comprised of a minimum 400-foot wide wildlife corridor with 50 foot setbacks located on either side. The onsite wildlife corridor is proposed to utilize an at-grade crossing (400 foot) where the wildlife corridor traverses the main spine road. Due to the low level of traffic on this end of the project, the at-grade crossing is not anticipated to inhibit wildlife movement.

Aesthetics

The project has been designed to minimize impact on the existing land form. The homes have been located on the relatively level areas in a broad crescent shape flowing along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off of the eastern major ridgeline bordering the property.

The grading concept for this alternative reflects a contour grading approach which utilizes techniques emphasizing variations and takes advantage of the curvilinear street and lotting design, rather than repetitive uniformity. This allows the project a more natural and organic ambiance in keeping with the rolling hillside setting. Potential project aesthetic impacts are significantly mitigated by this alternative.

Cultural Scientific Resources

The substantially smaller area of site disturbance under this alternative would significantly reduce the potential impacts to cultural and scientific resources onsite as compared to the proposed project.

Recreation

Trail connections are provided under Alternative 4, which link the project to existing regional riding/hiking trails and bikeways. The project proposed a trail staging area, ridgetop park and significant dedicated natural open space. The proposed Trail Staging Area provides a direct link to the regional trail located on El Toro Road and the other proposed recreation features (ridgetop park and old ranch house site). Recreation impacts under this alternative would therefore be reduced in comparison to the proposed project.

Hazards

The project site is located in a designated very high fire risk area. All residential development onsite is potentially at risk in a fire event. Due to the proximity of the development to El Toro Road, as well as the secondary entry road into the site, emergency access is significantly improved by this alternative, as compared to the proposed project.

Public Services

Given the reduced residential density of this alternative, potential impacts to public services and utilities would be significantly reduced as compared to the proposed project.

Public Utilities

Given the reduced residential density of this alternative, potential impacts to public utilities would be significantly reduced as compared to the proposed project.

6.5 ALTERNATIVE 5 - CLUSTER/REDUCED DEVELOPMENT FOOTPRINT -318 SFD

This alternative proposes the construction of 178 attached condominium units located on the western half of the site and 140 single family units on 4,000 square foot lots located along the eastern ridgeline. Alternative No. 5 is summarized in Table 43.

Table 43
ALTERNATIVE NO. 5 LAND USE SUMMARY

Land Use	Area	% of Site
Single Family Residential	16.9 ac	8%
Multi Family Residential	39.0 ac	18%
Streets	11.1 ac	5%
Manufactured Slope	43.5 ac	19%
Natural Open Space	111.7 ac	50%
Total	**222.2 ac**	**100%**

Primary access would be provided from a single main road traversing the site and ending in a cul-de-sac near the northeast project boundary. Secondary site access will be provide from Valley Vista Way through Hidden Ridge near the southwest corner of the subject property. Approximately 105 acres will be directly impacted by site development with conventional grading volume estimated to be 1.5 million cu. yds. 5.0 million cu. yds. of remedial grading would be required under this alternative. Approximately 50% of the site will be retained in natural open space. Alternative 5 is shown in Exhibit 69. Total open space is approximately 60% of the site.

Financial analysis prepared for this project indicates that this alternative would operate at an annual deficit after including fees associated with the Orange County General Fund; County Road Fund; County Library District; and the Harbor, Beaches, and Parks Department.

Land Use

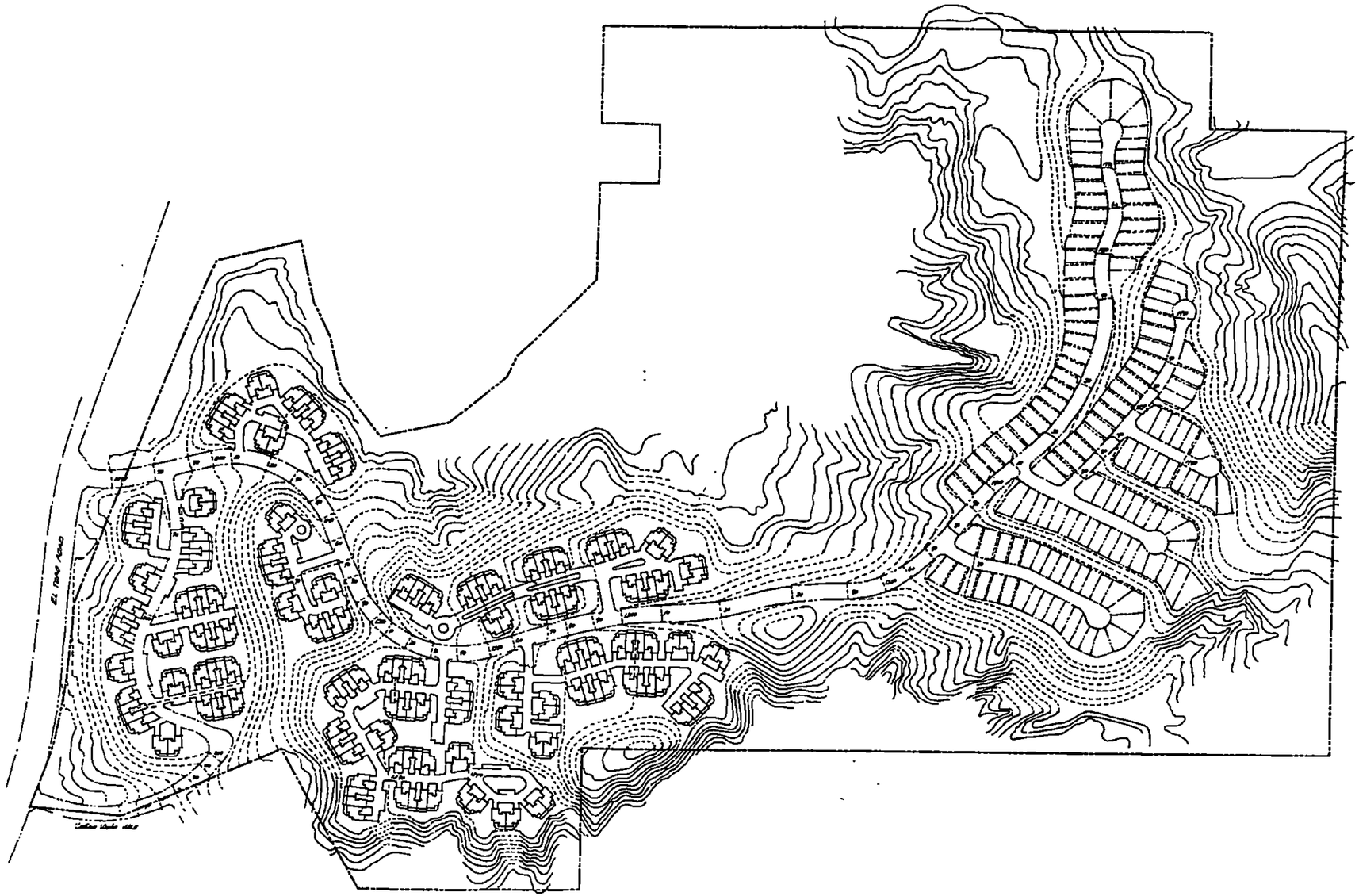
The proposed condominium units will be contained in either two- or four-plex structures which tend to create a more massive appearance than typical single family residences. Development of attached residential units would be more urban in scale and appearance; however, the much smaller development footprint associated with this alternative may be less in conflict with FTSP rural preservation goals than the proposed project. Moreover, by providing a greater variety of housing types and price ranges, this alternative better meets the housing goals of the General Plan.

Soils and Geology

The anticipated grading volumes and area of disturbance associated with this Alternative 5 are substantially less as compared to the currently proposed project (6.5 millions of cubic yards versus 11.5 millions of cubic yards). Similarly, soil, topographical and geological impacts are reduced commensurately.

Water/Hydrology

Water and hydrological impacts are anticipated to be substantially less than the proposed project,



SADDLEBACK MEADOWS - RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

County of Orange P&DS
Scale: 1"=400'
Source: N/A

N

Alternative No. 5 - Cluster/Reduced Devel. Footprint 318 MF/SF

EXHIBIT No. 69

with substantially reduced runoff volumes and urban runoff as compared to the proposed project. This reduction in urban runoff would result in fewer BMP mitigation requirements.

Transportation/Circulation

Multi-family dwelling units have a lower estimated trip generation rate than single family residences. This, combined with the significant reduction in the number of dwelling units as compared to the proposed project, is anticipated to generate substantially lower traffic volumes. In addition, the secondary access from Valley Vista Way would reduce some of the anticipated use of the primary access road and have a corresponding mitigating effect on traffic congestion at the intersection of El Toro Road and primary site access road. Overall area circulation impacts are anticipated to be substantially less than those of the proposed project.

Air Quality

Potential air quality impacts are anticipated to be significantly reduced as compared to the proposed project, based upon a lower overall trip generation rate. Reduced trip generation would result in a positive impact on SCAQMD goals.

Noise

No substantial difference in potential noise related impacts as perceived by adjacent existing noise sensitive land use would be anticipated with this alternative, as compared to the proposed project.

Biological Resources

Over 30% more open space would be provided with this alternative, resulting in a corresponding reduction in the impact on biological resources associated with site development. A 700 foot wildlife movement corridor between wilderness areas located south and west of the project site would be provided with this alternative. Conversely, no wildlife corridor is proposed under the proposed project. In addition, impacts to oak woodland would be substantially reduced under Alternative 5.

Aesthetics

Attached units create a more urban appearance to project viewsheds, and may be perceived in terms of rural preservation goals for the area as a significant adverse aesthetic impact. However, given the substantially smaller development footprint associated with Alternative 5, overall aesthetic impacts are expected to be far less obtrusive than the project currently proposed. Also, because of the greater amount of open space associated with this alternative, aesthetic impacts with regard to alteration of the site's natural topography and scenic oak woodlands are anticipated to be substantially reduced in comparison to the proposed project.

Cultural/Scientific Resources

Potential impacts to onsite cultural and scientific resources would be greatly reduced in comparison

to the proposed project.

Recreation

This alternative shifts site development and associated remedial grading further west directly adjacent to the west property line, eliminating the ability for the project to provide connections to the regional riding, hiking and biking trail system.

Hazards

Potential fire hazard and emergency response impacts would be similar to the proposed project.

Public Services

Potential impacts to public services under this alternative would be significantly reduced as compared to the recorded tract map.

Public Utilities

Potential impacts to public utilities under this alternative would be significantly reduced as compared to the recorded tract map.

6.6 SUMMARY OF ALTERNATIVE FINDINGS

Although all the project alternatives propose different development scenarios for the subject site, their potential environmental impacts can be generally characterized as being less than the proposed project in almost every instance.

Of the alternatives evaluated, the Foothill-Trabuco Alternative A (Alternative 2) is considered environmentally inferior to all other alternatives. The development of 150 single-family residences on 20,000 square foot lots, as proposed under this alternative, will significantly alter site topography, remove sensitive biological resources, and change project site viewsheds much in the same way as the currently proposed project.

Having a somewhat less significant environmental impact is the proposed Cluster/Reduced Development Footprint (Alternative 5) which proposes the development of 178 attached condominium units and 140 single family residences on approximately 105 acres. This alternative retains a much larger percentage of open space as compared to the current project and consequently, topographical, biological, and geological impacts are substantially reduced. While aesthetic impacts may be perceived by some as being more adverse due to the more urban appearance of this alternative, the much smaller development footprint will likely result in aesthetic, and other impacts of substantially less magnitude.

The environmentally superior alternative is the No Project/No Development Alternative. CEQA requires that if the No Project Alternative is environmentally superior, the next least impacting

alternative be identified.

The environmentally superior alternative (not including the No Project Alternative) in nearly all categories is the Foothill-Trabuco Specific Plan Alternative B which proposes development of 100 single family residences on only the western most 31.7 acres of the site (Alternative 3). Associated environmental impacts of site development are significantly reduced with this alternative, primarily due to the fact that the majority of the site (190.53 acres) will be retained in natural open space.

An evaluation of alternative findings is shown in Table 44.

Table 44
ALTERNATIVE FINDINGS SUMMARY

Factor	ALT 1	ALT 2	ALT 3	ALT 4	ALT 5
Attain Project Objectives	No	No	Yes	Yes	Yes
Positive Fiscal Impact	N/A	Yes	No	Yes	No
REDUCE OR ELIMINATE IMPACTS AS COMPARED TO THE PROPOSED PROJECT					
Land Use/Housing	Yes	No	Yes	Yes	No
Soils/Geology	Yes	No	Yes	Yes	Yes
Water/Hydrology	Yes	No	Yes	Yes	Yes
Transportation/Circulation	Yes	No	Yes	Yes	Yes
Air Quality	Yes	No	Yes	Yes	Yes
Noise	Yes	No	Yes	Yes	Yes
Biological Resources	Yes	Yes	Yes	Yes	Yes
Aesthetics	Yes	No	Yes	Yes	Yes
Cultural Scientific Resources	Yes	No	Yes	Yes	Yes
Recreation	Yes	No	Yes	Yes	No
Hazards	Yes	No	Yes	Yes	Yes
Public Services	Yes	Yes	Yes	Yes	No
Utilities and Service Systems	Yes	Yes	Yes	Yes	No

7.0 INVENTORY OF MITIGATION MEASURES

This section lists the Project Design Features (PDFs), Standard Conditions, and additional mitigation measures, as included in Section 4.0. The mitigation measures are numbered according to the specific impacts to which they pertain; for some impacts, there are no additional measures. Therefore, the numbering of mitigation measures and some PDFs is not always sequential.

LAND USE

Standard County Conditions and Mitigation Measures

SC 1-1 Prior to the issuance of any building permits for residential construction, the developer shall comply with Board of Supervisors Resolution 82-1368 (Buyer Notification Program) which requires the developer to prepare a map denoting the existing and proposed land uses, arterial highways, and public facilities within the surrounding area for the approval of the Manager, PDS/Current Planning Services Division. The map content, display, and distribution shall be in accordance with the Buyer Notification Program guidelines approved by the Board of Supervisors and available at the Development Processing Center.

SC 1-2 Prior to the issuance of any certificates of use and occupancy, the developer shall provide evidence to the Manager, PDS/Building Inspection Services Division, that the Department of Real Estate has been notified that the project area is within the boundaries of a Community Facilities District (CFD), and will be subject to special taxes for public facilities and/or services.

SOILS AND GEOLOGY

Project Design Features

PDF 2-1 A comprehensive remedial grading mitigation plan has been designed to stabilize the project site, in accordance with OCPDS requirements. The plan is depicted in Exhibit 19, included in Appendix D and proposes measures including shear keys, buttresses, removals/recompaction to reduce hazards associated with landslides, erosion and subsidence.

Standard County Conditions and Mitigation Measures

SC 2-2 Prior to the issuance of a grading permit, the applicant shall submit a geotechnical report to the Manager, PDS/Subdivision and Grading Services Division for approval. The report shall include the information and be in a form as required by the Grading Manual.

SC 2-3 Prior to the issuance of any grading permits, the Manager, PDS/Subdivision and Grading Services Division, shall determine if the proposed grading complies with the grading illustrated in the plans approved by the decision-maker with regard to grading concepts, slope heights, slope ratios, and pad elevations and configuration. Significant deviations shall be reviewed by the decision-maker for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised application per Orange County Zoning Code Section 7-9-139 and 7-9-150.

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, offsite grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the onsite material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

Seismic

SC 2-7 Conformance with the Uniform Building Code and Orange County codes will insure that seismic considerations are incorporated into the structural designs. All recommendations of the geotechnical report shall be incorporated and utilized in the final construction plans for the parcels in a manner meeting the approval of the Manager, PDS/Building Permit Services Division. Larger buildings, structures with extraordinary architectural configurations, or those of tilt-up construction may require seismic analysis.

SC 2-8 The seismic exposure of the site shall be considered in the design of the proposed structures in a manner meeting the approval of the Manager, Building Permit Servicies Division.

SC 2-9 Geologic inspections shall be required during site grading for each parcel to confirm the absence of major faults in the local area in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-10 Prior to the issuance of any grading permits, if review of the grading plan for this property by the Manager, PDS/Subdivision and Grading Services Division, indicates significant deviation from the proposed grading illustrated on the approved tentative tract map, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative tract map; or, if a final tract/parcel map has been recorded, a new tentative tract/parcel map or a site development permit application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required.

SC 2-11 Prior to the issuance of any grading permit, if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage. The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to recordation of the tract/parcel map or prior to the issuance of any grading permit, whichever comes first.

SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-13 Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading

Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-14 Prior to the issuance of any grading or building permits, whichever comes first, the applicant shall provide, in accordance with criteria supply by EMA, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Monitoring Programs Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

Grading

AM 2-15 Multiple cuts and fills (2.6 million cubic yards) to achieve planned elevations and profiles, and associated access roadways shall be required.

AM 2-16 Remedial grading (8.9 million cubic yards) to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills shall be required. Back cut failure guidelines shall be provided to the Grading Services Division prior to issuance of grading permits.

AM 2-17 Removal (clean out) of all or major portions of the graben materials and softer alluvium and colluvium under most of the variable thickness fills shall be required.

AM 2-18 Installation of appropriate subdrain systems within natural drainage courses and within stability fills prior to fill placement shall be required.

AM 2-19 Adequate foundation and slab subgrade conditioning for the proposed development, including overexcavation, capping and measures related to expansive soils shall be required.

AM 2-20 Achieving suitable surface gradients to preclude ponding anywhere onsite and to control water run-off via paved/closed drainage devices shall be required.

Compaction

AM 2-21 Wherever structural fills are to be placed, the upper 6 to 8 inches of the exposed

subgrade (after stripping and/or overexcavation/clean-out) shall first be scarified and reworked. In general, the dry density of the in-situ (native) material shall be at least 85 percent of maximum. In the event that lower densities are determined by field testing to exist, the depth of overexcavation will be determined onsite, given due consideration to the geology of the exposed material, as well as its relative location. It is at present expected that typical depths of overexcavation will be on the order of 4 to 5 feet.

AM 2-22 Fill shall be placed in lifts of 6 to 8 inches (loose) in thickness. Rocks exceeding 4 inches in maximum dimension are best not incorporated within the upper fill zone (say 3 feet) where foundations and most utility systems are expected to be housed.

AM 2-23 In all fill areas where active gradients are steeper than 5:1 (horizontal:vertical), those surfaces shall be prepared to receive fill by excavating standard keyways and benches in a stair-step configuration.

AM 2-24 Any loosening of reworked or in-place (native material, consequent to weathering and/or passage of construction traffic, shall be made competent.

AM 2-25 Temporary fills, typically associated with access ramps built to accommodate grading equipment shall be subject to removal when their use is discontinued.

AM 2-26 The depths of excavation shall be subject to onsite monitoring by the Soil Engineer, normally during the actual removal operations. Any surface or subsurface obstructions, or questionable material encountered during grading, shall be brought immediately to the attention of the Soil Engineer, for his determination as to proper exposure, removal and/or processing as directed.

Material Selection

AM 2-27 After the site has been stripped of any debris, vegetation and organic soils, such exposed onsite shall be considered satisfactory for reuse in the construction of onsite fills, provided the organic content does not exceed 3% by volume. It is recommended that highly expansive soils not be placed within the upper 4 to 5 feet thick zone underlying final pad and street grades. More importantly, no such soil is to be placed (as backfill)within a horizontal distance equal to the wall height immediately behind retaining walls.

AM 2-28 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal offsite.

AM 2-29 All borrow sites shall be approved by the Soil Engineer/Geologist prior to onsite delivery. This will permit the timely allocation of such available materials for use on the project site.

Compaction Requirements

AM 2-30 Reworking/compaction shall include water addition or drying-out as needed, to bring the soils close to their optimum moisture content. All such reworked soils, placed as structural fills, shall be densified to achieve at least 90 percent relative compaction with reference to the laboratory compaction standard. The optimum moisture content and maximum dry density, for each identified soil type, will be determined in the laboratory in accordance with ASTM Test Designation D1557.

Shrinkage/Subsidence

AM 2-31 For preliminary earthwork computations, an approximate (overall) shrinkage factor of 12 percent shall be required, for the existing site soils. The above value does not include allowance for stripping nor handling losses.

AM 2-32 Subsidence shall be assumed as 3/4 to 1-1/2 inches for grading design purposes.

Excavating Conditions

AM 2-33 Excavation of onsite soils shall be accomplished with standard heavy duty earthmoving or trenching equipment. Some hard cemented sandstone beds were encountered during the field exploration on portions of the site and some minor, isolated blasting may be required to remove these hard materials.

AM 2-34 Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water (seepage) is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher site elevations as well as in cuts made late in the year. All nuisance water shall be accommodated in accordance with County requirements.

Expansion Potential

AM 2-35 Onsite materials are considered to be moderately expansive, generally. Soils of high and low expansivity are expected to comprise less than 25% of the overall pad areas. The expansivity of the actual soils placed within structural areas shall be verified during grading, prior to construction.

Utility Trenching

AM 2-36 The typical walls of temporary construction trenches shall stand nearly vertical, with only minor sloughing, provided the total depth does not exceed 4 to 5 feet. Shoring of excavation walls and/of flattening of side slopes may be required, if greater depths are necessary.

AM 2-37 Trenches shall be located so as not to impair the bearing capacity nor settlement under planned foundations. As a guide, trenches shall be aligned perpendicular to foundations, and the Structural Engineer so informed to modify the foundation at the crossing, as needed. All other trenches shall observe a lateral off-set equal to their total depth

AM 2-38 Existing soils shall be utilized for trench backfill, provided they are essentially free of organic materials and oversized materials (rock, gravel, etc., in excess of 1-inch maximum size, unless within an approved soil matrix). Alternately, select granular materials (sand equivalent of 30 or greater) may be imported as backfill. Compaction should be accomplished entirely by mechanical means, subject to onsite assessment during pipeline installation

Surface Drainage

AM 2-39 Positive surface gradients shall be provided away from slope tops per approved grading plans and adjacent to the future buildings, so as to direct surface water run-off away from structural areas and toward suitable discharge facilities.

Sulphate Content

AM 2-40 The soils sulphate content shall be ascertained during the concluding stages of rough grading, and the type of cement to be used determined at that time.

Grading Control

AM 2-41 All grading and earthwork shall be subject to on-going testing and observation by the applicants geotechnical consultant, including engineers, engineering geologists and/or technicians.

Slabs-on-Grade

AM 2-42 Concrete slabs shall be founded on approved (reworked) in-place soils and/or on properly compacted fill. The subgrade shall be proof-rolled just prior to construction to provide a firm, unyielding surface, especially if the surface has been disturbed by the passage of time and/or exposure to construction traffic.

AM 2-43 Floor slabs shall be at least 4 inches thick. The Finished Floor Level should be at least 6 inches above highest adjacent exterior grade. Joints shall be provided.

AM 2-44 If flooring that would be affected by moisture is to be used, the slab shall be underlain by 2 inches of sand, with a 10-mil plastic sheet between the sand and the subgrade.

AM 2-45 Precautions in respect of expansive soils shall be taken.

Foundations

AM 2-46 The proposed structures shall be supported on conventional spread footings, supported into approved compacted fill and/or reworked native material.

Long Term Settlements

AM 2-47 The grading concept, as presently proposed, includes several areas where deep fill will result, exceeding 50 feet in depth. These soil masses may experience significant settlements, with time, of 4 to 6 inches or more. Such downward movements can be tolerated by most improvements, provided these occur at a reasonably uniform rate and rather evenly over a well distributed area. However, the degrees and rates of settlement shall be analyzed during the final design phase.

Phasing of Earthwork

AM 2-48 Unstable Ground
Initial stability evaluations have determined that several natural slopes subject to grading are inherently unstable. Removals, therefore, shall be planned and carried out with care in order to minimize deep-seated, in-construction failures. Typically, about 10 percent of back cuts for buttresses will fail during grading. Allowances for schedule and budget contingencies should be made.

AM 2-49 Required Clean-Out Work
Prior to improving the gross stability of hillsides, clean-out work will be necessary along their lowest (toe) elevations. Whereas such selective removals are essential prior to placement of additional fill, this process can trigger undesired slippage. Therefore, selective unloading of the slide mass shall be required before stabilization can effectively begin.

AM 2-50 Slide Unloading
Where existing slope faces are marginally safe in their present condition, the higher portions of each such slide shall require removals toward the top, prior to clean-out, and subsequent loading at the toe.

WATER/HYDROLOGY

Project Design Features

PDF 3-1 A master drainage concept has been incorporated into the project design to mitigate hydrology impacts to existing OCPDS requirements and standards. The master drainage concept, shown in Exhibit 22, and contained in its entirety in Appendix L of this EIR, proposes a series of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to control project drainage.

Standard County Conditions and Mitigation Measures

SC 3-2 Prior to the issuance of any grading permits the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. Prepare a drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

b. Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

SC 3-3 Prior to the issuance of any grading permits the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. Design and convey construction funds for surface drainage improvements; and

b. Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

c. Dedicate the associated easements to the County of Orange, if determined necessary.

SC 3-4 Prior to the issuance of any certificates of use and occupancy, said improvements shall be constructed in a manner meeting the approval of the Manager, PF&R/Construction Division.

SC 3-5 Prior to the issuance of any grading permit, and if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the upstream and/or downstream property owners permitting drainage diversions and/or unnatural concentrations.

SC 3-6 Prior to issuance of any building permits, the applicant shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division, including payment of fees and the construction of the necessary facilities.

SC 3-7 Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering design and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

Water Quality

SC 3-8 Prior to issuance of building permits, or grading permits, whichever come first, permit

applicant shall submit for approval of the Manager, PDS/Subdivision and Grading Services Division, a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used onsite to control predictable pollutant runoff. This WQMP shall identify at a minimum the routine structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of the BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association, lessee, etc.); and, shall reference the location(s) of structural BMPs.

SC 3-9 Prior to the issuance of precise grading permits or building permits, whichever comes first, the applicant shall submit and obtain approval from the Manager, PDS/Subdivision and Grading Services Division, of a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on-site to control predictable pollutant runoff. This WQMP shall identify, at a minimum, the routine, structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association shall reference the location(s) of structural BMPs.

Flood Plain Elevation

SC 3-10 Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

Easements

SC 3-11 Prior to the issuance of any certificates of use and occupancy, the applicant shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, PDS/Subdivision and Grading Services Division, for review and approval. Further, a copy of the approved easement shall be furnished to the Manager, Building Inspection Services, prior to the issuance of any certificate of use and occupancy.

TRANSPORTATION/CIRCULATION

Project Design Features

Primary project access will be off of El Toro Road with an emergency access at Valley Vista Way.

PDF 4-1 The onsite circulation system is proposed as shown in Exhibit 45 to accommodate project related traffic generation, including design of the entry street as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median. The entry's cross-section shall be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. Secondary emergency only access will be provided via a gated connection to existing Valley Vista Way. Minimum fire access roadway width of 28 feet shall be required.

PDF 4-2 The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane. The applicant shall provide a cash deposit for the design and construction of the traffic signal.

PDF 4-3 All weather access to the proposed water tank shall be provided by the applicant. This access shall be designed with a minimum 28 foot width and a maximum grade of 10%.

Standard County Conditions and Mitigation Measures

SC 4-4 Prior to the issuance of any building permits, the applicant shall participate in design, construction, and/or financing of the cost of a traffic signal in the project vicinity in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-5 Prior to the issuance of building permits, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, PF&R/Programs Division.

a. Foothill Circulation Phasing Program

b. Prior to recordation of a final tract map, the subdivider shall enter into an agreement with the County of Orange for participation in a fee program for participation in a fee program (if adopted by the Board of Supervisors) for implementation of the Foothill/Eastern Transportation Corridor. Said agreement shall provide that:

1. The fee shall be $158.00 per trip end times the County standard trip end generation rate for the type of development proposed, times the number of units (footage) proposed, or the fee payable under the program, whichever is less.

2. Subdivider's obligation to pay fees would arise only after the County establishes the fee program, prior to issuance of building permits.

3. Subdivider's obligation to pay the fee would be extinguished if the fee program were not established within three (3) years of the date of issuance of the first building permit for subject development.

4. Subdivider shall furnish surety bond, letter of credit, money or such other security approved by the Director, PF&RD, to assure payment of the fees related to subject development.

5. This condition shall be void if a trial court of competent jurisdiction, in a final judgement, or an appellate court, if the matter is appealed, sets aside a condition imposed by the County which was substantially the same as said condition.

c. El Toro Road

d. Santiago Canyon Road

SC 4-6 Building permit issuance shall be phased in accordance with the Foothill Circulation Phasing Plan (FCPP) Development Phasing Plan, and shall also be subject to any other Board of Supervisors approved growth management phasing plan pertaining to the timely provision of public services and facilities.

SC 4-7 Building permit issuance shall be phased in accordance with any Board of Supervisors approved Growth Management Phasing Plan pertaining to the timely provision of public services and facilities.

SC 4-8 Prior to the issuance of any grading permits, adequate sight distance shall be provided at all street intersections per Standard Plan 1117, in a manner meeting the approval of the Manager, PF&R/Programs Division. This includes any necessary revisions to the plan such as removing slopes or other encroachments from the limited use area.

SC 4-9 Prior to the issuance of any certificates of use and occupancy, the developer shall construct the approved internal circulation improvements in a manner meeting the approval of the Manager, PF&R/Construction Division. Further, a copy of the approved plans shall be furnished to the Manager, Building Inspection Services, prior to the issuance of any certificates of use and occupancy.

SC 4-10 When monuments exist which control the location of subdivisions, streets or highways, or provide survey control, the monuments shall be located and referenced prior to any street construction or relocation, and shall be reset after construction as required by Section 8771 of the Business and Professions Code, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-11 Prior to issuance of a building permit, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road

from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manger, Traffic Engineering. In addition, the applicant shall participate in the Santiago Canyon Road Safety Improvement Program.

SC 4-12 Prior to issuance of a building permit, the applicant shall design and construct roadway improvements for El Toro Road including a deceleration lane and a left turn pocket into the project entrance based on a 60 mph minimum design speed in a manner meeting the approval of the Manager, PF&R/Programs Division.

SC 4-13 Prior to issuance of a building permit, the applicant shall provide a cash deposit for the difference in cost of designing and constructing the roadway improvements proposed with the project as compared to the costs associated with the ultimate configuration of El Toro Road, as determined by PDS/Environmental & Project Planning ServicesDivision, all in a manner meeting the approval of the Manager, PF&R/Programs Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, Transportation Planning.

AM 4-15 El Toro Road lane improvements needed at the Project Entrance to serve Year 2000 and 2020 conditions shall be completed in conjunction with development.

AM 4-16 Traffic signing/striping shall be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking shall be analyzed for the project site in conjunction with approval of the site plan.

AM 4-17 The project shall participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program.

Both existing traffic patterns and SCTM traffic projections for Years 2000 and 2020 indicate the attraction of Glenn Ranch Road, Portola Parkway, and the Foothill Transportation Corridor (SR-241) for increased traffic volumes in the project study area. North of the Foothill Transportation Corridor, El Toro Road can accommodate projected traffic volumes with the proposed project on four travel lanes divided by a raised or striped median.

AIR QUALITY

Project Design Features

No air quality PDF's have been proposed.

Standard Conditions and Mitigation Measures

SC 5-1 Grading and excavation shall be halted during periods of high winds meeting the approval of the Manager, EA, Subdivision and Grading Services Division. According to AQP Measure F-4, high winds are defined as 25 mph or greater. This level occurs only under unusually extreme conditions, such as Santa Ana wind conditions. Notations in the above format, included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

SC 5-2 Prior to issuance of grading permits, the project applicant shall demonstrate measures to ensure compliance with SCAQMD Rule 403, and shall identify the dust suppression measures, such as regular watering, which shall be implemented to reduce emissions during construction and grading in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. This will help reduce the short-term impacts from particles which could result in nuisances that are prohibited by Rule 403.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations:

AM 5-3 As previously noted, no credit was taken for mobile source emissions reductions either from technology improvements (reformulated gasoline, alternative fuels and/or electric cars), nor from transportation behavior modification in response to programs such as South Coast AQMD Reg. XV or by the trip reduction programs. These programs will mitigate the identified significant growth-related cumulative air quality impact to some extent. Because the projected effectiveness of such programs and because the time frame for technology development is uncertain, the degree of possible mitigation can not be quantified with certainty. Similarly, the buildout date for Saddleback Meadows will depend on economic forces that can not be predicted. The following discussion structures the recommended mitigation as comprehensively as possible, but quantification of mitigation effectiveness is speculative at currently known levels of detail.

AM 5-4 Contractors will comply with SCAQMD Rule 403.

AM 5-5 Contractors will utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and will wash or sweep the construction access points at El Toro Road on a routine basis on a frequency specified by the County of Orange as well as whenever dirt is visible more than 50 feet from the access point independent of the routine clean-up schedule.

AM 5-6 Trucks hauling dirt on public roads to and from the site will be covered or will

maintain a six inch differential between the maximum height of any hauled material and the top of the haul trailer. Haul truck drivers will water the load prior to leaving the site to prevent soil loss during transport.

AM 5-7 Construction management procedures required by the County of Orange and other jurisdictions shall be implemented. Contractor personnel responsible for supervision and the appropriate actions to be taken for the following measures shall be identified:

- Cessation of activities during a Stage-2 smog episode. Call 1-800-242-4022 for the daily forecast.
- Truck routes and schedules for receipt of materials shall be coordinated with County of Orange staff.
- Where feasible, on-road vehicles and off-road equipment shall be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes.

AM 5-8 Graded surfaces used for off-road parking, materials lay-down or awaiting future construction shall be stabilized for dust control as needed. Frequently accessed unpaved areas shall be paved as early as possible to minimize dirt trackout to public rights of way.

AM 5-9 Equipment will be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and use low-sulfur fuel as required by SCAQMD regulation.

Flag persons and appropriate traffic control devices will be used as needed to minimize construction activity interference with off-site traffic.

AM 5-11 Implementation of the above measures is expected to maintain construction activity air quality impacts at less than significant levels.

Operational Activities:

- Traffic flow at the project access will be maintained at acceptable levels of service through mitigation measures identified in the project traffic study.
- 220v electric power for future use to charge electric-powered vehicles will be made available in homeowner garages.

AM 5-12 Emissions calculations and the corresponding ambient air quality impact assessment for project-related construction and Saddleback Meadows operations presumed compliance with SCAQMD rules regarding dust control. The potential for additional

emissions reduction beyond the mandatory requirements of existing rules and regulations was evaluated based on Appendix 11 of the SCAQMD Air Quality Handbook which quantifies reduction potential of a variety of project construction and operation emissions control measures.

Dust emissions can be controlled from their 50 percent control assumed for Rule 403 compliance by an additional 50-80 percent of the uncontrolled fraction. The net effective dust control level is therefore 75-90 percent.

Unless the entire project site is under simultaneous massive grading, attaining the optimum level of dust control will maintain dust impacts at less than significant levels.

Operational emissions reduction from mobile sources of 5 percent of their non-TCM implementation level can not reduce the substantial emission level to less than the SCAQMD advisory level significance thresholds. A number of secondary considerations were identified, however, that would either allow for a finding of an individually less than significant air quality impact.

NOISE

Project Design Features

No PDF mitigation measures are proposed.

Standard County Conditions and Mitigation Measures

SC 6-1 All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dBA CNEL all habitable rooms and a source specific exterior standard of 65 DBA CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

a. Prior to the issuance of grading permits, as determined by the Manager, PDS/ Building Permit Services Division, the applicant shall submit an acoustical analysis report to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report, in which case it may also satisfy "B" below.

b. Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior

noise standards to the Manager, PDS/Building Permits Services Division, for approval along with satisfactory evidenced which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

c. Prior to the issuance of any building permits, the applicant shall show all freestanding acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-2 Prior to the issuance of grading permits, as determined by the Manager, PDS/Building Permits Services Division, an acoustical analysis report shall be submitted to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report in which case it may also satisfy SC 6-3 below.

SC 6-3 Prior to the issuance of any building permits for residential construction, an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards shall be submitted for review and approval to the Manager, PDS/Building Permits Services Division, along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

SC 6-4 Prior to the issuance of any building permits, all freestanding acoustical barriers must be shown on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-5 Prior to the issuance of any certificates of use and occupancy, the developer shall produce evidence acceptable to the Manager, PDS/Building Inspection Services Division, that information stating this property is subject to the overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station) has been provided to the Department of Real Estate of the State of California for inclusion into the Final Subdivision Public Report.

SC 6-6 Prior to the issuance of any certificates of use and occupancy, the applicant shall post aircraft noise impact notification signs in all sales offices associated with new residential development located within an aircraft 63 dB CNEL contour. The number and location of said signs shall be as approved by the Manager, PDS/Building Permits Services Division.

SC 6-7 Prior to the issuance of any building permit, an aviation easement over this property shall be offered for dedication to the County of Orange in a manner meeting the

approval of the Manager, PDS/Building Permits Services Division.

SC 6-8 Prior to the sale, lease or rental of any structure or portion thereof, the applicant/owner shall provide to each prospective purchaser, lessee, or tenant a notice and statement of acknowledgment that the property is subject to overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station). The form and method of distribution of said notice and statement of acknowledgment shall be as approved by the Manager, PDS/Building Permits Services Division.

A. Prior to the issuance of any grading permits, the proponent shall produce evidence acceptable to the Manager, Building Permit, that:

(1) all construction vehicles or equipment, fixed or mobile, operated within 1000 feet of a dwelling shall be equipped with properly operating and maintained mufflers.
(2) All operations shall comply with Orange County "Codified Ordinance Division 6 (Noise Control); and
(3) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this requirement.

SC 6-9 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that excavation, grading and other construction-related activities shall be restricted to daytime hours as promulgated in the County's Codified Ordinance Division 6 (Noise Control).

SC 6-10 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that all construction equipment, stationary or mobile, shall be equipped with properly operating and maintained mufflers.

SC 6-11 Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division, that:

a) All construction vehicles or equipment, fixed or mobile, operated within 1,000-feet of a dwelling shall be equipped with properly operating and maintained mufflers.

b) All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

c) Stockpiling and/or vehicle staging areas shall be located as far as practicable

from dwellings.

Notations in the above format, appropriately identified and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

BIOLOGICAL RESOURCES

Project Resign Features

No PDFs proposed.

Standard County Conditions and Mitigation Measures

SC 7-1 Pursuant to Section 711.4 of the Fish and Game Code, the applicant shall comply with the requirements of AB 3158, prior to the filing of the Notice of Determination for the project, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services Division.

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement.

SC 7-3 Prior to the issuance of any grading permits, the applicant shall obtain the necessary individual or nationwide permit (pursuant to Section 404 of the Federal Clean Water Act) covering all affected wetland areas from the U.S. Army Corps of Engineers, Los Angeles District All wetland areas shall be subject to the specifications of the 404 permit as determined by the Corps of Engineers. A copy of the 404 permit shall be submitted with the first grading permit application for the proposed project to the Manager, PDS/Subdivision and Grading Services Division.

SC 7-4 Prior to the issuance of a grading permit, as required by participation in the Natural Community Conservation Planning/Coastal Sage Scrub (NCCP) agreement signed by the County on May 1, 1992, the project applicant shall provide an accounting summary, in acres or portions thereof, of coastal sage scrub scheduled to be impacted by removal through grading in a manner meeting the approval of the Administrator, Planning & Zoning. (See Section 4.7.3.)

SC 7-5 Prior to the issuance of a grading permit, the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the U.S. Fish and Wildlife Service, in a manner meeting the approval of the Administrator, Planning & Zoning and Manager, PDS/Grading Services

Division, in consultation with the Administrator, Planning & Zoning.

SC 7-6 Notwithstanding the tentative map, no grading shall occur within the Natural Community Conservation Plan (NCCP) enrolled area except as in a manner meeting the approval of the Administrator, Planning and Zoning.

SC 7-7 Prior to the issuance of any grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. This evidence shall be submitted to the Manager, PDS/Subdivision and Grading Services Division, for review and approval, in consultation with the Administrator, Planning and Zoning.

SC 7-8 Prior to the issuance of grading permits the applicant shall submit a landscape and tree preservation plan to the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval in accordance with the following guidelines:

A. To the maximum extent feasible, all existing native and exotic trees and other significant vegetation shall be preserved in conjunction with any development activity.

B. A tree preservation plan shall be prepared by a landscape architect for all development projects which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and one-half feet above ground level) and shrubs having a trunk or branch diameter of 3 inches or greater. The plan shall show which plants are proposed for removal and where transplanted and/or replacement plants will be located. Tree preservation plans shall be approved prior to issuance of grading permits, or where grading permits are not required, prior to issuance of building permits.

C. Trees removed in accordance with an approved tree preservation plan shall be replaced by a combination of transplanting to another location on the subject property and/or replacement by a combination of 1 and 15-gallon plants at a minimum ratio of 5:1. The following sliding scale shall also be used for trees to determine if more than the minimum number of replacement trees are required.

Tree Replacement Scale

Trunk Diameter (inches) of Tree Removed At 4½ Feet Above Ground Level	Total Number of Replacement
5 to 11	5 (1-15 gal / 4-1 gal)
12 to 17	7 (1-15 gal / 6-1 gal)
18 to 23	10 (2-15 gal / 8-1 gal)
24 to 35	12 (2-15 gal / 10-1 gal

Any oak exceeding 35 inches in diameter should be preserved, transplanted or replaced in accordance with the provisions outlined in Section E of the mitigation measure. In the event that all required replacement trees will not fit on the property, increase in container size will be considered in conjunction with reductions in replacement quality.

D. Significant shrubs removed in accordance with an approved tree preservation plan should be replaced by a combination of transplanting to another location on the subject property and/or replacement by 5-gallon plants at a minimum ration of 3:1.

E. All other plants not specified in Guidelines C and D above that are removed in accordance with an approved tree preservation plan should be either transplanted to another location on the subject property or replaced by 15-gallon plants for trees and 5-gallon plants for shrubs at a minimum ration of 1:1. The two 35" + oak trees impacted by project implementation, will be mitigated by an enhanced replacement ratio (5-15 gal/10-1 gal) to the satisfaction of the Manager, PF&R/Harbors Beaches and Parks Division.

F. All transplanting of trees shall be performed by an experienced nursery or other landscape contractor, who shall care for the trees for at least six months after transplanting.

G. Prior to issuance of final certificates of use and occupancy, all transplanted or replacement trees and shrubs shall be installed in accordance with the tree preservation plan.

H. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

I. Natural drainage courses and natural grades in proximity of, and providing seasonal irrigation to oak trees shall not be altered.

J. Grading, placement of fill, storage of building materials and heavy equipment,

structural development, and hardscape (e.g., roads, sidewalks, patio slabs and pool decks) shall be prohibited within the drip line (outer edge of branches) of any tree. During grading and construction operations, all trees shall be temporarily fenced off with chain link fencing to protect such areas.

K. Use of pre-emergent weed killers shall be prohibited within 10 feet of the drip line of any individual tree and within any natural drainage course which seasonally irrigates trees.

L. Use of soil sterilizers shall be prohibited because they kill everything in the soil.

SC 7-9 Specify areas/lots to be dedicated or irrevocably offered to the County in fee or easement for landscape maintenance purposes, scenic or resource preservation purposes or resource replacement shall be landscaped, equipped for irrigation, and improved in accordance with an approved plan as stated below:

a) Preliminary Plan -An agreement shall be entered into and financial security posed guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, with a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFR/Harbors Beaches and Parks Division. Said plan shall take into account the previously approved landscape plan for AP 95-7, the EMA Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

b) Detailed Plan - Prior to the issuance of any building permit(s), a detailed landscape plan shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFR/Harbors Beaches and Parks Division. Detailed plans shall show the detailed irrigation and landscaping design.

c) Installation Certification - Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, said improvements shall be installed and shall be certified by a licensed landscape architect or licensed landscape contractor, as required, as having been installed in accordance with the approved detailed plans. Said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable, shall be furnished in writing to the Manager, PFR/Construction Division, and the Manager, PDS/Building Inspection Services Division, prior

to the issuance of any certificates of use and occupancy.

SC 7-10 Prior to the issuance of precise grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan. The plan shall be certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan (if any), EMA Standard Plans, area plan 95-7, scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures) and Board Resolution 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed by the future homeowners association and be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division.

SC 7-11 Prior to the issuance of grading permits, the applicant shall provide additional evidence that the onsite coastal sage scrub habitat is not occupied by California gnatcatchers, in accordance with current USFWS protocol (7 in season/9 out of season pass surveys) to the satisfaction of the USFWS and the Administrator, Planning and Zoning. Should occupied coastal sage scrub habitat be identified onsite by the surveys consultation shall be initiated with the USFWS, and a coastal sage scrub/gnatcatcher mitigation plan shall be developed to the satisfaction of the USFWS and the Administrator, Planning and Zoning prior to the issuance of grading permits.

SC 7-12 Prior to the issuance of grading permits, the applicant shall provide appropriate measures to mitigate the project related impacts to onsite wildlife movement, to the satisfactin of the USFWS, CDFG and the Administrator, Planning and Zoning. Mitigation shall consider onsite as well as offsite mitigation options, and established fee programs.

SC 7-13 Prior to the issuance of grading permits, the applicant shall provide assurances to the satisfactin of the County NCCP coordinator and the Administrator, Planning and Zoning, that the proposed project will participate in the NCCP planning process and not preclude the finalization of the Southern Subregional reserve component of the NCCP.

SC 7-14 Prior to the issuance of grading permits, the applicant shall prepare a relocation and establishment mitigation plan, designed to mitigate impacts to Riverside fairy shrimp/pond habitat, wetlands, and southern sycamore woodland, to the satisfaction of the Administrator, Planning and Zoning, in consultation with USFWS and CDFG. Mitigation shall consider onsite as well as offsite mitigation options, as well as, established fee programs.

Additional Mitigation Recommendations

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner acceptable to the Manager, Environmental and Project Planning Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division.

AM 7-15 The following recommendations are proposed to further minimize some of the proposed impacts.

- Where possible, bulbs of individual Catalina Mariposa Lily and Intermediate Mariposa Lily that are to be impacted shall be dug up and transplanted to a suitable habitat with similar soil, slope exposure, etc.

- Lighting within development projects adjacent to conserved habitat should be selectively placed, shielded, and directed away from that habitat. In addition, lighting from homes abutting conserved habitat should be screened with vegetation, and large spotlight-type lighting that may affect conserved habitat should be prohibited. These lighting restrictions should be incorporated into the project's CC&Rs.

AESTHETICS

Project Design Features

PDF 8-1 All public utilities shall be situated underground.

PDF 8-2 Where feasible, drainage devices (terrace drains, benches, and intervening terraces) shall be bermed and placed in swales.

PDF 8-3 Concrete drainage swales and other similar drainage infrastructure shall be tinted with an appropriate earth tone to effectively conceal them from surrounding view.

PDF 8-4 The water tank shall be bermed, landscaped and painted to blend with the surrounding environment.

Standard County Conditions and Mitigation Measures

SC 8-5 Prior to the issuance of any building permits, an agreement shall be entered into and financial security posted guaranteeing landscape improvements and the maintenance thereof based upon a detailed landscape plan showing landscape design and irrigation with a cost estimate for the landscape improvements approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches

& Parks Division. Said plan shall take into account previously approved landscape plan(s), PF&RD Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, water conservation measures contained in Board Resolutions 90-487 (Water Conservation Measures), and 90-1341 (Water Conservation Implementation Plan).

SC 8-6 Prior to the issuance of preliminary grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan(s), PF&RD Standard Plans, area plan 95-7 scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolutions 90-487 (Water Conservation Measures) and 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed and approved by Manager, PDS/Building Permits Services Division, Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, and Manager, PDS/ Environmental and Projects Planning Services Division.

SC 8-7 Prior to the issuance of certificates of use and occupancy and release of financial security, applicant shall install the approved landscaping and irrigation system and shall have a licensed landscape architect or licensed landscape contractor, as applicable, certify that it was installed in accordance with the certified plan. Said certification, including an irrigation management report for each landscape irrigation system, and any other implementation report determined applicable, shall be furnished in writing to the Manager, Building Inspection Services, prior to the issuance of any certificates of use and occupancy.

SC 8-8 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations:

AM 8-9 Prior to issuance of any grading permit, the project proponent shall provide evidence to the Manager, PDS/Subdivision and Grading Services Division indicating that

graded areas will be compatible with natural landform characteristics to the greatest extent possible. Criteria to achieve the desired effect shall include:

a) Recontouring the existing landforms to provide a smooth and gradual transition between graded slopes and existing grade while preserving the basic topographic character of the site.

b) Variation and combination of slopes 2:1, 3:1 and 4:1 to create a more natural character wherever possible within the graded areas.

c) Attempting to balance cut and fill within the overall project area to eliminate offsite and import/export related grading operations.

d) Obscuring slope drainage structures with a variety of plant materials.

e) Preservation of visual opportunities from hillsides by providing for panoramic views from selected locations (e.g., view corridors, sensitive landscape placement).

AM 8-10 Manufactured slopes shall be replanted with vegetation native to the site to blend the new topography with existing natural on site vegetation, immediately following precise grading operations.

AM 8-11 Fuel modification areas shall be planted with fire resistant vegetation.

AM 8-12 Use of the California Sycamore or other species similar to trees currently existing onsite shall be used in appropriate common area and street landscape locations where feasible.

AM 8-13 Common area landscaping and habitat transition zones shall utilize the FTSP recommended plant palette (Appendix H) when selecting plant material.

AM 8-14 Slope landscaping shall occur as soon as feasible after grading and be maintained by the applicant until a homeowners association has been organized and assumes long term maintenance responsibility.

Light and Glare

AM 8-15 Prior to issuance of any certificate of use and/or occupancy, the potentially adverse impact of night lighting on surrounding land use shall be mitigated to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division by the following measures:

a) Street lights shall only be installed at intersections and as required to insure

public safety.

b) Low intensity halogen street lamps shall be used.

c) Street lights shall be shielded to direct the light beam downward and to avoid direct glare into open space areas and adjacent property.

CULTURAL/SCIENTIFIC RESOURCES

Standard County Conditions and Mitigation Measures

Archaeology

SC 9-1 Prior to the issuance of any grading permit, a County-certified archaeologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified archaeologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records search and the field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division. Mitigation measures may be required depending upon the recommendations of this report. This mitigation measure has been completed as part of the Draft EIR.

SC 9-2 Prior to issuance of any grading permit, a county-certified archaeologist shall be retained by the applicant to perform a subsurface test level investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PF&R/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

SC 9-3 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained to conduct pregrade salvage excavation of the archaeological resources in the permit area. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. A final report of the salvage operation shall submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, prior to any grading.

SC 9-4 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained, shall be present at the pregrading conference, shall establish procedures for archaeological resource surveillance, and

shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeological observer shall determine appropriate actions, in cooperation with the project developer, for exploration and/or salvage. The archaeologist shall submit a follow-up report to the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, an analysis of any artifacts found and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, PF&R/Harbors Beaches and Parks Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations in a manner acceptable to the Manager, PF&R/Harbors Beaches and Parks Division Facilities.

AM 9-5 Prior to site grading the project site shall be examined by a qualified archeologist, all potential archeological sites identified, and surface collection and documentation of artifacts be conducted.

AM 9-6 As indicated by the project archeologist, sites warranting further study shall be disced to ascertain the extent and significance of the deposit. If the project archeologist determines that a site is potentially of cultural worth, then additional excavation in a manner determined by the project archeologist shall occur prior to further grading or construction activities at these locations.

AM 9-7 During initial grading, the project site shall be monitored by a qualified archeologist who shall have the authority to order a temporary cessation of grading activities and take appropriate action to preserve any culturally significant materials if uncovered.

AM 9-8 If human remains of Native American origin are encountered during the project the County Coroner's Office and the Native American Heritage Commission shall be contacted for preservation and protection of the remains.

Paleontology

SC 9-9 Prior to the issuance of any grading permit, a County-certified paleontologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified paleontologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records

search and field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, Future mitigation shall depend upon the recommendations of the report. This mitigation measure has been completed.

SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pregrade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their present repository. This mitigation measure has been completed.

SC 9-11 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pregrading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first-refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, PF&R/Harbors Beaches and Parks Division.

Additional Mitigation Measures

AM 9-12 A qualified paleontologist shall be retained to perform periodic inspections of excavations and, if necessary, salvage exposed fossils. The frequency of inspections will depend on the rate of excavation, the materials being excavated, and the abundance of fossils. Initially, monitoring shall be on a full time basis in all excavations because of the high potential for the discovery of fossils in all the rock units present in the study area.

AM 9-13 The paleontologist shall be allowed to divert or direct grading in the area of an exposed fossil to facilitate evaluation and if necessary, salvage.

AM 9-14 To recover small fossils, it will be necessary to collect sediment samples from

promising horizons discovered during grading monitoring for processing through fine mesh screens. Once the samples have been screened, they will be examined microscopically for small fossils.

AM 9-15 Fossils shall be prepared to the point of identification and catalogued before they are donated to their final repository.

AM 9-16 All fossils collected should be donated the County of Orange's designated repository.

AM 9-17 A report detailing the results of these efforts, listing the fossils collected, and naming the repository shall be submitted to the lead agency at the completion of the project.

Historical Resources

SC 9-18 Prior to issuance of a grading permit, project applicant shall provide written evidence to Manager, PF&R/Harbors Beaches and Parks Division that an historian has been retained by the applicant to implement final mitigation measures. A final report shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area.

SC 9-19 Development adjacent to a place, structure, or object of historic significance shall be designed so that permitted uses and architectural design will protect the visual setting of the historic site. Such design shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area.

RECREATION

Project Design Features

PDF 10-1 The Live Oak and Aliso Creek riding and hiking trail shall be located on the Project Site as shown in Exhibit 7 and Exhibit 63 Site Plan.

PDF 10-2 Live Oak Canyon Trail shall be constructed onsite, ultimately connecting O'Neil Regional Park to the Aliso Creek riding and hiking trail, as shown in Exhibit 7, Site Plan.

PDF 10-3 Eight onsite private parks shall be constructed as shown on Exhibit 7 Site Plan, to offset project demand.

Standard County Conditions and Mitigation Measures

SC 10-4 The developer or his assigns and successors in interest shall maintain offered park site(s) until such time as the County or its designer accepts the offer of dedication, all

in a manner of meeting the approval of the Manager, PF&R/Harbors Beaches & Parks Division

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations:

AM 10-5 Prior to first building occupancy, the applicant shall pay all park mitigation as required by the Department Manager, PF&R/Harbors Beaches & Parks Division.

AM 10-6 Prior to final building occupancy the applicant shall dedicate and construct all required regional trail connections and improvements as approved and required by the Department Manager, PF&R/Harbors Beaches & Parks Division.

HAZARDS

PDF 11-1 Implement a comprehensive fuel modification program in accordance with Section 27 of Appendix II-A of the 1994 Uniform Fire Code as adopted by County Ordinance 3954 (the Wildland Urban Interface Task Force report was not adopted and is not enforced by the OCFA). Exhibits 9 and 64 illustrate the fuel modification zones and, although adequately described, it should be noted that the distances are horizontal measurements rather than vertical and, therefore, may actually be larger zones as measured vertically up or down a slope (based on topography).

PDF 11-2 Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.

PDF 11-3 Provide for the construction of a water tank off site to ensure adequate on site water supply and OCFA fire flow requirements. The minimum fireflow requirements for this project of 1500 gpm for a minimum of 2 hours at 20 psi residual pressure. This flow must be available 24 hours per day .

PDF 11-4 Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.

PDF 11-5 Residential structures shall be constructed of fire-resistant material, including but not limited to, "Class A roof assemblies", closed eaves and offsets, double paned or dual glazed windows. The exterior walls of structures will be constructed of " 1-hour fire resistant materials" and all structures will have fire sprinklers.

PDF 11-6 All residential structures shall be required to have automatic interior fire sprinkler systems.

PDF 11-7 The interface area between residential lots and open space areas within the project boundary shall be wrought iron fenced to minimize intrusion of wildlife into the built portions of the project site.

Standard County Conditions and Mitigation Measures

SC 11-8 Prior to the issuance of any preliminary grading permits, applicant shall request that the Manager, HCA/Environmental Health, determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, HCA/Environmental Health.

SC 11-9 Prior to the issuance of any building permits for combustible construction, a letter and plan from the developer shall be submitted stating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site. Said letter shall be approved by the Fire Chief prior to the issuance of any building permits.

SC 11-10 Prior to the issuance of any building permits on those lots determined applicable by the Fire Chief, plans for an automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. This system shall be operational prior to the issuance of a certificate of use and occupancy.

SC 11-11 Prior to the issuance of any building permits, the applicant shall submit a detailed letter of intended use for each building to the Fire Chief for review and approval.

SC 11-12 Prior to the issuance of any grading permits, preliminary plans for all street and courts, public or private, shall be submitted to and approved by the Fire Chief. The plans shall include the plan view, sectional view, and indicate the width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be clearly marked.

SC 11-13 Prior to the issuance of any certificates of use and occupancy, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief. The plans shall indicate the locations of red curbing and signage, and provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color.

SC 11-14 Prior to the issuance of any grading permits, construction details for any emergency access gate shall be submitted to and approved by the Fire Chief. Contact the Orange County Fire Department at (714)744-6623 for a copy of the "Guidelines for Fire Department Emergency Access".

SC 11-15 Prior to the issuance of any grading permits, a fuel modification plan and program shall be submitted and approved by the Fire Chief in consultation with the Manger, Environmental and Project Planning Services Division. The Planning and

Development Section shall be contacted at 744-0403 for requirements to be met and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation, include the method (mechanical or hand labor) for removal of flammable vegetation and provide for the planting of drought tolerant fire resistant plants.

SC 11-16 Prior to the issuance of any building permits, the developer shall have completed, under the supervision of the Fire Chief, that portion of the approved fuel modification plan determined to be necessary by the Fire Chief before the introduction of any combustible construction material into the project area.

SC 11-17 Prior to the issuance of any certificates of use and occupancy, the remaining fuel modification shall be installed and completed under the supervision of the Fire Chief. Further, the installed fuel modification shall be established to a degree meeting the approval of the Fire Chief.

PUBLIC SERVICES

Project Design Features

Sheriff

SC 11-8 Prior to the issuance of any preliminary grading permits, applicant shall request that the Manager, HCA/Environmental Health, determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, HCA/Environmental Health.

SC 11-9 Prior to the issuance of any building permits for combustible construction, a letter and plan from the developer shall be submitted stating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site. Said letter shall be approved by the Fire Chief prior to the issuance of any building permits.

SC 11-10 Prior to the issuance of any building permits on those lots determined applicable by the Fire Chief, plans for an automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. This system shall be operational prior to the issuance of a certificate of use and occupancy.

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SC 11-15 Prior to the issuance of any grading permits, a fuel modification plan and program shall be submitted and approved by the Fire Chief in consultation with the Manger, Environmental and Project Planning Services Division. The Planning and Development Section shall be contacted at 744-0403 for requirements to be met and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation, include the method (mechanical or hand labor) for removal of flammable vegetation and provide for the planting of drought tolerant fire resistant plants.

SC 11-16 Prior to the issuance of any building permits, the developer shall have completed, under the supervision of the Fire Chief, that portion of the approved fuel modification plan determined to be necessary by the Fire Chief before the introduction of any combustible construction material into the project area.

SC 11-17 Prior to the issuance of any certificates of use and occupancy, the remaining fuel modification shall be installed and completed under the supervision of the Fire Chief. Further, the installed fuel modification shall be established to a degree meeting the approval of the Fire Chief.

UTILITIES AND SERVICE SYSTEMS

Project Design Features

Water

PDF 13-1 The new booster pump station shall be paid for by the applicant and designed and function according to TCWD's guidelines and standards.

PDF 13-2 Operational capacities and pressure parameters for design of the booster pump station (approved by OCFA) shall be determined at design stage and should incorporate but not be limited to the following requirements:

- It shall meet the maximum day demand for the "stand alone" zones of Saddleback Meadows with an operating time of 24 hours and without its largest unit in service.

- It shall be designed with a back-up generator for the booster pump, as well as fuel and maintenance provisions.

- It shall incorporate the typical 3 or 4 pump system with an alternating state sequence.

- It shall pump from TCWD's El Toro Road zone (1,165 feet HWL) to the storage facility (reservoir) proposed.

- It shall have the ability to refill the proposed reservoir, if it were empty, within 72 hours while also providing for maximum day demands on the water system during that time.

PDF 13-3 Water conservation measures to be implemented consist of water-conserving features in the design and construction of residential homes and uses, plus use of drought-tolerant plant materials in the slope and streetscape plantings. Proposed water conservation measures also include:

- Supply line pressure. Water pressure greater than 50 pounds per square inch (psi) reduced to 50 psi or less by means of pressure-reducing valves.

- Ultra-low-flush toilets: 1.5 gallon-per-flush toilets installed in all new construction.

- Landscape with low-water-using plants wherever feasible.

- Grouping of plants of similar water use to reduce over-irrigation of low-water-using plants.

- Extensive use of mulch as top cover to improve water-holding capacity of the soil.

- Installation of efficient irrigation systems that minimize runoff and evaporation, and maximize the amount of water reaching plant roots. Drip irrigation, soil moisture sensors, and automatic irrigation systems are proposed methods of increasing irrigation efficiency.

PDF 13-4 All design and landscape features shall comply with TCWD's guidelines and standards.

Wastewater

PDF 13-5 All utilities shall be installed by the applicant in accordance with Department/County

requirements, per the requirements outlined on the Final Tract Map.

Electricity

PDF 13-6 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Natural Gas

PDF 13-7 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Cable

PDF 13-8 All utilities shall be installed by Cox Cable in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Communications

PDF 13-9 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Standard County Conditions and Mitigation Measures

Water

SC 13-10 Prior to the issuance of any building permit(s), the applicant shall provide a report to the Manager, PDS/Building Permits Services Division, indicating that plans showing the location of all proposed reclaimed water lines used to irrigate open spaces, parks, and other landscaped areas, have been submitted to and approved by the Trabuco Canyon Water District.

SC 13-11 Prior to the issuance of building permits, water conservation measures shall be incorporated into the development design plans and which shall be submitted for approval to the Trabuco Canyon Water District.

Wastewater

SC 13-12 Prior to the issuance of a certificate of use and occupancy, sewer lines, connections, and structures shall be installed in a manner meeting the approval of the Manager, HCA/Environmental Health.

A. All waste water facilities and line shall be constructed and maintained to meet TCWD standards and requirements.

B. All sewer lines shall be underground facilities.

C. The project shall comply with all State of California Health and Safety Codes.

Electricity

SC 13-13 Prior to the issuance of a building permit, project proponent shall consult with the local gas and electric companies regarding feasible energy conservation features that should be included in the design of the proposed project. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 13-14 Prior to the issuance of a building permit, the project proponent shall incorporate passive or natural heating and cooling opportunities in the design of the proposed project including but not limited to the following: solar energy use; thermal insulation; tinted or solar reflective glass; orientation to sunlight; use of deciduous trees in landscaping; installation of roof fans; utilize fluorescent lighting, switches and thermostat, utilize time-controlled lighting; and, utilize AC units with 100% outdoor air economize. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

Natural Gas

SC 13-15 The applicant shall provide for all lines and mains necessary to provide natural gas to the project.

SC 13-16 The applicant shall obtain all required permits and follow all SCG, State and County regulations and requirements regarding natural gas service.

Cable

No standard condition requirements.

Communications

SC 13-17 Applicant shall comply with the requirements of the California Public Utilities Commission and Pacific Bell Telephone Company for the provision of telephone service.

8.0 INVENTORY OF UNAVOIDABLE ADVERSE IMPACTS

In accordance with CEQA Guidelines, Section 15126(b), EIRs must include a discussion describing significant impacts of the proposed project that cannot be mitigated to a level of insignificance.

In accordance with the incorporation by reference process, the analysis in this EIR provides a greater level of detail on the specific project within the FTSP than was available during preparation of FEIR No. 531. It has been determined in this analysis that, following implementation of all mitigation measures, the project will have the following unavoidable adverse impacts:

- Land use incompatibility with: 1) O'Neill Regional Park, 2) the Ramakrishna Monastery, and 3) St. Michael's Abbey;
- Major landform alteration including cut and fill slopes up to 120-feet in height;
- Cumulative contribution to regional adverse air quality conditions, since the project is located in a non-attainment area;
- Loss of 154.13 acres of onsite habitat, including: 1) southern sycamore woodland, 2) coast live oak woodland, 3) coastal sage scrub, 4) mulefat scrub, and 5) ephemeral ponds;
- Loss of Riverside fairy shrimp habitat (ephemeral ponds) and individuals, a federally listed endangered species;
- Urban landform visual impacts to: 1) O'Neill Regional Park, 2) Ramakrishna Monastery, and 3) St. Michael's Abbey.

9.0 MITIGATION MEASURE MONITORING PROGRAM

Effective January 1, 1989, the California Environmental Quality Act (CEQA) was amended to add Section 21081 6 of the Public Resources Code, implementing Assembly Bill (AB) 3180.

As part of CEQA environmental review procedures, Section 21081.6 requires a public agency to adopt a monitoring or reporting program for assessing and ensuring efficacy of any required mitigation measures applied to proposed developments. As stated in Section 21081.6 of the Public Resources Code:

> *"...the public agency shall adopt a reporting or monitoring program for the changes to the project which it has adopted, or made a condition of project approval, in order to mitigate or avoid significant effects on the environment."*

Section 21081.6 provides general guidelines for implementing monitoring and reporting programs. Specific reporting and/or monitoring requirements, to be enforced during project implementation, shall be defined prior to final approval of the project proposal by the responsible decision maker(s). In response to established CEQA requirements and Public Resources Code Section 21000 et seq., the proposed mitigation monitoring program shall be submitted to the Planning Department for consideration prior to completion of the environmental review process to enable the decision maker's appropriate response to the proposals.

The proposed program should be included in the Draft EIR to allow public circulation of the proposal; a mitigation monitoring program must be provided as part of the Final EIR.

In addition, pursuant to Section 21081(a) of the Public Resources Code, findings must be adopted by the decision maker coincidental to certification of the EIR. The following language shall be incorporated as part of the decision maker's Findings of Fact in response to AB 3180, and in compliance with requirements of the Public Resources Code.

1. In accordance with section requirements of Section 21081(a) and 21081.6 of the public Resources Code, the County has made the following additional findings:

   - That a mitigation reporting and monitoring program shall be implemented as specified in the final decision relative to the subject project;

   - That through covenant and agreement, prior to the recordation of the final map, certificate of occupancy and/or building permit, the applicant shall identify and appropriate licensed professional to provide certification that compliance with the required mitigation measures has been effected;

   - Site plans and/or building plans, submitted for approval by the responsible monitoring

agency, have included required mitigation measures/conditions; and,

- That an accountable enforcement agency and monitoring agency shall be identified for mitigation measures/conditions adopted as part of the decision maker's final determination.

Consistent with currently applicable law there is mutual incorporation by reference of mitigation measures contained in the Mitigation Monitoring Program and substantive conditions to the project entitlements.

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

NO. 566

STATE CLEARINGHOUSE NO. 96121072

SADDLEBACK MEADOWS

RECORDED TRACT MAP 10692

GRADING APPLICATION GA960048

VOL. 3

Orange County
Planning & Development Services Department

June 1997

URBAN VISION

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT NO. 566

State Clearinghouse No. 96121072

SADDLEBACK MEADOWS
Recorded Tract Map No. 10692
GA 960048

Lead Agency:
COUNTY OF ORANGE
Planning & Development Services Dept.
Environmental & Project Planning Services Div.
George Britton, Division Manager

Raymond H. C. Brantley, Chief
Environmental Planning Section
William Grieman, Project Manager

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Project Sponsor:
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44 Montgomery Street, Suite 1300
San Francisco, California 94104

Environmental Consultant:
URBAN VISION
Carlene Baskevitch, Principal
Eric Ruby, Advisory
1601 Dove Street, Suite 250
Newport Beach, California 92660
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June 1997

TABLE OF CONTENTS
Volume 3

APPENDIX D - GEOTECHNICAL EVALUATION

APPENDIX E - TRAFFIC REPORT

APPENDIX F - AIR QUALITY CALCULATIONS

APPENDIX G - NOISE CALCULATIONS

APPENDIX H - BIOLOGICAL RESOURCES ASSESSMENT

APPENDIX I - CULTURAL RESOURCES ASSESSMENT

APPENDIX J - FISCAL IMPACT REPORT

APPENDIX K - OAK TREE INVENTORY

APPENDIX L - HYDROLOGY REPORT

APPENDIX D
GEOTECHNICAL EVALUATION

G. A. Nicoll
and Associates, Inc.

March 14, 1997
Project 4816-04

TPG Management, Inc.
1601 Dove Street, Suite 105
Newport Beach, California 92660-2441

Attention: Messrs. Pike Oliver & Michael McKnight

Subject: Geotechnical Environmental Impact Report
for Draft EIR #566 for Final Tract Map 10692
Saddleback Meadows Development
Orange County, California

Gentlemen:

Transmitted herewith is the report for the Geotechnical EIR for Draft EIR #566 for Final Tract Map 10692, Saddleback Meadows Development, Orange County, California.

Included in this report are our findings, conclusions and recommendations regarding the development of the site. Included is a geologic hazards assessment and a summary of principal favorable and unfavorable geotechnical conditions.

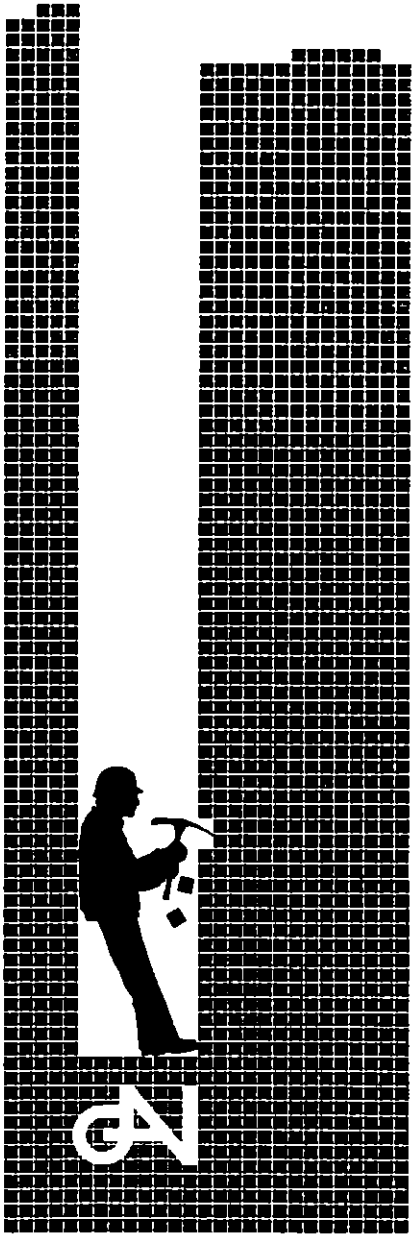
The opportunity to be of service is sincerely appreciated. If you have any questions or if we can be of further assistance, please call.

Very truly yours,

G. A. NICOLL AND ASSOCIATES, INC.

Gerald A. Nicoll
President

GAN/MBU/GDH:cs



Project 4816-04

TABLE OF CONTENTS

Page No.

1. INTRODUCTION 1
   - 1.1 General 1
   - 1.2 Summary of Principal Favorable and Unfavorable Conditions 1
     - 1.2.1 Principal Favorable Geotechnical Conditions . 1
     - 1.2.2 Principal Unfavorable Geotechnical Conditions 3

2. PROPOSED IMPROVEMENTS 3

3. SCOPE 4

4. QUALIFICATIONS 4

5. SITE CONDITIONS 4
   - 5.1 Location 4
   - 5.2 Surface Conditions 5

6. GEOLOGY 5
   - 6.1 Geologic Setting 5
   - 6.2 Geologic and Soil Units 6
     - 6.2.1 Sespe Formation (ts)* 6
     - 6.2.2 Vaqueros-Sespe Formation, Undifferentiated (Tvs)* 6
     - 6.2.3 Landslide Material (Qls)* 7
     - 6.2.4 Older Alluvium (Qalo)* 8
     - 6.2.5 Alluvium (Qal)* 8
     - 6.2.6 Soil slumps (Ss)* 8
     - 6.2.7 Colluvium (Qcol)* 9
     - 6.2.8 Fill (Fill)* 9
     - 6.2.9 Pond Sediments (Qp)* 9
   - 6.3 Structural Geology/Faulting 9

7. GROUND WATER 10

TABLE OF CONTENTS (Continued)

Page No.

8. SEISMICITY 11

9. GEOLOGIC HAZARDS ASSESSMENT 11
   - 9.1 Seismic Hazards 11
     - 9.1.1 Ground Surface Rupture 11
     - 9.1.2 Seismic Ground Shaking 12
   - 9.2 Secondary Seismic Hazards 12
     - 9.2.1 Liquefaction 12
     - 9.2.2 Seismically-Induced Landslides 12
     - 9.2.3 Seismically-Induced Settlement 13
     - 9.2.4 Flooding Attributable to Dam/Levee Failure .. 13
     - 9.2.5 Seiches and Tsunamis 13
   - 9.3 Compressible Soils/Hydroconsolidation 14
   - 9.4 Flooding, Erosion, and Sedimentation 14
   - 9.5 Loss of Mineral Resources 14

10. CONCLUSIONS AND RECOMMENDATIONS 14
    - 10.1 General 14
    - 10.2 Remedial Grading 15

11. LIMITATIONS 16

Appendix, Figures and Plates

Location

References ..... Appendix

Site Location Map ..... Figure 1 (after pg. 4)

Seismicity Map ..... Figure 2 (after pg. 11)

Table of Seismic Parameters ..... Figure 3 (after pg. 11)

Geotechnical Plan ..... Plate 1

Geotechnical Cross Sections ..... Plates 2 through 4

GEOTECHNICAL ENVIRONMENTAL IMPACT REPORT
FOR
DRAFT EIR NUMBER 566
FINAL TRACT MAP 10692
SADDLEBACK MEADOWS DEVELOPMENT
ORANGE COUNTY, CALIFORNIA

1. INTRODUCTION

1.1 General

a) This report presents the geotechnical conditions at the Saddleback Meadows Development site and the impact that the subject development will have on the property.

b) The current plan, prepared by Michael Madden Associates, and entitled "Final Tract Map 10692", is a graphically scaled-down representation of the 705 Lot approved Entitled Plan for Tentative Tract 10962, prepared by Hunsaker Associates Irvine, Inc. This plan was utilized as the base map for the *Geotechnical Plan, Plate 1,* for this report

c) This report presents the geotechnical aspects of the site, prepared for inclusion into Draft Subsequent EIR Number 566 for the recorded tract map.

d) The geologic conditions at the site and the proposed major buttress and shear key locations are illustrated on *Plate 1.*

e) Reports and other literature cited during the preparation of this report are presented in *References, Appendix.*

1.2 Summary of Principal Favorable and Unfavorable Conditions

1.2.1 Principal Favorable Geotechnical Conditions

a) At the site, a number of soil and geologic conditions are present that will be favorable to site development.

b) These conditions include:

   i) The presence of bedrock materials and large landslide blocks having a low settlement potential;

   ii) the presence of sufficient low to non-expansive materials to generate select fills;

   iii) the potential for the occurrence of liquefaction is low;

   iv) bedrock excavatability is favorable and no blasting is anticipated.

c) Grading east of the Abbey property will produce fill in the gully area which will tend to stabilize the slope on the Abbey property in this area.

d) No known active faults are present at the site and surface rupture during earthquakes is not expected.

e) Planned remedial grading will reduce the potential for the occurrence of earthquake-induced landsliding.

f) The site does not lie within the 100-year flood zone limits.

g) Subsidence at the site due to fluid withdrawal should not occur since no known major ground water aquifers or petroleum reservoirs underlie the site.

h) At the present time, the potential for the occurrence of tsunamis and seiches is non-existent.

i) Site grading will reduce the potential for surficial erosion and the consequential siltation of nearby Alisos Creek.

1.2.2 Principal Unfavorable Geotechnical Conditions

a) A number of unfavorable conditions are present including the presence of unstable landslides, the occurrence of some moderately to highly expansive soils and bedrock units, and the presence of adverse bedding conditions and some ground water.

b) These unfavorable conditions can be mitigated by implementing corrective grading concepts; such as the construction of buttresses and shear keys, selective grading to place expansive materials in the deep fills, the buttressing of cut slopes where necessary, and the construction of canyon subdrains and back drains to minimize or eliminate the affects of ground water.

c) Furthermore, compressible materials will be removed and replaced with compacted fill. Large buttress cuts will be constructed in segments to reduce the possibility of backcut failure.

2. PROPOSED IMPROVEMENTS

a) Proposed improvements for the Entitled Plan include 705 single-family residential lots and accompanying arterial and secondary streets and slope areas. Several park site lots, equestrian trails, and open space areas are planned.

b) It is anticipated that conventional grading methods will be used in the construction of building pads and streets. Remedial grading to produce a stable site is planned, which will include buttresses, shear keys, and stabilization slope.

3. SCOPE

The scope of services we have provided for the preparation of this EIR is outlined below:

a) Review of available geotechnical reports and literature pertaining to the site, and preliminary consultation and planning;

b) Examination of stereoscopic aerial photographs;

c) A geologic site reconnaissance to review the current site conditions;

d) Preparation of a geotechnical plan utilizing the Final Tract Map 10692 as a base map;

e) Preparation of geotechnical cross sections showing the general subsurface structure;

f) Geologic and engineering analyses of accumulated geotechnical data;

g) The preparation of this report presenting our findings, conclusions, and recommendations.

4. QUALIFICATIONS

This report was prepared at an EIR level. A more detailed evaluation of the slope stability, including analyses of buttress backcuts and forecuts, individual cut slope buttresses, etc. will be conducted during the 40-scale grading plan review to accompany the grading permit application.

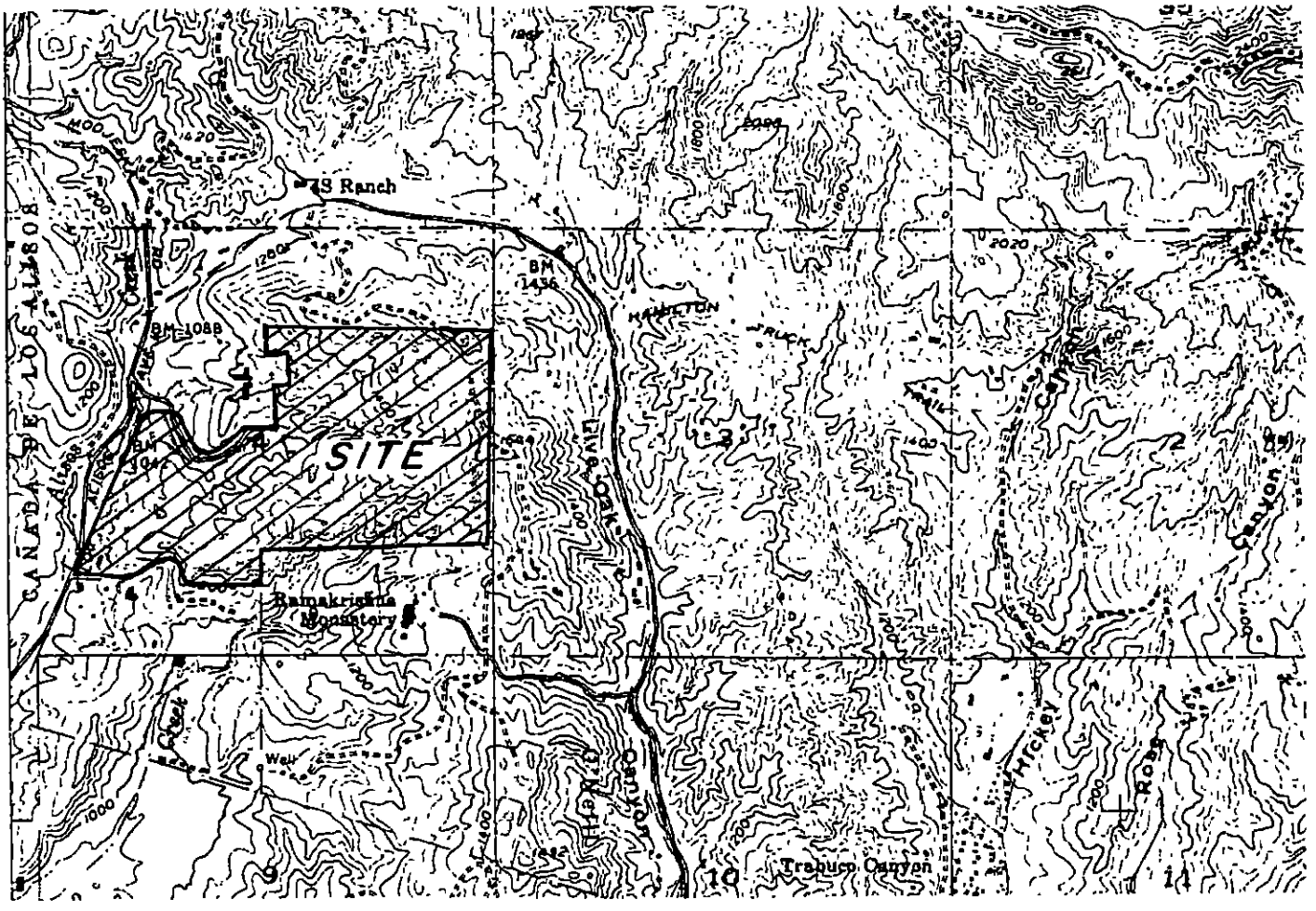
5. SITE CONDITIONS

5.1 Location

a) The project site is an irregularly-shaped 232± acre tract located on the east side of El Toro Road and about 1,000 feet south of Live Oak Canyon Road in the County of Orange, California

b) The site location is shown on the *Location Map, Figure 1.*

LOCATION MAP



Base Map: USGS Santiago Peak Quadrangle
7.5 Minute Series , 1982

NORTH

2000 0 2000 4000
scale feet

G. A. NICOLL & ASSOCIATES
EARTH SCIENCE CONSULTANTS

Saddleback Meadows	
Date: March, 1997	
Project No: 4816-04	Figure No: 1

BISHOP GRAPHICS/ACCUPRESS
REORDER NO A28843

5.2 Surface Conditions

a) The proposed development is partially cradled within a re-entrant of Canada de Los Alisos. Ridges, ravines and gullies form the dominant physiographic features, providing moderate to high topographic relief. Elevations above Mean Sea Level range from approximately 1,000 to 1,550 feet. Natural slope gradients range from nearly level along some ridge crests and valley bottoms to 1:1 (horizontal:vertical) within deeply incised gullies. The site drains generally toward the west and southwest into Alisos Creek and Oso Creek.

b) Vegetation at the site consists primarily of annual grasses, coastal sage scrub and some areas of oak woodland. An olive tree orchard is located in the central portion of the property. Numerous dirt ranch roads cross the site. At the time of our investigation, the site was utilized for livestock grazing. A more in-depth account of the site vegetation is presented in the biological resources section of the project EIR.

c) Man-made structures on the property include an abandoned ranch house, barn and related structures; several ponds for watering livestock were constructed during the period the ranch was operated, which are still in use for the grazing livestock.

6. GEOLOGY

6.1 Geologic Setting

a) The subject tract is located within Canada De Los Alisos in the low coastal foothills of the Santa Ana Mountains. These hills are part of the Peninsular Ranges Geomorphic Province and are generally underlain by sedimentary bedrock of Tertiary Age.

b) At the site, the bedrock consists of a thick sequence of interbedded, fine- to coarse-grained SANDSTONE and SILTSTONE of the Tertiary Age Vaqueros-Sespe Undifferentiated and Sespe Formations. Ancient to active landslides underlie much of the project area. Recent and older alluvial deposits are confined to the major gullies and Alisos Creek drainage. Topsoil and colluvium mantle the bedrock and landslides throughout

most of the site Fill soils underlie areas where man-made features, such as roads and berms associated with livestock ponds were constructed Some pond sediments are present in the cattle ponds. Geologic features of the site are shown on the *Geotechnical Plan, Plate 1, and the Geotechnical Cross Sections, Plates 2-4.*

6.2 Geologic and Soil Units

6.2.1 Sespe Formation (ts)*

The late Eocene to early Miocene Sespe Formation is generally confined to the northwest corner of the tract where it is in fault contact with the undifferentiated Vaqueros-Sespe Formation. These rocks, where they were observed, consisted of red-brown to gray SANDSTONE and interbedded, greenish-gray, Clayey SILTSTONE.

6.2.2 Vaqueros-Sespe Formation, Undifferentiated (Tvs)*

The bedrock underlying the majority of the site exhibits characteristics similar to both the Vaqueros and Sespe Formation. Therefore, these rocks have been classified together as an undifferentiated formation. The rocks consisted of a rhythmic sequence of orange-brown, red-brown, gray to gray-green SANDSTONE and SILTSTONE with thin interbeds of bentonite-like CLAY and less weathered volcanic ash and/or tuff. The bentonitic CLAY beds are generally soft to stiff and plastic in consistency; whereas the SANDSTONE and SILTSTONE units were more often found to be dense and stiff, respectively. Occasionally, fossil-rich beds consisting mainly of broken clam shells were encountered. Some carbonate cementation of sandstone beds has occurred.

*Refers to Geologic Symbols. See Key, Plate 1

6.2.3 Landslide Material (Qls)*

a) The site is occupied by an interrelated collection of active and inactive slides. The extent of the slides is comparable to other sites in the general area which have accommodated residential development, such as the nearby Portola Hills site. Between prehistoric and recent times, it appears that there were several episodes of slide movement. The larger, older slides generally failed as block slides, usually along 3 to 12-inch thick CLAY beds. Some of the smaller, more recent slides have failed as rotational-type failures, following oversteepening of the flanks of the major drianage on the site. The characteristics of the observed landslide materials varied from a soft, intensely fractured, sheared and weathered condition to nearly intact, unweathered blocks of displaced, interbedded SANDSTONE and SILTSTONE.

b) The Saddleback Meadows project is characterized by three general generations of landsliding:

i) *Recent Shallow Sliding* are the youngest and shallowest of the landslides and are characterized by active slumps, high moisture contents, depths of less than 50 feet and maximum dimensions of 100 to 400 feet. Their present movements are periodic and small and largely controlled by water content variations. These are most prevalent east of the St. Michaels' property.

ii) *The Intermediate Age and Intermediate Landslides* are approximately 50 to 120 feet deep. They often occur in series and their movements are at a much slower rate than the overlying younger landslides. An example of this is found at the west end of the site, at the existing entrance road, where a landslide has covered some old alluvial deposits *(see Plates 2 and 3)*.

*Refers to Geologic Symbols See Key, Plate 1.

iii) *The Oldest and Deepest Landslides* are estimated to be between 100 to possibly exceeding 250 feet in depth. The deepest slide surfaces *(see Plates 2-4)* are hypothetical surfaces, based on the projection of shear zones observed in borings at shallower depths and projected along the general geologic structure. These deeper shear zones may have a tectonic origin.

6.2.4 Older Alluvium (Qalo)*

a) Quaternary Alluvium Deposits are present along the lower portions of the slopes located on the west side of the project site. These deposits consist of moist to wet, moderately dense to loose/soft, Silty SAND, Sandy SILT, Sandy CLAY, CLAY and occasional layers of Gravel.

b) Disturbed Older Alluvium is present along the east side of El Toro Road at the toe of the major slides. This material consists of disturbed SAND, SILT and CLAY layers containing some Gravel that were mixed with blocks of displaced SANDSTONE and SILTSTONE during landsliding.

6.2.5 Alluvium (Qal)*

Alluvium of recent origin is present in Canada De Los Alisos and its tributaries that enter the project site. The Alluvium consists of interbedded deposits of predominately SAND and SILT with some CLAY and layers of GRAVEL. These soils range from dry to wet and are generally poorly consolidated. Alluvial depths range from less than 1 foot to approximately 12 feet in the tributary drainage, to roughly 20 feet in Canada De Los Alisos which borders the site on the west.

6.2 6 Soil slumps (Ss)*

A number of soil slumps are present. Only the dominant ones are shown on *Plate 1*. These features represent downhill movement and slumping of topsoil, colluvial soil and weathered bedrock material, generally to a depth of 5 to 10 feet

*Refers to Geologic Symbols. See Key, Plate 1

6.2.7 Colluvium (Qcol)*

Colluvial deposits cover most of the slopes on the site to average depths of 2 to 3 feet. Within depressions related to landsliding and along the margins of ancient landslides, colluvial depths range from 15 to over 40 feet. The colluvium consists of brown to black, moist to very moist, soft to stiff, Silty CLAY, Sandy CLAY, Clayey SAND and Silty SAND. In some areas, the colluvial deposits contain cobble to boulder-size, cemented SANDSTONE clasts.

6.2.8 Fill (Fill)*

The soil placed in association with the construction of cattle watering ponds and/or access roads on the subject property is considered Uncertified Fill. The method and effort of compaction is not known. Fill placed essentially on St. Michael's Priory property for landslide stabilization is certified fill. However, no distinction between the two types of fill was made on the Geotechnical Plan. Fill is also present beneath the completed portion of El Toro Road.

6.2.9 Pond Sediments (Qp)*

Pond sediments generally consist of dark gray and dark brown SILTS and CLAYS that are moist and soft. Pond sediments on-site probably average 5 feet in thickness.

6.3 Structural Geology/Faulting

a) The project area is bordered on the north and south by generally northwest-trending prehistoric faults. Between these faults, the bedding appears to be warped gently downward, resulting in generally southwest-dipping strata in the central and northern portions of the site and northwest- to northeast-dipping strata in the southern areas; where the bedrock units appear to be warped upwards along a suspected northwesterly-trending fault zone that crosses beneath El Toro Road, forming a synclinal structure at the west end of the site. This synclinal feature, which appears

*Refers to Geologic Symbols. See Key, Plate 1

asymmetric, probably governed the configuration and direction of movement of the landslides on the subject property. Bedding planes under landslides dip at shallow angles (predominantly 6-17 degrees).

b) The potentially active Cristianitos Fault is situated 1 mile west of the site. Ancient (probably much greater than 10,000 years) movement along this fault and subsequent compressional forces probably attributed to the folding and faulting and bedding plane shearing that is present on the site.

c) Fracturing or jointing was most prevalent in the landslide blocks and in areas within close proximity to faults. Nearly vertical open fractures were observed in some borings. Jointing, in general, dips steeply (between 45 and 90 degrees).

d) No evidence for active faulting has been found on the site. No active faults are known to be present near the site.

7. GROUND WATER

a) Ground water occurs on the site as free ground water within the alluvial deposits, and within the deeper sandstone bedrock; and as perched ground water within the various landslide blocks. The amount of ground water observed in several of the borings indicates that some dewatering may be required prior to and during remedial grading. No significant ground water aquifer is present.

b) Planned subdrain systems in buttresses, shear keys and fill keys, and within canyon fills should control any potential ground water level increased from the increase in surface water infiltration from future irrigation.

8. SEISMICITY

a) Seismic risk in Southern California is a well recognized factor, and is directly related to geologic fault activity. Seismic damage potential depends on the proximity to active or potentially active fault zones, and on the type of geologic structures. In relative terms, seismic damage is generally less intense in consolidated formations, i.e., bedrock, than in unconsolidated materials, such as alluvium.

b) In Southern California, most of the seismic damage to man-made structures results from ground shaking and to a lesser degree from liquefaction and ground rupture caused by earthquakes along active fault zones. In general, the greater the magnitude of the earthquake, the greater the potential damage.

c) Seismic hazards at this site are attributed to ground shaking as a result of an earthquake epicentered on a nearby active fault. Ground rupture is not expected to occur on the property as a consequence of the following listed faults.

d) *Figure 2* shows the geographical relationships among the site location, nearby faults and the epicenters of significant occurrences. *Figure 3* gives the seismic parameters affecting the subject site.

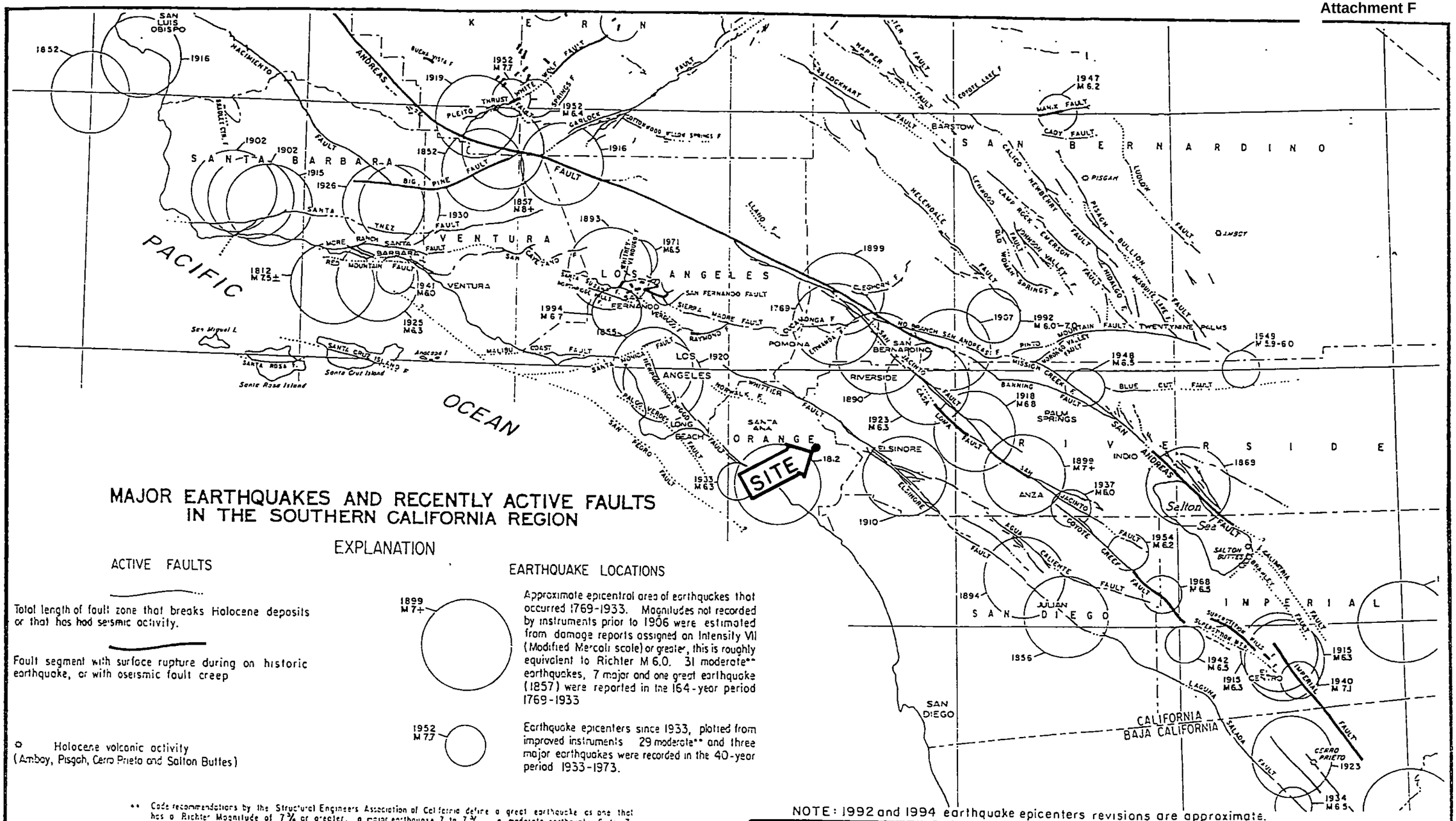
9. GEOLOGIC HAZARDS ASSESSMENT

This section generally follows the guidelines prepared by the California Division of Mines and Geology and most of the conclusions are presented on a subjective scale.

9.1 Seismic Hazards

9.1.1 Ground Surface Rupture

Ground rupture along a fault plane is not expected at the site since no known active faults are present on the site.



MAJOR EARTHQUAKES AND RECENTLY ACTIVE FAULTS IN THE SOUTHERN CALIFORNIA REGION

EXPLANATION

ACTIVE FAULTS

Total length of fault zone that breaks Holocene deposits or that has had seismic activity.

Fault segment with surface rupture during an historic earthquake, or with aseismic fault creep

Holocene volcanic activity (Amboy, Pisgah, Cerro Prieto and Salton Buttes)

EARTHQUAKE LOCATIONS

1899 M7+

Approximate epicentral area of earthquakes that occurred 1769-1933. Magnitudes not recorded by instruments prior to 1906 were estimated from damage reports assigned an Intensity VII (Modified Mercalli scale) or greater, this is roughly equivalent to Richter M 6.0. 31 moderate** earthquakes, 7 major and one great earthquake (1857) were reported in the 164-year period 1769-1933

1952 M7.7

Earthquake epicenters since 1933, plotted from improved instruments 29 moderate** and three major earthquakes were recorded in the 40-year period 1933-1973.

** Code recommendations by the Structural Engineers Association of California define a great earthquake as one that has a Richter Magnitude of 7¾ or greater, a major earthquake 7 to 7¾, a moderate earthquake 6 to 7

Compiled by Richard J Proctor mainly from published and unpublished data of the *California Division of Mines and Geology*, *California Department of Water Resources Bulletin 116-2* (1964); selections from bulletins of the *Geological* and *Seismological Societies of America*, from C.F Richter, *Elementary Seismology* (1958); and the *National Atlas*, p 66.

NOTE: 1992 and 1994 earthquake epicenters revisions are approximate.

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Saddleback Meadows
Date March, 1997
Project No 4816-04
Figure No 2

TABLE OF SEISMIC PARAMETERS

Potential Causative Fault	Distance from Site to Fault (mi.)	Richter Magnitude and Year of Historical Earthquake within 70 mi	Distance from Site to Epicenter of Historical Earthquake within 70 mi.	Maximum Credible Peak Horizontal Ground Acceleration	Maximum Credible Richter Magnitude	Maximum Probable Earthquake for Design Purposes				Site Intensity Modified Mercalli	
						Richter Magnitude	Peak Horizontal Ground Acceleration	*Maximum Repeatable Ground Acceleration (gravities)	Duration of Strong Shaking at Site (sec.)	C	P
San Andreas Fault (south of Garlock Fault)	39	1857	N/A	0 11	8 0	7 25	06	N/A	36	VII	VI
San Jacinto Fault	35	6 8 (4/18/18) 6 3 (7/23/23)	36 23	0 09	7 5	7 0	06	N/A	18	VII	VI
Newport Inglewood Fault	16	6 3	22	0 24	7 5	6 5	13	0 08	18	IX	VIII
Whittier Elsinore Fault	9	6 0 (5/15/10)	14	0 41	7 5	6 25	21	13	18	X	VIII
Sierra Madre/San Fernando Fault	34	6 5 (2/9/71)	63	0 11	7 5	6.5	0 06	N/A	18	VII	VI

*The repeatable high ground acceleration taken as 65 percent of the peak acceleration for sites within 20 miles of the epicenter may be more applicable for design analysis

Saddleback Meadows, Orange County, California

Date: March 1997

Project No: 4816-04 Figure No: 3

G. A. NICOLL *and Associates, Inc.*
Geologic and Soil Engineers

9.1.2 Seismic Ground Shaking

a) Slight to moderate ground shaking is possible at the site if an earthquake occurs on a segment of the active faults listed in *Figure 3*.

b) Some areas of the project site are underlain by unconsolidated alluvium and colluvium which tends to amplify earthquake produced ground motion. However, it is planned to remove these materials within proposed structural areas of the site. Nevertheless, buildings should be designed to resist seismic lateral loads.

c) Ground shaking is not expected to be any more intense than that expected at other nearby developments.

9.2 Secondary Seismic Hazards

9.2.1 Liquefaction

The potential for liquefaction at the site is considered low since the alluvial materials will be removed in structural areas.

9.2.2 Seismically-Induced Landslides

a) In its natural, undeveloped state, the site may experience seismically-induced landsliding in the form of re-activation of the existing smaller, shallower landslides.

b) With the implementation of site grading and corrective grading, the potential for seismically-induced landsliding will be reduced significantly. Corrective grading, in the form of major buttresses and shear keys, will increase the pseudostatic factor of safety of the larger landslides to an acceptable level of 1.1 or greater.

9.2.3 Seismically-Induced Settlement

Strong seismic shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Some soft colluvial and alluvial deposits are more susceptible to this phenomenon than others. Artificial fills, if not adequately compacted, may also experience seismically-induced settlement. Since the alluvial and colluvial soils will be removed during grading, and since the proposed fills will be adequately compacted, the potential for seismically-induced settlement is considered low.

9.2.4 Flooding Attributable to Dam/Levee Failure

Since the site is situated well above the adjacent valley bottom and since no dams or levees will be present, the potential for flooding is considered nil.

9.2.5 Seiches and Tsunamis

a) Confined bodies of water may be subject to large, earthquake-induced waves known as seiches. These waves can cause flooding and other related property damage to adjacent areas. Since no large bodies of water are present on or adjacent to the site, the potential for seiching is considered nil.

b) Low-lying coastal areas may be subject to flooding or other damage from large, earthquake-induced ocean waves known as tsunamis. The site is well outside the limits of possible tsunami inundated areas, and therefore, the geotechnical hazard posed by tsunami damage is considered to be nil at the subject site.

9.3 Compressible Soils/Hydroconsolidation

a) Since all alluvial and colluvial soils and compressible landslide materials will be removed during grading at the site, settlement due to compressibility of these soils will not be a consideration.

b) Fill soils will be placed at or slightly above optimum moisture during grading to reduce the potential for the occurrence of hydroconsolidation of the proposed fills.

c) Backcuts in removal areas and for buttress keys will be constructed at gradients of 1.5:1 (horizontal to vertical) to 2:1 in cut areas and areas of planned shallow fills, to reduce the effects of differential settlement.

9.4 Flooding, Erosion, and Sedimentation

a) The site is situated well above the flood plain of the Los Alisos Creek, and therefore, flooding will not affect the site.

b) Erosion and subsequent sedimentation on the site will be reduced because the future development will be constructed so as to improve the drainage of surface water on the site. Sedimentation of Los Alisos Creek will not be increased as a consequence of site development.

9.5 Loss of Mineral Resources

Since no known economic mineral resources are present on the site, the loss of mineral resources as a consequence of development does not apply.

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 General

a) We consider that the site will be suitable for the proposed current development plan, from the geotechnical aspects, provided the recommendations given below and the recommendations presented in the final geotechnical report are implemented.

b) Grading will be required as follows:

i) Multiple cuts and fills to achieve planned elevations and profiles, and associated access roadways;

ii) Remedial grading to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills;

iii) Removal (clean out) of all or major portions of landslide graben materials and alluvium and colluvium under the variable thickness fills;

iv) Installation of appropriate subdrain systems within natural drainage courses and within buttress and stability fill keys prior to fill placement;

v) Adequate foundation and slab subgrade conditioning for the proposed development, including overexcavation, capping and measures related to expansive soils;

vi) Achieving suitable surface gradients to preclude ponding anywhere on-site and to control water run-off via paved/closed drainage devices.

10.2 Remedial Grading

a) Remedial grading will incorporate one or more of several devices, including: buttress fills, shear keys, flattening of slopes to dip-slope gradients, surcharge toe fills, stabilization fills, and keys along the daylight cuts. The major buttress keys and shear keys are shown on the *Geotechnical Plan, Plate 1,* and in the *Geotechnical Cross Sections, Plates 2-4.*

b) Softer alluvium, existing fill, colluvium, pond sediments, and compressible landslide debris are all subject to selective removal, either partially or in their entirety. Removals in areas of deep colluvial soils and shallow landsliding may reach depths averaging 40 feet; such as the area south of the olive tree grove.

c) Cut areas which will expose firm landslide materials will require a minimum of 4-5 feet of overexcavation; the replacement of these materials as a compacted fill cap will serve to reduce future infiltration of moisture. Deeper removals may be required, the depths of which will be determined during grading.

d) i) Subdrains and surface drains shall be provided in compliance with the Grading Code.

ii) The lengths, dimensions and locations of subdrains should be finalized on-site during actual grading excavation work, when subsurface conditions become exposed, and the patterns of ground water/seepage flow(s) become apparent. Subdrain locations should be surveyed.

e) Complete details of the corrective grading will be illustrated in the final geotechnical report for the site, which will be submitted for grading plan permitting purposes.

11. LIMITATIONS

a) Soils and bedrock over an area show variations in geological structure, type, strength and other properties from what can be observed, sampled and tested from specimens extracted from necessarily limited exploratory borings. Therefore, there are natural limitations inherent in making geologic and soil engineering studies and analyses. Our findings, interpretations, analyses and recommendations are based on observation, laboratory data and our professional experience; and the projections we make are professional judgments conforming to the usual standards of the profession No other warranty is herein expressed or implied.

b) In the event that during construction, conditions are exposed which are significantly different from those described in this report, they should be brought to the attention of the Soil Engineer.

The opportunity to be of service is sincerely appreciated. If you have any questions or if we can be of further assistance, please call. The primary investigator and author of this report was Mr. Gerald D. Horton, with principal review by the undersigned.

Very truly yours,

G. A. NICOLL AND ASSOCIATES, INC.

Gerald A. Nicoll
President
CEG 34
(Exp. December 31, 1997)

Mohan B. Upasani
Vice President, Engineering
RGE 2301
(Exp. March 31, 1999)

GAN/MBU/GDH:cs

APPENDIX

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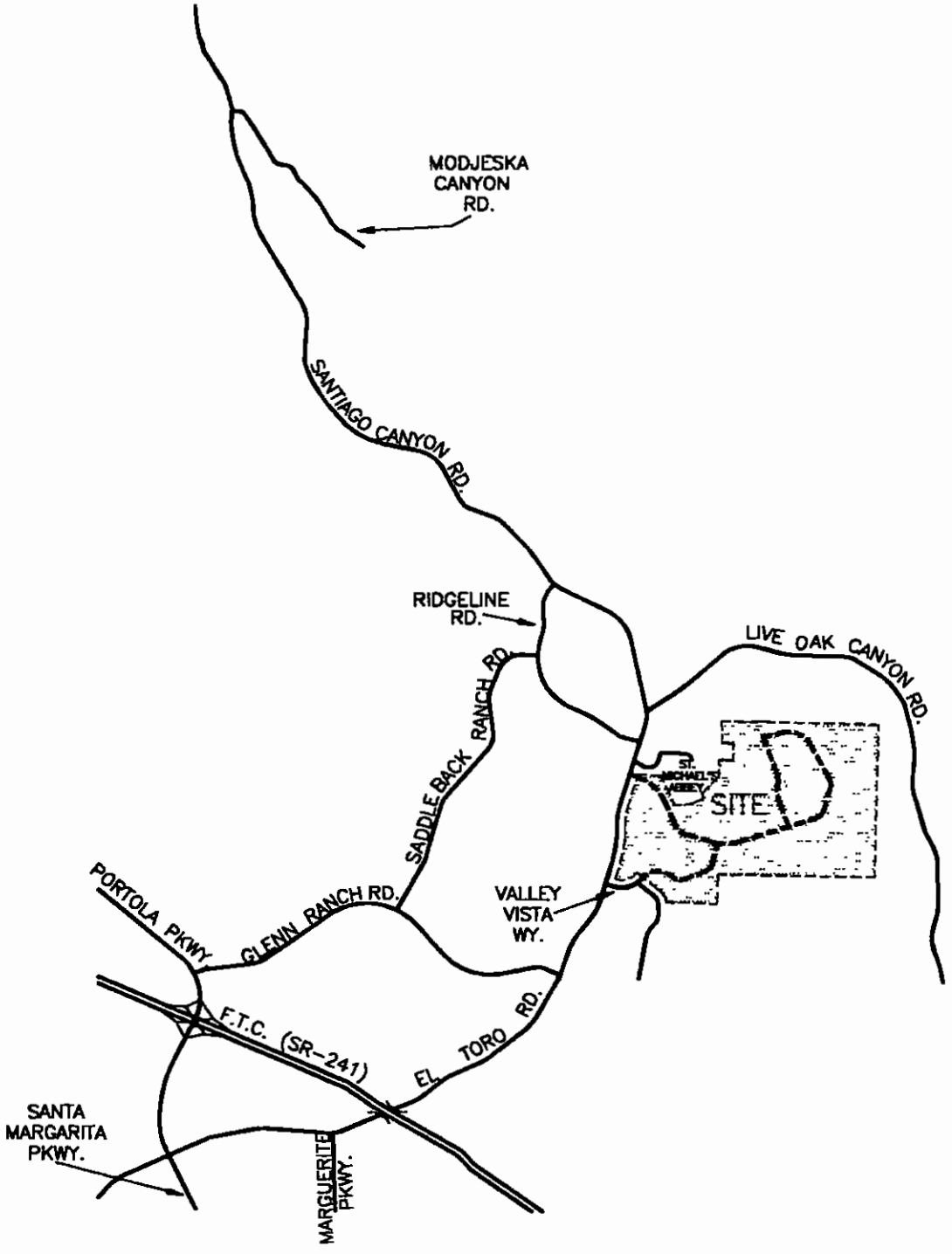
Aerial Photographs

1. Soil Conservation Service, December 12, 1952, Flight AXK-3K, Exposure 113 and 114, scale: 1 inch = 2000 feet.

APPENDIX E
TRAFFIC REPORT

SADDLEBACK MEADOWS (TT 10692)
GROWTH MANAGEMENT/CMP TRAFFIC ANALYSIS (REVISED)
Orange County, California



RKJK
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May 19, 1997

CALIFORNIA QUARTET LTD.
C/O Mr. Mike McKnight
TPG MANAGEMENT, INC.
1601 Dove Street, Suite 105
Newport Beach, CA 92660

Subject: Saddleback Meadows (TT 10692) Growth Management/CMP Traffic Analysis - Revised

Dear Mr. McKnight:

ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC. (RKJK) is pleased to submit the revised Saddleback Meadows (TT 10692) Growth Management/CMP traffic analysis. This report provides a summary of the findings, analysis procedures and evaluation of the proposed project with respect to on-site and off-site traffic impacts pursuant to County of Orange requirements.

This traffic impact analysis report includes an evaluation of traffic for existing conditions, existing plus project conditions, Year 2000 conditions, and Year 2020 conditions. Based upon this review, the project can be accommodated within the planned circulation system, if the recommended improvements are implemented. These recommendations are included in the "Project Recommendations" section of this report.

If you have any questions regarding this study, please do not hesitate to call at (714) 474-0809.

Sincerely,

ROBERT KAHN, JOHN KAIN & ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER
ROBERT KAHN
NO. 0556
EXP 12/31/97
TRAFFIC
STATE OF CALIFORNIA

John Kain, AICP
Principal

Carl Ballard
Senior Associate

Robert Kahn, P.E.
Principal

JK:RK:CB:nam/6657
JN:685-95-001
Attachments

SADDLEBACK MEADOWS (TT 10692)
GROWTH MANAGEMENT/CMP TRAFFIC ANALYSIS
ORANGE COUNTY, CALIFORNIA
(REVISED)

Prepared for:

CALIFORNIA QUARTET LTD.
C/O Mr. Mike McKnight
TPG MANAGEMENT, INC.
1601 Dove Street, Suite 105
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Prepared by:

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John Kain, AICP
Carl Ballard
Robert Kahn, P.E.

May 19, 1997

JK:RK:CB:nam/6657
JN:685-95-001

TABLE OF CONTENTS

SECTION		PAGE
I.	INTRODUCTION AND SUMMARY	1
	A. Purpose of Report and Study Objectives	
	B. Executive Summary	
	1. Site Location and Study Area	
	2. Development Description	
	3. Principal Findings	
	4. Project Recommendations	
II.	AREA CONDITIONS	11
	A. Study Area	
	1. Area of Significant Traffic Impact	
	B. Site Accessibility	
	1. Area Roadway System	
	2. Existing Master Plan of Arterial Highways	
	3. Traffic Volumes and Conditions	
III.	PROJECTED TRAFFIC	27
	A. Site Traffic	
	1. Trip Generation	
	2. Trip Distribution	
	3. Modal Split	
	4. Trip Assignment	
	B. Other Development Traffic	
	1. Method of Projection	
	2. Non-Site Traffic for Study Area	
	C. Total Traffic	
IV.	TRAFFIC ANALYSIS	50
	A. Capacity and Level of Service and Improvement Analysis, Existing Plus Project	
	1. Level of Service at Existing Plus Project	
	B. Capacity and Level of Service and Improvement Analysis, Year 2000	
	1. Level of Service at Year 2000 Without Project	
	2. Level of Service at Year 2000 With Project	

C. Capacity and Level of Service and Improvement Analysis, Year 2020
1. Level of Service at Year 2020 Without Project
2. Level of Service at Year 2020 With Project
D. Santiago Canyon Road Analysis

V. RECOMMENDATIONS 72

A. Site Access
B. Roadway Improvements
1. Off-Site
2. On-Site

APPENDICES

LEVEL OF SERVICE DESCRIPTION . . . . . A

TRAFFIC COUNT WORKSHEETS . . . . . B

ICU CALCULATIONS- EXISTING C

ICU CALCULATIONS- EXISTING PLUS PROJECT . . . . . D

ICU CALCULATIONS - YEAR 2000 WITHOUT PROJECT . . . . . E

ICU CALCULATIONS - YEAR 2000 WITH PROJECT . . . . . F

ICU CALCULATIONS - YEAR 2020 WITHOUT PROJECT . . . . . G

ICU CALCULATIONS - YEAR 2020 WITH PROJECT . . . . . H

TRAFFIC SIGNAL WARRANTS I

SIGHT DISTANCE STANDARDS . . . . . J

PASS-BY/DIVERTED TRIPS . . . . . K

LIST OF EXHIBITS

EXHIBIT		PAGE
A	LOCATION MAP	2
B	SITE PLAN	5
C	EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS	14
D	ORANGE COUNTY MASTER PLAN OF ARTERIAL HIGHWAYS	15
E	ORANGE COUNTY CROSS-SECTIONS AND LEVEL OF SERVICE "C" VALUES	16
F	EXISTING AVERAGE DAILY TRAFFIC (ADT)	17
G	EXISTING AM PEAK HOUR INTERSECTION VOLUMES	23
H	EXISTING PM PEAK HOUR INTERSECTION VOLUMES	24
I	EXISTING INTERSECTION LANES	25
J	PROJECT (RESIDENTIAL) TRIP DISTRIBUTION	32
K	PROJECT (COMMERCIAL RETAIL) TRIP DISTRIBUTION	33
L	PROJECT AVERAGE DAILY TRAFFIC (ADT)	35
M	PROJECT AM PEAK HOUR INTERSECTION VOLUMES	36
N	PROJECT PM PEAK HOUR INTERSECTION VOLUMES	37
O	OTHER DEVELOPMENT TRIP DISTRIBUTION	40
P	OTHER DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)	41
Q	OTHER DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES	42
R	OTHER DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES	43
S	EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)	45

T	YEAR 2000 AVERAGE DAILY TRAFFIC (ADT) WITHOUT PROJECT	46
U	YEAR 2000 AVERAGE DAILY TRAFFIC (ADT) WITH PROJECT	47
V	YEAR 2020 AVERAGE DAILY TRAFFIC (ADT) WITHOUT PROJECT	48
W	YEAR 2020 AVERAGE DAILY TRAFFIC (ADT) WITH PROJECT	49
X	EXISTING PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES	52
Y	EXISTING PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES	53
Z	YEAR 2000 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	56
AA	YEAR 2000 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	57
BB	YEAR 2000 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	60
CC	YEAR 2000 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	61
DD	YEAR 2020 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	65
EE	YEAR 2020 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT	66
FF	YEAR 2020 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	69
GG	YEAR 2020 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT	70
HH	EL TORO ROAD CROSS-SECTIONS	75
II	CIRCULATION RECOMMENDATIONS	79

LIST OF TABLES

TABLE		PAGE
1	ROADWAY CAPACITY VALUES	18
2	EXISTING INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS	22
3	TRIP GENERATION RATES	28
4	PROJECT TRIP GENERATION	29
5	TRIP GENERATION COMPARISON FOR OTHER ALTERNATIVES	31
6	OTHER DEVELOPMENT TRIP GENERATION	39
7	EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS	51
8	YEAR 2000 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT	54
9	YEAR 2000 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITHOUT IMPROVEMENTS	58
10	YEAR 2000 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITH IMPROVEMENTS	59
11	YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT, WITHOUT IMPROVEMENTS	63
12	YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT, WITH IMPROVEMENTS	64
13	YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITHOUT IMPROVEMENTS	67

14	YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITH IMPROVEMENTS	68
15	POTENTIAL ROADWAY FEES	73
16	SANTIAGO CANYON ROAD PROJECT SHARE ANALYSIS . . .	76

SADDLEBACK MEADOWS (TT 10692)
GROWTH MANAGEMENT/CMP TRAFFIC ANALYSIS
ORANGE COUNTY, CALIFORNIA
(REVISED)

I. INTRODUCTION AND SUMMARY

A. Purpose of Report and Study Objectives

The purpose of this traffic study is to evaluate the development of the Saddleback Meadows (TT 10692) from a traffic circulation standpoint. The proposed development is included within the unincorporated portion of Orange County.

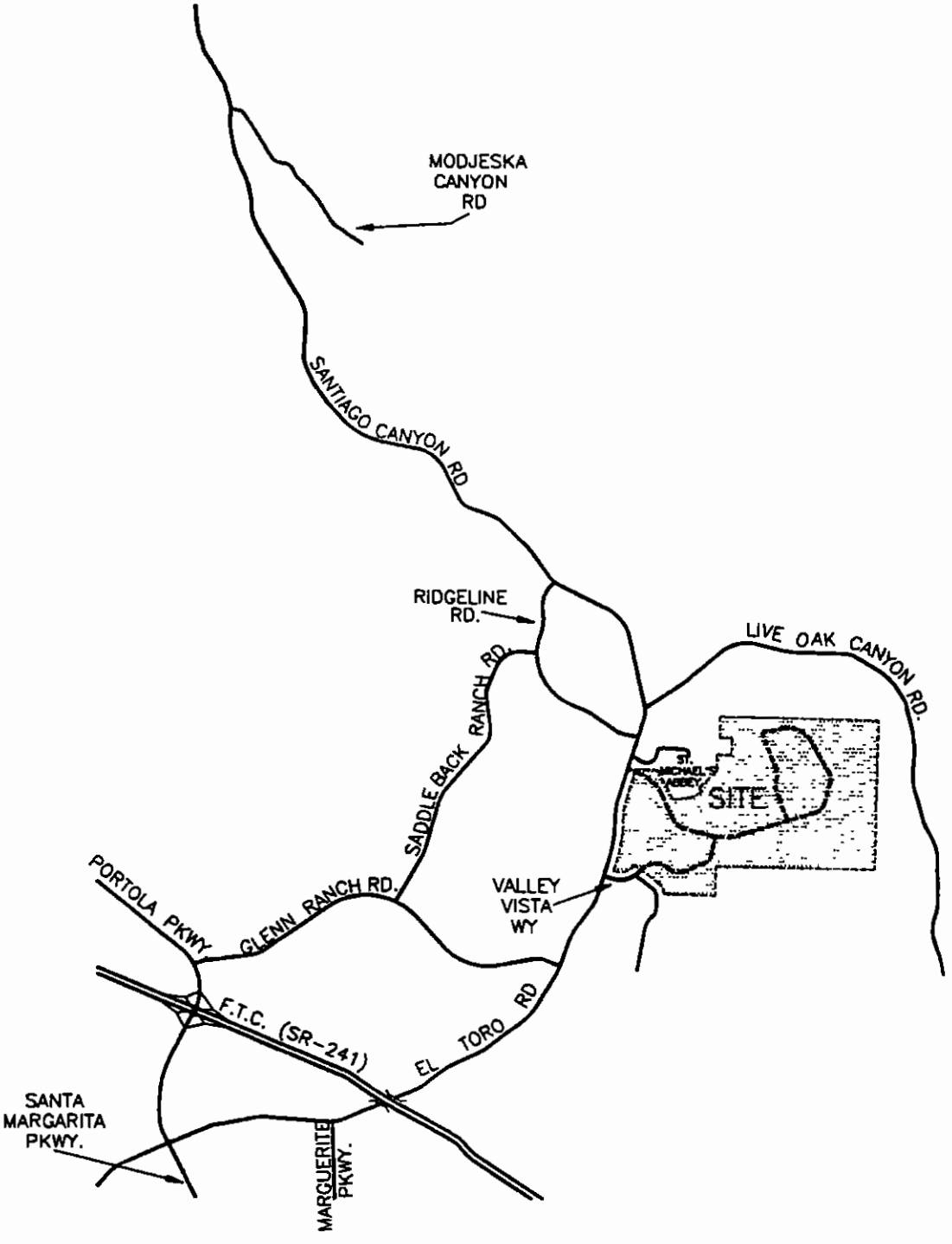
Study objectives include (1) documentation of existing traffic conditions in the vicinity of the site; (2) calculation of existing plus project traffic conditions; (3) evaluation of traffic conditions for the Year 2000; (4) analysis of traffic conditions for Year 2020; and (5) determination of off-site improvements and system management actions needed to achieve County of Orange level of service requirements.

B. Executive Summary

1. Site Location and Study Area

The project site is located east of El Toro Road and south of Live Oak Canyon Road in the County of Orange. Exhibit A illustrates the traffic analysis study area.

EXHIBIT A
LOCATION MAP



685-95-001.75A
SADDLEBACK MEADOWS, Orange County, California

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The study area includes the following intersections:

Santiago Canyon Road (NS) at:

- Modjeska Canyon Road (EW)
- Ridgeline Road (EW)

El Toro Road (NS) at:

- Live Oak Canyon Road (EW)
- Ridgeline Road (EW)
- Valley Vista Way (EW)
- Glenn Ranch Road (EW)

Saddleback Ranch Road (NS) at:

- Glenn Ranch Road (EW)

Marguerite Parkway (NS) at:

- El Toro Road (EW)

Portola Parkway (NS) at:

- Glenn Ranch Road (EW)
- Foothill Transportation Corridor (EW)
- El Toro Road (EW)

2. Development Description

The approximately 223 acre project site is currently undeveloped and does not generate any significant traffic. Proposed uses for the project site include 705 manufactured housing dwelling units and 20,000 square

feet of commercial retail. The site plan for the project is shown on Exhibit B.

3. Principal Findings

The proposed development is projected to generate a total of approximately 8,340 trip-ends per day with 540 vehicles per hour during the AM peak hour and 825 vehicles per hour during the PM peak hour.

For existing traffic conditions, the intersections in the vicinity of the site are operating at Level of Service "D" or better during the peak hours, as shown in Table 2. Traffic signals appear to presently be warranted at the following intersections (see Appendix "I"):

Santiago Canyon Road (NS) at:

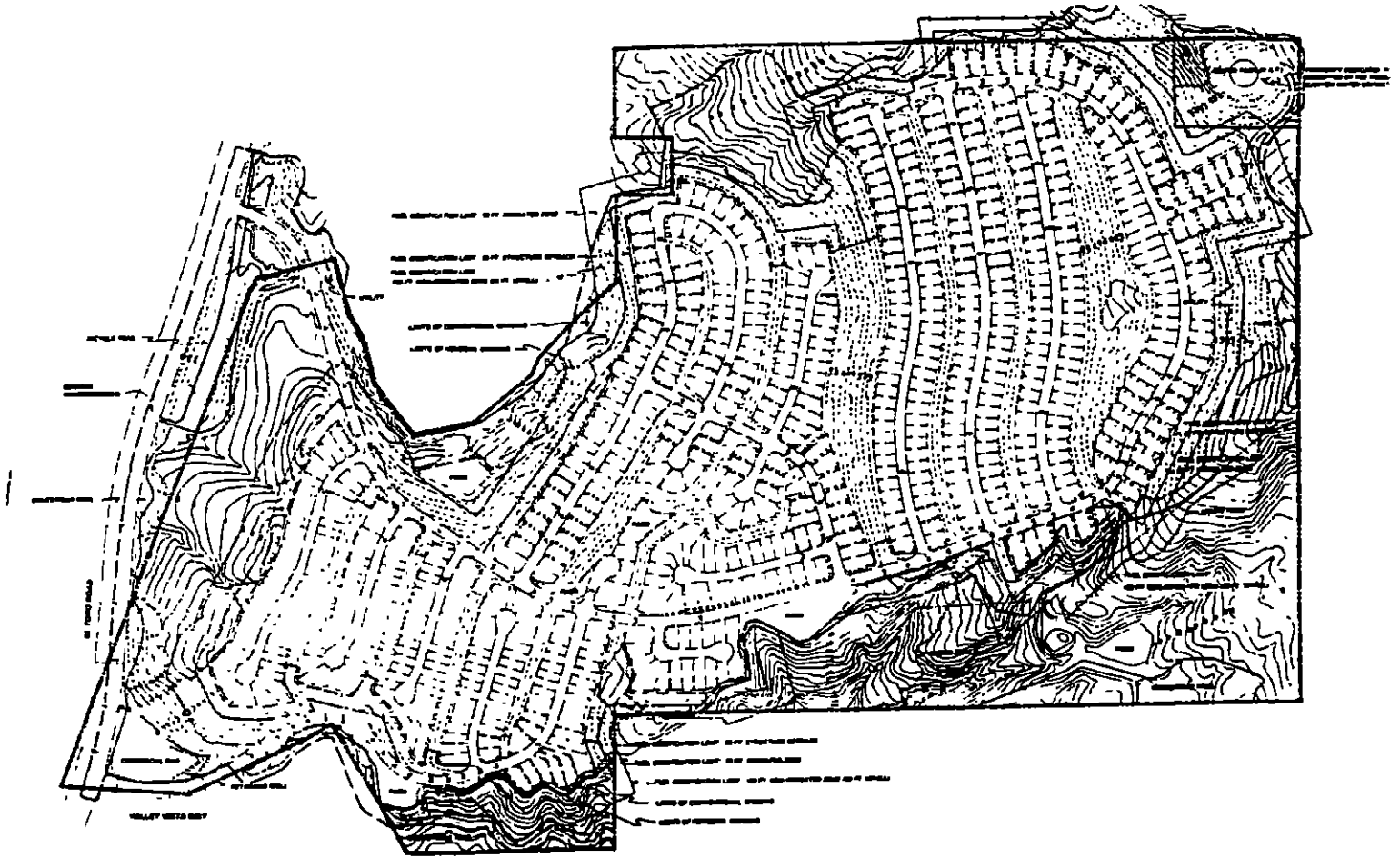
- Ridgeline Road (EW)

El Toro Road (NS) at:

- Live Oak Canyon Road (EW)

For existing plus project traffic conditions, the intersections in the vicinity of the site are projected to continue to operate at Level of Service "D" or better during the peak hours, as shown in Table 7. A traffic signal is projected to be warranted at the intersection of El Toro Road/Project Entrance for existing plus project traffic conditions (see Appendix "I").

EXHIBIT B
SITE PLAN



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SADDLEBACK MEADOWS, Orange County, California

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For Year 2000 traffic conditions, the intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with improvements, as shown in Table 10. A traffic signal is projected to be warranted at the intersection of Santiago Canyon Road/Modjeska Canyon Road for Year 2000 without project traffic conditions (see Appendix "I").

For Year 2020 traffic conditions, the intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with improvements that include the ultimate widening of El Toro Road and Santiago Canyon Road to four through travel lanes (two in each direction), as shown in Table 14.

Pursuant to the County of Orange Growth Management Plan (GMP), segments of Santiago Canyon Road are required to function at a Level of Service "C". Capacity improvements along Santiago Canyon Road will be required in conjunction with future growth to achieve Level of Service "C". The Santiago Canyon Road Major Thoroughfare and Bridge Fee Program has been designed to provide up to $34 million in improvements to Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road. However, the March, 1994 Project Report for improvements to Santiago Canyon Road indicates that the total cost of improvements is approximately $52.3 million for a "limited project" scenario. To address the difference between the ultimate cost of $52.3 million and the fee program allocation of $34 million, the project should provide an additional contribution beyond the payment of normal fees based upon its traffic share.

4. Project Recommendations

The proposed project will have primary access to El Toro Road. The El Toro Road turn-lane improvements needed at the Project Entrance to serve Year 2000 conditions should be completed in conjunction with development. Secondary access will be provided via an access to Valley Vista Way.

For Year 2000 and Year 2020 traffic conditions with the project and with off-site improvements, study area intersections that are impacted by the proposed development are projected to operate at Level of Service "D" or better during the peak hours. Significant off-site improvements will be needed at study area intersections to accommodate Year 2020 traffic conditions. Improvements are programmed to be implemented through existing funding programs (i.e., Measure "M", existing road fee programs, etc.) and pro-rata participation by individual developments based upon vesting tentative map conditions and existing development agreements. Potential roadway fees for the Saddleback Meadows (TT 10692) development are shown in Table 15.

Both existing traffic patterns and SCTM traffic projections for Years 2000 and 2020 indicate the attraction of Glenn Ranch Road, Portola Parkway, and the Foothill Transportation Corridor (SR-241) for increased traffic volumes in the project study area.

North of the Foothill Transportation Corridor, El Toro Road can accommodate cumulative Year 2020 traffic volumes with the proposed project on four travel lanes divided by a raised or striped median. Exhibit

HH illustrates the alternative cross-sections for El Toro Road in the vicinity of the project. Implementation of a full Major arterial cross-section (six lanes divided) is not needed to serve future traffic volumes. Exhibit HH depicts an alternative section which would provide four travel lanes along El Toro Road divided by a striped median. This alternative section represents a modification of the typical cross-section for a Primary arterial. Appropriate transitions would be required between this cross-section and other modified cross-sections along El Toro Road south of Glenn Ranch Road.

Table 16 depicts the project share of peak hour traffic along segments of Santiago Canyon Road. The residential project peak hour traffic increases range from 5.8 percent during the AM peak hour traffic north of Ridgeline Road, to 9.2 percent of PM peak hour traffic between Live Oak Canyon Road and Ridgeline Road. The commercial project peak hour traffic increases range from 0.2 percent during the AM peak hour traffic north of Modjeska Canyon Road, to 2.5 percent of PM peak hour traffic between Live Oak Canyon Road and Ridgeline Road. Pursuant to the County of Orange Growth Management Plan (GMP) and discussions with Environmental Management Agency staff, it has been determined that the project should contribute a fee beyond the normal Santiago Canyon Road Major Thoroughfare and Bridge Fee Program to address ultimate improvement requirements based upon the project's fare share traffic contribution. The difference between the long range improvement costs for Santiago Canyon Road and the amount estimated to be provided by the Santiago Canyon Road Major Thoroughfare and Bridge Fee Program is approximately $18,300,000. A conservative estimate of the project's residential traffic share is approximately 7.3 percent based

upon the values presented in Table 16. This amounts to a residential project contribution of $1,335,900, which in turn equates to a fee per dwelling unit of $1,895. The project should therefore participate in a supplemental fee contribution to Santiago Canyon Road of $1,895 per dwelling unit. A conservative estimate of the project's commercial traffic share is approximately 1.1 percent based upon the values presented in Table 16. This amounts to a commercial project contribution of $201,300, which in turn equates to a fee per square foot of $10.07. The project commercial area should therefore participate in a supplemental fee contribution to Santiago Canyon Road of $10.07 per square foot.

It is anticipated that the main project access point to El Toro Road will require a traffic signal in conjunction with the first project phase (approximately 208 dwelling units). The project should provide this improvement as well as a southbound left turn lane and northbound right turn lane on El Toro Road at the project entry.

In order to accommodate the anticipated traffic and the potential traffic signal, it is recommended that the entry street to Saddleback Meadows (TT 10692) be designed as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12 foot exiting lanes and two 12 foot entering lanes with a 10 foot median. The Collector cross-section should be maintained for approximately 160 feet where it could then be transitioned to a standard 40 foot wide curb-to-curb width Collector roadway, as shown on Exhibit II.

Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan.

The project should participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Program, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program.

Sight distance at each of the project access intersections should be reviewed with respect to Standard Plan Number 1117 (see Appendix "J") in conjunction with the preparation of precise grading and landscape plans.

II. AREA CONDITIONS

A. Study Area

1. Area of Significant Traffic Impact

Existing roadways in the study area include the Foothill Transportation Corridor (SR-241), Santiago Canyon Road, El Toro Road, Marguerite Parkway, Portola Parkway, Santa Margarita Parkway, Live Oak Canyon Road, Ridgeline Road, Saddleback Ranch Road and Glenn Ranch Road.

Foothill Transportation Corridor (SR-241) has been extended southerly to Antonio Parkway. This corridor, in conjunction with Portola Parkway and Irvine Boulevard, provides a connection from the communities of Coto de Caza and Santa Margarita to the City of Tustin.

Santiago Canyon Road is classified as a Primary (four-lane divided) Arterial highway on the Orange County Master Plan of Arterial Highways (MPAH). It is currently two lanes in the vicinity of the site. Santiago Canyon Road currently accommodates approximately 10,000 to 14,000 ADT in the study area.

El Toro Road is classified as a Major (six-lane divided) Arterial highway south of Live Oak Canyon Road on the Orange County MPAH. It is partially constructed to its Master Plan classification near Santa Margarita Parkway and has yet to be improved (two lanes) in the vicinity of the project site. El Toro Road currently accommodates approximately 13,000 to 23,000 ADT in the study area.

Marguerite Parkway is classified as a Primary (four-lane divided) Arterial highway south of El Toro Road on the Orange County MPAH. Marguerite Parkway in the study area has been fully constructed and currently carries approximately 12,000 ADT in the study area.

Portola Parkway is classified as a Major (six-lane divided) Arterial highway north of El Toro Road to Alton Parkway on the Orange County MPAH. It is fully improved and currently accommodates approximately 20,000 to 22,000 ADT in the study area.

Santa Margarita Parkway is classified as a Major (six-lane divided) Arterial highway on the Orange County MPAH. It has been fully improved to its Master Plan of Arterial Highways classification in the study area. Traffic volumes on Santa Margarita Parkway are approximately 26,000 ADT in the study area.

Live Oak Canyon Road is currently two lanes east of El Toro Road. It currently carries approximately 5,000 ADT in the study area.

Ridgeline Road is currently two lanes west of El Toro Road. It currently carries approximately 1,000 to 2,000 ADT in the study area.

Saddleback Ranch Road is currently two to four lanes in the study area. It currently carries approximately 3,000 ADT.

Glenn Ranch Road has recently been completed to provide a direct connection between El Toro Road south of the project site and Portola Parkway north of the Foothill Transportation Corridor (SR-241). Glenn Ranch Road is classified as a Primary (four-lane divided) Arterial highway

on the Orange County MPAH. It is fully constructed and currently carries approximately 5,000 ADT in the study area.

B. Site Accessibility

1. Area Roadway System

Exhibit C identifies the existing roadway conditions for study area roadways. The number of through travel lanes for existing roadways and the existing intersection controls are identified.

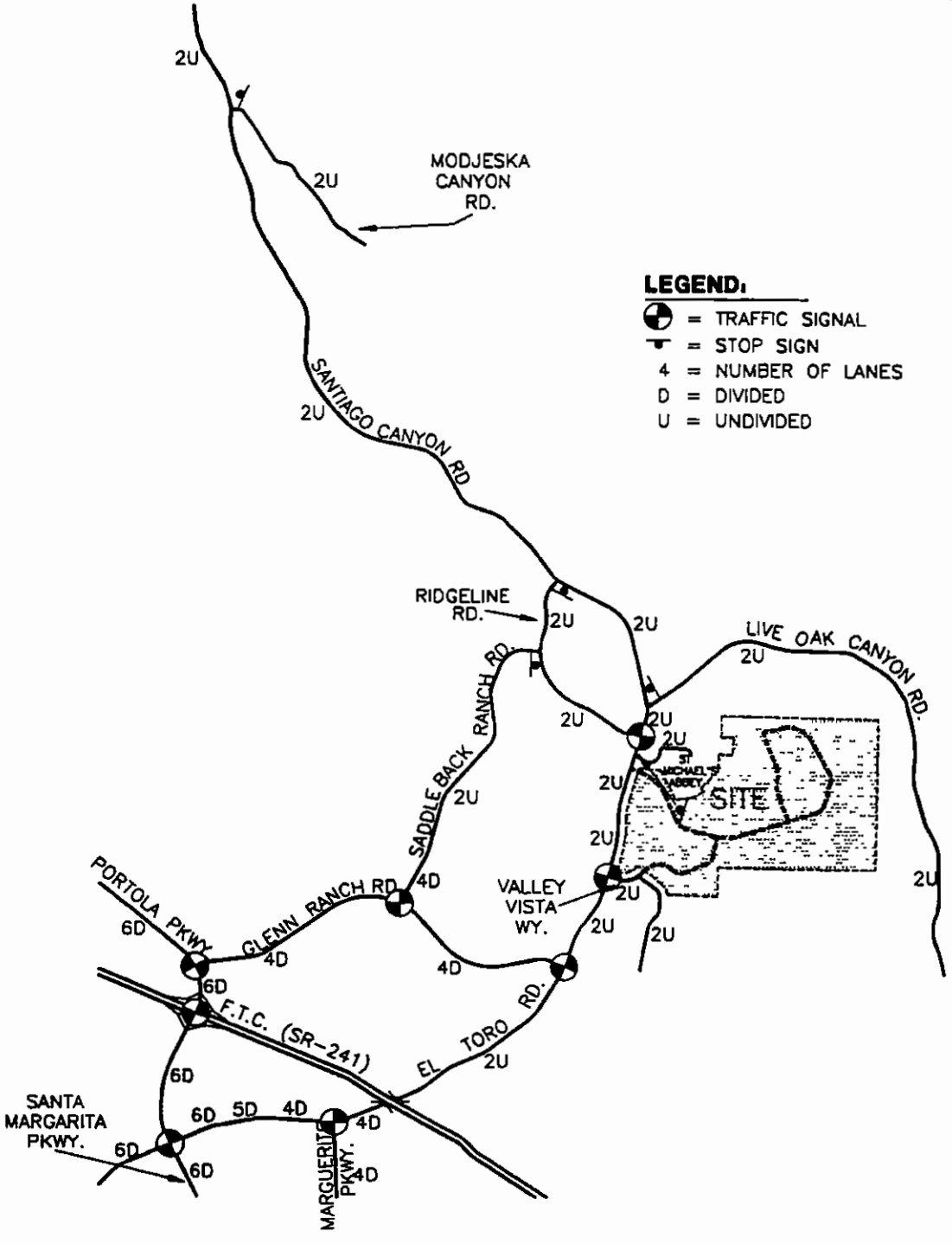
2. Existing Master Plan of Arterial Highways

Existing and future roadways are included in the latest Orange County Master Plan of Arterial Highways (MPAH) and are illustrated on Exhibit D. This exhibit shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan and serves to coordinate future arterial highways between local jurisdictions. Exhibit E illustrates the typical Orange County cross-sections and design capacity values for various roadway classifications.

3. Traffic Volumes and Conditions

Existing average daily traffic (ADT) on arterial highways throughout the study area are shown on Exhibit F. Existing ADT volumes are based upon the traffic data collected by the County of Orange and counts made for RKJK in June, 1995 (see Appendix "B"). Typical daily capacity values for arterial highways are shown in Table 1.

EXHIBIT C
EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



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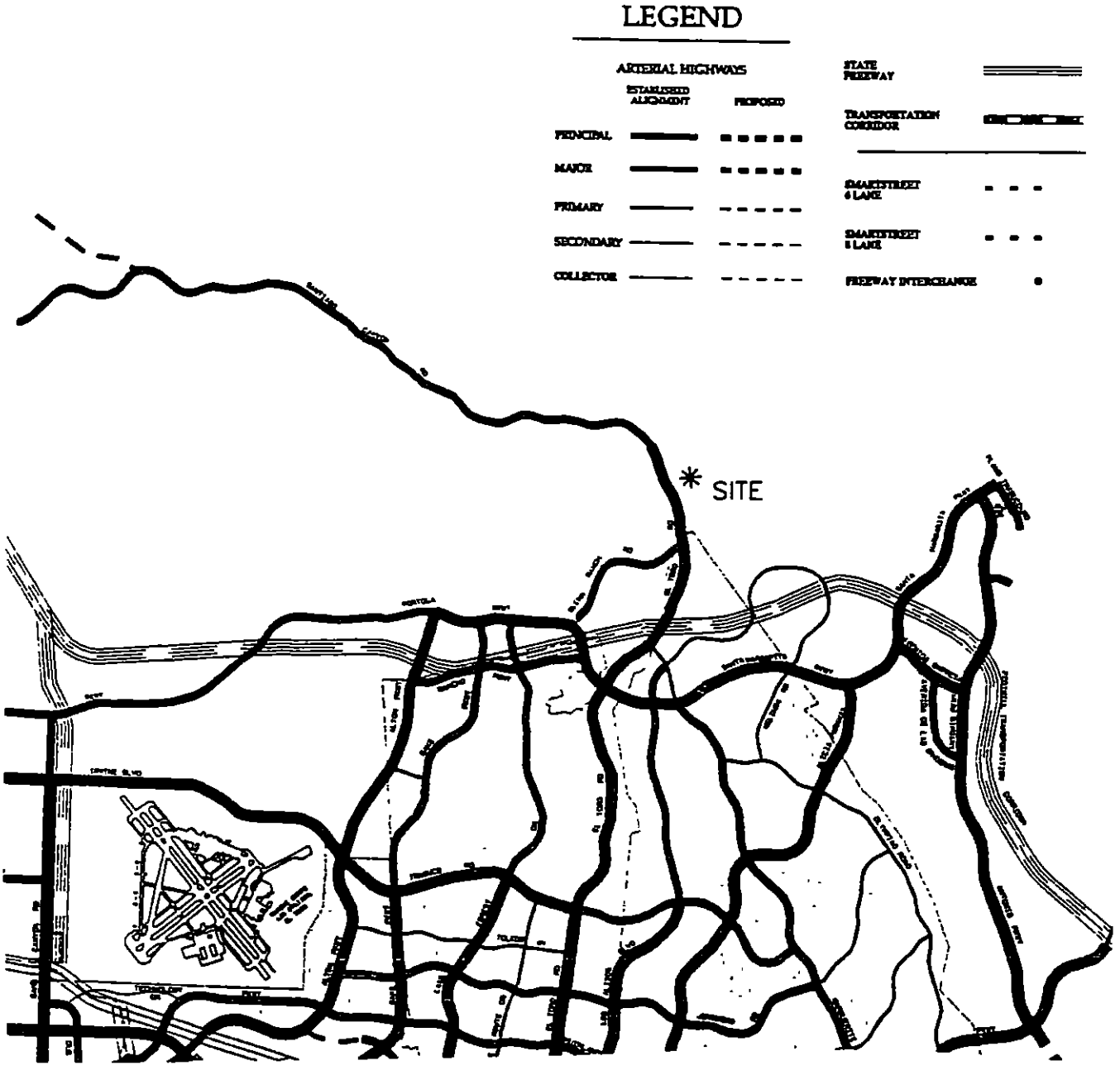
685-95-001.77A
SADDLEBACK MEADOWS, Orange County, California

RKJK
ROBERT KAHN · JOHN KAHN & ASSOCIATES INC.

EXHIBIT D
ORANGE COUNTY
MASTER PLAN OF ARTERIAL HIGHWAYS



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SADDLEBACK MEADOWS, Orange County, California

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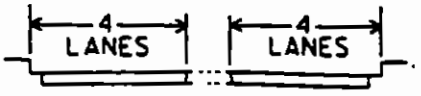
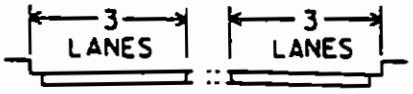
EXHIBIT E
ORANGE COUNTY CROSS-SECTIONS AND LEVEL OF SERVICE "C" VALUES

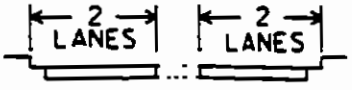
CLASSIFICATION



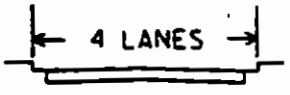
PRINCIPAL
8 Lane Divided Roadway
Accommodates 45,000 to 60,000 ADT



MAJOR
6 Lane Divided Roadway
Accommodates 30,000 to 45,000 ADT



PRIMARY
4 Lane Divided Roadway
Accommodates 20,000 to 30,000 ADT

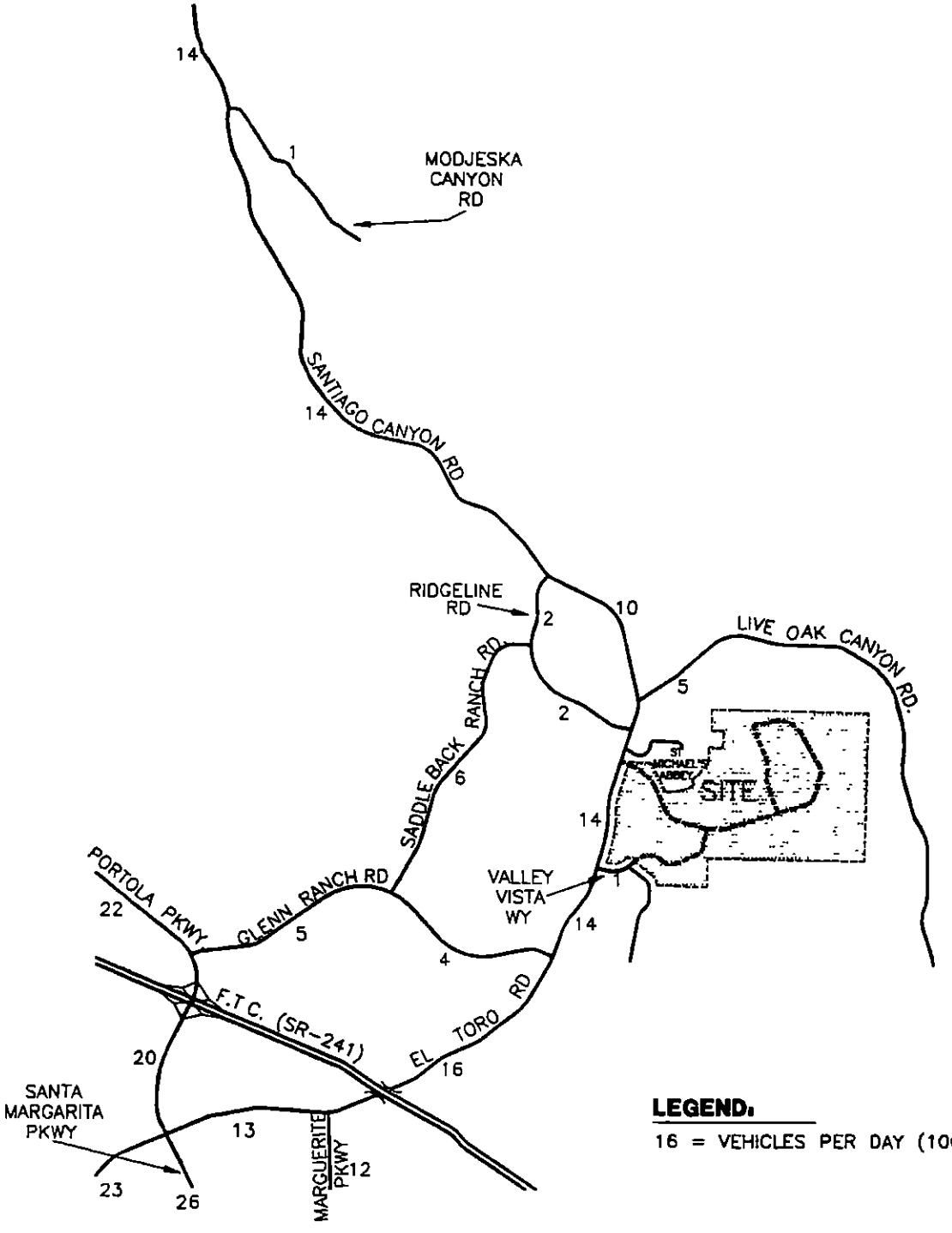


SECONDARY
4 Lane Undivided Roadway
Accommodates 10,000 to 20,000 ADT

COMMUTER
2 Lane Undivided Roadway
Accommodates 7,500 to 10,000 ADT

EXHIBIT F

EXISTING AVERAGE DAILY TRAFFIC (ADT)



685-95-001 80A
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TABLE 1

ROADWAY CAPACITY VALUES[1]

FREEWAY SIZES	AT ULTIMATE CAPACITY (LOS "E")
4 lanes	96,000
6 lanes	144,000
8 lanes	192,000
10 lanes	240,000
12 lanes	288,000
14 lanes	336,000

TYPE OF ARTERIAL	LEVEL OF SERVICE				
	A	B	C	D	E
8 lanes divided	45,000	52,500	60,000	67,500	75,000
6 lanes divided	33,900	39,400	45,000	50,600	56,300
4 lanes divided	22,500	26,300	30,000	33,800	37,500
4 lanes undivided	15,000	17,500	20,000	22,500	25,000
2 lanes divided	11,300	13,200	15,000	17,000	18,800
2 lanes undivided	7,500	8,800	10,000	11,300	12,500

[1] These roadway capacities are approximate figures only, and are used at the General Plan level. They are affected by such factors as intersections (numbers & configuration), degree of access control, roadway grades, design geometrics (horizontal & vertical alignment standards), sight distance, level of truck and bus traffic, and level of pedestrian and bicycle traffic. Average daily traffic (ADT) is used by the County as a long range planning tool to assist in determining arterial highway classification (number of through lanes) needed to meet traffic demand.

The technique used to assess the operation of an intersection is known as Intersection Capacity Utilization (ICU). To calculate an ICU the volume of traffic using the intersection is compared with the capacity of the intersection. ICU is usually expressed as a percent. The percent represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. An explanation of Level of Service is included in Appendix "A".

Calculation Method:

a. Intersection Capacity Utilization (ICU) for study area intersections;

b. Daily volume/capacity ratio (V/C) for study links.

c. Saturation Flow Rate:

Saturation flow value of 1,700 vehicles per lane per hour for intersections; no adjustments are used for protection movements with dedicated lanes (including both right and left turns).

d. Lost Time:

A lost time factor of 5% (.05) is applied to the ICU calculations.

e. Level of Service Ranges:

The following thresholds are used in assigning a letter value to the resulting LOS:

LOS	CRITICAL VOLUME TO CAPACITY RATIO
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	>1.00

f. Peak-Periods:

Weekday peak-hour analysis periods are defined as follows:

7:00 to 9:00 AM
4:00 to 6:00 PM

g. Peak-Hour:

The highest one-hour period in both the AM and PM peak periods, as determined by four consecutive 15-minute count periods are used in the ICU calculations. Both AM and PM peak hours are studied.

h. Peak-Hour Data Consistency:

Variations in peak-hour volumes can affect LOS calculations because they vary from day-to-day. To minimize these variations, no counts are taken on Mondays, Fridays, holidays or weekends.

i. Right Turn Movements:

If the distance from the edge of the outside through lane is at least 19 feet and parking is prohibited during the peak period, right turning vehicles may be assumed to utilize this "unofficial" right turn lane. Otherwise, all right turn traffic is assigned to the through lane. If a right turn lane exists, right turn activity is checked for conflicts with other critical movements. It is assumed that right turn movements are accommodated during non-conflicting left turn phases (e.g., northbound right turns during westbound left turn phase), as well as non-conflicting through flows (e.g., northbound right turn movements and north/south through flows. Right turn movements become critical when conflicting movements (e.g., northbound right turns, southbound left turns, and eastbound through flows) represent a sum of V/C ratios which are greater than the normal through/left turn critical movements. Right turn volumes have been reduced by 15% to account for right turns on red.

If a free right turn lane exists (right turns do not have to stop for the signal), a flow rate of 1,700 vehicles per hour per lane is assumed. The V/C ratio of the right turn lane is reported but not included in the sum of the critical V/C ratios.

The ICU's for the intersections in the vicinity of the site are shown in Table 2. Existing ICU's are based upon manual AM and PM peak hour turning movement counts made for RKJK in June and August, 1995 (see Exhibits G and H). The existing intersection lanes for the study area intersections are depicted on Exhibit I.

TABLE 2

EXISTING INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.82	0.57	D	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.78	0.55	C	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.74	0.45	C	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.62	0.53	B	A
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.58	0.45	A	A
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.54	0.56	A	A
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	1	2	0	0	2	1	0.29	0.33	A	A
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	1>	0	0	0	0	2	0	2	2	0	0.32	0.43	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	0	3	1	2	3	0	0	0	0	2	0	1	0.54	0.45	A	A
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.40	0.55	A	A
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.40	0.49	A	A

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

EXHIBIT G
EXISTING AM PEAK HOUR INTERSECTION VOLUMES

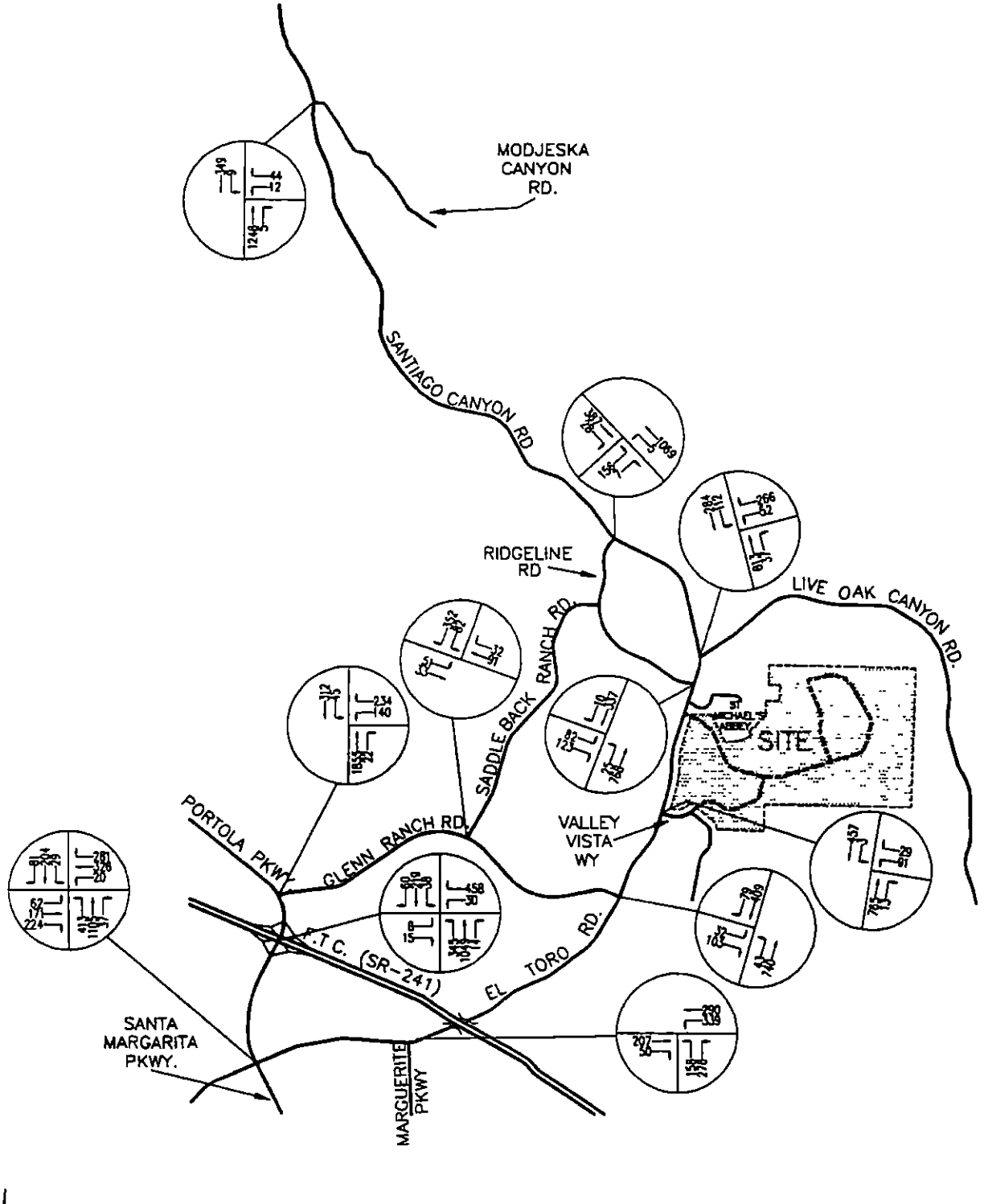

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EXHIBIT H
EXISTING PM PEAK HOUR INTERSECTION VOLUMES

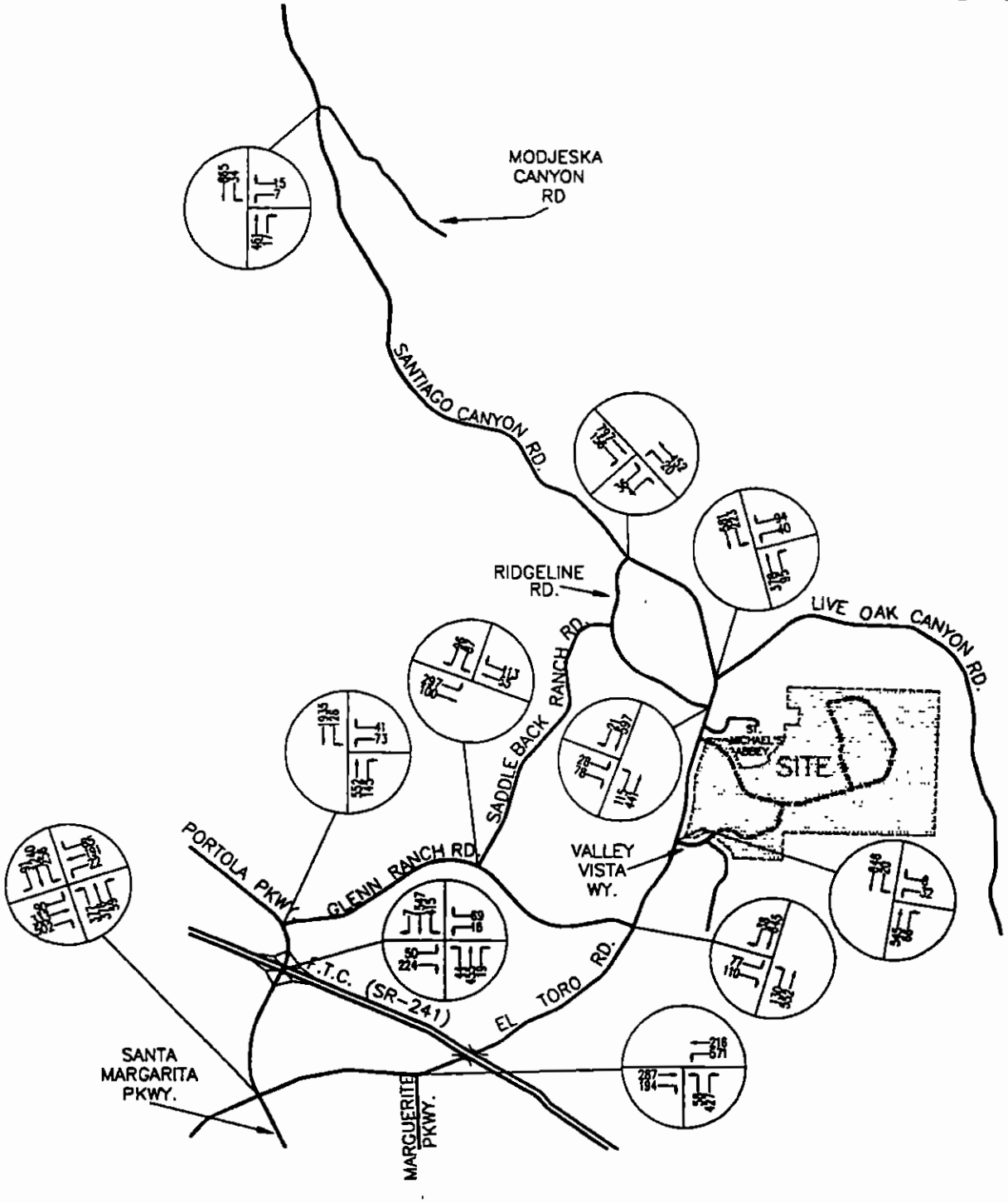

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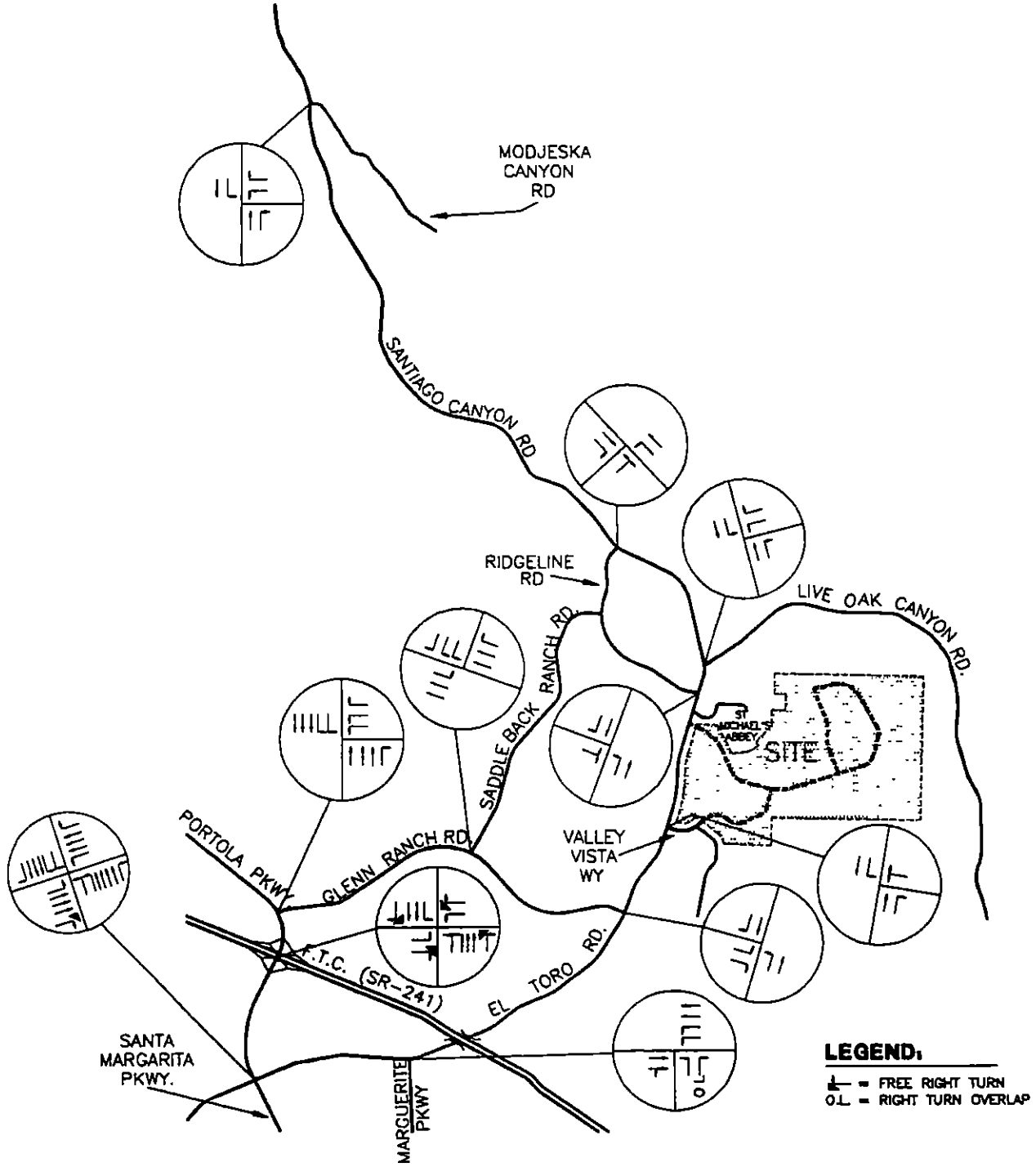
EXHIBIT I
EXISTING INTERSECTION LANES



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Traffic count worksheets are included in Appendix "B". The intersections in the vicinity of the site are currently operating at Level of Service "D" or better during the peak hours. ICU calculation worksheets are provided in Appendix "C".

Traffic signals appear to presently be warranted at the following intersections (see Appendix "I"):

Santiago Canyon Road (NS) at:

- Ridgeline Road (EW)

El Toro Road (NS) at:

- Live Oak Canyon Road (EW)

III. PROJECTED TRAFFIC

A. Site Traffic

1. Trip Generation

Trip generation represents the amount of traffic which is attracted and produced by a development. The recorded map for Tract 10692 shows 705 manufactured housing dwelling units. The project site also includes 20,000 square feet of commercial retail.

Trip generation rates for this project are shown in Table 3. The trip generation rates are based upon the County of Orange and Institute of Transportation Engineers (ITE).

Both daily and peak-hour trip generation for the proposed project are shown in Table 4. The Saddleback Meadows (TT 10692) development is projected to generate a total of approximately 8,340 trip-ends per day with 540 vehicles per hour during the AM peak hour and 825 vehicles per hour during the PM peak hour.

It should be noted that for commercial retail land uses, a portion of the traffic would come from pass-by or diverted trips from adjacent roadways, trips which are currently on the roadway system (see Appendix "K"). In order to analyze a "conservative" scenario in terms of the assignment of traffic, the traffic volumes from the project site have been reduced by 30% as a result of pass-by or diverted trips.

TABLE 3

TRIP GENERATION RATES

LAND USE	UNITS[2]	PEAK HOUR[1]				DAILY
		AM		PM		
		IN	OUT	IN	OUT	
Manufactured Housing	DU	0.17	0.50	0.47	0.36	8.00
Commercial Retail	TSF	1.98	1.16	5.88	5.88	135.00[3]

[1] Source: Institute of Transportation Engineers (ITE), Trip Generation, Fifth Edition Update, February, 1995, Land Use Categories 231 and 820.

[2] DU = dwelling units
TSF = thousand square feet

[3] Source: County of Orange, Daily Vehicle Trip Generation Rates, August, 1982.

TABLE 4

PROJECT TRIP GENERATION

LAND USE	UNITS[2]	PEAK HOUR[1]				DAILY[3]
		AM		PM		
		IN	OUT	IN	OUT	
Manufactured Housing	705.0 DU	120	355	330	255	5,640
Commercial Retail	20.0 TSF	40	25	120	120	2,700
• Pass-By/Diverted Trips[4] (30%)		-10	-5	-35	-35	-810
Total						
• W/O Pass-By/Diverted Reduction		160	380	450	375	8,340
• W/Pass-By/Diverted Reduction		150	375	415	340	7,530

[1] All peak hour trips rounded to nearest 5.

[2] DU = dwelling units
TSF = thousand square feet

[3] All daily trips rounded to nearest 10.

[4] A portion of the commercial retail traffic would come from pass-by or diverted trips from adjacent roadways, trips which are currently on the roadway system (see Appendix "K").

A trip generation comparison to four other alternatives of the project site is shown in Table 5. All of the alternatives decrease the AM and PM vehicles per hour and daily trip-ends as compared to the proposed project.

2. Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the proximity to the regional freeway system, existing/future residential development, other commercial and community facilities. The directional orientation of traffic was determined by evaluating existing and proposed land uses within the community and the Master Plan of Arterial Highways (MPAH).

Trip distribution for this study has been based upon near-term conditions, based upon those highway facilities which are in place. The trip distribution patterns for the project are graphically depicted on Exhibits J and K.

3. Modal Split

The traffic reducing potential of public transit has not been considered in this report. Essentially the traffic projections are "conservative" in that public transit might be able to reduce the traffic volumes.

TABLE 5

TRIP GENERATION COMPARISON FOR OTHER ALTERNATIVES

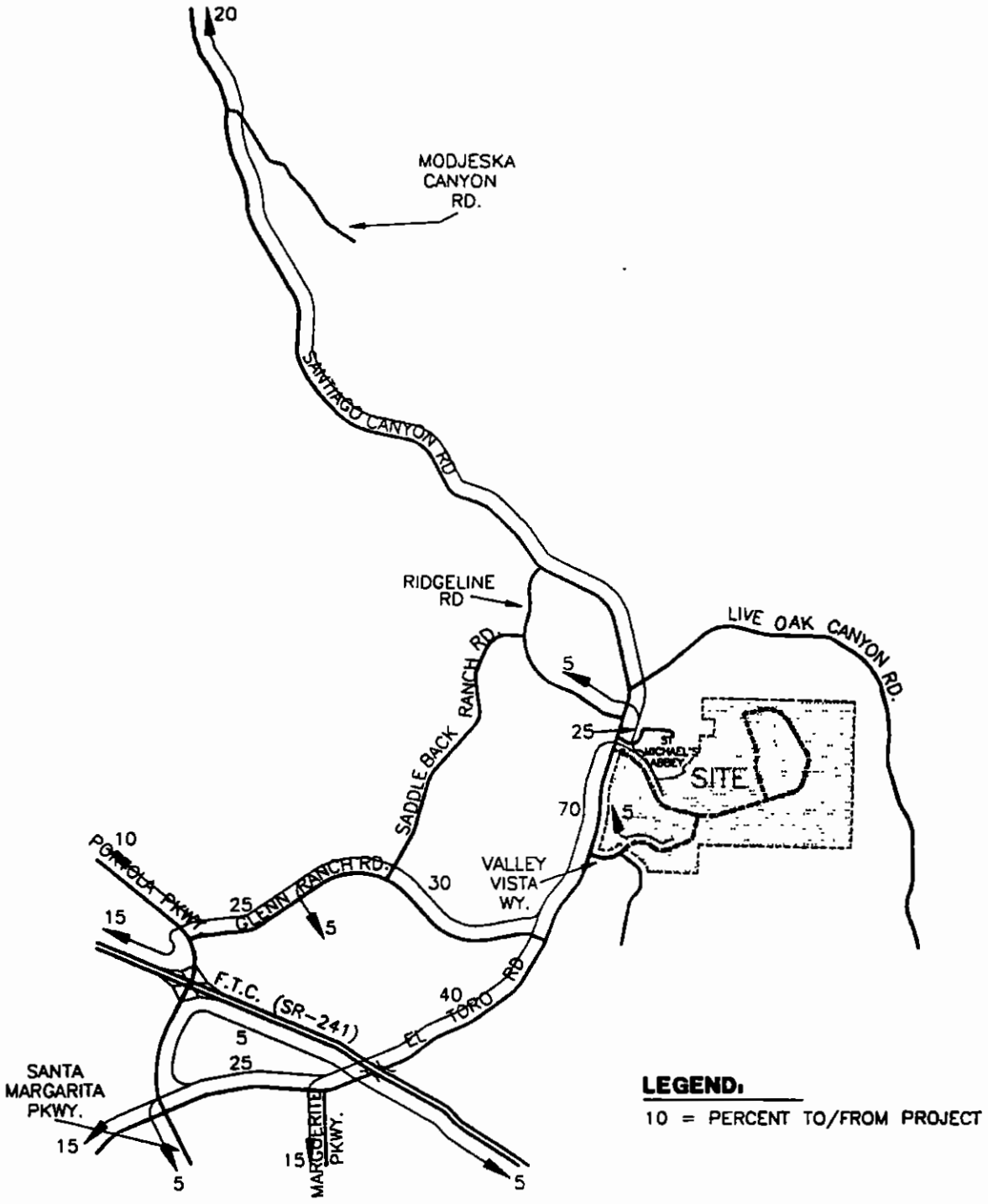
LAND USE	QUANTITY[2]	PEAK HOUR[1]				DAILY[3]
		AM		PM		
		IN	OUT	IN	OUT	
Single-Family Detached Residential	150 DU	30	85	100	55	1,800
Single-Family Detached Residential	100 DU	20	55	65	35	1,200
Multi-Family Attached Residential	Small Lot Cluster/ 318 DU MF	30	120	120	65	2,230
Single-Family Detached Residential	299 DU	55	165	195	105	3,590
TT 10692 Project • Manufactured Housing • Commercial Retail	 705 DU 20.0 TSF	 120 40	 355 25	 330 120	 255 120	 5,640 2,700
Subtotal		160	380	450	375	8,340

[1] All peak hour trips are rounded to the nearest 5.

[2] DU = dwelling units
TSF = thousand square feet

[3] Daily trips are rounded to the nearest 10.

EXHIBIT J
PROJECT (RESIDENTIAL) TRIP DISTRIBUTION



885-95-001.84A
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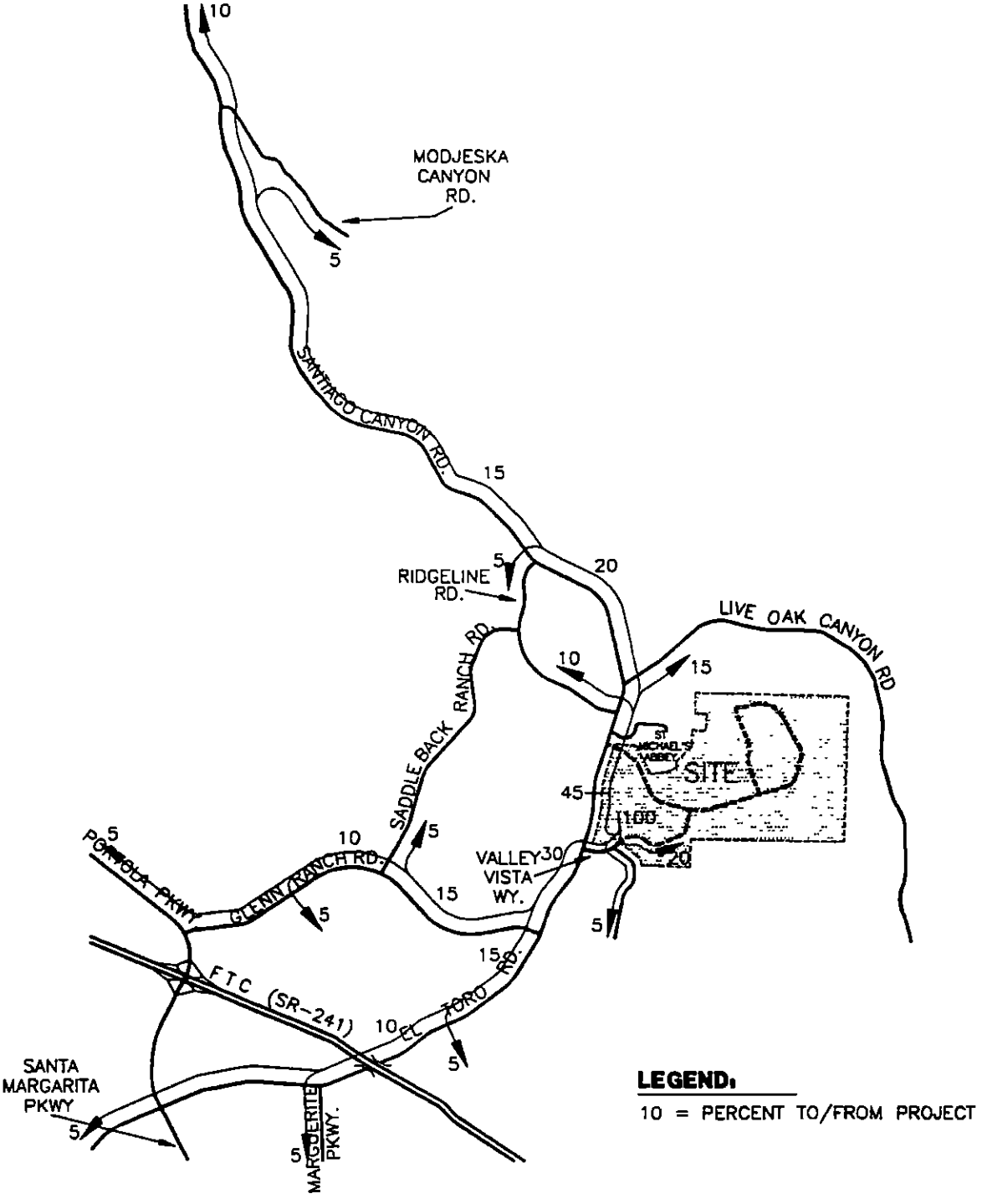
EXHIBIT K

PROJECT (COMMERCIAL RETAIL) TRIP DISTRIBUTION



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4. Trip Assignment

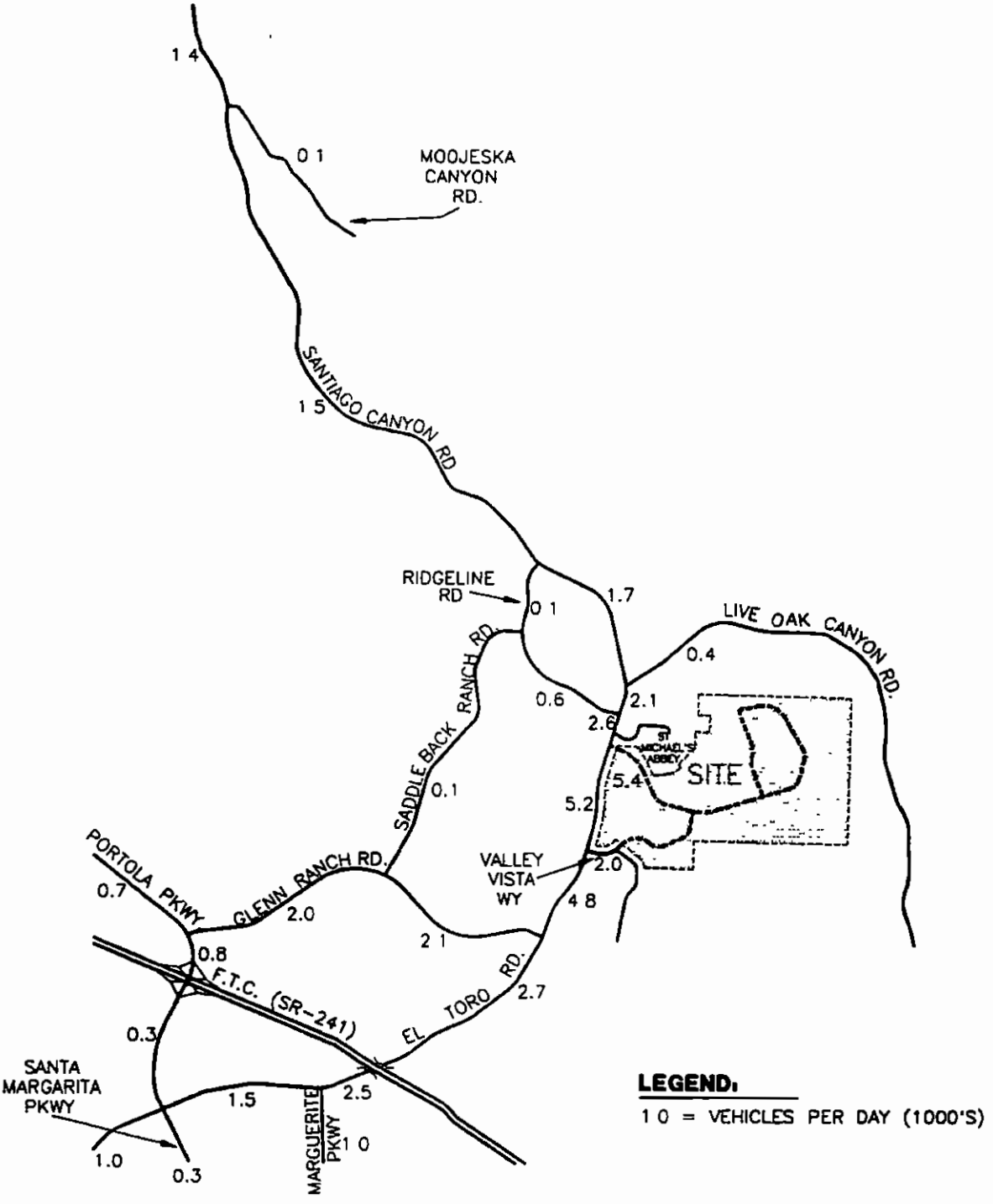
The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distributions, proposed arterial highway and local street systems. Based on the identified project traffic generation and distributions, the project related traffic volumes are shown on Exhibit L. The project AM and PM peak hour intersection turning movement volumes are shown on Exhibits M and N, respectively.

B. Other Development Traffic

1. Method of Projection

During 1995, RKJK staff interfaced with the County of Orange regarding the Year 2000 and Year 2020 traffic projections in the study area. The modeling source for traffic projections in the study area has been the Orange County Transportation Analysis Model (OCTAM), Version 2.5, South County Subarea (SCTM). SCTM projections for the Year 2000 incorporate 366 single-family residential units in traffic analysis zone 2695 which encompasses the project site. The Year 2000 and 2020 ADT volume forecasts were projected to include the residential portion of the project, therefore, Year 2000 and 2020 traffic conditions without the project involved subtracting the residential project volumes from the SCTM model volumes. The entire proposed project including the commercial retail portion was then added to this baseline data to determine the "with project" volumes.

EXHIBIT L
PROJECT AVERAGE DAILY TRAFFIC (ADT)



685-95-001.86A
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EXHIBIT M
PROJECT AM PEAK HOUR INTERSECTION VOLUMES

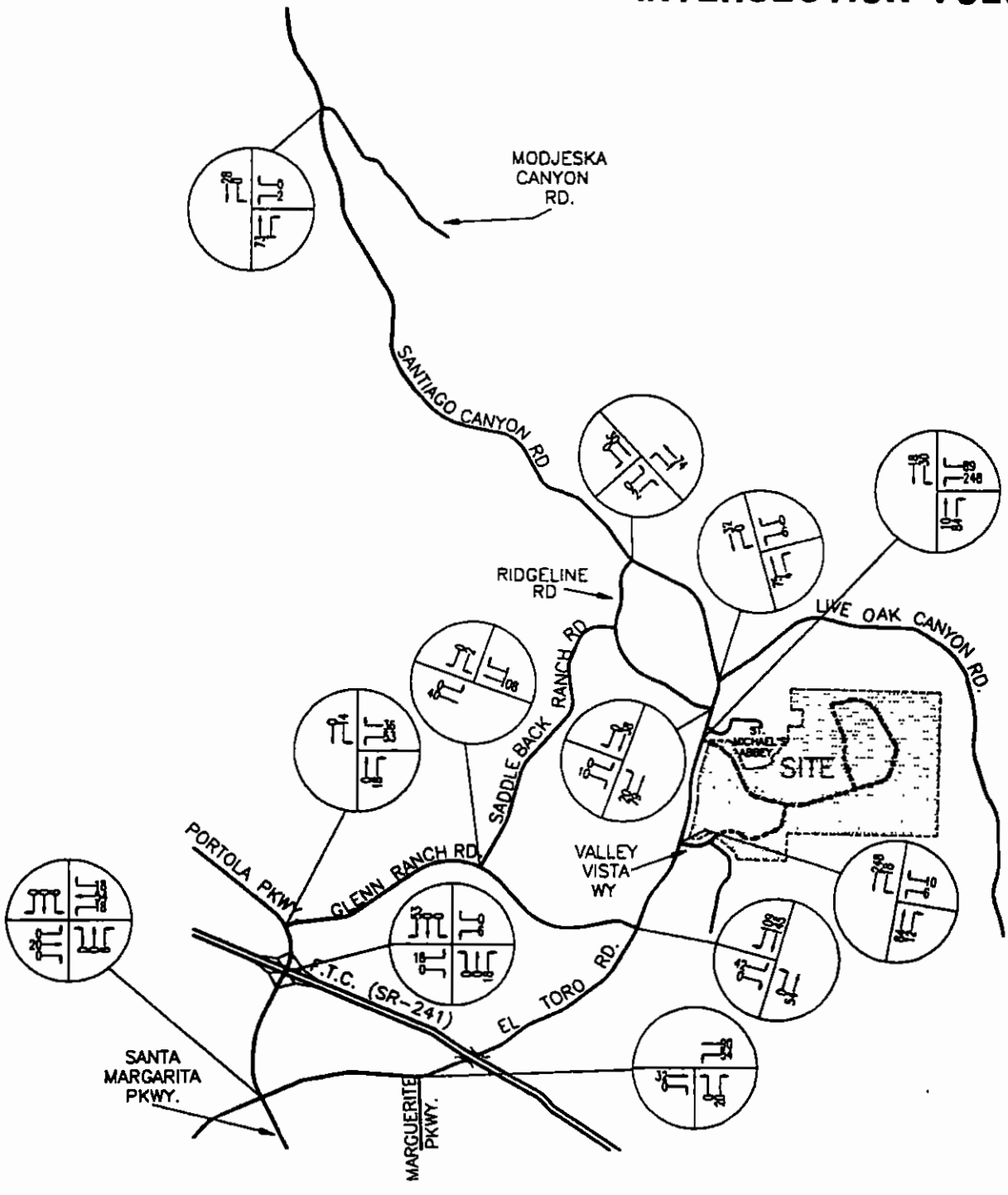

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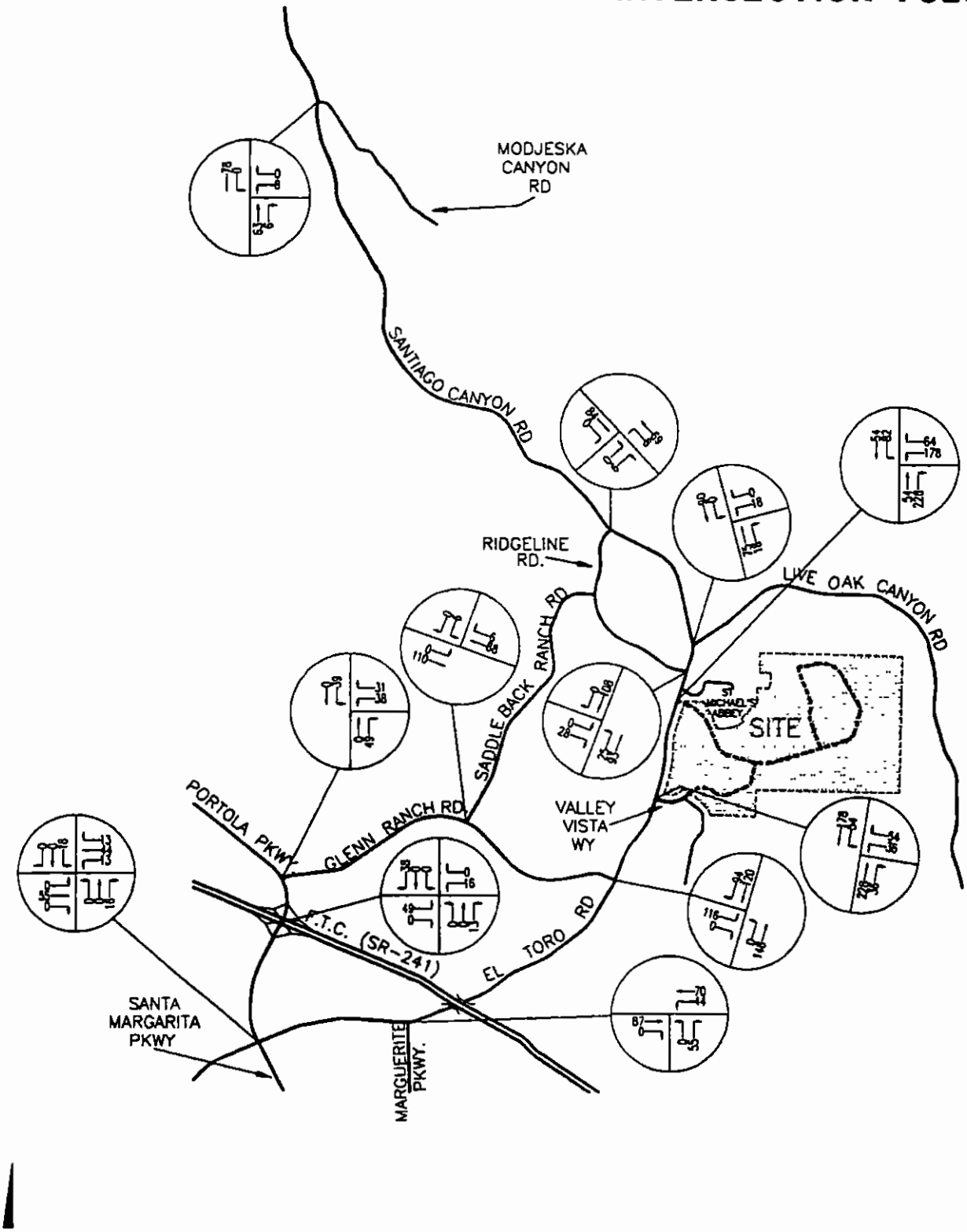
EXHIBIT N
PROJECT PM PEAK HOUR INTERSECTION VOLUMES



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The Year 2000 and 2020 peak hour forecasts were developed using the previously described daily forecasts, along with peak hour traffic count data collected at each analysis location. Each existing turning movement was initially multiplied by the average growth in daily traffic for the two legs of the intersection involved. The resulting initial estimate of the future Year 2000 and 2020 peak hour turning movements were then reviewed for reasonableness. The reasonableness checks performed include review of flow conservation, as well as comparison to both the existing actual counted volume and the overall relationship between the forecast peak hour volume and daily volume on each individual intersection leg. Where necessary, the initial estimates were adjusted to achieve flow conservation, reasonable growth, and acceptable relationships between the peak hour and daily traffic volume forecasts.

2. Non-Site Traffic for Study Area

The Live Oak Plaza Traffic Analysis prepared by Kunzman Associates (January 7, 1997) has been included as other development in this traffic study.

Table 6 depicts the daily and peak hour vehicle trips generated by the other development in the study area. Exhibit O illustrates the directional distribution and assignment of the other development traffic. Based on the identified trip distribution for other development on arterial highways throughout the study area, other development average daily traffic (ADT) are shown on Exhibit P. Other development AM and PM peak hour intersection turning movement volumes are shown on Exhibits Q and R, respectively.

TABLE 6

OTHER DEVELOPMENT TRIP GENERATION

PROJECT	PEAK-HOUR				DAILY
	AM		PM		
	IN	OUT	IN	OUT	
Live Oak Plaza[1]	106	78	255	252	5,560

[1] Source: Live Oak Plaza Traffic Analysis, Kunzman Associates, January 7, 1997. An additional pass-by percentage of 44% provided within the Kunzman Associates Traffic Analysis has been utilized for the Saddleback Meadows Traffic Analysis.

EXHIBIT O
OTHER DEVELOPMENT TRIP DISTRIBUTION

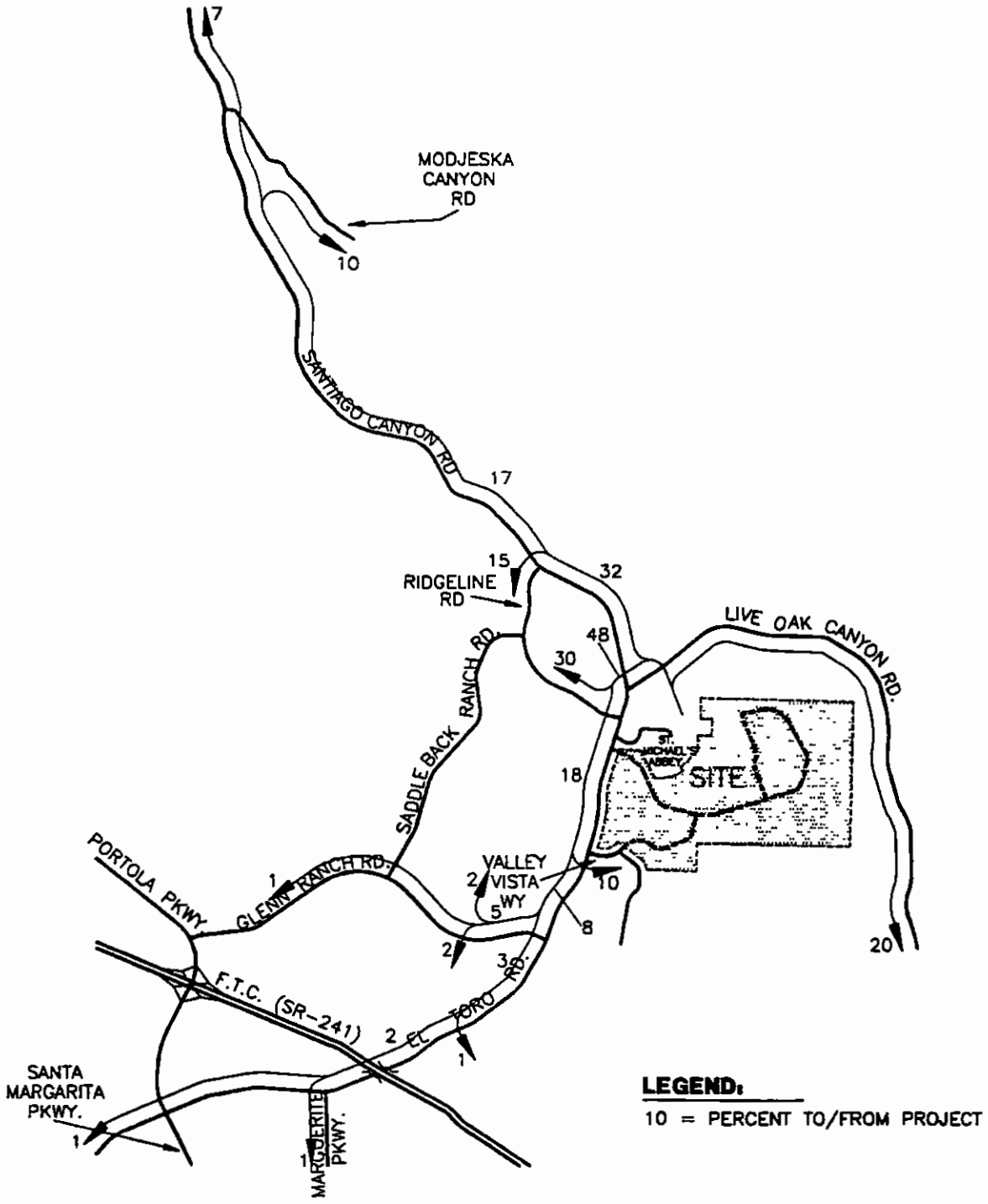

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EXHIBIT P
OTHER DEVELOPMENT
AVERAGE DAILY TRAFFIC (ADT)

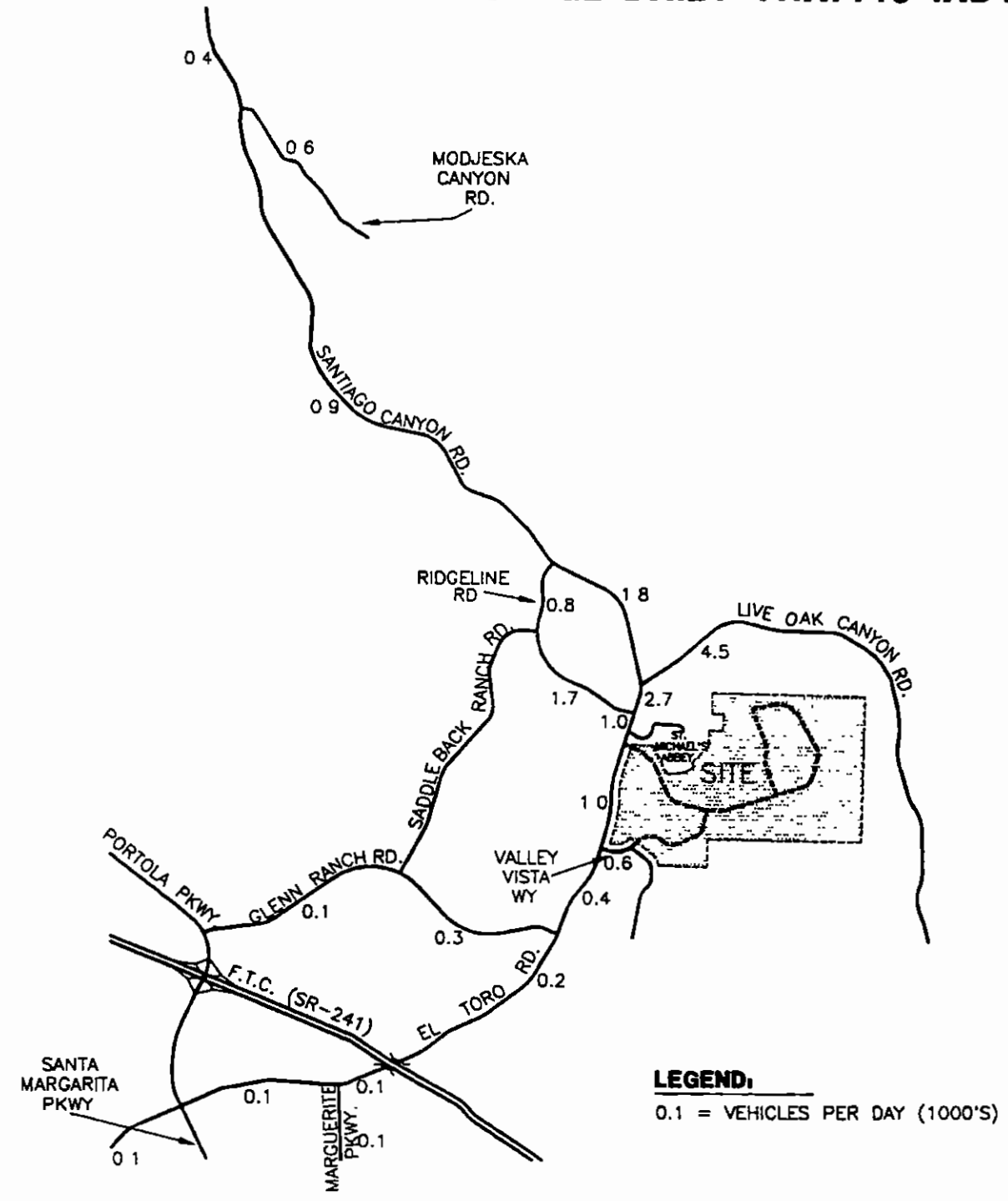

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EXHIBIT Q
OTHER DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES

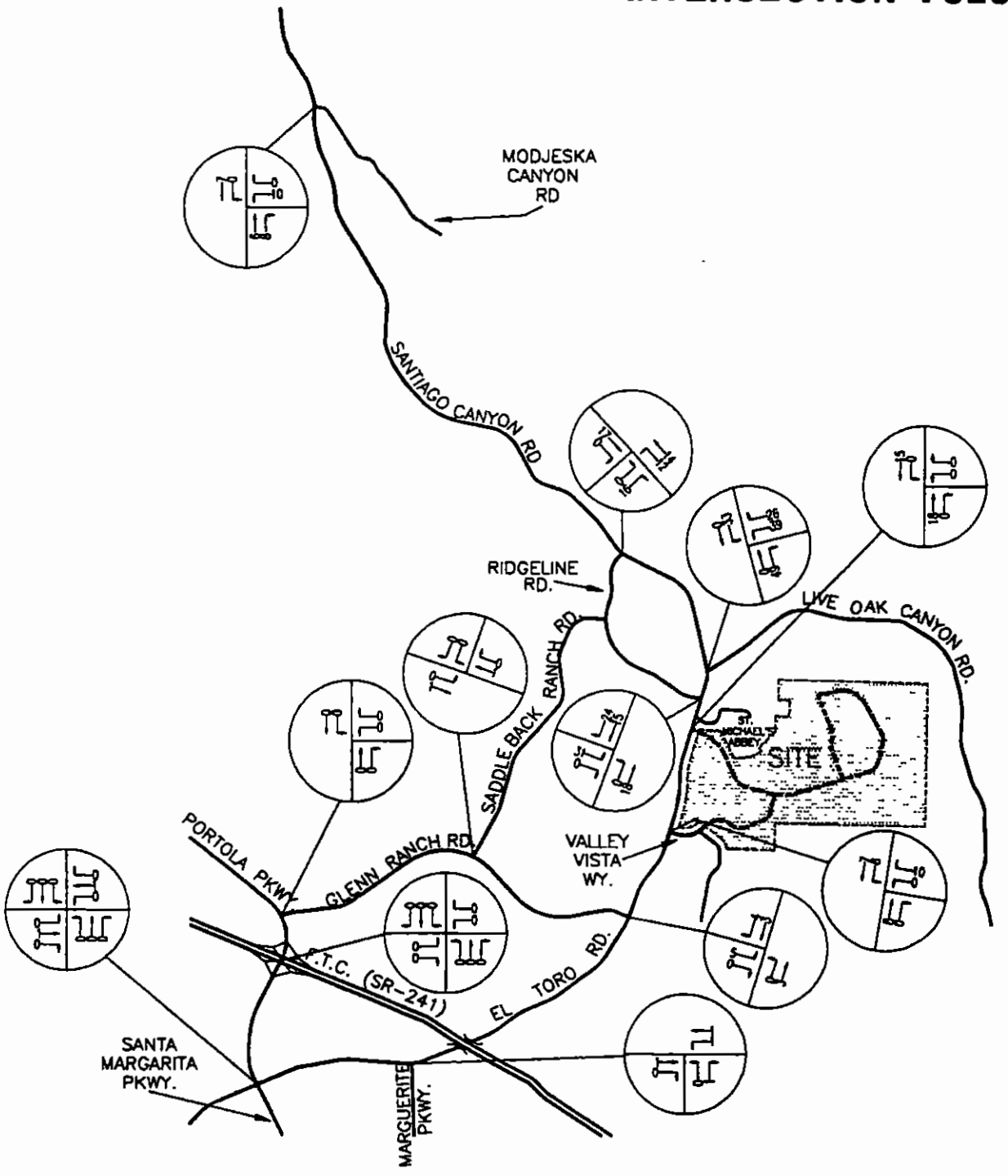

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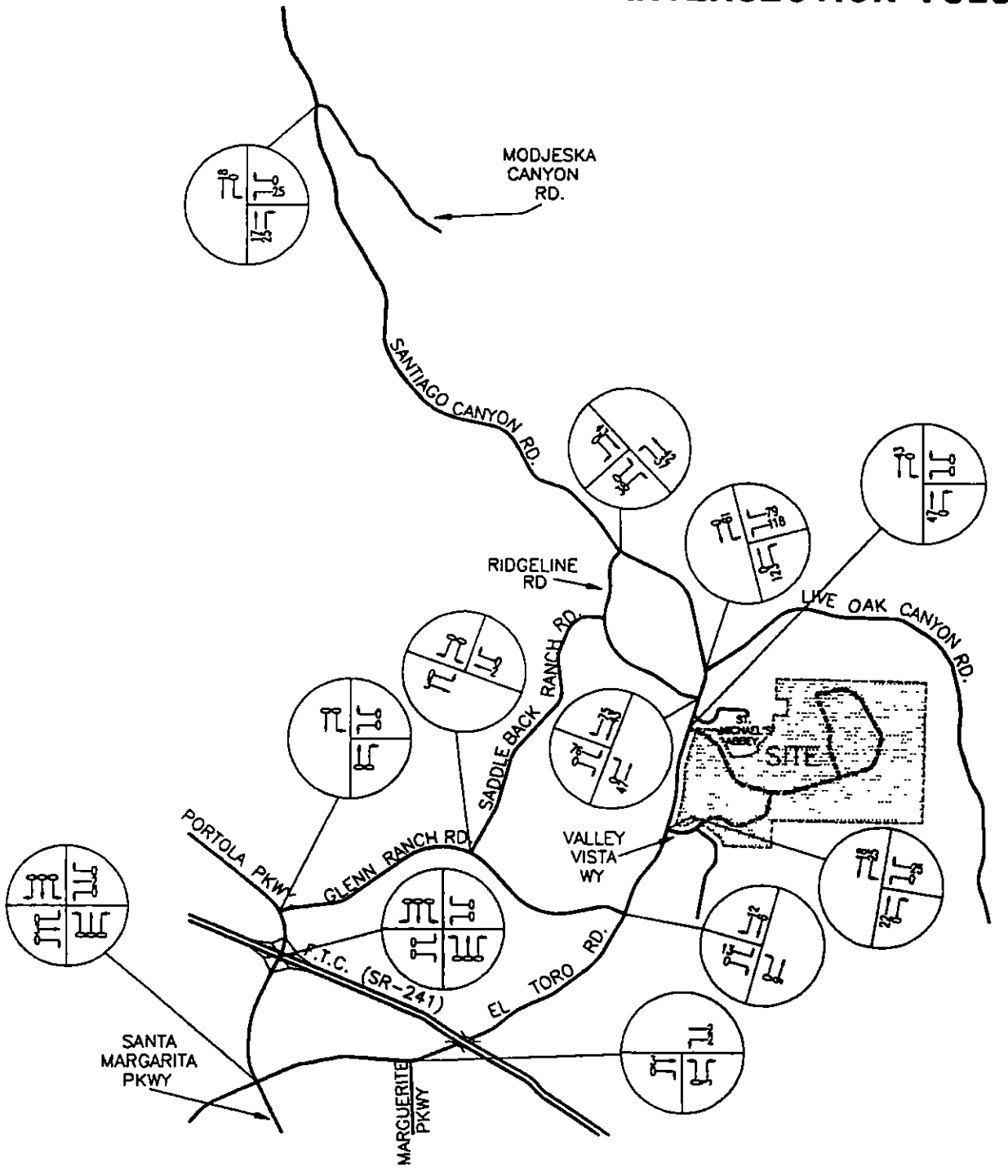
EXHIBIT R
OTHER DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES



685-95-001-92A
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C. Total Traffic

Once the project related traffic is assigned to the street network (see Exhibit L) and added to existing volumes in the study area, existing plus project ADT volumes can be assessed (see Exhibit S).

Exhibit T shows the ADT volumes which can be expected for Year 2000 traffic conditions without the project.

Exhibit U shows the SCTM ADT volumes which can be expected for Year 2000 traffic conditions with the project. Traffic volume increases along El Toro Road and Santiago Canyon Road caused by both the project site and surrounding development are moderated by the incremental extension of the Foothill Transportation Corridor (SR-241) and the availability of Glenn Ranch Road to service traffic generated west of El Toro Road and north of the corridor.

Exhibit V shows the ADT volumes which can be expected for Year 2020 traffic conditions without the project. Exhibit W shows the SCTM ADT volumes which can be expected for Year 2020 traffic conditions with the project.

EXHIBIT S
EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)

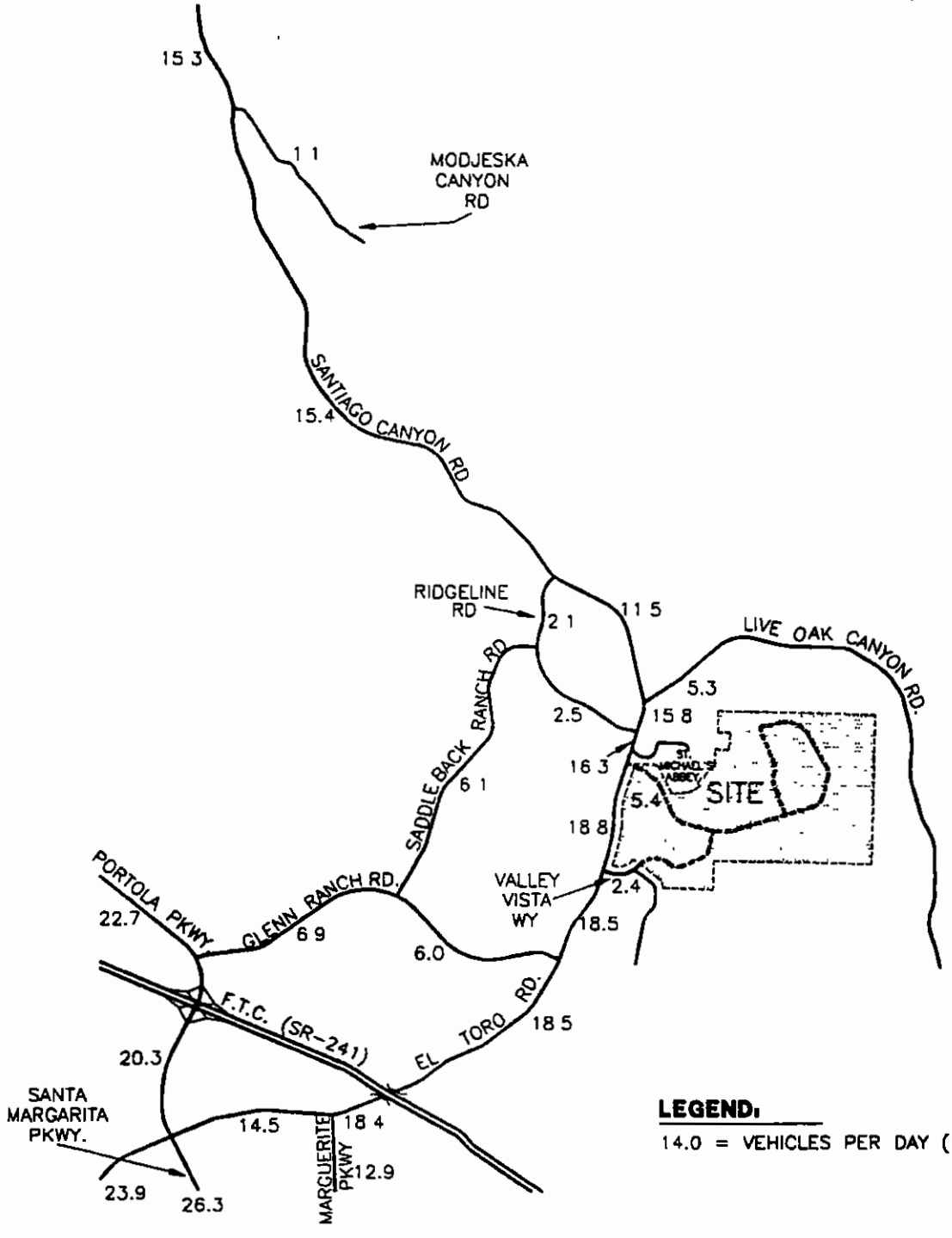

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EXHIBIT T

YEAR 2000 AVERAGE DAILY TRAFFIC (ADT) WITHOUT PROJECT

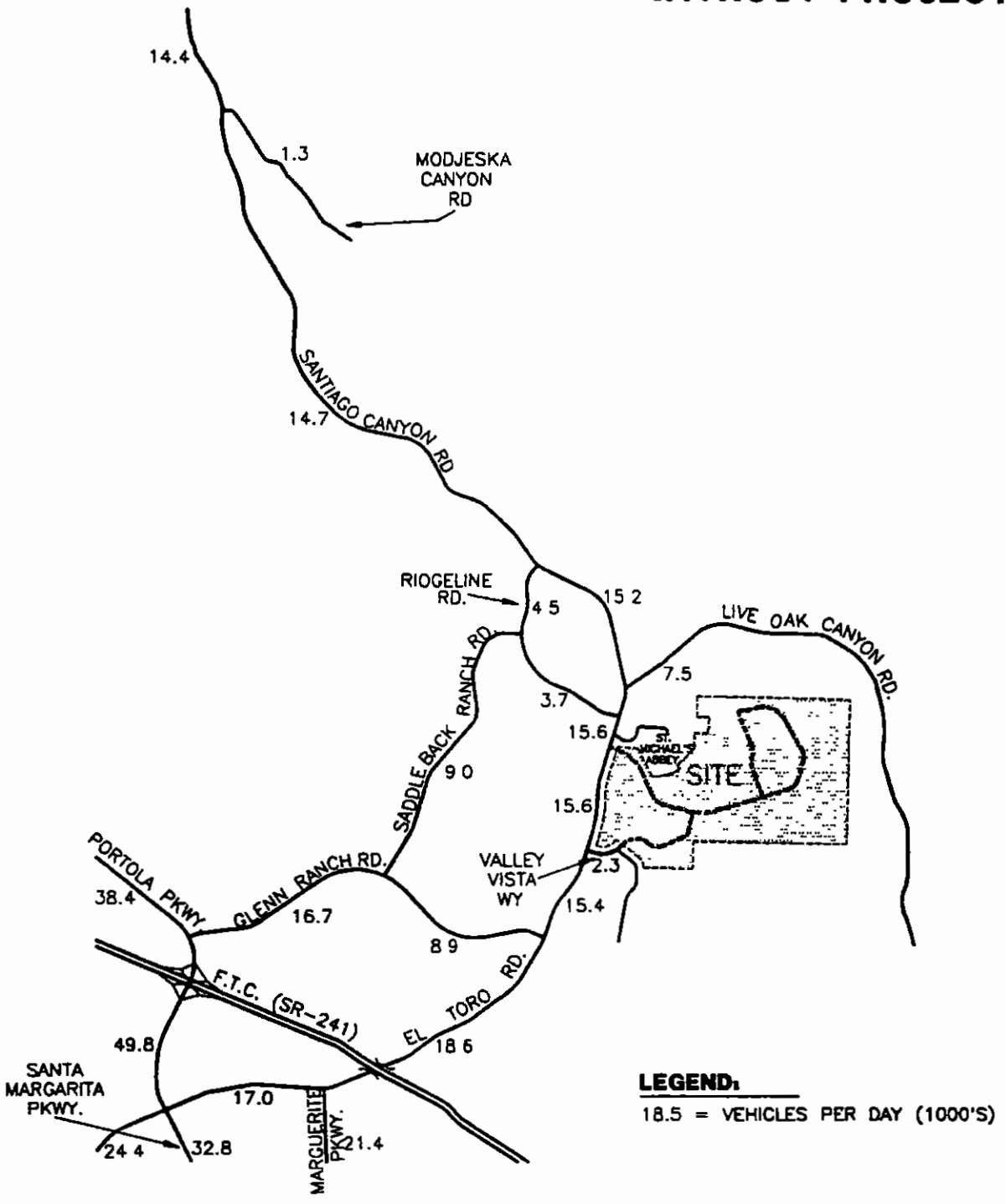

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EXHIBIT U
YEAR 2000 AVERAGE DAILY TRAFFIC (ADT) WITH PROJECT

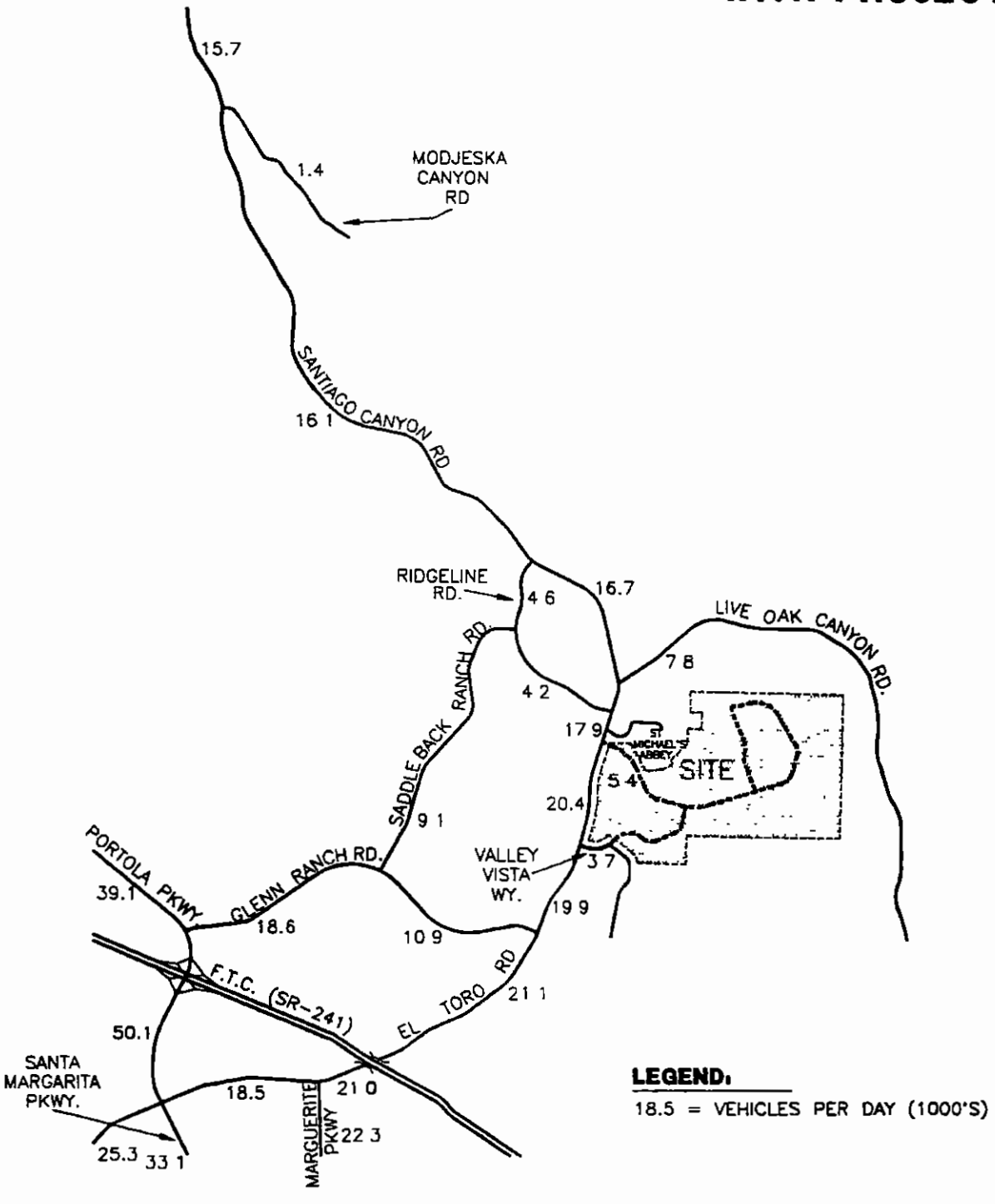

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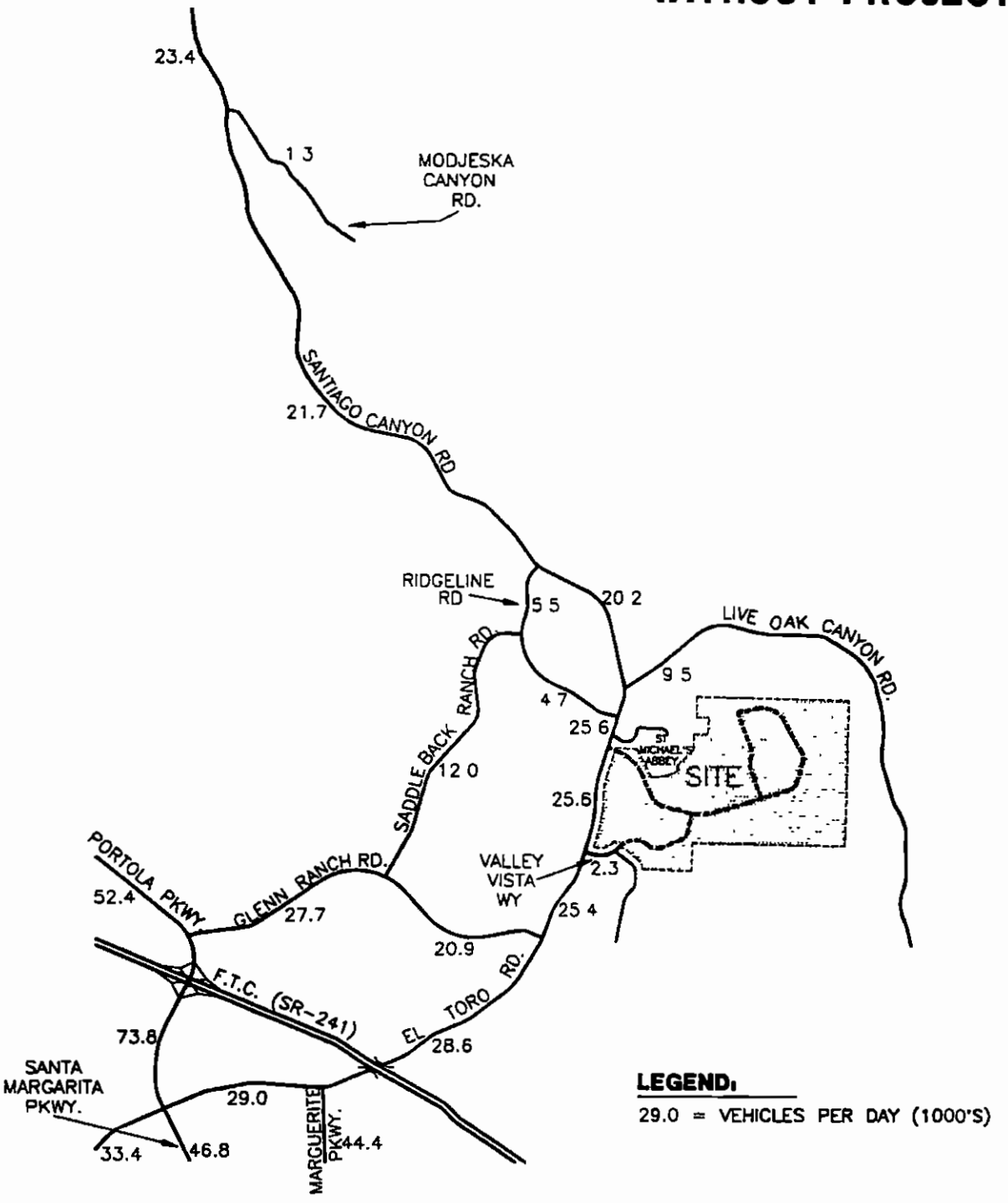
EXHIBIT V
YEAR 2020 AVERAGE DAILY TRAFFIC (ADT) WITHOUT PROJECT



685-95-001:96A
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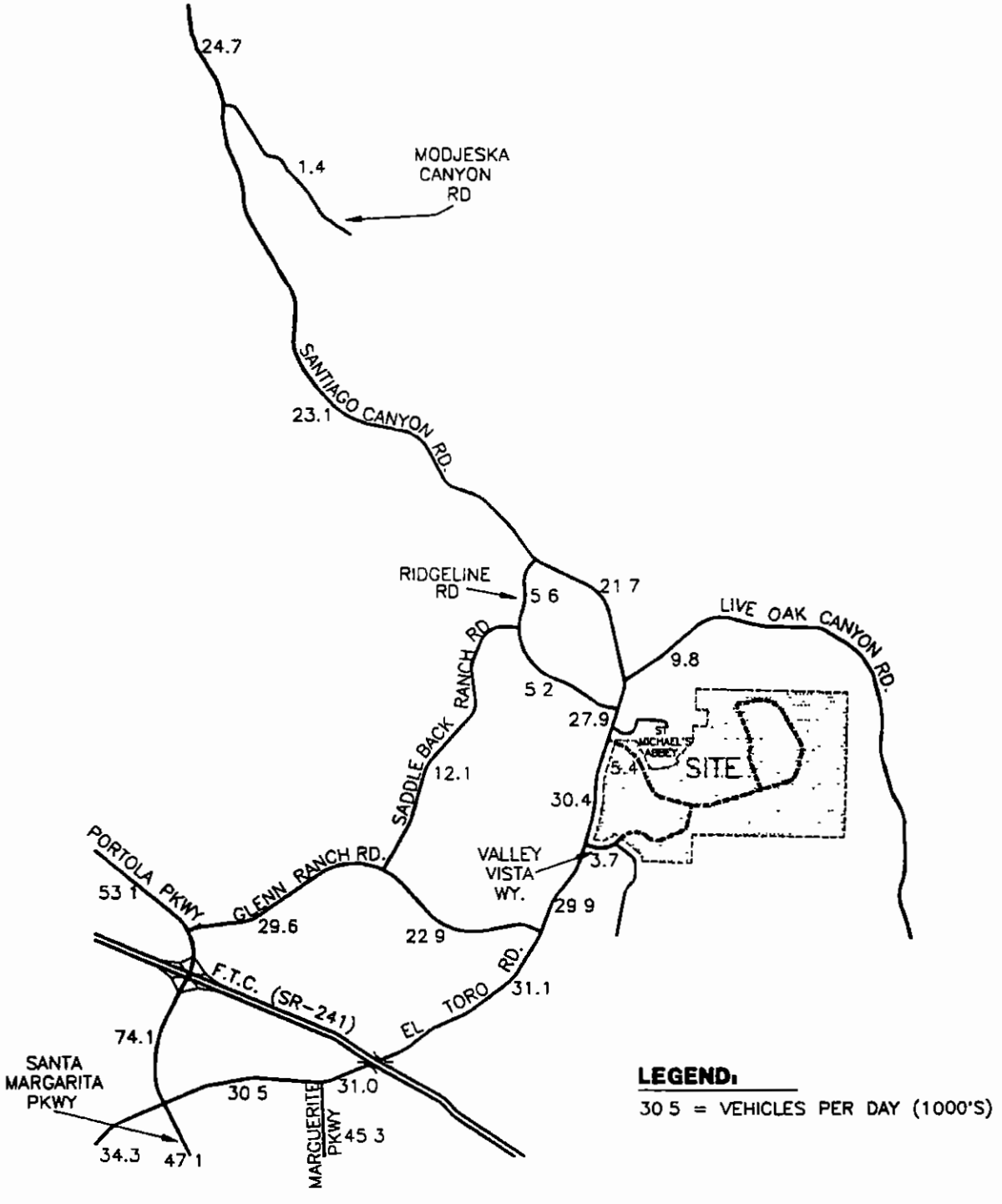
EXHIBIT W
YEAR 2020 AVERAGE DAILY TRAFFIC (ADT) WITH PROJECT



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IV. TRAFFIC ANALYSIS

A. Capacity and Level of Service and Improvement Analysis, Existing Plus Project

1. Level of Service at Existing Plus Project

Intersection Capacity Utilization (ICU) for existing plus project traffic conditions have been calculated and are shown in Table 7. Table 7 shows ICU calculations at the study area intersections without improvements. Existing plus project AM and PM peak hour turning movement volumes are shown on Exhibits X and Y, respectively.

As shown in Table 7, intersections in the vicinity of the site are projected to continue to operate at Level of Service "D" or better during the peak hours. ICU calculation worksheets are included in Appendix "D". A traffic signal is projected to be warranted at the intersection of El Toro Road/Project Entrance for existing plus project traffic conditions (see Appendix "I").

B. Capacity and Level of Service and Improvement Analysis, Year 2000

1. Level of Service at Year 2000 Without Project

Intersection Capacity Utilization (ICU) for Year 2000 traffic conditions without the project have been calculated and are shown in Table 8. Table 8 shows ICU calculations at the study area intersections without the project, without improvements. Year 2000 AM and PM peak hour

TABLE 7

EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.87	0.61	D	B
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.82	0.60	D	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.78	0.49	C	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.68	0.62	B	B
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.69	0.57	B	A
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.64	0.59	B	A
• Glenn Ranch Rd (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.57	0.69	A	B
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	1	2	0	0	2	1	0.32	0.33	A	A
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	1>	0	0	0	0	2	0	2	2	0	0.34	0.49	A	A
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	0	3	1	2	3	0	0	0	0	2	0	1	0.57	0.46	A	A
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.40	0.58	A	A
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.41	0.50	A	A

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

EXHIBIT X
EXISTING PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES

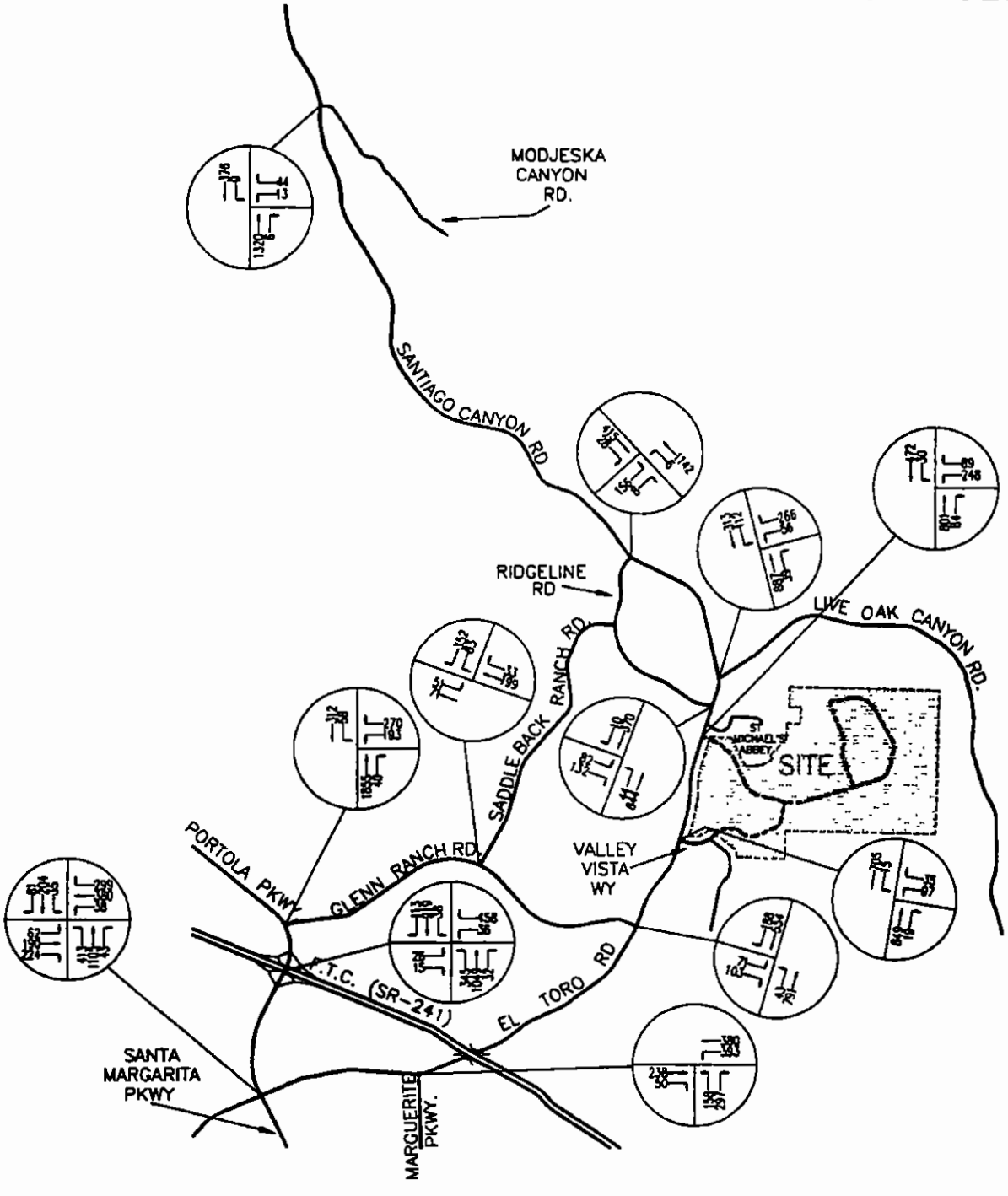

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EXHIBIT Y
EXISTING PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES

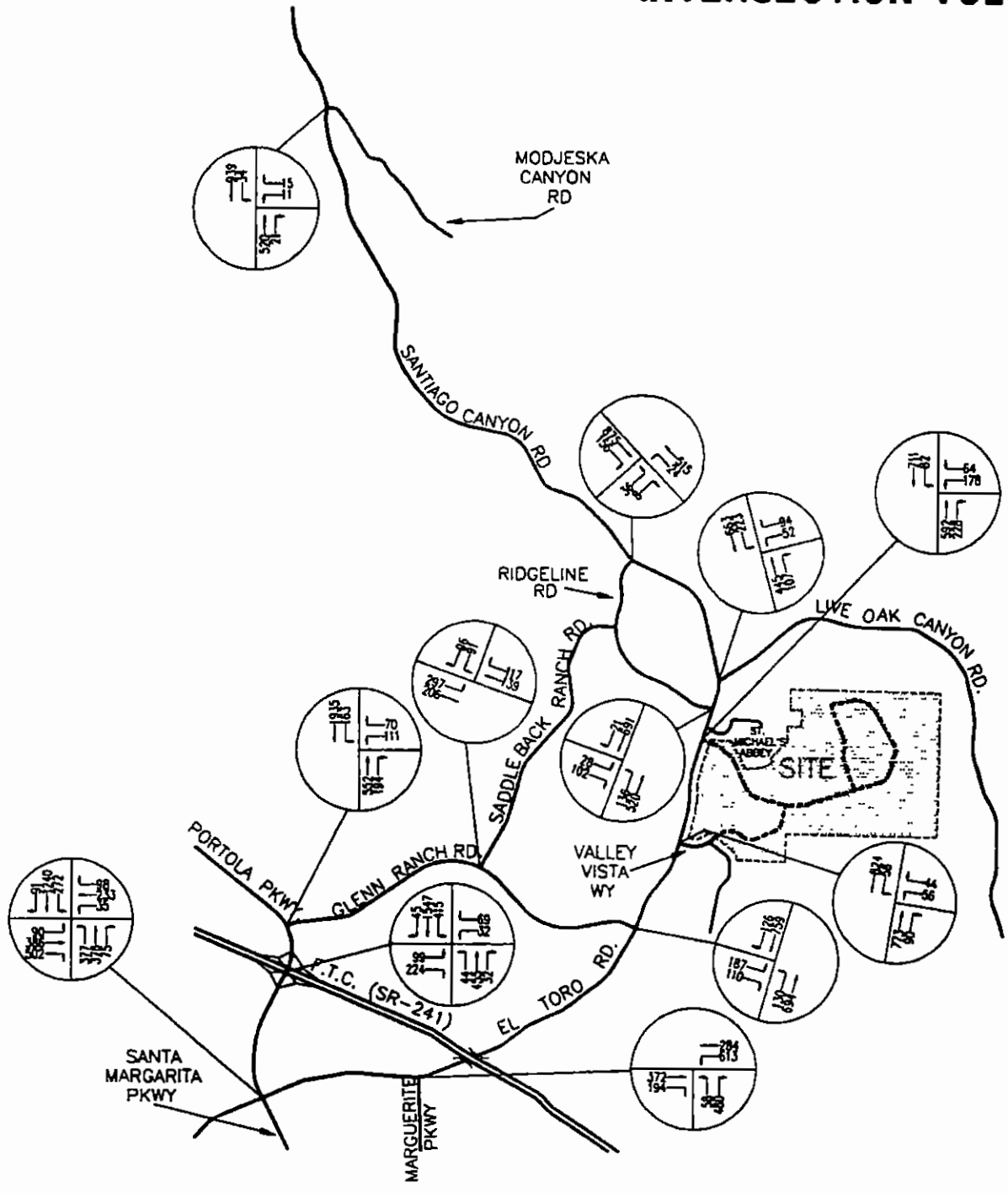

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TABLE 8

YEAR 2000 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.86	0.69	D	B
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.87	0.72	D	C
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.80	0.60	C	A
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.70	0.62	B	B
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.67	0.52	B	A
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.62	0.75	B	C
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	1	2	0	0	2	1	0.59	0.70	A	B
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	1>	0	0	0	0	2	0	2	2	0	0.49	0.73	A	C
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	0	3	1	2	3	0	0	0	0	2	0	1	0.90	0.75	D	C
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.73	0.87	C	D
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.80	0.79	C	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

turning movement volumes without the project are shown on Exhibits Z and AA, respectively.

As shown in Table 8, intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours without the proposed project, without improvements. ICU calculation worksheets are included in Appendix "E". A traffic signal is projected to be warranted at the intersection of Santiago Canyon Road/Modjeska Canyon Road for Year 2000 without project traffic conditions (see Appendix "I").

2. Level of Service at Year 2000 With Project

Intersection Capacity Utilization (ICU) for Year 2000 traffic conditions with the project have been calculated and are shown in Tables 9 and 10. Table 9 shows ICU calculations at the study area intersections with the project, without improvements. ICU calculations with the project and with improvements are shown in Table 10. Year 2000 AM and PM peak hour turning movement volumes with the project are shown on Exhibits BB and CC, respectively.

As shown in Table 10, intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with the proposed project, with site access improvements. ICU calculation worksheets are included in Appendix "F".

EXHIBIT Z
YEAR 2000 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT

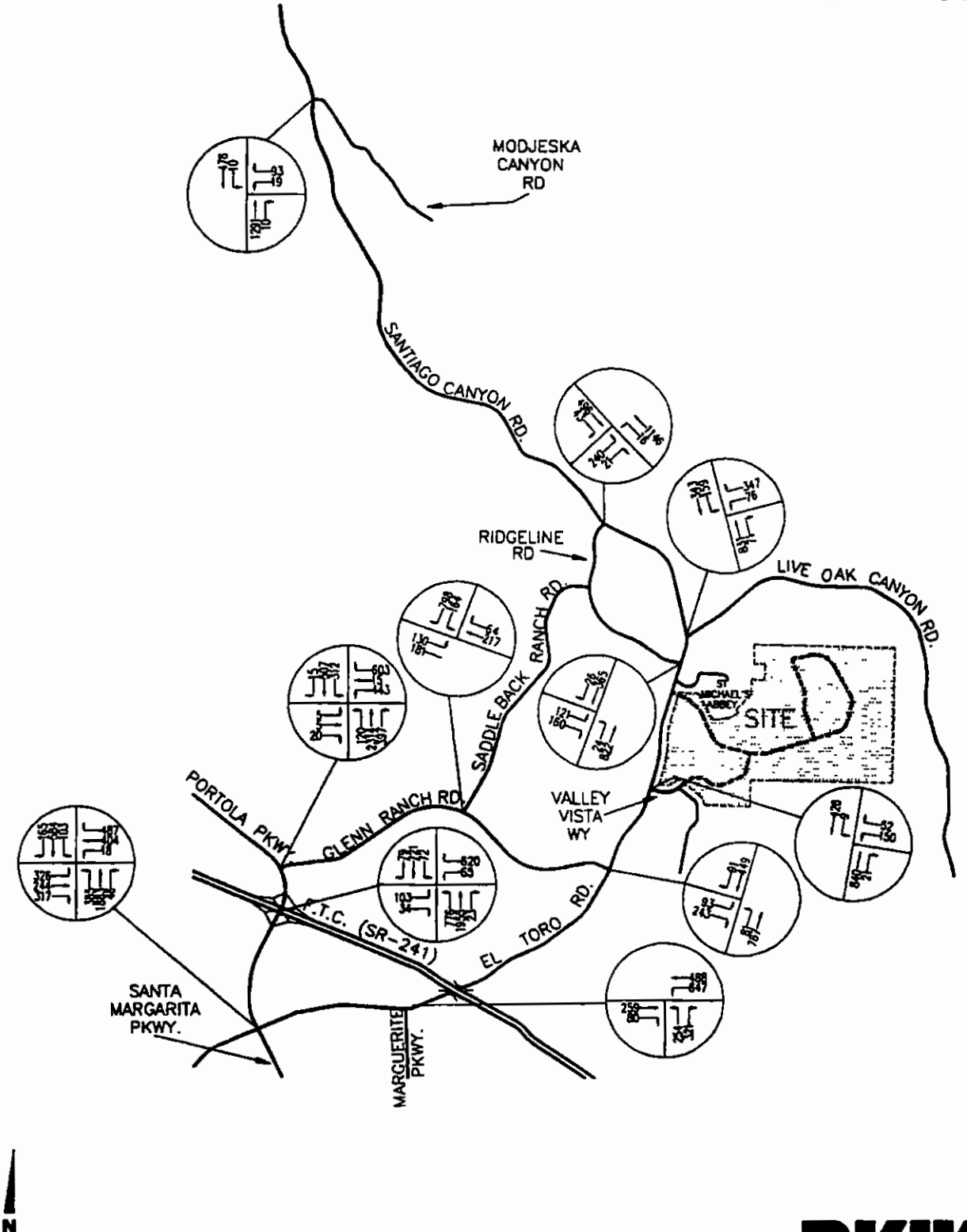

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EXHIBIT AA
YEAR 2000 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT

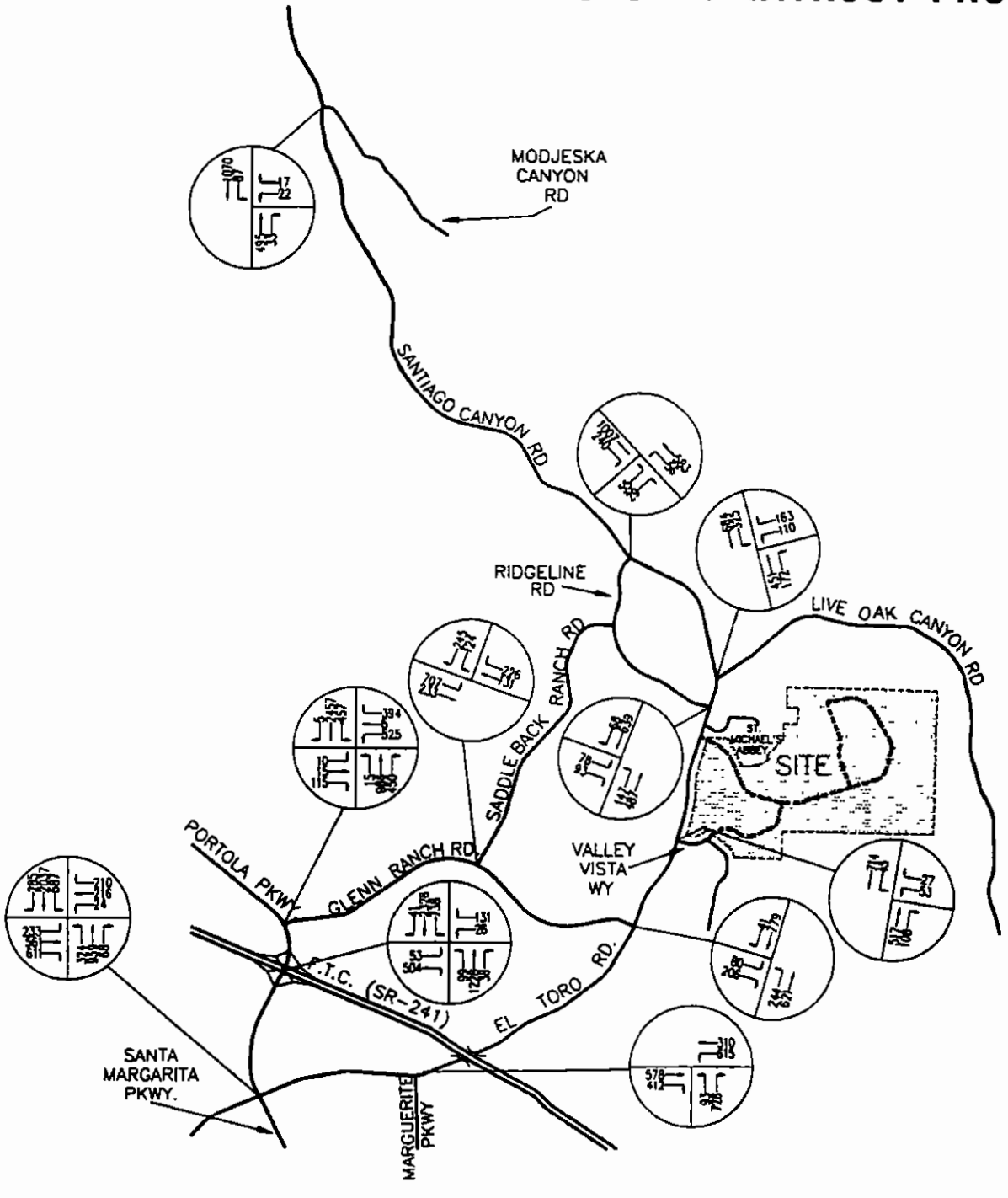

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TABLE 9

YEAR 2000 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITHOUT IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.90	0.74	D	C
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.92	0.78	E	C
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.84	0.63	D	B
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.75	0.69	C	B
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.74	0.62	C	B
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.73	0.65	C	B
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.65	0.83	B	D
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	1	2	0	0	2	1	0.63	0.71	B	C
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	1>	0	0	0	0	2	0	2	2	0	0.52	0.79	A	C
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1	0.93	0.76	E	C
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.74	0.90	C	D
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.81	0.80	D	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

TABLE 10

YEAR 2000 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITH IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.90	0.74	D	C
• Ridgeline Rd. (EW)	1	2	0	0	1	1	0	1	0	0	0	0	0.56	0.78	A	C
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.84	0.63	D	B
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.75	0.69	C	B
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.74	0.62	C	B
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.73	0.65	C	B
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.65	0.83	B	D
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	1	2	0	0	2	1	0.63	0.71	B	C
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	1>	0	0	0	0	2	0	2	2	0	0.52	0.79	A	C
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1≥	0.85	0.75	D	C
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	0.74	0.90	C	D
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	0.81	0.80	D	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap
2 = Lane Improvement

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

EXHIBIT BB
YEAR 2000 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT

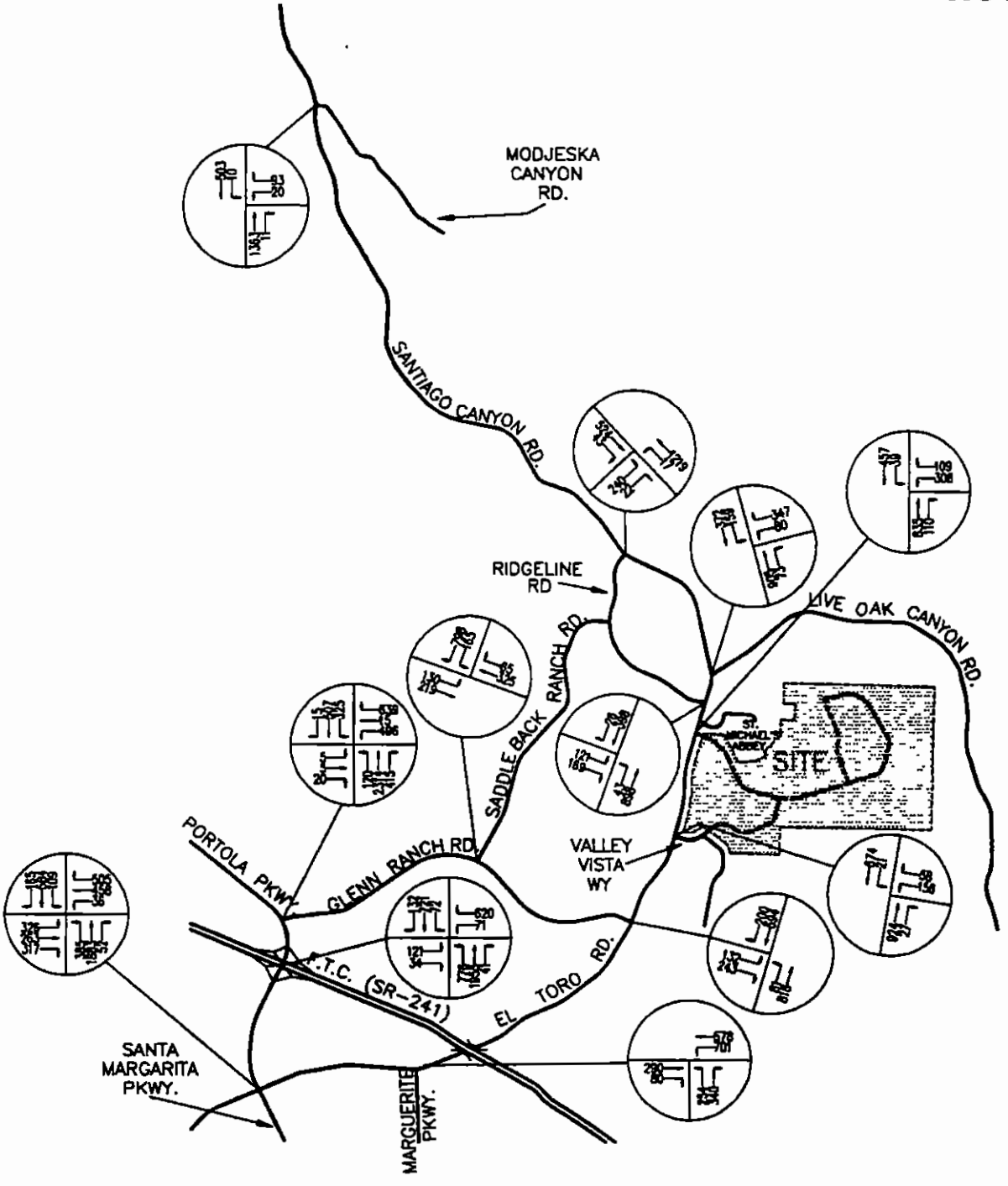

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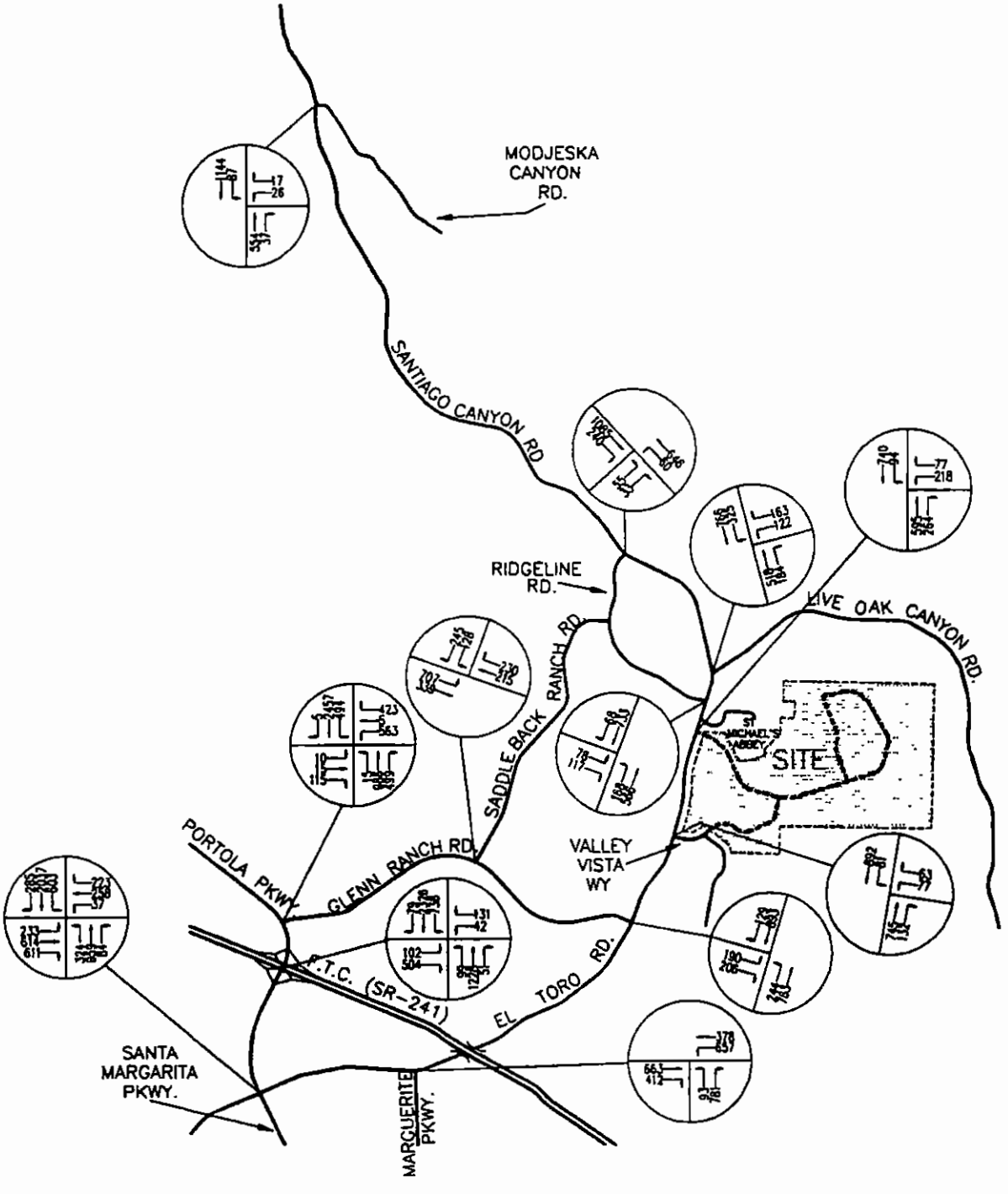
EXHIBIT CC
YEAR 2000 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT



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C. Capacity and Level of Service and Improvement Analysis, Year 2020

1. Level of Service at Year 2020 Without Project

Intersection Capacity Utilization (ICU) for Year 2020 traffic conditions without the project have been calculated and are shown in Tables 11 and 12. Table 11 shows ICU calculations at the study area intersections without the project, without improvements. ICU calculations without the project and with improvements are shown in Table 12. Year 2020 AM and PM peak hour turning movement volumes without the project are shown on Exhibits DD and EE, respectively.

As shown in Table 12, intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours without the proposed project, with improvements that include the ultimate widening of El Toro Road and Santiago Canyon Road to four through travel lanes (two in each direction). ICU calculation worksheets are included in Appendix "G".

2. Level of Service at Year 2020 With Project

Intersection Capacity Utilization (ICU) for Year 2020 traffic conditions with the project have been calculated and are shown in Tables 13 and 14. Table 13 shows ICU calculations at the study area intersections with the project, without improvements. ICU calculations with the project and with improvements are shown in Table 14. Year 2020 AM and PM peak hour turning movement volumes with the project are shown on Exhibits FF and GG, respectively.

TABLE 11

YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT, WITHOUT IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	1.16	1.00	F	E
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	1.18	0.98	F	E
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	1.07	0.79	F	C
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.89	0.92	D	E
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.87	0.79	D	C
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.94	1.24	E	F
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	1	2	0	0	2	1	0.77	0.96	C	E
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	1>	0	0	0	0	2	0	2	2	0	0.74	1.33	C	F
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1	1.21	1.04	F	F
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	1.04	1.44	F	F
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	1.20	1.14	F	F

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

TABLE 12

YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITHOUT PROJECT, WITH IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.66	0.54	B	A
• Ridgeline Rd. (EW)	1	2	0	0	2	1	0	1	0	0	0	0	0.72	0.56	C	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.74	0.60	C	A
• Ridgeline Rd. (EW)	1	2	0	0	2	1	0	1	0	0	0	0	0.59	0.62	A	B
• Valley Vista Way (EW)	0	2	1	1	2	0	0	0	0	0	1	0	0.53	0.45	A	A
• Glenn Ranch Rd. (EW)	1	2	0	0	2	1	1	0	1>	0	0	0	0.54	0.82	A	C
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	2	2	0	0	2	1	0.72	0.69	C	B
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	2>	0	0	0	0	3	1>	2	3	0	0.65	0.78	B	C
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1>	2	3	1	1	1.5	1.5	3	1	1>>	0.90	0.88	D	D
• Foothill Trans. Corridor (EW)	2	3	1>>	2	3	1>>	1	0	1>>	1	0	1>>	0.75	0.88	C	D
• El Toro Rd. (EW)																
-W/Improvements	2	4	1	2	3	1	2	3	1>>	1	2	2>	0.84	0.95	D	E
-W/Additional Improvements	2	4	1	2	4	0	2	3	1>>	1	2	2>	0.84	0.87	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap
2 = Lane Improvement

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

EXHIBIT DD
YEAR 2020 AM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT

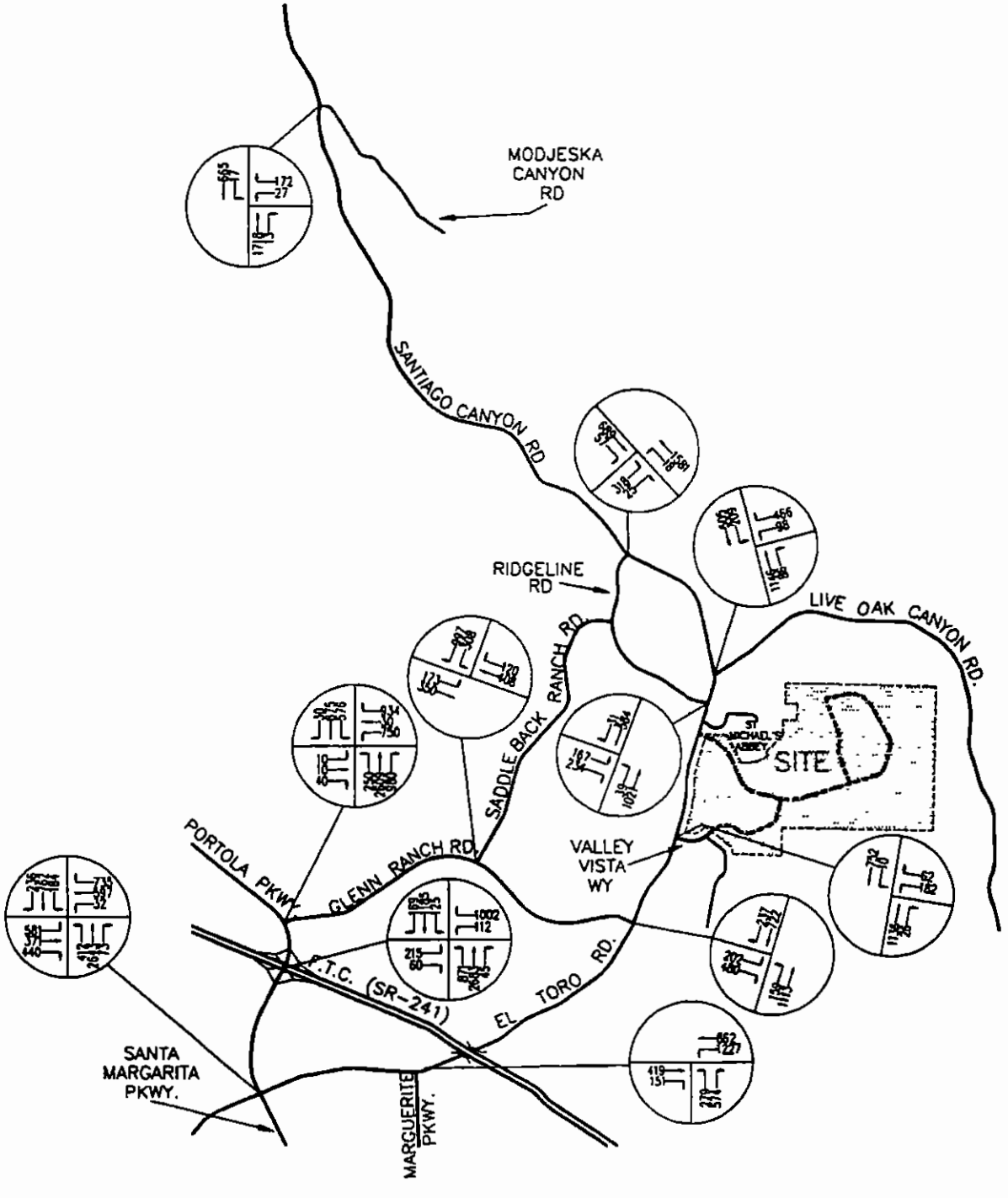

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EXHIBIT EE
YEAR 2020 PM PEAK HOUR INTERSECTION VOLUMES WITHOUT PROJECT

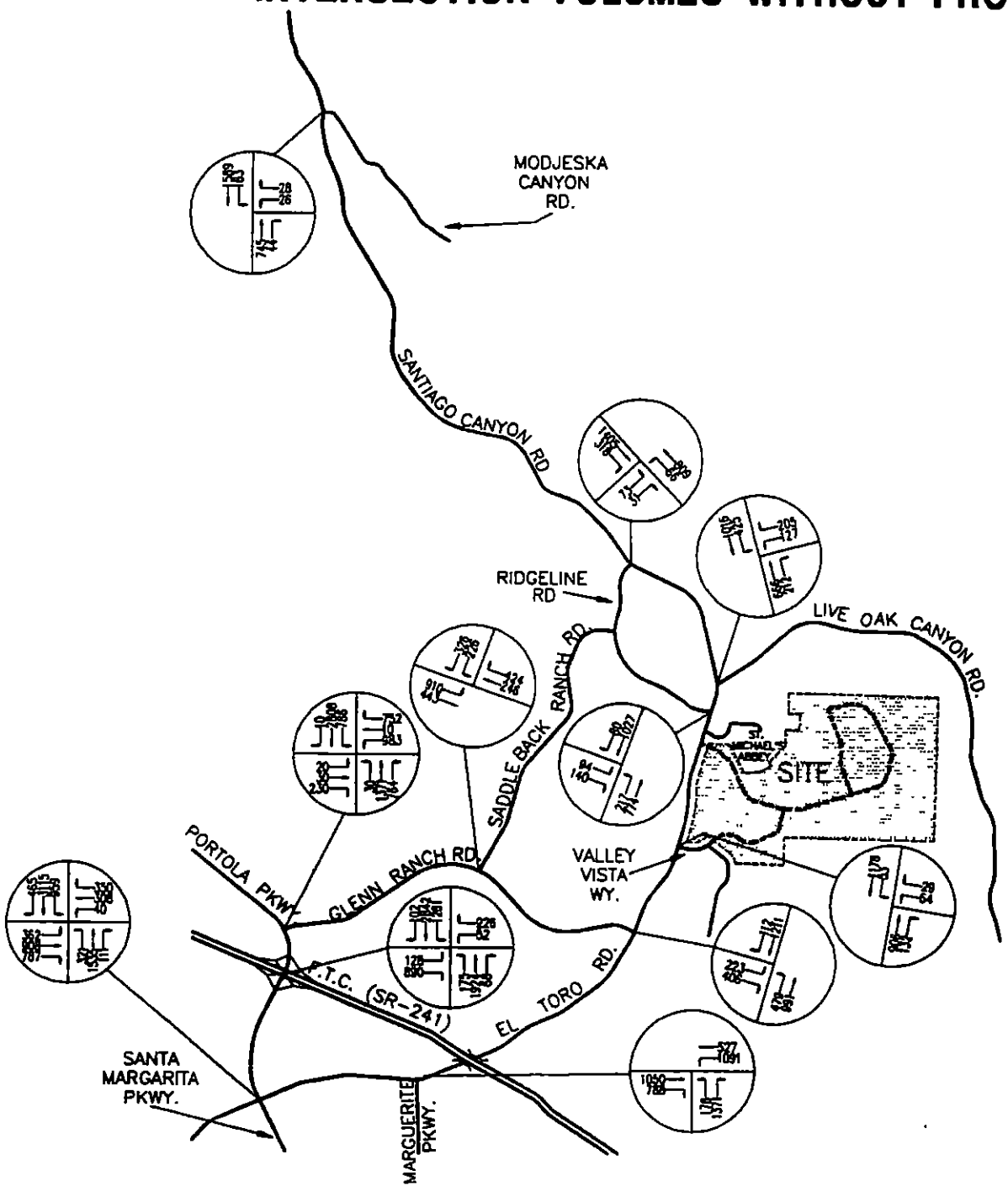

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TABLE 13

YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITHOUT IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	1.20	1.05	F	F
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	1.22	1.02	F	F
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	1	1	1	1	0	0	0	0	1	0	1	1.12	0.83	F	D
• Ridgeline Rd. (EW)	1	1	0	0	1	1	0	1	0	0	0	0	0.94	1.00	E	E
• Project Entrance (EW)	0	1	1	1	1	0	0	0	0	1	0	1	0.90	0.88	D	D
• Valley Vista Way (EW)	0	1	1	1	1	0	0	0	0	0	1	0	0.93	0.94	E	E
• Glenn Ranch Rd. (EW)	1	1	0	0	1	1	1	0	1	0	0	0	0.97	1.31	E	F
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	1	2	0	0	2	1	0.80	0.86	C	E
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	1>	0	0	0	0	2	0	2	2	0	0.77	1.38	C	F
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1	2	3	1	1	1.5	1.5	2	1	1	1.22	1.10	F	F
• Foothill Trans. Corridor (EW)	2	2	1>>	1	2	1>>	1	0	1>>	1	0	1>>	1.05	1.46	F	F
• El Toro Rd. (EW)	2	4	1	2	3	1	1	3	1>>	1	3	1	1.21	1.14	F	F

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

TABLE 14

YEAR 2020 INTERSECTION LEVELS OF SERVICE AND LANE GEOMETRICS WITH PROJECT, WITH IMPROVEMENTS

INTERSECTION	INTERSECTION APPROACH LANES[1]												PEAK HOUR ICU[2]		PEAK HOUR LOS[3]	
	NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Santiago Cyn. Rd. (NS) at:																
• Modjeska Cyn. Rd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.68	0.56	B	A
• Ridgeline Rd. (EW)	1	2	0	0	2	1	0	1	0	0	0	0	0.74	0.59	C	A
El Toro Rd. (NS) at:																
• Live Oak Cyn. Rd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.78	0.62	C	B
• Ridgeline Rd. (EW)	1	2	0	0	2	1	0	1	0	0	0	0	0.61	0.67	B	B
• Project Entrance (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.58	0.53	A	A
• Valley Vista Way (EW)	0	2	1	1	2	0	0	0	0	0	1	0	0.57	0.54	A	A
• Glenn Ranch Rd. (EW)	1	2	0	0	2	1	2	0	1>	0	0	0	0.56	0.82	A	D
Saddleback Ranch Rd. (NS) at:																
• Glenn Ranch Rd. (EW)	0	0	0	2	0	1	2	2	0	0	2	1	0.75	0.69	C	B
Marguerite Pkwy. (NS) at:																
• El Toro Rd. (EW)	1	0	2>	0	0	0	0	3	1>	2	3	0	0.68	0.79	B	C
Portola Pkwy. (NS) at:																
• Glenn Ranch Rd. (EW)	2	3	1>	2	3	1	1	1	2	3	1	1>>	0.90	0.87	D	D
• Foothill Trans. Corridor (EW)	2	3	1>>	2	3	1>>	1	0	1>>	1	0	1>>	0.76	0.90	C	D
• El Toro Rd. (EW)																
-W/Improvements	2	4	1	2	3	1	2	3	1>>	1	2	2>	0.86	0.97	D	E
-W/Additional Improvements	2	4	1	2	4	0	2	3	1>>	1	2	2>	0.86	0.89	D	D

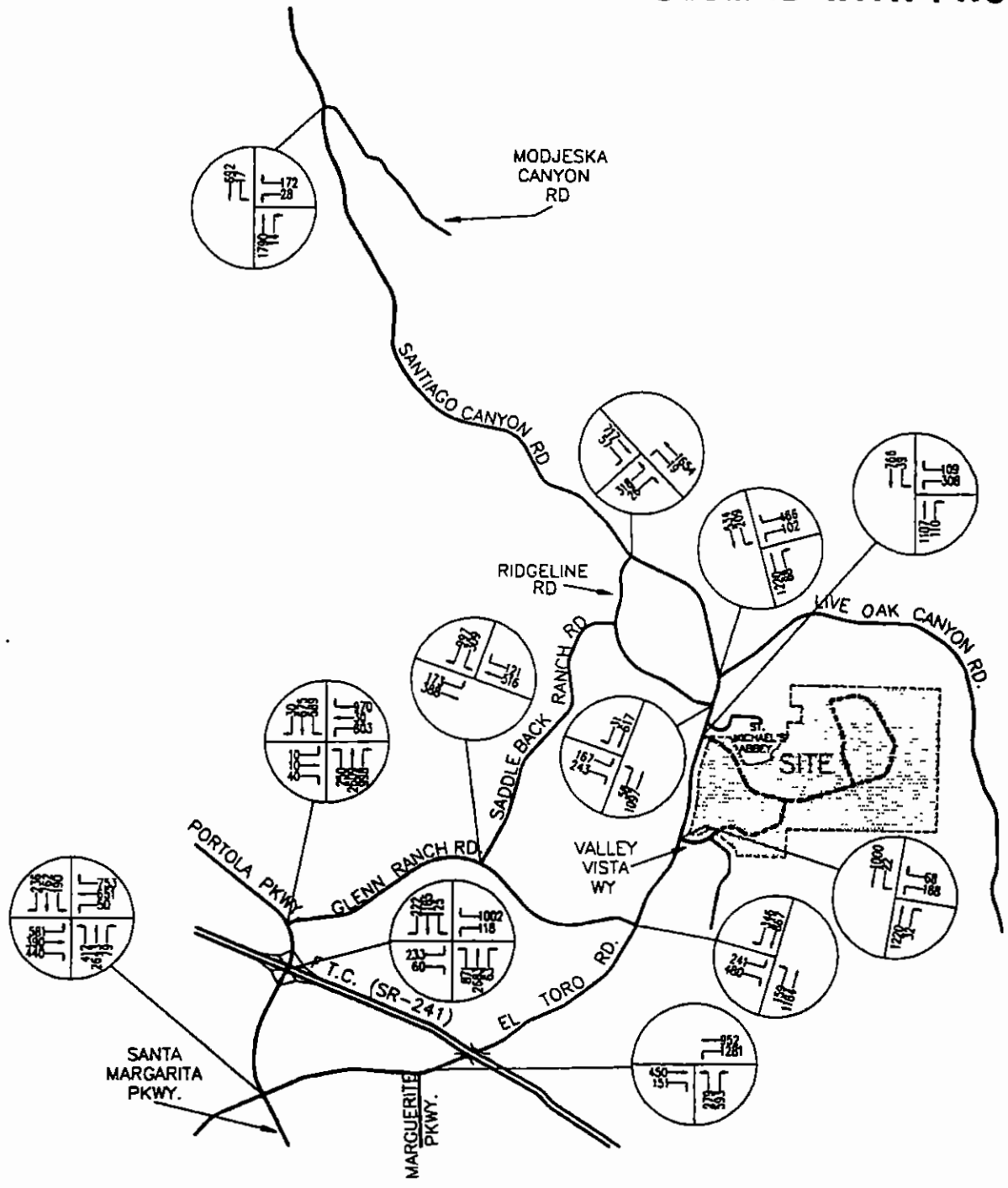
[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left
T = Through
R = Right
>> = Free Right Turn
> = Right Turn Overlap
2 = Lane Improvement

[2] Intersection Capacity Utilization (ICU)

[3] Level of Service (LOS)

EXHIBIT FF
YEAR 2020 AM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT



685-95-001.106A
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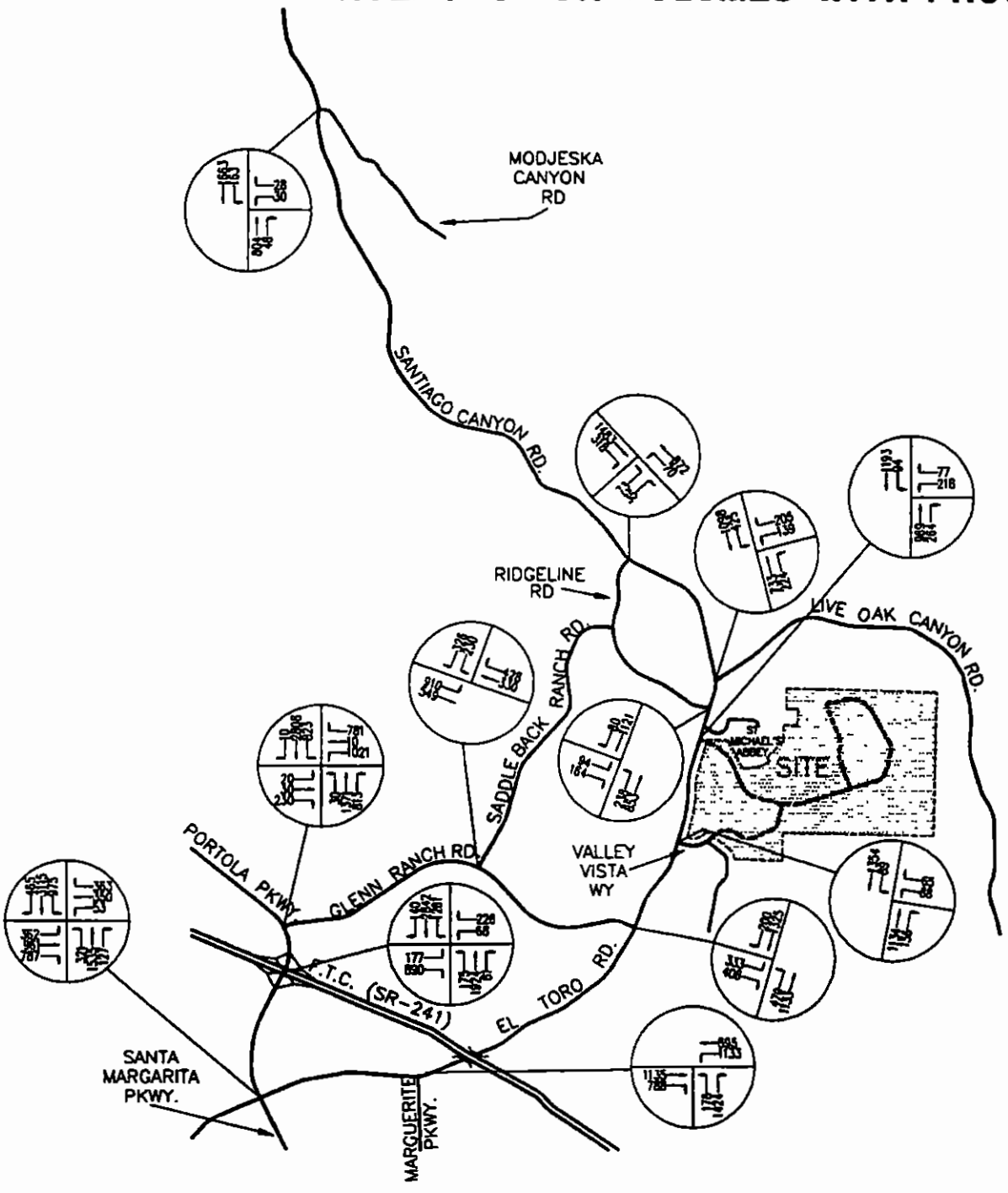
EXHIBIT GG
YEAR 2020 PM PEAK HOUR INTERSECTION VOLUMES WITH PROJECT



685-95-001 107A
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As shown in Table 14, intersections in the vicinity of the site are projected to operate at Level of Service "D" or better during the peak hours with the proposed project, with improvements that include the ultimate widening of El Toro Road and Santiago Canyon Road to four through travel lanes (two in each direction). ICU calculation worksheets are included in Appendix "H".

D. Santiago Canyon Road Analysis

Pursuant to the County of Orange Growth Management Plan (GMP), segments of Santiago Canyon Road are required to function at a Level of Service "C". Capacity improvements along Santiago Canyon Road will be required in conjunction with future growth to achieve Level of Service "C". The Santiago Canyon Road Major Thoroughfare and Bridge Fee Program has been designed to provide up to $34 million in improvements to Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road. However, the March, 1994 Project Report for improvements to Santiago Canyon Road indicates that the total cost of improvements is approximately $52.3 million for a "limited project" scenario. To address the difference between the ultimate cost of $52.3 million and the fee program allocation of $34 million, the project should provide an additional contribution beyond the payment of normal fees based upon its traffic share.

V. RECOMMENDATIONS

A. Site Access

The proposed project will have primary access to El Toro Road. The El Toro Road turn-lane improvements needed at the Project Entrance to serve Year 2000 conditions should be completed in conjunction with development. Secondary access will be provided via an access to Valley Vista Way.

It is anticipated that the main project access point to El Toro Road will require a traffic signal in conjunction with the first project phase (approximately 208 dwelling units). The project should provide this improvement as well as a southbound left turn lane and northbound right turn lane on El Toro Road at the project entry.

Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan.

B. Roadway Improvements

1. Off-Site

The project should participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program. Potential roadway fees for the Saddleback Meadows (TT 15230) development are shown in Table 15.

TABLE 15

POTENTIAL ROADWAY FEES

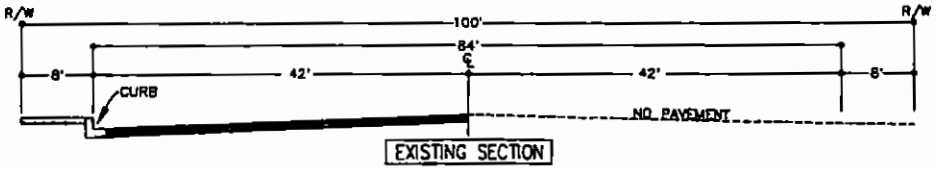
EXISTING ROAD FEE PROGRAMS	ROADWAYS TO BE CONSTRUCTED	ADOPTION DATE	RATES (EFFECTIVE FROM JULY 1, 1996 THROUGH JUNE 30, 1997)	APPROXIMATE PROJECT FEES (705 DU's AND 20,000 SQ. FT.)
1. Eastern/Foothill Transportation Corridor Road Fee Program (Zone A)	Portion of the cost of the future Eastern/Foothill Transportation Corridor from the Southern Orange County line at Interstate Route 5 to the Riverside Freeway (State Route 91).	Oct., 1984	$3,594/DU $4.99/Sq. Ft. Commercial	$2,533,770.00 $99,800.00
2. Santiago Canyon Road Major Thoroughfare and Bridge Fee Program	Improvements of Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road to its Master Plan of Arterial Highways designation as a primary arterial highway.	Aug., 1990	$510/DU $0.45/Sq. Ft. Commercial	$359,550.00 $9,000.00
3. El Toro Road Fee Program	Widen El Toro Road from a two lane to four lane highway from Live Oak Canyon Road to Trabuco Road.	Oct., 1983	$1,026/DU $59,498/Acre Commercial	$723,330.00 $101,146.60
4. Foothill Circulation Phasing Program (FCPP), Including Special FTC Fees (Zone 4)	Provides for a Backbone System of arterial highways and intersection improvements in the northern El Toro area. Roadways to be constructed include the extension of Portola Parkway/Santa Margarita Parkway (with the FTC), Bake Parkway, Oso Parkway, Alicia Parkway, Sand Canyon, Jeffrey, Irvine Boulevard/Trabuco Road and various intersection upgrades.	Oct., 1987	$2,759/DU $155/DU $2.483/Sq. Ft. Commercial $0.140/Sq. Ft. Commercial	$1,945,095.00 $109,275.00 $49,660.00 $2,800.00
TOTAL	--	--		$5,933,426.60

Both existing traffic patterns and SCTM traffic projections for Years 2000 and 2020 indicate the attraction of Glenn Ranch Road, Portola Parkway, and the Foothill Transportation Corridor (SR-241) for increased traffic volumes in the project study area.

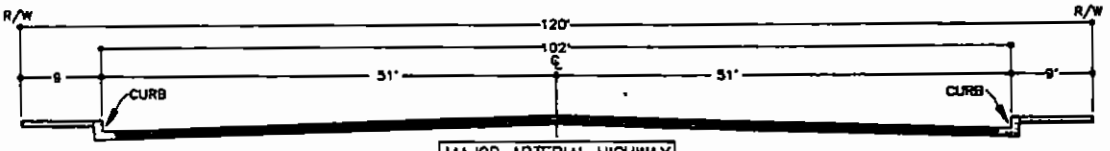
North of the Foothill Transportation Corridor, El Toro Road can accommodate cumulative Year 2020 traffic volumes with the proposed project on four travel lanes divided by a raised or striped median. Exhibit HH illustrates the alternative cross-sections for El Toro Road in the vicinity of the project. Implementation of a full Major arterial cross-section (six lanes divided) is not needed to serve future traffic volumes. Exhibit HH depicts an alternative section which would provide four travel lanes along El Toro Road divided by a striped median. This alternative section represents a modification of the typical cross-section for a Primary arterial. Appropriate transitions would be required between this cross-section and other modified cross-sections along El Toro Road south of Glenn Ranch Road.

Table 16 depicts the project share of peak hour traffic along segments of Santiago Canyon Road. The residential project peak hour traffic increases range from 5.8 percent during the AM peak hour traffic north of Ridgeline Road, to 9.2 percent of PM peak hour traffic between Live Oak Canyon Road and Ridgeline Road. The commercial project peak hour traffic increases range from 0.2 percent during the AM peak hour traffic north of Modjeska Canyon Road, to 2.5 percent of PM peak hour traffic between Live Oak Canyon Road and Ridgeline Road. Pursuant to the County of Orange Growth Management Plan (GMP) and discussions with Environmental Management Agency staff, it has been determined that the project should contribute a fee beyond the normal Santiago

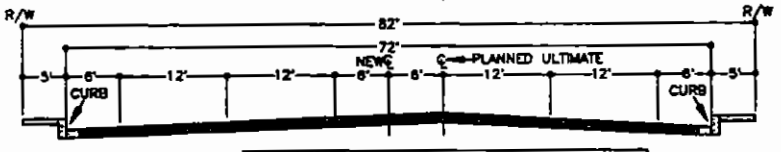
EXHIBIT HH
EL TORO ROAD CROSS-SECTIONS



EXISTING SECTION



MAJOR ARTERIAL HIGHWAY



ALTERNATIVE SECTION RECOMMENDED BY RKJK

TABLE 16

SANTIAGO CANYON ROAD PROJECT SHARE ANALYSIS

VOLUME COMPONENT	ROADWAY SEGMENT					
	LIVE OAK CYN. RD. TO RIDGELINE RD.		RIDGELINE RD. TO MODJESKA CYN. RD.		NORTH OF MODJESKA CYN. RD.	
	AM	PM	AM	PM	AM	PM
Existing Volume (two-way)	1,478	1,276	1,640	1,441	1,650	1,375
Project Volume (two-way)						
• Residential	95	117	95	117	95	117
• Commercial[1]	8	32	6	24	4	16
Project Increases						
• Residential	6.4%	9.2%	5.8%	8.1%	5.8%	8.5%
• Commercial	0.5%	2.5%	0.4%	1.7%	0.2%	1.2%

[1] Includes pass-by/diverted traffic reduction.

Canyon Road Major Thoroughfare and Bridge Fee Program to address ultimate improvement requirements based upon the project's fare share traffic contribution. The difference between the long range improvement costs for Santiago Canyon Road and the amount estimated to be provided by the Santiago Canyon Road Major Thoroughfare and Bridge Fee Program is approximately $18,300,000. A conservative estimate of the project's residential traffic share is approximately 7.3 percent based upon the values presented in Table 16. This amounts to a residential project contribution of $1,335,900, which in turn equates to a fee per dwelling unit of $1,895. The project should therefore participate in a supplemental fee contribution to Santiago Canyon Road of $1,895 per dwelling unit. A conservative estimate of the project's commercial traffic share is approximately 1.1 percent based upon the values presented in Table 16. This amounts to a commercial project contribution of $201,300, which in turn equates to a fee per square foot of $10.07. The project commercial area should therefore participate in a supplemental fee contribution to Santiago Canyon Road of $10.07 per square foot.

2. On-Site

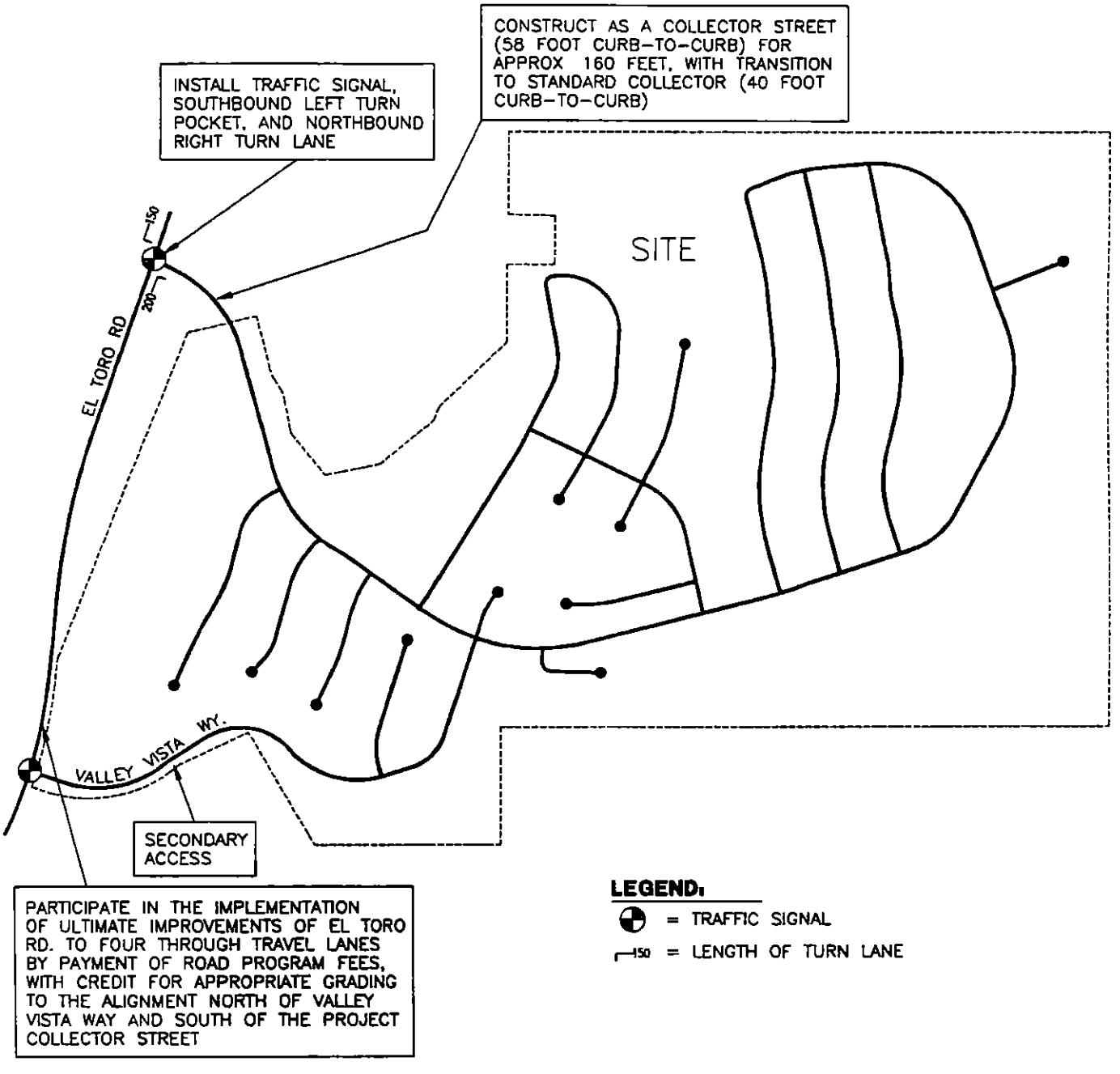
In order to accommodate the anticipated traffic and the potential traffic signal, it is recommended that the entry street to Saddleback Meadows (TT 10692) be designed as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12 foot exiting lanes and two 12 foot entering lanes with a 10 foot median. The Collector cross-section should be maintained for approximately 160 feet where it could then be transitioned to a standard

40 foot wide curb-to-curb width Collector roadway, as shown on Exhibit II.

Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan.

Sight distance at each of the project access intersections should be reviewed with respect to Standard Plan Number 1117 (see Appendix "J") in conjunction with the preparation of precise grading and landscape plans.

EXHIBIT II
CIRCULATION RECOMMENDATIONS



685-95-001 x109A
SADDLEBACK MEADOWS, Orange County, California

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APPENDIX A

LEVEL OF SERVICE DESCRIPTION

LEVEL OF SERVICE - DEFINITIONS*

Service Level	General Definition	Freeways Criteria for measurement: Density (cars per lane-mile)	Arterials Criteria for measurement: Average travel speed (mph)
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.	Free flow operations. Average travel speeds near 60 mph generally prevail on 70-mph freeway elements. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The average spacing between vehicles is about 440 ft, or 22 car-lengths, with a maximum density of 12 cars/mi/ln. The effects of minor incidents or breakdowns are easily absorbed at this level. Although they may cause a deterioration in LOS in the vicinity of the incident, standing queues will not form, and traffic quickly returns to LOS A on passing the disruption.	Primarily free flow-operations at average travel speeds usually within 90 percent of the free flow speed. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.	Reasonably free-flow conditions, and speeds of over 57 mph are maintained on 70-mph freeway elements. The average spacing between vehicles is about 260 ft, or 13 car-lengths, with a maximum density of 20 cars/mi/ln. The ability to maneuver within the traffic stream is only slightly restricted. The effects of minor incidents and breakdowns are still easily absorbed, though local deterioration in service would be more severe than for LOS A.	Unimpeded operations at average travel speeds usually within 70 percent of the free flow speed. The ability to maneuver within the traffic stream is slightly restricted and stopped delays are not bothersome.
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.	Stable operations, but flows approach the range in which small increases in flow will cause substantial deterioration in service. Average travel speeds are still over 54 mph. Freedom to maneuver within the traffic stream is noticeably restricted at LOS C, and lane changes require additional care and vigilance by the driver. Average spacings are in the range of 175 ft, or 9 car-lengths, with a maximum density of 30/cars/mi/ln. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage. Additional vigilance by driver required for safe operation.	Stable operations. Ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50 percent of the average free flow speed.

D	High-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.	Borders on unstable flow. In this range, small increases in flow cause substantial deterioration in service. Average travel speeds of 48 mph or more can still be maintained on 70-mph freeway elements. Freedom to maneuver within the traffic stream is severely limited. Even minor incidents can be expected to create substantial queuing, because the traffic stream has little space to absorb disruptions. Average spacings are about 125 ft, or 6 car-lengths, with a maximum density of 42 cars/mi/ln.	Borders on a range on which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free flow speed.
E	Operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.	The boundary between LOS D and LOS E describes operation at capacity. Operations in this level are extremely unstable, because there are virtually no usable gaps in the traffic stream. Vehicles are spaced at approximately 80 ft, or 4 car-lengths, at relatively uniform headways. This, however, represents the minimum spacing at which stable flow can be accommodated. Any disruption to the traffic stream, such as a vehicle entering from a ramp, or a vehicle changing lanes, causes following vehicles to give way to admit the vehicle. At capacity, the traffic stream has no ability to dissipate even the most minor disruptions. Any incident can be expected to produce a serious breakdown with extensive queuing. The range of flows encompassed by LOS E is relatively small compared to other levels, but reflects a substantial deterioration in service. Maneuverability within the traffic stream is extremely limited. Average travel speeds at capacity are approximately 30 mph.	Significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination or adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
F	Level-of-service F. Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Arrival flow exceeds discharge flow.	Level F describes forced or breakdown flow. Such conditions generally exist within queues forming behind breakdown points. Breakdown occurs when the ratio of actual arrival flow rate to actual capacity or the forecasted flow rate to estimated capacity exceeds 1.00. Operations at such a point will generally be at or near capacity, and downstream operations may be better as vehicles pass the bottleneck (assuming that there are no additional downstream problems). The LOS F operations observed within a queue are the result of a breakdown or bottleneck at a downstream point.	Arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse progression is frequently a contributor to this condition.

*Source: "Highway Capacity Manual, Special Report 209" Transportation Research Board, Washington D.C., 1985

APPENDIX B

TRAFFIC COUNT WORKSHEETS

Location: El Toro N/O Live Oak		Mission Viejo		Volumes for Tuesday 6/27/95			
AM Period	NB	SB		PM Period	NB	SB	
12:00–12:15	5	8		12:00–12:15	65	55	
12:15–12 30	5	3		12.15–12:30	36	29	
12:30–12:45	0	4		12:30–12.45	56	53	
12:45–1:00	2	5	32	12.45–1:00	56	46	396
1:00–1:15	9	6		1:00–1:15	48	48	
1:15–1:30	3	1		1:15–1:30	56	49	
1.30–1:45	5	2		1:30–1:45	53	58	
1:45–2·00	0	0	26	1:45–2:00	62	38	412
2:00–2:15	3	2		2:00–2:15	56	49	
2:15–2.30	0	2		2:15–2:30	68	57	
2:30–2:45	3	4		2:30–2:45	66	34	
2:45–3:00	3	4	21	2:45–3:00	55	60	445
3·00–3:15	3	0		3 00–3:15	89	69	
3:15–3:30	3	0		3:15–3.30	109	72	
3.30–3:45	3	3		3:30–3:45	95	78	
3:45–4:00	1	2	15	3:45–4:00	91	83	686
4:00–4:15	3	4		4:00–4:15	85	85	
4:15–4:30	6	4		4:15–4:30	84	133	
4:30–4:45	7	3		4:30–4:45	98	154	
4:45–5:00	7	4	38	4:45–5:00	70	163	872
5·00–5:15	11	5		5:00–5 15	81	164	
5.15–5.30	16	16		5.15–5:30	101	196	
5.30–5:45	32	26		5:30–5·45	78	216	
5·45–6:00	47	32	185	5.45–6·00	83	243	1162
6 00–6·15	58	60		6:00–6.15	78	222	
6:15–6:30	90	66		6:15–6:30	80	197	
6:30–6:45	148	139		6:30–6·45	68	158	
6:45–7.00	169	104	834	6:45–7:00	48	106	957
7·00–7.15	179	97		7:00–7:15	55	102	
7:15–7.30	253	103		7:15–7:30	51	83	
7:30–7:45	188	103		7:30–7·45	32	57	
7:45–8:00	185	80	1188	7:45–8:00	23	72	475
8·00–8:15	132	72		8:00–8:15	25	62	
8:15–8:30	118	69		8:15–8:30	40	58	
8:30–8:45	102	61		8:30–8:45	24	39	
8:45–9:00	80	57	691	8:45–9:00	20	38	306
9·00–9:15	63	56		9:00–9:15	23	24	
9.15–9:30	68	53		9:15–9:30	21	28	
9:30–9:45	45	43		9:30–9:45	28	27	
9:45–10:00	54	46	428	9:45–10:00	15	39	205
10:00–10:15	42	54		10:00–10:15	13	24	
10:15–10:30	62	55		10:15–10:30	17	21	
10:30–10:45	50	41		10:30–10:45	13	16	
10:45–11:00	41	34	379	10:45–11:00	13	16	133
11:00–11:15	62	58		11:00–11:15	7	15	
11:15–11:30	63	50		11:15–11:30	8	15	
11:30–11·45	64	46		11:30–11:45	2	8	
11:45–12:00	77	44	464	11:45–12:00	6	13	74
Total Volumes	2570	1731	4301		2451	3672	6123
Daily Totals					5021	5403	10424

Location: El Toro N/O Valley Vista Mission Viejo Volumes for Tuesday 6/27/95

AM Period	NB	SB		PM Period	NB	SB	
12:00–12:15	14	10		12:00–12:15	83	78	
12:15–12:30	8	9		12:15–12:30	68	77	
12:30–12:45	3	4		12:30–12:45	76	90	
12:45–1:00	9	6	63	12:45–1:00	85	65	622
1:00–1:15	7	4		1:00–1:15	77	75	
1:15–1:30	5	3		1:15–1:30	78	75	
1:30–1:45	10	4		1:30–1.45	65	70	
1:45–2:00	4	6	43	1 45–2:00	110	75	625
2:00–2:15	4	3		2:00–2:15	87	80	
2:15–2:30	1	2		2:15–2:30	89	87	
2:30–2:45	4	2		2:30–2:45	96	87	
2:45–3:00	3	4	23	2:45–3:00	94	88	708
3:00–3:15	3	2		3:00–3:15	100	120	
3:15–3:30	2	1		3:15–3:30	138	90	
3:30–3:45	3	2		3:30–3:45	116	95	
3:45–4:00	3	1	17	3:45–4:00	116	125	900
4:00–4:15	5	2		4:00–4:15	110	88	
4:15–4:30	5	3		4:15–4:30	126	120	
4:30–4:45	8	10		4:30–4:45	119	160	
4:45–5:00	7	15	55	4:45–5:00	113	155	991
5:00–5:15	15	15		5:00–5:15	128	168	
5:15–5:30	19	35		5:15–5:30	150	187	
5:30–5:45	33	45		5:30–5:45	143	205	
5:45–6:00	40	65	267	5:45–6:00	121	220	1322
6:00–6:15	51	75		6:00–6:15	126	187	
6:15–6:30	97	86		6:15–6.30	136	177	
6:30–6:45	125	125		6:30–6:45	120	135	
6:45–7:00	151	135	845	6:45–7:00	122	125	1128
7:00–7:15	176	155		7:00–7:15	87	87	
7:15–7:30	256	148		7:15–7:30	97	82	
7:30–7:45	226	160		7:30–7:45	86	82	
7:45–8:00	188	150	1459	7:45–8:00	74	80	675
8:00–8:15	159	155		8:00–8:15	87	78	
8:15–8:30	120	125		8:15–8:30	74	75	
8:30–8:45	127	120		8:30–8:45	70	67	
8:45–9:00	100	101	1007	8:45–9:00	53	55	559
9:00–9:15	78	90		9:00–9:15	64	45	
9:15–9:30	94	99		9:15–9:30	53	40	
9:30–9:45	54	88		9:30–9:45	72	45	
9:45–10:00	69	75	647	9:45–10:00	52	55	426
10:00–10:15	59	88		10:00–10:15	46	32	
10:15–10:30	63	85		10:15–10:30	54	40	
10:30–10:45	74	70		10:30–10:45	30	26	
10:45–11:00	68	77	584	10:45–11:00	29	25	282
11:00–11:15	73	60		11:00–11:15	26	25	
11:15–11:30	87	65		11:15–11:30	27	20	
11:30–11:45	82	75		11:30–11:45	15	16	
11:45–12:00	90	77	609	11:45–12:00	15	16	160
Total Volumes	2882	2737	5619		4103	4295	8398
Daily Totals					6985	7032	14017

Location. El Toro N/O Glenn Ranch Mission Viejo Volumes for Tuesday 6/27/95

AM Period	NB	SB		PM Period	NB	SB	
12.00–12.15	10	12		12:00–12:15	78	80	
12:15–12:30	13	8		12:15–12:30	84	74	
12:30–12.45	4	9		12:30–12:45	78	98	
12:45–1:00	12	8	76	12:45–1:00	95	61	648
1:00–1:15	4	4		1:00–1:15	84	76	
1:15–1:30	7	3		1:15–1:30	82	70	
1.30–1:45	8	8		1.30–1 45	85	89	
1:45–2:00	5	3	42	1.45–2 00	97	65	648
2:00–2:15	1	2		2:00–2.15	39	94	
2:15–2:30	1	4		2:15–2.30	97	79	
2:30–2:45	5	5		2:30–2:45	126	79	
2:45–3 00	4	2	24	2:45–3:00	90	97	701
3:00–3 15	2	0		3.00–3:15	127	108	
3:15–3 30	2	1		3:15–3:30	113	86	
3:30–3:45	5	3		3:30–3:45	142	91	
3:45–4.00	4	4	21	3:45–4:00	152	108	927
4:00–4 15	3	5		4:00–4:15	138	96	
4:15–4 30	6	5		4:15–4:30	144	128	
4:30–4:45	8	12		4:30–4:45	119	144	
4:45–5:00	0	18	57	4:45–5:00	131	149	1049
5:00–5 15	10	14		5:00–5:15	138	158	
5:15–5:30	20	39		5:15–5:30	196	166	
5:30–5:45	42	40		5:30–5:45	145	206	
5:45–6.00	36	55	256	5:45–6:00	142	204	1355
6.00–6:15	59	70		6:00–6:15	130	170	
6:15–6 30	105	96		6:15–6:30	120	197	
6:30–6:45	114	144		6:30–6.45	110	153	
6:45–7:00	166	123	877	6:45–7:00	96	115	1091
7:00–7:15	191	149		7:00–7:15	106	99	
7:15–7.30	226	142		7:15–7.30	110	77	
7:30–7:45	199	164		7:30–7:45	74	76	
7:45–8:00	177	130	1378	7:45–8:00	87	84	713
8:00–8:15	138	153		8:00–8:15	72	64	
8 15–8.30	122	117		8:15–8:30	71	67	
8.30–8:45	113	108		8:30–8:45	64	85	
8:45–9:00	100	90	941	8:45–9:00	54	62	539
9:00–9:15	88	91		9:00–9:15	59	47	
9:15–9:30	78	89		9:15–9:30	65	35	
9:30–9:45	53	69		9:30–9:45	58	42	
9:45–10:00	69	72	609	9:45–10:00	49	58	413
10:00–10:15	55	92		10:00–10:15	34	32	
10:15–10:30	68	87		10:15–10:30	37	39	
10:30–10:45	75	79		10:30–10:45	30	24	
10:45–11:00	76	89	621	10:45–11:00	17	20	233
11:00–11:15	84	76		11:00–11:15	26	24	
11:15–11 30	90	71		11:15–11:30	30	23	
11:30–11.45	76	77		11:30–11:45	13	16	
11:45–12:00	91	75	640	11:45–12:00	18	15	165
Total Volumes	2825	2717	5542		4252	4230	8482
Daily Totals					7077	6947	14024

Location: El Toro E/O Marguerite Mission Viejo Volumes for Tuesday 6/27/95

AM Period	EB	WB		PM Period	EB	WB	
12:00–12:15	13	13		12:00–12:15	74	91	
12:15–12:30	11	10		12:15–12:30	83	78	
12:30–12:45	9	9		12:30–12:45	84	104	
12:45–1:00	11	10	86	12:45–1:00	88	69	671
1:00–1:15	12	3		1:00–1:15	87	107	
1:15–1:30	12	7		1:15–1:30	82	92	
1:30–1:45	8	7		1:30–1:45	94	104	
1:45–2:00	6	4	59	1:45–2:00	108	118	792
2:00–2:15	3	3		2:00–2:15	111	131	
2.15–2:30	2	3		2:15–2:30	102	122	
2:30–2:45	5	5		2:30–2:45	102	132	
2:45–3:00	6	4	31	2:45–3:00	99	108	907
3:00–3:15	3	1		3:00–3:15	119	139	
3:15–3:30	2	1		3:15–3:30	125	146	
3:30–3:45	4	3		3:30–3:45	122	162	
3:45–4:00	4	4	22	3:45–4:00	106	126	1045
4:00–4:15	2	6		4:00–4:15	133	153	
4:15–4:30	7	5		4:15–4:30	127	147	
4:30–4:45	11	13		4:30–4:45	120	140	
4:45–5:00	8	22	74	4:45–5:00	104	124	1048
5:00–5:15	18	10		5:00–5:15	163	163	
5:15–5:30	22	41		5:15–5:30	170	120	
5:30–5:45	44	44		5:30–5:45	182	195	
5:45–6:00	40	57	276	5:45–6:00	135	145	1273
6:00–6:15	61	63		6.00–6:15	125	165	
6:15–6:30	110	84		6:15–6:30	142	162	
6:30–6:45	119	127		6:30–6:45	136	171	
6:45–7:00	174	117	855	6:45–7:00	125	121	1147
7:00–7.15	217	136		7:00–7:15	111	112	
7:15–7:30	235	149		7:15–7:30	109	139	
7:30–7:45	217	159		7:30–7:45	105	105	
7:45–8:00	201	149	1463	7:45–8:00	97	96	874
8:00–8:15	150	140		8:00–8:15	101	67	
8:15–8:30	139	134		8:15–8:30	101	66	
8:30–8:45	128	113		8:30–8:45	81	83	
8:45–9:00	105	113	1022	8:45–9:00	81	72	652
9:00–9:15	102	88		9:00–9:15	78	61	
9:15–9:30	96	93		9:15–9:30	78	47	
9:30–9:45	67	83		9:30–9:45	65	45	
9:45–10:00	89	86	704	9:45–10:00	66	60	500
10:00–10:15	83	83		10:00–10:15	68	44	
10:15–10:30	74	110		10:15–10:30	69	44	
10:30–10:45	84	88		10:30–10:45	56	27	
10:45–11:00	101	95	718	10:45–11:00	27	20	355
11:00–11:15	102	81		11:00–11:15	38	24	
11:15–11:30	105	91		11:15–11:30	32	24	
11:30–11:45	88	94		11:30–11:45	18	19	
11:45–12:00	111	90	762	11:45–12:00	22	14	191
Total Volumes	3221	2851	6072		4651	4804	9455
Daily Totals					7872	7655	15527

Location: Live Oak E/O El Toro Mission Viejo Volumes for Tue 6/27/95 to Wed 6/28/95

AM Period	EB	WB		PM Period	EB	WB	
12:00–12:15	6	8		12:00–12:15	31	29	
12:15–12:30	5	4		12:15–12:30	17	42	
12:30–12:45	3	0		12:30–12:45	24	25	
12:45–1:00	4	2	32	12:45–1:00	34	27	229
1:00–1:15	1	0		1:00–1:15	25	25	
1:15–1:30	3	1		1:15–1:30	33	26	
1:30–1:45	7	1		1:30–1:45	37	32	
1:45–2:00	1	2	16	1:45–2:00	34	31	243
2:00–2:15	6	3		2:00–2:15	29	35	
2:15–2:30	3	2		2:15–2:30	50	40	
2:30–2:45	2	0		2:30–2:45	26	42	
2:45–3:00	3	4	23	2:45–3:00	33	35	290
3:00–3:15	1	0		3:00–3:15	29	36	
3:15–3:30	0	2		3:15–3:30	27	34	
3:30–3:45	0	3		3:30–3:45	30	32	
3:45–4:00	4	3	13	3:45–4:00	32	33	253
4:00–4:15	1	2		4:00–4:15	37	30	
4:15–4:30	1	3		4:15–4:30	41	27	
4:30–4:45	0	7		4:30–4:45	54	51	
4:45–5:00	1	7	22	4:45–5:00	64	48	352
5:00–5:15	0	8		5:00–5:15	61	27	
5:15–5:30	2	12		5:15–5:30	72	29	
5:30–5:45	8	16		5:30–5:45	99	32	
5:45–6:00	12	15	73	5:45–6:00	89	35	444
6:00–6:15	18	38		6:00–6:15	103	37	
6:15–6:30	16	42		6:15–6:30	70	33	
6:30–6:45	54	52		6:30–6:45	72	28	
6:45–7:00	43	62	325	6:45–7:00	67	36	446
7:00–7:15	44	58		7:00–7:15	41	25	
7:15–7:30	38	105		7:15–7:30	34	31	
7:30–7:45	45	67		7:30–7:45	40	23	
7:45–8:00	48	71	476	7:45–8:00	46	22	262
8:00–8:15	35	83		8:00–8:15	34	19	
8:15–8:30	24	62		8:15–8:30	31	24	
8:30–8:45	18	51		8:30–8:45	22	24	
8:45–9:00	21	17	311	8:45–9:00	17	38	209
9:00–9:15	16	25		9:00–9:15	29	19	
9:15–9:30	19	24		9:15–9:30	28	16	
9:30–9:45	25	31		9:30–9:45	20	14	
9:45–10:00	18	21	179	9:45–10:00	17	10	153
10:00–10:15	15	24		10:00–10:15	14	17	
10:15–10:30	12	24		10:15–10:30	18	11	
10:30–10:45	13	17		10:30–10:45	11	7	
10:45–11:00	21	32	158	10:45–11:00	10	15	103
11:00–11:15	19	23		11:00–11:15	16	2	
11:15–11:30	30	23		11:15–11:30	14	4	
11:30–11:45	22	25		11:30–11:45	8	4	
11:45–12:00	31	30	203	11:45–12:00	6	4	58
Total Volumes	719	1112	1831		1776	1266	3042
Daily Totals					2495	2378	4873

Location: Valley Vista E/O El Toro Mission Viejo Volumes for Tuesday 6/27/95

AM Period	EB	WB		PM Period	EB	WB	
12:00–12:15	1	1		12:00–12:15	6	2	
12:15–12:30	3	2		12:15–12:30	6	9	
12:30–12:45	2	0		12:30–12:45	10	5	
12:45–1:00	0	1	10	12:45–1:00	11	8	57
1:00–1:15	1	0		1:00–1:15	9	9	
1:15–1:30	0	0		1:15–1:30	11	11	
1:30–1:45	0	0		1:30–1:45	8	8	
1:45–2:00	0	0	1	1:45–2:00	7	11	74
2:00–2:15	0	0		2:00–2:15	8	4	
2:15–2:30	0	0		2:15–2:30	8	2	
2:30–2 45	1	1		2:30–2:45	10	8	
2:45–3:00	0	0	2	2:45–3:00	9	9	58
3:00–3:15	0	1		3:00–3:15	9	10	
3:15–3:30	1	0		3:15–3:30	17	9	
3:30–3:45	2	1		3:30–3:45	8	7	
3:45–4:00	0	3	8	3:45–4:00	7	8	75
4:00–4:15	0	4		4:00–4:15	11	10	
4:15–4:30	1	1		4:15–4:30	14	15	
4:30–4:45	0	2		4:30–4:45	22	8	
4:45–5:00	0	3	11	4:45–5:00	14	16	110
5:00–5:15	0	3		5:00–5:15	29	12	
5:15–5:30	0	6		5:15–5:30	20	13	
5:30–5:45	0	10		5:30–5:45	25	13	
5:45–6:00	1	7	27	5:45–6:00	30	12	154
6:00–6:15	1	10		6:00–6:15	16	3	
6:15–6:30	1	13		6:15–6:30	23	12	
6:30–6:45	3	29		6:30–6:45	18	14	
6:45–7:00	4	22	83	6:45–7:00	19	7	112
7:00–7:15	1	38		7:00–7:15	21	4	
7.15–7:30	6	21		7:15–7:30	18	11	
7.30–7:45	7	28		7:30–7:45	12	11	
7:45–8:00	5	27	133	7:45–8:00	12	10	99
8:00–8:15	5	26		8:00–8:15	8	7	
8:15–8.30	7	26		8:15–8:30	21	3	
8:30–8:45	3	13		8:30–8:45	14	8	
8:45–9:00	6	17	103	8:45–9:00	11	7	79
9:00–9:15	6	15		9:00–9:15	5	9	
9:15–9:30	6	6		9:15–9:30	13	2	
9:30–9.45	2	7		9:30–9:45	9	5	
9:45–10:00	4	11	57	9:45–10:00	5	4	52
10:00–10:15	5	5		10:00–10:15	6	6	
10:15–10:30	4	13		10:15–10:30	11	4	
10:30–10:45	4	4		10:30–10:45	7	4	
10:45–11:00	11	11	57	10:45–11:00	6	3	47
11:00–11:15	13	5		11:00–11:15	9	1	
11:15–11:30	2	9		11:15–11:30	2	1	
11:30–11:45	3	12		11:30–11:45	1	0	
11:45–12:00	2	13	59	11:45–12:00	1	0	15
Total Volumes	124	427	551		577	355	932
Daily Totals					701	782	1483

Location: Glenn Ranch P/O Portola Mission Viejo Volumes for Tuesday 6 27 95

AM Period	EB	WB		PM Period	EB	WB	
12:00–12:15	3	0		12:00–12:15	27	23	
12:15–12:30	8	1		12:15–12:30	27	29	
12:30–12:45	1	1		12:30–12:45	40	21	
12:45–1:00	5	1	20	12:45–1:00	19	24	210
1:00–1:15	1	1		1:00–1:15	35	26	
1:15–1:30	1	1		1:15–1:30	24	30	
1:30–1:45	4	3		1:30–1:45	12	34	
1:45–2:00	2	1	14	1:45–2:00	28	19	208
2:00–2:15	1	1		2:00–2:15	18	25	
2:15–2:30	1	2		2:15–2:30	11	21	
2:30–2:45	2	1		2:30–2:45	24	22	
2:45–3:00	0	0	8	2:45–3:00	26	21	168
3:00–3:15	1	3		3:00–3:15	32	27	
3:15–3:30	4	2		3:15–3:30	43	29	
3:30–3:45	1	1		3:30–3:45	27	23	
3:45–4:00	2	0	14	3:45–4:00	24	26	231
4:00–4:15	1	3		4:00–4:15	49	28	
4:15–4:30	1	1		4:15–4:30	45	28	
4:30–4:45	2	8		4:30–4:45	66	31	
4:45–5:00	1	7	24	4:45–5:00	55	20	320
5:00–5:15	0	8		5:00–5:15	51	18	
5:15–5:30	0	29		5:15–5:30	75	31	
5:30–5:45	3	29		5:30–5:45	74	28	
5:45–6:00	5	25	99	5:45–6:00	71	37	385
6:00–6:15	9	37		6:00–6:15	68	36	
6:15–6:30	9	42		6:15–6:30	70	23	
6:30–6:45	12	71		6:30–6:45	54	31	
6:45–7:00	12	78	270	6:45–7:00	69	24	375
7:00–7:15	11	82		7:00–7:15	72	31	
7:15–7:30	29	86		7:15–7:30	46	28	
7:30–7:45	13	101		7:30–7:45	46	18	
7:45–8:00	14	105	441	7:45–8:00	30	18	289
8:00–8:15	12	72		8:00–8:15	37	18	
8:15–8:30	16	78		8:15–8:30	35	23	
8:30–8:45	13	64		8:30–8:45	31	16	
8:45–9:00	17	61	333	8:45–9:00	27	11	198
9:00–9:15	11	37		9:00–9:15	36	11	
9:15–9:30	8	35		9:15–9:30	37	7	
9:30–9:45	9	28		9:30–9:45	29	11	
9:45–10:00	13	33	174	9:45–10:00	24	11	166
10:00–10:15	10	43		10:00–10:15	26	4	
10:15–10:30	10	27		10:15–10:30	19	13	
10:30–10:45	22	27		10:30–10.45	15	7	
10:45–11:00	18	28	185	10:45–11:00	18	9	111
11:00–11:15	9	39		11:00–11:15	9	3	
11:15–11:30	14	26		11:15–11:30	13	3	
11:30–11:45	19	20		11:30–11:45	9	1	
11:45–12:00	18	28	177	11:45–12:00	4	3	45
Total Volumes	382	1377	1759		1725	981	2706
Daily Totals					2107	2358	4465

Location: Portola N/O El Toro Mission Viejo Volumes for Tue 6/27/95 to Wed 6/28/95

AM Period	NB	SB		PM Period	NB	SB	
12:00–12:15	14	14		12:00–12:15	111	150	
12:15–12:30	6	12		12:15–12:30	180	129	
12:30–12:45	5	18		12:30–12:45	177	140	
12:45–1:00	9	8	86	12:45–1:00	133	134	1154
1:00–1:15	4	10		1:00–1:15	170	140	
1:15–1:30	11	8		1:15–1:30	151	98	
1:30–1:45	3	6		1:30–1:45	111	156	
1:45–2:00	5	4	51	1:45–2:00	163	117	1106
2:00–2:15	0	8		2:00–2:15	146	133	
2:15–2:30	6	2		2:15–2:30	113	121	
2:30–2:45	8	3		2:30–2:45	140	132	
2 45–3:00	6	4	37	2:45–3:00	140	133	1058
3:00–3:15	6	3		3:00–3:15	114	161	
3:15–3:30	2	4		3:15–3:30	125	156	
3:30–3:45	4	6		3:30–3:45	132	161	
3:45–4:00	13	3	41	3:45–4:00	152	181	1182
4:00–4:15	5	7		4:00–4:15	114	187	
4:15–4:30	6	1		4:15–4:30	118	167	
4:30–4:45	15	5		4:30–4:45	98	236	
4:45–5:00	29	8	76	4:45–5:00	140	247	1307
5 00–5:15	36	6		5:00–5:15	109	260	
5:15–5:30	53	11		5:15–5:30	122	337	
5.30–5:45	75	19		5:30–5:45	121	334	
5:45–6:00	130	17	347	5:45–6:00	149	321	1753
6:00–6:15	135	27		6:00–6:15	128	329	
6:15–6:30	170	55		6:15–6:30	138	313	
6:30–6:45	243	59		6:30–6:45	127	284	
6:45–7:00	259	65	1013	6:45–7:00	163	212	1694
7:00–7:15	312	76		7:00–7:15	130	195	
7:15–7:30	333	63		7:15–7:30	139	173	
7:30–7:45	313	81		7:30–7:45	118	138	
7:45–8:00	353	93	1624	7:45–8:00	107	145	1145
8:00–8.15	301	74		8:00–8:15	109	132	
8.15–8:30	251	68		8:15–8:30	92	131	
8:30–8:45	237	90		8:30–8:45	87	215	
8:45–9:00	187	104	1312	8:45–9:00	74	135	975
9:00–9:15	164	75		9:00–9:15	72	107	
9:15–9:30	139	94		9:15–9:30	74	110	
9:30–9:45	143	80		9:30–9:45	63	81	
9:45–10:00	141	98	934	9:45–10:00	56	81	644
10:00–10:15	140	91		10:00–10:15	42	52	
10:15–10:30	133	112		10:15–10:30	40	68	
10:30–10:45	141	82		10:30–10:45	27	56	
10:45–11:00	155	103	957	10:45–11:00	31	34	350
11:00–11:15	156	139		11:00–11:15	22	33	
11:15–11:30	140	106		11:15–11:30	23	34	
11:30–11:45	138	138		11:30–11:45	14	24	
11:45–12:00	141	128	1086	11:45–12:00	22	28	200
Total Volumes	5276	2288	7564		5127	7441	12568
Daily Totals					10403	9729	20132

Location. Portola Pkwy S/O El Toro Mission Viejo Volumes for Tuesday 6/27/95

AM Period	NB	SB		PM Period	NB	SB	
12.00–12:15	18	14		12.00–12:15	209	195	
12:15–12:30	19	31		12:15–12:30	196	193	
12:30–12:45	18	20		12:30–12:45	178	203	
12:45–1:00	9	22	151	12:45–1:00	171	202	1547
1:00–1:15	11	14		1:00–1:15	176	174	
1:15–1:30	7	18		1:15–1:30	206	163	
1:30–1:45	7	13		1:30–1:45	165	158	
1:45–2:00	4	5	79	1.45–2:00	167	165	1374
2:00–2:15	7	8		2:00–2:15	168	150	
2:15–2:30	5	5		2:15–2:30	209	176	
2:30–2:45	8	9		2:30–2:45	161	170	
2:45–3:00	4	2	48	2:45–3:00	174	162	1370
3.00–3:15	6	3		3:00–3:15	173	187	
3:15–3:30	5	2		3:15–3:30	176	183	
3:30–3:45	8	6		3:30–3:45	192	198	
3:45–4:00	12	10	52	3:45–4:00	203	236	1548
4:00–4.15	13	5		4:00–4:15	168	224	
4:15–4:30	25	9		4:15–4:30	167	265	
4:30–4:45	28	11		4:30–4:45	195	284	
4.45–5:00	36	8	135	4:45–5:00	193	305	1801
5:00–5:15	64	19		5:00–5:15	189	330	
5.15–5:30	84	19		5:15–5:30	200	376	
5.30–5:45	112	30		5:30–5:45	176	384	
5 45–6:00	128	41	497	5:45–6:00	199	381	2235
6:00–6:15	132	55		6:00–6:15	153	403	
6:15–6:30	221	84		6:15–6:30	195	328	
6 30–6:45	268	112		6:30–6.45	152	336	
6:45–7:00	248	170	1290	6:45–7:00	144	307	2018
7:00–7:15	324	107		7:00–7:15	162	294	
7:15–7:30	350	128		7:15–7.30	168	273	
7:30–7:45	428	122		7.30–7:45	149	256	
7.45–8:00	375	158	1992	7:45–8:00	159	196	1657
8:00–8:15	301	113		8:00–8:15	113	172	
8:15–8:30	276	117		8:15–8:30	129	187	
8:30–8:45	216	129		8:30–8:45	110	177	
8:45–9:00	238	125	1515	8:45–9:00	107	143	1138
9:00–9:15	179	125		9:00–9:15	116	144	
9:15–9:30	196	104		9:15–9:30	84	166	
9:30–9:45	161	105		9:30–9:45	75	157	
9:45–10:00	173	133	1176	9:45–10:00	63	119	924
10:00–10:15	167	124		10:00–10:15	65	118	
10:15–10:30	152	152		10:15–10:30	57	85	
10:30–10:45	170	134		10:30–10:45	31	53	
10:45–11:00	185	131	1215	10:45–11:00	21	77	507
11:00–11:15	165	170		11:00–11:15	24	51	
11:15–11:30	189	140		11:15–11:30	19	49	
11:30–11:45	194	173		11:30–11:45	10	48	
11:45–12:00	190	167	1388	11:45–12:00	20	40	261
Total Volumes	6136	3402	9538		6737	9643	16380
Daily Totals					12873	13045	25918

Location Marguerite S/O El Toro Rd Mission Viejo Volumes for Tuesday 6/27/95

AM Period	NB	SB		PM Period	NB	SB	
12:00–12:15	4	7		12:00–12.15	62	48	
12:15–12:30	7	3		12.15–12:30	72	49	
12:30–12:45	5	3		12:30–12:45	68	59	
12:45–1:00	2	8	39	12:45–1:00	66	52	476
1:00–1:15	2	4		1:00–1:15	54	45	
1:15–1:30	3	6		1:15–1:30	62	52	
1:30–1:45	5	3		1:30–1·45	58	46	
1:45–2:00	3	0	26	1:45–2:00	63	42	422
2:00–2:15	4	2		2.00–2:15	57	46	
2:15–2:30	2	3		2:15–2:30	72	62	
2:30–2:45	5	0		2:30–2:45	83	60	
2:45–3·00	4	2	22	2:45–3:00	64	82	526
3.00–3:15	2	1		3·00–3:15	102	83	
3:15–3:30	0	1		3:15–3:30	99	89	
3:30–3:45	3	0		3.30–3:45	115	93	
3:45–4:00	3	2	12	3:45–4:00	92	105	778
4:00–4:15	4	3		4:00–4:15	107	110	
4:15–4:30	4	2		4:15–4:30	100	120	
4:30–4 45	11	9		4:30–4 45	89	108	
4:45–5:00	13	10	56	4:45–5:00	81	128	843
5:00–5:15	14	18		5 00–5:15	126	125	
5:15–5:30	19	20		5:15–5:30	137	154	
5:30–5·45	47	22		5:30–5:45	125	184	
5:45–6·00	44	36	220	5:45–6:00	101	185	1137
6:00–6:15	62	40		6:00–6·15	105	160	
6:15–6:30	110	47		6:15–6:30	100	151	
6:30–6:45	106	66		6:30–6 45	104	152	
6:45–7:00	152	75	658	6:45–7:00	101	127	1000
7:00–7:15	216	78		7·00–7:15	84	126	
7:15–7:30	209	95		7:15–7:30	88	115	
7:30–7.45	198	90		7.30–7:45	82	88	
7:45–8:00	175	93	1154	7:45–8:00	68	93	744
8.00–8:15	129	75		8:00–8:15	65	68	
8.15–8:30	117	69		8:15–8:30	80	88	
8:30–8:45	86	67		8:30–8:45	77	61	
8:45–9:00	74	69	686	8:45–9:00	65	59	563
9:00–9:15	68	56		9:00–9:15	70	51	
9:15–9:30	63	47		9:15–9:30	78	47	
9:30–9:45	60	44		9:30–9:45	71	35	
9:45–10:00	52	48	438	9:45–10:00	46	40	438
10:00–10:15	55	43		10:00–10:15	36	21	
10:15–10:30	47	66		10:15–10:30	37	34	
10:30–10:45	67	64		10:30–10:45	28	16	
10:45–11:00	65	52	459	10:45–11:00	15	16	203
11:00–11:15	68	49		11:00–11:15	17	21	
11:15–11:30	74	51		11:15–11:30	21	12	
11:30–11:45	70	46		11:30–11:45	8	12	
11:45–12:00	83	63	504	11:45–12:00	8	10	109
Total Volumes	2616	1658	4274		3509	3730	7239
Daily Totals					6125	5388	11513

TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: MODJESKA CANYON ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507074

Movements by: VEHICLES

DATE: 8/03/95

Time Begin	From North			From East			From South			From West			Vehicle Total
	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
7:00 AM	0	103	2	9	0	3	0	303	0	0	0	0	420
7:15	0	89	2	12	0	1	1	349	0	0	0	0	454
7:30	0	90	2	12	0	4	3	318	0	0	0	0	429
7:45	0	67	3	11	0	4	1	278	0	0	0	0	364
HR TOTAL	0	349	9	44	0	12	5	1248	0	0	0	0	1667
8:00 AM	0	66	3	9	0	3	0	203	0	0	0	0	284
8:15	0	72	2	8	0	1	3	211	0	0	0	0	297
8:30	0	59	3	13	0	6	1	159	0	0	0	0	241
8:45	0	59	6	7	0	3	2	97	0	0	0	0	174
HR TOTAL	0	256	14	37	0	13	6	670	0	0	0	0	996
Break													
4:00 PM	0	118	5	4	0	5	4	110	0	0	0	0	246
4:15	0	135	5	4	0	0	3	116	0	0	0	0	263
4:30	0	161	5	4	0	3	2	103	0	0	0	0	278
4:45	0	185	4	2	0	2	6	104	0	0	0	0	303
HR TOTAL	0	599	19	14	0	10	15	433	0	0	0	0	1090
5:00 PM	0	168	6	6	0	2	4	117	0	0	0	0	303
5:15	0	217	12	5	0	0	5	109	0	0	0	0	348
5:30	0	238	7	4	0	3	4	112	0	0	0	0	368
5:45	0	242	9	0	0	2	4	123	0	0	0	0	380
HR TOTAL	0	865	34	15	0	7	17	461	0	0	0	0	1399
DAY TOTAL	0	2069	76	110	0	42	43	2812	0	0	0	0	5152

TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: MODJESKA CANYON ROAD
Client : RKJK & ASSOC.

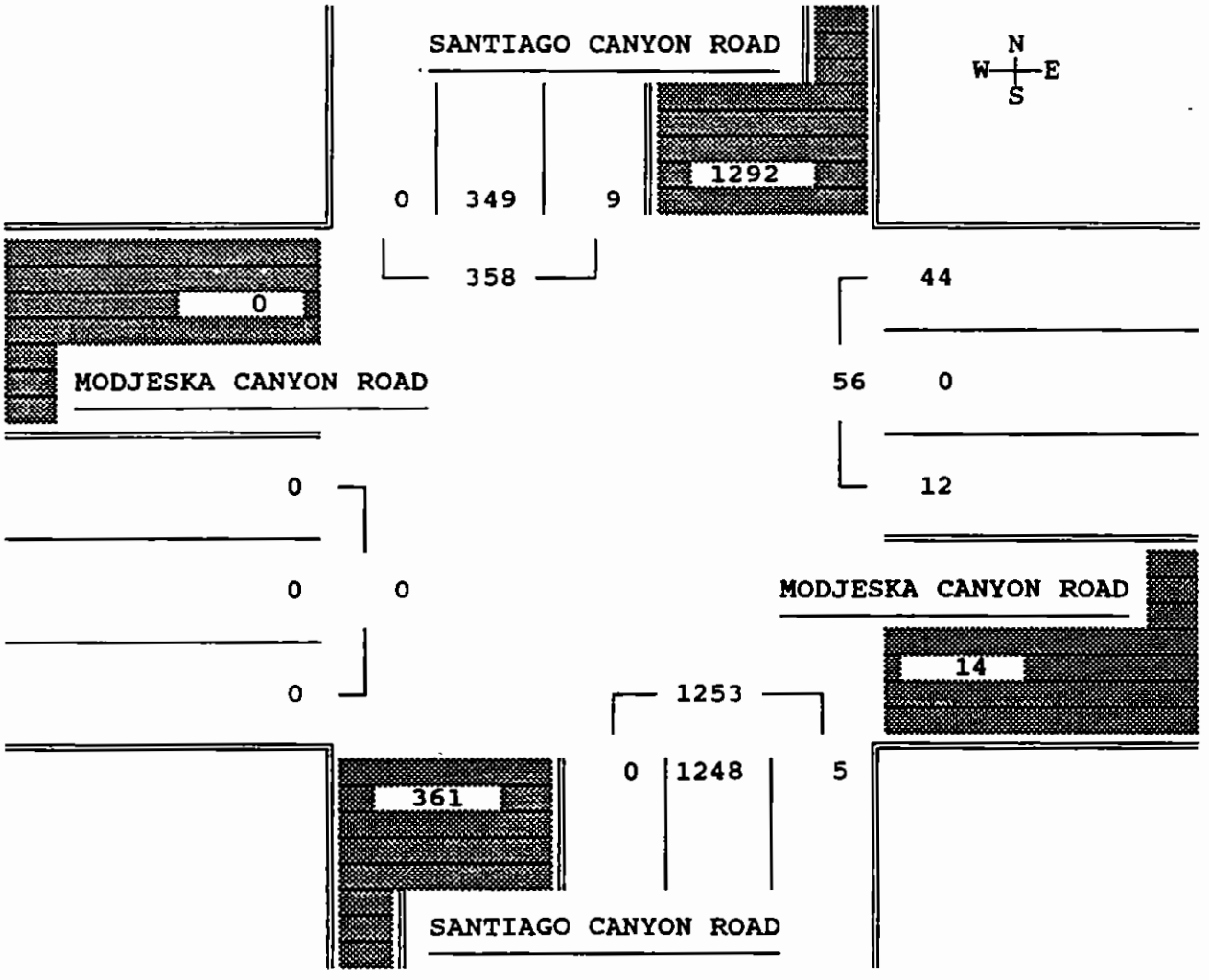
PAGE: 1
FILE: H9507074

Movements by: VEHICLES

DATE: 8/03/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.85	0	349	9	358	0	97	3
East	7:00 AM	0.88	44	0	12	56	79	0	21
South	7:00 AM	0.89	5	1248	0	1253	0	%100	0
West	7:00 AM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	7:00 AM	0.85	0	349	9	358	0	97	3
East		0.88	44	0	12	56	79	0	21
South		0.89	5	1248	0	1253	0	%100	0
West		0.00	0	0	0	0	0	0	0



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: MODJESKA CANYON ROAD
Client : RKJK & ASSOC.

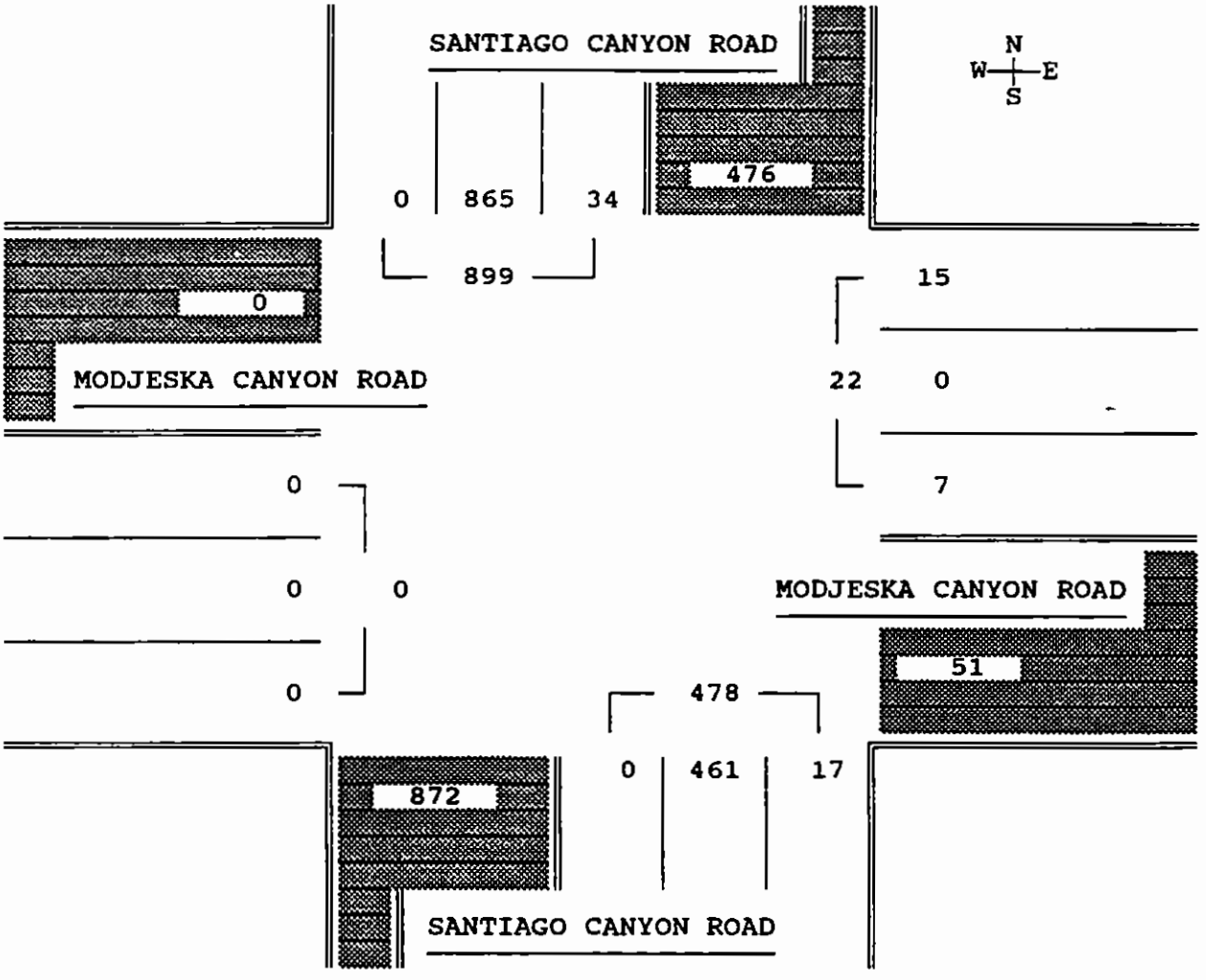
PAGE: 1
FILE: H9507074

Movements by: VEHICLES

DATE: 8/03/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.90	0	865	34	899	0	96	4
East	4:00 PM	0.67	14	0	10	24	58	0	42
South	5:00 PM	0.94	17	461	0	478	4	96	0
West	5:00 PM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	5:00 PM	0.90	0	865	34	899	0	96	4
East		0.69	15	0	7	22	68	0	32
South		0.94	17	461	0	478	4	96	0
West		0.00	0	0	0	0	0	0	0



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: RIDGELINE ROAD NORTH
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507075
Movements by: VEHICLES
DATE: 8/02/95

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	7	114	0	0	0	0	0	272	0	0	0	55	448
7:15	9	81	0	0	0	0	0	296	1	5	0	33	425
7:30	8	86	0	0	0	0	0	275	1	1	0	40	411
7:45	4	106	0	0	0	0	0	226	3	1	0	28	368
HR TOTAL	28	387	0	0	0	0	0	1069	5	7	0	156	1652
8:00 AM	4	60	0	0	0	0	0	207	1	1	0	37	310
8:15	5	81	0	0	0	0	0	143	2	0	0	24	255
8:30	5	76	0	0	0	0	0	133	1	0	0	25	240
8:45	4	62	0	0	0	0	0	106	3	2	0	17	194
HR TOTAL	18	279	0	0	0	0	0	589	7	3	0	103	999
Break													
4:00 PM	25	109	0	0	0	0	0	147	2	2	0	10	295
4:15	18	111	0	0	0	0	0	122	3	1	0	5	260
4:30	21	127	0	0	0	0	0	125	1	0	0	7	281
4:45	31	161	0	0	0	0	0	107	7	1	0	10	317
HR TOTAL	95	508	0	0	0	0	0	501	13	4	0	32	1153
5:00 PM	22	153	0	0	0	0	0	121	6	1	0	13	316
5:15	37	224	0	0	0	0	0	123	2	0	0	8	394
5:30	51	217	0	0	0	0	0	107	6	1	0	9	391
5:45	46	203	0	0	0	0	0	101	6	2	0	6	364
HR TOTAL	156	797	0	0	0	0	0	452	20	4	0	36	1465
DAY TOTAL	297	1971	0	0	0	0	0	2611	45	18	0	327	5269

TURNING MOVEMENTS by Traffic Counts, Inc

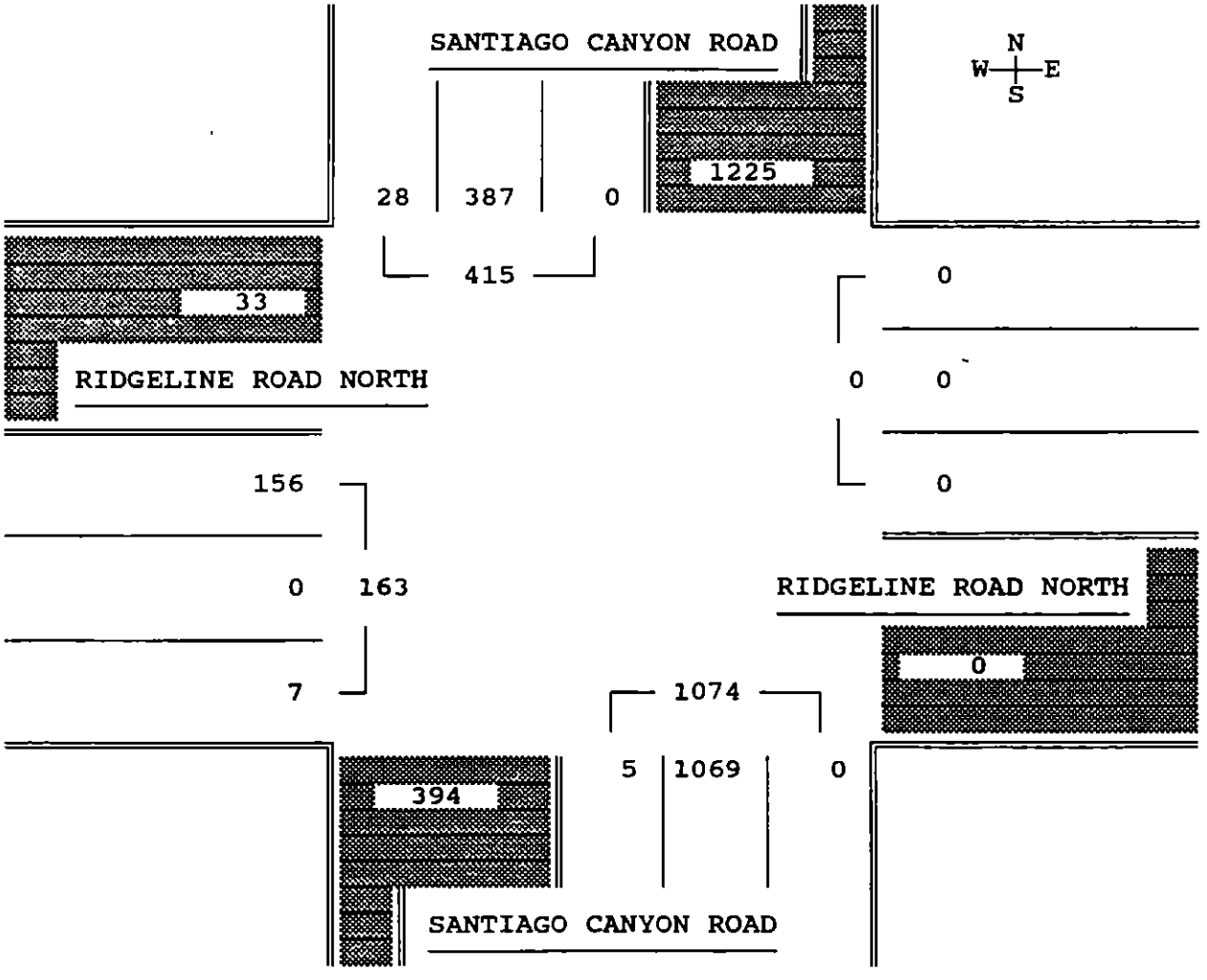
Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: RIDGELINE ROAD NORTH
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507075
DATE: 8/02/95

Movements by: VEHICLES

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.86	28	387	0	415	7	93	0
East	7:00 AM	0.00	0	0	0	0	0	0	0
South	7:00 AM	0.90	0	1069	5	1074	0	%100	0
West	7:00 AM	0.74	7	0	156	163	4	0	96
Entire Intersection									
North	7:00 AM	0.86	28	387	0	415	7	93	0
East		0.00	0	0	0	0	0	0	0
South		0.90	0	1069	5	1074	0	%100	0
West		0.74	7	0	156	163	4	0	96



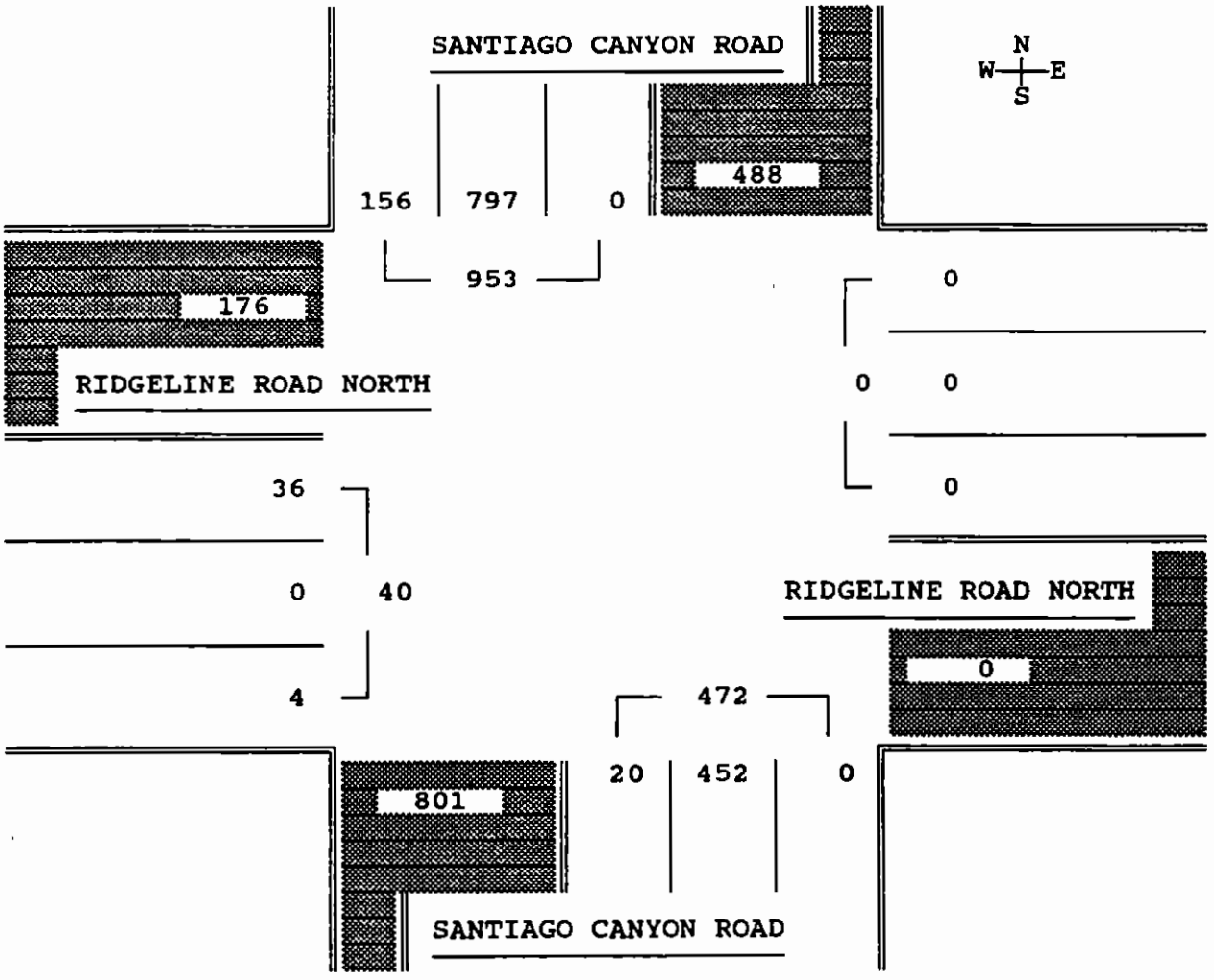
TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: RIDGELINE ROAD NORTH
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507075
Movements by: VEHICLES
DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.89	156	797	0	953	16	84	0
East	5:00 PM	0.00	0	0	0	0	0	0	0
South	4:00 PM	0.86	0	501	13	514	0	97	3
West	4:45 PM	0.77	3	0	40	43	7	0	93
Entire Intersection									
North	5:00 PM	0.89	156	797	0	953	16	84	0
East		0.00	0	0	0	0	0	0	0
South		0.93	0	452	20	472	0	96	4
West		0.71	4	0	36	40	10	0	90



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: LIVE OAK CANYON ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507076
Movements by: VEHICLES
DATE: 8/02/95

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	0	79	34	66	0	9	8	222	0	0	0	0	418
7:15	0	68	22	82	0	12	6	235	0	0	0	0	425
7:30	0	74	28	64	0	16	11	186	0	0	0	0	379
7:45	0	63	28	54	0	15	12	170	0	0	0	0	342
HR TOTAL	0	284	112	266	0	52	37	813	0	0	0	0	1564
8:00 AM	0	55	16	50	0	15	11	141	0	0	0	0	288
8:15	0	58	14	48	0	18	9	110	0	0	0	0	257
8:30	0	54	19	39	0	18	6	108	0	0	0	0	244
8:45	0	52	13	17	0	15	9	73	0	0	0	0	179
HR TOTAL	0	219	62	154	0	66	35	432	0	0	0	0	968
Break													
4:00 PM	0	74	25	40	0	7	20	102	0	0	0	0	268
4:15	0	90	23	26	0	9	14	97	0	0	0	0	259
4:30	0	98	29	36	0	15	12	84	0	0	0	0	274
4:45	0	114	41	35	0	16	21	92	0	0	0	0	319
HR TOTAL	0	376	118	137	0	47	67	375	0	0	0	0	1120
5:00 PM	0	119	38	29	0	11	19	99	0	0	0	0	315
5:15	0	175	66	19	0	11	22	96	0	0	0	0	389
5:30	0	141	54	25	0	11	26	94	0	0	0	0	351
5:45	0	146	65	21	0	7	28	89	0	0	0	0	356
HR TOTAL	0	581	223	94	0	40	95	378	0	0	0	0	1411
DAY TOTAL	0	1460	515	651	0	205	234	1998	0	0	0	0	5063

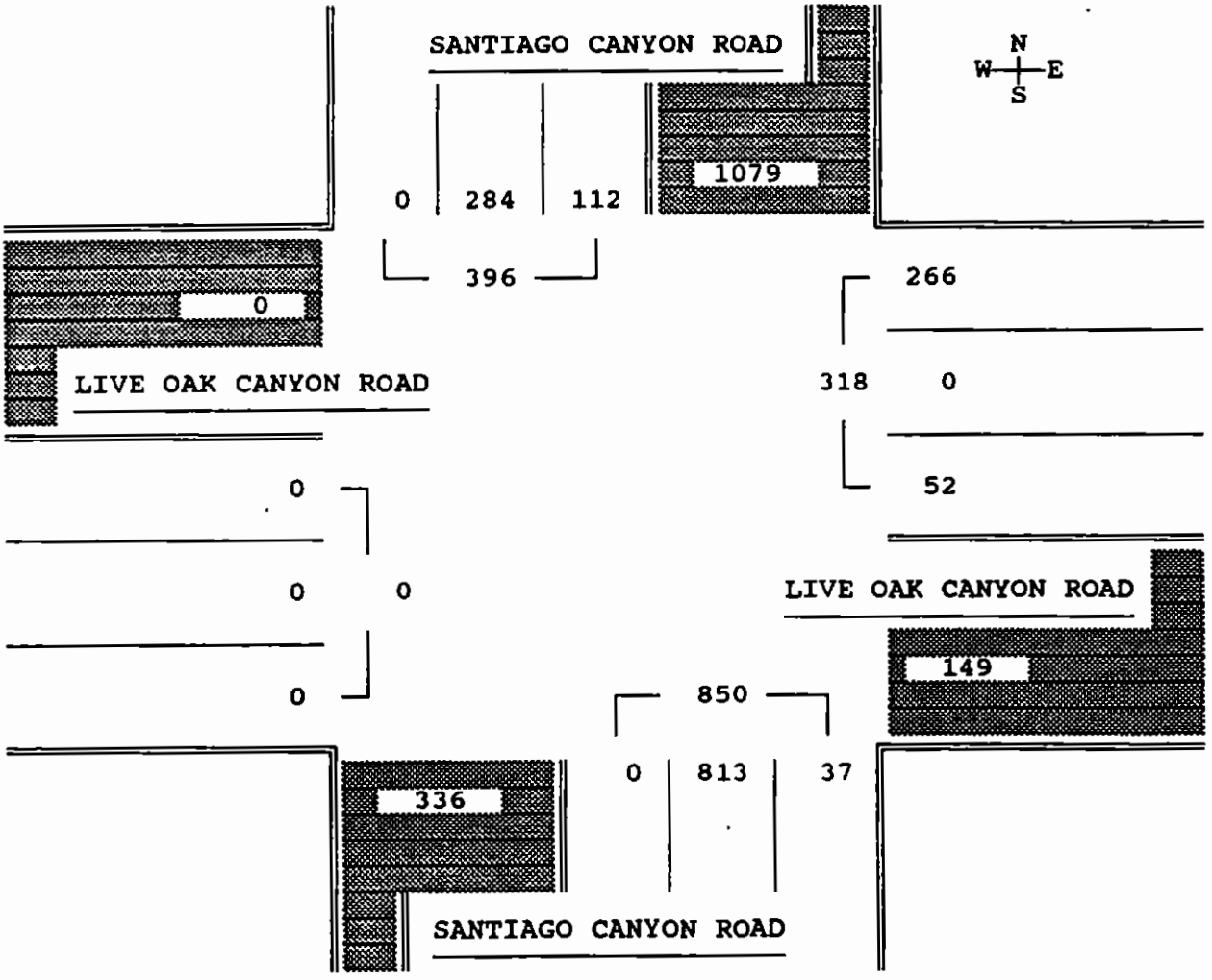
TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: LIVE OAK CANYON ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507076
Movements by: VEHICLES
DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.88	0	284	112	396	0	72	28
East	7:00 AM	0.85	266	0	52	318	84	0	16
South	7:00 AM	0.88	37	813	0	850	4	96	0
West	7:00 AM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	7:00 AM	0.88	0	284	112	396	0	72	28
East		0.85	266	0	52	318	84	0	16
South		0.88	37	813	0	850	4	96	0
West		0.00	0	0	0	0	0	0	0



TURNING MOVEMENTS by Traffic Counts, Inc

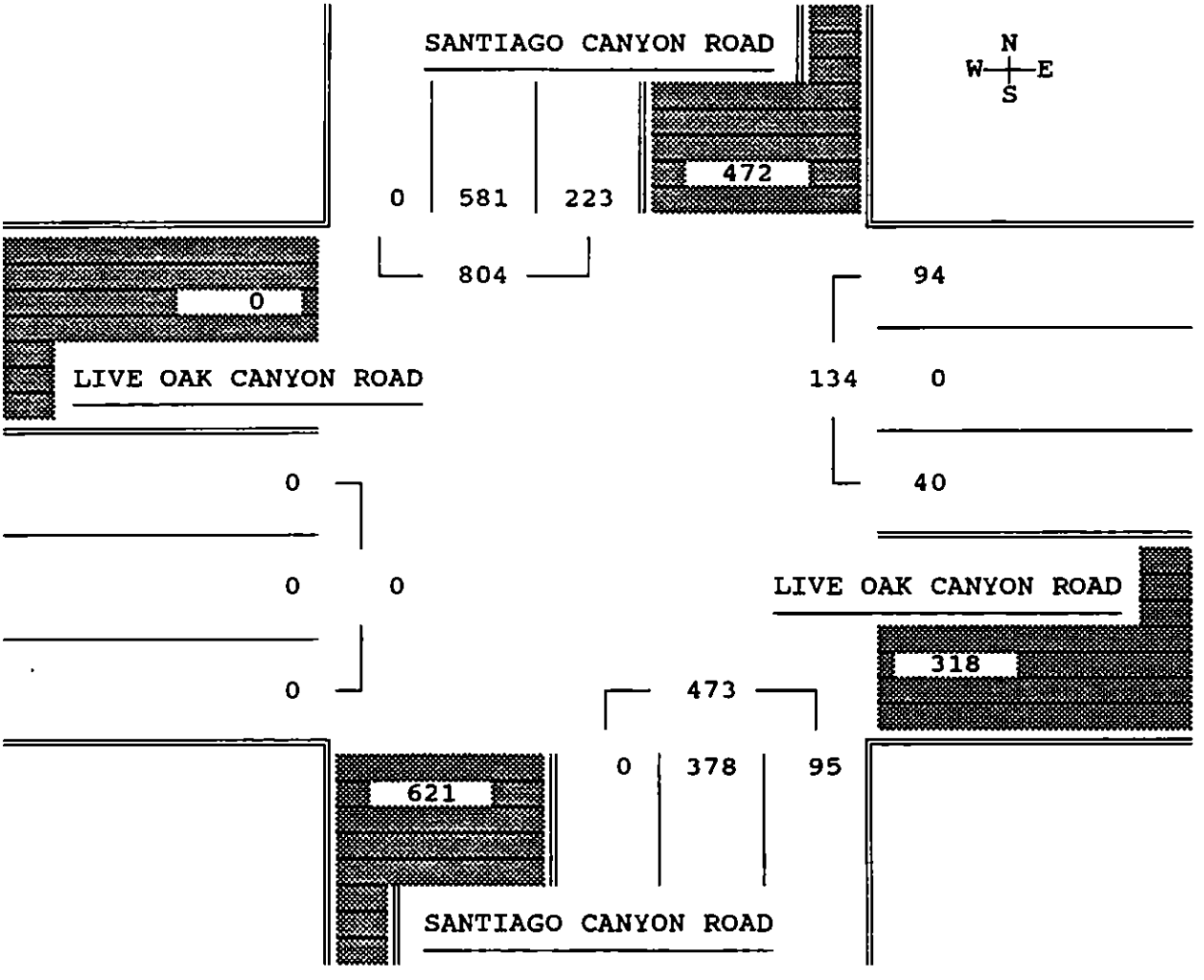
Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: LIVE OAK CANYON ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507076
DATE: 8/02/95

Movements by: VEHICLES

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.83	0	581	223	804	0	72	28
East	4:00 PM	0.90	137	0	47	184	74	0	26
South	5:00 PM	0.99	95	378	0	473	20	80	0
West	5:00 PM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	5:00 PM	0.83	0	581	223	804	0	72	28
East		0.84	94	0	40	134	70	0	30
South		0.99	95	378	0	473	20	80	0
West		0.00	0	0	0	0	0	0	0



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: RIDGELINE ROAD SOUTH
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507077
DATE: 8/02/95

Movements by: VEHICLES

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	4	85	0	0	0	0	0	203	7	24	0	24	347
7:15	0	83	0	0	0	0	0	214	5	30	0	23	355
7:30	1	72	0	0	0	0	0	187	5	35	0	23	323
7:45	5	97	0	0	0	0	0	164	8	34	0	12	320
HR TOTAL	10	337	0	0	0	0	0	768	25	123	0	82	1345
8:00 AM	1	57	0	0	0	0	0	145	9	41	0	10	263
8:15	5	80	0	0	0	0	0	104	9	30	0	8	236
8:30	3	70	0	0	0	0	0	96	10	42	0	6	227
8:45	7	64	0	0	0	0	0	78	8	34	0	5	196
HR TOTAL	16	271	0	0	0	0	0	423	36	147	0	29	922
Break													
4:00 PM	1	76	0	0	0	0	0	126	13	15	0	1	232
4:15	2	95	0	0	0	0	0	105	24	16	0	5	247
4:30	6	104	0	0	0	0	0	92	30	37	0	3	272
4:45	1	139	0	0	0	0	0	96	33	20	0	13	302
HR TOTAL	10	414	0	0	0	0	0	419	100	88	0	22	1053
5:00 PM	4	123	0	0	0	0	0	119	31	13	0	5	295
5:15	8	182	0	0	0	0	0	105	21	17	0	5	338
5:30	5	156	0	0	0	0	0	104	32	21	0	7	325
5:45	4	136	0	0	0	0	0	113	31	27	0	11	322
HR TOTAL	21	597	0	0	0	0	0	441	115	78	0	28	1280
DAY TOTAL	57	1619	0	0	0	0	0	2051	276	436	0	161	4600

TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: RIDGELINE ROAD SOUTH
Client : RKJK & ASSOC.

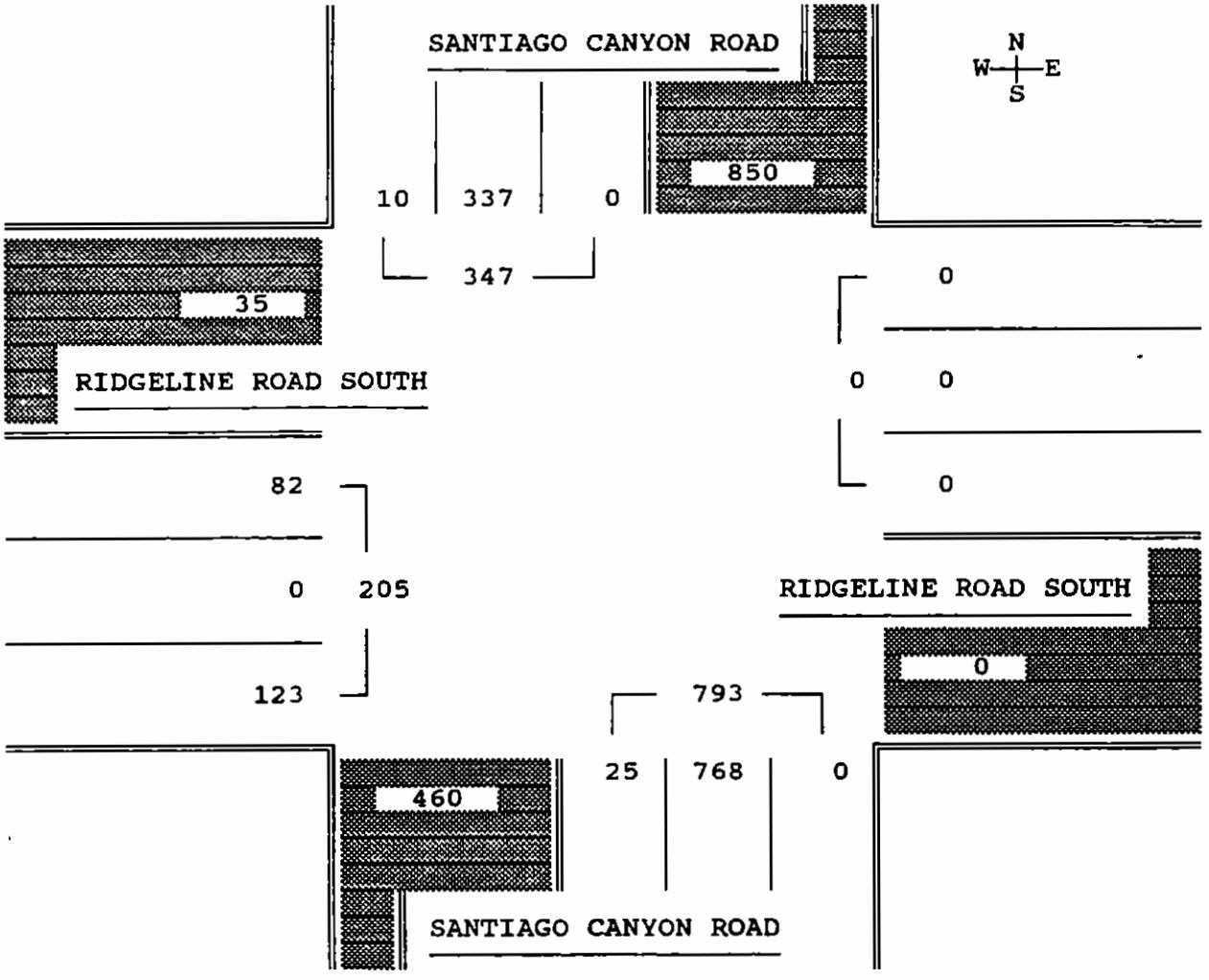
PAGE: 1
FILE: N9507077

Movements by: VEHICLES

DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.85	10	337	0	347	3	97	0
East	7:00 AM	0.00	0	0	0	0	0	0	0
South	7:00 AM	0.91	0	768	25	793	0	97	3
West	7:15 AM	0.90	140	0	68	208	67	0	33
Entire Intersection									
North	7:00 AM	0.85	10	337	0	347	3	97	0
East		0.00	0	0	0	0	0	0	0
South		0.91	0	768	25	793	0	97	3
West		0.88	123	0	82	205	60	0	40



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: RIDGELINE ROAD SOUTH
Client : RKJK & ASSOC.

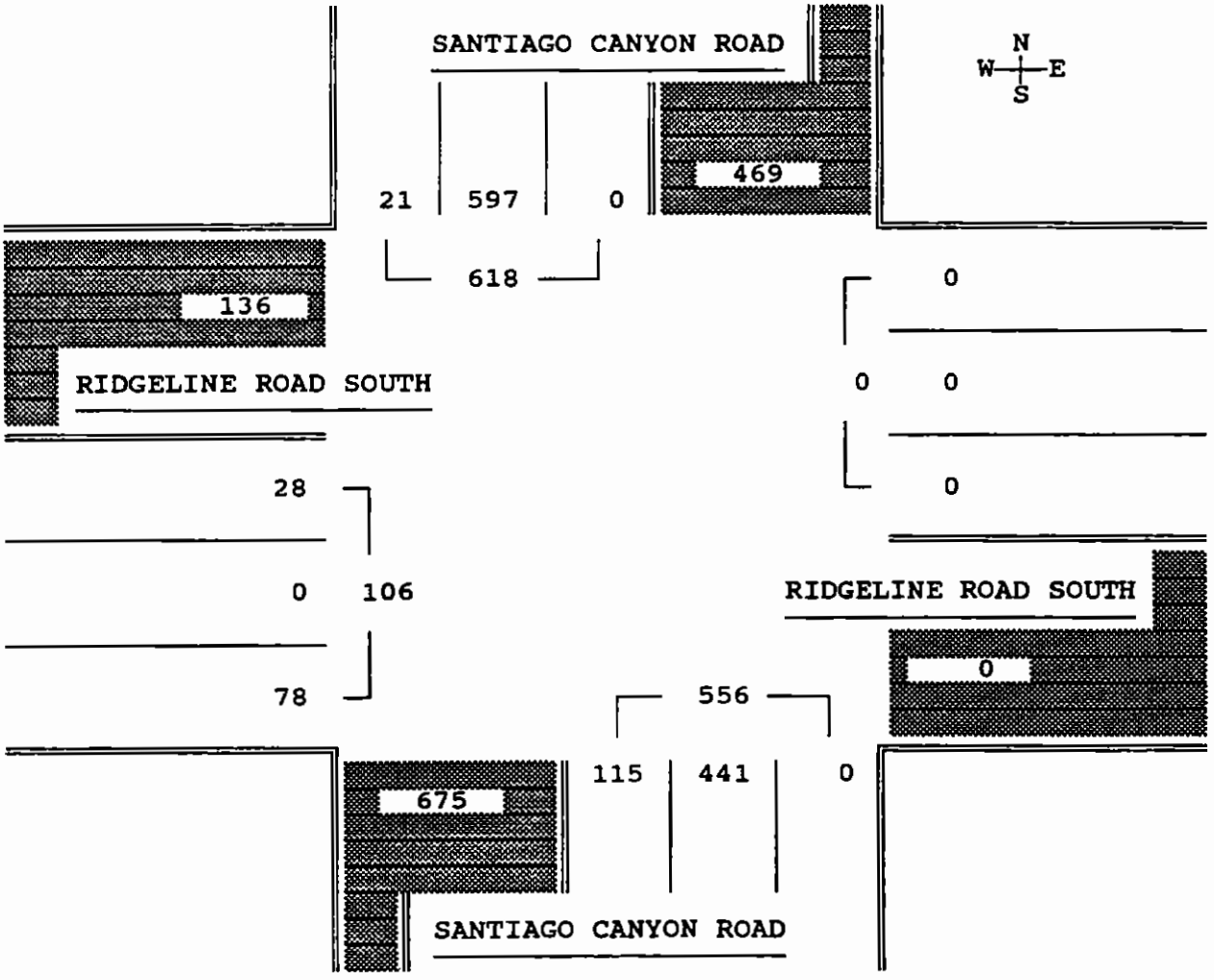
PAGE: 1
FILE: H9507077

Movements by: VEHICLES

DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	4:45 PM	0.81	18	600	0	618	3	97	0
East	4:45 PM	0.00	0	0	0	0	0	0	0
South	5:00 PM	0.93	0	441	115	556	0	79	21
West	4:30 PM	0.71	87	0	26	113	77	0	23
Entire Intersection									
North	5:00 PM	0.81	21	597	0	618	3	97	0
East		0.00	0	0	0	0	0	0	0
South		0.93	0	441	115	556	0	79	21
West		0.70	78	0	28	106	74	0	26



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: VALLEY VISTA WAY
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507078

Movements by: VEHICLES

DATE: 8/02/95

Time	From North			From East			From South			From West			Vehicle
Begin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
7:00 AM	0	97	1	7	0	14	4	199	0	0	0	0	322
7:15	0	122	0	11	0	32	3	211	0	0	0	0	379
7:30	0	106	1	8	0	22	6	182	0	0	0	0	325
7:45	0	132	1	3	0	23	0	173	0	0	0	0	332
HR TOTAL	0	457	3	29	0	91	13	765	0	0	0	0	1358
8:00 AM	0	97	1	4	0	15	2	148	0	0	0	0	267
8:15	0	116	3	6	0	9	2	105	0	0	0	0	241
8:30	0	107	1	2	0	9	8	104	0	0	0	0	231
8:45	0	97	2	4	0	7	4	83	0	0	0	0	197
HR TOTAL	0	417	7	16	0	40	16	440	0	0	0	0	936
Break													
4:00 PM	0	87	8	1	0	12	10	131	0	0	0	0	249
4:15	0	109	4	3	0	5	17	126	0	0	0	0	264
4:30	0	139	2	4	0	10	11	113	0	0	0	0	279
4:45	0	143	3	2	0	6	15	135	0	0	0	0	304
HR TOTAL	0	478	17	10	0	33	53	505	0	0	0	0	1096
5:00 PM	0	130	4	3	0	8	13	138	0	0	0	0	296
5:15	0	176	7	0	0	10	13	129	0	0	0	0	335
5:30	0	175	3	4	0	9	22	144	0	0	0	0	357
5:45	0	165	6	1	0	5	18	134	0	0	0	0	329
HR TOTAL	0	646	20	8	0	32	66	545	0	0	0	0	1317
DAY TOTAL	0	1998	47	63	0	196	148	2255	0	0	0	0	4707

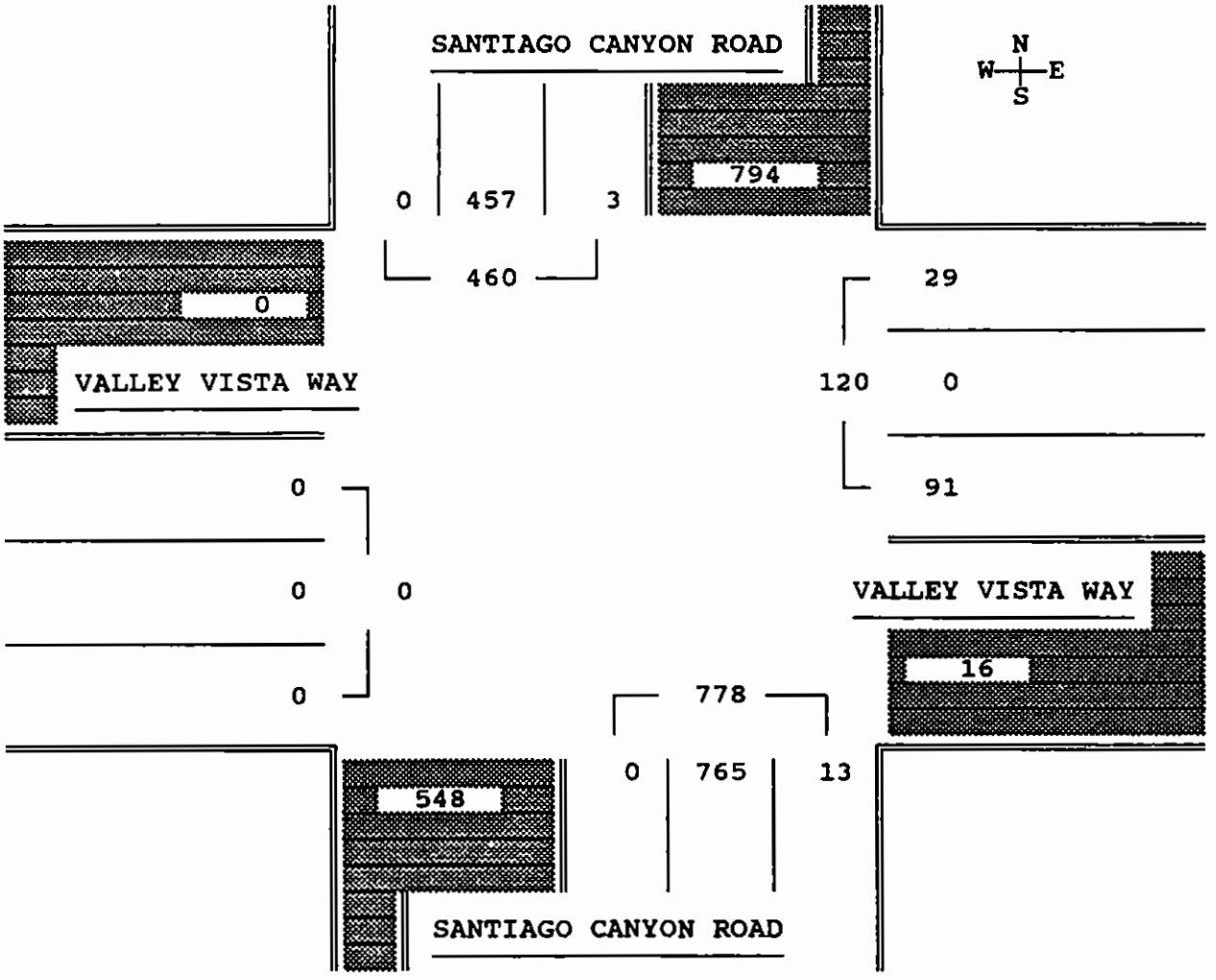
TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: VALLEY VISTA WAY
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507078
Movements by: VEHICLES
DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.86	0	457	3	460	0	99	1
East	7:00 AM	0.70	29	0	91	120	24	0	76
South	7:00 AM	0.91	13	765	0	778	2	98	0
West	7:00 AM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	7:00 AM	0.86	0	457	3	460	0	99	1
East		0.70	29	0	91	120	24	0	76
South		0.91	13	765	0	778	2	98	0
West		0.00	0	0	0	0	0	0	0



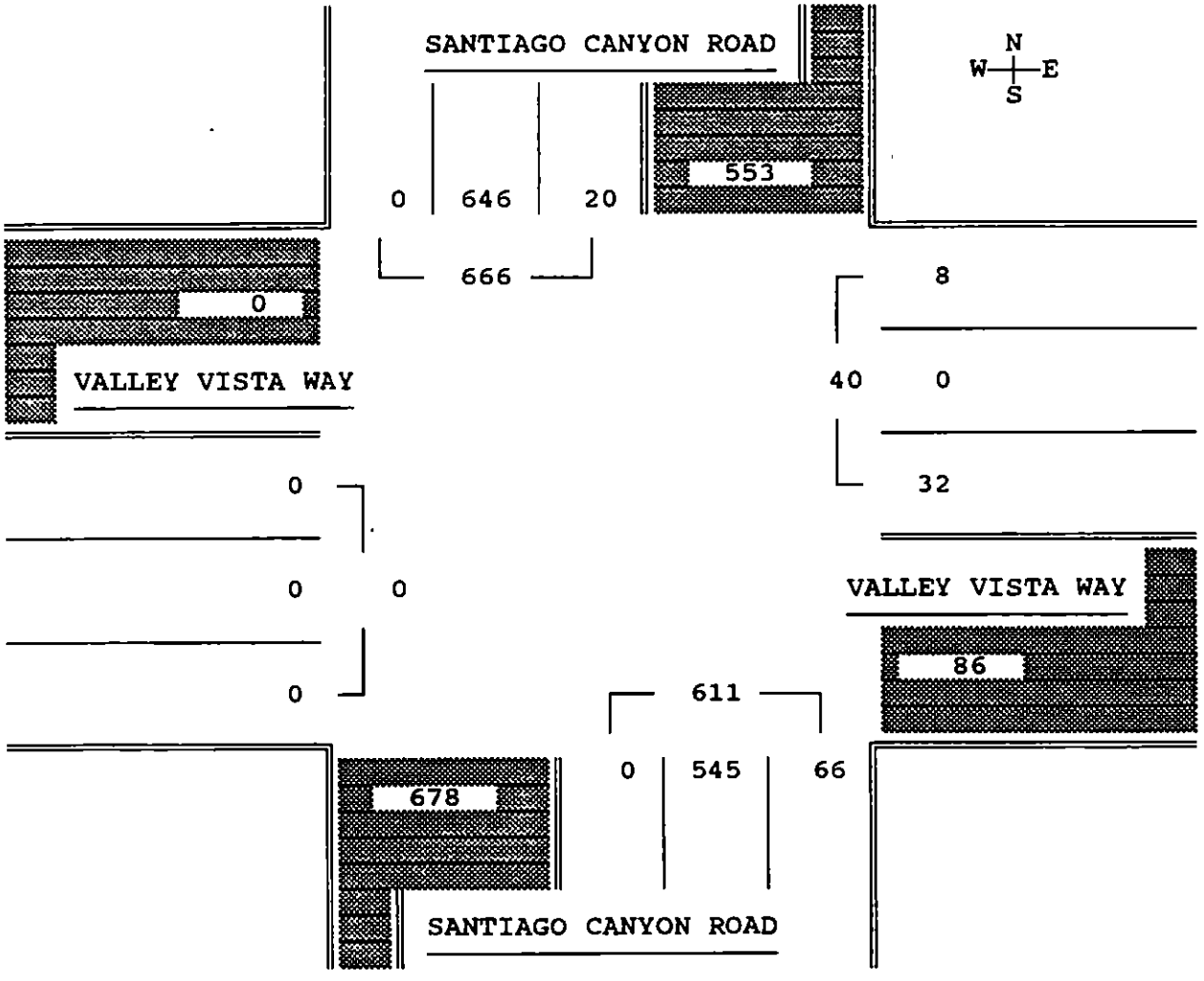
TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: VALLEY VISTA WAY
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507078
Movements by: VEHICLES
DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.91	0	646	20	666	0	97	3
East	4:00 PM	0.77	10	0	33	43	23	0	77
South	5:00 PM	0.92	66	545	0	611	11	89	0
West	5:00 PM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	5:00 PM	0.91	0	646	20	666	0	97	3
East		0.77	8	0	32	40	20	0	80
South		0.92	66	545	0	611	11	89	0
West		0.00	0	0	0	0	0	0	0



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507079
Movements by: VEHICLES
DATE: 8/02/95

Time	From North			From East			From South			From West			Vehicle
Begin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
7:00 AM	10	84	0	0	0	0	0	193	9	20	0	7	323
7:15	29	114	0	0	0	0	0	206	12	18	0	9	388
7:30	19	97	0	0	0	0	0	179	18	30	0	7	350
7:45	21	114	0	0	0	0	0	162	4	35	0	9	345
HR TOTAL	79	409	0	0	0	0	0	740	43	103	0	32	1406
8:00 AM	21	70	0	0	0	0	0	140	9	27	0	6	273
8:15	11	104	0	0	0	0	0	95	12	21	0	4	247
8:30	18	83	0	0	0	0	0	102	16	19	0	9	247
8:45	11	91	0	0	0	0	0	82	6	21	0	7	218
HR TOTAL	61	348	0	0	0	0	0	419	43	88	0	26	985
Break													
4:00 PM	6	104	0	0	0	0	0	137	17	14	0	10	288
4:15	5	117	0	0	0	0	0	141	22	17	0	9	311
4:30	10	123	0	0	0	0	0	120	23	19	0	17	312
4:45	8	145	0	0	0	0	0	132	29	20	0	14	348
HR TOTAL	29	489	0	0	0	0	0	530	91	70	0	50	1259
5:00 PM	11	149	0	0	0	0	0	133	20	13	0	20	346
5:15	14	160	0	0	0	0	0	130	33	29	0	22	388
5:30	6	174	0	0	0	0	0	141	42	30	0	22	415
5:45	7	162	0	0	0	0	0	148	35	38	0	13	403
HR TOTAL	38	645	0	0	0	0	0	552	130	110	0	77	1552
DAY TOTAL	207	1891	0	0	0	0	0	2241	307	371	0	185	5202

TURNING MOVEMENTS by Traffic Counts, Inc

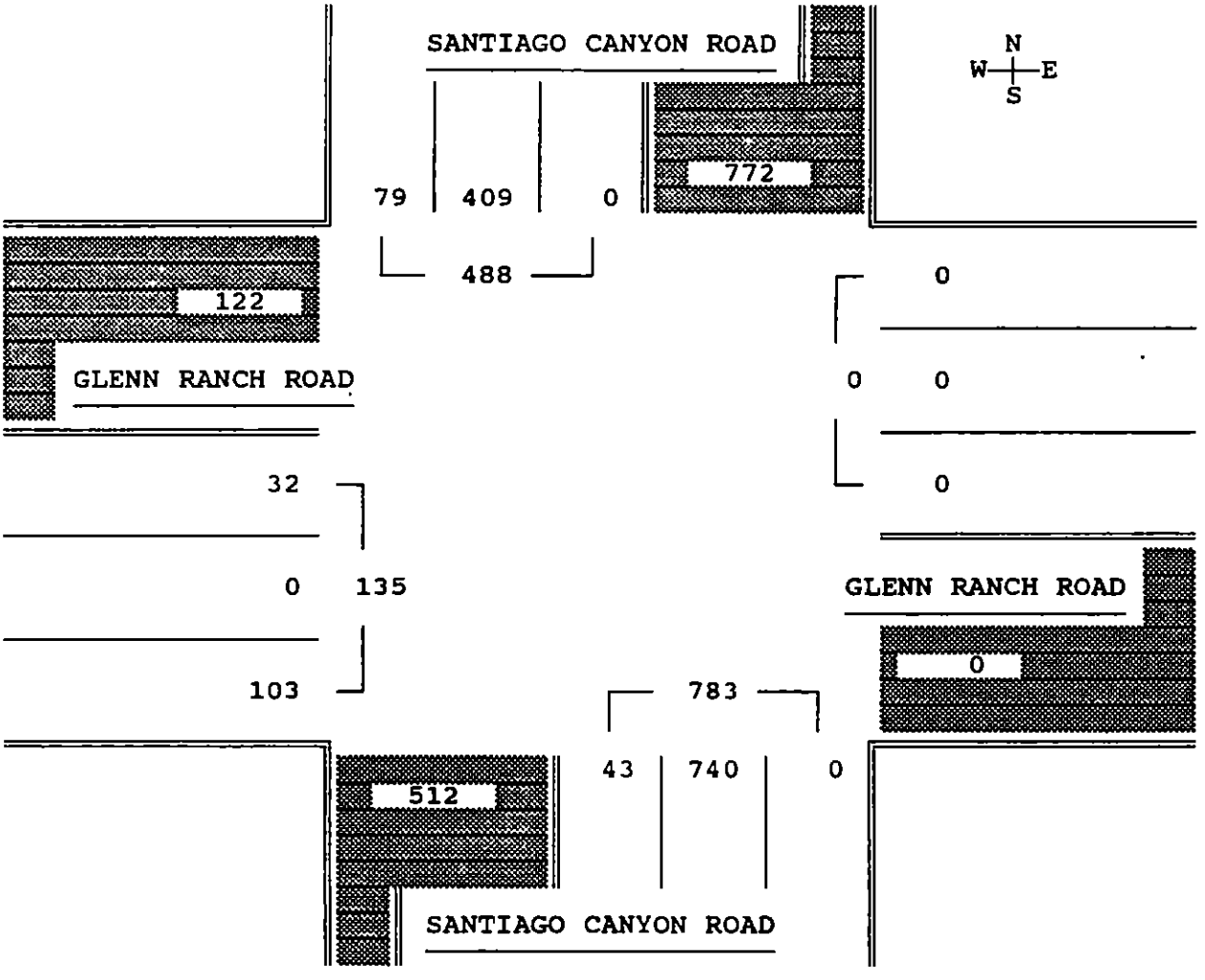
Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507079
DATE: 8/02/95

Movements by: VEHICLES

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.85	79	409	0	488	16	84	0
East	7:00 AM	0.00	0	0	0	0	0	0	0
South	7:00 AM	0.90	0	740	43	783	0	95	5
West	7:15 AM	0.80	110	0	31	141	78	0	22
Entire Intersection									
North	7:00 AM	0.85	79	409	0	488	16	84	0
East		0.00	0	0	0	0	0	0	0
South		0.90	0	740	43	783	0	95	5
West		0.77	103	0	32	135	76	0	24



TURNING MOVEMENTS by Traffic Counts, Inc

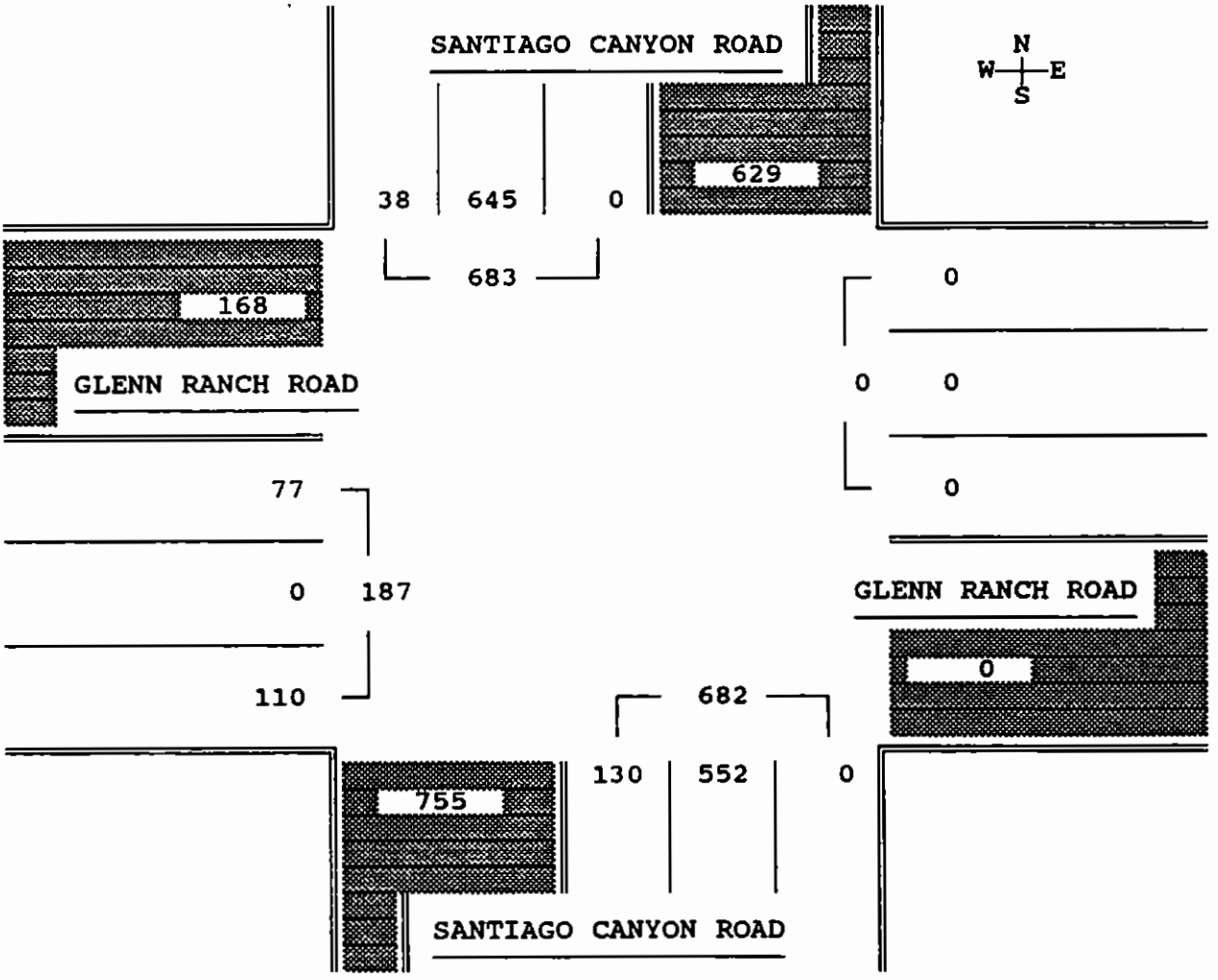
Site Code : COUNTY OF ORANGE
N-S Street: SANTIAGO CANYON ROAD
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507079
DATE: 8/02/95

Movements by: VEHICLES

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.95	38	645	0	683	6	94	0
East	5:00 PM	0.00	0	0	0	0	0	0	0
South	5:00 PM	0.93	0	552	130	682	0	81	19
West	5:00 PM	0.90	110	0	77	187	59	0	41
Entire Intersection									
North	5:00 PM	0.95	38	645	0	683	6	94	0
East		0.00	0	0	0	0	0	0	0
South		0.93	0	552	130	682	0	81	19
West		0.90	110	0	77	187	59	0	41



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SADDLEBACK RANCH ROAD
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507080
Movements by: VEHICLES
DATE: 8/02/95

Time	From North			From East			From South			From West			Vehicle
Begin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
7:00 AM	91	0	18	11	19	0	0	0	0	0	5	15	159
7:15	93	0	19	9	27	0	0	0	0	0	8	12	168
7:30	94	0	28	9	21	0	0	0	0	0	6	16	174
7:45	74	0	17	3	24	0	0	0	0	0	14	8	140
HR TOTAL	352	0	82	32	91	0	0	0	0	0	33	51	641
8:00 AM	68	0	28	7	20	0	0	0	0	0	5	16	144
8:15	46	0	19	6	12	0	0	0	0	0	5	18	106
8:30	69	0	25	16	12	0	0	0	0	0	7	4	133
8:45	71	0	21	13	11	0	0	0	0	0	5	3	124
HR TOTAL	254	0	93	42	55	0	0	0	0	0	22	41	507
Break													
4:00 PM	17	0	13	15	7	0	0	0	0	0	8	31	91
4:15	29	0	17	24	6	0	0	0	0	0	12	47	135
4:30	10	0	12	23	10	0	0	0	0	0	20	52	127
4:45	18	0	19	25	10	0	0	0	0	0	18	58	148
HR TOTAL	74	0	61	87	33	0	0	0	0	0	58	188	501
5:00 PM	22	0	15	19	15	0	0	0	0	0	25	71	167
5:15	30	0	20	32	16	0	0	0	0	0	27	48	173
5:30	23	0	25	33	9	0	0	0	0	0	29	80	199
5:45	21	0	27	29	15	0	0	0	0	0	19	98	209
HR TOTAL	96	0	87	113	55	0	0	0	0	0	100	297	748
DAY TOTAL	776	0	323	274	234	0	0	0	0	0	213	577	2397

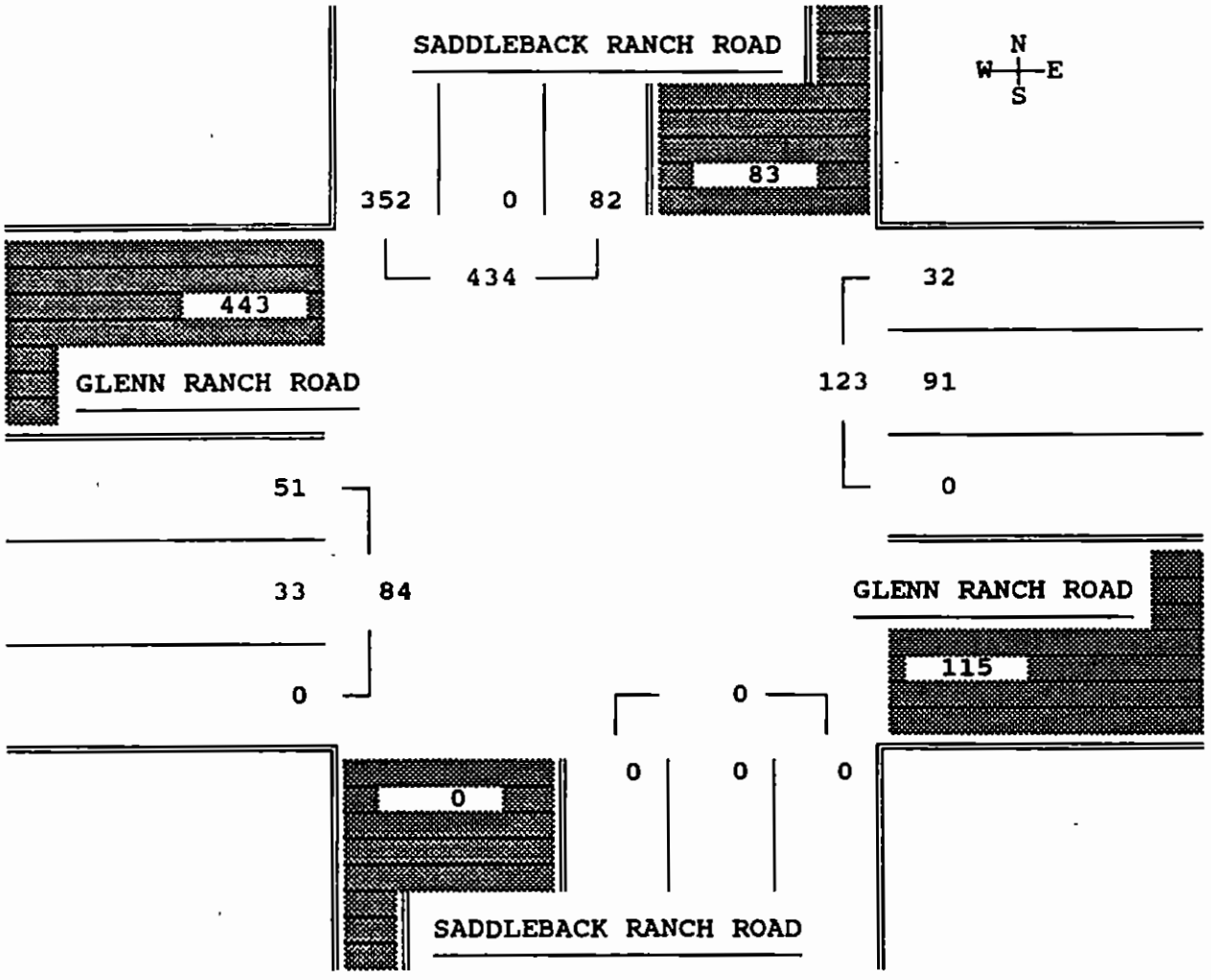
TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SADDLEBACK RANCH ROAD
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9507080
Movements by: VEHICLES
DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.89	352	0	82	434	81	0	19
East	7:00 AM	0.85	32	91	0	123	26	74	0
South	7:00 AM	0.00	0	0	0	0	0	0	0
West	7:30 AM	0.96	0	30	58	88	0	34	66
Entire Intersection									
North	7:00 AM	0.89	352	0	82	434	81	0	19
East		0.85	32	91	0	123	26	74	0
South		0.00	0	0	0	0	0	0	0
West		0.95	0	33	51	84	0	39	61



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : COUNTY OF ORANGE
N-S Street: SADDLEBACK RANCH ROAD
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

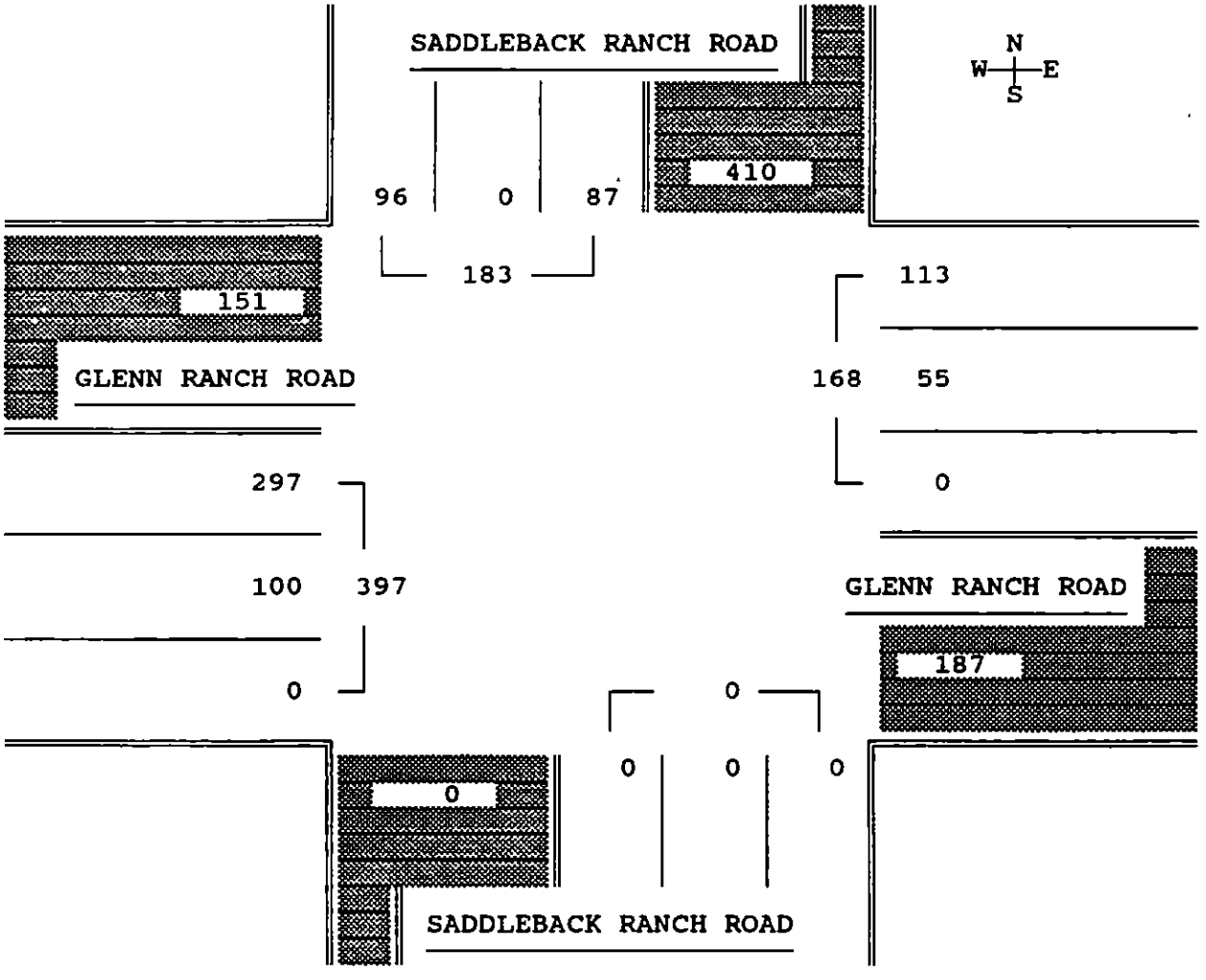
PAGE: 1
FILE: H9507080

Movements by: VEHICLES

DATE: 8/02/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.92	96	0	87	183	52	0	48
East	5:00 PM	0.88	113	55	0	168	67	33	0
South	5:00 PM	0.00	0	0	0	0	0	0	0
West	5:00 PM	0.85	0	100	297	397	0	25	75
Entire Intersection									
North	5:00 PM	0.92	96	0	87	183	52	0	48
East		0.88	113	55	0	168	67	33	0
South		0.00	0	0	0	0	0	0	0
West		0.85	0	100	297	397	0	25	75



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: M9506150
Movements by: VEHICLES
DATE: 6/28/95

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	0	64	4	1	0	1	0	434	0	0	0	0	504
7:15	0	76	4	1	0	0	3	465	0	0	0	0	549
7:30	0	83	1	3	0	1	0	491	0	0	0	0	579
7:45	0	89	1	0	0	1	2	465	0	0	0	0	558
HR TOTAL	0	312	10	5	0	3	5	1855	0	0	0	0	2190
8:00 AM	0	64	0	0	0	0	1	348	0	0	0	0	413
8:15	0	74	3	0	0	1	0	321	0	0	0	0	399
8:30	0	93	1	2	0	0	0	275	0	0	0	0	371
8:45	0	92	1	2	0	1	0	329	0	0	0	0	425
HR TOTAL	0	323	5	4	0	2	1	1273	0	0	0	0	1608
Break													
4:00 PM	0	262	0	1	0	0	1	141	0	0	0	0	405
4:15	0	258	11	0	0	1	2	121	0	0	0	0	393
4:30	0	294	1	0	0	2	0	115	0	0	0	0	412
4:45	0	348	0	1	0	1	2	145	0	0	0	0	497
HR TOTAL	0	1162	12	2	0	4	5	522	0	0	0	0	1707
5:00 PM	0	432	2	1	0	2	2	138	0	0	0	0	577
5:15	0	501	5	4	0	10	2	132	0	0	0	0	654
5:30	0	480	3	1	0	1	6	145	0	0	0	0	636
5:45	0	522	10	2	0	1	13	137	0	0	0	0	685
HR TOTAL	0	1935	20	8	0	14	23	552	0	0	0	0	2552
DAY TOTAL	0	3732	47	19	0	23	34	4202	0	0	0	0	8057

TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

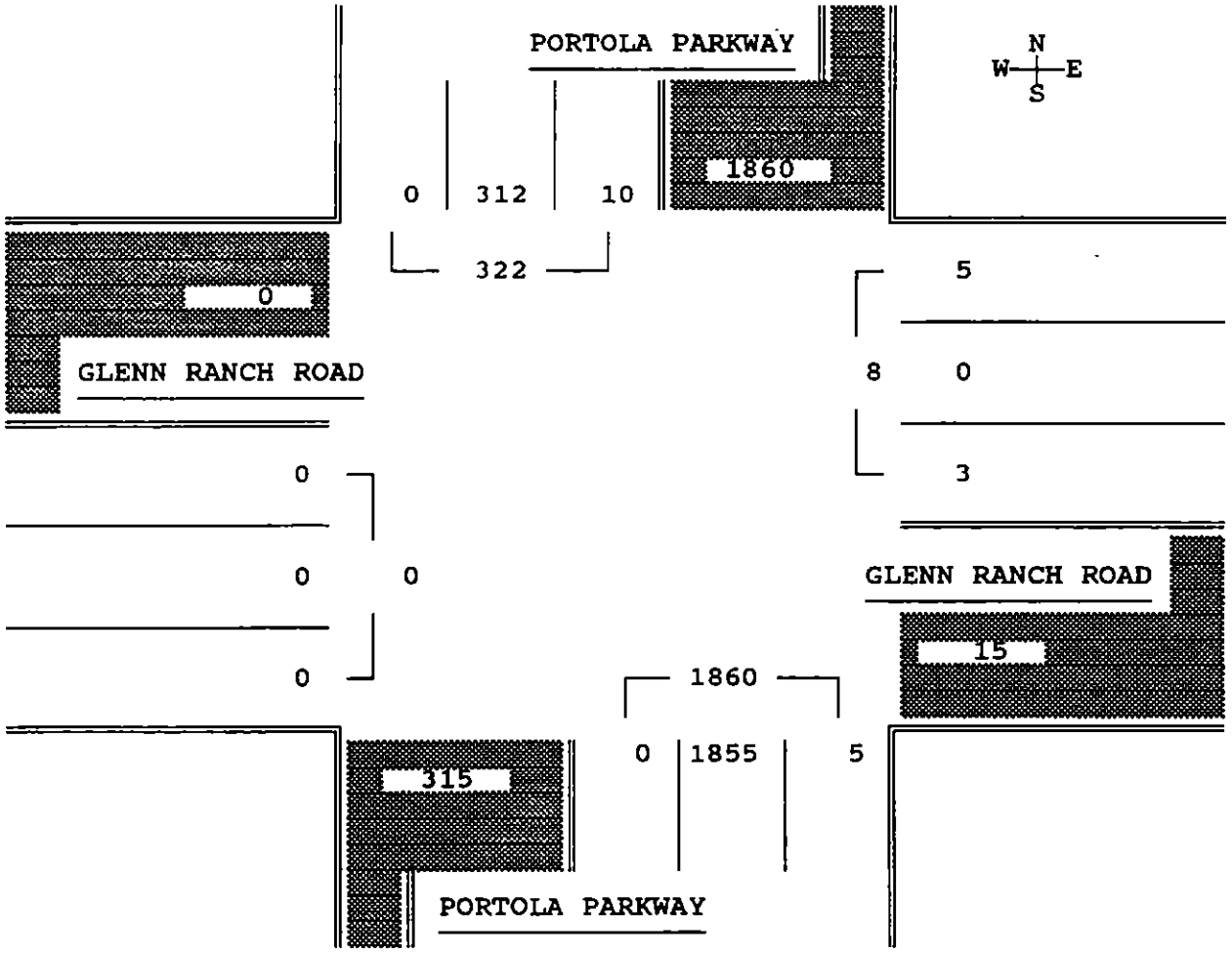
PAGE: 1
FILE: H9506150

Movements by: VEHICLES

DATE: 6/28/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	8:00 AM	0.87	0	323	5	328	0	98	2
East	7:00 AM	0.50	5	0	3	8	62	0	38
South	7:00 AM	0.95	5	1855	0	1860	0	%100	0
West	7:00 AM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	7:00 AM	0.89	0	312	10	322	0	97	3
East		0.50	5	0	3	8	62	0	38
South		0.95	5	1855	0	1860	0	%100	0
West		0.00	0	0	0	0	0	0	0



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: GLENN RANCH ROAD
Client : RKJK & ASSOC.

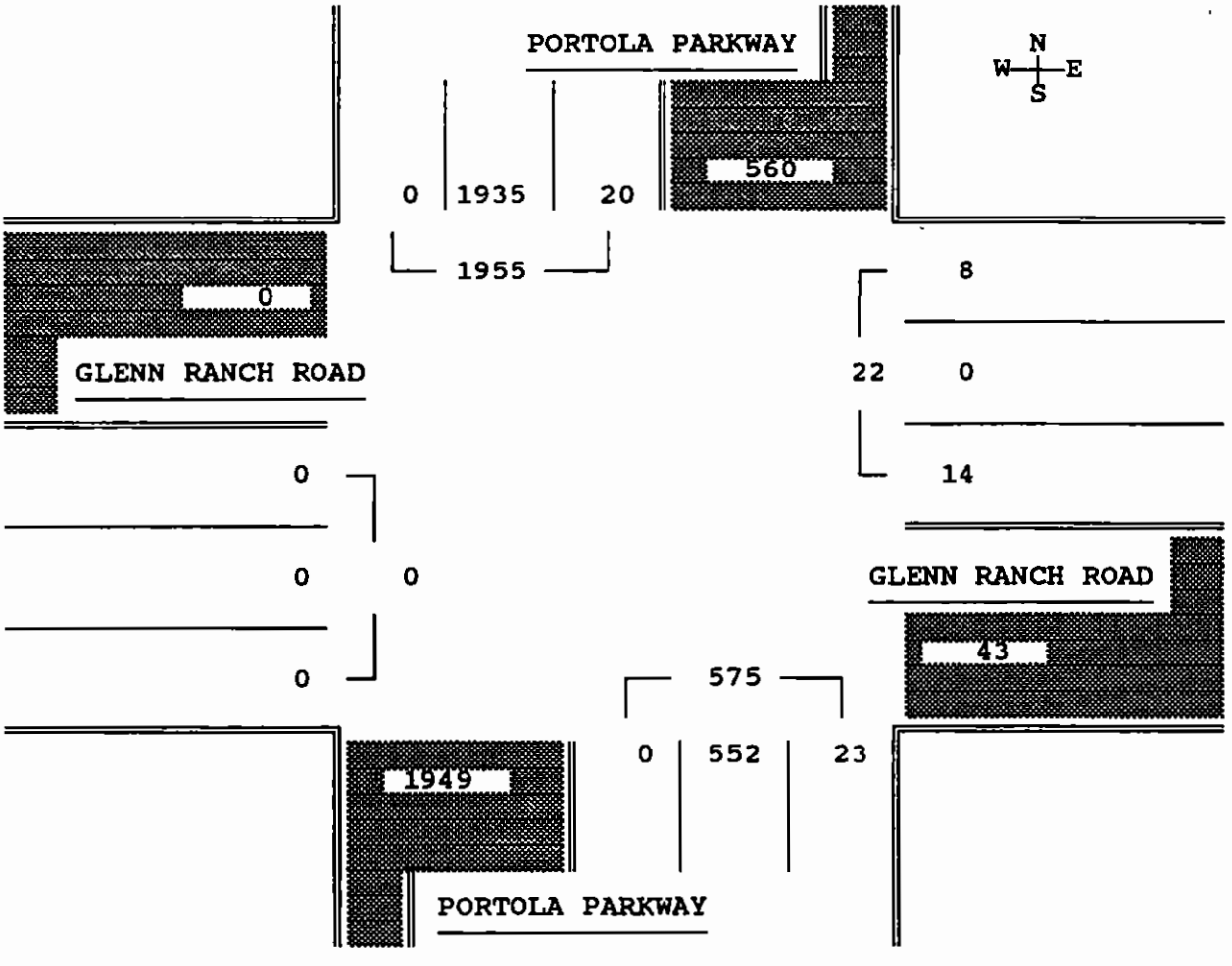
PAGE: 1
FILE: H9506150

Movements by: VEHICLES

DATE: 6/28/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.92	0	1935	20	1955	0	99	1
East	5:00 PM	0.39	8	0	14	22	36	0	64
South	5:00 PM	0.95	23	552	0	575	4	96	0
West	5:00 PM	0.00	0	0	0	0	0	0	0
Entire Intersection									
North	5:00 PM	0.92	0	1935	20	1955	0	99	1
East		0.39	8	0	14	22	36	0	64
South		0.95	23	552	0	575	4	96	0
West		0.00	0	0	0	0	0	0	0



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: 241FTC RAMPS
Client : RKJK & ASSOC.

PAGE: 1
FILE: N9506149

Movements by: VEHICLES

DATE: 6/28/95

Time Begin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	16	47	5	88	0	3	4	250	91	6	0	1	511
7:15	14	47	10	97	0	12	3	255	85	4	0	1	528
7:30	18	61	10	116	0	5	3	284	101	3	0	3	604
7:45	12	64	13	157	0	10	4	260	68	2	0	3	593
HR TOTAL	60	219	38	458	0	30	14	1049	345	15	0	8	2236
8:00 AM	10	48	8	80	0	6	0	226	74	1	0	1	454
8:15	8	68	6	82	0	7	1	179	43	4	0	0	398
8:30	8	68	12	50	0	5	5	172	60	1	0	1	382
8:45	3	72	10	47	0	4	3	133	27	10	0	2	311
HR TOTAL	29	256	36	259	0	22	9	710	204	16	0	4	1545
Break													
4:00 PM	3	217	43	14	0	3	4	119	8	11	0	4	426
4:15	2	201	49	17	0	3	3	99	11	23	0	4	412
4:30	7	267	49	19	0	4	1	98	2	28	0	7	482
4:45	3	278	62	11	0	5	3	130	5	37	0	3	537
HR TOTAL	15	963	203	61	0	15	11	446	26	99	0	18	1857
5:00 PM	2	370	81	15	0	3	4	104	9	45	0	11	644
5:15	0	395	102	18	0	2	8	103	14	61	0	13	716
5:30	1	373	130	19	0	6	2	113	13	57	0	10	724
5:45	4	409	102	17	0	5	5	135	8	61	0	16	762
HR TOTAL	7	1547	415	69	0	16	19	455	44	224	0	50	2846
DAY TOTAL	111	2985	692	847	0	83	53	2660	619	354	0	80	8484

TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: 241FTC RAMPS
Client : RKJK & ASSOC.

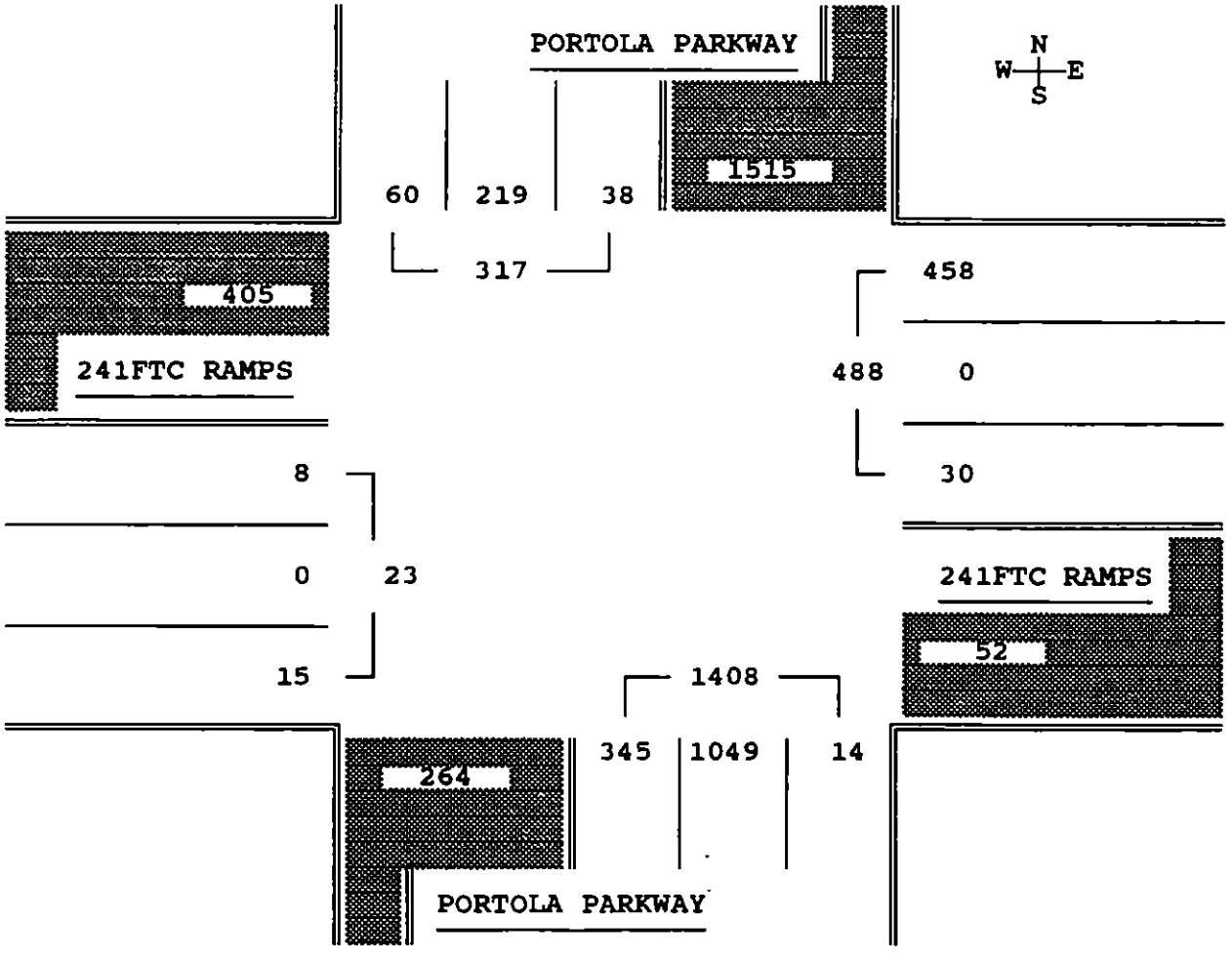
PAGE: 1
FILE: H9506149

Movements by: VEHICLES

DATE: 6/28/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:30 AM	0.92	48	241	37	326	15	74	11
East	7:00 AM	0.73	458	0	30	488	94	0	6
South	7:00 AM	0.91	14	1049	345	1408	1	75	25
West	7:00 AM	0.82	15	0	8	23	65	0	35
Entire Intersection									
North	7:00 AM	0.89	60	219	38	317	19	69	12
East		0.73	458	0	30	488	94	0	6
South		0.91	14	1049	345	1408	1	75	25
West		0.82	15	0	8	23	65	0	35



TURNING MOVEMENTS by Traffic Counts, Inc

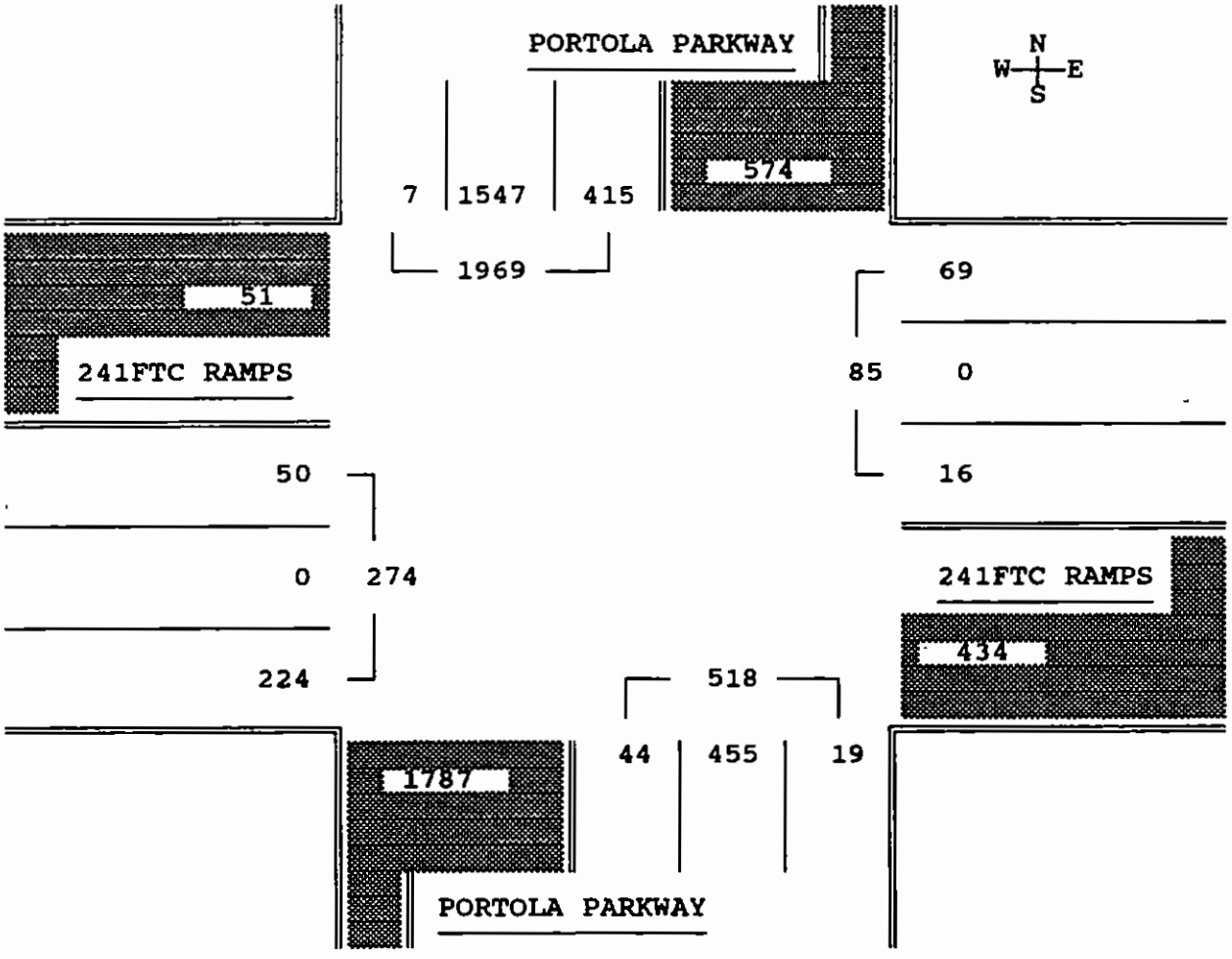
Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: 241FTC RAMPS
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9506149
DATE: 6/28/95

Movements by: VEHICLES

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.96	7	1547	415	1969	0	79	21
East	5:00 PM	0.85	69	0	16	85	81	0	19
South	5:00 PM	0.88	19	455	44	518	4	88	8
West	5:00 PM	0.89	224	0	50	274	82	0	18
Entire Intersection									
North	5:00 PM	0.96	7	1547	415	1969	0	79	21
East		0.85	69	0	16	85	81	0	19
South		0.88	19	455	44	518	4	88	8
West		0.89	224	0	50	274	82	0	18



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: EL TORO ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9506145

Movements by: VEHICLES

DATE: 6/28/95

Time Begin	From North			From East			From South			From West			Vehicle Total
	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
7:00 AM	15	41	12	51	62	6	9	235	80	62	42	23	638
7:15	22	45	5	70	78	4	1	298	72	58	46	18	717
7:30	20	53	5	68	82	3	10	322	122	49	46	9	789
7:45	24	65	7	92	104	7	17	250	139	55	37	12	809
HR TOTAL	81	204	29	281	326	20	37	1105	413	224	171	62	2953
8:00 AM	14	39	8	62	53	3	4	256	69	58	46	11	623
8:15	14	52	9	46	81	3	6	224	75	54	27	10	601
8:30	18	53	8	41	69	4	4	176	79	40	21	14	527
8:45	20	63	10	26	74	6	3	124	76	51	42	17	512
HR TOTAL	66	207	35	175	277	16	17	780	299	203	136	52	2263
Break													
4:00 PM	56	246	67	57	65	5	14	90	31	133	106	9	879
4:15	27	127	47	33	76	7	12	90	35	105	59	14	632
4:30	19	122	32	15	61	4	19	79	97	109	84	10	651
4:45	18	129	50	13	58	8	13	86	75	111	73	14	648
HR TOTAL	120	624	196	118	260	24	58	345	238	458	322	47	2810
5:00 PM	15	287	44	20	28	6	11	86	89	104	67	19	776
5:15	26	314	66	20	49	1	6	90	94	142	74	18	900
5:30	29	325	57	20	68	8	19	91	110	136	92	26	981
5:45	21	314	89	25	46	7	23	109	84	120	100	27	965
HR TOTAL	91	1240	256	85	191	22	59	376	377	502	333	90	3622
DAY TOTAL	358	2275	516	659	1054	82	171	2606	1327	1387	962	251	11648

TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: EL TORO ROAD
Client : RKJK & ASSOC.

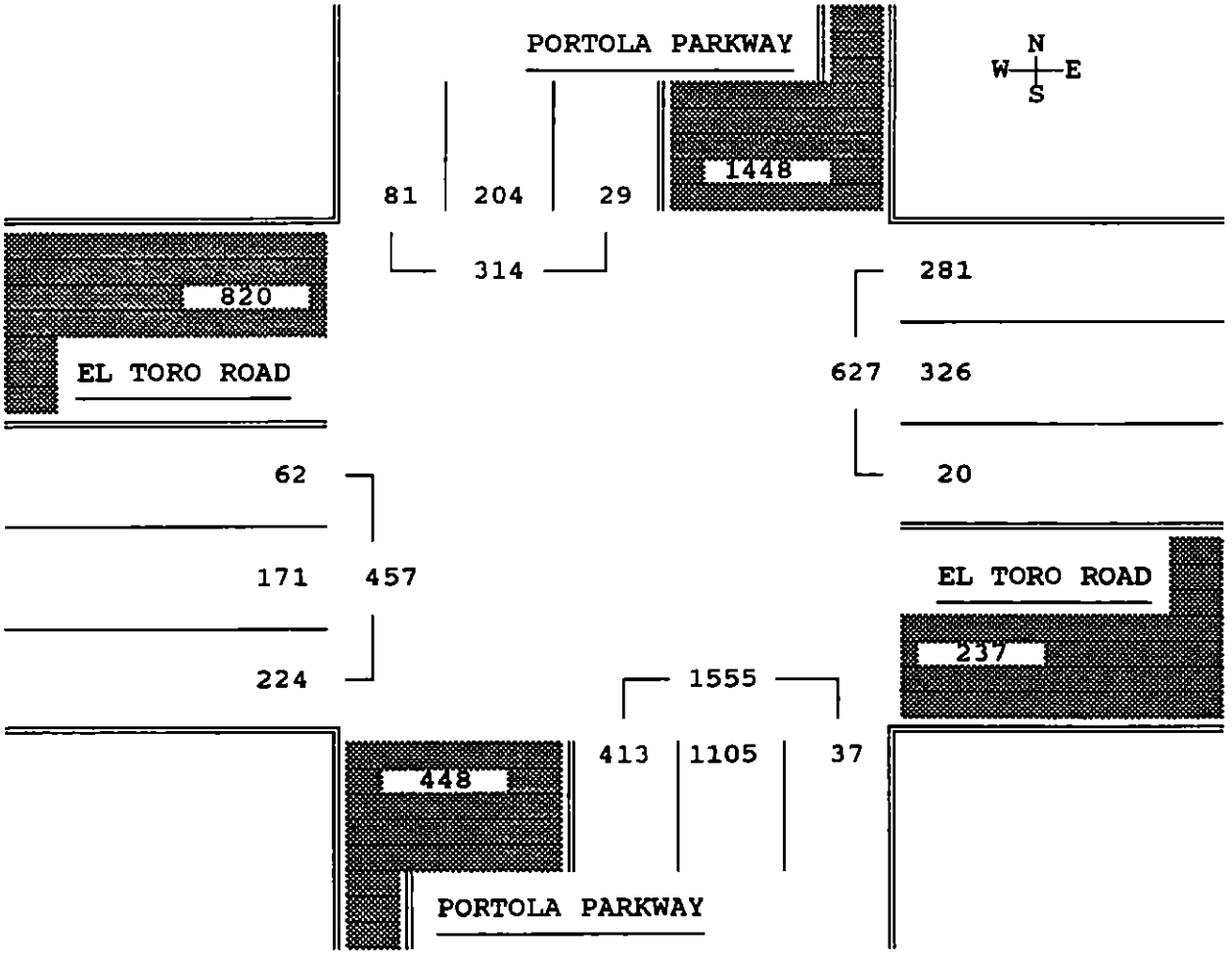
PAGE: 1
FILE: H9506145

Movements by: VEHICLES

DATE: 6/28/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:00 AM	0.82	81	204	29	314	26	65	9
East	7:00 AM	0.77	281	326	20	627	45	52	3
South	7:15 AM	0.86	32	1126	402	1560	2	72	26
West	7:00 AM	0.90	224	171	62	457	49	37	14
Entire Intersection									
North	7:00 AM	0.82	81	204	29	314	26	65	9
East		0.77	281	326	20	627	45	52	3
South		0.86	37	1105	413	1555	2	71	27
West		0.90	224	171	62	457	49	37	14



TURNING MOVEMENTS by Traffic Counts, Inc

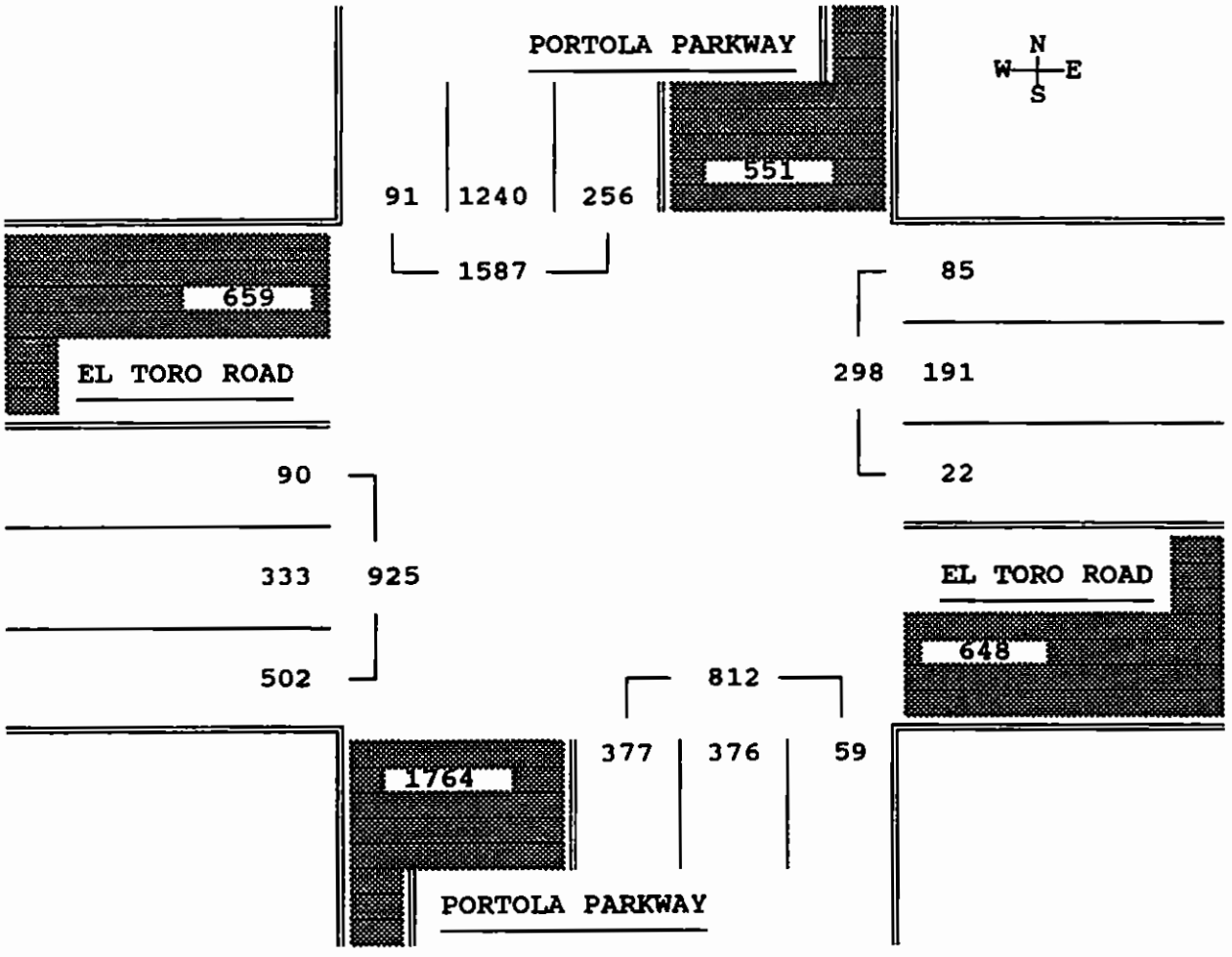
Site Code : MISSION VIEJO
N-S Street: PORTOLA PARKWAY
E-W Street: EL TORO ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9506145
DATE: 6/28/95

Movements by: VEHICLES

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	5:00 PM	0.94	91	1240	256	1587	6	78	16
East	4:00 PM	0.79	118	260	24	402	29	65	6
South	5:00 PM	0.92	59	376	377	812	7	46	46
West	5:00 PM	0.91	502	333	90	925	54	36	10
Entire Intersection									
North	5:00 PM	0.94	91	1240	256	1587	6	78	16
East		0.78	85	191	22	298	29	64	7
South		0.92	59	376	377	812	7	46	46
West		0.91	502	333	90	925	54	36	10



TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: MARGUERITE PARKWAY
E-W Street: EL TORO ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9506146
DATE: 6/28/95

Movements by: VEHICLES

Time Begin	From North RT	From North THRU	From North LT	From East RT	From East THRU	From East LT	From South RT	From South THRU	From South LT	From West RT	From West THRU	From West LT	Vehicle Total
7:00 AM	0	0	0	0	58	89	72	0	37	4	41	0	301
7:15	0	0	0	0	70	93	73	0	30	7	52	0	325
7:30	0	0	0	0	57	78	74	0	52	11	54	0	326
7:45	0	0	0	0	99	100	51	0	44	17	53	0	364
HR TOTAL	0	0	0	0	284	360	270	0	163	39	200	0	1316
8:00 AM	0	0	0	0	64	68	80	0	32	15	48	0	307
8:15	0	0	0	0	81	79	37	0	22	6	40	0	265
8:30	0	0	0	0	80	48	36	0	28	4	38	0	234
8:45	0	0	0	0	67	63	28	0	10	11	41	0	220
HR TOTAL	0	0	0	0	292	258	181	0	92	36	167	0	1026
Break													
4:00 PM	0	0	0	0	43	82	95	0	14	26	49	0	309
4:15	0	0	0	0	51	94	72	0	14	23	63	0	317
4:30	0	0	0	0	47	80	95	0	16	29	59	0	326
4:45	0	0	0	0	50	115	129	0	9	45	68	0	416
HR TOTAL	0	0	0	0	191	371	391	0	53	123	239	0	1368
5:00 PM	0	0	0	0	58	124	100	0	13	41	76	0	412
5:15	0	0	0	0	49	131	120	0	12	51	57	0	420
5:30	0	0	0	0	56	139	113	0	14	50	75	0	447
5:45	0	0	0	0	53	177	94	0	19	52	79	0	474
HR TOTAL	0	0	0	0	216	571	427	0	58	194	287	0	1753
DAY TOTAL	0	0	0	0	983	1560	1269	0	366	392	893	0	5463

TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: MARGUERITE PARKWAY
E-W Street: EL TORO ROAD
Client : RKJK & ASSOC.

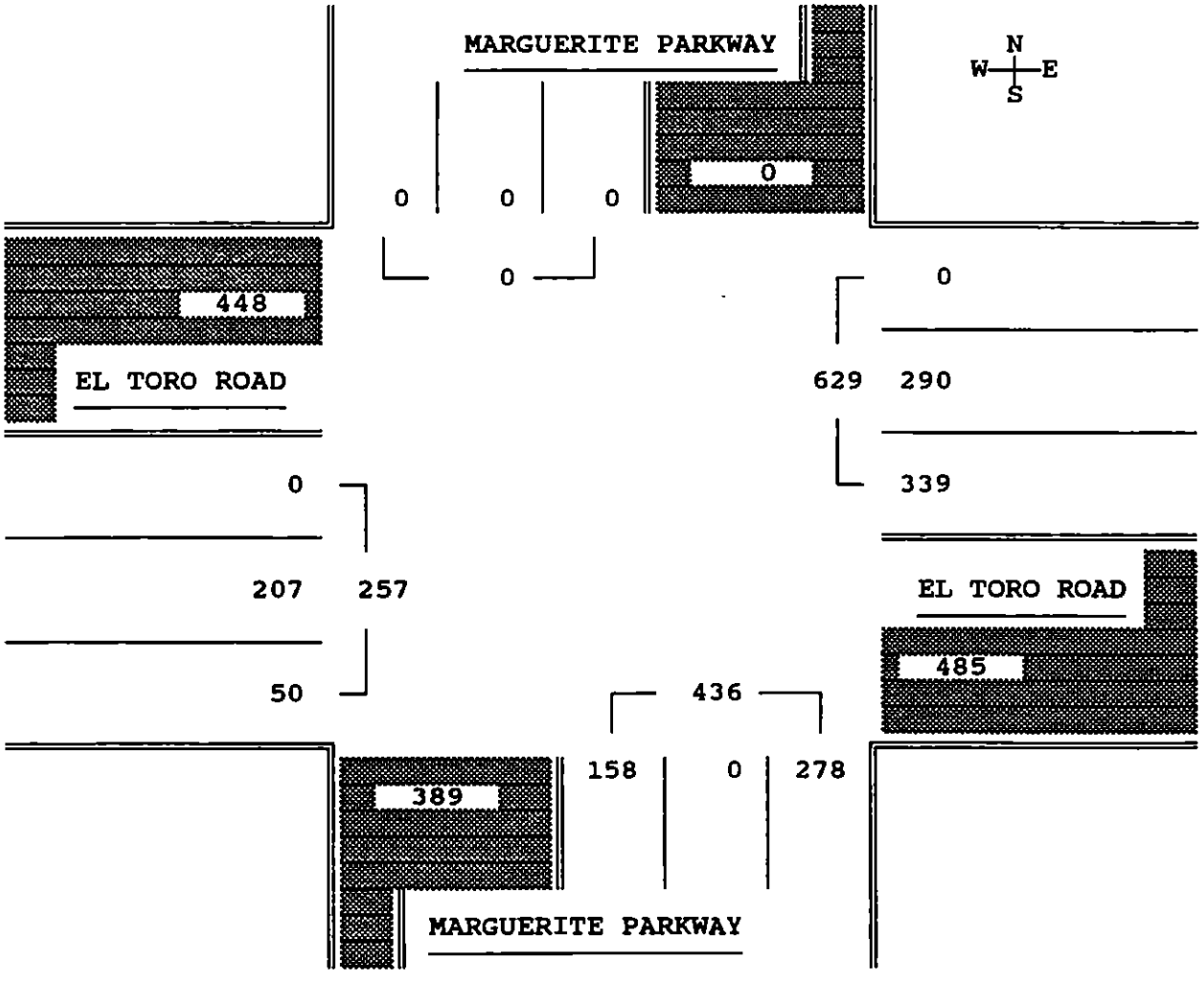
PAGE: 1
FILE: H9506146

Movements by: VEHICLES

DATE: 6/28/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	12:00 AM	0.00	0	0	0	0	0	0	0
East	7:00 AM	0.81	0	284	360	644	0	44	56
South	7:15 AM	0.87	278	0	158	436	64	0	36
West	7:15 AM	0.92	50	207	0	257	19	81	0
Entire Intersection									
North	7:15 AM	0.00	0	0	0	0	0	0	0
East		0.79	0	290	339	629	0	46	54
South		0.87	278	0	158	436	64	0	36
West		0.92	50	207	0	257	19	81	0



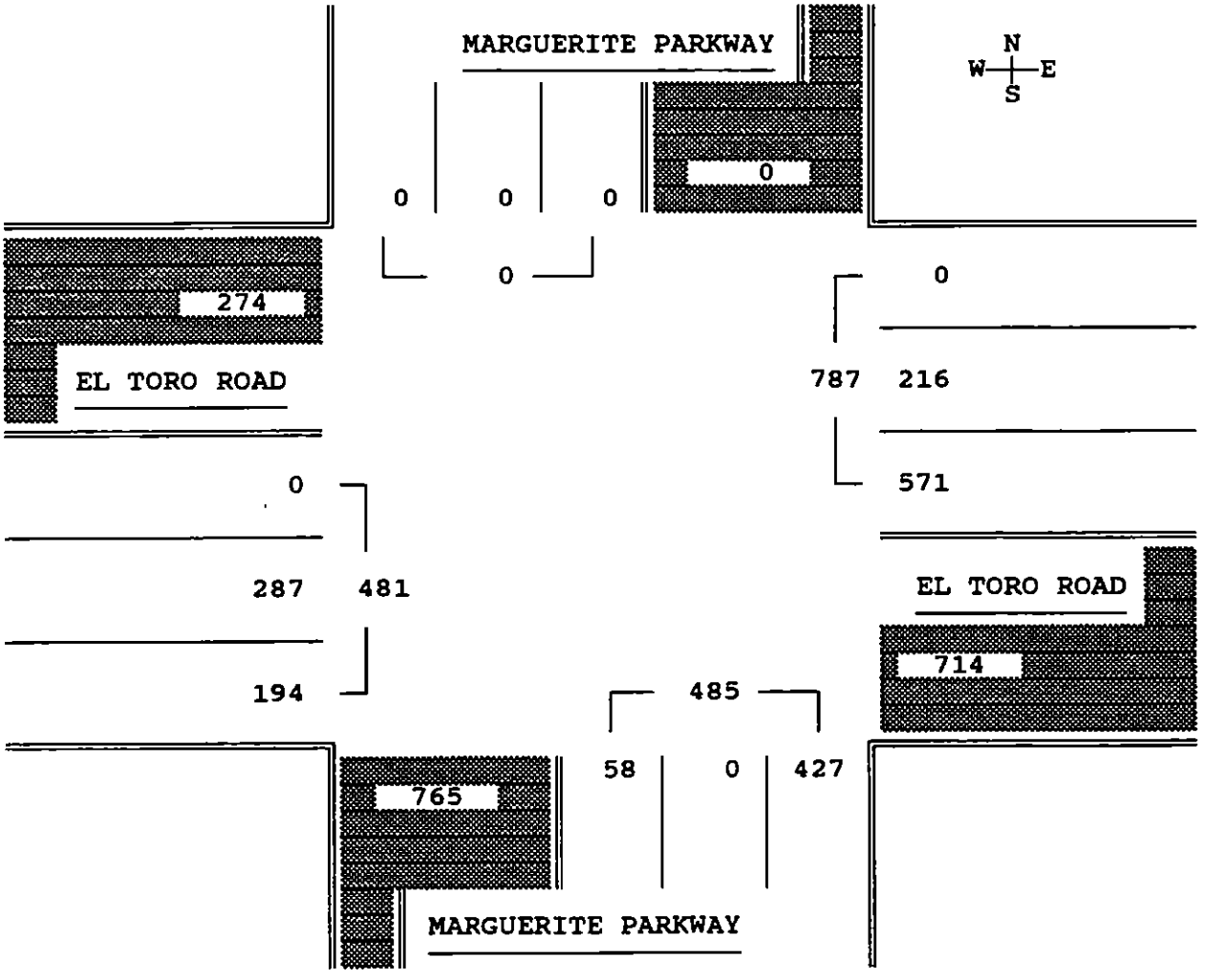
TURNING MOVEMENTS by Traffic Counts, Inc

Site Code : MISSION VIEJO
N-S Street: MARGUERITE PARKWAY
E-W Street: EL TORO ROAD
Client : RKJK & ASSOC.

PAGE: 1
FILE: H9506146
Movements by: VEHICLES
DATE: 6/28/95

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	4:15 PM	0.00	0	0	0	0	0	0	0
East	5:00 PM	0.86	0	216	571	787	0	27	73
South	4:45 PM	0.92	462	0	48	510	91	0	9
West	5:00 PM	0.92	194	287	0	481	40	60	0
Entire Intersection									
North	5:00 PM	0.00	0	0	0	0	0	0	0
East		0.86	0	216	571	787	0	27	73
South		0.92	427	0	58	485	88	0	12
West		0.92	194	287	0	481	40	60	0



APPENDIX C

ICU CALCULATIONS - EXISTING

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	1248	0.73*
NR	1.0	1700	5	0.01-
SL	1.0	1700	9	0.01*
ST	1.0	1700	349	0.21
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	12	0.01
WT	0.0	0	0	0.00
WR	1 0	1700	44	0.03-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.82 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1.0	1700	461	0.27
NR	1.0	1700	17	0.01-
SL	1.0	1700	34	0.02
ST	1.0	1700	865	0.51*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	7	0.01*
WT	0.0	0	0	0.00
WR	1.0	1700	15	0.01-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.57 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	5	0.01
NT	1.0	1700	1069	0.63*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	387	0.23
SR	1.0	1700	28	0.02-
EL	0.0	1700	156	0.09
ET	1.0	1700	0	0.10*
ER	0.0	1700	7	0.01
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.78 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	20	0.01*
NT	1.0	1700	452	0.27
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	797	0.47*
SR	1.0	1700	156	0.08-
EL	0.0	1700	36	0.02*
ET	1.0	1700	0	0.02
ER	0.0	1700	4	0.01
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.55 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	813	0.48*
NR	1.0	1700	37	0.02-
SL	1.0	1700	112	0.07*
ST	1.0	1700	284	0.17
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	52	0.03
WT	0.0	0	0	0.00
WR	1.0	1700	266	0.14-*
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	378	0.22*
NR	1.0	1700	95	0.05-
SL	1.0	1700	223	0.13*
ST	1.0	1700	581	0.34
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1700	40	0.02
WT	0.0	0	0	0.00
WR	1.0	1700	94	0.05-*
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.45 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	25	0.01
NT	1.0	1700	768	0.45*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	337	0.20
SR	1.0	1700	10	0.01-
EL	0.0	1700	82	0.05
ET	1.0	1700	0	0.12*
ER	0.0	1700	123	0.07
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.62 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	115	0.07*
NT	1.0	1700	441	0.26
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	597	0.35*
SR	1.0	1700	21	0.01-
EL	0.0	1700	28	0.02
ET	1.0	1700	0	0.06*
ER	0.0	1700	78	0.05
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.53 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1700	765	0.45*
NR	1.0	1700	13	0.01-
SL	1.0	1700	3	0.01*
ST	1.0	1700	457	0.27
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	91	0.05
WT	1.0	1700	0	0.07*
WR	0.0	1700	29	0.02
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.58 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1 0	1700	545	0.32
NR	1.0	1700	66	0.03-
SL	1.0	1700	20	0.01
ST	1.0	1700	646	0.38*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	1700	32	0.02*
WT	1.0	1700	0	0.02
WR	0.0	1700	8	0.01
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.45 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	43	0.03
NT	1.0	1700	740	0.44*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1700	409	0.24
SR	1.0	1700	79	0.04-
EL	1.0	1700	32	0.02
ET	0.0	0	0	0.00
ER	1.0	1700	103	0.05-*
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	130	0.08*
NT	1.0	1700	552	0.32
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00
ST	1.0	1700	645	0.38*
SR	1.0	1700	38	0.02-
EL	1.0	1700	77	0.05*
ET	0.0	0	0	0.00
ER	1.0	1700	110	0.05-
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
			Clearance Interval Percentage =	0.05
			Sum of Critical Movements =	0.56 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	2.0	3400	82	0.02
ST	0.0	0	0	0.00
SR	1.0	1700	352	0.18-*
EL	1.0	1700	51	0.03*
ET	2.0	3400	33	0.01
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	2.0	3400	91	0.03*
WR	1.0	1700	32	0.02-
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.29 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	2.0	3400	87	0.03
ST	0.0	0	0	0.00
SR	1.0	1700	96	0.05-*
EL	1.0	1700	297	0.17*
ET	2.0	3400	100	0.03
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	2.0	3400	55	0.02
WR	1.0	1700	113	0.06-*
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.33 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	158	0.09*
NT	0.0	0	0	0.00
NR >	1.0	1700	278	0.05-
SL	0.0	0	0	0.00
ST	0.0	0	0	0.00
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	2.0	3400	207	0.08*
ER	0.0	1700	50	0.03
WL	2.0	3400	339	0.10*
WT	2.0	3400	290	0.09
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.32 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1700	58	0.03
NT	0.0	0	0	0.00
NR >	1.0	1700	427	0.07-*
SL	0.0	0	0	0.00
ST	0.0	0	0	0.00
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	2.0	3400	287	0.14*
ER	0.0	1700	194	0.11
WL	2.0	3400	571	0.17*
WT	2.0	3400	216	0.06
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.43 A

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	3.0	5100	1855	0.36*
NR	1.0	1700	22	0.01-
SL	2.0	3400	45	0.01*
ST	3.0	5100	312	0.06
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	2.0	3400	140	0.04
WT	0.0	0	0	0.00
WR	1.0	1700	234	0.12-*
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	3.0	5100	552	0.11
NR	1.0	1700	145	0.08-
SL	2.0	3400	126	0.04
ST	3.0	5100	1935	0.38*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	2.0	3400	73	0.02*
WT	0.0	0	0	0.00
WR	1.0	1700	41	0.02-
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.45 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	345	0.10
NT	2.0	3400	1049	0.31*
NR >>	1.0	1700	14	0.01
SL	1.0	1700	38	0.02*
ST	2.0	3400	219	0.06
SR >>	1.0	1700	60	0.04
EL	1.0	1700	8	0.01
ET	0.0	0	0	0.00*
ER >>	1.0	1700	15	0.01
WL	1.0	1700	30	0.02*
WT	0.0	0	0	0.00
WR >>	1.0	1700	458	0.27
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.40 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	44	0.01*
NT	2.0	3400	455	0.13
NR >>	1.0	1700	19	0.01
SL	1.0	1700	415	0.24
ST	2.0	3400	1547	0.46*
SR >>	1.0	1700	7	0.01
EL	1.0	1700	50	0.03*
ET	0.0	0	0	0.00
ER >>	1.0	1700	224	0.13
WL	1.0	1700	16	0.01
WT	0.0	0	0	0.00*
WR >>	1.0	1700	69	0.04
				=======
		Clearance Interval Percentage =		0.05
		Sum of Critical Movements =		0.55 A

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	413	0.12
NT	4.0	6800	1105	0.16*
NR	1.0	1700	37	0.02-
SL	2.0	3400	29	0.01*
ST	3.0	5100	204	0.04
SR	1.0	1700	81	0.04-
EL	1.0	1700	62	0.04*
ET	3.0	5100	171	0.03
ER >>	1.0	1700	224	0.13
WL	1.0	1700	20	0.01
WT	3.0	5100	326	0.06
WR	1.0	1700	281	0.14-*
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.40 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	3400	377	0.11*
NT	4.0	6800	376	0.06
NR	1.0	1700	59	0.03-
SL	2.0	3400	256	0.08
ST	3.0	5100	1240	0.24*
SR	1.0	1700	91	0.04-
EL	1.0	1700	90	0.05*
ET	3.0	5100	333	0.07
ER >>	1.0	1700	502	0.30
WL	1.0	1700	22	0.01
WT	3.0	5100	191	0.04*
WR	1.0	1700	85	0.04-
				=======
Clearance Interval Percentage =				0.05
Sum of Critical Movements =				0.49 A

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX D

ICU CALCULATIONS- EXISTING PLUS PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	1248	72	1320	0.78*
NR	1.0	1700	5	1	6	0.01-
SL	1.0	1700	9	0	9	0.01*
ST	1.0	1700	349	27	376	0.22
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	12	1	13	0.01
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	44	0	44	0.03-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	461	59	520	0.31
NR	1.0	1700	17	4	21	0.01-
SL	1.0	1700	34	0	34	0.02
ST	1.0	1700	865	74	939	0.55*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	7	4	11	0.01*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	15	0	15	0.01-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.61 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio	
NL	1.0	1700	5	1	6	0.01	
NT	1.0	1700	1069	73	1142	0.67*	
NR	0.0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0.00*	
ST	1.0	1700	387	28	415	0.24	
SR	1.0	1700	28	0	28	0.02-	
EL	0.0	1700	156	0	156	0.09	
ET	1.0	1700	0	0	0	0.10*	
ER	0.0	1700	7	1	8	0.01	
WL	0.0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0.00	
						=======	
					Clearance Interval Percentage =	0.05	
					Sum of Critical Movements =	0.82	D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio	
NL	1.0	1700	20	4	24	0.01*	
NT	1.0	1700	452	63	515	0.30	
NR	0.0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0.00	
ST	1.0	1700	797	78	875	0.51*	
SR	1.0	1700	156	0	156	0.08-	
EL	0.0	1700	36	0	36	0.02	
ET	1.0	1700	0	0	0	0.03*	
ER	0.0	1700	4	4	8	0.01	
WL	0.0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0.00	
						=======	
					Clearance Interval Percentage =	0.05	
					Sum of Critical Movements =	0.60	A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	813	74	887	0.52*
NR	1.0	1700	37	2	39	0.02-
SL	1.0	1700	112	0	112	0.07*
ST	1.0	1700	284	29	313	0.18
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	52	4	56	0.03
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	266	0	266	0.14-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.78 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	378	67	445	0.26
NR	1.0	1700	95	12	107	0.05-
SL	1.0	1700	223	0	223	0.13
ST	1.0	1700	581	82	663	0.39*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	40	12	52	0.03
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	94	0	94	0.05-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.49 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	25	19	44	0.03
NT	1.0	1700	768	76	844	0.50*
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00*
ST	1.0	1700	337	33	370	0.22
SR	1.0	1700	10	0	10	0.01-
EL	0.0	1700	82	0	82	0.05
ET	1.0	1700	0	0	0	0.13*
ER	0.0	1700	123	9	132	0.08
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.68 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	115	21	136	0.08*
NT	1.0	1700	441	79	520	0.31
NR	0.0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0.00
ST	1.0	1700	597	94	691	0.41*
SR	1.0	1700	21	0	21	0.01-
EL	0.0	1700	28	0	28	0.02
ET	1.0	1700	0	0	0	0.08*
ER	0.0	1700	78	24	102	0.06
WL	0.0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.62 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	795	6	801	0.47*
NR	1.0	1700	0	84	84	0.04-
SL	1.0	1700	0	30	30	0.02*
ST	1.0	1700	460	12	472	0.28
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	0	248	248	0.15*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	0	89	89	0.04-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.69 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	556	36	592	0.35
NR	1.0	1700	0	228	228	0.11-
SL	1.0	1700	0	82	82	0.05
ST	1.0	1700	675	36	711	0.42*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	1.0	1700	0	178	178	0.10*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	0	64	64	0.03-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.57 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	1.0	1700	765	84	849	0.50*
NR	1.0	1700	13	6	19	0.01-
SL	1.0	1700	3	12	15	0.01*
ST	1.0	1700	457	248	705	0.41
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	0.0	1700	91	6	97	0.06
WT	1.0	1700	0	0	0	0.08*
WR	0.0	1700	29	6	35	0.02
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.64 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	1.0	1700	545	228	773	0.45
NR	1.0	1700	66	24	90	0.04-
SL	1.0	1700	20	36	56	0.03
ST	1.0	1700	646	178	824	0.48*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	0.0	1700	32	24	56	0.03
WT	1.0	1700	0	0	0	0.06*
WR	0.0	1700	8	36	44	0.03
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.59 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio	
NL	1.0	1700	43	0	43	0.03	
NT	1.0	1700	740	51	791	0.47*	
NR	0.0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0.00*	
ST	1.0	1700	409	145	554	0.33	
SR	1.0	1700	79	109	188	0.09-	
EL	1.0	1700	32	39	71	0.04	
ET	0.0	0	0	0	0	0.00	
ER	1.0	1700	103	0	103	0.05-*	
WL	0.0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0.00	
						=======	
			Clearance Interval Percentage =			0.05	
			Sum of Critical Movements =			0.57	A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio	
NL	1.0	1700	130	0	130	0.08*	
NT	1.0	1700	552	142	694	0.41	
NR	0.0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0.00	
ST	1.0	1700	645	114	759	0.45*	
SR	1.0	1700	38	88	126	0.06-	
EL	1.0	1700	77	110	187	0.11*	
ET	0.0	0	0	0	0	0.00	
ER	1.0	1700	110	0	110	0.05-	
WL	0.0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0.00	
						=======	
			Clearance Interval Percentage =			0.05	
			Sum of Critical Movements =			0.69	B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0.00
SL	2.0	3400	82	1	83	0.02
ST	0.0	0	0	0	0	0.00
SR	1.0	1700	352	0	352	0.18-*
EL	1.0	1700	51	0	51	0.03*
ET	2.0	3400	33	38	71	0.02
ER	0.0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0.00
WT	2.0	3400	91	108	199	0.06*
WR	1.0	1700	32	1	33	0.02-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.32 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0.00
SL	2.0	3400	87	4	91	0.03
ST	0.0	0	0	0	0	0.00
SR	1.0	1700	96	0	96	0.05-*
EL	1.0	1700	297	0	297	0.17*
ET	2.0	3400	100	106	206	0.06
ER	0.0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0.00
WT	2.0	3400	55	84	139	0.04
WR	1.0	1700	113	4	117	0.06-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.33 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	158	0	158	0.09*
NT	0.0	0	0	0	0	0.00
NR >	1.0	1700	278	19	297	0.04-
SL	0.0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	2.0	3400	207	31	238	0.08*
ER	0.0	1700	50	0	50	0.03
WL	2.0	3400	339	54	393	0.12*
WT	2.0	3400	290	90	380	0.11
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.34 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	1.0	1700	58	0	58	0.03
NT	0.0	0	0	0	0	0.00
NR >	1.0	1700	427	53	480	0.09-*
SL	0.0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	2.0	3400	287	85	372	0.17*
ER	0.0	1700	194	0	194	0.11
WL	2.0	3400	571	42	613	0.18*
WT	2.0	3400	216	68	284	0.08
WR	0.0	0	0	0	0	0.00
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.49 A

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00
NT	3.0	5100	1855	0	1855	0.36*
NR	1.0	1700	22	18	40	0.02-
SL	2.0	3400	45	13	58	0.02*
ST	3.0	5100	312	0	312	0.06
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	2.0	3400	140	53	193	0.06
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	234	36	270	0.14-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.57 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Total	V/C Ratio
NL	0.0	0	0	0	0	0.00*
NT	3.0	5100	552	0	552	0.11
NR	1.0	1700	145	49	194	0.09-
SL	2.0	3400	126	37	163	0.05
ST	3.0	5100	1935	0	1935	0.38*
SR	0.0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0.00
WL	2.0	3400	73	38	111	0.03*
WT	0.0	0	0	0	0	0.00
WR	1.0	1700	41	29	70	0.03-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.46 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	345	0	345	0.10
NT	2.0	3400	1049	0	1049	0.31*
NR >>	1.0	1700	14	18	32	0.02
SL	1.0	1700	38	0	38	0.02*
ST	2.0	3400	219	0	219	0.06
SR >>	1.0	1700	60	53	113	0.07
EL	1.0	1700	8	18	26	0.02*
ET	0.0	0	0	0	0	0.00
ER >>	1.0	1700	15	0	15	0.01
WL	1.0	1700	30	6	36	0.02
WT	0.0	0	0	0	0	0.00*
WR >>	1.0	1700	458	0	458	0.27
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.40 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Total	V/C Ratio
NL	2.0	3400	44	0	44	0.01*
NT	2 0	3400	455	0	455	0.13
NR >>	1.0	1700	19	13	32	0.02
SL	1.0	1700	415	0	415	0.24
ST	2.0	3400	1547	0	1547	0.46*
SR >>	1.0	1700	7	38	45	0.03
EL	1.0	1700	50	49	99	0.06*
ET	0.0	0	0	0	0	0.00
ER >>	1.0	1700	224	0	224	0.13
WL	1.0	1700	16	16	32	0.02
WT	0.0	0	0	0	0	0.00*
WR >>	1.0	1700	69	0	69	0.04
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.58 A

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Background Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	VOLUMES Project	VOLUMES Total	V/C Ratio
NL	2.0	3400	413	0	413	0.12
NT	4.0	6800	1105	0	1105	0.16*
NR	1.0	1700	37	6	43	0.03-
SL	2.0	3400	29	6	35	0.01*
ST	3.0	5100	204	0	204	0.04
SR	1.0	1700	81	0	81	0.04-
EL	1.0	1700	62	0	62	0.04*
ET	3.0	5100	171	19	190	0.04
ER >>	1.0	1700	224	0	224	0.13
WL	1.0	1700	20	18	38	0.02
WT	3.0	5100	326	54	380	0.07
WR	1.0	1700	281	18	299	0.15-*
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.41 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	VOLUMES Project	VOLUMES Total	V/C Ratio
NL	2.0	3400	377	0	377	0.11*
NT	4.0	6800	376	0	376	0.06
NR	1.0	1700	59	16	75	0.03-
SL	2.0	3400	256	16	272	0.08
ST	3.0	5100	1240	0	1240	0.24*
SR	1.0	1700	91	0	91	0.04-
EL	1.0	1700	90	0	90	0.05*
ET	3.0	5100	333	53	386	0.08
ER >>	1.0	1700	502	0	502	0.30
WL	1.0	1700	22	13	35	0.02
WT	3.0	5100	191	42	233	0.05*
WR	1.0	1700	85	13	98	0.05-
						=======
				Clearance Interval Percentage =		0.05
				Sum of Critical Movements =		0.50 A

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX E

ICU CALCULATIONS - YEAR 2000 WITHOUT PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1323	0	-32	1291	0.76*
NR	1.0	1700	6	0	4	10	0.01-
SL	1.0	1700	10	0	0	10	0.01*
ST	1.0	1700	484	0	-8	476	0.28
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	13	0	6	19	0.01
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	93	0	0	93	0.04-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.86 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	507	0	-12	495	0.29
NR	1.0	1700	19	0	14	33	0.02-
SL	1.0	1700	87	0	0	87	0.05
ST	1.0	1700	1102	0	-32	1070	0.63*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	8	0	14	22	0.01*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	17	0	0	17	0.01-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.69 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	9	0	7	16	0.01
NT	1.0	1700	1174	0	-28	1146	0.67*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	498	0	-2	496	0.29
SR	1.0	1700	43	0	0	43	0.03-
EL	0.0	1700	240	0	0	240	0.14
ET	1.0	1700	0	0	0	0	0.15*
ER	0.0	1700	12	0	9	21	0.01
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	35	0	21	56	0.03*
NT	1.0	1700	581	0	2	583	0.34
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	1025	0	-18	1007	0.59*
SR	1.0	1700	240	0	0	240	0.12-
EL	0.0	1700	55	0	0	55	0.03
ET	1.0	1700	0	0	0	0	0.05*
ER	0.0	1700	7	0	22	29	0.02
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.72 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	866	0	-35	831	0.49*
NR	1.0	1700	41	0	30	71	0.03-
SL	1.0	1700	140	0	19	159	0.09*
ST	1.0	1700	355	0	-12	343	0.20
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	57	0	19	76	0.04
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	333	0	14	347	0.17-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.80 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	473	0	-22	451	0.27*
NR	1.0	1700	105	0	67	172	0.09-
SL	1.0	1700	279	0	46	325	0.19*
ST	1.0	1700	726	0	-42	684	0.40
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	44	0	66	110	0.06
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	118	0	45	163	0.09-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.60 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	33	0	-9	24	0.01
NT	1.0	1700	845	0	-23	822	0.48*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	371	0	-6	365	0.21
SR	1.0	1700	13	0	13	26	0.02-
EL	0.0	1700	103	0	18	121	0.07
ET	1.0	1700	0	0	0	0	0.17*
ER	0.0	1700	163	0	-3	160	0.09
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.70 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	152	0	-5	147	0.09*
NT	1.0	1700	485	0	2	487	0.29
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	657	0	-18	639	0.38*
SR	1.0	1700	26	0	42	68	0.03-
EL	0.0	1700	35	0	43	78	0.05
ET	1.0	1700	0	0	0	0	0.10*
ER	0.0	1700	103	0	-10	93	0.05
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.62 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	879	0	-39	840	0.49*
NR	1.0	1700	21	0	0	21	0.01-
SL	1.0	1700	5	0	4	9	0.01*
ST	1.0	1700	555	0	-129	426	0.25
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	150	0	0	150	0.09
WT	1.0	1700	0	0	0	0	0.12*
WR	0.0	1700	46	0	6	52	0.03
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.67 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	662	0	-145	517	0.30
NR	1.0	1700	108	0	0	108	0.05-
SL	1.0	1700	31	0	14	45	0.03
ST	1.0	1700	784	0	-70	714	0.42*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	53	0	0	53	0.03
WT	1.0	1700	0	0	0	0	0.05*
WR	0.0	1700	13	0	14	27	0.02
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.52 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	81	0	0	81	0.05	
NT	1.0	1700	788	0	-21	767	0.45*	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00*	
ST	1.0	1700	519	0	-70	449	0.26	
SR	1.0	1700	150	0	-59	91	0.04-	
EL	1.0	1700	111	0	-18	93	0.05	
ET	0.0	0	0	0	0	0	0.00	
ER	1.0	1700	243	0	0	243	0.12-*	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.62	B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	244	0	0	244	0.14*	
NT	1.0	1700	700	0	-79	621	0.37	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00	
ST	1.0	1700	818	0	-39	779	0.46*	
SR	1.0	1700	72	0	-31	41	0.02-	
EL	1.0	1700	146	0	-66	80	0.05	
ET	0.0	0	0	0	0	0	0.00	
ER	1.0	1700	206	0	0	206	0.10-*	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.75	C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	2.0	3400	164	0	0	164	0.05
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1700	798	0	0	798	0.40-*
EL	1.0	1700	130	0	0	130	0.08*
ET	2.0	3400	201	0	-20	181	0.05
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	278	0	-61	217	0.06*
WR	1.0	1700	64	0	0	64	0.03-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.59 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	2.0	3400	124	0	0	124	0.04
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1700	245	0	0	245	0.12-*
EL	1.0	1700	707	0	0	707	0.42*
ET	2.0	3400	305	0	-72	233	0.07
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	168	0	-37	131	0.04
WR	1.0	1700	226	0	0	226	0.11-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.70 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	254	0	0	254	0.15*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	329	0	-8	321	0.00-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	273	0	-14	259	0.10*
ER	0.0	1700	80	0	0	80	0.05
WL	2.0	3400	673	0	-26	647	0.19*
WT	2.0	3400	532	0	-44	488	0.14
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.49 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	93	0	0	93	0.05
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	758	0	-30	728	0.21-*
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	628	0	-50	578	0.29*
ER	0.0	1700	412	0	0	412	0.24
WL	2.0	3400	630	0	-15	615	0.18*
WT	2.0	3400	335	0	-25	310	0.09
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.73 C

* denotes critical movement
> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	120	0	0	120	0.04
NT	3.0	5100	2314	0	0	2314	0.45*
NR	1.0	1700	409	0	-12	397	0.20-
SL	2.0	3400	321	0	-9	312	0.09*
ST	3.0	5100	507	0	0	507	0.10
SR	1.0	1700	15	0	0	15	0.01-
EL	1.0	1700	5	0	0	5	0.01*
ET	1.5	2550	5	0	0	5	0.01
ER	1.5	2550	20	0	0	20	0.01-
WL	2.0	3400	478	0	-35	443	0.13
WT	1.0	1700	15	0	0	15	0.01
WR	1.0	1700	629	0	-26	603	0.30-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	15	0	0	15	0.01*
NT	3.0	5100	986	0	0	986	0.19
NR	1.0	1700	492	0	-42	450	0.22-
SL	2.0	3400	488	0	-31	457	0.13
ST	3.0	5100	2457	0	0	2457	0.48*
SR	1.0	1700	5	0	0	5	0.01-
EL	1.0	1700	10	0	0	10	0.01*
ET	1.5	2550	15	0	0	15	0.01
ER	1.5	2550	115	0	0	115	0.04-
WL	2.0	3400	547	0	-22	525	0.15
WT	1.0	1700	5	0	0	5	0.01
WR	1.0	1700	410	0	-16	394	0.20-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.75 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	776	0	0	776	0.23
NT	2.0	3400	1955	0	0	1955	0.58*
NR >>	1.0	1700	32	0	-9	23	0.01
SL	1.0	1700	72	0	0	72	0.04*
ST	2.0	3400	721	0	0	721	0.21
SR >>	1.0	1700	114	0	-35	79	0.05
EL	1.0	1700	115	0	-12	103	0.06*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	34	0	0	34	0.02
WL	1.0	1700	68	0	-3	65	0.04
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	620	0	0	620	0.36
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.73 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	99	0	0	99	0.03
NT	2.0	3400	1228	0	0	1228	0.36*
NR >>	1.0	1700	43	0	-5	38	0.02
SL	1.0	1700	738	0	0	738	0.43*
ST	2.0	3400	2326	0	0	2326	0.68
SR >>	1.0	1700	63	0	-22	41	0.02
EL	1.0	1700	95	0	-42	53	0.03*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	504	0	0	504	0.30
WL	1.0	1700	36	0	-10	26	0.02
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	131	0	0	131	0.08
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.87 D

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	385	0	0	385	0.11
NT	4.0	6800	1883	0	0	1883	0.28*
NR	1.0	1700	49	0	-3	46	0.03-
SL	2.0	3400	106	0	-3	103	0.03*
ST	3.0	5100	584	0	0	584	0.11
SR	1.0	1700	165	0	0	165	0.09-
EL	1.0	1700	326	0	0	326	0.19*
ET	3.0	5100	252	0	-8	244	0.05
ER >>	1.0	1700	317	0	0	317	0.19
WL	1.0	1700	27	0	-9	18	0.01
WT	3.0	5100	430	0	-26	404	0.08
WR	1.0	1700	496	0	-9	487	0.25-*
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.80 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	324	0	0	324	0.10*
NT	4.0	6800	959	0	0	959	0.14
NR	1.0	1700	78	0	-10	68	0.03-
SL	2.0	3400	597	0	-10	587	0.17
ST	3.0	5100	2037	0	0	2037	0.40*
SR	1.0	1700	285	0	0	285	0.14-
EL	1.0	1700	233	0	0	233	0.14*
ET	3.0	5100	591	0	-30	561	0.11
ER >>	1.0	1700	611	0	0	611	0.36
WL	1.0	1700	29	0	-5	24	0.01
WT	3.0	5100	231	0	-15	216	0.04
WR	1.0	1700	215	0	-5	210	0.10-*
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.79 C

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX F

ICU CALCULATIONS - YEAR 2000 WITH PROJECT

* Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)
* Intersection # 2

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	1323	507	1248	461
NR	6	19	5	17
SL	10	87	9	34
ST	484	1102	349	865
SR	0	0	0	0
EL	0	0	0	0
ET	0	0	0	0
ER	0	0	0	0
WL	13	8	12	7
WT	0	0	0	0
WR	93	17	44	15
* Totals	1929	1740		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	494	1189			
* North Leg OUT	1416	524			
* North Leg TOTAL	1910	1713	13	11	15000
* South Leg IN	1329	526			
* South Leg OUT	497	1110			
* South Leg TOTAL	1826	1636	12	11	15000
* East Leg IN	106	25			
* East Leg OUT	16	106			
* East Leg TOTAL	122	131	12	13	1000
* West Leg IN	0	0			
* West Leg OUT	0	0			
* West Leg TOTAL	0	0	0	0	0
* TOTALS	3858	3480	12	11	31000

* Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

3 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	9	35	5	20
NT	1224	581	1069	452
NR	0	0	0	0
SL	0	0	0	0
ST	498	1025	387	797
SR	43	240	28	156
EL	240	55	156	36
ET	0	0	0	0
ER	12	7	7	4
WL	0	0	0	0
WT	0	0	0	0
WR	0	0	0	0
* Totals	2026	1943		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	541	1265			
* North Leg OUT	1464	636			
* North Leg TOTAL	2005	1901	13	13	15000
* South Leg IN	1233	616			
* South Leg OUT	510	1032			
* South Leg TOTAL	1743	1648	12	11	15000
* East Leg IN	0	0			
* East Leg OUT	0	0			
* East Leg TOTAL	0	0	0	0	0
* West Leg IN	252	62			
* West Leg OUT	52	275			
* West Leg TOTAL	304	337	8	8	4000
* TOTALS	4052	3886	12	11	34000

```
 * Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)
          4      * Intersection #
* Future Peak Hour Volumes   Existing Peak Hour Volumes
* Move     AM          PM          AM          PM
* ---- --------   --------    --------   --------
   NL         0          0           0          0
   NT       866        473         813        378
   NR        41        105          37         95

   SL       140        279         112        223
   ST       355        726         284        581
   SR         0          0           0          0

   EL         0          0           0          0
   ET         0          0           0          0
   ER         0          0           0          0

   WL        57         44          52         40
   WT         0          0           0          0
   WR       333        118         266         94

* Totals  1792       1745

* Intersection Peak Hour Leg Volumes   Percent of ADT       ADT
*                    --AM--   --PM--      --AM--   --PM--   ---------
* North Leg IN         495      1005
* North Leg OUT       1199       591
*                    ------   ------
* North Leg TOTAL     1694      1596          11       11       15000

* South Leg IN         907       578
* South Leg OUT        412       770
*                    ------   ------
* South Leg TOTAL     1319      1348           9       10       14000

* East  Leg IN         390       162
* East  Leg OUT        181       384
*                    ------   ------
* East  Leg TOTAL      571       546          11       11        5000

* West  Leg IN           0         0
* West  Leg OUT          0         0
*                    ------   ------
* West  Leg TOTAL        0         0           0        0           0
*                    ======   ======
* TOTALS              3584      3490          11       10       34000
*
```

* Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)
5 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	33	152	25	115
NT	845	485	768	441
NR	0	0	0	0
SL	0	0	0	0
ST	371	657	337	597
SR	13	26	10	21
EL	103	35	82	28
ET	0	0	0	0
ER	163	103	123	78
WL	0	0	0	0
WT	0	0	0	0
WR	0	0	0	0
* Totals	1528	1458		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	384	683			
* North Leg OUT	948	520			
* North Leg TOTAL	1332	1203	10	9	14000
* South Leg IN	878	637			
* South Leg OUT	534	760			
* South Leg TOTAL	1412	1397	9	9	16000
* East Leg IN	0	0			
* East Leg OUT	0	0			
* East Leg TOTAL	0	0	0	0	0
* West Leg IN	266	138			
* West Leg OUT	46	178			
* West Leg TOTAL	312	316	10	11	3000
* TOTALS	3056	2916	9	9	33000

* Intersection: El Toro Rd. (NS) / Project Entrance (EW)
6 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	817	535	0	0
NR	71	191	0	0
SL	24	64	0	0
ST	439	680	0	0
SR	0	0	0	0
EL	0	0	0	0
ET	0	0	0	0
ER	0	0	0	0
WL	191	120	0	0
WT	0	0	0	0
WR	64	40	0	0
* Totals	1606	1630		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	463	744			
* North Leg OUT	881	575			
* North Leg TOTAL	1344	1319	8	8	16000
* South Leg IN	888	726			
* South Leg OUT	630	800			
* South Leg TOTAL	1518	1526	9	10	16000
* East Leg IN	255	160			
* East Leg OUT	95	255			
* East Leg TOTAL	350	415	12	14	3000
* West Leg IN	0	0			
* West Leg OUT	0	0			
* West Leg TOTAL	0	0	0	0	0
* TOTALS	3212	3260	9	9	35000

* Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)
7 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	879	662	765	545
NR	21	108	13	66
SL	5	31	3	20
ST	555	784	457	646
SR	0	0	0	0
EL	0	0	0	0
ET	0	0	0	0
ER	0	0	0	0
WL	150	53	91	32
WT	0	0	0	0
WR	46	13	29	8
* Totals	1656	1651		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	560	815			
* North Leg OUT	925	675			
* North Leg TOTAL	1485	1490	9	9	16000
* South Leg IN	900	770			
* South Leg OUT	705	837			
* South Leg TOTAL	1605	1607	9	9	18000
* East Leg IN	196	66			
* East Leg OUT	26	139			
* East Leg TOTAL	222	205	11	10	2000
* West Leg IN	0	0			
* West Leg OUT	0	0			
* West Leg TOTAL	0	0	0	0	0
* TOTALS	3312	3302	9	9	36000

* Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)
8 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	81	244	43	130
NT	788	700	740	552
NR	0	0	0	0
SL	0	0	0	0
ST	519	818	409	645
SR	150	72	79	38
EL	111	146	32	77
ET	0	0	0	0
ER	243	206	103	110
WL	0	0	0	0
WT	0	0	0	0
WR	0	0	0	0
* Totals	1892	2186		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	669	890			
* North Leg OUT	899	846			
* North Leg TOTAL	1568	1736	9	10	18000
* South Leg IN	869	944			
* South Leg OUT	762	1024			
* South Leg TOTAL	1631	1968	8	10	20000
* East Leg IN	0	0			
* East Leg OUT	0	0			
* East Leg TOTAL	0	0	0	0	0
* West Leg IN	354	352			
* West Leg OUT	231	316			
* West Leg TOTAL	585	668	6	7	10000
* TOTALS	3784	4372	8	9	48000

```
 * Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)
          18      * Intersection #
* Future Peak Hour Volumes    Existing Peak Hour Volumes
* Move     AM          PM          AM          PM
* ---- --------    --------    --------    --------
   NL         0           0           0           0
   NT         0           0           0           0
   NR         0           0           0           0

   SL       164         124          82          87
   ST         0           0           0           0
   SR       798         245         352          96

   EL       130         707          51         297
   ET       201         305          33         100
   ER         0           0           0           0

   WL         0           0           0           0
   WT       278         168          91          55
   WR        64         226          32         113

* Totals  1635        1775

* Intersection Peak Hour Leg Volumes    Percent of ADT       ADT
*                    --AM--   --PM--     --AM--   --PM--   ---------
* North Leg IN         962      369
* North Leg OUT        194      933
*                    ------   ------
* North Leg TOTAL     1156     1302          13       14       9000

* South Leg IN           0        0
* South Leg OUT          0        0
*                    ------   ------
* South Leg TOTAL        0        0           0        0          0

* East  Leg IN         342      394
* East  Leg OUT        365      429
*                    ------   ------
* East  Leg TOTAL      707      823           7        8      10000

* West  Leg IN         331     1012
* West  Leg OUT       1076      413
*                    ------   ------
* West  Leg TOTAL     1407     1425           8        8      18000
*                    ======   ======
* TOTALS              3270     3550           9       10      37000
*
```

* Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)
10 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	254	93	158	58
NT	0	0	0	0
NR	329	758	278	427
SL	0	0	0	0
ST	0	0	0	0
SR	0	0	0	0
EL	0	0	0	0
ET	273	628	207	287
ER	80	412	50	194
WL	673	630	339	571
WT	532	335	290	216
WR	0	0	0	0
* Totals	2141	2856		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	0	0			
* North Leg OUT	0	0			
* North Leg TOTAL	0	0	0	0	0
* South Leg IN	583	851			
* South Leg OUT	753	1042			
* South Leg TOTAL	1336	1893	6	9	22000
* East Leg IN	1205	965			
* East Leg OUT	602	1386			
* East Leg TOTAL	1807	2351	9	12	20000
* West Leg IN	353	1040			
* West Leg OUT	786	428			
* West Leg TOTAL	1139	1468	6	8	18000
* TOTALS	4282	5712	7	10	60000

* Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)
20 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	120	15	0	0
NT	2314	986	1855	552
NR	409	492	22	145
SL	321	488	45	126
ST	507	2457	312	1935
SR	15	5	0	0
EL	5	10	0	0
ET	5	15	0	0
ER	20	115	0	0
WL	478	547	140	73
WT	15	5	0	0
WR	629	410	234	41
* Totals	4838	5545		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	843	2950			
* North Leg OUT	2948	1406			
* North Leg TOTAL	3791	4356	10	11	39000
* South Leg IN	2843	1493			
* South Leg OUT	1005	3119			
* South Leg TOTAL	3848	4612	9	10	45000
* East Leg IN	1122	962			
* East Leg OUT	735	995			
* East Leg TOTAL	1857	1957	10	11	18000
* West Leg IN	30	140			
* West Leg OUT	150	25			
* West Leg TOTAL	180	165	0	0	0
* TOTALS	9676	11090	9	11	102000

* Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

21 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	776	99	345	44
NT	1955	1228	1049	455
NR	32	43	14	19
SL	72	738	38	415
ST	721	2326	219	1547
SR	114	63	60	7
EL	115	95	8	50
ET	0	0	0	0
ER	34	504	15	224
WL	68	36	30	16
WT	0	0	0	0
WR	620	131	458	69
* Totals	4507	5263		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	907	3127			
* North Leg OUT	2690	1454			
* North Leg TOTAL	3597	4581	8	10	45000
* South Leg IN	2763	1370			
* South Leg OUT	823	2866			
* South Leg TOTAL	3586	4236	7	8	50000
* East Leg IN	688	167			
* East Leg OUT	104	781			
* East Leg TOTAL	792	948	8	9	10000
* West Leg IN	149	599			
* West Leg OUT	890	162			
* West Leg TOTAL	1039	761	13	10	8000
* TOTALS	9014	10526	8	9	113000

* Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

*	11	* Intersection #			
*	Future Peak Hour Volumes		Existing Peak Hour Volumes		
*	Move	AM	PM	AM	PM
*	----	--------	--------	--------	--------
	NL	385	324	413	377
	NT	1883	959	1105	376
	NR	49	78	37	59
	SL	106	597	29	256
	ST	584	2037	204	1240
	SR	165	285	81	91
	EL	326	233	62	90
	ET	252	591	171	333
	ER	317	611	224	502
	WL	27	29	20	22
	WT	430	231	326	191
	WR	496	215	281	85
*	Totals	5020	6190		

* Intersection Peak Hour Leg Volumes			Percent of ADT		ADT
*	--AM--	--PM--	--AM--	--PM--	---------
* North Leg IN	855	2919			
* North Leg OUT	2705	1407			
*	------	------			
* North Leg TOTAL	3560	4326	7	9	50000
* South Leg IN	2317	1361			
* South Leg OUT	928	2677			
*	------	------			
* South Leg TOTAL	3245	4038	10	12	33000
* East Leg IN	953	475			
* East Leg OUT	407	1266			
*	------	------			
* East Leg TOTAL	1360	1741	8	10	18000
* West Leg IN	895	1435			
* West Leg OUT	980	840			
*	------	------			
* West Leg TOTAL	1875	2275	8	9	25000
*	======	======			
* TOTALS	10040	12380	8	10	126000
*					

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1323	72	-32	1363	0.80*
NR	1.0	1700	6	1	4	11	0.01-
SL	1.0	1700	10	0	0	10	0.01*
ST	1.0	1700	484	27	-8	503	0.30
SR	0 0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	13	1	6	20	0.01
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	93	0	0	93	0.04-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	507	59	-12	554	0.33
NR	1.0	1700	19	4	14	37	0.02-
SL	1.0	1700	87	0	0	87	0.05
ST	1.0	1700	1102	74	-32	1144	0.67*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	8	4	14	26	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	17	0	0	17	0.01-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	9	1	7	17	0.01	
NT	1.0	1700	1174	73	-28	1219	0.72*	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00*	
ST	1.0	1700	498	28	-2	524	0.31	
SR	1.0	1700	43	0	0	43	0.03-	
EL	0.0	1700	240	0	0	240	0.14	
ET	1.0	1700	0	0	0	0	0.15*	
ER	0.0	1700	12	1	9	22	0.01	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.92	E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	35	4	21	60	0.04*	
NT	1.0	1700	581	63	2	646	0.38	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00	
ST	1.0	1700	1025	78	-18	1085	0.64*	
SR	1.0	1700	240	0	0	240	0.12-	
EL	0.0	1700	55	0	0	55	0.03	
ET	1.0	1700	0	0	0	0	0.05*	
ER	0.0	1700	7	4	22	33	0.02	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.78	C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	866	74	-35	905	0.53*
NR	1.0	1700	41	2	30	73	0.03-
SL	1.0	1700	140	0	19	159	0.09*
ST	1.0	1700	355	29	-12	372	0.22
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	57	4	19	80	0.05
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	333	0	14	347	0.17-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.84 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	473	67	-22	518	0.30*
NR	1.0	1700	105	12	67	184	0.09-
SL	1.0	1700	279	0	46	325	0.19*
ST	1.0	1700	726	82	-42	766	0.45
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	44	12	66	122	0.07
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	118	0	45	163	0.09-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.63 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	33	19	-9	43	0.03
NT	1.0	1700	845	76	-23	898	0.53*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	371	33	-6	398	0.23
SR	1.0	1700	13	0	13	26	0.02-
EL	0.0	1700	103	0	18	121	0.07
ET	1.0	1700	0	0	0	0	0.17*
ER	0.0	1700	163	9	-3	169	0.10
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.75 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	152	21	-5	168	0.10*
NT	1.0	1700	485	79	2	566	0.33
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	657	94	-18	733	0.43*
SR	1.0	1700	26	0	42	68	0.03-
EL	0.0	1700	35	0	43	78	0.05
ET	1.0	1700	0	0	0	0	0.11*
ER	0.0	1700	103	24	-10	117	0.07
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.69 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	817	6	12	835	0.49*
NR	1.0	1700	71	84	-45	110	0.05-
SL	1.0	1700	24	30	-15	39	0.02*
ST	1.0	1700	439	12	6	457	0.27
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	191	248	-131	308	0.18*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	64	89	-44	109	0.05-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	535	36	24	595	0.35
NR	1.0	1700	191	228	-155	264	0.14-
SL	1.0	1700	64	82	-52	94	0.06
ST	1.0	1700	680	36	24	740	0.44*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	120	178	-80	218	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	40	64	-27	77	0.04-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.62 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	879	84	-39	924	0.54*
NR	1.0	1700	21	6	0	27	0.02-
SL	1.0	1700	5	12	4	21	0.01*
ST	1.0	1700	555	248	-129	674	0.40
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	150	6	0	156	0.09
WT	1.0	1700	0	0	0	0	0.13*
WR	0.0	1700	46	6	6	58	0.03
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.73 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	662	228	-145	745	0.44
NR	1.0	1700	108	24	0	132	0.07-
SL	1.0	1700	31	36	14	81	0.05
ST	1.0	1700	784	178	-70	892	0.52*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	53	24	0	77	0.05
WT	1.0	1700	0	0	0	0	0.08*
WR	0.0	1700	13	36	14	63	0.04
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.65 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	81	0	0	81	0.05
NT	1.0	1700	788	51	-21	818	0.48*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	519	145	-70	594	0.35
SR	1.0	1700	150	109	-59	200	0.10-
EL	1.0	1700	111	39	-18	132	0.08
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	243	0	0	243	0.12-*
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.65 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	244	0	0	244	0.14*
NT	1.0	1700	700	142	-79	763	0.45
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	818	114	-39	893	0.53*
SR	1.0	1700	72	88	-31	129	0.07-
EL	1.0	1700	146	110	-66	190	0.11*
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	206	0	0	206	0.10-
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.83 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	2.0	3400	164	1	0	165	0.05
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1700	798	0	0	798	0.40-*
EL	1.0	1700	130	0	0	130	0.08*
ET	2.0	3400	201	38	-20	219	0.06
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	278	108	-61	325	0.10*
WR	1.0	1700	64	1	0	65	0.03-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.63 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	2.0	3400	124	4	0	128	0.04
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1700	245	0	0	245	0.12-*
EL	1.0	1700	707	0	0	707	0.42*
ET	2.0	3400	305	106	-72	339	0.10
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	168	84	-37	215	0.06
WR	1.0	1700	226	4	0	230	0.12-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.71 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	254	0	0	254	0.15*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	329	19	-8	340	0.00-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	273	31	-14	290	0.11*
ER	0.0	1700	80	0	0	80	0.05
WL	2.0	3400	673	54	-26	701	0.21*
WT	2.0	3400	532	90	-44	578	0.17
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.52 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	93	0	0	93	0.05
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	758	53	-30	781	0.23-*
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	628	85	-50	663	0.32*
ER	0.0	1700	412	0	0	412	0.24
WL	2.0	3400	630	42	-15	657	0.19*
WT	2.0	3400	335	68	-25	378	0.11
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.79 C

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	120	0	0	120	0.04
NT	3.0	5100	2314	0	0	2314	0.45*
NR	1.0	1700	409	18	-12	415	0.20-
SL	2.0	3400	321	13	-9	325	0.10*
ST	3.0	5100	507	0	0	507	0.10
SR	1.0	1700	15	0	0	15	0.01-
EL	1.0	1700	5	0	0	5	0.01*
ET	1.5	2550	5	0	0	5	0.01
ER	1.5	2550	20	0	0	20	0.01-
WL	2.0	3400	478	53	-35	496	0.15
WT	1.0	1700	15	0	0	15	0.01
WR	1.0	1700	629	36	-26	639	0.32-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.93 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	15	0	0	15	0.01*
NT	3.0	5100	986	0	0	986	0.19
NR	1.0	1700	492	49	-42	499	0.25-
SL	2.0	3400	488	37	-31	494	0.15
ST	3.0	5100	2457	0	0	2457	0.48*
SR	1.0	1700	5	0	0	5	0.01-
EL	1.0	1700	10	0	0	10	0.01*
ET	1.5	2550	15	0	0	15	0.01
ER	1.5	2550	115	0	0	115	0.04-
WL	2.0	3400	547	38	-22	563	0.17
WT	1.0	1700	5	0	0	5	0.01
WR	1.0	1700	410	29	-16	423	0.21-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.76 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	776	0	0	776	0.23
NT	2.0	3400	1955	0	0	1955	0.58*
NR >>	1.0	1700	32	18	-9	41	0.02
SL	1.0	1700	72	0	0	72	0.04*
ST	2.0	3400	721	0	0	721	0.21
SR >>	1.0	1700	114	53	-35	132	0.08
EL	1.0	1700	115	18	-12	121	0.07*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	34	0	0	34	0.02
WL	1.0	1700	68	6	-3	71	0.04
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	620	0	0	620	0.36
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	99	0	0	99	0.03
NT	2.0	3400	1228	0	0	1228	0.36*
NR >>	1.0	1700	43	13	-5	51	0.03
SL	1.0	1700	738	0	0	738	0.43*
ST	2.0	3400	2326	0	0	2326	0.68
SR >>	1.0	1700	63	38	-22	79	0.05
EL	1.0	1700	95	49	-42	102	0.06*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	504	0	0	504	0.30
WL	1.0	1700	36	16	-10	42	0.02
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	131	0	0	131	0.08
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	385	0	0	385	0.11
NT	4.0	6800	1883	0	0	1883	0.28*
NR	1.0	1700	49	6	-3	52	0.03-
SL	2.0	3400	106	6	-3	109	0.03*
ST	3.0	5100	584	0	0	584	0.11
SR	1.0	1700	165	0	0	165	0.09-
EL	1.0	1700	326	0	0	326	0.19*
ET	3.0	5100	252	19	-8	263	0.05
ER >>	1.0	1700	317	0	0	317	0.19
WL	1.0	1700	27	18	-9	36	0.02
WT	3.0	5100	430	54	-26	458	0.09
WR	1.0	1700	496	18	-9	505	0.26-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.81 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	324	0	0	324	0.10*
NT	4.0	6800	959	0	0	959	0.14
NR	1.0	1700	78	16	-10	84	0.04-
SL	2.0	3400	597	16	-10	603	0.18
ST	3.0	5100	2037	0	0	2037	0.40*
SR	1.0	1700	285	0	0	285	0.14-
EL	1.0	1700	233	0	0	233	0.14*
ET	3.0	5100	591	53	-30	614	0.12
ER >>	1.0	1700	611	0	0	611	0.36
WL	1.0	1700	29	13	-5	37	0.02
WT	3.0	5100	231	42	-15	258	0.05
WR	1.0	1700	215	13	-5	223	0.11-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.80 C

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1323	72	-32	1363	0.80*
NR	1.0	1700	6	1	4	11	0.01-
SL	1.0	1700	10	0	0	10	0.01*
ST	1.0	1700	484	27	-8	503	0.30
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	13	1	6	20	0.01
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	93	0	0	93	0.04-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	507	59	-12	554	0.33
NR	1.0	1700	19	4	14	37	0.02-
SL	1.0	1700	87	0	0	87	0.05
ST	1.0	1700	1102	74	-32	1144	0.67*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	8	4	14	26	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	17	0	0	17	0.01-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	9	1	7	17	0.01
NT	2.0	3400	1174	73	-28	1219	0.36*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	498	28	-2	524	0.31
SR	1.0	1700	43	0	0	43	0.03-
EL	0.0	1700	240	0	0	240	0.14
ET	1.0	1700	0	0	0	0	0.15*
ER	0.0	1700	12	1	9	22	0.01
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.56 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	35	4	21	60	0.04*
NT	2.0	3400	581	63	2	646	0.19
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	1025	78	-18	1085	0.64*
SR	1.0	1700	240	0	0	240	0.12-
EL	0.0	1700	55	0	0	55	0.03
ET	1.0	1700	0	0	0	0	0.05*
ER	0.0	1700	7	4	22	33	0.02
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.78 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	866	74	-35	905	0.53*
NR	1.0	1700	41	2	30	73	0.03-
SL	1.0	1700	140	0	19	159	0.09*
ST	1.0	1700	355	29	-12	372	0.22
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	57	4	19	80	0.05
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	333	0	14	347	0.17-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.84 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	473	67	-22	518	0.30*
NR	1.0	1700	105	12	67	184	0.09-
SL	1.0	1700	279	0	46	325	0.19*
ST	1.0	1700	726	82	-42	766	0.45
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	44	12	66	122	0.07
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	118	0	45	163	0.09-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.63 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	33	19	-9	43	0.03
NT	1.0	1700	845	76	-23	898	0.53*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	371	33	-6	398	0.23
SR	1.0	1700	13	0	13	26	0.02-
EL	0.0	1700	103	0	18	121	0.07
ET	1.0	1700	0	0	0	0	0.17*
ER	0.0	1700	163	9	-3	169	0.10
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.75 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	152	21	-5	168	0.10*
NT	1.0	1700	485	79	2	566	0.33
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	657	94	-18	733	0.43*
SR	1.0	1700	26	0	42	68	0.03-
EL	0.0	1700	35	0	43	78	0.05
ET	1.0	1700	0	0	0	0	0.11*
ER	0.0	1700	103	24	-10	117	0.07
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.69 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	817	6	12	835	0.49*
NR	1.0	1700	71	84	-45	110	0.05-
SL	1.0	1700	24	30	-15	39	0.02*
ST	1.0	1700	439	12	6	457	0.27
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	191	248	-131	308	0.18*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	64	89	-44	109	0.05-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	535	36	24	595	0.35
NR	1.0	1700	191	228	-155	264	0.14-
SL	1.0	1700	64	82	-52	94	0.06
ST	1.0	1700	680	36	24	740	0.44*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	120	178	-80	218	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	40	64	-27	77	0.04-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.62 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	879	84	-39	924	0.54*
NR	1.0	1700	21	6	0	27	0.02-
SL	1.0	1700	5	12	4	21	0.01*
ST	1.0	1700	555	248	-129	674	0.40
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	150	6	0	156	0.09
WT	1.0	1700	0	0	0	0	0.13*
WR	0.0	1700	46	6	6	58	0.03
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.73 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	662	228	-145	745	0.44
NR	1.0	1700	108	24	0	132	0.07-
SL	1.0	1700	31	36	14	81	0.05
ST	1.0	1700	784	178	-70	892	0.52*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	53	24	0	77	0.05
WT	1.0	1700	0	0	0	0	0.08*
WR	0.0	1700	13	36	14	63	0.04
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.65 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	81	0	0	81	0.05
NT	1.0	1700	788	51	-21	818	0.48*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	519	145	-70	594	0.35
SR	1.0	1700	150	109	-59	200	0.10-
EL	1.0	1700	111	39	-18	132	0.08
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	243	0	0	243	0.12-*
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.65 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	244	0	0	244	0.14*
NT	1.0	1700	700	142	-79	763	0.45
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	818	114	-39	893	0.53*
SR	1.0	1700	72	88	-31	129	0.07-
EL	1.0	1700	146	110	-66	190	0.11*
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	206	0	0	206	0.10-
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.83 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	164	1	0	165	0.05	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	798	0	0	798	0.40-*	
EL	1.0	1700	130	0	0	130	0.08*	
ET	2.0	3400	201	38	-20	219	0.06	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	278	108	-61	325	0.10*	
WR	1.0	1700	64	1	0	65	0.03-	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.63	B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	124	4	0	128	0.04	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	245	0	0	245	0.12-*	
EL	1.0	1700	707	0	0	707	0.42*	
ET	2.0	3400	305	106	-72	339	0.10	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	168	84	-37	215	0.06	
WR	1.0	1700	226	4	0	230	0.12-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.71	C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	254	0	0	254	0.15*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	329	19	-8	340	0.00-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	273	31	-14	290	0.11*
ER	0.0	1700	80	0	0	80	0.05
WL	2.0	3400	673	54	-26	701	0.21*
WT	2.0	3400	532	90	-44	578	0.17
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.52 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	93	0	0	93	0.05
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	758	53	-30	781	0.23-*
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	628	85	-50	663	0.32*
ER	0.0	1700	412	0	0	412	0.24
WL	2.0	3400	630	42	-15	657	0.19*
WT	2.0	3400	335	68	-25	378	0.11
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.79 C

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	120	0	0	120	0.04
NT	3.0	5100	2314	0	0	2314	0.45*
NR	1.0	1700	409	18	-12	415	0.20-
SL	2.0	3400	321	13	-9	325	0.10*
ST	3.0	5100	507	0	0	507	0.10
SR	1.0	1700	15	0	0	15	0.01-
EL	1.0	1700	5	0	0	5	0.01*
ET	1.5	2550	5	0	0	5	0.01
ER	1.5	2550	20	0	0	20	0.01-
WL	2.0	3400	478	53	-35	496	0.15
WT	1.0	1700	15	0	0	15	0.01
WR >	1.0	1700	629	36	-26	639	0.24-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.85 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	15	0	0	15	0.01*
NT	3.0	5100	986	0	0	986	0.19
NR	1.0	1700	492	49	-42	499	0.25-
SL	2.0	3400	488	37	-31	494	0.15
ST	3.0	5100	2457	0	0	2457	0.48*
SR	1.0	1700	5	0	0	5	0.01-
EL	1.0	1700	10	0	0	10	0.01
ET	1.5	2550	15	0	0	15	0.01
ER	1.5	2550	115	0	0	115	0.04-*
WL	2.0	3400	547	38	-22	563	0.17*
WT	1.0	1700	5	0	0	5	0.01
WR >	1.0	1700	410	29	-16	423	0.09-
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.75 C

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	776	0	0	776	0.23
NT	2.0	3400	1955	0	0	1955	0.58*
NR >>	1.0	1700	32	18	-9	41	0.02
SL	1.0	1700	72	0	0	72	0.04*
ST	2.0	3400	721	0	0	721	0.21
SR >>	1.0	1700	114	53	-35	132	0.08
EL	1.0	1700	115	18	-12	121	0.07*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	34	0	0	34	0.02
WL	1.0	1700	68	6	-3	71	0.04
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	620	0	0	620	0.36
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	99	0	0	99	0.03
NT	2.0	3400	1228	0	0	1228	0.36*
NR >>	1.0	1700	43	13	-5	51	0.03
SL	1.0	1700	738	0	0	738	0.43*
ST	2.0	3400	2326	0	0	2326	0.68
SR >>	1.0	1700	63	38	-22	79	0.05
EL	1.0	1700	95	49	-42	102	0.06*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	504	0	0	504	0.30
WL	1.0	1700	36	16	-10	42	0.02
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	131	0	0	131	0.08
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2000 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	385	0	0	385	0.11
NT	4.0	6800	1883	0	0	1883	0.28*
NR	1.0	1700	49	6	-3	52	0.03-
SL	2.0	3400	106	6	-3	109	0.03*
ST	3.0	5100	584	0	0	584	0.11
SR	1.0	1700	165	0	0	165	0.09-
EL	1.0	1700	326	0	0	326	0.19*
ET	3.0	5100	252	19	-8	263	0.05
ER >>	1.0	1700	317	0	0	317	0.19
WL	1.0	1700	27	18	-9	36	0.02
WT	3.0	5100	430	54	-26	458	0.09
WR	1.0	1700	496	18	-9	505	0.26-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.81 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	324	0	0	324	0.10*
NT	4.0	6800	959	0	0	959	0.14
NR	1.0	1700	78	16	-10	84	0.04-
SL	2.0	3400	597	16	-10	603	0.18
ST	3.0	5100	2037	0	0	2037	0.40*
SR	1.0	1700	285	0	0	285	0.14-
EL	1.0	1700	233	0	0	233	0.14*
ET	3.0	5100	591	53	-30	614	0.12
ER >>	1.0	1700	611	0	0	611	0.36
WL	1.0	1700	29	13	-5	37	0.02
WT	3.0	5100	231	42	-15	258	0.05
WR	1.0	1700	215	13	-5	223	0.11-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.80 C

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX G

ICU CALCULATIONS - YEAR 2020 WITHOUT PROJECT

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1750	0	-32	1718	1.01*
NR	1.0	1700	9	0	4	13	0.01-
SL	1.0	1700	17	0	0	17	0.01*
ST	1.0	1700	673	0	-8	665	0.39
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	21	0	6	27	0.02
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	172	0	0	172	0.09-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.16 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	757	0	-12	745	0.44
NR	1.0	1700	30	0	14	44	0.03-
SL	1.0	1700	163	0	0	163	0.10
ST	1.0	1700	1621	0	-32	1589	0.93*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	12	0	14	26	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	28	0	0	28	0.02-
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.00 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	11	0	7	18	0.01
NT	1.0	1700	1609	0	-28	1581	0.93*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	691	0	-2	689	0.41
SR	1.0	1700	57	0	0	57	0.03-
EL	0.0	1700	318	0	0	318	0.19
ET	1.0	1700	0	0	0	0	0.20*
ER	0.0	1700	16	0	9	25	0.01
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.18 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	45	0	21	66	0.04*
NT	1.0	1700	807	0	2	809	0.48
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	1423	0	-18	1405	0.83*
SR	1.0	1700	318	0	0	318	0.16-
EL	0.0	1700	73	0	0	73	0.04
ET	1.0	1700	0	0	0	0	0.06*
ER	0.0	1700	9	0	22	31	0.02
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.98 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	1.0	1700	1181	0	-35	1146	0.67*	
NR	1.0	1700	56	0	30	86	0.04-	
SL	1.0	1700	190	0	19	209	0.12*	
ST	1.0	1700	517	0	-12	505	0.30	
SR	0.0	0	0	0	0	0	0.00	
EL	0.0	0	0	0	0	0	0.00	
ET	0.0	0	0	0	0	0	0.00	
ER	0.0	0	0	0	0	0	0.00	
WL	1.0	1700	79	0	19	98	0.06	
WT	0.0	0	0	0	0	0	0.00	
WR	1.0	1700	452	0	14	466	0.23-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		1.07	F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	1.0	1700	688	0	-22	666	0.39*	
NR	1.0	1700	145	0	67	212	0.10-	
SL	1.0	1700	379	0	46	425	0.25*	
ST	1.0	1700	1058	0	-42	1016	0.60	
SR	0.0	0	0	0	0	0	0.00	
EL	0.0	0	0	0	0	0	0.00	
ET	0.0	0	0	0	0	0	0.00	
ER	0.0	0	0	0	0	0	0.00	
WL	1.0	1700	61	0	66	127	0.07	
WT	0.0	0	0	0	0	0	0.00	
WR	1.0	1700	160	0	45	205	0.10-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.79	C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	48	0	-9	39	0.02
NT	1.0	1700	1044	0	-23	1021	0.60*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	590	0	-6	584	0.34
SR	1.0	1700	18	0	13	31	0.02-
EL	0.0	1700	149	0	18	167	0.10
ET	1.0	1700	0	0	0	0	0.24*
ER	0.0	1700	237	0	-3	234	0.14
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.89 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	222	0	-5	217	0.13*
NT	1.0	1700	772	0	2	774	0.46
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	1045	0	-18	1027	0.60*
SR	1.0	1700	38	0	42	80	0.04-
EL	0.0	1700	51	0	43	94	0.06
ET	1.0	1700	0	0	0	0	0.14*
ER	0.0	1700	150	0	-10	140	0.08
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.92 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1175	0	-39	1136	0.67*
NR	1.0	1700	26	0	0	26	0.02-
SL	1.0	1700	6	0	4	10	0.01*
ST	1.0	1700	881	0	-129	752	0.44
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	182	0	0	182	0.11
WT	1.0	1700	0	0	0	0	0.14*
WR	0.0	1700	56	0	6	62	0.04
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	1051	0	-145	906	0.53
NR	1.0	1700	132	0	0	132	0.07-
SL	1.0	1700	39	0	14	53	0.03
ST	1.0	1700	1246	0	-70	1176	0.69*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	64	0	0	64	0.04
WT	1.0	1700	0	0	0	0	0.05*
WR	0.0	1700	15	0	14	29	0.02
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.79 C

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	159	0	0	159	0.09	
NT	1.0	1700	1134	0	-21	1113	0.65*	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00*	
ST	1.0	1700	792	0	-70	722	0.42	
SR	1.0	1700	296	0	-59	237	0.12-	
EL	1.0	1700	220	0	-18	202	0.12	
ET	0.0	0	0	0	0	0	0.00	
ER	1.0	1700	480	0	0	480	0.24-*	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.94	E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	479	0	0	479	0.28*	
NT	1.0	1700	1070	0	-79	991	0.58	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00	
ST	1.0	1700	1250	0	-39	1211	0.71*	
SR	1.0	1700	143	0	-31	112	0.06-	
EL	1.0	1700	289	0	-66	223	0.13	
ET	0.0	0	0	0	0	0	0.00	
ER	1.0	1700	406	0	0	406	0.20-*	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		1.24	F

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	308	0	0	308	0.09	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	997	0	0	997	0.50-*	
EL	1.0	1700	173	0	0	173	0.10*	
ET	2.0	3400	370	0	-20	350	0.10	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	469	0	-61	408	0.12*	
WR	1.0	1700	120	0	0	120	0.06-	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.77	C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	226	0	0	226	0.07	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	326	0	0	326	0.16-*	
EL	1.0	1700	910	0	0	910	0.54*	
ET	2.0	3400	515	0	-72	443	0.13	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	283	0	-37	246	0.07	
WR	1.0	1700	424	0	0	424	0.21-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.96	E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	279	0	0	279	0.16*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	582	0	-8	574	0.00-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	433	0	-14	419	0.17*
ER	0.0	1700	151	0	0	151	0.09
WL	2.0	3400	1253	0	-26	1227	0.36*
WT	2.0	3400	906	0	-44	862	0.25
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	176	0	0	176	0.10
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	1401	0	-30	1371	0.42-*
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	1100	0	-50	1050	0.54*
ER	0.0	1700	788	0	0	788	0.46
WL	2.0	3400	1106	0	-15	1091	0.32*
WT	2.0	3400	552	0	-25	527	0.16
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.33 F

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	250	0	0	250	0.07
NT	3.0	5100	2609	0	0	2609	0.51*
NR	1.0	1700	992	0	-12	980	0.49-
SL	2.0	3400	585	0	-9	576	0.17*
ST	3.0	5100	675	0	.0	675	0.13
SR	1.0	1700	30	0	0	30	0.02-
EL	1.0	1700	10	0	0	10	0.01*
ET	1.5	2550	10	0	0	10	0.01
ER	1.5	2550	40	0	0	40	0.02-
WL	2.0	3400	785	0	-35	750	0.22
WT	1.0	1700	30	0	0	30	0.02
WR	1.0	1700	960	0	-26	934	0.47-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.21 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	30	0	0	30	0.01
NT	3.0	5100	1371	0	0	1371	0.27
NR	1.0	1700	806	0	-42	764	0.38-*
SL	2.0	3400	817	0	-31	786	0.23*
ST	3.0	5100	2808	0	0	2808	0.55
SR	1.0	1700	10	0	0	10	0.01-
EL	1.0	1700	20	0	0	20	0.01*
ET	1.5	2550	30	0	0	30	0.01
ER	1.5	2550	230	0	0	230	0.08-
WL	2.0	3400	1005	0	-22	983	0.29
WT	1.0	1700	10	0	0	10	0.01
WR	1.0	1700	768	0	-16	752	0.37-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.04 F

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	871	0	0	871	0.26
NT	2.0	3400	2683	0	0	2683	0.79*
NR >>	1.0	1700	54	0	-9	45	0.03
SL	1.0	1700	125	0	0	125	0.07*
ST	2.0	3400	1185	0	0	1185	0.35
SR >>	1.0	1700	204	0	-35	169	0.10
EL	1.0	1700	227	0	-12	215	0.13*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	60	0	0	60	0.04
WL	1.0	1700	115	0	-3	112	0.07
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	1002	0	0	1002	0.59
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.04 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	175	0	0	175	0.05
NT	2.0	3400	1924	0	0	1924	0.57*
NR >>	1.0	1700	73	0	-5	68	0.04
SL	1.0	1700	1261	0	0	1261	0.74*
ST	2.0	3400	2842	0	0	2842	0.84
SR >>	1.0	1700	124	0	-22	102	0.06
EL	1.0	1700	170	0	-42	128	0.08*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	890	0	0	890	0.52
WL	1.0	1700	62	0	-10	52	0.03
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	226	0	0	226	0.13
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.44 F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	412	0	0	412	0.12
NT	4.0	6800	2643	0	0	2643	0.39*
NR	1.0	1700	76	0	-3	73	0.03-
SL	2.0	3400	187	0	-3	184	0.05*
ST	3.0	5100	762	0	0	762	0.15
SR	1.0	1700	236	0	0	236	0.12-
EL	1.0	1700	581	0	0	581	0.34*
ET	3.0	5100	379	0	-8	371	0.07
ER >>	1.0	1700	440	0	0	440	0.26
WL	1.0	1700	41	0	-9	32	0.02
WT	3.0	5100	623	0	-26	597	0.12
WR	1.0	1700	744	0	-9	735	0.37-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.20 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	321	0	0	321	0.09*
NT	4.0	6800	1535	0	0	1535	0.23
NR	1.0	1700	121	0	-10	111	0.06-
SL	2.0	3400	969	0	-10	959	0.28
ST	3.0	5100	3115	0	0	3115	0.61*
SR	1.0	1700	465	0	0	465	0.23-
EL	1.0	1700	362	0	0	362	0.21*
ET	3.0	5100	938	0	-30	908	0.18
ER >>	1.0	1700	787	0	0	787	0.46
WL	1.0	1700	45	0	-5	40	0.02
WT	3.0	5100	323	0	-15	308	0.06
WR	1.0	1700	355	0	-5	350	0.18-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.14 F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	1750	0	-32	1718	0.51*
NR	1.0	1700	9	0	4	13	0.01-
SL	1.0	1700	17	0	0	17	0.01*
ST	2.0	3400	673	0	-8	665	0.20
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	21	0	6	27	0.02
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	172	0	0	172	0.09-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.66 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	2.0	3400	757	0	-12	745	0.22
NR	1.0	1700	30	0	14	44	0.03-
SL	1.0	1700	163	0	0	163	0.10
ST	2.0	3400	1621	0	-32	1589	0.47*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	12	0	14	26	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	28	0	0	28	0.02-
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.54 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	11	0	7	18	0.01
NT	2.0	3400	1609	0	-28	1581	0.47*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	2.0	3400	691	0	-2	689	0.20
SR	1.0	1700	57	0	0	57	0.03-
EL	0.0	1700	318	0	0	318	0.19
ET	1.0	1700	0	0	0	0	0.20*
ER	0.0	1700	16	0	9	25	0.01
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.72 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	45	0	21	66	0.04*
NT	2.0	3400	807	0	2	809	0.24
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	2.0	3400	1423	0	-18	1405	0.41*
SR	1.0	1700	318	0	0	318	0.16-
EL	0.0	1700	73	0	0	73	0.04
ET	1.0	1700	0	0	0	0	0.06*
ER	0.0	1700	9	0	22	31	0.02
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.56 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	1181	0	-35	1146	0.34*
NR	1.0	1700	56	0	30	86	0.04-
SL	1.0	1700	190	0	19	209	0.12*
ST	2.0	3400	517	0	-12	505	0.15
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	79	0	19	98	0.06
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	452	0	14	466	0.23-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	688	0	-22	666	0.20*
NR	1.0	1700	145	0	67	212	0.10-
SL	1.0	1700	379	0	46	425	0.25*
ST	2.0	3400	1058	0	-42	1016	0.30
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	61	0	66	127	0.07
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	160	0	45	205	0.10-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.60 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	48	0	-9	39	0.02
NT	2.0	3400	1044	0	-23	1021	0.30*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	2.0	3400	590	0	-6	584	0.17
SR	1.0	1700	18	0	13	31	0.02-
EL	0.0	1700	149	0	18	167	0.10
ET	1.0	1700	0	0	0	0	0.24*
ER	0.0	1700	237	0	-3	234	0.14
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.59 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	222	0	-5	217	0.13*
NT	2.0	3400	772	0	2	774	0.23
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	2.0	3400	1045	0	-18	1027	0.30*
SR	1.0	1700	38	0	42	80	0.04-
EL	0.0	1700	51	0	43	94	0.06
ET	1.0	1700	0	0	0	0	0.14*
ER	0.0	1700	150	0	-10	140	0.08
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.05
Sum of Critical Movements = 0.62 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	1175	0	-39	1136	0.33*
NR	1.0	1700	26	0	0	26	0.02-
SL	1.0	1700	6	0	4	10	0.01*
ST	2.0	3400	881	0	-129	752	0.22
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	182	0	0	182	0.11
WT	1.0	1700	0	0	0	0	0.14*
WR	0.0	1700	56	0	6	62	0.04
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.53 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	2.0	3400	1051	0	-145	906	0.27
NR	1.0	1700	132	0	0	132	0.07-
SL	1.0	1700	39	0	14	53	0.03
ST	2.0	3400	1246	0	-70	1176	0.35*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	64	0	0	64	0.04
WT	1.0	1700	0	0	0	0	0.05*
WR	0.0	1700	15	0	14	29	0.02
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.45 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	159	0	0	159	0.09
NT	2.0	3400	1134	0	-21	1113	0.33*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	2.0	3400	792	0	-70	722	0.21
SR	1.0	1700	296	0	-59	237	0.12-
EL	1.0	1700	220	0	-18	202	0.12
ET	0.0	0	0	0	0	0	0.00
ER >	1.0	1700	480	0	0	480	0.16-*
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	479	0	0	479	0.28*
NT	2.0	3400	1070	0	-79	991	0.29
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	2.0	3400	1250	0	-39	1211	0.36*
SR	1.0	1700	143	0	-31	112	0.06-
EL	1.0	1700	289	0	-66	223	0.13*
ET	0.0	0	0	0	0	0	0.00
ER >	1.0	1700	406	0	0	406	0.00-
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.82 D

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	2.0	3400	308	0	0	308	0.09
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1700	997	0	0	997	0.50-*
EL	2.0	3400	173	0	0	173	0.05*
ET	2.0	3400	370	0	-20	350	0.10
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	469	0	-61	408	0.12*
WR	1.0	1700	120	0	0	120	0.06-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.72 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	2.0	3400	226	0	0	226	0.07
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1700	326	0	0	326	0.16-*
EL	2.0	3400	910	0	0	910	0.27*
ET	2.0	3400	515	0	-72	443	0.13
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3400	283	0	-37	246	0.07
WR	1.0	1700	424	0	0	424	0.21-*
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.69 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	279	0	0	279	0.16*
NT	0.0	0	0	0	0	0	0.00
NR >	2.0	3400	582	0	-8	574	0.00-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	3.0	5100	433	0	-14	419	0.08*
ER >	1.0	1700	151	0	0	151	0.00-
WL	2.0	3400	1253	0	-26	1227	0.36*
WT	3.0	5100	906	0	-44	862	0.17
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.65 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	176	0	0	176	0.10*
NT	0.0	0	0	0	0	0	0.00
NR >	2.0	3400	1401	0	-30	1371	0.07-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	3.0	5100	1100	0	-50	1050	0.21
ER >	1.0	1700	788	0	0	788	0.31-*
WL	2.0	3400	1106	0	-15	1091	0.32*
WT	3.0	5100	552	0	-25	527	0.10
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.78 C

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	250	0	0	250	0.07
NT	3.0	5100	2609	0	0	2609	0.51*
NR >	1.0	1700	992	0	-12	980	0.37-
SL	2.0	3400	585	0	-9	576	0.17*
ST	3.0	5100	675	0	0	675	0.13
SR	1.0	1700	30	0	0	30	0.02-
EL	1.0	1700	10	0	0	10	0.01
ET	1.5	2550	10	0	0	10	0.01
ER	1.5	2550	40	0	0	40	0.02-*
WL	3.0	5100	785	0	-35	750	0.15*
WT	1.0	1700	30	0	0	30	0.02
WR >>	1.0	1700	960	0	-26	934	0.55
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	30	0	0	30	0.01*
NT	3.0	5100	1371	0	0	1371	0.27
NR >	1.0	1700	806	0	-42	764	0.22-
SL	2.0	3400	817	0	-31	786	0.23
ST	3.0	5100	2808	0	0	2808	0.55*
SR	1.0	1700	10	0	0	10	0.01-
EL	1.0	1700	20	0	0	20	0.01
ET	1.5	2550	30	0	0	30	0.01
ER	1.5	2550	230	0	0	230	0.08-*
WL	3.0	5100	1005	0	-22	983	0.19*
WT	1.0	1700	10	0	0	10	0.01
WR >>	1.0	1700	768	0	-16	752	0.44
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.88 D

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	871	0	0	871	0.26
NT	3.0	5100	2683	0	0	2683	0.53*
NR >>	1.0	1700	54	0	-9	45	0.03
SL	2.0	3400	125	0	0	125	0.04*
ST	3.0	5100	1185	0	0	1185	0.23
SR >>	1.0	1700	204	0	-35	169	0.10
EL	1.0	1700	227	0	-12	215	0.13*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	60	0	0	60	0.04
WL	1.0	1700	115	0	-3	112	0.07
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	1002	0	0	1002	0.59
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.75 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	175	0	0	175	0.05
NT	3.0	5100	1924	0	0	1924	0.38*
NR >>	1.0	1700	73	0	-5	68	0.04
SL	2.0	3400	1261	0	0	1261	0.37*
ST	3.0	5100	2842	0	0	2842	0.56
SR >>	1.0	1700	124	0	-22	102	0.06
EL	1.0	1700	170	0	-42	128	0.08*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	890	0	0	890	0.52
WL	1.0	1700	62	0	-10	52	0.03
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	226	0	0	226	0.13
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.88 D

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	412	0	0	412	0.12
NT	4.0	6800	2643	0	0	2643	0.39*
NR	1.0	1700	76	0	-3	73	0.03-
SL	2.0	3400	187	0	-3	184	0.05*
ST	3.0	5100	762	0	0	762	0.15
SR	1.0	1700	236	0	0	236	0.12-
EL	2.0	3400	581	0	0	581	0.17*
ET	3.0	5100	379	0	-8	371	0.07
ER >>	1.0	1700	440	0	0	440	0.26
WL	1.0	1700	41	0	-9	32	0.02
WT	2.0	3400	623	0	-26	597	0.18*
WR >	2.0	3400	744	0	-9	735	0.14-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.84 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	321	0	0	321	0.09*
NT	4.0	6800	1535	0	0	1535	0.23
NR	1.0	1700	121	0	-10	111	0.06-
SL	2.0	3400	969	0	-10	959	0.28
ST	3.0	5100	3115	0	0	3115	0.61*
SR	1.0	1700	465	0	0	465	0.23-
EL	2.0	3400	362	0	0	362	0.11*
ET	3.0	5100	938	0	-30	908	0.18
ER >>	1.0	1700	787	0	0	787	0.46
WL	1.0	1700	45	0	-5	40	0.02
WT	2.0	3400	323	0	-15	308	0.09*
WR >	2.0	3400	355	0	-5	350	0.00-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.95 E

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions Without Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	412	0	0	412	0.12
NT	4.0	6800	2643	0	0	2643	0.39*
NR	1.0	1700	76	0	-3	73	0.03-
SL	2.0	3400	187	0	-3	184	0.05*
ST	4.0	6800	762	0	0	762	0.15
SR	0.0	1700	236	0	0	236	0.14
EL	2.0	3400	581	0	0	581	0.17*
ET	3.0	5100	379	0	-8	371	0.07
ER >>	1.0	1700	440	0	0	440	0.26
WL	1.0	1700	41	0	-9	32	0.02
WT	2.0	3400	623	0	-26	597	0.18*
WR >	2.0	3400	744	0	-9	735	0.14-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.84 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	321	0	0	321	0.09*
NT	4.0	6800	1535	0	0	1535	0.23
NR	1.0	1700	121	0	-10	111	0.06-
SL	2.0	3400	969	0	-10	959	0.28
ST	4.0	6800	3115	0	0	3115	0.53*
SR	0.0	1700	465	0	0	465	0.27
EL	2.0	3400	362	0	0	362	0.11*
ET	3.0	5100	938	0	-30	908	0.18
ER >>	1.0	1700	787	0	0	787	0.46
WL	1.0	1700	45	0	-5	40	0.02
WT	2.0	3400	323	0	-15	308	0.09*
WR >	2.0	3400	355	0	-5	350	0.00-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.87 D

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX H

ICU CALCULATIONS - YEAR 2020 WITH PROJECT

* Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)
2 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	1750	757	1248	461
NR	9	30	5	17
SL	17	163	9	34
ST	673	1621	349	865
SR	0	0	0	0
EL	0	0	0	0
ET	0	0	0	0
ER	0	0	0	0
WL	21	12	12	7
WT	0	0	0	0
WR	172	28	44	15
* Totals	2642	2611		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	690	1784			
* North Leg OUT	1922	785			
* North Leg TOTAL	2612	2569	11	11	24000
* South Leg IN	1759	787			
* South Leg OUT	694	1633			
* South Leg TOTAL	2453	2420	11	11	22000
* East Leg IN	193	40			
* East Leg OUT	26	193			
* East Leg TOTAL	219	233	11	12	2000
* West Leg IN	0	0			
* West Leg OUT	0	0			
* West Leg TOTAL	0	0	0	0	0
* TOTALS	5284	5222	11	11	48000

* Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)
3 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	11	45	5	20
NT	1609	807	1069	452
NR	0	0	0	0
SL	0	0	0	0
ST	691	1423	387	797
SR	57	318	28	156
EL	318	73	156	36
ET	0	0	0	0
ER	16	9	7	4
WL	0	0	0	0
WT	0	0	0	0
WR	0	0	0	0
* Totals	2702	2675		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	748	1741			
* North Leg OUT	1927	880			
* North Leg TOTAL	2675	2621	12	12	22000
* South Leg IN	1620	852			
* South Leg OUT	707	1432			
* South Leg TOTAL	2327	2284	12	11	20000
* East Leg IN	0	0			
* East Leg OUT	0	0			
* East Leg TOTAL	0	0	0	0	0
* West Leg IN	334	82			
* West Leg OUT	68	363			
* West Leg TOTAL	402	445	8	9	5000
* TOTALS	5404	5350	11	11	47000

* Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)
4 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	1181	688	813	378
NR	56	145	37	95
SL	190	379	112	223
ST	517	1058	284	581
SR	0	0	0	0
EL	0	0	0	0
ET	0	0	0	0
ER	0	0	0	0
WL	79	61	52	40
WT	0	0	0	0
WR	452	160	266	94
* Totals	2475	2491		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	707	1437			
* North Leg OUT	1633	848			
* North Leg TOTAL	2340	2285	12	11	20000
* South Leg IN	1237	833			
* South Leg OUT	596	1119			
* South Leg TOTAL	1833	1952	8	8	23000
* East Leg IN	531	221			
* East Leg OUT	246	524			
* East Leg TOTAL	777	745	11	11	7000
* West Leg IN	0	0			
* West Leg OUT	0	0			
* West Leg TOTAL	0	0	0	0	0
* TOTALS	4950	4982	10	10	50000

*

* Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)
5 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	48	222	25	115
NT	1044	772	768	441
NR	0	0	0	0
SL	0	0	0	0
ST	590	1045	337	597
SR	18	38	10	21
EL	149	51	82	28
ET	0	0	0	0
ER	237	150	123	78
WL	0	0	0	0
WT	0	0	0	0
WR	0	0	0	0
* Totals	2086	2278		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	608	1083			
* North Leg OUT	1193	823			
* North Leg TOTAL	1801	1906	8	8	23000
* South Leg IN	1092	994			
* South Leg OUT	827	1195			
* South Leg TOTAL	1919	2189	7	8	26000
* East Leg IN	0	0			
* East Leg OUT	0	0			
* East Leg TOTAL	0	0	0	0	0
* West Leg IN	386	201			
* West Leg OUT	66	260			
* West Leg TOTAL	452	461	11	12	4000
* TOTALS	4172	4556	8	9	53000

* Intersection: El Toro Rd. (NS) / Project Entrance (EW)
6 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	1089	909	0	0
NR	71	191	0	0
SL	24	64	0	0
ST	748	1133	0	0
SR	0	0	0	0
EL	0	0	0	0
ET	0	0	0	0
ER	0	0	0	0
WL	191	120	0	0
WT	0	0	0	0
WR	64	40	0	0
* Totals	2187	2457		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	772	1197			
* North Leg OUT	1153	949			
* North Leg TOTAL	1925	2146	7	8	26000
* South Leg IN	1160	1100			
* South Leg OUT	939	1253			
* South Leg TOTAL	2099	2353	8	9	26000
* East Leg IN	255	160			
* East Leg OUT	95	255			
* East Leg TOTAL	350	415	12	14	3000
* West Leg IN	0	0			
* West Leg OUT	0	0			
* West Leg TOTAL	0	0	0	0	0
* TOTALS	4374	4914	8	9	55000

* Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)
7 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	1175	1051	765	545
NR	26	132	13	66
SL	6	39	3	20
ST	881	1246	457	646
SR	0	0	0	0
EL	0	0	0	0
ET	0	0	0	0
ER	0	0	0	0
WL	182	64	91	32
WT	0	0	0	0
WR	56	15	29	8
* Totals	2326	2547		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	887	1285			
* North Leg OUT	1231	1066			
* North Leg TOTAL	2118	2351	8	9	26000
* South Leg IN	1201	1183			
* South Leg OUT	1063	1310			
* South Leg TOTAL	2264	2493	8	9	28000
* East Leg IN	238	79			
* East Leg OUT	32	171			
* East Leg TOTAL	270	250	14	13	2000
* West Leg IN	0	0			
* West Leg OUT	0	0			
* West Leg TOTAL	0	0	0	0	0
* TOTALS	4652	5094	8	9	56000

* Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)
8 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	159	479	43	130
NT	1134	1070	740	552
NR	0	0	0	0
SL	0	0	0	0
ST	792	1250	409	645
SR	296	143	79	38
EL	220	289	32	77
ET	0	0	0	0
ER	480	406	103	110
WL	0	0	0	0
WT	0	0	0	0
WR	0	0	0	0
* Totals	3081	3637		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	1088	1393			
* North Leg OUT	1354	1359			
* North Leg TOTAL	2442	2752	9	10	28000
* South Leg IN	1293	1549			
* South Leg OUT	1272	1656			
* South Leg TOTAL	2565	3205	9	11	30000
* East Leg IN	0	0			
* East Leg OUT	0	0			
* East Leg TOTAL	0	0	0	0	0
* West Leg IN	700	695			
* West Leg OUT	455	622			
* West Leg TOTAL	1155	1317	5	6	22000
* TOTALS	6162	7274	8	9	80000

* Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)
18 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	0	0	0	0
NT	0	0	0	0
NR	0	0	0	0
SL	308	226	82	87
ST	0	0	0	0
SR	997	326	352	96
EL	173	910	51	297
ET	370	515	33	100
ER	0	0	0	0
WL	0	0	0	0
WT	469	283	91	55
WR	120	424	32	113
* Totals	2437	2684		

* Intersection Peak Hour Leg Volumes	--AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	1305	552			
* North Leg OUT	293	1334			
* North Leg TOTAL	1598	1886	13	16	12000
* South Leg IN	0	0			
* South Leg OUT	0	0			
* South Leg TOTAL	0	0	0	0	0
* East Leg IN	589	707			
* East Leg OUT	678	741			
* East Leg TOTAL	1267	1448	6	7	22000
* West Leg IN	543	1425			
* West Leg OUT	1466	609			
* West Leg TOTAL	2009	2034	8	8	24000
* TOTALS	4874	5368	8	9	58000

* Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)
10 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	279	176	158	58
NT	0	0	0	0
NR	582	1401	278	427
SL	0	0	0	0
ST	0	0	0	0
SR	0	0	0	0
EL	0	0	0	0
ET	433	1100	207	287
ER	151	788	50	194
WL	1253	1106	339	571
WT	906	552	290	216
WR	0	0	0	0
* Totals	3604	5123		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	0	0			
* North Leg OUT	0	0			
* North Leg TOTAL	0	0	0	0	0
* South Leg IN	861	1577			
* South Leg OUT	1404	1894			
* South Leg TOTAL	2265	3471	5	8	45000
* East Leg IN	2159	1658			
* East Leg OUT	1015	2501			
* East Leg TOTAL	3174	4159	11	14	30000
* West Leg IN	584	1888			
* West Leg OUT	1185	728			
* West Leg TOTAL	1769	2616	6	9	30000
* TOTALS	7208	10246	7	10	105000

* Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)
20 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	250	30	0	0
NT	2609	1371	1855	552
NR	992	806	22	145
SL	585	817	45	126
ST	675	2808	312	1935
SR	30	10	0	0
EL	10	20	0	0
ET	10	30	0	0
ER	40	230	0	0
WL	785	1005	140	73
WT	30	10	0	0
WR	960	768	234	41
* Totals	6976	7905		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	1290	3635			
* North Leg OUT	3579	2159			
* North Leg TOTAL	4869	5794	9	11	53000
* South Leg IN	3851	2207			
* South Leg OUT	1500	4043			
* South Leg TOTAL	5351	6250	8	10	64000
* East Leg IN	1775	1783			
* East Leg OUT	1587	1653			
* East Leg TOTAL	3362	3436	12	12	29000
* West Leg IN	60	280			
* West Leg OUT	310	50			
* West Leg TOTAL	370	330	0	0	0
* TOTALS	13952	15810	10	11	146000

* Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)
21 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	871	175	345	44
NT	2683	1924	1049	455
NR	54	73	14	19
SL	125	1261	38	415
ST	1185	2842	219	1547
SR	204	124	60	7
EL	227	170	8	50
ET	0	0	0	0
ER	60	890	15	224
WL	115	62	30	16
WT	0	0	0	0
WR	1002	226	458	69
* Totals	6526	7747		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	1514	4227			
* North Leg OUT	3912	2320			
* North Leg TOTAL	5426	6547	8	10	64000
* South Leg IN	3608	2172			
* South Leg OUT	1360	3794			
* South Leg TOTAL	4968	5966	7	8	74000
* East Leg IN	1117	288			
* East Leg OUT	179	1334			
* East Leg TOTAL	1296	1622	6	8	20000
* West Leg IN	287	1060			
* West Leg OUT	1075	299			
* West Leg TOTAL	1362	1359	8	8	17000
* TOTALS	13052	15494	7	9	175000

* Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)
11 * Intersection #

* Move	Future Peak Hour Volumes AM	PM	Existing Peak Hour Volumes AM	PM
NL	412	321	413	377
NT	2643	1535	1105	376
NR	76	121	37	59
SL	187	969	29	256
ST	762	3115	204	1240
SR	236	465	81	91
EL	581	362	62	90
ET	379	938	171	333
ER	440	787	224	502
WL	41	45	20	22
WT	623	323	326	191
WR	744	355	281	85
* Totals	7124	9336		

* Intersection	Peak Hour Leg Volumes --AM--	--PM--	Percent of ADT --AM--	--PM--	ADT
* North Leg IN	1185	4549			
* North Leg OUT	3968	2252			
* North Leg TOTAL	5153	6801	7	9	74000
* South Leg IN	3131	1977			
* South Leg OUT	1243	3947			
* South Leg TOTAL	4374	5924	9	13	47000
* East Leg IN	1408	723			
* East Leg OUT	642	2028			
* East Leg TOTAL	2050	2751	7	9	30000
* West Leg IN	1400	2087			
* West Leg OUT	1271	1109			
* West Leg TOTAL	2671	3196	8	9	34000
* TOTALS	14248	18672	8	10	185000

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1750	72	-32	1790	1.05*
NR	1.0	1700	9	1	4	14	0.01-
SL	1.0	1700	17	0	0	17	0.01*
ST	1.0	1700	673	27	-8	692	0.41
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	21	1	6	28	0.02
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	172	0	0	172	0.09-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.20 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	757	59	-12	804	0.47
NR	1.0	1700	30	4	14	48	0.03-
SL	1.0	1700	163	0	0	163	0.10
ST	1.0	1700	1621	74	-32	1663	0.98*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	12	4	14	30	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	28	0	0	28	0.02-
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.05 F

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	11	1	7	19	0.01	
NT	1.0	1700	1609	73	-28	1654	0.97*	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00*	
ST	1.0	1700	691-	28	-2	717	0.42	
SR	1.0	1700	57	0	0	57	0.03-	
EL	0.0	1700	318	0	0	318	0.19	
ET	1.0	1700	0	0	0	0	0.20*	
ER	0.0	1700	16	1	9	26	0.02	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		1.22	F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	1.0	1700	45	4	21	70	0.04*	
NT	1.0	1700	807	63	2	872	0.51	
NR	0.0	0	0	0	0	0	0.00	
SL	0.0	0	0	0	0	0	0.00	
ST	1.0	1700	1423	78	-18	1483	0.87*	
SR	1.0	1700	318	0	0	318	0.16-	
EL	0.0	1700	73	0	0	73	0.04	
ET	1.0	1700	0	0	0	0	0.06*	
ER	0.0	1700	9	4	22	35	0.02	
WL	0.0	0	0	0	0	0	0.00	
WT	0.0	0	0	0	0	0	0.00	
WR	0.0	0	0	0	0	0	0.00	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		1.02	F

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1181	74	-35	1220	0.72*
NR	1.0	1700	56	2	30	88	0.04-
SL	1.0	1700	190	0	19	209	0.12*
ST	1.0	1700	517	29	-12	534	0.31
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	79	4	19	102	0.06
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	452	0	14	466	0.23-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.12 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	688	67	-22	733	0.43*
NR	1.0	1700	145	12	67	224	0.11-
SL	1.0	1700	379	0	46	425	0.25*
ST	1.0	1700	1058	82	-42	1098	0.65
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	61	12	66	139	0.08
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	160	0	45	205	0.10-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.83 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	48	19	-9	58	0.03
NT	1.0	1700	1044	76	-23	1097	0.65*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	590	33	-6	617	0.36
SR	1.0	1700	18	0	13	31	0.02-
EL	0.0	1700	149	0	18	167	0.10
ET	1.0	1700	0	0	0	0	0.24*
ER	0.0	1700	237	9	-3	243	0.14
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.94 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	222	21	-5	238	0.14*
NT	1.0	1700	772	79	2	853	0.50
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	1045	94	-18	1121	0.66*
SR	1.0	1700	38	0	42	80	0.04-
EL	0.0	1700	51	0	43	94	0.06
ET	1.0	1700	0	0	0	0	0.15*
ER	0.0	1700	150	24	-10	164	0.10
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.00 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1089	6	12	1107	0.65*
NR	1.0	1700	71	84	-45	110	0.05-
SL	1.0	1700	24	30	-15	39	0.02*
ST	1.0	1700	748	12	6	766	0.45
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	191	248	-131	308	0.18*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	64	89	-44	109	0.05-
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	909	36	24	969	0.57
NR	1.0	1700	191	228	-155	264	0.14-
SL	1.0	1700	64	82	-52	94	0.06
ST	1.0	1700	1133	36	24	1193	0.70*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	120	178	-80	218	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	40	64	-27	77	0.04-
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.88 D

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1700	1175	84	-39	1220	0.72*
NR	1.0	1700	26	6	0	32	0.02-
SL	1.0	1700	6	12	4	22	0.01*
ST	1.0	1700	881	248	-129	1000	0.59
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	182	6	0	188	0.11
WT	1.0	1700	0	0	0	0	0.15*
WR	0.0	1700	56	6	6	68	0.04
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.93 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1700	1051	228	-145	1134	0.67
NR	1.0	1700	132	24	0	156	0.08-
SL	1.0	1700	39	36	14	89	0.05
ST	1.0	1700	1246	178	-70	1354	0.80*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	64	24	0	88	0.05
WT	1.0	1700	0	0	0	0	0.09*
WR	0.0	1700	15	36	14	65	0.04
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.94 E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	159	0	0	159	0.09
NT	1.0	1700	1134	51	-21	1164	0.68*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1700	792	145	-70	867	0.51
SR	1.0	1700	296	109	-59	346	0.17-
EL	1.0	1700	220	39	-18	241	0.14
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	480	0	0	480	0.24-*
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.97 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	479	0	0	479	0.28*
NT	1.0	1700	1070	142	-79	1133	0.67
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1700	1250	114	-39	1325	0.78*
SR	1.0	1700	143	88	-31	200	0.10-
EL	1.0	1700	289	110	-66	333	0.20*
ET	0.0	0	0	0	0	0	0.00
ER	1.0	1700	406	0	0	406	0.20-
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.31 F

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	308	1	0	309	0.09	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	997	0	0	997	0.50-*	
EL	1.0	1700	173	0	0	173	0.10*	
ET	2.0	3400	370	38	-20	388	0.11	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	469	108	-61	516	0.15*	
WR	1.0	1700	120	1	0	121	0.06-	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.80	C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	226	4	0	230	0.07	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	326	0	0	326	0.16-*	
EL	1.0	1700	910	0	0	910	0.54*	
ET	2.0	3400	515	106	-72	549	0.16	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	283	84	-37	330	0.10	
WR	1.0	1700	424	4	0	428	0.21-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.96	E

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	279	0	0	279	0.16*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	582	19	-8	593	0.00-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	433	31	-14	450	0.18*
ER	0.0	1700	151	0	0	151	0.09
WL	2.0	3400	1253	54	-26	1281	0.38*
WT	2.0	3400	906	90	-44	952	0.28
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.77 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	176	0	0	176	0.10
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1700	1401	53	-30	1424	0.43-*
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3400	1100	85	-50	1135	0.57*
ER	0.0	1700	788	0	0	788	0.46
WL	2.0	3400	1106	42	-15	1133	0.33*
WT	2.0	3400	552	68	-25	595	0.18
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.38 F

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	2.0	3400	250	0	0	250	0.07	
NT	3.0	5100	2609	0	0	2609	0.51*	
NR	1.0	1700	992	18	-12	998	0.50-	
SL	2.0	3400	585	13	-9	589	0.17*	
ST	3.0	5100	675	0	0	675	0.13	
SR	1.0	1700	30	0	0	30	0.02-	
EL	1.0	1700	10	0	0	10	0.01*	
ET	1.5	2550	10	0	0	10	0.01	
ER	1.5	2550	40	0	0	40	0.02-	
WL	2.0	3400	785	53	-35	803	0.24	
WT	1.0	1700	30	0	0	30	0.02	
WR	1.0	1700	960	36	-26	970	0.48-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		1.22	F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio	
NL	2.0	3400	30	0	0	30	0.01	
NT	3.0	5100	1371	0	0	1371	0.27	
NR	1.0	1700	806	49	-42	813	0.41-*	
SL	2.0	3400	817	37	-31	823	0.24*	
ST	3.0	5100	2808	0	0	2808	0.55	
SR	1.0	1700	10	0	0	10	0.01-	
EL	1.0	1700	20	0	0	20	0.01*	
ET	1.5	2550	30	0	0	30	0.01	
ER	1.5	2550	230	0	0	230	0.08-	
WL	2.0	3400	1005	38	-22	1021	0.30	
WT	1.0	1700	10	0	0	10	0.01	
WR	1.0	1700	768	29	-16	781	0.39-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		1.10	F

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	871	0	0	871	0.26
NT	2.0	3400	2683	0	0	2683	0.79*
NR >>	1.0	1700	54	18	-9	63	0.04
SL	1.0	1700	125	0	0	125	0.07*
ST	2.0	3400	1185	0	0	1185	0.35
SR >>	1.0	1700	204	53	-35	222	0.13
EL	1.0	1700	227	18	-12	233	0.14*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	60	0	0	60	0.04
WL	1.0	1700	115	6	-3	118	0.07
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	1002	0	0	1002	0.59
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.05 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	175	0	0	175	0.05
NT	2.0	3400	1924	0	0	1924	0.57*
NR >>	1.0	1700	73	13	-5	81	0.05
SL	1.0	1700	1261	0	0	1261	0.74*
ST	2.0	3400	2842	0	0	2842	0.84
SR >>	1.0	1700	124	38	-22	140	0.08
EL	1.0	1700	170	49	-42	177	0.10*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	890	0	0	890	0.52
WL	1.0	1700	62	16	-10	68	0.04
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	226	0	0	226	0.13
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.46 F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Existing

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	412	0	0	412	0.12
NT	4.0	6800	2643	0	0	2643	0.39*
NR	1.0	1700	76	6	-3	79	0.04-
SL	2.0	3400	187	6	-3	190	0.06*
ST	3.0	5100	762	0	0	762	0.15
SR	1.0	1700	236	0	0	236	0.12-
EL	1.0	1700	581	0	0	581	0.34*
ET	3.0	5100	379	19	-8	390	0.08
ER >>	1.0	1700	440	0	0	440	0.26
WL	1.0	1700	41	18	-9	50	0.03
WT	3.0	5100	623	54	-26	651	0.13
WR	1.0	1700	744	18	-9	753	0.37-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.21 F

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	321	0	0	321	0.09*
NT	4.0	6800	1535	0	0	1535	0.23
NR	1.0	1700	121	16	-10	127	0.06-
SL	2.0	3400	969	16	-10	975	0.29
ST	3.0	5100	3115	0	0	3115	0.61*
SR	1.0	1700	465	0	0	465	0.23-
EL	1.0	1700	362	0	0	362	0.21*
ET	3.0	5100	938	53	-30	961	0.19
ER >>	1.0	1700	787	0	0	787	0.46
WL	1.0	1700	45	13	-5	53	0.03
WT	3.0	5100	323	42	-15	350	0.07
WR	1.0	1700	355	13	-5	363	0.18-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		1.14 F

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Modjeska Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

			V O L U M E S				
Move	Lanes	Capacity	Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	1750	72	-32	1790	0.53*
NR	1.0	1700	9	1	4	14	0.01-
SL	1.0	1700	17	0	0	17	0.01*
ST	2.0	3400	673	27	-8	692	0.20
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	21	1	6	28	0.02
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	172	0	0	172	0.09-*
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.68 B

PM Intersection Capacity Analysis

			V O L U M E S				
Move	Lanes	Capacity	Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	2.0	3400	757	59	-12	804	0.24
NR	1.0	1700	30	4	14	48	0.03-
SL	1.0	1700	163	0	0	163	0.10
ST	2.0	3400	1621	74	-32	1663	0.49*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	12	4	14	30	0.02*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	28	0	0	28	0.02-
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.56 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Santiago Cyn. Rd. (NS) / Ridgeline Rd. North (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	11	1	7	19	0.01
NT	2.0	3400	1609	73	-28	1654	0.49*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	2.0	3400	691-	28	-2	717	0.21
SR	1.0	1700	57	0	0	57	0.03-
EL	0.0	1700	318	0	0	318	0.19
ET	1.0	1700	0	0	0	0	0.20*
ER	0.0	1700	16	1	9	26	0.02
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	45	4	21	70	0.04*
NT	2.0	3400	807	63	2	872	0.26
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	2.0	3400	1423	78	-18	1483	0.44*
SR	1.0	1700	318	0	0	318	0.16-
EL	0.0	1700	73	0	0	73	0.04
ET	1.0	1700	0	0	0	0	0.06*
ER	0.0	1700	9	4	22	35	0.02
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.59 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Live Oak Cyn. Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

			V O L U M E S				
Move	Lanes	Capacity	Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	1181	74	-35	1220	0.36*
NR	1.0	1700	56	2	30	88	0.04-
SL	1.0	1700	190	0	19	209	0.12*
ST	2.0	3400	517	29	-12	534	0.16
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	79	4	19	102	0.06
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	452	0	14	466	0.23-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.76 C

PM Intersection Capacity Analysis

			V O L U M E S				
Move	Lanes	Capacity	Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	688	67	-22	733	0.22*
NR	1.0	1700	145	12	67	224	0.11-
SL	1.0	1700	379	0	46	425	0.25*
ST	2.0	3400	1058	82	-42	1098	0.32
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	61	12	66	139	0.08
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	160	0	45	205	0.10-*
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.62 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Ridgeline Rd. South (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	48	19	-9	58	0.03
NT	2.0	3400	1044	76	-23	1097	0.32*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	2.0	3400	590	33	-6	617	0.18
SR	1.0	1700	18	0	13	31	0.02-
EL	0.0	1700	149	0	18	167	0.10
ET	1.0	1700	0	0	0	0	0.24*
ER	0.0	1700	237	9	-3	243	0.14
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.61 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	222	21	-5	238	0.14*
NT	2.0	3400	772	79	2	853	0.25
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	2.0	3400	1045	94	-18	1121	0.33*
SR	1.0	1700	38	0	42	80	0.04-
EL	0.0	1700	51	0	43	94	0.06
ET	1.0	1700	0	0	0	0	0.15*
ER	0.0	1700	150	24	-10	164	0.10
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.67 B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Project Entrance (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	1089	6	12	1107	0.33*
NR	1.0	1700	71	84	-45	110	0.05-
SL	1.0	1700	24	30	-15	39	0.02*
ST	2.0	3400	748	12	6	766	0.23
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	191	248	-131	308	0.18*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	64	89	-44	109	0.05-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.58 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	2.0	3400	909	36	24	969	0.29
NR	1.0	1700	191	228	-155	264	0.14-
SL	1.0	1700	64	82	-52	94	0.06
ST	2.0	3400	1133	36	24	1193	0.35*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1700	120	178	-80	218	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1700	40	64	-27	77	0.04-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.53 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Valley Vista Wy. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3400	1175	84	-39	1220	0.36*
NR	1.0	1700	26	6	0	32	0.02-
SL	1.0	1700	6	12	4	22	0.01*
ST	2.0	3400	881	248	-129	1000	0.29
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	182	6	0	188	0.11
WT	1.0	1700	0	0	0	0	0.15*
WR	0.0	1700	56	6	6	68	0.04
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.57 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	2.0	3400	1051	228	-145	1134	0.33
NR	1.0	1700	132	24	0	156	0.08-
SL	1.0	1700	39	36	14	89	0.05
ST	2.0	3400	1246	178	-70	1354	0.40*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	1700	64	24	0	88	0.05
WT	1.0	1700	0	0	0	0	0.09*
WR	0.0	1700	15	36	14	65	0.04
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.54 A

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: El Toro Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	159	0	0	159	0.09*
NT	2.0	3400	1134	51	-21	1164	0.34
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	2.0	3400	792	145	-70	867	0.26*
SR	1.0	1700	296	109	-59	346	0.17-
EL	2.0	3400	220	39	-18	241	0.07
ET	0.0	0	0	0	0	0	0.00
ER >	1.0	1700	480	0	0	480	0.16-*
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.56 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	479	0	0	479	0.28*
NT	2.0	3400	1070	142	-79	1133	0.33
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00
ST	2.0	3400	1250	114	-39	1325	0.39*
SR	1.0	1700	143	88	-31	200	0.10-
EL	2.0	3400	289	110	-66	333	0.10*
ET	0.0	0	0	0	0	0	0.00
ER >	1.0	1700	406	0	0	406	0.00-
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.82 D

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Saddleback Ranch Rd. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	308	1	0	309	0.09	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	997	0	0	997	0.50-*	
EL	2.0	3400	173	0	0	173	0.05*	
ET	2.0	3400	370	38	-20	388	0.11	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	469	108	-61	516	0.15*	
WR	1.0	1700	120	1	0	121	0.06-	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.75	C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	V O L U M E S Background	Project	Other	Total	V/C Ratio	
NL	0.0	0	0	0	0	0	0.00	
NT	0.0	0	0	0	0	0	0.00	
NR	0.0	0	0	0	0	0	0.00	
SL	2.0	3400	226	4	0	230	0.07	
ST	0.0	0	0	0	0	0	0.00	
SR	1.0	1700	326	0	0	326	0.16-*	
EL	2.0	3400	910	0	0	910	0.27*	
ET	2.0	3400	515	106	-72	549	0.16	
ER	0.0	0	0	0	0	0	0.00	
WL	0.0	0	0	0	0	0	0.00	
WT	2.0	3400	283	84	-37	330	0.10	
WR	1.0	1700	424	4	0	428	0.21-*	
							=======	
					Clearance Interval Percentage =		0.05	
					Sum of Critical Movements =		0.69	B

* denotes critical movement
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Marguerite Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	279	0	0	279	0.16*
NT	0.0	0	0	0	0	0	0.00
NR >	2.0	3400	582	19	-8	593	0.00-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	3.0	5100	433	31	-14	450	0.09*
ER >	1.0	1700	151	0	0	151	0.00-
WL	2.0	3400	1253	54	-26	1281	0.38*
WT	3.0	5100	906	90	-44	952	0.19
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.68 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	1.0	1700	176	0	0	176	0.10*
NT	0.0	0	0	0	0	0	0.00
NR >	2.0	3400	1401	53	-30	1424	0.08-
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	3.0	5100	1100	85	-50	1135	0.22
ER >	1.0	1700	788	0	0	788	0.31-*
WL	2.0	3400	1106	42	-15	1133	0.33*
WT	3.0	5100	552	68	-25	595	0.12
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.79 C

* denotes critical movement
\> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Glenn Ranch Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	250	0	0	250	0.07
NT	3.0	5100	2609	0	0	2609	0.51*
NR >	1.0	1700	992	18	-12	998	0.37-
SL	2.0	3400	585	13	-9	589	0.17*
ST	3.0	5100	675	0	0	675	0.13
SR	1.0	1700	30	0	0	30	0.02-
EL	1.0	1700	10	0	0	10	0.01
ET	1.0	1700	10	0	0	10	0.01*
ER	2.0	3400	40	0	0	40	0.01-
WL	3.0	5100	785	53	-35	803	0.16*
WT	1.0	1700	30	0	0	30	0.02
WR >>	1.0	1700	960	36	-26	970	0.57
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	30	0	0	30	0.01*
NT	3.0	5100	1371	0	0	1371	0.27
NR >	1.0	1700	806	49	-42	813	0.24-
SL	2.0	3400	817	37	-31	823	0.24
ST	3.0	5100	2808	0	0	2808	0.55*
SR	1.0	1700	10	0	0	10	0.01-
EL	1.0	1700	20	0	0	20	0.01
ET	1.0	1700	30	0	0	30	0.02
ER	2.0	3400	230	0	0	230	0.06-*
WL	3.0	5100	1005	38	-22	1021	0.20*
WT	1.0	1700	10	0	0	10	0.01
WR >>	1.0	1700	768	29	-16	781	0.46
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.87 D

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / Foothill Transportation Corridor (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	871	0	0	871	0.26
NT	3.0	5100	2683	0	0	2683	0.53*
NR >>	1.0	1700	54	18	-9	63	0.04
SL	2.0	3400	125	0	0	125	0.04*
ST	3.0	5100	1185	0	0	1185	0.23
SR >>	1.0	1700	204	53	-35	222	0.13
EL	1.0	1700	227	18	-12	233	0.14*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	60	0	0	60	0.04
WL	1.0	1700	115	6	-3	118	0.07
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	1002	0	0	1002	0.59
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.76 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	175	0	0	175	0.05
NT	3.0	5100	1924	0	0	1924	0.38*
NR >>	1.0	1700	73	13	-5	81	0.05
SL	2.0	3400	1261	0	0	1261	0.37*
ST	3.0	5100	2842	0	0	2842	0.56
SR >>	1.0	1700	124	38	-22	140	0.08
EL	1.0	1700	170	49	-42	177	0.10*
ET	0.0	0	0	0	0	0	0.00
ER >>	1.0	1700	890	0	0	890	0.52
WL	1.0	1700	62	16	-10	68	0.04
WT	0.0	0	0	0	0	0	0.00*
WR >>	1.0	1700	226	0	0	226	0.13
							=======
					Clearance Interval Percentage =		0.05
					Sum of Critical Movements =		0.90 D

* denotes critical movement
>> denotes free right turn
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	412	0	0	412	0.12
NT	4.0	6800	2643	0	0	2643	0.39*
NR	1.0	1700	76	6	-3	79	0.04-
SL	2.0	3400	187	6	-3	190	0.06*
ST	3.0	5100	762	0	0	762	0.15
SR	1.0	1700	236	0	0	236	0.12-
EL	2.0	3400	581	0	0	581	0.17*
ET	3.0	5100	379	19	-8	390	0.08
ER >>	1.0	1700	440	0	0	440	0.26
WL	1.0	1700	41	18	-9	50	0.03
WT	2.0	3400	623	54	-26	651	0.19*
WR >	2.0	3400	744	18	-9	753	0.14-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.86 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	321	0	0	321	0.09*
NT	4.0	6800	1535	0	0	1535	0.23
NR	1.0	1700	121	16	-10	127	0.06-
SL	2.0	3400	969	16	-10	975	0.29
ST	3.0	5100	3115	0	0	3115	0.61*
SR	1.0	1700	465	0	0	465	0.23-
EL	2.0	3400	362	0	0	362	0.11
ET	3.0	5100	938	53	-30	961	0.19*
ER >>	1.0	1700	787	0	0	787	0.46
WL	1.0	1700	45	13	-5	53	0.03*
WT	2.0	3400	323	42	-15	350	0.10
WR >	2.0	3400	355	13	-5	363	0.00-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.97 E

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
\- denotes V/C ratio reduced 15 percent for right turn on red

Intersection: Portola Pkwy. (NS) / El Toro Rd. (EW)

Project: Saddleback Meadows Traffic Impact Study Report

Traffic Condition: Year 2020 Conditions With Project
Lane Configuration: Initial Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	412	0	0	412	0.12
NT	4.0	6800	2643	0	0	2643	0.39*
NR	1.0	1700	76	6	-3	79	0.04-
SL	2.0	3400	187	6	-3	190	0.06*
ST	4.0	6800	762	0	0	762	0.15
SR	0.0	1700	236	0	0	236	0.14
EL	2.0	3400	581	0	0	581	0.17*
ET	3.0	5100	379	19	-8	390	0.08
ER >>	1.0	1700	440	0	0	440	0.26
WL	1.0	1700	41	18	-9	50	0.03
WT	2.0	3400	623	54	-26	651	0.19*
WR >	2.0	3400	744	18	-9	753	0.14-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.86 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Background	Project	Other	Total	V/C Ratio
NL	2.0	3400	321	0	0	321	0.09*
NT	4.0	6800	1535	0	0	1535	0.23
NR	1.0	1700	121	16	-10	127	0.06-
SL	2 0	3400	969	16	-10	975	0.29
ST	4.0	6800	3115	0	0	3115	0.53*
SR	0.0	1700	465	0	0	465	0.27
EL	2.0	3400	362	0	0	362	0.11
ET	3.0	5100	938	53	-30	961	0.19*
ER >>	1.0	1700	787	0	0	787	0.46
WL	1.0	1700	45	13	-5	53	0.03*
WT	2.0	3400	323	42	-15	350	0.10
WR >	2.0	3400	355	13	-5	363	0.00-
						Clearance Interval Percentage =	0.05
						Sum of Critical Movements =	0.89 D

* denotes critical movement
>> denotes free right turn
> denotes protected right turn (right turn overlap with adjacent left)
- denotes V/C ratio reduced 15 percent for right turn on red

APPENDIX I

TRAFFIC SIGNAL WARRANTS

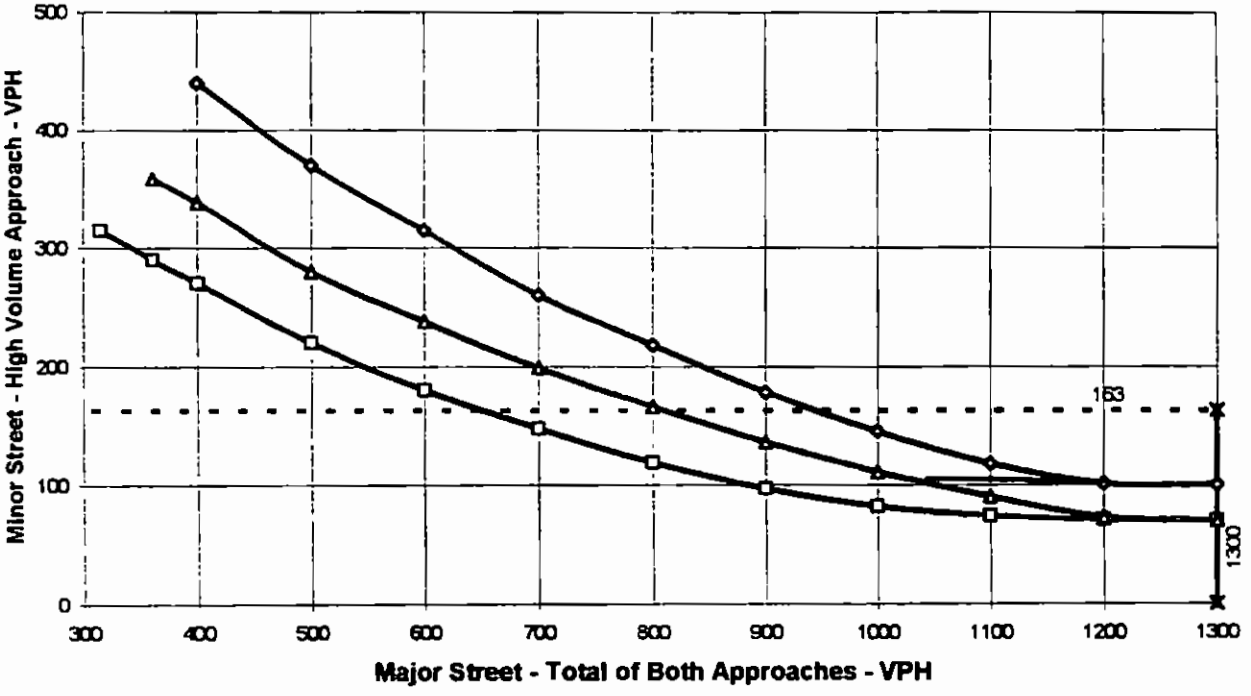
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing

Major Street Name = **Santiago Cyn Rd.** Total of Both Approaches (VPH) = **1489**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Ridgeline Rd.** High Volume Approach (VPH) = **163**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



1 Lane (Major) & 1 Lane (Minor)
2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
2+ Lanes (Major) & 2+ Lanes (Minor)
Major Street Approaches
Minor Street Approaches

** NOTE.
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

RKJK Rural (RURAL AREA WARRANT) 3/11/97

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing

Major Street Name = **El Toro Rd.**

Total of Both Approaches (VPH) = **1277**

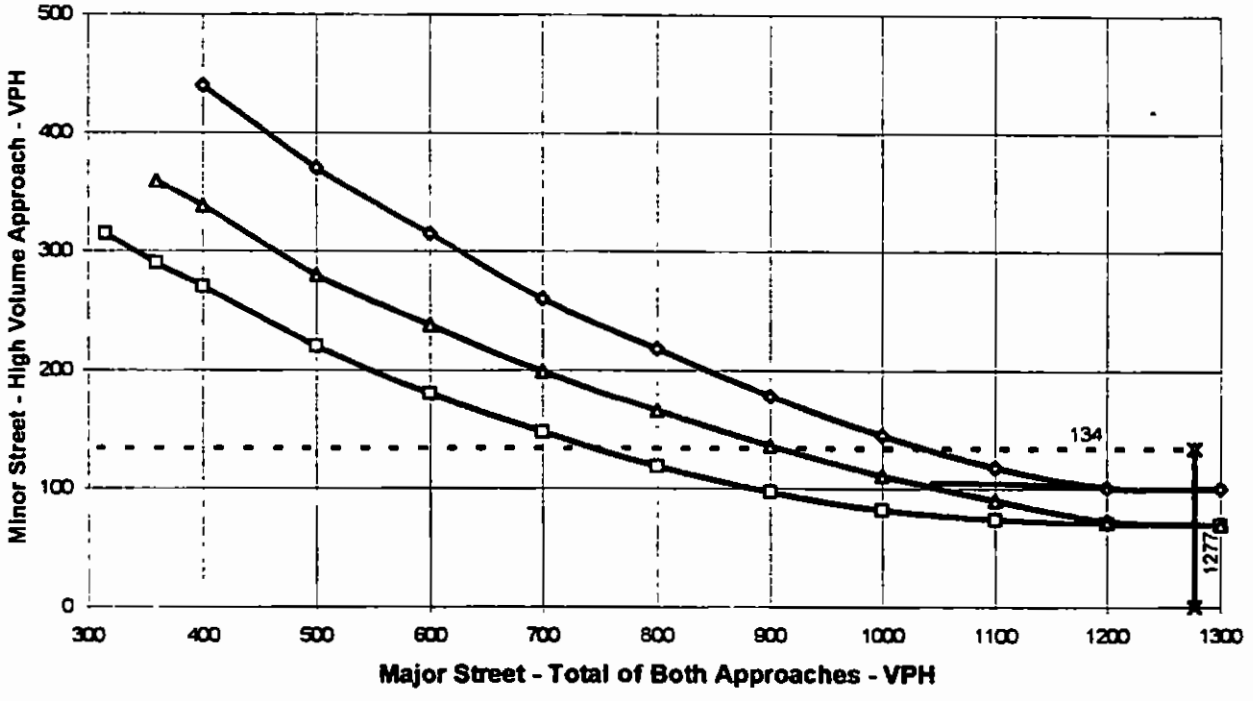
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Live Oak Cyn. Rd.**

High Volume Approach (VPH) = **134**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



1 Lane (Major) & 1 Lane (Minor)

2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)

2+ Lanes (Major) & 2+ Lanes (Minor)

Major Street Approaches

Minor Street Approaches

** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

PEAK HOUR VOLUME WARRANT
(Rural Areas)

Existing Plus Project

Major Street Name = El Toro Rd.

Total of Both Approaches (VPH) = **1613**

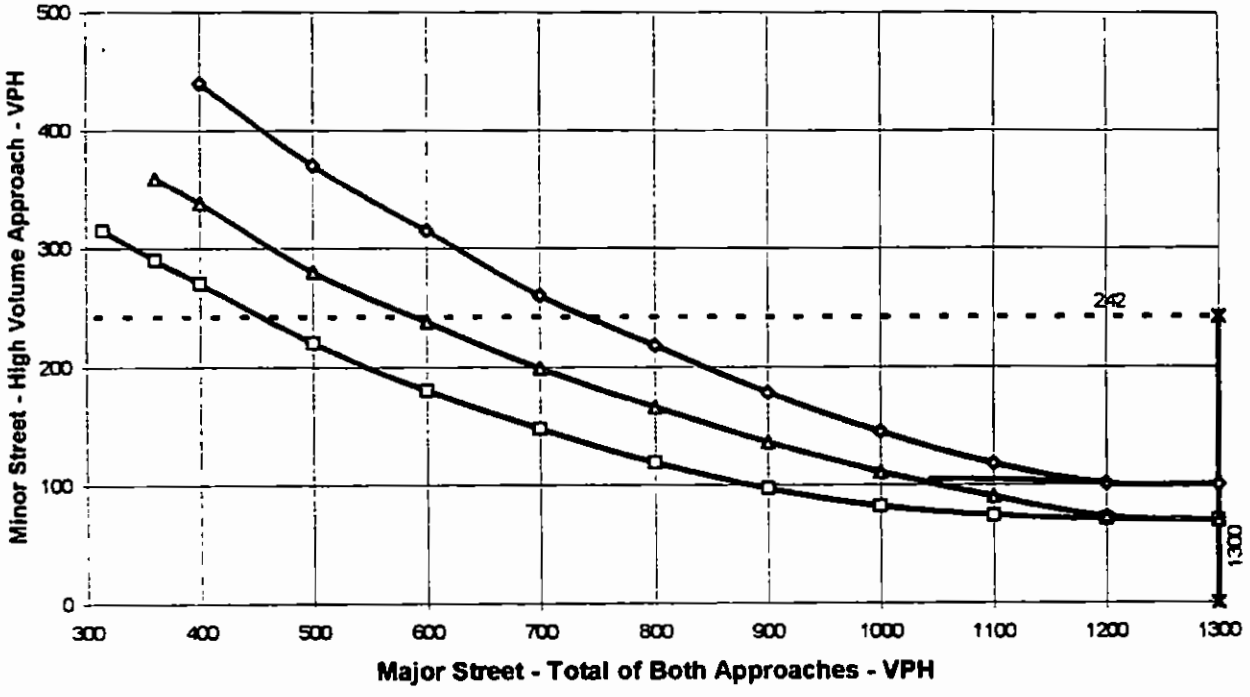
Number of Approach Lanes Major Street = **1**

Minor Street Name = Project Entrance

High Volume Approach (VPH) = **242**

Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



1 Lane (Major) & 1 Lane (Minor)

2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)

2+ Lanes (Major) & 2+ Lanes (Minor)

Major Street Approaches

Minor Street Approaches

** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

RKJK Rural (RURAL AREA WARRANT) **5/16/97**

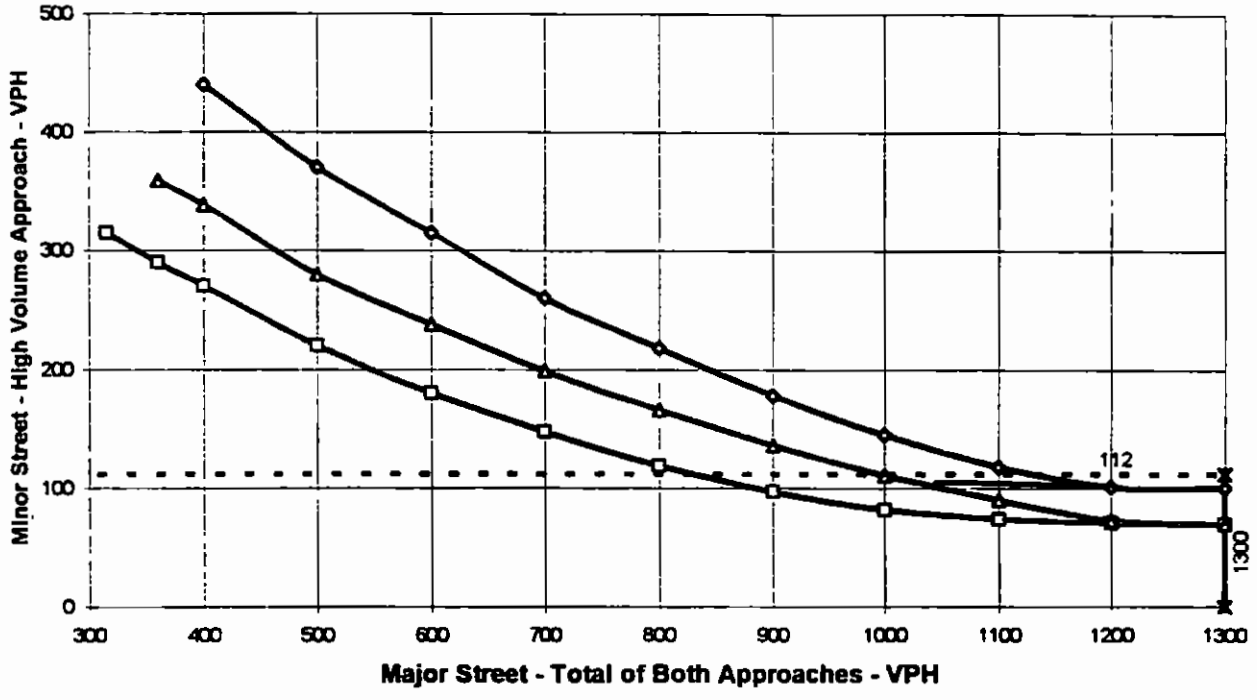
PEAK HOUR VOLUME WARRANT
(Rural Areas)

Year 2000 Without Project

Major Street Name = **Santiago Cyn. Rd.** Total of Both Approaches (VPH) = **1787**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Modjeska Cyn. Rd.** High Volume Approach (VPH) = **112**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



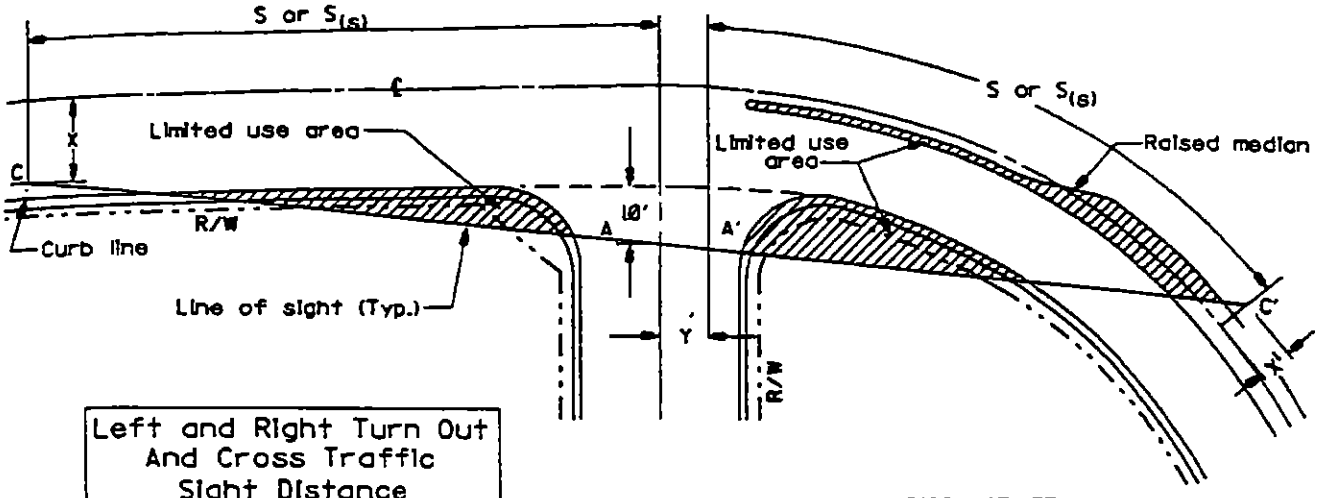
1 Lane (Major) & 1 Lane (Minor)
2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
2+ Lanes (Major) & 2+ Lanes (Minor)
Major Street Approaches
Minor Street Approaches

** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

RKJK Rural (RURAL AREA WARRANT) **3/11/97**

APPENDIX J

SIGHT DISTANCE STANDARDS



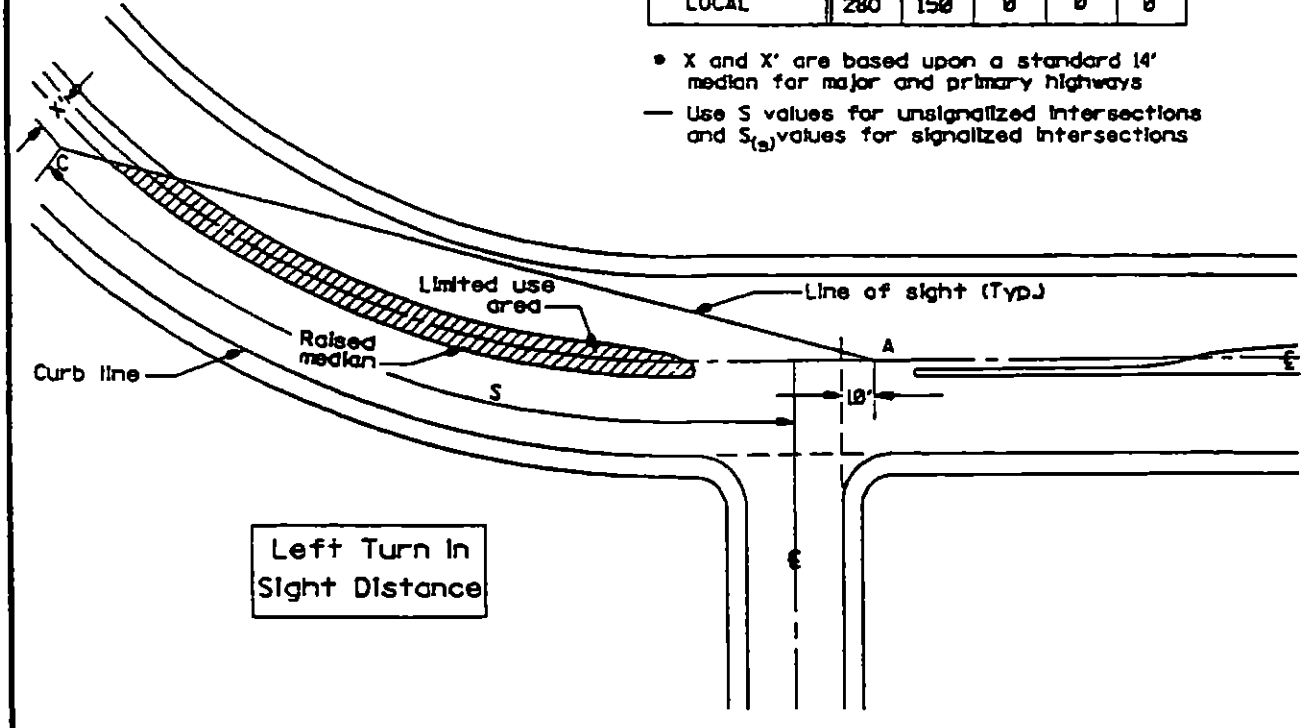
Left and Right Turn Out And Cross Traffic Sight Distance

DISTANCE (FT.)

	S	$S_{(s)}$	Y'	X*	X'*
MAJOR	660	580	37	37	13
PRIMARY	610	500	25	25	13
SECONDARY	550	430	18	18	6
COMMUTER	500	360	0	0	0
COLLECTOR	390	250	0	0	0
LOCAL	280	150	0	0	0

* X and X' are based upon a standard 14' median for major and primary highways

— Use S values for unsignalized intersections and $S_{(s)}$ values for signalized intersections



Left Turn In Sight Distance

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved W.L. Zeiss 11-15-91
W.L. Zeiss, Director of Public Works

Adopted: Res. 77-92 Revised: Res. 82-718; 86-114; 88-1341; 91-1481

INTERSECTION SIGHT DISTANCE

STD. PLAN 1117

SHT. 1 OF 3

NOTES:

1. The distance S represents the corner sight distance measured along the centerline of the road. The corner sight distance is the distance required to allow 7 1/2 seconds for the driver on the cross road (or left turn pocket) to safely cross the main roadway or turn left while the approach vehicle travels at the assumed design speed of the main roadway.
2. The distance S should be increased by 20% from the amount shown on the table on sustained downgrades steeper than 3% and longer than one mile.
3. Points A and A' are the locations of a driver's line of sight (3.5 foot eye height) to oncoming vehicles (4.25 foot object height) located at Points C and C' while in a vehicle at an intersection 10 feet back from the projection of the curb line. In no case shall Points A or A' be less than fifteen feet from the edge of the traveled way.
4. The distance Y' is the distance measured from the centerline of the main road to the far right through travel lane. The distance Y' is equal to zero for T-intersections. The distance X is the distance measured from the centerline of the main road to the center of the far right through travel lane. The distance X' is the distance measured from the centerline of the main road to the center of the travel lane nearest the centerline of the road.
5. The Limited Use Area is determined by the graphical method using the appropriate distances given in the above table. It shall be used for the purpose of prohibiting or clearing obstructions in order to maintain adequate sight distance at intersections.
6. The Line of Sight line shall be shown at intersections on all landscaping plans, grading plans and tentative tract plans where safe sight distance is questionable. In cases where an intersection is located on a vertical curve, a profile of the line of sight may be required.
7. Obstructions such as bus shelters, walls or landscaping within the Limited Use Area which could restrict the line of sight shall not be permitted.
   a. Plants and shrubs within the Limited Use Area shall be of the type that will grow no higher than 12 inches above the ground and shall be maintained at a maximum height of 12 inches above the ground. Maintenance at a lower height may be required on crest vertical curves per Note 6 above.
   b. A profile of the line of sight may be required to verify 12" minimum vertical clearance above variable height obstructions such as slope landscaping, plants and shrubs.
   c. The toe of slope may encroach into the Limited Use Area provided that the requirements of (b) above are satisfied.
   d. In lieu of providing a profile of the line of sight, the toe of slope shall not encroach into the Limited Use Area, and the Limited Use Area shall slope at 2% maximum to the roadway.

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved W.L. Zaun 11-15-91
W.L. Zaun, Director of Public Works

Adopted: Res. 77-92 Revised: Res. 82-718; 86-1141; 88-1341; 91-1481

STD. PLAN 1117

INTERSECTION SIGHT DISTANCE

SHT. 2 OF 3

8. Trees shall not be permitted within any portion of the Limited Use Area.

9. Median areas less than six (6) feet in width shall be paved with concrete per Standard Plan 1114.

10. Residential driveways serving four or more units and comercial driveways shall be treated as a local street intersection.

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

Approved W.L. Zoph 11-15-91
W.L. Zoph, Director of Public Works

Adopted: Res. 77-92 Revised: Res. 82-718; 86-1141; 88-1341; 91-1481

STD. PLAN
1117
SHT. 3 OF 3

INTERSECTION SIGHT DISTANCE

APPENDIX K

PASS-BY/DIVERTED TRIPS

VII. Quantifying Pass-By and Diverted Linked Trips

Background

The trip generation rates and equations contained in this report were derived from actual measurements of traffic on the driveways of land uses or buildings. However, in some cases, the driveway volume at a generator is different than the amount of traffic *added* to the street system. Buildings such as retail establishments, restaurants, banks, service stations and convenience markets attract a portion of their trips from traffic passing the site on the way from one location to another.

Trip making where this phenomenon occurs can be broken down into the following four categories of trips:

- Primary Trips (N_{Pr})
- Pass-by Trips (N_{Pb})
- Diverted Linked Trips (N_D)
- Non Pass-by Trips (N_{nPb})

These trips are defined as follows:

Primary Trips are trips made for the specific purpose of visiting the generator. The stop at that generator is the primary reason for the trip. For example, a home-to-shopping-to-home combination of trips is a primary trip set.

Pass-By Trips are trips made as intermediate stops on the way from an origin to a primary trip destination. Pass-by trips are attracted from traffic passing the site on an adjacent street which contains direct access to the generator. These trips do not require a diversion from another roadway.

Diverted Linked Trips are trips attracted from the traffic volume on roadways within the vicinity of the generator but which require a diversion from that roadway to another roadway to gain access to the site. These roadways could include streets or freeways adjacent to the generator but without access to the generator.

Non Pass-By Trips refer to the total of the primary trips and the diverted linked trips. This term is used when diverted linked trips are not quantified, but pass-by trips are quantified (i.e., the non pass-by trips are equal to the total trips minus the pass-by trips).

Figure VII-1 indicates an example of roadways from which pass-by trips and diverted linked trips are produced. It should be noted that the vicinity of the generator has not been defined. Research is needed to determine the size of the area or distance from a generator from which diverted linked trips are produced (much like the market area of a shopping center for primary trips).

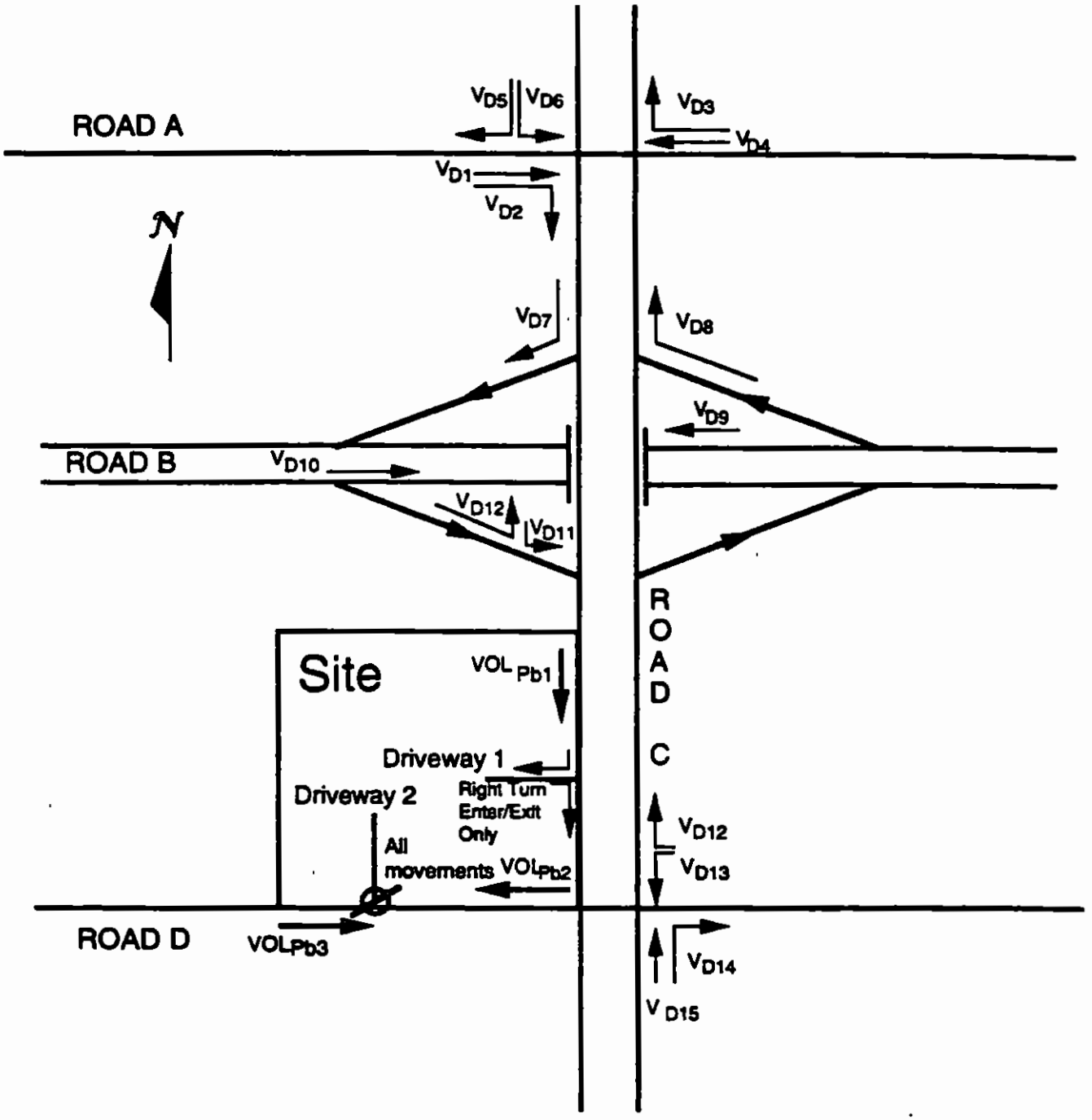
It is essential that this phenomenon be recognized when examining the traffic impact of a development on the street system. The pass-by and diverted linked trip estimation method initiated in previous editions is calculated as a percentage of the total number of trips entering the generator. Statistical correlation of the data collected by the professional community has proven difficult, with resulting low correlation indices. The results of the pass-by trip percentages analyzed to date and presented herein can be enhanced further with an expanded methodology that also accounts for the effects of the magnitude of the passing traffic stream volume on the adjacent road system. Additionally, more detailed data are needed before this estimation methodology can be statistically analyzed and formally adopted. To assist in this regard, the interview survey forms have been expanded to assist the professional community in collecting this data in a standard format for use in future analyses. The fifth edition of *Trip Generation* contains additional theoretical discussion on pass-by and diverted linked trips.

The professional community should continue to use the results of the analyses of pass-by trip percentages tempered with engineering judgment until more data are attained and the methodology produces results with higher correlation to the actual events.

Database on Pass-By Trip and Diverted Linked Trip Percentages

Surveys conducted to date have been limited to interviewing a limited sample of people to determine a pass-by trip and diverted linked trip percentage based on the interviews and relating the percentage to the size of the generator or shopping center. Some recent surveys also provided information on ADT, but not in sufficient detail

Figure VII-1: Identification of Pass-By and Diverted Linked Trip Volumes



Legend

$$V_{Pb\ TOT} = \sum VOL_{Pb1} + VOL_{Pb2} + VOL_{Pb3} \quad (VPH)$$

$$V_{D\ TOT} = \sum VOL_{D1} + VOL_{D2} + VOL_{D.....} + VOL_{D15} \quad (VPH)$$

to identify traffic volume related to true pass-by trips and diverted linked trips. The data available for the land uses presented in this update are contained in the following tables.

Table VII-1	High-Turnover (Sit-Down) Restaurant (832) P.M Peak Hour
Table VII-2	Fast-Food Restaurant with Drive-Through Window (834) A.M. Peak Hour
Table VII-3	Fast-Food Restaurant with Drive-Through Window (834) P.M Peak Hour
Table VII-4	Gasoline/Service Station (844) A.M. Peak Hour
Table VII-5	Gasoline/Service Station (844) P.M. Peak Hour
Table VII-6	Gasoline/Service Station with Convenience Market (845) A.M. Peak Hour
Table VII-7	Gasoline/Service Station with Convenience Market (845) P.M. Peak Hour
Table VII-8	Convenience Market with Gasoline Pumps (853) A.M. Peak Hour
Table VII-9	Convenience Market with Gasoline Pumps (853) P.M. Peak Hour

Good correlation between the pass-by trip percentage and size of the generator has been illusive. The database needs to be further expanded before better predictive relationships can be developed. Therefore, the user is cautioned to use engineering judgment to establish the pass-by trip and diverted linked trip percentage before application. Whenever possible, and especially at planned expansion to existing facilities, it is recommended that the pass-by trip and diverted linked trip percentages be determined on the basis of site-specific data collected with the expanded forms provided.

Application of Pass-By Trip and Diverted Linked Trip Percentage Results

Until the estimation methodology is further developed, the results of the pass-by trip and diverted linked trip percentages may continue to be applied with caution, as explained herein. The pass-by trips and diverted linked trips estimated to enter and exit a development does not affect the driveway volumes but does affect the amount of traffic added to the adjacent street system. The following example and Figure VII-2 illustrate this point for pass-by trips.

- The p.m peak hour traffic passing a retail center is 1,200 vehicles per hour, as shown in Figure VII-2(a).
- The driveway volumes are estimated to be 200 vehicles per hour entering and leaving the center as shown in Figure VII-2(b).
- The pass-by trips are estimated to be 25 percent of the driveway volumes, as shown in Figure VII-2(b).
- The trip distribution for the primary trips is shown in Figure VII-2(c).
- The distribution of the pass-by trips is based on the volume of traffic passing the driveway, as shown in Figure VII-2(d).
- The assignment of the pass-by trips is shown in Figure VII-2(f).
- The final assignment of all the trips entering and leaving and passing the driveway is shown in Figure VII-2(g).

Data Needs for Pass-By Trips and Diverted Linked Trips

More data are needed to further quantify the pass-by trips and diverted linked trips for all land uses where this phenomenon exists. It is essential that the data in this report be expanded through the uniform collection of data suggested in the survey forms. Following is a questionnaire to be used for conducting interviews for the purpose of collecting pass-by trip and diverted linked trip data, and a summary form. The summary form is designed to list the summary of survey results, but must also provide information related to the generator, location and traffic volumes associated with both true pass-by trips and diverted linked trips.

Figure VII-2

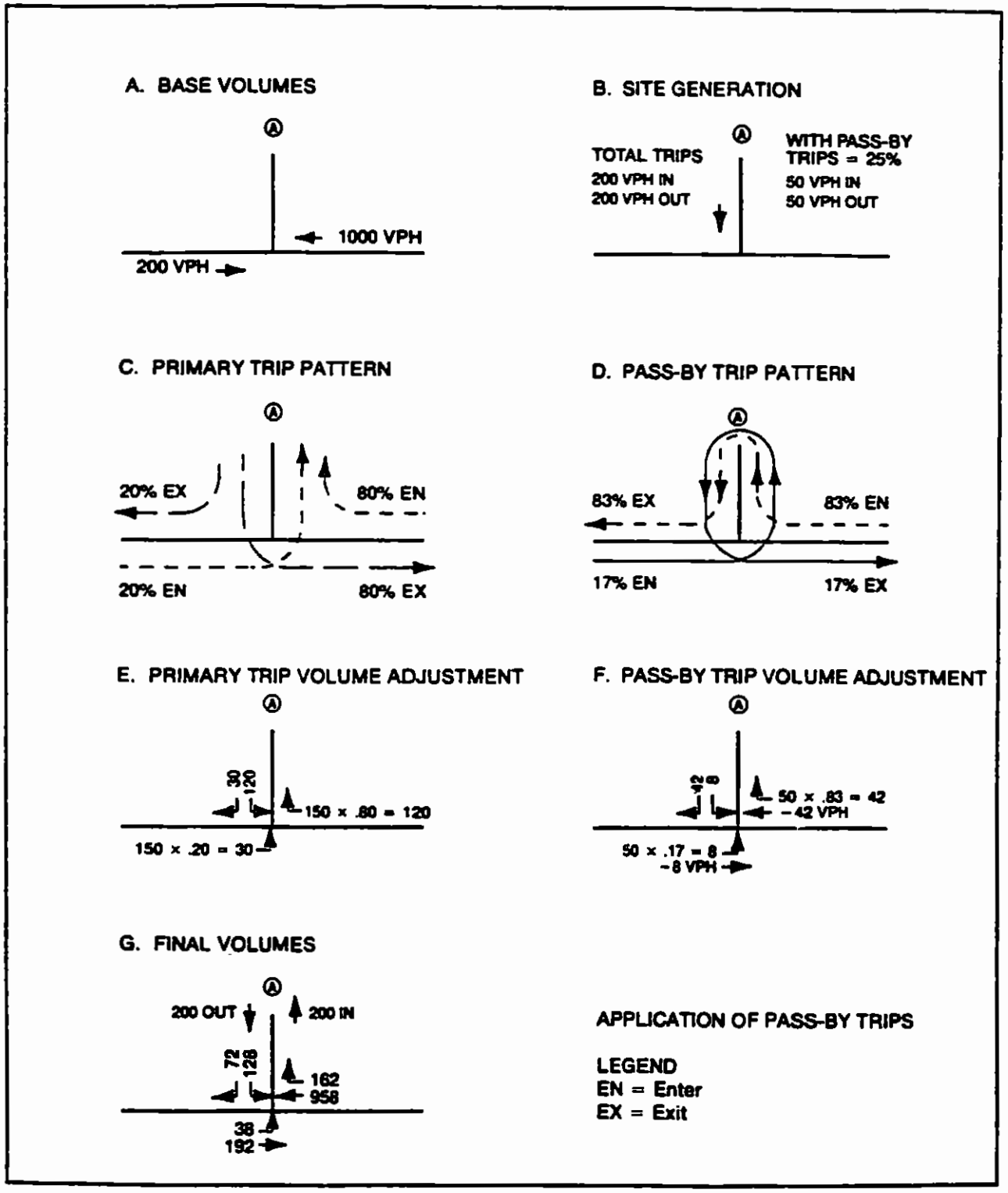
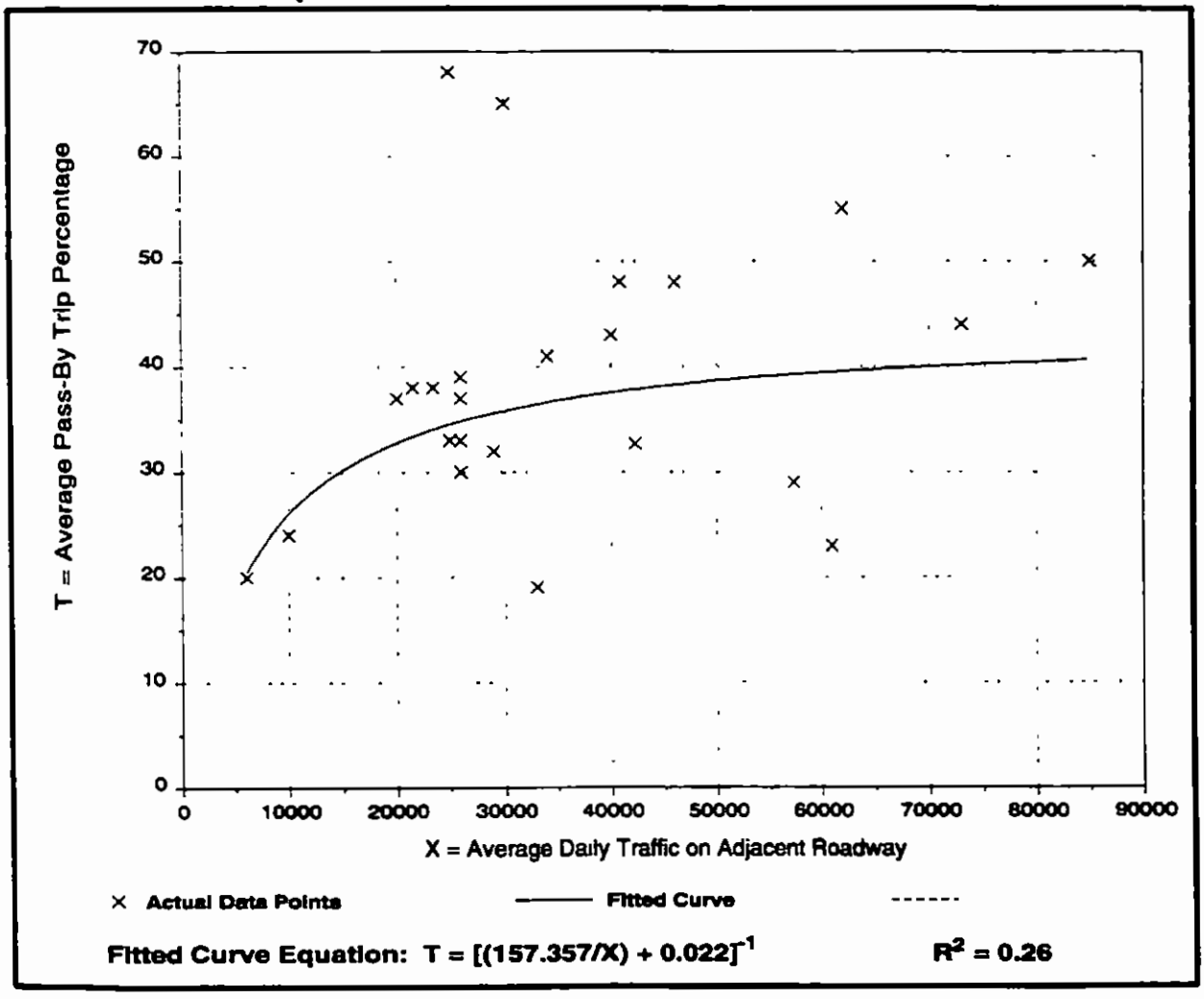

A. BASE VOLUMES
1000 VPH
200 VPH
B. SITE GENERATION
TOTAL TRIPS
200 VPH IN
200 VPH OUT
WITH PASS-BY TRIPS = 25%
50 VPH IN
50 VPH OUT
C. PRIMARY TRIP PATTERN
20% EX
80% EN
20% EN
80% EX
D. PASS-BY TRIP PATTERN
83% EX
83% EN
17% EN
17% EX
E. PRIMARY TRIP VOLUME ADJUSTMENT
30
120
150 x .80 = 120
150 x .20 = 30
F. PASS-BY TRIP VOLUME ADJUSTMENT
50 x .83 = 42
-42 VPH
50 x .17 = 8
-8 VPH
G. FINAL VOLUMES
200 OUT
200 IN
72
128
162
958
38
192
APPLICATION OF PASS-BY TRIPS
LEGEND
EN = Enter
EX = Exit

Figure VII-1B: Shopping Center Pass-By Trips (Weekday, P.M. Peak Hour of Adjacent Street Traffic)

Average Pass-By Trip Percentage vs: Daily Traffic on Adjacent Roadway
On a: Weekday, P.M. Peak Hour of Adjacent Street Traffic

Number of Studies: 24
Average Daily Traffic on Adjacent Roadway: 36,174

Data Plot and Equation



APPENDIX F
AIR QUALITY CALCULATIONS

Giroux & Associates
Environmental Consultants

AIR QUALITY IMPACT ANALYSIS

SADDLEBACK MEADOWS (TT 10692)

ORANGE COUNTY, CALIFORNIA

Prepared for:

Urban Vision, Inc.
Attn: Carlene Baskevitch
1601 Dove Street, Suite 250
Newport Beach, CA 92660

Date:

June 13, 1997

17744 Sky Park Circle, Suite 210, Irvine California 92614 - Phone (714) 851-8609 - Fax (714) 851-8612

METEOROLOGY/CLIMATE

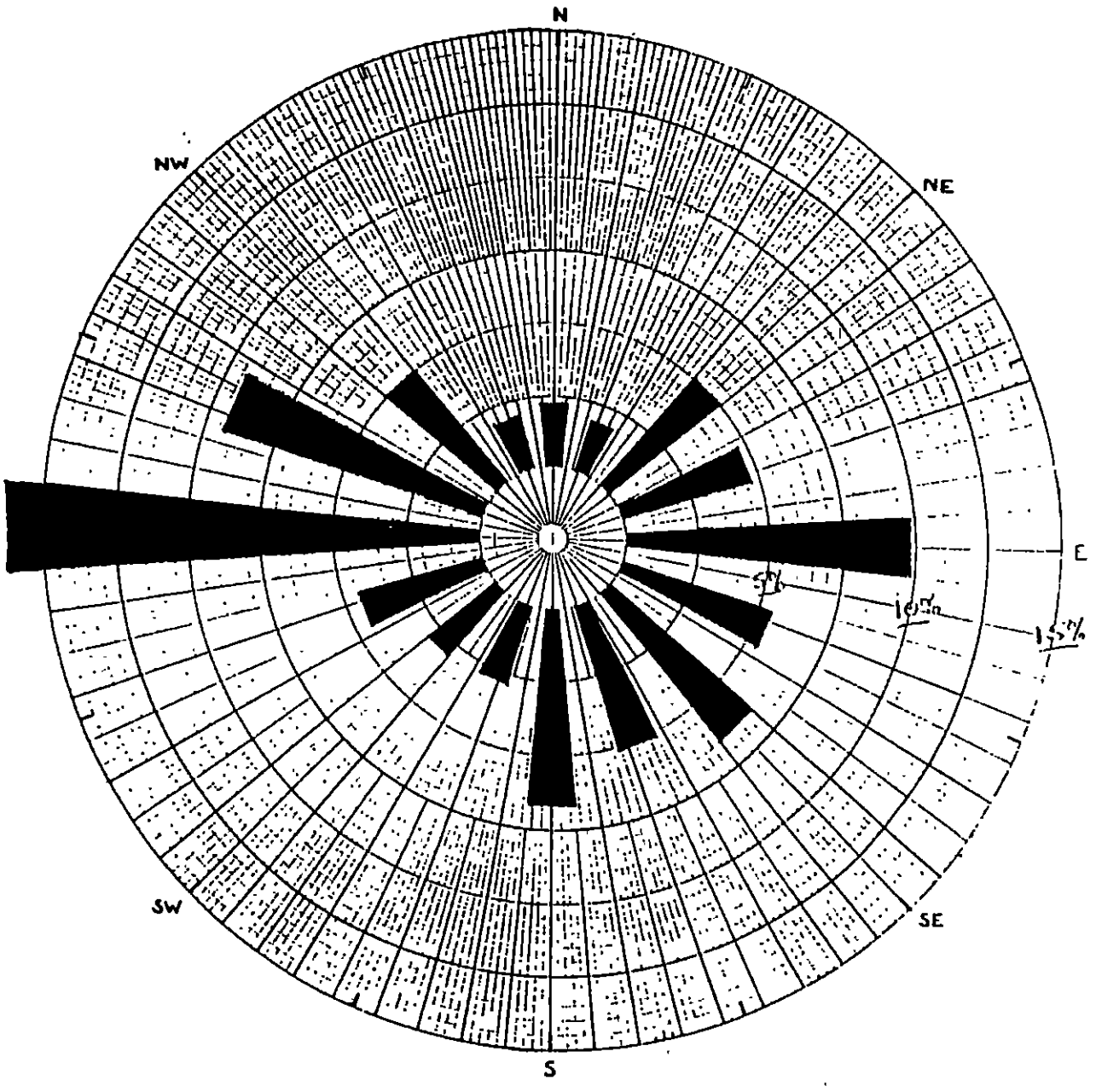
The project site's climate, as with all of Southern California, is dominated by the strength and position of the semi-permanent high pressure center over the Pacific Ocean near Hawaii. It creates cool summers, mild winters, infrequent rainfall, it drives the cool daytime sea breeze, and it maintains comfortable humidities and ample sunshine. Unfortunately, the same atmospheric processes that create the desirable living climate combine to restrict the ability of the atmosphere to disperse the air pollution generated by the large population attracted in part by the comfortable climate. Portions of the Los Angeles Basin therefore experience some of the worst air quality in the nation for certain pollutants.

Temperatures in El Toro average 62°F annually. Daily and seasonal oscillations of temperature are small because of the moderating effects of the nearby oceanic heat reservoir. In contrast to the steady temperature regime, rainfall is highly variable, and confined almost exclusively to the "rainy" period from early November to mid-April. Rainfall in the project area averages around 12 inches annually with January typically the wettest month of the year.

Winds near the project site, based on long-term monitoring from nearby El Toro MCAS, display several characteristic regimes. During the day, especially in summer, winds are from the west at 7-9 miles per hour. At night, especially in winter, the land becomes cooler than the ocean and an offshore wind of 3-5 miles per hour develops. After sunrise, the wind direction rotates through the southeast and south at 5-7 miles per hour until the west wind again becomes dominant in the early afternoon. One other important wind regime occurs when a high pressure center forms over the western United States and creates strong, hot, dry, gusty, Santa Ana winds from the northeast and east across El Toro.

Figure 1 shows the annual average wind direction pattern (frequency of winds <u>from</u> a given direction) in the project vicinity. The dominance of winds from the west is clearly seen. The data in Figure 1 also show a high frequency of winds of less than 3 mph. Such light winds lead to limited local ventilation and resulting in possibly elevated pollution levels near freeways, shopping centers and other traffic concentrations. The Saddleback Meadows project site is, however, sufficiently separated from traffic stagnation conditions as to preclude the formation of any local pollution "hot spots."

The net effect of the area wind pattern is that any locally generated air pollutant emissions will be carried from east to west



AVG. SPEED = 5.5 MPH
WINDS ≤ 3 MPH = 29.4%

EL TORO MCAS WIND ROSE

FIGURE
1

at night, and then reverse from west to east by day. Although the daytime windspeeds are generally stronger and therefore better ventilate the project area, the offshore flow, once well-organized late in the evening and during the night, is also strong enough to minimize any significant localized air stagnation. The least ventilated period is typically during the morning and evening directional transition when winds become near calm until the new flow component becomes fully established.

In addition to winds that govern the horizontal rate and trajectory of any air pollutants, Southern California experiences several characteristic temperature inversions that control the vertical depth through which pollutants can be mixed. The daytime onshore flow of marine air is capped by a massive dome of warm air that acts like a giant lid over the basin. As the clean ocean air moves inland, pollutants are continually added from below without any dilution from above. As this layer slows down in inland valleys of the basin and undergoes photochemical transformations under abundant sunlight, it creates very unhealthful levels of smog (mainly ozone).

A second inversion forms at night as cool air pools in low elevations while the air aloft remains warm. Shallow radiation inversions are formed (especially in winter) that trap pollutants near intensive traffic sources such as freeways, shopping centers, etc., and from localized violations of clean air standards called "hot spots." Although inversions are found during all seasons of the year, the regional capping inversion is far more prevalent in summer while the localized radiation inversions are strongest in winter. The strong seasonal split in inversion intensity thus contributes significantly to the completely different air quality climate found in summer in the project vicinity than in winter. Because traffic concentrations in the project area are low, and because individual cars are becoming progressively "cleaner," air quality concerns in the El Toro area are more centered on the regional, summertime intrusion of photochemical smog (ozone) than on any winter microscale stagnation conditions.

AIR QUALITY SETTING

Ambient Air Quality Standards (AAQS): In order to assess the air quality impact of any proposed new development such as Saddleback Meadows, that impact, together with baseline air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered adequate to protect the public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress or infection, such as asthmatics, the elderly, the very young, people weak from other disease or illness, and persons engaged in heavy work or exercise, called "sensitive receptors". Healthy adults can tolerate periodic exposure to air pollution levels well above these standards before adverse health effects are observed. Recent research has shown, however, that adverse health effects may occur from life-long chronic exposure to ozone concentrations that just meet the hourly standard. Barely meeting clean air standards may, therefore, not be enough to insure public health protection until some additional margin of safety is established to overcome chronic exposure health effects.

The Clean Air Act Amendments of 1970 established national AAQS with states retaining the option to adopt more stringent standards or to include other pollution species. Because California already had standards in existence before federal AAQS were established, and because of unique meteorological problems in California, there is considerable diversity between state and federal standards currently in effect in California as shown in Table 1.

Baseline Air Quality: Existing and probable future levels of air quality in the project area can be best inferred from ambient air quality measurements conducted by the South Coast Air Quality Management District (AQMD) at its El Toro monitoring station. Monitoring at this station include both regional pollutants such as dust and smog, as well as primary vehicular pollution levels such as carbon monoxide. Table 2 summarizes the last seven years of published data from this monitoring station. Although the entire spectrum of air pollutants is not monitored at the El Toro station, the following conclusions can be drawn from this data:

a. Photochemical smog (ozone) levels continue to exceed standards by a wide margin. However, the frequency of first stage smog episodes has ranged from 0-2 per year with a noticeable trend toward fewer episodes within the last several years. First-stage smog episodes have dropped by 90% the last 10-15 years. 1990 was the first year without a first-stage smog alert (one hour $\geq$ 0.20 ppm) since ozone monitoring began at El Toro. There have been no first-stage smog alerts from 1992 to the present.

TABLE 1

Ambient Air Quality Standards

AIR POLLUTANT	STATE STANDARD CONCENTRATION/ AVERAGING TIME	FEDERAL PRIMARY STANDARD CONCENTRATION/ AVERAGING TIME	MOST RELEVANT EFFECTS
Ozone	0 09 ppm, 1-hr. avg. >	0.12 ppm, 1-hr avg.>	(a) Short-term exposures (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals, (b) Long-term exposures· Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage, (d) Property damage
Carbon Monoxide	9 0 ppm, 8-hr avg. > 20 ppm, 1-hr avg. >	9 ppm, 8-hr avg > 35 ppm, 1-hr avg.>	(a) Aggravation of angina pectoris and other aspects of coronary heart disease, (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease, (c) Impairment of central nervous system functions, (d) Possible increased risk to fetuses
Nitrogen Dioxide	0.25 ppm, 1-hr avg >	0 053 ppm, ann avg >	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups, (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes, (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0 04 ppm, 24-hr avg.> 0.25 ppm, 1-hr. avg. >	0 03 ppm, ann avg > 0.14 ppm, 24-hr avg.>	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})	30 $\mu g/m^3$, ann. geometric mean > 50 $\mu g/m^3$, 24-hr average>	50 $\mu g/m^3$, annual arithmetic mean > 150$\mu g/m^3$, 24-hr avg >	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease, (b) Excess seasonal declines in pulmonary function, especially in children
Sulfates	25 $\mu g/m^3$, 24-hr avg. >=		(a) Decrease in ventilatory function, (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease, (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 $\mu g/m^3$, 30-day avg. >=	1.5 $\mu g/m^3$, calendar quarter>	(a) Increased body burden, (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70 percent, 8-hour average (10am - 6pm)		Visibility impairment on days when relative humidity is less than 70 percent

TABLE 2

SOUTH ORANGE COUNTY
AIR QUALITY MONITORING SUMMARY (1988-94)
(Number of Days Standards Were Exceeded, and Maximum Levels During Such Violations
Entries shown as ratios = samples exceeding standard/samples taken)

Pollutant/Standard	1989	1990	1991	1992	1993	1994	1995
Ozone:							
1-Hour > 0.09 ppm (a)	30	32	29	31	22	16	15
1-Hour > 0.12 ppm (b)	7	11	10	9	7	5	1
1-Hour ≥ 0.20 ppm (c)	2	0	1	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.23	0.19	0.24	0.16	0.16	0.18	0.15
Carbon Monoxide:							
1-Hour > 20. ppm (a)	0	0	0	0	0	0	0
8-Hour > 9. ppm (a,b)	0	0	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	9	9	8	10	7	8	6
Max. 8-Hour Conc. (ppm)	5.1	5.6	4.8	7.3	4.1	5.4	4.1
Inhalable Particulates: (PM-10)							
24-Hour > 50 $\mu g/m^3$ (a)	20/60	16/55	9/59	5/60	7/61	7/59	11/60
24-Hour > 150 $\mu g/m^3$ (b)	0/60	0/55	0/59	0/60	0/61	0/59	0/60
Max. 24-Hour Conc. ($\mu g/m^3$)	88.	88.	94.	83.	115.	91.	122.

Source: South Coast Air Quality Management District, El Toro Monitoring Station, El Toro Road @ Jeronimo Road.

(a) = California ambient air quality standard
(b) = National ambient air quality standard
(c) = California first-stage smog episode alert level.

b. Annual maximum ozone levels rose in the early '80s to close to the second stage alert level of 0.35 ppm for 1 hour, but they since dropped sharply to the sub-0.20 ppm level. For several years, El Toro had the worst smog of any station in Orange County. In the last several years, however, El Toro, and by inference all of the South County, had some of the lowest smog readings on record.

c. Measurements of carbon monoxide have shown relatively low baseline levels for a monitoring station located near two busy arterials (El Toro Road and Jeronimo Road). With lower traffic volumes and more complex terrain reducing stagnation potential, CO levels near Saddleback Meadows are probably even lower than the AQMD readings at the El Toro monitoring station.

d. Respirable dust (PM-10) levels periodically exceed the state standard, but the less stringent federal PM-10 standard has never been violated since PM-10 measurements began at El Toro.

Despite substantial South County growth in the last two decades, area air quality, as inferred from the El Toro SCAQMD data, continues to improve.

Lowest number of state ozone violations	(15)	-	1995
Lowest number of federal ozone violations	(1)	-	1995
Lowest one-hour ozone maximum	(0.15 ppm)	-	1995
Lowest one-hour CO maximum	(6 ppm)	-	1995
Lowest 8-hour CO maximum	(4.1 ppm)	-	1993, 95

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment will occur within the reasonably near future.

Air Quality Management Planning: The Federal Clean Air Act (1977 Amendments) stated that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards by December 31, 1987. The South Coast Air Basin (SCAB) could not meet the deadline for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the South Coast Air Basin, the agencies designated by the governor to develop regional air quality plans are the South Coast Air Quality Management District and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it in 1982 to project attainment of the standards in 2000.

In 1988, because of uncertainty in federal Clean Air Act reauthorization, the California Legislature enacted the California Clean Air Act (CCAA). The CCAA requires that regional emissions be reduced by 5 percent per year, averaged over 3 year periods, until attainment can be demonstrated. Each area that did not meet a national or state ambient air quality standard was required to prepare a plan which demonstrated how the 5 percent reductions was to be achieved. The plan was to be locally adopted and submitted to the CARB by June 30, 1991. Areas with the most heavily degraded air quality were required to reduce emissions 50 percent from 1987 levels by December 31, 2000. In July 1991, the SCAQMD adopted a revised AQMP which was designed to meet the CCAA requirements. The 1991 AQMP deferred the attainment date to 2010, consistent with the 1990 federal Clean Air Act.

The 1990 federal Clean Air Act Amendments required that all states with airsheds with "serious" or worse ozone problems submit a revision to the State Implementation Plan (SIP). The 1991 AQMP was modified/adapted and submitted as the South Coast Air Basin portion of the SIP. The 1991 SIP submittal estimated that an 85% basinwide reduction in volatile organic compound (VOC) emissions and a 59% reduction in oxides of nitrogen (NO_x) between 1990 to 2010 was needed to meet federal clean air standards. About 40% of these reductions were to come from existing pollution control programs. The rest would come from new rules, technologies or other reduction programs.

EPA recently approved the 1994 submittal of the SCAB portion of the SIP. The plan was finally approved after considerable debate on the contingency measures that should be implemented if progress is not as rapid as anticipated in the 1994 SIP. The currently approved plan will not be in effect for long because the federal Clean Air Act required that an updated plan be submitted by February 8, 1997 which includes attainment plans for all pollutants exceeding federal standards. The CCAA requires an update of the state-mandated clean air plan every three years. The next update is due December 31, 1997.

An updated 1997 AQMP has been locally adopted. The California Air Resources Board (ARB) has forwarded this plan on to EPA for its consideration and recommended approval. The 1997 AQMP is designed to meet both federal (EPA) and state (ARB) air quality planning guidelines. Components of the 1997 plan update include:

- Demonstration of attainment for ozone, CO, and PM-10
- Updated emissions inventories (1993 base year) of VOC, NO_x, CO, SO_x and PM-10

- Emissions budgets for future years of the inventoried compounds.

- An updated pollution control strategy

- Contingency measures if the plan as presently proposed fails to meet stated timetables.

Additional research and photochemical computer modeling, as well as improved emissions estimates, now suggest that formerly predicted emissions reductions required to meet standards need not be quite as severe as thought earlier. Table 3 summarizes the currently proposed regional attainment planning for ozone (VOC and NO_x) and for carbon monoxide (CO). Emissions reductions of around 68 percent for VOC, 57 percent for NO_x and 68 percent for CO are anticipated from the currently proposed AQMP update. Within the plan, some measures considered "long-term reductions" require additional technological development whose development schedule is uncertain. There is therefore no clear scientific consensus that the 1997 AQMP update will be able to achieve its mandatory clean air objectives by the end of 2010. For new projects that are developed within the next few years, the 1997 AQMP and its underlying plans for mobility, infrastructure development, population, housing, employment and land use, etc., will, however, be the benchmark by which project consistency with air quality planning objectives will be judged.

A residential development such as the proposed Saddleback Meadows project does not directly relate to the AQMP. Any relationship is indirect via the growth assumptions used in the regional air quality plan. To the degree that project residential growth has been forecast by SCAG in its regional comprehensive plan (RCP), the project creates no regional impacts that have not already been analyzed as part of the RCP adoption process.

TABLE 3

SOUTH COAST AIR BASIN ATTAINMENT PLAN
(Emissions in tons/day)

	VOC*	NOx*	CO**
Current Inventory[a]			
Stationary	491	152	127
On-Road Mobile	647	775	5,908
Off-Road Mobile	138	296	1,538
TOTAL	1,276	1,223	7,573
2010 Forecast[b]			
Stationary	531	98	337
On-Road Mobile	163	360	1,913
Off-Road Mobile	144	269	1,643
TOTAL	838	727	3,893
Short-term Intermediate Reductions	< 221>	< 120>	<1,468>
Long-term Reductions	< 204>	< 77>	< 0>
2010 Remaining[c]	413	530	2,425

(a) 1993 Base Year

(b) With current emissions reduction programs and adopted growth forecasts.

(c) Levels at which all federal air quality standards will be met.

Source: SCAQMD, Draft Final 1997 AQMP (October 1996)

* - summer ozone precursors
** - winter CO "hot spot" precursors

AIR QUALITY IMPACTS

Methodology

The analysis methodology utilized procedures outlined in the SCAQMD 1993 "CEQA Air Quality Handbook" where appropriate. In areas where more site-specific information was available beyond the default values recommended in the handbook, they were used to supplement the AQMD-suggested input parameters.

Vehicular emissions were calculated using the SCAQMD "MAAQI" computer model. Microscale emissions impacts were calculated using one generic run of the CALINE4 computer model adjusted for site-specific traffic volumes, travel speeds and emission data for intersections near Saddleback Meadows potentially affected by project-related traffic.

Standards of Significance

Many air quality impacts from dispersed mobile sources, i.e., the dominant pollution generators in the basin, often occur hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual source is generally immeasurably small. The SCAQMD has therefore developed suggested significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The 1993 SCAQMD Handbook states that any projects in the SCAB with daily emissions that exceed any of the following thresholds should be considered as having an individually and cumulatively significant air quality impact:

55 lbs per day of ROC*

55 lbs per day of NO_x**

550 lbs per day of CO

150 lbs per day of PM-10

150 lbs per day of SO_x

* - 75 lbs/day during construction

** - 100 lbs/day during construction

These thresholds do not take into account several important considerations, namely:

1. Emission levels from one large project may exceed thresholds while those from numerous smaller projects with identical emissions might not, even though the regional impact is the same.

2. Large developments have a greater opportunity to effectively implement TCMs because of a greater potential participant pool in trip/VMT diversion programs.

3. Project-related emissions and their regional impact may already have been incorporated into regional growth projections.

4. Emissions generated in or near El Toro have essentially the same regional air quality impact if they were released in a nearby community. If the anticipated demand for residential use is not met at Saddleback Meadows but in some other community, the no-project alternative will have basically the same regional air quality impact.

These considerations can be used by the Lead Agency as a basis for supporting a finding of a less than significant impact, even if the SCAQMD advisory thresholds are exceeded. Alternately, the Lead Agency may make a finding of a significant impact for projects exceeding the SCAQMD thresholds, but use as many of the above criteria in a statement of overriding considerations as are applicable.

Additional indicators should be used as screening criteria to evaluate the need for further analysis with respect to air quality. Whenever possible, the project should be evaluated in a quantitative analysis; otherwise a qualitative analysis is appropriate. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation;

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP;

- Project could generate vehicle trips that cause a CO hot spot;

- Project might have the potential to create or be subjected to objectionable odors;

- Project could have hazardous materials on site and could result in an accidental release of air toxic emissions;
- Project could emit an air toxic contaminant regulated by District rules or that is on a federal or state air toxic list;
- Project could involve disposal of hazardous waste;
- Project could be occupied by sensitive receptors near a facility that emits air toxics or near CO hot spots;
- Project could emit carcinogenic air contaminants that could pose a cancer risk.

Project-Related Sources of Potential Impact

Intensification of land uses in Orange County potentially impacts ambient air quality on two scales of motion. As cars drive throughout Southern California, the small incremental contribution to the basin air pollution burden from any single vehicle is added to that from several million other vehicles. The impact from this project, even if it generates a significant number of new vehicle trips, is very small on a regional scale. Basinwide air quality impacts are, therefore, addressed in terms of project compatibility with regional air quality plans. If any given project or plan has been properly incorporated into basinwide growth projections which are the basis for regional air quality/transportation planning, then the basinwide impact of any proposed development is presumed, by definition, to be less than significant.

Locally, changes in the location of any collection of automotive sources, or changes in the number of vehicles or travel speeds may impact the microscale air quality around any given development site. Traffic increases not only contribute air pollutants in direct proportion to their cumulative percentage of traffic volume growth, but they may slow all existing traffic to slower, more inefficient travel speeds. The development traffic/air quality impact is thus potentially compounded.

Temporary construction activity emissions will occur during project buildout. Such emissions include on-site generation of dust and equipment exhaust, and off-site emissions from construction employee commuting and/or trucks delivering building materials. Because of their temporary nature, air quality impacts from construction have often been considered as individually less than significant. Also, construction activity emissions are difficult to quantify, since the exact type and amount of equipment that will be used or the acreage that may be disturbed on any given day in

the future is not known with any reasonable certainty. The emphasis in environmental documents relative to construction activity emission impacts has therefore been to minimize the emissions as fully as possible through comprehensive mitigation even if the precise amount of emissions can not be precisely quantified.

Historical use of agricultural pesticides or herbicides on the project site may have left residues within the soil that may be lofted during site development. Such concern, however, are more common for cultivated fields where DDT or other chlorinated compounds were used than for open rangeland such as the project site.

Construction workers, and to some extent the public at large, could also be exposed to any spores, viruses or other materials in the soil released during site grading. Grading activities are not likely to create any unacceptable health impacts from biological organisms in that organisms such as Valley Fever are not endemic to the El Toro area. Thousands of acres of Orange County have been tilled for many years or graded for new development with minimal evidence of any health impacts from soil-borne pathogens.

Construction Activity Impacts

Dust is normally the primary concern during construction of new buildings and infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Because of such variations, regulatory agencies use one universal factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into mid-range average values.

The PM-10 fraction of fugitive dust emissions are predicted to be around 55 pounds per day per acre disturbed in the absence of any dust control measures being applied (AQMD CEQA Handbook, Table 9-2). Mandatory measures required by South Coast AQMD Rule 403 (Fugitive Dust) are generally assumed to reduce this rate by 50%. Average daily PM-10 emissions during site grading and other disturbance are stated in the SCAQMD Handbook to be 26.4 pounds/acre. Best available control measures (BACMs) such as continual soil wetting, use of supplemental binders, early paving, etc. can achieve a substantially higher PM-10 control efficiency. Use of BACMs in dust control from construction is an important component of the 1997 PM-10 regional attainment plan.

The Saddleback Meadows project site totals 223 acres. Some steep slopes will be left in open space, but a very substantial part of the site would be graded to accommodate 705 manufactured homes. Rough grading over a large part of the site would likely occur initially with finish grading completed in response to market demand. The area of simultaneous disturbance on any given day could be 10-20 acres. Use of the SCAQMD "default" PM-10 emission factor of 26.4 pounds per acre per day would predict daily PM-10 emissions during rough grading of 264-528 pounds per day. Such emissions would exceed the daily PM-10 significance threshold of 150 pounds per day by a wide margin.

Recent studies of dust control with BACMs have demonstrated, however, that emissions rates of 10.7 pounds per acre per day are attainable when such measures are applied. A 10-20 acre disturbance area with use of all BACMs would contribute 107-214 pounds per day of PM-10. Use of BACMs plus limiting the daily grading area to approximately 14 acres or less could be used in tandem to keep PM-10 emissions at less than significant levels.

It is possible that impact significance in terms of PM-10 emissions may not be wholly relevant in light of current understanding of health effects from airborne dust exposure. Recent research indicates that only the very tiniest particulates of 2.5 micron in diameter or smaller (called "PM-2.5") dominate health response to particulate inhalation. Mechanical soil abrasion creates very little PM-2.5. Measurements in Orange County have shown that one-third of PM-10 is made up of "crustal material", i.e., dirt. Among the PM-2.5 fraction, less than one percent is soil material. Replacement of the PM-10 standard by one for PM-2.5 would likely change the conclusion regarding health impacts from grading operations.

In addition to the fine particulates that remain suspended in the air semi-indefinitely, soil disturbance during construction may release considerable amounts of larger particles that have short atmospheric residence times. These larger particulates are generally inert silicates that are readily filtered out in the upper respiratory tract. They therefore have no adverse health effects. They may, however, create a soiling nuisance as they settle out on parked cars, landscaping foliage or other horizontal surfaces. Clouds of such dust may also locally impair visibility. Soiling nuisance at St. Michael's Abbey during daytime on-shore flow or in Hidden Hills during early morning drainage winds is therefore a possible concern that further prompts the use of efficient dust control.

It is through these larger particulates that the public is aware of a dust problem in a construction area rather than through PM-10.

Because such large particles are more readily lofted by turbulence during strong winds, extra dust control or cessation of soil disturbance activities is recommended when wind speeds exceed a heavy particulate lofting threshold of around 25 mph.

Construction also entails use of internal combustion engines to power on-road trucks and off-road mobile, semi-mobile and semi-stationary equipment. Such sources are mainly diesel-powered and are poorly regulated in terms of allowable emission levels. Off-road sources are sometimes not well maintained because there is no regulatory mechanism to enforce efficient combustion as there is for on-road sources. The SCAQMD has calculated the total area under construction that would cause the significance thresholds to be exceeded from construction-related equipment combustion emissions. For single family residences, the threshold is 1.3 million sq. feet of gross floor area (SCAQMD Handbook, Table 6-2). For 705 units of manufactured housing, even at 2,000 square feet per unit (triple-wides), total improved footage from simultaneous construction of the entire project will be less than the stated threshold. With the use of a comprehensive dust control program, construction activity air quality impacts in the project vicinity can be maintained at less than significant levels.

Construction activities are concentrated at the construction site, but they also spill over into the adjacent community. Spill-over may be physical spillage, or it may be from off-site congestion effects. Vehicles may track dirt off-site, lane closures may create congestion on public roadways and construction worker vehicles and supply trucks may compete with the general public for sometimes inadequate roadway capacity. Trucks may be left idling near off-site sensitive receptors while waiting to load or unload. Each of these small impacts nevertheless may be cumulatively significant when spread over several years of project area buildout. As with the on-site impacts, a heightened level of impact mitigation will need to be utilized to maintain an overall tolerable level of impact from site activity construction. Housekeeping and construction activity management procedures are identified in the impact mitigation discussion relative to "spill-over" minimization.

Mobile Source Impacts

The bulk of the proposed project's impact will derive from the approximately 7,530 "new" daily trips that will be generated at full site buildout. At a typical trip length of around 9 miles per trip, project implementation would add around 70,000 vehicle miles traveled (VMT) to the basinwide mobile source emissions burden.

The emissions associated with project buildout can be readily calculated using the SCAQMD's MAAQI computer model. Emissions from project-related travel were calculated for a buildout year of 1998 as the earliest likely project completion year. The results of these calculations are summarized in Table 4. The computer output from the emissions model is attached as an appendix to this report.

Mobile source emissions for the three primary exhaust pollutants (ROG, CO and NO_x) exceed the SCAQMD significance threshold by a wide margin. This conclusion is generally consistent with the SCAQMD Handbook ... which, in Table 6-2, states that single family residential projects of 166 units or more may have a significant environmental impact.

Although the SCAQMD Air Quality Handbook states strongly that such emission levels will have a significant impact on the environment, that finding is not necessarily binding. The SCAQMD is only an advisory agency on this project, such that the Lead Agency must evaluate whether there will actually be a measurable degradation of the regional air quality environment resulting from project implementation. While the proposed project would cause the suggested AQMD emissions threshold to be exceeded by a wide margin, several considerations may mitigate against considering the resulting air quality impact as individually significant as follows:

1. Similar emissions would result from development of the same project in an adjacent jurisdiction or elsewhere in Orange County.

2. The project is consistent with growth assumptions that were used for regional emissions forecasts in the AQMP. The AQMP forecasts regional attainment of the federal ozone standard by 2010 as long as the rate of predicted regional growth is not exceeded. The Saddleback Meadows project is only a minute part of predicted Orange County growth.

3. The transportation infrastructure is in place to efficiently service the site with good access to multiple transportation modes.

4. The project is located near the Foothill Corridor that provides good linkage between the Orange County concentrated employment centers and the project site.

The above considerations would allow for the Lead Agency to find that the air quality impact is individually less than significant

TABLE 4

SADDLEBACK MEADOWS DEVELOPMENT
REGIONAL EMISSIONS SUMMARY (pounds/day)

Land Use	CO	ROG	NOx	SOx	PM-10
750 D.U. (Manuf. Housing)	1311.8	107.7	149.0	10.3	15.2
20 KSF Commercial	397.3	34.0	43.1	3.2	5.1
TOTAL	1709.1	141.7	192.1	13.5	20.3
SCAQMD Threshold	550.	55.	55.	150.	150.
Project Share of Threshold	311%	258%	349%	9%	14%

Source: MAAQI Air Quality Model (SCAQMD, 1993) - Output in Appendix.

despite the considerable emissions magnitude. If the emissions total alone were to be judged as sufficient evidence for a finding of significance, then the above considerations should be incorporated into a statement of overriding consideration.

Relative to a finding of (in)significance for the mobile source emissions, traffic from all future growth will contribute significantly to the sub-regional and regional air pollution burden, and, therefore, creates a cumulatively significant air quality impact, regardless of project size. This is a function of growth and the dependence upon the single occupant fossil-fueled vehicle as the primary means of transportation. All growth delays the ultimate attainment of regional clean air standards. This project, within a loose definition of "cumulative projects", would contribute to that impediment to clean air. Regardless of any finding of individual impact significance, the proposed Saddleback Meadows development should be identified as having a cumulatively significant air quality impact.

Because vehicular sources from all combined growth will contribute so substantially to regional emissions total, it correspondingly represents a significant opportunity to reduce that contribution. A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) will achieve a measurable reduction when applied to such a large baseline emissions level. The degree of "excess" emissions, however, is so substantial as to preclude reduction to sub-threshold levels through any project-specific mitigation.

Orange County has been extensively involved in trip/VMT reduction programs through the trip reduction ordinances (TRO) and various geographically focused transportation management programs. Several countywide programs that monitor city and county response to AQMP TCMs have shown that the county collectively has exceeded the 1994 trip reduction target of the 1991 AQMP when the county is allocated its fair share of the basinwide reduction target. While progress toward reducing the dependence on the single occupant vehicle (SOV) is slow, continued progress toward higher average vehicle ridership (AVR) is to be expected during the Saddleback Meadows buildout timeframe.

While regional mobile source emissions do not have a very direct impact on local El Toro air quality, the incremental addition of growth-related traffic over a wide area may change microscale air quality distributions. To determine whether future traffic changes will create an adverse air quality impact, a microscale air quality analysis was performed for the traffic analysis grid around the project site. A screening procedure based on the California line source roadway dispersion model CALINE4 was run for a number of

traffic scenarios to evaluate any changes due to changes in patterns of growth anticipated as part of the Saddleback Meadows development.

The model combines the results of the traffic analysis with very restrictive dispersion conditions in order to generate a worst-case impact assessment. Carbon monoxide (CO) was used as an indicator of any "hot spot" potential because CO, unlike regional pollutants such as ozone, is directly related to source activity immediately adjacent to the receptor (a primary, unreacted pollutant impact). Calculations were made for an hourly exposure in the immediate vicinity of 10 roadway intersections where baseline traffic volumes were calculated in the traffic analysis.

The results of the microscale impact analysis are summarized in Table 5. The values in Table 5 must be added to any non-local background CO distribution. If one assumes that the maximum level measured near the El Toro and Jeronimo Roads intersection is the regional background, and that the worst-case, one-hour level of 6 ppm observed in 1995 occurs at the exact same hour as any worst-case project impact, then it would take a local contribution of 14 ppm to threaten the one-hour California CO standard of 20 ppm. Microscale hourly CO levels, both without and with the proposed project are forecast to be below the 14 ppm threshold. The maximum future (2000) microscale CO exposure is predicted to be 12 ppm above background at Portola Parkway and Glenn Ranch Road. With improvements, the local increment reduces to 9 ppm. Even under worst-case ("no improvement") assumptions, the theoretical combination of maximum local impacts (12 ppm) plus the maximum background (6 ppm) remains below the most stringent 20 ppm California 1-hour and/or the 35 ppm federal 1-hour standards.

By the year 2000, project-related CO contributions are seen in Table 5 to range from 0.2 to 3.0 ppm compared to no-project conditions without roadway improvements. Increases exceeding 1 ppm occur at El Toro Road and Ridgeline and along Portola Parkway. The average increase at all intersections is 0.9 ppm compared to the most stringent standard of 20 ppm (4.5 percent average change). There are not now, nor will there be with the project, any microscale air pollution "hot spots" at any project area intersections.

Increased areawide traffic and associated congestion is offset by continued improvements in vehicular CO emissions per average vehicle. Future (2020) CO levels with the proposed project and with anticipated intersection improvements are generally less than in 1997. At no intersection are 2020 "with project" levels greater than in 1997 by more than 1.0 ppm for the "with mitigation" (w/Mit.) scenario. SCAQMD Rule 1303 identifies a CO increment of

TABLE 5

MICROSCALE AIR QUALITY IMPACT ANALYSIS

(Hourly CO concentration [ppm] above non-local background
at edge of each indicated intersection leg).

Intersection	Existing	Existing Plus Project	2000 w/o Project	-2000 with Proj.-		-2020 w/o Proj.-		-2020 with Proj.-	
			No. Imp.	No Imp.	w/Mit.	No Imp.	w/Mit.	No Imp.	w/Mit.
Santiago Cyn./Modjeska Cyn. Road	4.4	5.2	3.7	3.9	3.9	2.6	0.9	2.7	0.9
Santiago Cyn./Ridgeline Road	3.1	4.3	3.5	4.9	1.7	2.5	1.1	2.6	1.1
El Toro Rd./Live Oak Cyn. Road	2.7	2.8	2.3	3.2	3.2	2.1	1.0	2.2	1.0
El Toro Rd./Ridgeline Road	2.0	2.2	1.6	2.4	2.4	1.1	0.5	1.5	0.7
El Toro Rd./Project Entrance	---	2.5	---	2.6	2.6	---	---	1.3	0.6
El Toro Rd./Valley Vista Way	1.6	2.5	1.7	2.5	2.5	1.1	0.6	1.6	0.6
El Toro Rd./Glenn Ranch Road	1.6	1.9	1.9	2.1	2.1	1.8	0.7	1.9	0.8
Saddleback Ranch Rd./Glenn Ranch Rd.	1.0	0.8	1.5	1.7	1.7	1.0	0.9	1.0	1.0
Marguerite Pkwy./El Toro Road	1.6	1.1	1.9	2.1	2.1	1.6	1.3	1.7	1.4
Portola Pkwy./Glenn Ranch Road	2.9	3.1	8.8	11.8	9.0	6.6	3.7	6.7	3.8
Portola Pkwy./Foothill Trans Corr.	2.0	2.2	6.1	6.1	6.1	5.8	2.5	6.4	2.5
Portola Pkwy./El Toro Road	2.7	2.8	5.6	7.4	7.4	5.4	3.0	5.4	3.0

less than 5 percent of the hourly standard of 20 ppm, i.e., 1.0 ppm, to be a de minimis increment requiring no further impact analysis. The findings of the microscale impact assessment are therefore that CO levels under theoretical worst-case conditions do not exceed clean air standards and the Saddleback Meadows traffic will add an insignificant amount to the total CO exposure. Microscale impacts are less than significant.

MITIGATION

Potentially significant impacts were identified during construction from dust (PM-10) generated by surface disturbance and from construction equipment operations. Operational emissions will be in excess of thresholds of significance for regionally significant pollutants as identified by the South Coast AQMD. As a minimum, vehicular emissions from project-related traffic should be identified as having a cumulatively significant air quality impact. A number of mitigations, as related to the project, are already incorporated into rules, regulations or ordinances. They are included in the following list of mitigation measures in that compliance mitigates a potentially adverse impact. They are not discretionary measures, however, which a developer can implement or the County of Orange can additionally require since compliance is already assumed in the impact analysis.

In particular, dust control during construction requires compliance with SCAQMD Rule 403 (rev. 1997). Rule 403 requires the use of best available control measures, requires that visible dirt track-out at construction access be promptly removed, and prohibits visible dust clouds beyond the property boundary. Any discretionary actions would be those measures that go beyond the already established Rule 403 minimum requirements.

The SCAQMD in its CEQA Handbook (1993) has developed a menu of mitigation options for consideration into project planning where applicable or appropriate. Some measures are not considered feasible for the proposed project. Many transportation control measures (TCMs) are already incorporated into actions required by the County of Orange. Mitigation potential, beyond what is already required, is therefore somewhat limited. The following measures are recommended:

Construction Dust

- Contractors will comply with SCAQMD Rule 403. In addition to meeting minimum compliance requirements, the contractor will utilize any additional reasonable and feasible methods of dust control from the measures shown in the list in the SCAQMD Rule 403 Implementation Handbook.

  Responsible Party: Construction Contractor

  Supervising Agency: County of Orange
  South Coast AQMD

- Contractors will implement a high wind dust control program when wind gusts exceed 25 mph as measured by an on-site wind monitor or as reported by weather observers at El Toro MCAS. High wind dust control will entail:

  - Termination of operation of scrapers, graders or dozers on unpaved surfaces until winds subside.

  - Application of water hourly to any unpaved surface with vehicle or equipment operations.

  - Application of water or other dust control material to any previously graded surface if dust emanation is visible from such surface.

- Contractors will utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and will wash or sweep the construction access points at El Toro Road on a routine basis on a frequency specified by the County of Orange as well as whenever dirt is visible more than 50 feet from the access point independent of the routine clean-up schedule.

  Responsible Party: Construction Contractor

  Supervising Agency: County of Orange

- Trucks hauling dirt on public roads to and from the site will be covered or will maintain a six inch differential between the maximum height of any hauled material and the top of the haul trailer. Haul truck drivers will water the load prior to leaving the site to prevent soil loss during transport.

  Responsible Party: Construction Contractor

  Supervising Agency: California Highway Patrol

- Construction management procedures required by the County of Orange and other jurisdictions shall be implemented. Contractor personnel responsible for supervision and the appropriate actions to be taken for the following measures shall be identified:

  - Cessation of activities during a Stage-2 smog episode. Call 1-800-242-4022 for the daily forecast.

- Truck routes and schedules for receipt of materials shall be coordinated with County of Orange staff.

- Where feasible, on-road vehicles and off-road equipment shall be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes.

Responsible Party: Construction Contractor

Supervising Agency: County of Orange

- Graded surfaces used for off-road parking, materials laydown or awaiting future construction shall be stabilized for dust control as needed. Frequently accessed unpaved areas shall be paved as early as possible to minimize dirt trackout to public rights of way.

Responsible Party: Construction Contractor

Supervising Agency: County of Orange

- Equipment will be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and use low-sulfur fuel as required by SCAQMD regulation.

Responsible Party: Construction Contractor

Supervising Agency: South Coast AQMD

- Lane closures or detour will require coordination with the County of Orange. Flagpersons and appropriate traffic control devices will be used as needed to minimize construction activity interference with off-site traffic.

Responsible Party: Construction Contractor

Supervising Agency: County of Orange EMA
Orange County Sheriff Department

Implementation of the above measures is expected to maintain construction activity air quality impacts at less than significant levels.

Operational Activities:

- Traffic flow at the project access will be maintained at acceptable levels of service through mitigation measures identified in the project traffic study.

  Responsible Party: Project Developer

  Supervising Agency: County of Orange Transportation Planning

- 220v electric power for future use to charge electric-powered vehicles will be made available in homeowner garages.

  Responsible Party: Site Developer

  Supervising Agency: County of Orange EMA

Emissions Reduction Quantification

Emissions calculations and the corresponding ambient air quality impact assessment for project-related construction and Saddleback Meadows operations presumed compliance with SCAQMD rules regarding dust control. The potential for additional emissions reduction beyond the mandatory requirements of existing rules and regulations was evaluated based on Appendix 11 of the SCAQMD Air Quality Handbook which quantifies reduction potential of a variety of project construction and operation emissions control measures.

Table 6 shows the emission reduction estimate for the menu of recommended measures for the proposed project. Dust emissions can be controlled from their 50 percent control assumed for Rule 403 compliance by an additional 50-80 percent of the uncontrolled fraction. The net effective dust control level is therefore 75-90 percent, seen as follows.

Control = 0.50 + (0.50 - 0.80) X (0.50)

= Rule 403 + Add'l. Control X Not Contr.

= 0.50 + (0.25 - 0.40)

= 0.75 - 0.90

Unless the entire project site is under simultaneous massive grading, attaining the optimum level of dust control will maintain dust impacts at less than significant levels.

TABLE 6

MITIGATION EFFECTIVENESS ESTIMATE

	Pollutant Control	
Construction Measures	Particulates	Gaseous
Rule 403 Additional Measures	25-40%	---
High Wind Response Plan	NQ	NQ
Off-Site Dirt Deposition Control	5-10%	---
Covered Trucks or Watered Loads	5%	---
Construction Mgmt. Procedures	---	10%
Surface Stabilization	10-20%	---
Equipment Tune-ups	5%	10%
Traffic Interference Minimization	---	5%
Composite:	50-80%	25%
Operational Measures:		
Congestion Management	5%	5%
Electric Vehicle Access	NQ	NQ
Composite:	5%	5%

--- = minimal reduction

NQ = not quantified. Compliance with regulations already presumed in the impact analysis and generates no new reduction.

Operational emissions reduction from mobile sources of 5 percent of their non-TCM implementation level can not reduce the substantial emission level to less than the SCAQMD advisory level significance thresholds. A number of secondary considerations were identified, however, that would either allow for a finding of an individually less than significant air quality impact. If the impact were judged by the Lead Agency in any CEQA process to be significant, those secondary mitigating factors may become part of any statement of overriding considerations.

Alternatives

Four lesser intensity alternatives have been considered for the project site. Emissions associated with each alternative were presumed directly proportional to the "new" average daily traffic (ADT) generated by each alternative. Table 7 shows that all alternatives except the two lowest intensity single-family residential uses cause the SCAQMD threshold to be exceeded. Any development intensity that causes more than around daily trips is forecast to exceed the NO_x threshold.

Air quality, however, occurs mainly within a regional context. The air quality impact from lesser intensity alternatives may therefore not necessarily be environmentally preferred for the following reasons:

a. The same level of growth is likely to occur at some other Orange County location with similar impacts.

b. Transportation corridor access for goods and services may be less adequate at another location.

c. Development of this site is a natural expansion of already completed developments at Hidden Hills, Portola Hills or Foothill Ranch.

TABLE 7

REGIONAL EMISSIONS FROM PROJECT ALTERNATIVES
(pounds/day)

	ROG	CO	NOx	SOx	PM-10
100 S.F. Detached	22.8	278.7	29.9	2.1	3.2
150 S.F. Detached	34.3	418.1	44.9	3.1	4.8
318 M.F. Attached	42.4	517.5	58.0	4.1	6.0
299 S.F. Detached	68.3	833.4	89.5	6.2	9.6
Proposed Project	141.7	1709.1	192.1	13.5	20.3
SCAQMD Threshold	55.	550.	55.	150.	150.

Underlined entries exceed threshold.

References:

California Air Resources Board, 1989 - 1995; California Air Quality Data, Vols. XXI - XXVII.

California Dept. of Transportation (Caltrans), Air Quality Technical Analysis Notes (AQTAN), 1988.

South Coast AQMD, 1993: CEQA Air Quality Handbook

South Coast AQMD, 1994: Mobile Assessment for Air Quality Impacts (MAAQI Computer Program).

APPENDIX

MAAQI Computer Model Output

Project Year: 2000

```
--------------------PROJECT DESCRIPTION--------------------------
PROJECT NAME AND DESCRIPTION: Saddleback Meadows
  705 D.U. Manufactured Housing
PROJECT STARTING YEAR: 2000
    CITY: EL TORO                              ZIP CODE:
  COUNTY: ORANGE                             AREA NUMBER: AREA1
L.U., DESCR. AND SIZE: RESIDENTIAL, SINGLE FAMILY, 705 DWELLING UNIT
AVERAGE DAILY TRIPS:        5640 (PER DWELLING UNIT-- 8.00)
NUMBER OF VEHICLES:         2820  TOTAL PROJECT VMT: 44506 miles
-----TRIP PURPOSE DATA:      Home-Other      Home-Shop      Home-Work
AVERAGE TRIP SPEEDS:            26.4            26.4           26.4   mph
AVERAGE TRIP LENGTHS:            6.3             5.4           10.0   miles
TRIP PERCENTAGES:               45.1             9.2           45.7   percent
VEHICLE MILES TRAVELLED:     15991.8          2793.5        25721.2   miles
VEHICLE DATA DISTRIBUTIONS:  Heavy Duty Vehicles   Passenger Vehicles
  Average Daily Trips          12.9%    725/day       87.1%   4914/day
  Number of Vehicles           13.5%    381           86.5%   2438
  Vehicle Miles Travelled      12.5%   5563 miles     87.5%  38942 miles
TRIP COLD/HOT STARTS: 100% COLD,    0% HOT

ELECTRICAL SUPPLIER: SCE
CONVERSION FACTOR from PER DWELLING UNIT
     to MEGAWATT-HR/DAY is   5626.5/365/1000
 and to MILLION CU FT/DAY is 6650.0/30/1,000,000

RUN TYPE: Screening Run   DATA CASE: Project Without Mitigation
                          EMISSIONS (in lbs/day)
                 ==========================================
VEHICLES--       PASS.    TRUCK    BOTH     MITIGATED  EFFIC.
                 ------   ------   ------   ------     ------
Home-Other Trip Running Emissions--
  CO              135.1     48.4    183.5    183.5       0.0%
  ROC               8.4      6.2     14.6     14.6       0.0%
  NOx              14.9     20.0     34.8     34.8       0.0%
  SOx               1.9      1.4      3.2
  PM10-Exhaust      0.2      1.2      1.4      1.4       0.0%
  PM10-Tire Wear    3.1      0.8      3.9      3.9       0.0%
  LEAD            0.000    0.003    0.003

Home-Shop Trip Running Emissions--
  CO               23.6      8.5     32.1     32.1       0.0%
  ROC               1.5      1.1      2.5      2.5       0.0%
  NOx               2.6      3.5      6.1      6.1       0.0%
  SOx               0.3      0.2      0.6
  PM10-Exhaust      0.0      0.2      0.2      0.2       0.0%
  PM10-Tire Wear    0.5      0.1      0.7      0.7       0.0%
  LEAD            0.000    0.001    0.001

Home-Work Trip Running Emissions--
  CO              217.3     77.9    295.2    295.2       0.0%
  ROC              13.5      9.9     23.5     23.5       0.0%
  NOx              23.9     32.1     56.0     56.0       0.0%
  SOx               3.0      2.2      5.2
  PM10-Exhaust      0.2      1.9      2.2      2.2       0.0%
  PM10-Tire Wear    5.0      1.3      6.3      6.3       0.0%
  LEAD            0.000    0.005    0.005

Home-Other Trip Start & Soak Emissions--
  CO  Cold Start  334.0     24.6    358.6    358.6       0.0%
  ROC Cold Start   17.7      1.8     19.5     19.5       0.0%
```

NOx Cold Start	10.7	1.5	12.2	12.2	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	3.7	0.4	4.1	4.1	0.0%
Home-Shop Trip Start & Soak Emissions--					
CO Cold Start	68.0	5.0	73.1	73.1	0.0%
ROC Cold Start	3.6	0.4	4.0	4.0	0.0%
NOx Cold Start	2.2	0.3	2.5	2.5	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	0.8	0.1	0.8	0.8	0.0%
Home-Work Trip Start & Soak Emissions--					
CO Cold Start	339.0	25.0	364.0	364.0	0.0%
ROC Cold Start	18.0	1.8	19.8	19.8	0.0%
NOx Cold Start	10.9	1.5	12.4	12.4	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	3.8	0.4	4.2	4.2	0.0%
Other Evaporative Emissions--					
ROC-Diurnal	11.9	2.0	13.8		

TOTAL EMISSIONS SUMMARY

VEHICULAR--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
CO	1117.0	189.5	1306.5	1306.5	0.0%
ROC	82.9	23.9	106.8	106.8	0.0%
NOx	65.2	58.9	124.0	124.0	0.0%
SOx	5.2	3.8	9.0		
PM10	9.0	5.7	14.7	14.7	0.0%
LEAD	0.000	0.009	0.009		

STATIONARY--	ELECT.	GAS	BOTH	MITIGATED	EFFIC.
CO	2.17	3.13	5.30	5.30	0.0%
ROC	0.11	0.83	0.94	0.94	0.0%
NOx	12.50	12.50	25.00	25.00	0.0%
SOx	1.30	0.00	1.30		
PM10	0.43	0.03	0.47	0.47	0.0%

TOTAL--	EMISS.	THRES.	%THRES	MITIGATED	%THRES
CO	1311.8	550.0	239%	1311.8	239%
ROC	107.7	55.0	196%	107.7	196%
NOx	149.0	55.0	271%	149.0	271%
SOx	10.3	150.0	7%		
PM10	15.2	150.0	10%	15.2	10%
LEAD	0.009	N/A	N/A		

```
--------------------PROJECT DESCRIPTION--------------------------
PROJECT NAME AND DESCRIPTION: Saddleback Meadows
  20 KSF Commercial w/ 30% Pass-By Reduction
PROJECT STARTING YEAR: 2000
    CITY: EL TORO                              ZIP CODE:
  COUNTY: ORANGE                             AREA NUMBER: AREA1
L.U., DESCR. AND SIZE: NON_RESIDENTIAL, SHOPPING CTR. (10-500), 20 1000 SQ.FT.
AVERAGE DAILY TRIPS:       1890 (PER 1000 SQ.FT.-- 94.50)
NUMBER OF VEHICLES:         945  TOTAL PROJECT VMT: 15470 miles
-----TRIP PURPOSE DATA:        Work        Non-Work
AVERAGE TRIP SPEEDS:           26.4            26.4   mph
AVERAGE TRIP LENGTHS:          11.3             6.1   miles
TRIP PERCENTAGES:              40.0            60.0   percent
VEHICLE MILES TRAVELLED:     8547.9          6922.7   miles
VEHICLE DATA DISTRIBUTIONS:  Heavy Duty Vehicles   Passenger Vehicles
  Average Daily Trips         12.9%    243/day       87.1%   1646/day
  Number of Vehicles          13.5%    127           86.5%    817
  Vehicle Miles Travelled     12.5%   1933 miles     87.5%  13536 miles
TRIP COLD/HOT STARTS:  80% COLD,   20% HOT

ELECTRICAL SUPPLIER: SCE
CONVERSION FACTOR from PER 1000 SQ.FT.
     to MEGAWATT-HR/DAY is   13550.0/365/1000
 and to MILLION CU FT/DAY is 4800.0/30/1,000,000

RUN TYPE: Screening Run   DATA CASE: Project Without Mitigation
                          EMISSIONS (in lbs/day)
                        ==========================================
VEHICLES--              PASS.   TRUCK   BOTH    MITIGATED  EFFIC.
                        ------  ------  ------  ---------  ------
Work Trip Running Emissions--
  CO                     72.2    25.9    98.1     98.1       0.0%
  ROC                     4.5     3.3     7.8      7.8       0.0%
  NOx                     7.9    10.7    18.6     18.6       0.0%
  SOx                     1.0     0.7     1.7
  PM10-Exhaust            0.1     0.6     0.7      0.7       0.0%
  PM10-Tire Wear          1.6     0.4     2.1      2.1       0.0%
  LEAD                    0.000   0.002   0.002

Non-Work Trip Running Emissions--
  CO                     58.5    21.0    79.4     79.4       0.0%
  ROC                     3.6     2.7     6.3      6.3       0.0%
  NOx                     6.4     8.7    15.1     15.1       0.0%
  SOx                     0.8     0.6     1.4
  PM10-Exhaust            0.1     0.5     0.6      0.6       0.0%
  PM10-Tire Wear          1.3     0.4     1.7      1.7       0.0%
  LEAD                    0.000   0.001   0.001

Work Trip Start & Soak Emissions--
  CO  Cold Start         79.5     5.9    85.4     85.4       0.0%
  ROC Cold Start          4.2     0.4     4.6      4.6       0.0%
  NOx Cold Start          2.6     0.3     2.9      2.9       0.0%
  CO  Hot Start           2.3     0.2     2.5      2.5       0.0%
  ROC Hot Start           0.2     0.0     0.2      0.2       0.0%
  NOx Hot Start           0.3     0.0     0.4      0.4       0.0%
  ROC Hot Soak            1.1     0.1     1.2      1.2       0.0%

Non-Work Trip Start & Soak Emissions--
  CO  Cold Start        119.1     8.8   127.9    127.9       0.0%
  ROC Cold Start          6.3     0.6     6.9      6.9       0.0%
```

NOx Cold Start	3.8	0.5	4.4	4.4	0.0%
CO Hot Start	3.5	0.2	3.7	3.7	0.0%
ROC Hot Start	0.3	0.0	0.4	0.4	0.0%
NOx Hot Start	0.5	0.1	0.5	0.5	0.0%
ROC Hot Soak	1.7	0.2	1.8	1.8	0.0%
Other Evaporative Emissions--					
ROC-Diurnal	4.0	0.7	4.6		

TOTAL EMISSIONS SUMMARY

VEHICULAR--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
CO	335.1	61.9	397.0	397.0	0.0%
ROC	25.9	8.0	34.0	34.0	0.0%
NOx	21.6	20.3	41.9	41.9	0.0%
SOx	1.8	1.3	3.1		
PM10	3.1	2.0	5.1	5.1	0.0%
LEAD	0.000	0.003	0.003		

STATIONARY--	ELECT.	GAS	BOTH	MITIGATED	EFFIC.
CO	0.15	0.06	0.21	0.21	0.0%
ROC	0.01	0.02	0.02	0.02	0.0%
NOx	0.85	0.38	1.24	1.24	0.0%
SOx	0.09	0.00	0.09		
PM10	0.03	0.00	0.03	0.03	0.0%

TOTAL--	EMISS.	THRES.	%THRES	MITIGATED	%THRES
CO	397.3	550.0	72%	397.3	72%
ROC	34.0	55.0	62%	34.0	62%
NOx	43.1	55.0	78%	43.1	78%
SOx	3.2	150.0	2%		
PM10	5.1	150.0	3%	5.1	3%
LEAD	0.003	N/A	N/A		

----------PROJECT DESCRIPTION----------
PROJECT NAME AND DESCRIPTION: Saddleback Meadows
Other Alternatives 150 D.U. Single Family Detached
PROJECT STARTING YEAR: 2000
CITY: EL TORO ZIP CODE:
COUNTY: ORANGE AREA NUMBER: AREA1
L.U., DESCR. AND SIZE: RESIDENTIAL, SINGLE FAMILY, 150 DWELLING UNIT
AVERAGE DAILY TRIPS: 1800 (PER DWELLING UNIT-- 12.00)
NUMBER OF VEHICLES: 900 TOTAL PROJECT VMT: 14204 miles

-----TRIP PURPOSE DATA:	Home-Other	Home-Shop	Home-Work	
AVERAGE TRIP SPEEDS:	26.4	26.4	26.4	mph
AVERAGE TRIP LENGTHS:	6.3	5.4	10.0	miles
TRIP PERCENTAGES:	45.1	9.2	45.7	percent
VEHICLE MILES TRAVELLED:	5103.8	891.5	8208.9	miles

VEHICLE DATA DISTRIBUTIONS:	Heavy Duty Vehicles		Passenger Vehicles	
Average Daily Trips	12.9%	231/day	87.1%	1568/day
Number of Vehicles	13.5%	121	86.5%	778
Vehicle Miles Travelled	12.5%	1775 miles	87.5%	12428 miles

TRIP COLD/HOT STARTS: 100% COLD, 0% HOT

ELECTRICAL SUPPLIER: SCE
CONVERSION FACTOR from PER DWELLING UNIT
to MEGAWATT-HR/DAY is 5626.5/365/1000
and to MILLION CU FT/DAY is 6650.0/30/1,000,000

RUN TYPE: Screening Run DATA CASE: Project Without Mitigation
EMISSIONS (in lbs/day)

VEHICLES--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
Home-Other Trip Running Emissions--					
CO	43.1	15.5	58.6	58.6	0.0%
ROC	2.7	2.0	4.7	4.7	0.0%
NOx	4.7	6.4	11.1	11.1	0.0%
SOx	0.6	0.4	1.0		
PM10-Exhaust	0.0	0.4	0.4	0.4	0.0%
PM10-Tire Wear	1.0	0.3	1.3	1.3	0.0%
LEAD	0.000	0.001	0.001		
Home-Shop Trip Running Emissions--					
CO	7.5	2.7	10.2	10.2	0.0%
ROC	0.5	0.3	0.8	0.8	0.0%
NOx	0.8	1.1	1.9	1.9	0.0%
SOx	0.1	0.1	0.2		
PM10-Exhaust	0.0	0.1	0.1	0.1	0.0%
PM10-Tire Wear	0.2	0.0	0.2	0.2	0.0%
LEAD	0.000	0.000	0.000		
Home-Work Trip Running Emissions--					
CO	69.3	24.9	94.2	94.2	0.0%
ROC	4.3	3.2	7.5	7.5	0.0%
NOx	7.6	10.3	17.9	17.9	0.0%
SOx	1.0	0.7	1.7		
PM10-Exhaust	0.1	0.6	0.7	0.7	0.0%
PM10-Tire Wear	1.6	0.4	2.0	2.0	0.0%
LEAD	0.000	0.002	0.002		
Home-Other Trip Start & Soak Emissions--					
CO Cold Start	106.6	7.9	114.5	114.5	0.0%
ROC Cold Start	5.7	0.6	6.2	6.2	0.0%

NOx Cold Start	3.4	0.5	3.9	3.9	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	1.2	0.1	1.3	1.3	0.0%
Home-Shop Trip Start & Soak Emissions--					
CO Cold Start	21.7	1.6	23.3	23.3	0.0%
ROC Cold Start	1.2	0.1	1.3	1.3	0.0%
NOx Cold Start	0.7	0.1	0.8	0.8	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	0.2	0.0	0.3	0.3	0.0%
Home-Work Trip Start & Soak Emissions--					
CO Cold Start	108.2	8.0	116.2	116.2	0.0%
ROC Cold Start	5.7	0.6	6.3	6.3	0.0%
NOx Cold Start	3.5	0.5	4.0	4.0	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	1.2	0.1	1.3	1.3	0.0%
Other Evaporative Emissions--					
ROC-Diurnal	3.8	0.6	4.4		

TOTAL EMISSIONS SUMMARY

VEHICULAR--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
CO	356.5	60.5	417.0	417.0	0.0%
ROC	26.4	7.6	34.1	34.1	0.0%
NOx	20.8	18.8	39.6	39.6	0.0%
SOx	1.6	1.2	2.9		
PM10	2.9	1.8	4.7	4.7	0.0%
LEAD	0.000	0.003	0.003		

STATIONARY--	ELECT.	GAS	BOTH	MITIGATED	EFFIC.
CO	0.46	0.67	1.13	1.13	0.0%
ROC	0.02	0.18	0.20	0.20	0.0%
NOx	2.66	2.66	5.32	5.32	0.0%
SOx	0.28	0.00	0.28		
PM10	0.09	0.01	0.10	0.10	0.0%

TOTAL--	EMISS.	THRES.	%THRES	MITIGATED	%THRES
CO	418.1	550.0	76%	418.1	76%
ROC	34.3	55.0	62%	34.3	62%
NOx	44.9	55.0	82%	44.9	82%
SOx	3.1	150.0	2%		
PM10	4.8	150.0	3%	4.8	3%
LEAD	0.003	N/A	N/A		

```
--------------------PROJECT DESCRIPTION--------------------------
PROJECT NAME AND DESCRIPTION: Saddleback Meadows
  Other Alternatives 100 D.U. Single Family Detached
PROJECT STARTING YEAR: 2000
    CITY: EL TORO                              ZIP CODE:
  COUNTY: ORANGE                             AREA NUMBER: AREA1
L.U., DESCR. AND SIZE: RESIDENTIAL, SINGLE FAMILY, 100 DWELLING UNIT
AVERAGE DAILY TRIPS:       1200 (PER DWELLING UNIT-- 12.00)
NUMBER OF VEHICLES:         600  TOTAL PROJECT VMT: 9469 miles
-----TRIP PURPOSE DATA:     Home-Other      Home-Shop      Home-Work
AVERAGE TRIP SPEEDS:           26.4            26.4           26.4   mph
AVERAGE TRIP LENGTHS:           6.3             5.4           10.0   miles
TRIP PERCENTAGES:              45.1             9.2           45.7   percent
VEHICLE MILES TRAVELLED:     3402.5           594.4         5472.6   miles
VEHICLE DATA DISTRIBUTIONS:  Heavy Duty Vehicles   Passenger Vehicles
  Average Daily Trips         12.9%    154/day      87.1%   1045/day
  Number of Vehicles          13.5%     81          86.5%    518
  Vehicle Miles Travelled     12.5%   1183 miles    87.5%   8285 miles
TRIP COLD/HOT STARTS: 100% COLD,    0% HOT

ELECTRICAL SUPPLIER: SCE
CONVERSION FACTOR from PER DWELLING UNIT
     to MEGAWATT-HR/DAY is   5626.5/365/1000
 and to MILLION CU FT/DAY is 6650.0/30/1,000,000

RUN TYPE: Screening Run   DATA CASE: Project Without Mitigation
                          EMISSIONS (in lbs/day)
                  ==========================================
VEHICLES--        PASS.   TRUCK   BOTH    MITIGATED  EFFIC.
                  ------  ------  ------  ------     ------
Home-Other Trip Running Emissions--
  CO               28.7    10.3    39.0    39.0       0.0%
  ROC               1.8     1.3     3.1     3.1       0.0%
  NOx               3.2     4.3     7.4     7.4       0.0%
  SOx               0.4     0.3     0.7
  PM10-Exhaust      0.0     0.3     0.3     0.3       0.0%
  PM10-Tire Wear    0.7     0.2     0.8     0.8       0.0%
  LEAD              0.000   0.001   0.001

Home-Shop Trip Running Emissions--
  CO                5.0     1.8     6.8     6.8       0.0%
  ROC               0.3     0.2     0.5     0.5       0.0%
  NOx               0.6     0.7     1.3     1.3       0.0%
  SOx               0.1     0.1     0.1
  PM10-Exhaust      0.0     0.0     0.1     0.1       0.0%
  PM10-Tire Wear    0.1     0.0     0.1     0.1       0.0%
  LEAD              0.000   0.000   0.000

Home-Work Trip Running Emissions--
  CO               46.2    16.6    62.8    62.8       0.0%
  ROC               2.9     2.1     5.0     5.0       0.0%
  NOx               5.1     6.8    11.9    11.9       0.0%
  SOx               0.6     0.5     1.1
  PM10-Exhaust      0.1     0.4     0.5     0.5       0.0%
  PM10-Tire Wear    1.1     0.3     1.3     1.3       0.0%
  LEAD              0.000   0.001   0.001

Home-Other Trip Start & Soak Emissions--
  CO  Cold Start   71.1     5.2    76.3    76.3       0.0%
  ROC Cold Start    3.8     0.4     4.1     4.1       0.0%
```

NOx Cold Start	2.3	0.3	2.6	2.6	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	0.8	0.1	0.9	0.9	0.0%
Home-Shop Trip Start & Soak Emissions--					
CO Cold Start	14.5	1.1	15.5	15.5	0.0%
ROC Cold Start	0.8	0.1	0.8	0.8	0.0%
NOx Cold Start	0.5	0.1	0.5	0.5	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	0.2	0.0	0.2	0.2	0.0%
Home-Work Trip Start & Soak Emissions--					
CO Cold Start	72.1	5.3	77.4	77.4	0.0%
ROC Cold Start	3.8	0.4	4.2	4.2	0.0%
NOx Cold Start	2.3	0.3	2.6	2.6	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	0.8	0.1	0.9	0.9	0.0%
Other Evaporative Emissions--					
ROC-Diurnal	2.5	0.4	2.9		

TOTAL EMISSIONS SUMMARY

VEHICULAR--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
CO	237.7	40.3	278.0	278.0	0.0%
ROC	17.6	5.1	22.7	22.7	0.0%
NOx	13.9	12.5	26.4	26.4	0.0%
SOx	1.1	0.8	1.9		
PM10	1.9	1.2	3.1	3.1	0.0%
LEAD	0.000	0.002	0.002		

STATIONARY--	ELECT.	GAS	BOTH	MITIGATED	EFFIC.
CO	0.31	0.44	0.75	0.75	0.0%
ROC	0.02	0.12	0.13	0.13	0.0%
NOx	1.77	1.77	3.55	3.55	0.0%
SOx	0.18	0.00	0.18		
PM10	0.06	0.00	0.07	0.07	0.0%

TOTAL--	EMISS.	THRES.	%THRES	MITIGATED	%THRES
CO	278.7	550.0	51%	278.7	51%
ROC	22.8	55.0	42%	22.8	42%
NOx	29.9	55.0	54%	29.9	54%
SOx	2.1	150.0	1%		
PM10	3.2	150.0	2%	3.2	2%
LEAD	0.002	N/A	N/A		

```
--------------------PROJECT DESCRIPTION--------------------------
PROJECT NAME AND DESCRIPTION: Saddleback Meadows
  Other Alternatives 318 Multi-Family Attached
PROJECT STARTING YEAR: 2000
    CITY: EL TORO                              ZIP CODE:
  COUNTY: ORANGE                             AREA NUMBER: AREA1
L.U., DESCR. AND SIZE: RESIDENTIAL, APARTMENT, LOW-RISE, 318 DWELLING UNIT
AVERAGE DAILY TRIPS:       2226 (PER DWELLING UNIT-- 7.00)
NUMBER OF VEHICLES:        1113  TOTAL PROJECT VMT: 17565 miles
-----TRIP PURPOSE DATA:    Home-Other      Home-Shop      Home-Work
AVERAGE TRIP SPEEDS:          26.4            26.4           26.4   mph
AVERAGE TRIP LENGTHS:          6.3             5.4           10.0   miles
TRIP PERCENTAGES:             45.1             9.2           45.7   percent
VEHICLE MILES TRAVELLED:    6311.7          1102.5         10151.7   miles
VEHICLE DATA DISTRIBUTIONS: Heavy Duty Vehicles   Passenger Vehicles
  Average Daily Trips        12.9%    286/day       87.1%   1939/day
  Number of Vehicles         13.5%    150           86.5%    962
  Vehicle Miles Travelled    12.5%   2195 miles     87.5%  15369 miles
TRIP COLD/HOT STARTS: 100% COLD,    0% HOT

ELECTRICAL SUPPLIER: SCE
CONVERSION FACTOR from PER DWELLING UNIT
     to MEGAWATT-HR/DAY is   5626.5/365/1000
 and to MILLION CU FT/DAY is 4011.5/30/1,000,000

RUN TYPE: Screening Run   DATA CASE: Project Without Mitigation
                          EMISSIONS (in lbs/day)
                  ==========================================
VEHICLES--        PASS.    TRUCK    BOTH     MITIGATED  EFFIC.
                  ------   ------   ------   ------     ------
Home-Other Trip Running Emissions--
  CO               53.3     19.1     72.4     72.4       0.0%
  ROC               3.3      2.4      5.8      5.8       0.0%
  NOx               5.9      7.9     13.7     13.7       0.0%
  SOx               0.7      0.5      1.3
  PM10-Exhaust      0.1      0.5      0.5      0.5       0.0%
  PM10-Tire Wear    1.2      0.3      1.5      1.5       0.0%
  LEAD              0.000    0.001    0.001

Home-Shop Trip Running Emissions--
  CO                9.3      3.3     12.7     12.7       0.0%
  ROC               0.6      0.4      1.0      1.0       0.0%
  NOx               1.0      1.4      2.4      2.4       0.0%
  SOx               0.1      0.1      0.2
  PM10-Exhaust      0.0      0.1      0.1      0.1       0.0%
  PM10-Tire Wear    0.2      0.1      0.3      0.3       0.0%
  LEAD              0.000    0.000    0.000

Home-Work Trip Running Emissions--
  CO               85.8     30.8    116.5    116.5       0.0%
  ROC               5.3      3.9      9.3      9.3       0.0%
  NOx               9.4     12.7     22.1     22.1       0.0%
  SOx               1.2      0.9      2.0
  PM10-Exhaust      0.1      0.8      0.9      0.9       0.0%
  PM10-Tire Wear    2.0      0.5      2.5      2.5       0.0%
  LEAD              0.000    0.002    0.002

Home-Other Trip Start & Soak Emissions--
  CO  Cold Start  131.8      9.7    141.6    141.6       0.0%
  ROC Cold Start    7.0      0.7      7.7      7.7       0.0%
```

NOx Cold Start	4.2	0.6	4.8	4.8	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	1.5	0.2	1.6	1.6	0.0%
Home-Shop Trip Start & Soak Emissions--					
CO Cold Start	26.9	2.0	28.8	28.8	0.0%
ROC Cold Start	1.4	0.1	1.6	1.6	0.0%
NOx Cold Start	0.9	0.1	1.0	1.0	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	0.3	0.0	0.3	0.3	0.0%
Home-Work Trip Start & Soak Emissions--					
CO Cold Start	133.8	9.9	143.7	143.7	0.0%
ROC Cold Start	7.1	0.7	7.8	7.8	0.0%
NOx Cold Start	4.3	0.6	4.9	4.9	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	1.5	0.2	1.6	1.6	0.0%
Other Evaporative Emissions--					
ROC-Diurnal	4.7	0.8	5.5		

TOTAL EMISSIONS SUMMARY

VEHICULAR--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
CO	440.9	74.8	515.6	515.6	0.0%
ROC	32.7	9.4	42.1	42.1	0.0%
NOx	25.7	23.2	49.0	49.0	0.0%
SOx	2.0	1.5	3.5		
PM10	3.6	2.3	5.8	5.8	0.0%
LEAD	0.000	0.003	0.003		

STATIONARY--	ELECT.	GAS	BOTH	MITIGATED	EFFIC.
CO	0.98	0.85	1.83	1.83	0.0%
ROC	0.05	0.23	0.27	0.27	0.0%
NOx	5.64	3.40	9.04	9.04	0.0%
SOx	0.59	0.00	0.59		
PM10	0.20	0.01	0.20	0.20	0.0%

TOTAL--	EMISS.	THRES.	%THRES	MITIGATED	%THRES
CO	517.5	550.0	94%	517.5	94%
ROC	42.4	55.0	77%	42.4	77%
NOx	58.0	55.0	105%	58.0	105%
SOx	4.1	150.0	3%		
PM10	6.0	150.0	4%	6.0	4%
LEAD	0.003	N/A	N/A		

----------PROJECT DESCRIPTION----------
PROJECT NAME AND DESCRIPTION: Saddleback Meadows
Other Alternatives 299 D.U. Single Family Detached
PROJECT STARTING YEAR: 2000
CITY: EL TORO ZIP CODE:
COUNTY: ORANGE AREA NUMBER: AREA1
L.U., DESCR. AND SIZE: RESIDENTIAL, SINGLE FAMILY, 299 DWELLING UNIT
AVERAGE DAILY TRIPS: 3588 (PER DWELLING UNIT-- 12.00)
NUMBER OF VEHICLES: 1794 TOTAL PROJECT VMT: 28313 miles

-----TRIP PURPOSE DATA:	Home-Other	Home-Shop	Home-Work	
AVERAGE TRIP SPEEDS:	26.4	26.4	26.4	mph
AVERAGE TRIP LENGTHS:	6.3	5.4	10.0	miles
TRIP PERCENTAGES:	45.1	9.2	45.7	percent
VEHICLE MILES TRAVELLED:	10173.5	1777.1	16363.1	miles

VEHICLE DATA DISTRIBUTIONS:	Heavy Duty Vehicles		Passenger Vehicles	
Average Daily Trips	12.9%	461/day	87.1%	3126/day
Number of Vehicles	13.5%	242	86.5%	1551
Vehicle Miles Travelled	12.5%	3539 miles	87.5%	24773 miles

TRIP COLD/HOT STARTS: 100% COLD, 0% HOT

ELECTRICAL SUPPLIER: SCE
CONVERSION FACTOR from PER DWELLING UNIT
to MEGAWATT-HR/DAY is 5626.5/365/1000
and to MILLION CU FT/DAY is 6650.0/30/1,000,000

RUN TYPE: Screening Run DATA CASE: Project Without Mitigation
EMISSIONS (in lbs/day)

VEHICLES--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
Home-Other Trip Running Emissions--					
CO	85.9	30.8	116.8	116.8	0.0%
ROC	5.4	3.9	9.3	9.3	0.0%
NOx	9.4	12.7	22.2	22.2	0.0%
SOx	1.2	0.9	2.0		
PM10-Exhaust	0.1	0.8	0.9	0.9	0.0%
PM10-Tire Wear	2.0	0.5	2.5	2.5	0.0%
LEAD	0.000	0.002	0.002		
Home-Shop Trip Running Emissions--					
CO	15.0	5.4	20.4	20.4	0.0%
ROC	0.9	0.7	1.6	1.6	0.0%
NOx	1.7	2.2	3.9	3.9	0.0%
SOx	0.2	0.2	0.4		
PM10-Exhaust	0.0	0.1	0.2	0.2	0.0%
PM10-Tire Wear	0.3	0.1	0.4	0.4	0.0%
LEAD	0.000	0.000	0.000		
Home-Work Trip Running Emissions--					
CO	138.2	49.6	187.8	187.8	0.0%
ROC	8.6	6.3	14.9	14.9	0.0%
NOx	15.2	20.5	35.6	35.6	0.0%
SOx	1.9	1.4	3.3		
PM10-Exhaust	0.2	1.2	1.4	1.4	0.0%
PM10-Tire Wear	3.2	0.9	4.0	4.0	0.0%
LEAD	0.000	0.003	0.003		
Home-Other Trip Start & Soak Emissions--					
CO Cold Start	212.5	15.7	228.2	228.2	0.0%
ROC Cold Start	11.3	1.1	12.4	12.4	0.0%

NOx Cold Start	6.8	0.9	7.8	7.8	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	2.4	0.2	2.6	2.6	0.0%
Home-Shop Trip Start & Soak Emissions--					
CO Cold Start	43.3	3.2	46.5	46.5	0.0%
ROC Cold Start	2.3	0.2	2.5	2.5	0.0%
NOx Cold Start	1.4	0.2	1.6	1.6	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	0.5	0.1	0.5	0.5	0.0%
Home-Work Trip Start & Soak Emissions--					
CO Cold Start	215.7	15.9	231.6	231.6	0.0%
ROC Cold Start	11.4	1.1	12.6	12.6	0.0%
NOx Cold Start	6.9	0.9	7.9	7.9	0.0%
CO Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Start	0.0	0.0	0.0	0.0	0.0%
NOx Hot Start	0.0	0.0	0.0	0.0	0.0%
ROC Hot Soak	2.4	0.3	2.6	2.6	0.0%
Other Evaporative Emissions--					
ROC-Diurnal	7.6	1.2	8.8		

TOTAL EMISSIONS SUMMARY

VEHICULAR--	PASS.	TRUCK	BOTH	MITIGATED	EFFIC.
CO	710.6	120.5	831.1	831.1	0.0%
ROC	52.7	15.2	67.9	67.9	0.0%
NOx	41.5	37.5	78.9	78.9	0.0%
SOx	3.3	2.4	5.7		
PM10	5.7	3.6	9.4	9.4	0.0%
LEAD	0.000	0.005	0.005		

STATIONARY--	ELECT.	GAS	BOTH	MITIGATED	EFFIC.
CO	0.92	1.33	2.25	2.25	0.0%
ROC	0.05	0.35	0.40	0.40	0.0%
NOx	5.30	5.30	10.60	10.60	0.0%
SOx	0.55	0.00	0.55		
PM10	0.18	0.01	0.20	0.20	0.0%

TOTAL--	EMISS.	THRES.	%THRES	MITIGATED	%THRES
CO	833.4	550.0	152%	833.4	152%
ROC	68.3	55.0	124%	68.3	124%
NOx	89.5	55.0	163%	89.5	163%
SOx	6.2	150.0	4%		
PM10	9.6	150.0	6%	9.6	6%
LEAD	0.005	N/A	N/A		

APPENDIX G
NOISE CALCULATIONS

Giroux & Associates
Environmental Consultants

NOISE IMPACT ANALYSIS

SADDLEBACK MEADOWS (TT 10692)

ORANGE COUNTY, CALIFORNIA

Prepared for:

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Date:

June 13, 1997

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NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally described as unwanted sound. Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Several rating scales have been developed for the analysis of adverse effects of community noise on human beings. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. Upon this premise, a number of noise scales have been developed including the Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL).

LEQ is the sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over a given sample period. LEQ is the "energy" average noise level. CNEL is similar to LEQ but is based on a 24 hour period, and applies a time-weighting factor that places greater significance on noise events occurring during the evening and night hours (when sleep disturbance is a concern). "Time-weighted" refers to the fact that noise occurring during certain sensitive time periods is penalized for occurring at these times. The evening period (7 p.m. to 10 p.m.) penalizes noises by 5 dB, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dB. The CNEL scale is specified by the County of Orange for community noise analysis.

An interior CNEL of 45 dB(A) has been required by the State noise insulation standards (Title 24 of the California Code of Regulations) for all multiple family dwelling units and hotel/motel rooms since 1974. In 1988, the State Building Standards Commission expanded that standard to include all habitable rooms, including single family or low density residential uses. All development in close proximity to automotive traffic, rail or industrial noise sources with baseline levels exceeding 60 dB CNEL must undergo an analysis to verify that the 45 dB interior standard is attainable.

Exterior to interior noise attenuation is typically 20 dB for all windows closed. A 65 dB CNEL exterior noise exposure thus generally allows the 45 dB CNEL interior standard to be met as long as windows can normally be closed to shut out the noise. A level of 65 dB is also the threshold where noise begins to intrude

significantly into normal activities such as having a conversation. Although people may express annoyance if traffic noise levels in usable exterior space such as yards, patios, porches, etc. are below 65 dB, the percentage of "highly annoyed" people increases dramatically when noise exceeds 65 dB.

Noise/land use compatibility standards for various classes of land uses are generally expressed in the Noise Element of the General Plan to insure that noise exposure is considered in any development decisions. Local noise suitability criteria are based on state model guidelines shown in Figure 1.

Figure 1 contains four classes of acceptability and has a number of overlapping compatibility noise levels within several criteria. In order to reduce the potential ambiguity of various conditional acceptabilities, Orange County developed a more clear-cut matrix of acceptable noise levels shown in Table 1 and explained in Table 2.

Noise standards for residential projects such as Saddleback Meadows are as follows:

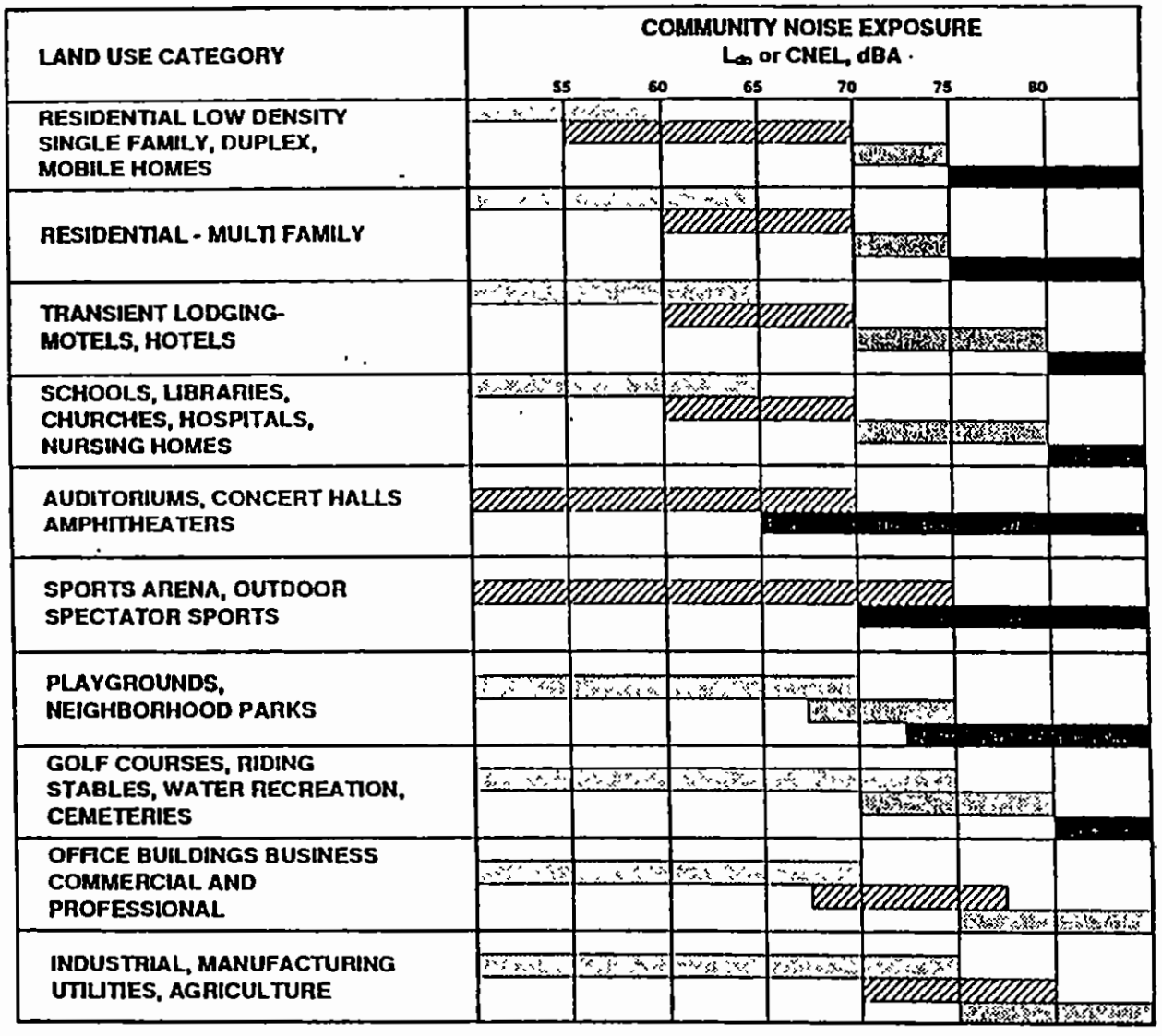
Exterior Level	Requirement
<60 dB CNEL	None
60-65 dB CNEL	Indoor Level <45 dB CNEL
>65 dB CNEL	Outdoor Level Mitigated to <65 dB CNEL Indoor Level <45 dB CNEL

Baseline Noise Levels

Existing noise levels on the project site are normally low except in close proximity to El Toro Road. Periods of quiet are interspersed with occasionally noisy periods of aircraft overflights. The project site also is near a flight corridor for military helicopter training operations in Santiago, Black Star and other interior canyons.

The project site is located near one of the primary landing/ takeoff routes from El Toro MCAS. Aircraft above the site, however, are sufficiently high such that the noise exposure is only marginally degraded. Figure 2 shows that the site is traversed by the 60 CNEL contour in the El Toro noise footprint shown in the Orange County Noise Element as determined in the 1981 El Toro MCAS Air Installation Compatible Use Zone (AICUZ) study. The 60 dB

FIGURE 1 - NOISE/LAND USE COMPATIBILITY STANDARDS



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

Source: Office of Noise Control, California Dept. of Health, Feb. 1976.

TABLE 1

COMPATIBILITY MATRIX FOR ORANGE COUNTY LAND USES AND COMMUNITY NOISE EQUIVALENT LEVELS (CNEL)

Type of Use	65+ dB CNEL	60-65 dB CNEL
Residential	3a, b, e	2a, e
Commercial	2c	2c
Employment	2c	2c
Open Space		
Local	2c	2c
Community	2c	2c
Regional	2c	2c
Educational Facilities		
School (K through 12)	2c, d, e	2c, d, e
Preschool, college, other	2c, d, e	2c, d, e
Places of Worship	2c, d, e	2c, d, e
Hospitals		
General	2a, c, d, e	2a, c, d, e
Convalescent	2a, c, d, e	2a, c, d, e
Group Quarters	1a, b, c, e	2a, c, e
Hotels/Motels	2a, c	2a, c
Accessory Uses		
Executive Apartments	1a, b, e	2a, e
Caretakers	1a, b, c, e	2a, c, e

TABLE 2

EXPLANATION AND DEFINITIONS ON TABLE 1

Action Required to Ensure Compatibility Between Land Use and Noise from External Sources

1. Allowed if interior and exterior community noise levels can be mitigated.

2. Allowed if interior levels can be mitigated.

3. New residential uses are prohibited in areas within the 65-decibel CNEL contour from any airport or air station; allowed in other areas if interior and exterior community noise levels can be mitigated. The prohibition against new residential development excludes limited "in-fill" development within an established neighborhood.

Standards Required for Compatibility of Land Use and Noise

a. Interior Standard: CNEL of less than 45-decibels (habitable rooms only)

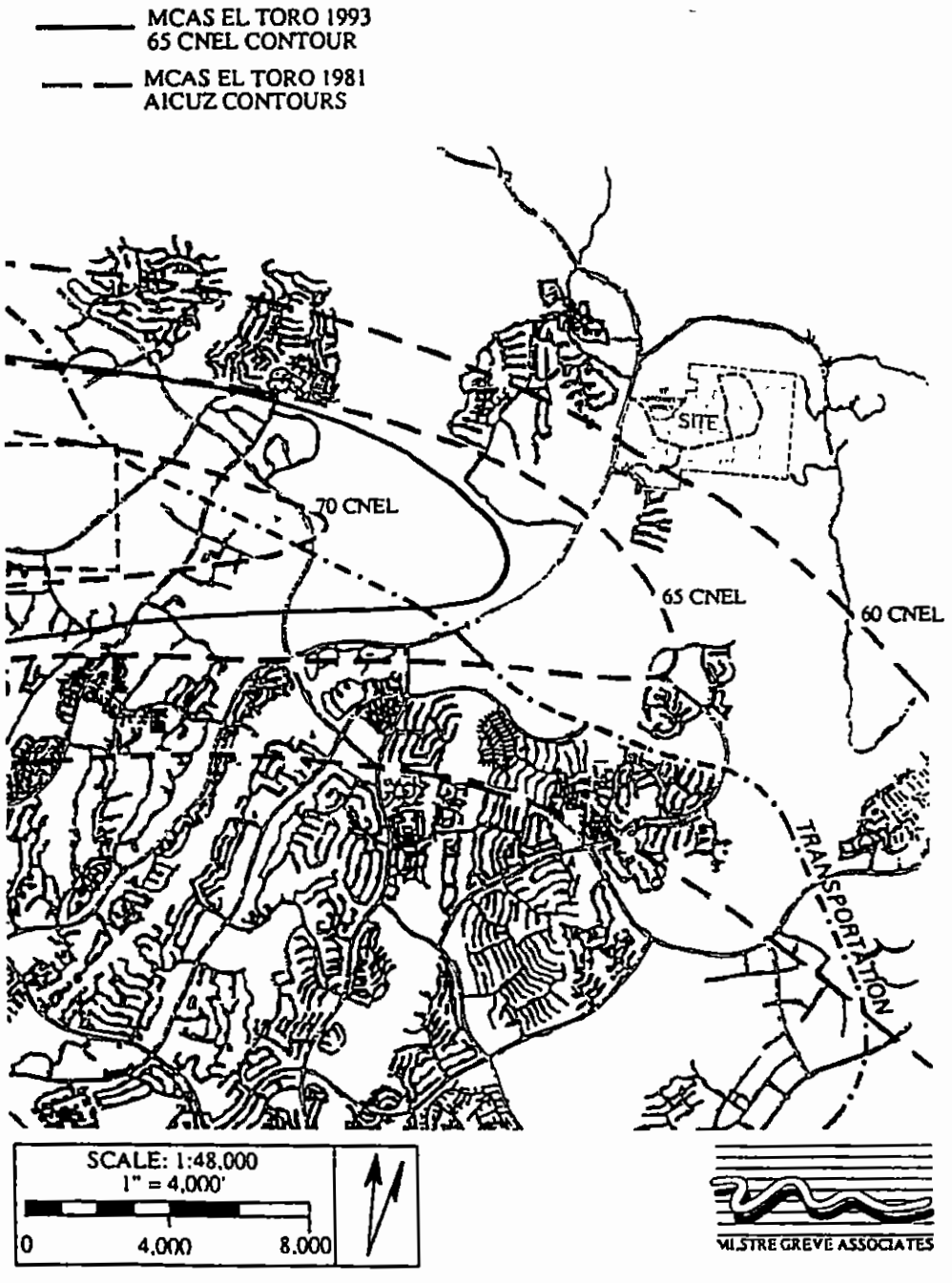
b. Exterior Standard: CNEL of less than 65-decibels in outdoor living areas

c. Interior Standard: LEQ(h) = 45 to 65 decibels interior noise level, depending on interior use

TYPICAL USE	LEQ(h)
Private Office, Church Sanctuary, College, Preschool, Schools (Grade K-12), Board Room, Conference Room, etc.	45
General office, Reception, Clerical, etc.	50
Schools (Grades K-12)	52
Bank Lobby, Retail Store, Restaurant, Typing Pool, etc.	55
Manufacturing, Kitchen, Warehousing, etc.	65

d. Exterior standard: LEQ(h) of less than 65 decibels in outdoor living areas.

e. Interior Standard: As approved by the Board of Supervisors for sound events of short duration such as aircraft fly-overs or individual passing railroad trains.



Project Location Relative to El Toro MCAS Noise Contours

FIGURE 2

contour just touches a few lots in the southwestern corner of the project site. Almost all developed lots are outside the 60 dB CNEL contour. However, County policy relative to aircraft noise exposure is to use the highest exposure anywhere on the property as the noise reference level. At the property line adjacent to Valley Vista Way in an area of proposed commercial development, the maximum EL Toro MCAS noise exposure is 62 dB CNEL. To be consistent with County policy, this level was thus used as an impact evaluation/mitigation criterion with the understanding that its use is overpredictive to varying degrees across the project site.

Aircraft fleet conversion since the noise element was adopted have slightly reduced the project site noise exposure. Whereas the project site is shown as being traversed by the 60 dB CNEL contour near the southwest corner of the property in the County Noise Element, its current location is south of the project site. Figure 2 also shows the results of more recent (1993) noise impact calculations. The 65 dB CNEL contour (and presumably the 60 dB CNEL contour as well) is seen to have shrunk by about 1 mile along the point of maximum extent. Distance reduction in the cross-lobe direction of the noise contour is smaller, but is enough to pull the 60 dB CNEL contour off the site. Because the 1993 (or any more current year) noise contours have not been officially adopted, the noise requirements for the project will be those engendered by the 1981 contours. Compliance with the 1981-based noise constraints may require a small amount of extra mitigation than if more current noise levels were used. In an aircraft noise environment, any small extra margin of safety, if achieved without great cost, is a desirable circumstance.

Because aircraft noise contours are constructed based upon average annual operations, and because the contours represent extended periods of quiet with isolated noise peaks, CNEL is not necessarily the best indicator of noise nuisance potential. Individual fly-over events may thus be intrusive even if the CNEL is below levels considered unacceptable for noise-sensitive uses. Mitigation for single event intrusion has therefore been incorporated for much new South County development near EL Toro MCAS flight tracks even if the CNEL itself did not trigger such requirements.

In order to characterize existing project site noise levels, a brief noise measurement program was undertaken on August 28, 1995. Noise levels were measured for 30-minute periods near El Toro Road, and again near the caretaker's trailer by the cattle corral. There was no observed El Toro MCAS flight activity during these measurements. There were, however, several USMC helicopter overflights during the site interior noise measurements. The observed noise levels (in dB) were as follows:

Parameter	50' to El Toro Rd.	Cattle Corral[a]	Cattle Corral[b]
LEQ	67.8	62.4	48.0
Lmax	86.5	86.5	----
Lmin	38.0	39.0	----
L10	71.0	55.5	----
L50	59.5	46.0	----
L90	43.5	42.5	----

[a] - with helicopter overflights
[b] - without helicopter activity

The dramatic effect of just a few single loud noise events skewing the average is seen in the difference between periods of helicopter traffic versus flight-free periods. Without the helicopters, the site interior has a semi-rural noise character. With the flight activity, the average noise level, as expressed by LEQ, is only around 5 dB less than directly adjacent to El Toro Road. As noted above, average noise exposure alone is therefore not a completely sufficient criterion for evaluating possible impacts of the ambient acoustic environment on development plans for Saddleback Meadows.

Single event noise can vary substantially with individual overflights. An unusual flight altitude, power setting or even atmospheric conditions can substantially alter the instantaneous maximum. As a rule of thumb, the instantaneous maximum tends to be around 25 dB higher than the CNEL. With a 60 dB aircraft CNEL adjacent to the site, peaks of 85 dB would likely be experienced from single aviation events passing over/near the proposed project site.

NOISE IMPACTS

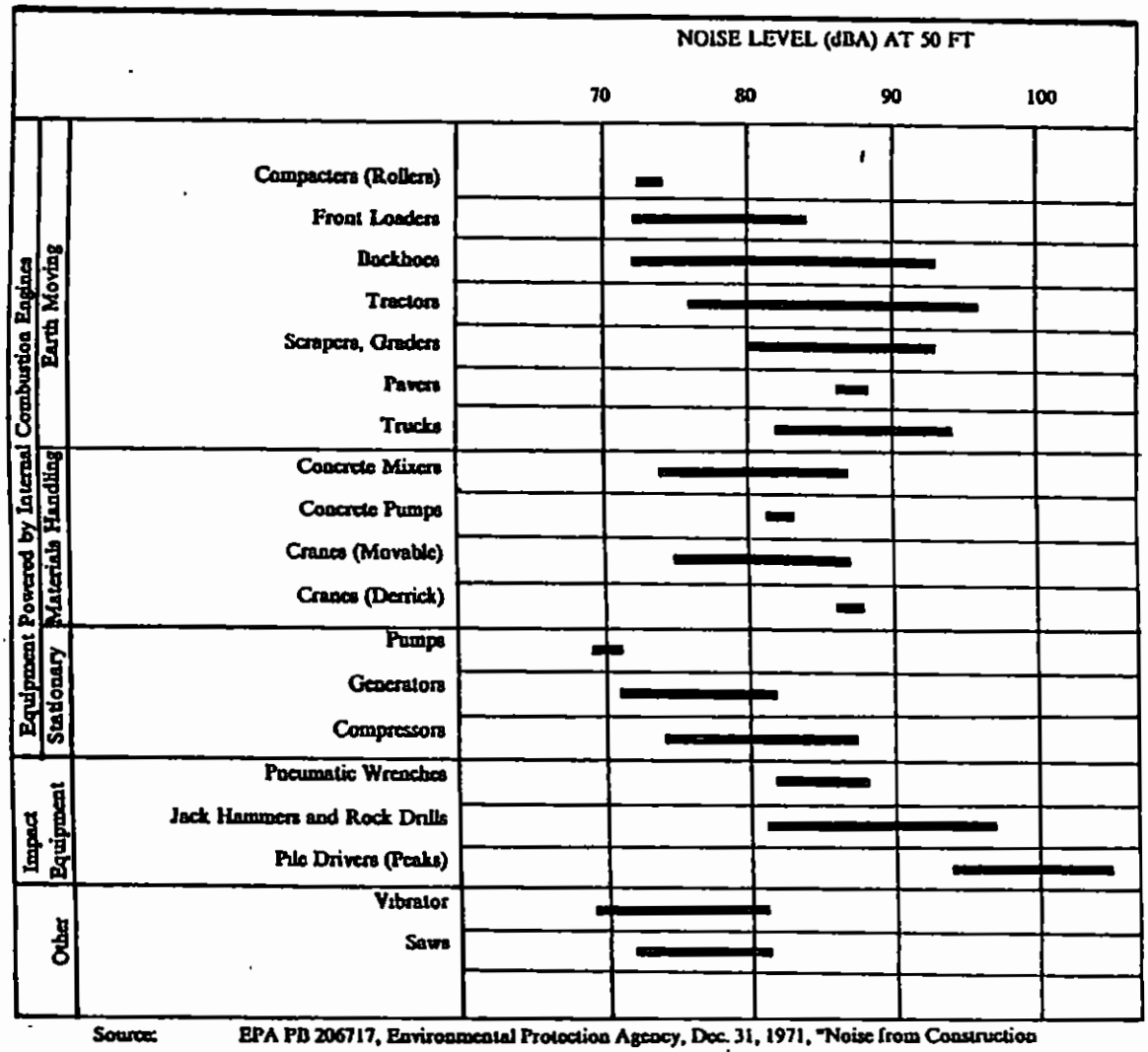
Three noise concerns are typically identified with land use intensification such as that proposed for the project area. Construction activities, especially heavy equipment, will create short-term noise increases near the project site. Upon completion, project-related traffic will cause an incremental increase in areawide noise levels throughout the El Toro area. Since, however, the number of trips generated by the proposed project is limited, the impact of ambient noise on the project site, rather than project traffic noise impacts on the rest of the community, is likely the important noise environment concern.

Construction Noise Impacts

Temporary construction noise impacts will vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by site clearing and grading, then by foundation construction, and finally for finish construction. The earth-moving (grading) activities are seen in Figure 3 to be the noisiest sources during construction with equipment noise ranging from 75 to 90 dB(A) at 50 feet from the source. The range of noise levels shown in Figure 3 is meant to indicate that long-term (hourly or more) noise levels are at the lower end of the range, while short-term peaks are at the upper end.

Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. The quieter construction noise sources will, therefore, drop below 60 dB by about 300 feet from the source while the loudest sources might still be detectable above the local background beyond 1,000' from the construction area. With hilly topography in the project vicinity, the terrain shielding effects will limit the "noise envelope" around each construction site to considerably less than its theoretical maximum.

Construction noise sources are not strictly relatable to a noise standard because they occur only during selected times and the source strength varies sharply with time. The penalty associated with noise disturbance during quiet hours and the nuisance factor accompanying such disturbance usually leads to time limits on grading activities imposed as conditions on grading permits. The weekday (including Saturday) hours from 7 a.m. to 8 p.m. are the times allowed in the Orange County Noise Ordinance for construction or grading. Division 6 (Sec. 4-6-1, et seq.) of the County Code



Source: EPA PB 206717, Environmental Protection Agency, Dec. 31, 1971, "Noise from Construction Equipment & Operations"

TYPICAL CONSTRUCTION EQUIPMENT NOISE GENERATION LEVELS

FIGURE 3

also contains standard requirements related to the distance separation between construction activities and any occupied dwellings. EMA's "Standard Condition for Approval" N10 requires:

1. All powered equipment operating within 1,000 feet of a dwelling must have a properly operating and maintained muffler.

2. Stockpiling and staging activities must be located as far as practicable from dwellings.

Construction activities in areas of noise-sensitive biotic habitats such as coastal sage scrub containing gnatcatchers may affect bird behavior. Little actual evidence of noise effects on gnatcatchers has been documented, but many wildlife management agencies believe such effects exist. In San Diego County, a standard of 60 dB Leq (one hour average) derived from studies on least Bell's Vireo has been applied to gnatcatchers. Use of this standard ignores the fact that a large number of successful breeding pairs have been found directly under the take-off end of major airport runways or next to freeways where peak hourly noise levels reach almost 80 dB. Many San Diego County grading projects have nevertheless been conditioned to avoid the breeding season for possibly noise-sensitive birds, or to erect temporary berms or other buffers to reduce avian noise exposure if seasonal avoidance is not practical.

Development-Related Vehicular Noise Impacts

Off-Site Noise Levels

Long term noise concerns from the increased urbanization of the project area center primarily on mobile source emissions surrounding the project site. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal highway noise prediction model (FHWA-RD-77-108) in a computerized version of the model developed by Caltrans. The model calculates the Leq noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.

Project-related traffic may incrementally contribute to the noise exposure of off-site receiver locations. Of the 7,530 "new" daily project-generated trips, 60% will travel south on El Toro Road, while the other 40% will travel inland. At each subsequent turning opportunity, fractions of each traffic stream will split into different directions and thus dilute any off-site project traffic noise impact. The CNEL at 100 feet from area roadways for various scenarios is shown in Table 3.

TABLE 3

CNEL (dB[A]) at 100' to Centerline

Link	Exist.	Exist. + Project	2000 No Proj.	2000 w/Proj.	2020 No Proj.	2020 w/Proj.
Santiago Canyon Road:						
North of Modjeska Canyon Road	65	65	65	65	67	67
Modjeska Canyon Road to Ridgeline	65	65	65	66	67	67
Ridgeline Road to Live Oak Cyn. Road	63	64	65	66	67	67
Modjeska Canyon Road:						
East of Santiago Canyon Road	53	54	55	55	55	55
El Toro Road:						
Ridgeline Road to Project	65	66	65	66	68	68
Project to Valley Vista	65	66	65	67	68	68
Valley Vista - Glenn Ranch	65	66	65	66	67	68
Glenn Ranch Road to SR-241	65	66	66	67	68	68
SR-241 to Marguerite Parkway	65	66	66	67	68	68
Marguerite Pkwy. to Santa Margarita Pkwy.	65	65	66	66	68	68
West of Santa Margarita Parkway	67	67	67	67	69	69
Portola Parkway:						
North of SR-241	67	67	69	69	71	71
Santa Margarita Parkway:						
SR-241 to El Toro Road	66	67	70	70	72	72
South of El Toro Road	68	68	69	69	70	70
Ridgeline Road:						
Santiago Cyn. Rd. to Saddleback Ranch Rd.	56	57	60	60	61	61
Saddleback Ranch Rd. to El Toro Road	56	57	59	60	60	60
Saddleback Ranch Road:						
Ridgeline Road to Glenn Ranch Road	61	61	63	63	64	64
Glenn Ranch Road:						
Portola Parkway to Saddleback Ranch Rd.	60	62	66	66	68	68
Saddleback Ranch Road to El Toro Road	59	61	63	64	67	67
Live Oak Canyon Road:						
East of El Toro Road	60	61	62	62	63	63
Valley Vista Way:						
East of El Toro Road	53	57	57	59	57	59
Marguerite Parkway:						
South of El Toro Road	64	64	67	67	70	70
Project Access Road:						
East of El Toro Road	N/A	61	N/A	61	N/A	61

N/A = no data available Source: FHWA-RD-77-108 (Calveno mod.)

In areas of greater concentration of site-related traffic, high non-project traffic levels will substantially mask any small project noise contribution. Detectable project-related noise increases will only occur in areas of low baseline traffic volumes. The maximum project-related traffic noise impact of +4 dB will occur along Valley Vista Way. Table 4 shows, however, that the 65 dB CNEL contour along Valley Vista Way will remain within the roadway right-of-way (<50' from centerline) along this segment for "with-project" conditions. Similarly, a project-related traffic noise increase of +2 dB along Glenn Ranch Road is again characterized by no substantial expansion of the 65 dB CNEL noise contour as a significant noise exposure for sensitive receivers.

Maximum off-site traffic noise impacts in areas of already elevated non-project traffic noise are 1 dB or less. Noise level differences of less than 1 dB are not distinguishable even in a laboratory setting -- much less in an ambient environment. Maximum expansion of the 65 dB CNEL contour is seen in Table 4 to occur along El Toro Road directly adjacent to the project site. An increase of 20 feet in contour distance occurs for "plus project versus existing", "2000 with project versus no project" and "2020 with project versus no project" scenarios. Away from the project site with dilution of project-related traffic, the project-related increment drops steadily to 10-foot, then a 5-foot, and quickly to an immeasurably small increase. The project is too limited in scope to create a discernible change in off-site traffic noise levels. The noise impact of the project on the ambient acoustic environment is judged to be less than significant.

On-Site Noise Exposure

The roadway that could affect project on-site noise exposure is El Toro Road. At the maximally exposed lot at around 400 feet from El Toro Road, the traffic noise level will be 63.5 dB CNEL at area buildout for an acoustically "hard" underlying surface. The El Toro MCAS aircraft noise contribution at this location is 60 dB CNEL. Their combined exposure is 65 dB CNEL. This just meets the Orange County exterior noise standard for residential use and requires no exterior noise mitigation. This calculation is a theoretical worst-case condition that assumes:

1. The maximally exposed residence in the year 2020 has a 180 degree field of view of El Toro Road without terrain irregularities or any vegetative noise absorption, and,

2. Aircraft noise in 2020 is characterized by El Toro MCAS aircraft mixes and operational conditions that existed almost twenty (20) years before today.

TABLE 4

DISTANCE FROM CENTERLINE TO 65 dB CNEL CONTOUR (feet)

Link	Exist.	Exist. + Project	2000 No Proj.	2000 w/Proj.	2020 No Proj.	2020 w/Proj.
Santiago Canyon Road:						
North of Modjeska Canyon Road	100	105	100	105	140	140
Modjeska Canyon Road to Ridgeline	100	105	100	110	130	135
Ridgeline Road to Live Oak Cyn. Road	80	85	105	110	125	130
Modjeska Canyon Road:						
East of Santiago Canyon Road	<50	<50	<50	<50	<50	<50
El Toro Road:						
Ridgeline Road to Project	100	110	105	115	145	155
Project to Valley Vista	100	120	105	125	145	165
Valley Vista - Glenn Ranch	100	120	105	125	145	165
Glenn Ranch Road to SR-241	105	120	120	130	160	165
SR-241 to Marguerite Parkway	105	115	120	130	160	165
Marguerite Pkwy. to Santa Margarita Pkwy.	95	100	110	120	160	165
West of Santa Margarita Parkway	135	140	140	145	175	180
Portola Parkway:						
North of SR-241	130	135	190	195	235	240
Santa Margarita Parkway:						
SR-241 to El Toro Road	125	125	230	230	295	295
South of El Toro Road	145	150	175	175	220	220
Ridgeline Road:						
Santiago Cyn. Rd. to Saddleback Ranch Rd.	<50	<50	<50	<50	50	55
Saddleback Ranch Rd. to El Toro Road	<50	<50	<50	<50	<50	50
Saddleback Ranch Road:						
Ridgeline Road to Glenn Ranch Road	55	55	70	75	90	90
Glenn Ranch Road:						
Portola Parkway to Saddleback Ranch Rd.	<50	60	110	120	155	160
Saddleback Ranch Road to El Toro Road	<50	55	70	85	130	135
Live Oak Canyon Road:						
East of El Toro Road	<50	50	65	65	75	75
Valley Vista Way:						
East of El Toro Road	<50	<50	<50	<50	<50	<50
Marguerite Parkway:						
South of El Toro Road	90	95	130	135	210	215
Project Access Road:						
East of El Toro Road	N/A	50	N/A	50	N/A	50

N/A = no data available Source: FHWA-RD-77-108 (Calveno mod.)

Both assumptions probably somewhat over-state horizon year noise exposures. There is likely an extra margin of safety relative to meeting the 65 dB CNEL exterior standard without any supplemental noise mitigation.

Mitigation in the form of exterior to interior noise attenuation will be required to meet the 45 dB CNEL interior standard for all units within the development since a maximum 62 dB CNEL aircraft noise contour will cover the site as long as El Toro MCAS operations occur. With open windows, exterior to interior noise reduction is approximately 12 dB. Any project site exposure exceeding 57 dB CNEL can not meet the 45 dB CNEL interior standard with open windows. Meeting the interior standard thus requires the option to close the window. Such ability, in turn, requires that there is supplemental mechanical ventilation to replace the natural draft eliminated by such closure. For new homes in inland valleys of Orange County, air conditioning is normally a standard feature meeting this requirement.

Noise reduction of 20 dB is normally attainable with closed single-paned windows. That will reduce any aircraft-related CNEL from 62 to 42 dB. As previously noted, however, CNEL is not the best predictor of noise annoyance due to single event phenomena such as individual overflights. Measured peak noise levels from helicopter operations were 86.5 dB in the center of the project site. A comparable level would likely occur from El Toro jet aircraft operations. A 20 dB attenuation would create a 65+ dB single event level that may be annoying to occupants even with windows closed. Most new developments within the fringes of the El Toro MCAS noise impact envelope thus have been built with acoustically enhanced windows. Such windows reduce single event noise, reduce vibration response (rattle) to aircraft noise often found in single-pane windows and are more energy efficient. Use of windows rated with a sound transmission class (STC) of 25 or better is therefore recommended to reduce noise annoyance potential from single events.

Residential activities may affect adjacent noise-sensitive land uses such as contemplative religious facilities. These facilities are, however, already exposed to single event aircraft noise that is much louder than a distant barking dog, lawnmower or auto horn associated with project residential use. The combination of irregular terrain, distance buffering and normally quiet residential activities are not expected to create a significant noise impact on any adjacent abbey or monastery uses.

NOISE IMPACT MITIGATION

The project noise impact study indicates a less than significant noise impact from project-related traffic on project vicinity receptors. Ambient noise levels were also shown to present no development constraint as the project site has more than adequate setback from El Toro Road to meet Orange County standards.

Construction activities may create a temporary adverse impact if new construction occurs adjacent to already completed residences. This potential will be minimized by completion of all mass grading before any homes are constructed. Construction noise could adversely affect any sensitive biotic species such as gnatcatchers if such species are present in the project vicinity. Although monitoring in high noise environments has shown gnatcatchers to be less noise-sensitive than sometimes believed, noise protection during construction has been required in some projects. Projects in Orange County have generally not been conditioned for gnatcatcher noise protection. Construction activity mitigation measures recommended for this project thus only include standard County requirements as follows:

- All construction and general maintenance activities, except in an emergency, shall be limited to the hours of 7 a.m. to 8 p.m. Monday through Saturday and should utilize the quietest equipment available.

- All on-site construction equipment should have properly operating mufflers.

- All construction staging areas should be as far away as possible from any surrounding completed development.

Single event noise from aircraft (fixed or rotary wing) may be intrusive in homes with "standard" construction. Aircraft noise is expected to subside with the elimination of military aviation in Orange County. Given, however, that a commercial airport may replace military operations, enhanced acoustical window treatment is recommended as follows:

- All operable windows exceeding 6 square feet of total glazing should be rated STC = 25 or greater.

APPENDIX H
BIOLOGICAL RESOURCES ASSESSMENT

BIOTECHNICAL REPORT FOR SADDLEBACK MEADOWS

Prepared for:

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DRAFT

SWEETWATER
ENVIRONMENTAL
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March 20, 1997

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1
METHODS 13
EXISTING CONDITIONS 15
IMPACTS 38
MITIGATION 46
LITERATURE CITED 55

APPENDIX A. Plant Species List for Saddleback Meadows A-1
APPENDIX B. Animal Species Observed on Saddleback Meadows B-1
APPENDIX C. Sensitivity Codes C-1

LIST OF FIGURES

1. Vicinity Map 7
2. Location Map 8
3. 299 Unit Single Family Housing Alternative 10
4. Cluster/Reduced Development Footprint 11
5. Vegetation\Sensitive Resources 16
6. Location within the NCCP Subregional Preserve 25
7. Vertical Aerial Showing Adjacency to O'Neill Regional Park, Whiting Ranch Wilderness Park and Cleveland National Forest 26
8. Proposed Project Impacts 39

LIST OF TABLES

1. Summary of Vegetation Communities on Saddleback Meadows 15
2. Sensitive Animal Species with the Potential for Occurrence within the Saddleback Meadows Site 36
3. Saddleback Meadows Existing Vegetation and Project Impact 40
4. Summary of On- and Off-Site Impacts to Vegetation Communities and Associated Mitigation 47
5. Venturan-Diegan Transitional Coastal Sage Scrub Hydroseed Species 48
6. Current Losses of Coastal Sage Scrub in Orange County Southern Subregion 50

EXECUTIVE SUMMARY

This biotechnical report describes existing conditions, anticipated impacts, and mitigation for the Project (Project). The biological data used in this report are from the results of previous surveys of the site vicinity (PSBS 1993; 1994) and survey work by Sweetwater Environmental Biologists, Inc. (SEB) in 1994 and 1995.

The Project site is approximately 222.2 acres located in an unincorporated portion of east-central Orange County, south of El Toro Road, and east of the Foothills Transportation Corridor. The Project proposes the development of 705 residential lots, two parks, a water tank, and associated surface streets. Approximately 206.2 acres (including 17.4 acres off site) will be impacted, including remedial grading and fuel modification zones outside of grading limits, leaving 33.4 acres on site designated as open space. Most of the site would be graded except for a canyon side that overlooks O'Neill Regional Park. Under the current plan, no wildlife corridors would be maintained across the Project site.

Two alternatives are being considered for the Project: the 299 Unit Single Family Housing Alternative and the Cluster/Reduced Development Footprint. Under both of these alternatives there would be increased open space and maintenance of a wildlife corridor across the site.

Early surveys conducted by PSBS (1993; 1994) mapped sensitive plant and animal species, vegetation communities, and manmade stock (ephemeral) ponds, and completed a federal wetland delineation. Recent surveys by SEB were conducted to update this information. This report places special emphasis on the results of these recent surveys, the occurrence of Riverside fairy shrimp (*Streptocephalus woottoni*), and additional sensitive resources found on site. No coastal California gnatcatchers (*Polioptila californica californica*) occur on site.

Four sensitive vegetation communities occur on site: Venturan-Diegan transitional coastal sage scrub (undisturbed and disturbed), coast live oak woodland, southern sycamore riparian

woodland, and mule fat scrub. For this report, ephemeral ponds are also considered sensitive because they support the Riverside fairy shrimp. Annual grassland, southern mixed chaparral, and agricultural land also occur on the site, but these are not sensitive communities.

The site supports two sensitive plant species: Catalina mariposa lily (*Calochortus catalinae*) and intermediate mariposa lily (*Calochortus weedii* ssp. *intermedius*). The site also supports eight sensitive animal species: Riverside fairy shrimp, western spadefoot (*Spea hammondi*), coastal whiptail (*Cnemidophorus tigris multiscutatus*), orangethroat whiptail (*Cnemidophorus hyperythrus beldingi*), cactus wren (*Campylorhynchus brunneicapillus*), loggerhead shrike (*Lanius ludovicianus*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), and Cooper's hawk (*Accipiter cooperii*). Of particular interest is the Riverside fairy shrimp, which is listed as endangered by the U.S. Fish and Wildlife Service.

Approximately 50.3 acres of Venturan-Diegan transitional coastal sage scrub (including 6.1 acres off site), 14.6 acres of coast live oak woodland (289 individual oaks), 3.3 acre of southern sycamore riparian woodland (including 2.8 acres off site), and 3.8 acres of mule fat scrub (including 1 acre off site) will be impacted by the Project. In addition, 0.6 acre of the manmade stock ponds supporting the Riverside fairy shrimp will be directly impacted. All of the above impacts are significant according to the California Environmental Quality Act. A federal Clean Water Act Permit issued by the U.S. Army Corps of Engineers will be necessary for direct impacts to 1.65 acres of wetlands (0.84 acre of mule fat scrub and 0.81 acre including approximately 0.71 acre off site) of southern sycamore riparian woodland [already included in the acreage stated above) and 1.78 acres of Waters of the U.S. (intermittent streams and manmade stock ponds). A streambed alteration agreement with the California Department of Fish and Game will also be required for the 1.65 acre of impacts to wetlands.

Seven stands of Catalina mariposa lily and one stand of intermediate mariposa lily will be at least partially impacted by the Project. One stand of Catalina mariposa lily and two stands of intermediate mariposa lily will likely remain despite the impact. An estimated 314 (72 percent) of the 435 individuals of Catalina mariposa lily will likely be lost, leaving an estimated 121 individuals in one stand in open space. These impacts are not significant because of the low level of sensitivity of the plant, its generally wide distribution in southern California, and the relatively small population size on site. One stand of intermediate mariposa lily (one individual) will be graded, while two stands (18 individuals) are within the non-irrigated fuel modification zone, (or within open space) and are assumed to remain. This impact is not significant because of the small amount of impact and small regional significance of the on-site population.

Impacts totaling 50.3 acres to Venturan-Diegan transitional coastal sage scrub will impact the orangethroat whiptail, coastal whiptail, at least four cactus wren territories, and at least 12 southern California rufous-crowned sparrow territories. These impacts are significant but mitigable considering the low level of sensitivity of these species. Cooper's hawks were found foraging on site, but no nests were observed. Impacts to Cooper's hawks will therefore be limited to foraging habitat and are not significant. The 0.6 acre of impacts to ephemeral ponds will significantly impact the Riverside fairy shrimp.

The Project adheres to the State of California's Natural Communities Conservation Program (NCCP). The NCCP establishes guidelines for conservation of coastal sage scrub and is the basis for a preserve system in Orange County. The Project site, which occurs in the southern subregion of the Orange County NCCP preserve, has undergone extensive planning, and three corridors are proposed to meet wildlife corridor needs in this area. In accordance with the NCCP, the loss of coastal sage scrub due to the Project is less than the allowable 5 percent of the total coastal sage scrub in the subregion. According to the NCCP Evaluation Logic Flow Chart, the coastal sage scrub on the Project site has intermediate value for long-term conservation because although it is not the most dense coastal sage scrub in the region, it is located next to a higher value district (O'Neill Regional Park).

Wildlife corridor design is important in counteracting the effects of wildlife habitat fragmentation. Three wildlife corridors are proposed in the site vicinity because it is thought that a single corridor will not be adequate for all wildlife. One corridor would be required on Saddleback Meadows while the other two would occur off site to the north and south. The corridor on site (Central Corridor) would not be suitable for the gnatcatcher because the site is not occupied and does not support enough coastal sage scrub to be adequate. Rather, the Central Corridor is planned to primarily facilitate movement of certain bird species and small- to medium-sized mammals. The corridor to the south would primarily facilitate gnatcatcher and other bird movement, and the corridor to the north would be most appropriate for large mammal movement. Neither off-site corridor is within the scope of the Project, but each has potential for incorporation into future land use planning.

As designed, the Central Corridor is not to be implemented. Thus, the Project would have significant, unmitigated impacts on regional wildlife corridors. The two alternatives maintain a wildlife corridor across the site—across the central ridge of the site under the 299 Unit Single Family Housing Alternative and across the northeast corner of the site under the Cluster/Reduced Development Footprint.

Mitigation for Project impacts to habitat and sensitive resources will primarily involve dedication of non-developed areas on site to open space, revegetation of remedial grading areas, and contribution to the NCCP. Despite these measures, certain impacts would remain unmitigated by the Project.

Approximately 40.4 acres of the remedial grading areas (outside of fuel modification areas) will be revegetated with Venturan-Diegan transitional coastal sage scrub. The remaining Venturan-Diegan transitional coastal sage scrub mitigation requirement will be met by a combination of enhancement/restoration within the wildlife corridor and making a financial contribution to the Endowment Fund for the NCCP (to be used for programs such as the Adaptive Management Program).

In applying Orange County's municipal code, the amount of oak transplantation is established based on the diameter and number of oaks impacted Since mitigation areas are not available on site, mitigation will have to take the form of off-site acquisition, off-site restoration, or contribution to the Orange County NCCP. Southern sycamore riparian woodland that is impacted will need to be replaced at a ratio of 3:1. As with the oak mitigation, restoration sites will be limited on site after development, although some may be possible within Aliso Creek. The majority of riparian mitigation will have to be conducted off site through acquisition, restoration, or contribution to the Orange County NCCP. Mitigation for Riverside fairy shrimp impacts is not possible on site. The possible mitigation option for the Riverside fairy shrimp is purchase of Riverside fairy shrimp habitat off site. The exact amount required for mitigation would be determined during consultation with the resource agencies.

Approximately 22.9 acres of Venturan-Diegan transitional coastal sage scrub, 0.5 acre of coast live oak woodland, 0.1 acre of mule fat scrub, and 3.6 acres of southern mixed chaparral will not be impacted but will be directly dedicated to open space on site. The remaining mitigation will be met through on-site revegetation, off-site restoration or acquisition, and/or monetary contribution.

INTRODUCTION

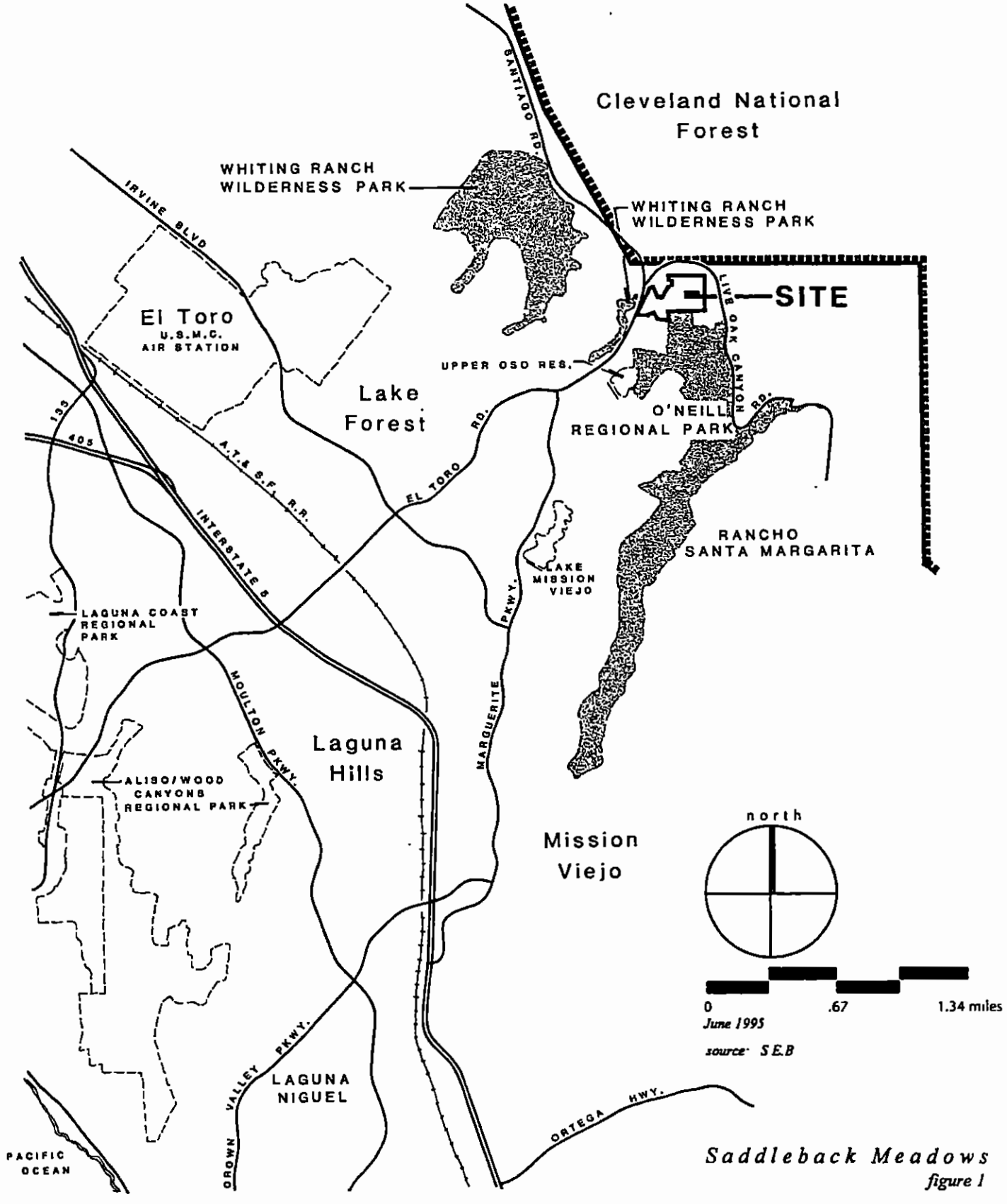
This report documents existing biological conditions, evaluates project impacts, and identifies mitigation measures that would reduce impacts to biological resources to less than significant levels on the Saddleback Meadows Project (Project) site. It also provides the County of Orange with information necessary to assess Project impacts of Saddleback Meadows under the California Environmental Quality Act (CEQA), the California Natural Communities Conservation Program (NCCP), state and federal Endangered Species Acts (ESAs), and Orange County ordinances. The Project site is approximately 222.2 acres. It is located in an unincorporated portion of east-central Orange County, south of El Toro Road and east of the Foothills Transportation Corridor (Figures 1 and 2).

Orange County's NCCP is currently being prepared and consists of northern, central, and southern subregions. The Project site occurs on the northern boundary of the southern NCCP subregional preserve and the southern boundary of the central NCCP preserve. The site is positioned in such a way that it plays a key role in the maintenance of a wildlife corridor between the central and southern subregional NCCP preserves. Other Projects surrounding the site received approval prior to approval of the Project site, reducing the flexibility of open space strategy in the area.

The Foothill Trabuco Specific Plan (Orange County Environmental Management Agency 1991) for the Project vicinity was adopted by the County of Orange in 1991. Originally the Project site was recorded as a final map in 1988.

PROJECT DESCRIPTION

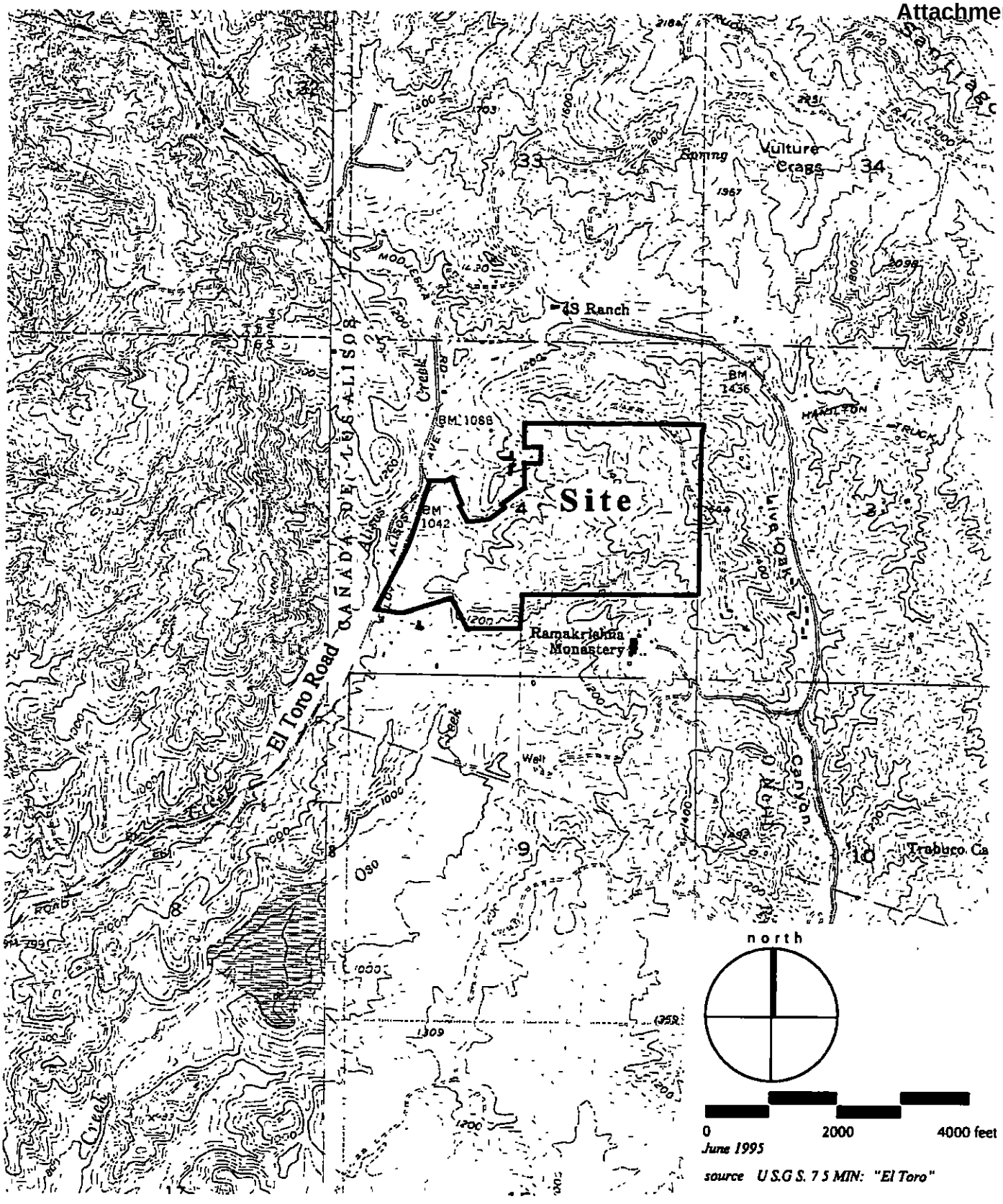
The Project proposes the development of 705 residential lots, two parks, a water tank, and associated surface streets within the 222.2-acre site. The minimum lot size is 3,200 square feet and the housing density is 3.17 units per acre. Primary access to the property will be



Saddleback Meadows
figure 1

Vicinity Map

prepared by Sweetwater Environmental Biologists, Inc



Saddleback Meadows
figure 2

Location Map

prepared by: Sweetwater Environmental Biologists, Inc

from El Toro Road to the west, while secondary emergency access only will be from Valley Vista Way in the Hidden Ridge Project to the south.

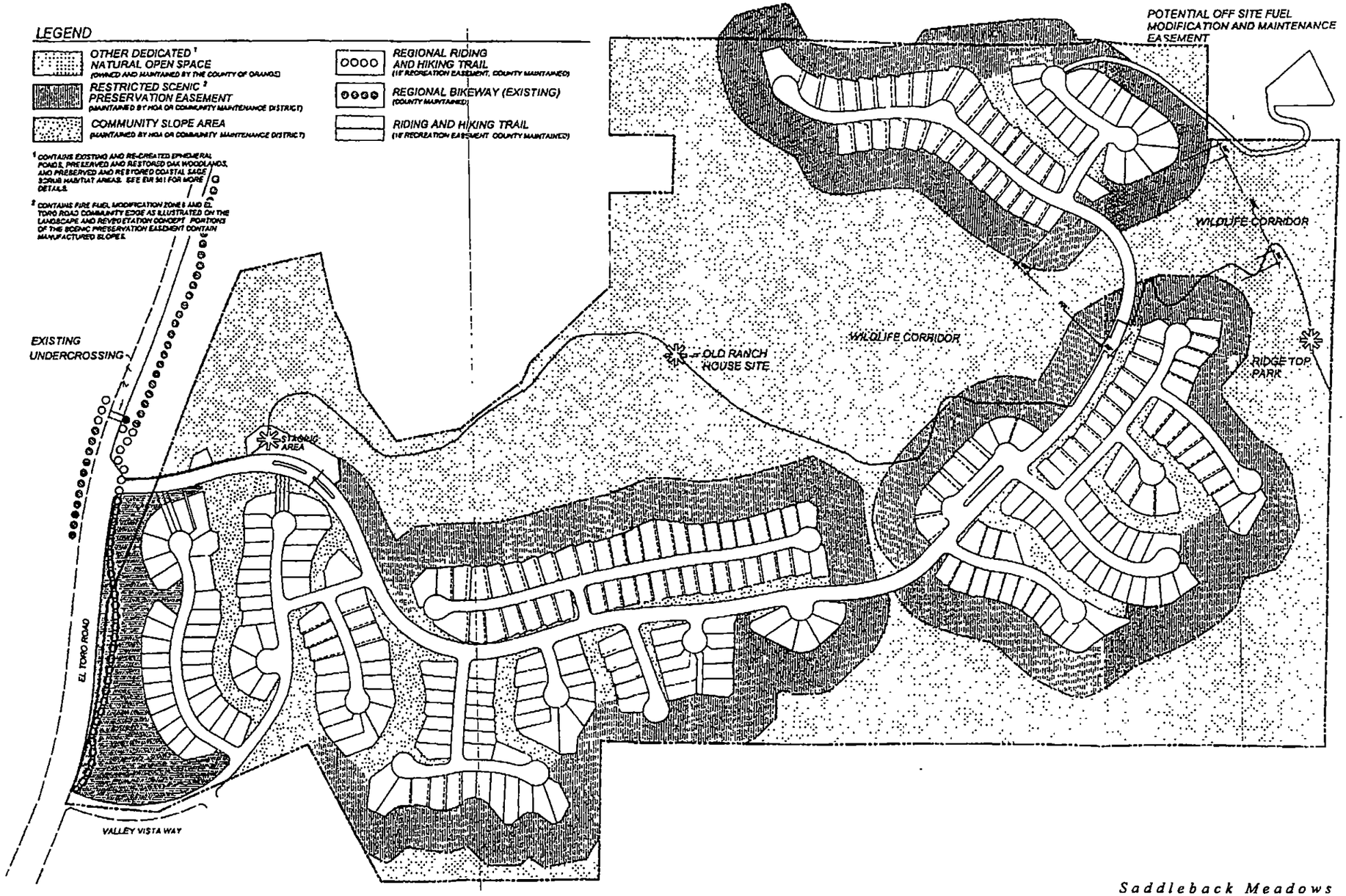
Of the 222.2-acre site, approximately 188.8 acres on site and 17.4 acres off site will be impacted with 33.4 acres on site remaining unmodified. Included within the impacted areas are remedial slope areas outside of the development limits that are necessary due to on-site geological stability issues and fuel modification zones. All of the remedial slopes occurring outside of the fuel modification zones will be revegetated with native vegetation after grading and are part of the Project's mitigation requirement. Although not part of the Project's mitigation, remedial slopes within the fuel modification zone will also be planted with native vegetation.

Two alternative development schemes are being considered that achieve the Project's objectives while reducing Project impacts. The first alternative is a 299 Unit Single Family Housing Alternative that accommodates a wildlife corridor across the northeast portion of the site (Figure 3). The second alternative is a Cluster/Reduced Development Footprint that maintains a wildlife corridor across the central portion of the site (Figure 4). These two alternatives are not analyzed in detail in this document.

PHYSICAL DESCRIPTION AND LAND USE

The Project site is situated amid the lower, southwestern foothills of the Santa Ana Mountains (Figure 2). The topography on site is hilly with several steep slopes and ravines. Aliso Creek generally follows El Toro Road near the western site boundary. Drainage is to the west into Aliso Creek and to the south into O'Neill Regional Park.

Past and present land use was/is primarily cattle grazing. Cattle grazing has reduced the coverage of shrub communities on site. Otherwise, the land is undeveloped. The largest nearby developments are Hidden Ridge to the south and Portola Hills just off site to the west.



Saddleback Meadows
figure 3

299 Unit Single Family Housing Alternative

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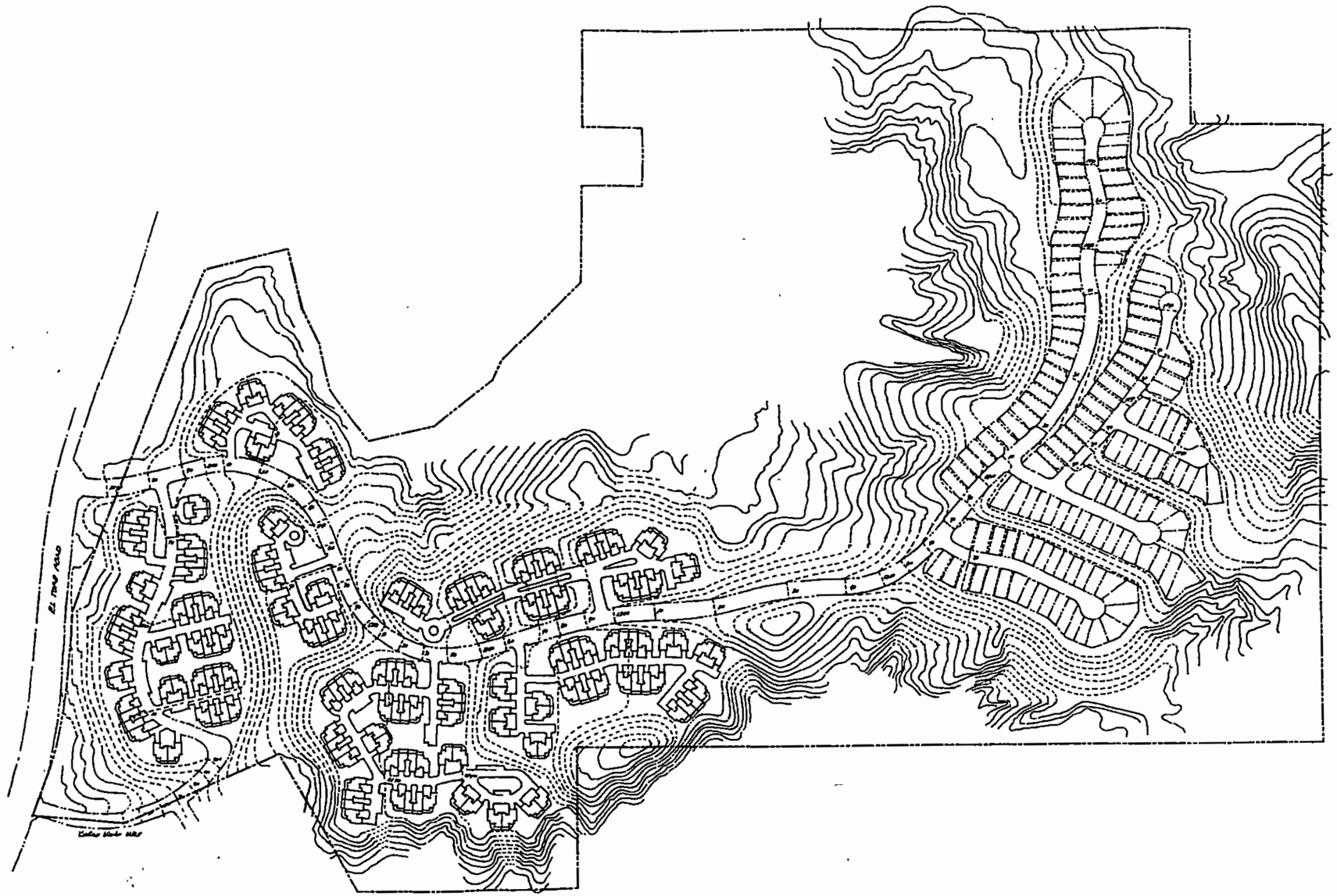

north

0 400 800 feet

February 21, 1997

Saddleback Meadows
figure 4

Cluster/Reduced Development Footprint

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An abby also occurs just off site in the northwest corner while a monastery occurs just off site of the southeast corner.

Three large blocks of designated open space occur within the site's vicinity. O'Neill Regional Park abuts the site on the south while the Cleveland National Forest occurs off site to the north and east. Another large block of open space, Whiting Ranch Regional Park, occurs to the west. Part of Whiting Ranch Regional Park lies directly across El Toro Road from the Project site, while the remaining larger block of open space in Whiting Ranch Regional Park is to the west on the opposite side of intervening residential development. Site elevation ranges from 1,000 feet to 1,544 feet above mean sea level.

SOILS

Soils on site consist primarily of clay loams. Several pockets of sandy loam occur in the drainages, and true clay soils occur in a few scattered areas throughout the site. The clay loams that dominate the site, especially on the hill tops and along the gentler sloping areas, are of the Calleguas and Balcom series. The other series occurring on site are Basamo Clay, Alo Clay, and the Myford Sandy Loam series.

METHODS

Prior to visiting the site, Sweetwater Environmental Biologists, Inc. (SEB) consulted previous site-specific biological reports completed by Pacific Southwest Biological Services ([PSBS] 1993; 1994). SEB performed a literature search for sensitive species that may potentially occur on site, including a search through an in-house database containing information from the California Natural Diversity Data Base.

A total of eight wildlife surveys were completed by PSBS. These included two general wildlife surveys in 1989, a general wildlife survey and three coastal California gnatcatcher (*Polioptila californica californica*) surveys in 1993, and three gnatcatcher surveys in 1994.

The 1993 and 1994 surveys for gnatcatchers satisfied U.S. Fish and Wildlife Service (USFWS) accepted protocol for gnatcatcher presence/absence surveys. Taped vocalizations of the coastal California gnatcatcher were played in all of the Venturan-Diegan transitional coastal sage scrub habitats on site. Field investigators spent more than one hour per 25 acres of habitat during the surveys.

The overall wildlife data appear adequate for assessing the general presence and distribution of the various groups of vertebrates on the site. The PSBS surveys had limitations in coverage, most of which were identified in PSBS's 1994 report when they stated that for detection of certain species (that is, nocturnal, underground-living, or seasonal species) certain focused surveys would be required. We feel that, as PSBS expressed, their research and literature review adequately predicted the potential for occurrence of sensitive vertebrate species.

Vegetation mapping and sensitive plant surveys were conducted by W. Larry Sward and Brenda Stone of SEB in June and July of 1995. Vegetation was mapped with the aid of a color aerial photograph and a topographic map of the same scale. Rare plant surveys focused on native and naturalized habitats. An oak inventory was completed in 1994 (PSBS 1994)

and then updated by SEB in 1995 to assess specific impacts under this revised Project. Additional vegetation mapping for certain areas off site were completed in 1996 by Scott Taylor of SEB.

On June 28, 1994, PSBS documented the presence of the Riverside fairy shrimp and the potential for additional fairy shrimp in the ponds on site. On October 12, 1994, Barry Jones and Scott Taylor of SEB and Phil Behrens of Dudek and Associates assessed the site for potential corridors. W. Larry Sward and Deborah Pudoff performed a wetland delineation on August 8 and 9, 1995 in accordance with the 1987 U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual (Environmental Laboratory 1987). This delineation took place within the development portion of the site including the remedial grading zone.

On April 9, 1996 a survey for western spadefoot (*Spea hammondi*) was conducted in all the ponds on site by Scott Taylor of SEB. Ponds were examined for the presence of tadpoles and any tadpoles were dipnetted, identified, and subsequently released. On April 3, 5, and 9, 1996 the site was surveyed for the presence of the Quino checkerspot (*Euphydras editha quino*) by John Brown, Ph.D. of Dudek and Associates, and Scott Taylor and Brenda Stone of SEB. Butterfly surveys were conducted primarily by the use of binoculars, although 12-inch cloth nets were carried as well.

Nomenclature for this report is from the following sources: flora - Hickman (1993) and Skinner and Pavlik (1994); vegetation communities - Gray and Bramlett (1992) and Holland (1986); amphibians and reptiles - Collins (1990); birds - American Ornithologist Union (1983); and mammals - Jones, et al. (1992). Sensitive animal and plant nomenclature and status are taken from the California Department of Fish and Game (CDFG) (1992; 1994) and Skinner and Pavlik (1994).

EXISTING CONDITIONS

VEGETATION COMMUNITIES

Five types of native vegetation occur on the Saddleback Meadows site. Venturan-Diegan transitional coastal sage scrub, coast live oak woodland, southern sycamore riparian woodland, mule fat scrub, and southern mixed chaparral (Figure 5). Portions of the Venturan-Diegan transitional coastal sage scrub are disturbed. Annual grassland, agricultural land, and manmade stock ponds (ephemeral ponds) also occur on the site (Figure 5). The ponds on site are not vernal pools because of their morphology and plant associates (see following text).

Table 1

SUMMARY OF VEGETATION COMMUNITIES ON SADDLEBACK MEADOWS

VEGETATION COMMUNITY	ACREAGE*
Venturan-Diegan transitional coastal sage scrub	64.8
Disturbed Venturan-Diegan transitional coastal sage scrub	2.3
Coast live oak woodland	14.5
Southern sycamore riparian woodland	0.5
Mule fat scrub	2.9
Southern mixed chaparral	5.4
Annual grassland	125.3
Agriculture	4.6
Ephemeral ponds	0.8
Disturbed	1.1
TOTAL	222.2

*Acreage is approximate.

VENTURAN-DIEGAN TRANSITION COASTAL SAGE SCRUB

Coastal sage scrub is found in coastal areas of California from the San Francisco Bay Area to the Mexican border, and beyond. The coastal sage scrub plant community is composed of low statured, drought-deciduous shrubs. Four floristic associations are recognized in distinct

LEGEND

CSS	Venturan-Diegan Transitional Coastal Sage Scrub
CSS-D	Venturan-Diegan Transitional Coastal Sage Scrub-Disturbed
OW	Coast Live Oak Woodland
SW	Southern Sycamore Riparian Woodland
MFS	Mulefat Scrub
SMC	Southern Mixed Chaparral
EP	Ephemeral Ponds
AG	Annual Grassland
CULT	Agricultural
DIS	Disturbed
RUD	Ruderal

SENSITIVE ANIMALS

* Riverside Fairy Shrimp
Streptocephalus woottoni

▲ Coastal Whiptail
Cnemidophorus tigris multiscutatus

■ Cactus Wren
Campylorhynchus brunneicapillus

Southern California Rufous-Crowned Sparrow
Aimophila ruficeps canescens

◆ Cooper's Hawk
Accipiter cooperii

△ Orangethroat Whiptail
Cnemidophorus hyperythrus beldingi

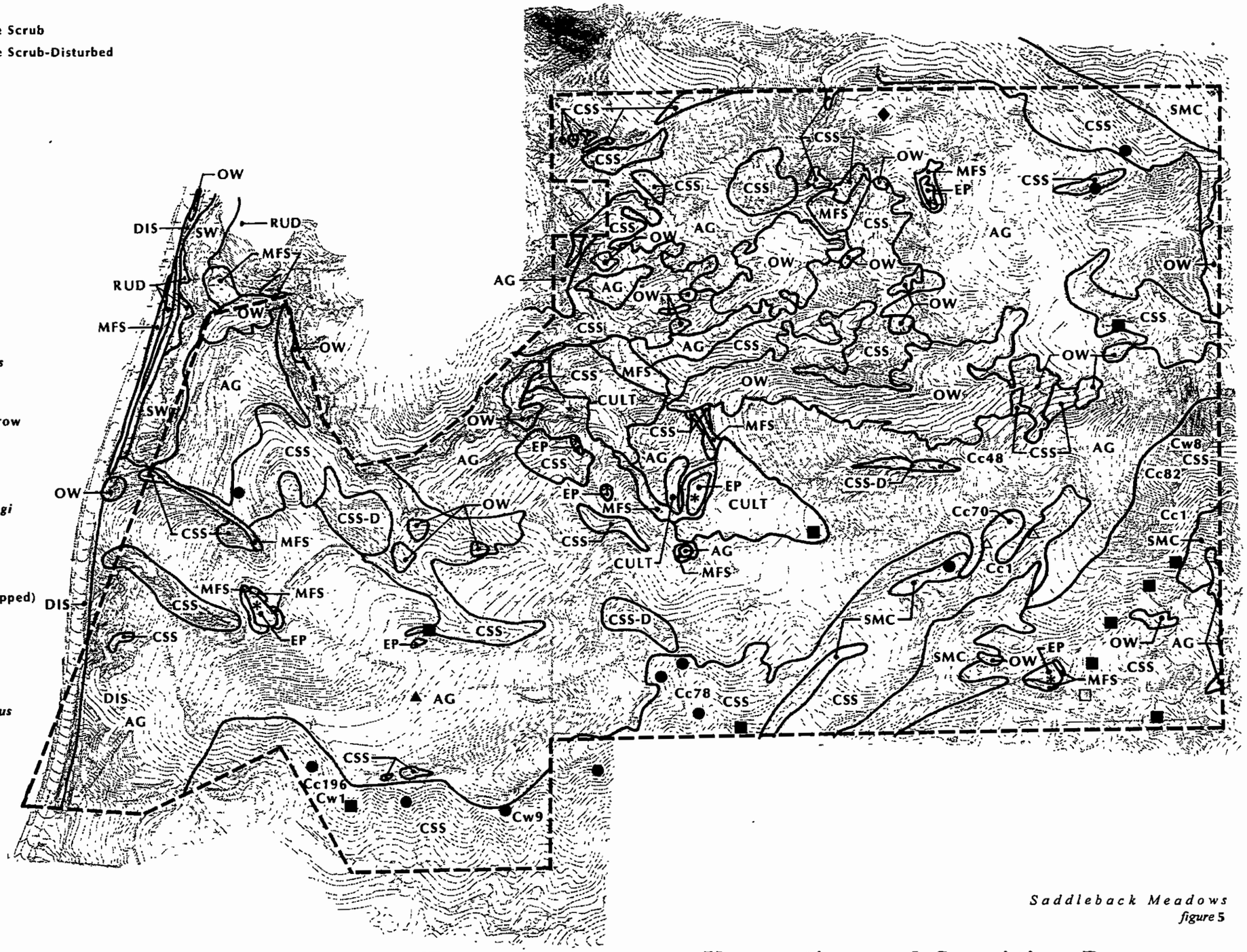
□ Western Spadefoot
Spea hammondi

Loggerhead Shrike
Lanius ludovicianus
(observed by PSBS in 1989, not mapped)

SENSITIVE PLANTS

Cc Catalina Mariposa Lily
Calochortus catalinae

Cw Intermediate Mariposa Lily
Calochortus weedii ssp. intermedius



north

0 400 800 feet

February 21, 1997

Saddleback Meadows
figure **5**

Vegetation and Sensitive Resources

prepared by Sweetwater Environmental Biologists, Inc.

geographical areas along the California coast with the Diegan association occupying an area from Orange County to northwestern coastal Baja California, Mexico (O'Leary 1990). The Venturan association occupies an area from San Luis Obispo County to Orange County. Venturan-Diegan transitional coastal sage scrub is found throughout Orange County and is a transitional scrub community between two floristic associations of coastal sage scrub: Venturan and Diegan. Approximately 67.1 acres of this plant community occur on site, 2.3 acres of which is disturbed.

Some of the typical plants found within the Venturan-Diegan transitional coastal sage scrub on site include California sage brush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), black sage (*Salvia mellifera*), and coastal prickly-pear (*Opuntia littoralis*). Disturbed portions of Venturan-Diegan transitional coastal sage scrub (2.3 acres) have a higher component of annual grasses and noticeably less shrub cover than undisturbed Venturan-Diegan transitional coastal sage scrub areas. Much of the Venturan-Diegan transitional coastal sage scrub on site is unconnected and subject to continued degradation because of previous and continued cattle grazing.

COAST LIVE OAK WOODLAND

Coast live oak woodlands occur in the outer portion of the central California coastal mountain ranges and extend south into Baja California, Mexico occurring between 500 and 4,500 feet in elevation. The dominant plant in this oak woodland are coast live oaks (*Quercus agrifolia*), which typically reach a height of 12 to 70 feet, forming an incompletely closed canopy, with an understory herbaceous layer approaching 80 percent cover.

On Saddleback Meadows, coast live oak woodland is found mainly along moderate, north-facing slopes and in ravines. Areas within small drainages or swales (central portion of the site) have the most dense canopy. The understory is, for the most part, dominated by annual grassland and has been heavily grazed, making the woodland of an overall moderate quality.

The ongoing grazing is precluding natural recruitment of new seedlings in the oak woodlands. Approximately 14.5 acres of coast live oak woodland occur on site.

SOUTHERN SYCAMORE RIPARIAN WOODLAND

Southern sycamore riparian woodland is composed of tall, open, broad-leaved, winter-deciduous trees that require water near the soil surface. Western sycamore (*Platanus racemosa*) is the dominant species forming an open, medium height woodland. Associated understory species include mule fat (*Baccharis salicifolia*), Mexican elderberry (*Sambucus mexicana*), and poison oak (*Toxicodendron diversilobum*). This habitat occurs along very rocky streambeds subject to seasonally high-intensity flooding (Holland 1986) and occurs along large intermittent streams in Orange County. An estimated 0.5 acre of this habitat occurs along Aliso Creek near El Toro Road on the western boundary of the site.

MULE FAT SCRUB

Mule fat scrub is a depauperate, tall, herbaceous, riparian scrub community that often occurs along intermittent stream channels but is also found around ponds or other wet areas. This early seral community thrives in areas that are subject to disturbances (for instance, by flooding); the absence of which could lead to a riparian woodland or forest (Holland 1986). On the site it occurs on fringes of the manmade stock ponds and in areas where there is not enough water to support riparian tree species. Approximately 2.9 acres of mule fat scrub occur on site.

SOUTHERN MIXED CHAPARRAL

Southern mixed chaparral is composed of deep-rooted shrubs that are usually not deciduous and grow to about 6 to 10 feet tall forming dense, often nearly impenetrable, stands. The plants of this association typically include lemonadeberry (*Rhus integrifolia*), toyon (*Heteromeles arbutifolia*), chamise (*Adenostoma fasciculatum*), and mission manzanita

(*Xylococcus bicolor*). Southern mixed chaparral occurs on canyon slopes in the extreme northeast and southeast quadrants of the site. Approximately 5.4 acres of southern mixed chaparral occur on site.

ANNUAL GRASSLAND

Annual grassland is a dense to sparse cover of mostly non-native grasses, often associated with numerous species of showy-flowered, annual forbs. This association occurs on gradual slopes with deep, fine-textured soils. Characteristic species include oats (*Avena* sp.), red brome (*Bromus madritensis* ssp. *rubens*), ripgut (*B. diandrus)*, and mustard (*Brassica* spp.). Cardoon (*Cynara cardunculus*) is dominant in some areas on site while virtually lacking in others. In conjunction with agriculture and grazing in California, many of these plants were imported. Annual grassland is in every quadrant of the site, but the most dense coverage is on the less steeply sloped portions of the western half of the site. Approximately 125.3 acres of annual grassland occur throughout the site.

AGRICULTURE

Agriculture in the form of olive trees (*Olea europaea*) is found in the central portion of the site. Approximately 4.6 acres of agriculture occur on site.

EPHEMERAL PONDS

All of the ponds appear to have been artificially created with earthen dams a number of years ago to provide water for cattle. The earthen dams of two of the ponds have breached, and as a result, no longer retain water. Existing use of the ponds by cattle severely impact vegetation and water quality. Seven existing and two former ponds occur on site. The seven existing ponds total 0.8 acre in size. The smaller of the two former ponds lacks significant vegetation in the bottom of the pond, but it is still rimmed with mule fat scrub. The larger pond still supports mule fat scrub.

None of the plant species observed in the ponds are primarily or typically found in vernal pools in southern California. Several species observed on site can occur in vernal pools but typically occur elsewhere. These species include salt-grass (*Distichlis spicata*) and curly dock (*Rumex crispus*). Salt-grass is a species typically found in salt marshes, and moist, alkaline areas. Curly dock is a species typically found in disturbed places. The typical habitats of the plant species observed in or near the ponds include fresh or salt water marsh, riparian, moist places, and disturbed areas.

Based on the absence of vernal pool indicator species and the presence of species typically found in other wetland or disturbed habitats, the vegetation of the ponds is atypical of vernal pools. We regard this conclusion with a fairly high degree of certainty because of the timing of the field observations (June and July). This timing will have facilitated observing vernal pool species which may occur in standing water and the drying pool beds.

The physical setting of these ponds also differs from most other southern California vernal pools (Zedler 1987). Vernal pools typically occur on relatively flat mesas, situated in low lying areas between small mounds. This contrasts sharply with the lay of the land on site where few areas are flat. Furthermore, the ponds do not occur in the few flat areas. They occur primarily in drainages which have been dammed and support a low species diversity and high percentage of weed species. We conclude based on vegetation, species composition, and physical setting that these ponds are not vernal pools. However, six of the existing ponds and two former ponds contained Riverside fairy shrimp (*Streptocephalus woottoni*). Although recently the USFWS recorded the Riverside fairy shrimp near El Toro, the occurrence of these shrimp on the site may be an anomaly because the ponds appear to have been artificially created. One possible theory is that cattle rotated between grazing areas with vernal pools in Riverside County and grazing areas on site, transferring fairy shrimp eggs to the ponds. The actual circumstances resulting in their occurrence on site is a matter of speculation and will likely never be known.

DISTURBED

A portion of the site is considered disturbed, which includes roads or other paved areas. Approximately 1.1 acres of disturbed areas occur on site.

PLANTS

A total of 110 plant species, 73 (66 percent) of which are native, were observed during surveys by PSBS (1993; 1994) and SEB. The presence of 39 non-native plant species on the Project site reiterates the disturbed nature of most of the site. A common plant species in much of the site is the cardoon, an artichoke-like plant that grows in areas where soils, especially clay soils, have been highly disturbed and compacted. This aggressive plant species often dominates areas that have been heavily grazed. Undisturbed native vegetation communities on steeper slopes of the site support a typical diversity of plant species common to central Orange County. Overall the plant diversity on site, however, appears to be somewhat limited. Appendix A provides a complete list of all plant species observed.

ANIMALS

A total of 63 animal species were observed during the surveys by PSBS (1993;1994) and SEB. The animal species observed represent a somewhat lower diversity than is usually observed in the western foothill region of the Santa Ana Mountains, probably due to the disturbed nature of the site and the presence of both cattle and man For a complete listing of animal species observed see Appendix B.

INVERTEBRATES

Both the native and non-native plant communities on site probably play host to a wide variety of invertebrate species, especially insects. Invertebrates are important features of an ecosystem because of their role in food chains and as decomposers. Specific surveys for

invertebrates focused on the presence of Riverside fairy shrimp, which were known to occur on site. Hundreds of additional invertebrates are expected to use the site.

VERTEBRATES

Amphibians

No amphibians were observed during site surveys. At least two species, the black-bellied salamander (*Batrachoseps nigriventris*) and California slender salamander (*Batrachoseps attenuatus*), are expected to occur. The disturbed conditions that exist throughout most of the site have likely restricted these species to the steeper slopes where vegetative coverage is most dense.

Reptiles

Four reptiles—the western fence lizard (*Sceloporus occidentalis*), coastal whiptail (*Cnemidophorus tigris multiscutatus*), orangethroat whiptail (*Cnemidophorus hyperythrus beldingi*), and side-blotched lizard (*Uta stansburiana*)—were observed on site. Although the site has many disturbed areas, reptile habitat still occurs throughout the site. Additional lizards and snakes would be expected, especially in the undisturbed portions of Venturan-Diegan transitional coastal sage scrub on the steeper slopes.

Birds

Birds were most abundant and conspicuous (50 species) during the surveys, and undoubtedly exhibit the highest vertebrate diversity. Most of the birds were observed within the Venturan-Diegan transitional coastal sage scrub, southern mixed chaparral, and coast live oak woodland habitats on site. A few of the resident birds which were most abundant on site include California quail (*Callipepla californica*), Anna's hummingbird (*Calypte anna*), mourning dove (*Zenaida macroura*), California towhee (*Pipilo crissalis*), house finch

(*Carpodacus mexicanus*), and lesser goldfinch (*Carduelis psaltria*). Other bird species were observed foraging on the site but probably reside elsewhere including cliff swallows (*Hirundo pyrrhonota*), northern rough-winged swallows (*Stelgidopteryx serripennis*), red-tailed hawks (*Buteo jamaicensis*), and American kestrels (*Falco sparverius*). A barn owl (*Tyto alba*) was observed nesting in the coast live oak woodlands possibly as recently as 1989.

Mammals

Eight mammals were detected on site including the California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), woodrat (*Neotoma* spp.), coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), mule deer (*Odocoileus hemionus*), and domestic cattle. Several rodents and additional medium-sized mammals are expected to use the site as well. Some expected but unobserved species include the Virginia opossum (*Didelphus virginiana*), striped skunk (*Mephitis mephitis*), and deer mouse (*Peromyscus maniculatus*). Many of the species which may occur were not observed during the diurnal surveys because they are nocturnal.

CORRIDOR ISSUES AND CONNECTIVITY

This section presents biological resource issues within the broader context of the region, including considerations such as corridors, preserve design, and other regional considerations. Due to the rapid urbanization and associated habitat loss in coastal southern California (in combination with the fact that this region supports such a unique biota), development of reserves that preserve and maintain the natural ecological communities has become an important planning goal.

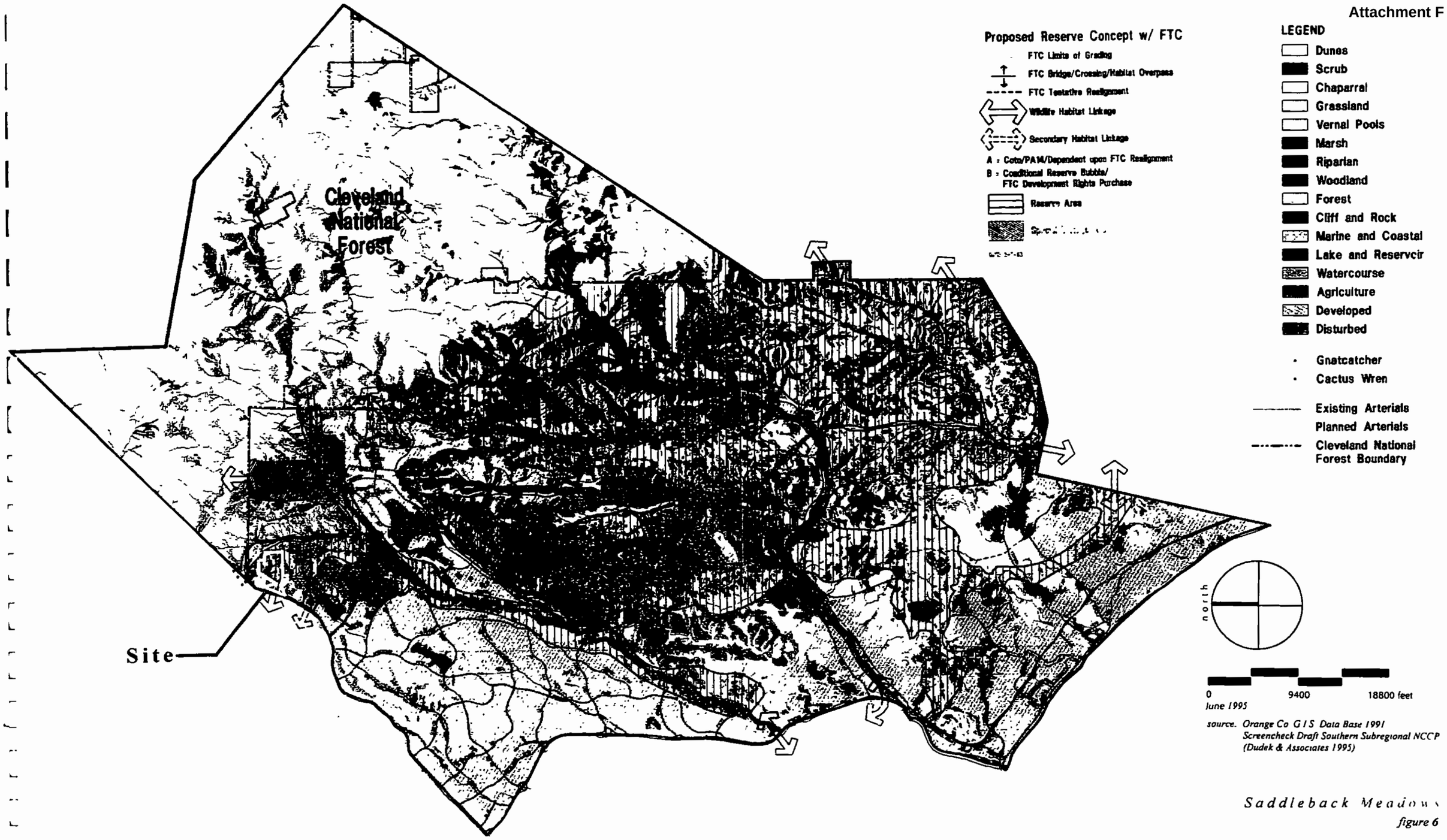
Connectivity between individual reserves is important for maintaining a diversity of species in a reserve system (Harris and Scheck 1991). Where connectivity is lacking, isolated islands of habitat are created. These islands often no longer support the diversity of species that could once

be supported prior to the isolation event. The most prominent threats facing populations in fragmented and isolated habitats are greater vulnerability to local extinction and genetic isolation (inbreeding). Adequate landscape linkages (for example, corridors) between native habitat areas ameliorate the situation by decreasing or eliminating the likelihood of these two threats.

Based on the results of a study in San Diego County for Otay Ranch, Ogden Environmental and Energy Services (Ogden) developed criteria for corridor design in developed areas (Ogden 1992). These criteria state that an ideal corridor has at least 500 feet of vegetative cover with 250 foot native vegetation buffers. Where development is not visible from the corridor (for instance in a deep gully), a narrower buffer would be acceptable. In instances where corridors are less than 500 feet long, the corridor should be no less than 400 feet in total width. At interfaces with developed areas, vegetative or opaque fencing is recommended to reduce visibility of developed areas from the corridor.

As noted earlier, Orange County is developing its NCCP preserve system in accordance with CDFG enrollment. The primary goal of this preserve system is to maintain large blocks of habitat that support viable ecosystems, and to link these large blocks via wildlife corridors. The developed areas in the vicinity of the Project limit the wildlife corridor options. Open space configuration in the vicinity of the Project is a key planning element for the Orange County NCCP preserve area (Figure 6).

Effective wildlife corridors serve all animals, from small mice or lizards up to large deer. Because of the topography and the disturbed nature of the site, and because of the existing open space and development patterns in the Project site's vicinity, the site alone could not serve to fill all of the wildlife corridor needs in the area. Three corridors have been identified in the area (Figure 7) to facilitate movement of wildlife. One would extend through the site (Central Corridor) to facilitate all wildlife except for large mammals. A second corridor would occur to the south (Southern Corridor) of the site to facilitate movement of the coastal California gnatcatcher. And a third corridor (Northern Corridor) would occur to the north of the site to facilitate large mammal movement.

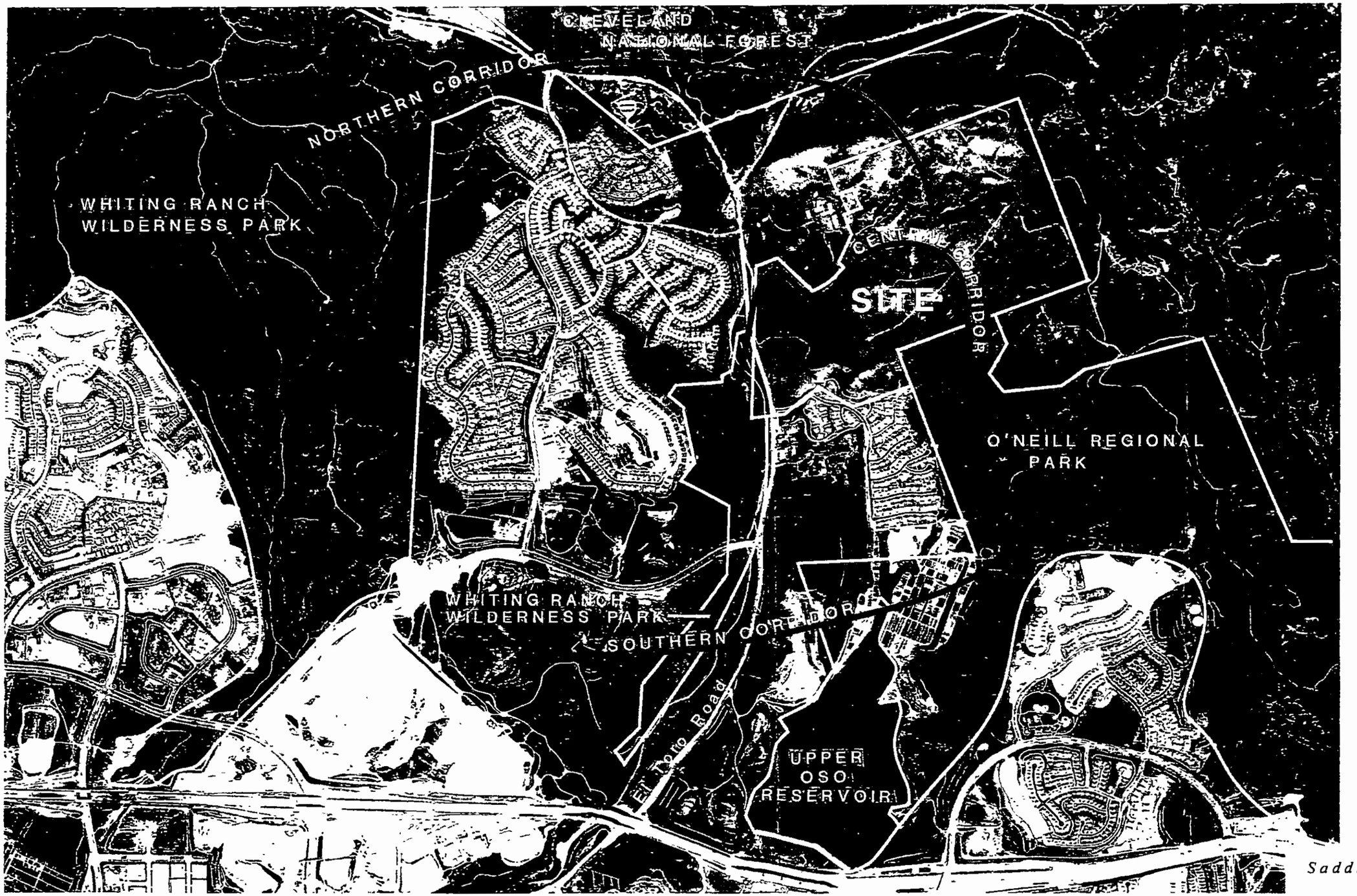


Saddleback Meadows

figure 6

Location within the NCCP Subregional Preserve

prepared by Sweetwater Environmental Biologists Inc



Saddleback Meadows
figure 7

Vertical Aerial showing adjacency to O'Neill Regional Park, Whiting Ranch Wilderness Park and Cleveland National Forest

prepared by: Sweetwater Environmental Biologists, Inc

The Central Corridor runs from the southern boundary of the Saddleback Meadows property which borders O'Neill Regional Park to Aliso Creek on the western site boundary. It follows a large drainage which demarcates part of the northern boundary of the site until it reaches the western boundary at El Toro Road. The Southern Corridor runs from O'Neill Regional Park, passes the northern end of Oso Reservoir and the Hidden Ridge development through a flat alluvial area currently in use as a nursery, then crosses a ridge and El Toro Road to enter the contiguous open space of Whiting Ranch Wilderness Park and the Edison parcel. The Northern Corridor extends northward from O'Neill Regional Park, along the eastern boundary of Saddleback Meadows. It then proceeds west to cross a portion of the Cleveland National Forest, then runs north/south across El Toro Road and Live Oak Canyon Road where it connects with Whiting Ranch Wilderness Park. All three corridors cross El Toro Road, but only the Central Corridor (on site) will benefit from two existing undercrossings that facilitate some animal movement, although neither one is suitable for large mammals such as mountain lion or mule deer.

The Central Corridor has three important features contributing to its ability to serve as a wildlife corridor: a major drainage through the property, contiguity with O'Neill Regional Park, and existing undercrossings of El Toro Road that facilitate animal movement along the Aliso Creek drainage. The undercrossings consist of several 7-foot diameter corrugated pipes that extend at an angle for approximately 300 feet underneath the road and a second perpendicular undercrossing of a corrugated pipe approximately 10-feet high and 15-feet across. Although the size and shorter length of the larger undercrossing will typically make this a preferred option for most wildlife, access by larger mammals is restricted by fencing and the cement-lined bottom. Preliminary data (Phil Behrens, pers. comm.) suggests that small mammals use the corrugated pipe undercrossings to some extent, and that Aliso Creek is a key wildlife movement corridor from the existing open space east and south of Saddleback Meadows to the Edison property to the west.

Any corridor on site (including the Central Corridor) will not likely serve as a primary corridor for the gnatcatcher. There are no known sightings of gnatcatchers on Saddleback

Meadows. Habitat immediately west of the site is primarily riparian or non-native vegetation. Venturan-Diegan transitional coastal sage scrub habitat is confined to a slope area on the western portion of the site near El Toro Road, along the slopes adjacent to the Central Corridor, and in the southern portion of the site. Therefore, although gnatcatchers at least have the potential to use this corridor, the Central Corridor was deemed most suitable for some birds and most small- to medium-sized mammals.

The Southern Corridor may be the most significant corridor for the gnatcatcher because of the presence of existing Venturan-Diegan transitional coastal sage scrub occupied by the gnatcatcher. The Southern Corridor will cross an area at the northern end of Oso Reservoir that has little native habitat, except in two drainages leading to the reservoir. This corridor could be dramatically enhanced by reconfiguring and revegetating portions of the nursery with native habitats. The ridge that intervenes between El Toro Road and Oso Reservoir supports Venturan-Diegan transitional coastal sage scrub and non-native grassland habitats. Although the eastern side of the intervening ridge line is steep, it is not assumed to prohibit bird movement. There is no undercrossing at El Toro Road, and given the terrain, it will be impractical to construct one; however, because this corridor is likely most important for gnatcatcher movement, road crossings are a secondary issue.

The Northern Corridor, through the Cleveland National Forest, is at a higher elevation than Saddleback Meadows, is steep, and supports mostly chaparral vegetation. Gnatcatchers are expected to make little use of this area due to the physiognomic setting and vegetation; however, there should be no such restriction on mountain lion and other large mammal movements. No undercrossings of El Toro Road occur along this corridor but planned road improvements may present opportunities for the construction of undercrossings.

It is beyond the scope of the Project to establish either the Southern or Northern corridors. However, because the proposed corridor areas are still undeveloped, opportunities still exist through the NCCP process to ensure the three identified corridors can function as a wildlife corridor unit and help meet the goals of the County of Orange's NCCP subregional design.

SENSITIVE RESOURCES

The following is a description of sensitive biological resources found on Saddleback Meadows. Where impacts to these resources occur, mitigation may be required as discussed in the Mitigation Section of this report.

HABITATS

Venturan-Diegan Transitional Coastal Sage Scrub

Venturan-Diegan transitional coastal sage scrub is a sensitive habitat because it supports a number of state and federally listed endangered, threatened, and rare vascular plants as well as several reptile, bird, and mammal species that are federally listed or are candidate species for federal listing. Loss estimates for coastal sage scrub habitat in California range from 36 to 85 percent, but since these estimates were made in 1979 to 1981, additional losses have since accrued (O'Leary 1990). The primary cause for the loss of coastal sage scrub within California have been habitat conversion to agriculture and urban development.

The fragmented nature of much of the Venturan-Diegan transitional coastal sage scrub on site makes it low quality. The highest quality Venturan-Diegan transitional coastal sage scrub occurs on the steep slopes that connect with O'Neill Regional Park in the southeast quadrant of the site. This area supports the highest native plant component and the highest diversity of animal species.

According to the NCCP Evaluation Logic Flow Chart, the Venturan-Diegan transitional coastal sage scrub on the Project site has intermediate value for long-term conservation because although it is not the most dense coastal sage scrub in the region, it is located next to a higher value district (O'Neill Regional Park and Whiting Ranch Regional Park).

Coast Live Oak Woodland

Coast live oak woodland and individual oaks are protected by the tenets of CEQA because of their scarcity, wildlife values, and ability to provide watershed protection. The major factors contributing to the decline of oak woodlands in southern California include livestock grazing, recreational use, and urban and rural developments. The coast live oak woodland on site is of moderate quality because of the extensive grazing which has eliminated the natural understory.

An oak tree inventory was completed by PSBS (PSBS 1994) and updated by SEB (SEB 1995) to document the number of oaks present on site and the number to be impacted by the Project.

Southern Sycamore Riparian Woodland

Southern sycamore riparian woodland is sensitive because it is a riparian habitat. Riparian habitats serve as movement corridors, water sources, shelter/shaded areas, and the unique microclimate supports a variety of wildlife. Many birds and amphibians are completely restricted to riparian habitats and are dependent on them for breeding. Animals also move back and forth across riparian habitats into adjacent upland or wetland habitats. Riparian systems are intimately linked with adjacent upland areas, and many species that are restricted to riparian habitats for breeding use upland areas surrounding riparian habitats for foraging. In addition, several insect and plant species are restricted to riparian habitats.

Riparian communities are protected by the ACOE (Section 404 of the Clean Water Act) and CDFG (Streambed Alteration Agreement) because of their wetland values. Under CEQA, riparian communities are protected because they are declining habitats that support sensitive species and serve in many instances as a wildlife corridors.

Ephemeral Ponds

Although this community by itself is not sensitive, it is recognized as sensitive in this case because it supports the Riverside fairy shrimp, a federally listed endangered species.

Wetlands and Waters of the U.S.

These areas are regulated by the CDFG and the ACOE. On site, Waters of the U.S. occur in manmade stock ponds and intermittent streams that cross several areas of the site. Wetland habitat, under CDFG jurisdiction, is associated with southern sycamore riparian woodland, mule fat scrub, and ephemeral ponds.

SENSITIVE PLANTS

Two sensitive plants, Catalina mariposa lily (*Calochortus catalinae*) and intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), were detected on site (Figure 3).

Catalina mariposa lily

Listing: USFWS: None; CDFG: None; CNPS: List 4, 1-2-3

Distribution: This species is distributed in all coastal counties from Santa Cruz County to San Diego County, except Monterey County.

Habitat(s): The Catalina mariposa lily grows on heavy soils, usually in open grassland or shrubland.

Status On Site: Eight stands were detected by SEB (435 individuals), six of which (428 individuals) were in Venturan-Diegan transitional coastal sage scrub along the southern boundary of the site. The two additional stands (seven individuals) were in Venturan-Diegan transitional coastal sage scrub patches in the northeastern quadrant of the site.

Intermediate mariposa lily

Listing: USFWS: Regionally sensitive; CDFG: None; CNPS: List 1B, 2-2-3

Distribution: This mariposa lily has only been recorded from Los Angeles, Orange, and Riverside counties.

Habitat(s): Dry, rocky slopes are the habitat of this species.

Status On Site: Three stands were detected by SEB totaling 18 individuals. Two stands are in the southwest quadrant, while the remaining stand is in the southeast quadrant.

Since the surveys had adequate coverage to detect potentially occurring sensitive plant species, no additional sensitive plant species are expected to occur on site. The plants which were determined originally to have a potential to occur on site included Palmer's grappling-hook (*Harpogonella palmeri*), many-stemmed dudleya (*Dudleya multicaulus*), and prostrate spineflower (*Chorizanthe procumbens*).

SENSITIVE ANIMALS

Eight sensitive animals were observed during the surveys by PSBS (1993; 1994) and SEB (Figure 3): Riverside fairy shrimp, western spadefoot, coastal whiptail, orangethroat whiptail, Cooper's hawk (*Accipiter cooperii*), cactus wren (*Campylorhynchus brunneicapillus*), loggerhead shrike (*Lanius ludovicianus*), and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*). No coastal California gnatcatchers occur on site.

Riverside fairy shrimp

Listing: USFWS Endangered

Distribution: Extremely limited distribution in Riverside, Orange, and San Diego counties; and northern Baja California, Mexico. In Orange County, known from two locations, in Riverside County, known only from five vernal pools, in San Diego County, known only from two vernal pool complexes.

Habitat(s): Vernal and ephemeral pool habitats that are relatively deep and have low values for alkalinity and chloride presence. The Riverside fairy shrimp is a warm water species of fairy shrimp, and it hatches at water temperatures of 15 to 17 °C.

Status On Site: Six of the ponds and two recently dried ponds (their dams have been breached) have evidence of Riverside fairy shrimp. These locations represent a significant expansion of the shrimp's typical habitat range.

Western spadefoot

Status: USFWS Regionally sensitive

Distribution: California's Central Valley and San Francisco Bay area south along the coast to northwestern Baja California, Mexico.

Habitat: Mesa tops, valleys, low hills, floodplains, and washes. Southern California habitats include coastal sage scrub, chaparral, and grassland. Important habitat components include temporary pools (which form during winter and spring rains) for breeding and friable soils for burrowing.

Status On Site: During focused surveys, western spadefoot tadpoles were observed in two of the ephemeral ponds on site.

Coastal whiptail

Status: USFWS Regionally sensitive

Distribution: Ventura County south, in cismontane California, to south-central Baja California, Mexico.

Habitat: Open Venturan-Diegan transitional coastal sage scrub, grasslands, chaparral, and woodlands. Frequently found along the edges of dirt roads traversing habitat. Important habitat components include open, sunny areas for basking, plant litter, and an abundance of invertebrate prey, particularly termites (*Reticulitermes* sp.).

Status On Site: A solitary individual was observed by PSBS.

Orangethroat whiptail

Status: USFWS: Regionally sensitive; CDFG CSC

Distribution: Southern Orange County and southern San Bernardino County (Colton), south to the cape of Baja California, Mexico.

Habitat: Venturan-Diegan transitional coastal sage scrub, chaparral, edges of riparian woodlands, and washes. Also found in weedy, disturbed areas adjacent to these habitats. Important habitat requirements include a mosaic of open, sunny areas and shade for thermoregulation, and an abundant invertebrate prey base, particularly termites.

Status On Site: Two individuals were observed by SEB on a slope in the southeast quadrant adjacent to O'Neill Regional Park.

Cooper's hawk

Status: Nesting—CDFG CSC

Distribution: Throughout the continental U.S. excluding Alaska, parts of Montana, and parts of the Dakotas. Winters south to Mexico and Honduras.

Habitat: In San Diego County tends to inhabit lowland riparian areas and oak woodlands in proximity to suitable foraging areas such as scrublands or fields.

Status On Site: One individual was observed by PSBS hunting in grassland on the northern half of the site.

Cactus wren

Status: USFWS Regionally sensitive/CDFG CSC

Distribution: Southern Orange County (San Juan Creek) south through San Diego County into northwestern Baja California, Mexico.

Habitat: Restricted to clumps of prickly-pear (*Opuntia littoralis and O. oricola*) or cholla (*O. prolifera*) growing in Venturan-Diegan transitional coastal sage scrub or along washes.

Status On Site: Ten individuals were observed by PSBS in the southern half of site, with most (seven) occurring on the slopes contiguous with habitat in O'Neill Regional Park.

Loggerhead shrike

Status: CDFG CSC

Distribution: Widespread, but declining, throughout North America. Winters south to Central America.

Habitat: Open habitats including grasslands, scrublands, and ruderal areas with adequate perching locations.

Status On Site: Observed by PSBS in 1989 but not mapped (PSBS 1993).

Southern California rufous-crowned sparrow

Status: USFWS Regionally sensitive/CDFG CSC

Distribution: Ventura County southeast through Los Angeles, Orange, Riverside and San Diego counties to northwestern Baja California, Mexico.

Habitat: Mainly inhabit Venturan-Diegan transitional coastal sage scrub where it occurs on rocky hillsides and in canyons but also may be found in open sage scrub/grassy areas of successional growth (for example, after a fire).

Status On Site: Ten individuals were observed by PSBS on the southern half of the site, mostly (seven) on the slopes of habitat contiguous with O'Neill Regional Park. Two additional individuals occur just off site near the southern half of the site and in the northeast corner.

Several additional animal species may occur on site (see Table 2). The majority of these species have a low to moderate potential for occurring on site. None of the species warrant further surveys because of their low potential for occurrence, they are of a generally low level of sensitivity, and/or adequate mitigation can be accomplished by mitigating for their habitats.

Table 2

SENSITIVE ANIMAL SPECIES WITH THE POTENTIAL FOR OCCURRENCE WITHIN THE SADDLEBACK MEADOWS SITE

SPECIES	STATUS*	POTENTIAL/HABITAT
Invertebrates		
Quino checkerspot *Euphydryas editha quino*	USFWS FE	Low; habitat highly variable, but primarily coastal sage scrub. Food plants (*Plantago* ssp.) present. Focused surveys were conducted but the species was not observed. This species is extremely rare in Orange County.
Reptiles		
San Diego horned lizard *Phrynosoma coronatum blainvillei*	USFWS Regionally sensitive CDFG CSC	High; chaparral, coastal sage scrub, food source (harvester ants [*Pogonomyrmex* sp.]) not seen but probably present. Focused surveys may be needed for detection but are not warranted. Expected but not seen during surveys.
San Diego ringneck snake *Diadophus punctatus similis*	USFWS Regionally sensitive CDFG CSC	Low to moderate; coastal sage scrub, chaparral, oak woodlands. Prefers moist habitats. Focused surveys needed for detection but are not warranted.
Coastal rosy boa	USFWS Regionally sensitive	Low; rocky areas in coastal sage scrub, chaparral, and cactus scrub. Focused surveys needed for detection but are not warranted.
Birds		
Prairie falcon *Falco mexicanus*	CDFG CSC	Low; an uncommon visitor to grasslands and scrublands of Orange County.
Northern harrier *Circus cyaneus*	CDFG CSC	Moderate; habitat includes open areas, such as grasslands, and adjacent habitats. Will have been observed if it consistently uses the site. Nevertheless, this raptor probably occurs in the site vicinity due to the amount of open habitat, especially to the southeast.
Burrowing owl *Speotyto cunicularia*	CDFG CSC	Low; often found in disturbed sites where ground squirrel burrows are present, but will have been observed if present.
Bell's sage sparrow *Amphispiza belli belli*	USFWS Regionally sensitive CDFG CSC	Low; habitat is coastal sage scrub and chaparral, not common and apparently absent from much of Orange County. Will likely have been detected if present.

Table 2 (cont.)

SENSITIVE ANIMAL SPECIES WITH THE POTENTIAL FOR OCCURRENCE WITHIN THE SADDLEBACK MEADOWS SITE

Tricolor blackbird *Agelaius tricolor*	USFWS Regionally sensitive CDFG CSC	Moderate potential as a winter visitor and as a migrant; mostly in grasslands and ephemeral pond habitat.
Mammals		
Pallid bat *Antrozous pallidus pacificus*	CDFG CSC	Moderate; habitat highly variable, could forage throughout the site, but roosting sites are likely elsewhere. Focused surveys needed for detection but not warranted.
Greater western mastiff bat *Eumops perotis californicus*	USFWS Regionally sensitive CDFG CSC	Moderate; could forage in any habitat on site, but roosting sites are likely elsewhere. Focused surveys needed for detection but not warranted.
Dulzura California pocket mouse *Chaetodipus californicus femoralis*	USFWS Regionally sensitive CDFG CSC	Low to moderate; dense chaparral, but occasionally other shrublands Trapping necessary for detection but not warranted.
San Diego desert woodrat *Neotoma lepida intermedia*	USFWS Regionally sensitive CDFG CSC	Moderate; woodrat sign was found, but it could have been dusky-footed woodrat. Habitat is coastal sage scrub and other dry habitats. Trapping necessary for detection but not warranted.

*Explanation of listing/sensitivity can be found in Appendix C

IMPACTS

Two types of impacts will be assessed: direct and indirect. All areas to be modified, including remedial slopes and fuel modification zones will be interpreted as direct impacts. Fuel management zones are also considered direct impacts because most native vegetation will be removed. Both on- and off-site impacts are considered in this analysis.

Indirect impacts are impacts to the biological resources that result from adjacent direct impacts. Though these impacts may not initially be evident, over time they may occur due to the relative proximity of development or disturbance. Examples of indirect impacts include habitat fragmentation, habitat insularization, edge effect, exotic species invasion, lighting, domestic pet intrusion/predation, and increased human intrusion.

DIRECT IMPACTS

HABITATS

Of the 222.2 acres on the Project site, approximately 188.8 acres on site (85 percent) and approximately 17.4 acres off site will be directly impacted by Project development (Figure 8). A total of 33.4 acres (15 percent) of undeveloped land will remain in open space within the site. A summary of the impacts is found in Table 3.

Venturan-Diegan Transitional Coastal Sage Scrub

Approximately 44.2 acres (66 percent) of the Venturan-Diegan transitional coastal sage scrub will be directly impacted on site by the proposed Project, leaving 22.9 acres preserved. An additional 6.1 acres will be impacted off site. Most of these impacts will occur in isolated patches of habitat throughout the central portion of the site and along the fringes of the larger patches on site. All impacts to Venturan-Diegan transitional coastal sage scrub are significant.

LEGEND

CSS	Venturan-Diegan Transitional Coastal Sage Scrub
CSS-D	Venturan-Diegan Transitional Coastal Sage Scrub-Disturbed
OW	Coast Live Oak Woodland
SW	Southern Sycamore Riparian Woodland
MFS	Mulefat Scrub
SMC	Southern Mixed Chaparral
EP	Ephemeral Ponds
AG	Annual Grassland
CULT	Agricultural
DIS	Disturbed
RUD	Ruderal

SENSITIVE ANIMALS

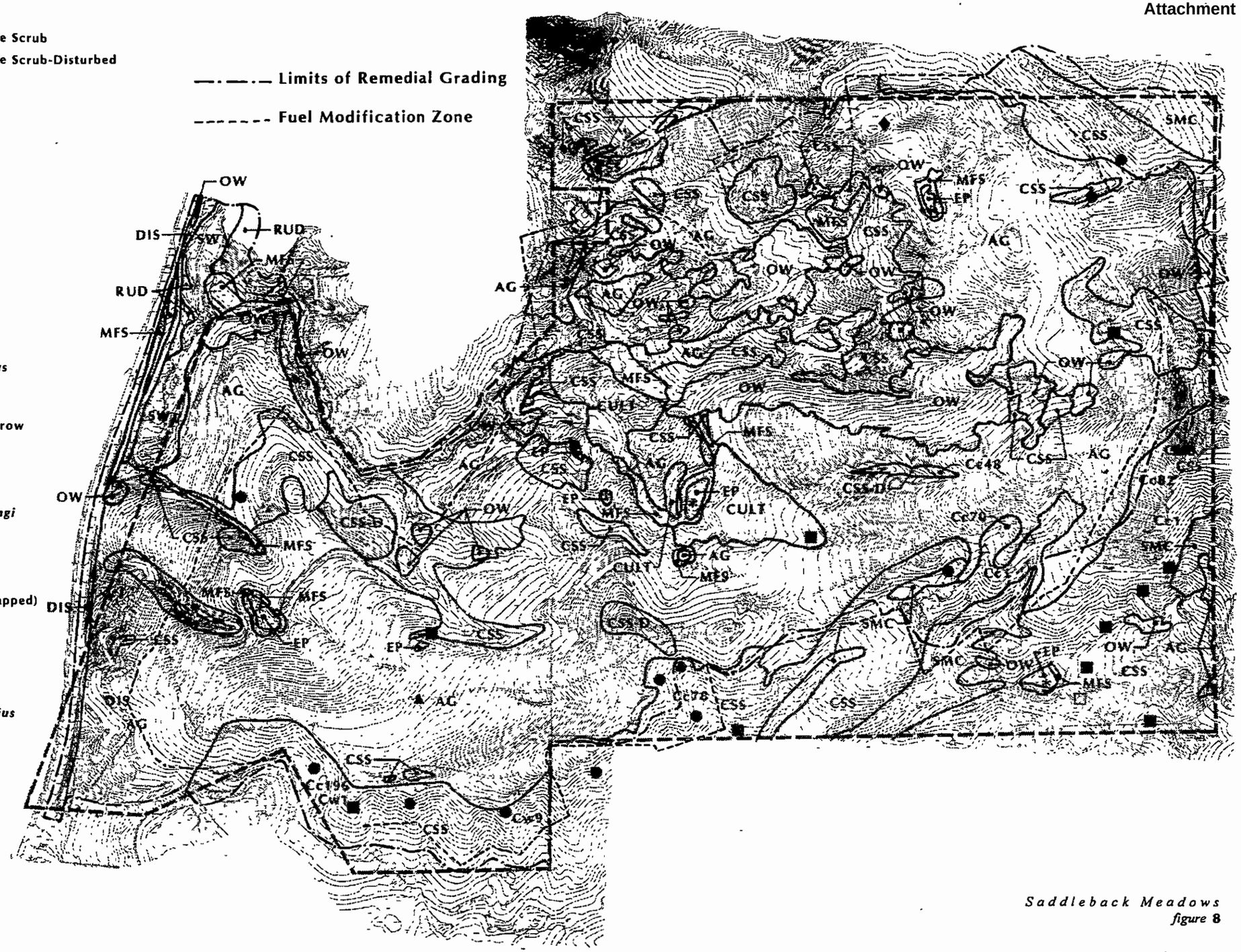
*	Riverside Fairy Shrimp *Streptocephalus woottoni*
▲	Coastal Whiptail *Cnemidophorus tigris multiscutatus*
■	Cactus Wren *Campylorhynchus brunneicapillus*
	Southern California Rufous-Crowned Sparrow *Aimophila ruficeps canescens*
◆	Cooper's Hawk *Accipiter cooperii*
△	Orangethroat Whiptail *Cnemidophorus hyperythrus beldingi*
□	Western Spadefoot *Spea hammondi*
	Loggerhead Shrike *Lanius ludovicianus* (observed by PSBS in 1989, not mapped)

SENSITIVE PLANTS

Cc	Catalina Mariposa Lily *Calochortus catalinae*
Cw	Intermediate Mariposa Lily *Calochortus weedii ssp. intermedius*

—.—.— Limits of Remedial Grading

- - - - - - Fuel Modification Zone



north

0 400 800 feet

February 21, 1997

Saddleback Meadows
figure **8**

Impact Map

prepared by. Sweetwater Environmental Biologists, Inc

Table 3

SADDLEBACK MEADOWS EXISTING VEGETATION AND PROJECT IMPACT

Habitat	Existing Acreage	On-Site Impacts	Percent Impact	Preserved On-Site	Percent Preserve	Off-Site Impacts
Venturan-Diegan transitional coastal sage scrub (disturbed and undisturbed)	67.1	44.2	66%	22.9	34%	6 1
Coast Live Oak Woodland (acreage/individuals)	14.5/298	14.0/284	97%	0.5/14	3%	0.6/5
Southern Mixed Chaparral	5.4	1.8	33%	3.6	67%	1.9
Southern Sycamore Riparian Woodland	0.5	0.5	100%	0.0	0%	2.8
Mule fat scrub	2.9	2.8	97%	0.1	3%	1.0
Ephemeral pond	0.8	0.6	75%	0.2	25%	
Annual grassland	125 3	119.2	95%	6.1	5%	2.4
Agriculture	4.6	4.6	100%	0.0	0%	
Disturbed	1.1	1.1	100%	0.0	0%	2.6
Total	**222.2**	**188.8**	**84%**	**33.4**	**16%**	**17.4**

Mule Fat Scrub and Southern Sycamore Riparian Woodland

Mule fat scrub (2.8 acres [97 percent]) will be impacted where it is associated with three of the ponds and in three intermittent streambeds. Southern sycamore riparian woodland (0.5 acre [100 percent]) will be impacted along the western boundary of the site by remedial grading. Off site, there will be impacts to 2.8 acres of southern sycamore riparian woodland and 1.0 acre of mule fat scrub. These impacts are significant because of the two habitats' values as wildlife habitats and because of their function as wetlands. Impacts to these habitats will require permitting as discussed below.

Coast Live Oak Woodland

A total of 14 acres (97 percent) of coast live oak woodlands (284 individuals) will be impacted by the proposed Project while 0.5 acres (14 individuals) will be preserved. Off site, there will be impacts to 0.6 acre of coast live oak woodlands (5 individuals). Impacts to oak woodlands are significant because of their wildlife values, their function in watershed protection and, in the case of Saddleback Meadows, their function as part of the planned NCCP regional wildlife corridor.

Ephemeral Ponds

The 0.6 acre of impact to manmade stock ponds is significant due to the presence of Riverside fairy shrimp. One ephemeral pond (0.2 acre) would be preserved in open space adjacent to O'Neill Regional Park. In addition, impacts to portions of this habitat will require permitting as discussed below because of its function under ACOE jurisdiction.

Wetlands and Waters of the U.S.

A federal Clean Water Act permit issued by the ACOE will be necessary for direct impacts to 1.65 acres of wetlands (0.84 acre of mule fat scrub and 0.81 acre of the southern sycamore riparian woodland) and 1.78 acres of Waters of the U.S. (intermittent streams and manmade stock ponds). As part of the permitting process, there may be required mitigation measures independent of the requirements of CEQA for impacts to wetlands. Only a portion of the mule fat scrub being impacted was delineated as a wetland (0.84 acre), although the total impact to this community is 2.8 acres. Only a portion of the southern sycamore riparian woodland being impacted was delineated as a wetland (0.81 acre), although the total impact to this community is 3.3 acres (0.5 acre on site and 2.8 acres off site). A Streambed Alteration Agreement with the CDFG will also be required for the 7.7 acres of impacts to wetland habitats (southern sycamore riparian woodland, mule fat scrub, and ephemeral pond). A conceptual wetland mitigation plan for these impacts is presented in Appendix D.

Southern Mixed Chaparral

Approximately 1.8 acres (33 percent) of southern mixed chaparral will be directly impacted on site by the Project. These impacts are not significant because of the small amount of impact and the fact that southern mixed chaparral is not a sensitive habitat.

Agriculture, Annual Grassland, and Disturbed

Approximately 4.6 acres (100 percent) of agriculture, 119.2 acres (95 percent) of annual grassland, and 1.1 acres of disturbed land (100 percent) will also be directly impacted on site. An additional 2.4 acres of annual grassland and 2.6 acres of disturbed will be impacted off site. These impacts are not significant because the habitats are not sensitive.

SENSITIVE PLANTS

All or a portion of seven of the eight stands of Catalina mariposa lily, including approximately 314 (72 percent) of the estimated 435 individuals, will be eliminated by the proposed Project. Approximately 121 individuals of the remaining stand will remain in open space. Impacts to this species are not significant due to the species' relatively low level of sensitivity, the relatively small population size on site, and the relatively broad distribution of this species throughout its range.

One of the three stands of intermediate mariposa lily will be eliminated by the proposed Project. Approximately one of the estimated 18 individuals (5 percent) will be directly impacted. Impacts to this species are adverse but not significant due to the small amount of impact and small size of the total site population and, therefore, low regional significance of the on-site population.

SENSITIVE ANIMALS

Riverside Fairy Shrimp

Impacts to all ponds where fairy shrimp were detected are significant because of the limited distribution of the species and because it is federally listed as endangered.

Western Spadefoot

One of the two ponds where larvae were found will be impacted by the Project. The impact to this species is not significant because of the species low level of sensitivity and because the population on site is not of regional significance due to its small size.

Orangethroat Whiptail, Coastal Whiptail, Cactus Wren, and Southern California Rufous-Crowned Sparrow

The orangethroat whiptail and coastal whiptail prefer the open Venturan-Diegan transitional coastal sage scrub and southern mixed chaparral areas of the site. Two orangethroat whiptails and one coastal whiptail were observed, and the two reptiles are expected to occur throughout appropriate Venturan-Diegan transitional coastal sage scrub habitat on site. Approximately 54 acres of combined Venturan-Diegan transitional coastal sage scrub and chaparral will be directly impacted (including off-site impacts), leaving 26.5 acres in open space on site. Ten cactus wrens and 12 southern California rufous-crowned sparrows are distributed throughout the Venturan-Diegan transitional coastal sage scrub on site and just off site. Approximately 50.3 acres of potential nesting and foraging habitat (Venturan-Diegan transitional coastal sage scrub) will be impacted on and off site, including at least portions of areas occupied by all of the sparrows and at least four pairs of cactus wrens. Impacts to these four species combined are significant but mitigable.

Cooper's Hawk and Loggerhead Shrike

No direct impacts to Cooper's hawk nests are anticipated because no nests were observed during the surveys. Impacts to foraging habitat on site (entire site) are adverse but not significant since it is unlikely that any active nests will be disturbed. The loss of foraging habitat could affect, at most, a portion of one territory of one pair of Cooper's hawks, and this impact is not significant.

Loggerhead shrikes were observed on site by PSBS, but it is unknown how many or whether they were breeding on site. Assuming that they still use the site, the Project impacts will still not be significant because of the low sensitivity of this species.

RAPTOR FORAGING HABITAT

Impacts to all habitats on and off site will total 206.2 acres, while off-site impacts will total 7.0 acres. These impacts will generally add to the loss of raptor foraging areas in the region. This impact is significant cumulatively but mitigable.

POTENTIALLY OCCURRING SPECIES

Given the low sensitivity of the potentially occurring species, their distribution throughout other parts of Orange County, and the low amount of anticipated impacts to their respective habitats, any potential impacts to these species are adverse but not significant. We do not recommend focused surveys for mammals or other species.

299 UNIT SINGLE FAMILY HOUSING ALTERNATIVE

This alternative reduces the impacts and maintains the wildlife corridor across the northeastern corner of the site (Figure 3). There would be significant impacts to all of the

sensitive habitats and species as are impacted under the current plan, but the impact would be greatly reduced and much more open space would remain on site.

CLUSTER/REDUCED DEVELOPMENT FOOTPRINT

This alternative maintains the wildlife corridor across the central ridge of the site (Figure 4). There would be significant impacts to all of the sensitive habitats and species as are impacted under the current plan, but the impact would be greatly reduced and much more open space would remain on site.

MITIGATION

This section presents recommendations to mitigate significant impacts based on current practices in the context of this Project, given the on-site opportunities for preservation and revegetation. Replacement ratios for the various impacted communities will also be discussed. Proposed mitigation measures are based on the requirements of CEQA, which requires mitigation to offset biological impacts which are significant, on the County of Orange's Oak Ordinance, NCCP process guidelines, the federal ESA, and state and federal wetland permitting requirements.

The Project impacts most of the site as a result of Project grading, fuel modification zones, and remedial grading requirements. Additionally, significant remedial grading are also required off site. Mitigation replacement ratios have been defined based on the quality of the habitat and the condition of the habitat used for compensation at the time the parcel is proposed for development.

Impacts to Venturan-Diegan transitional coastal sage scrub habitat will require a mitigation ratio of 1.5:1 because although it is ranked as intermediate value habitat (under the NCCP), in its current condition much of the habitat being impacted is fragmented, is at least partially disturbed, and it does not support the coastal California gnatcatcher. All impacts to mule fat scrub (including the wetland portion) will be mitigated at 1:1 because of the poor quality of the existing habitat and because it is surrounded by agriculture and annual grassland habitats. All southern sycamore riparian woodland (even the wetland portion) will be mitigated at a ratio of 3:1 because of its high habitat quality. Coast live oak woodland habitat will be mitigated at a 1:1 replacement ratio. The minimum number of oaks to be planted is derived from guidelines for individual tree replacement based on the Orange County oak ordinance, which considers the diameter and number of oak trees impacted. Ephemeral pond habitat will need to be replaced at a 2:1 ratio because it supports the Riverside fairy shrimp. Table 4 presents a summary of impacts and mitigation.

Table 4

SUMMARY OF ON- AND OFF-SITE IMPACTS
TO VEGETATION COMMUNITIES AND ASSOCIATED MITIGATION

Habitat Type	Impact Acreage	Mitigation Ratio	Mitigation Acreage
Venturan-Diegan transitional coastal sage scrub*	50 3	1.5:1	75.5
Mule fat scrub	3.8	1:1	3.8
Southern sycamore riparian woodland	3.3	3:1	9.9
Coast live oak woodland	14.6	1:1	14.6
Ephemeral pond	0.6	2:1	1.2

*Mitigation for Venturan-Diegan transitional coastal sage scrub will occur on and off site. See Figure 7 for on-site mitigation areas.

Impacts to the southern mixed chaparral, annual grassland, and agricultural habitats on site do not require mitigation.

VENTURAN-DIEGAN TRANSITIONAL COASTAL SAGE SCRUB

Venturan-Diegan transitional coastal sage scrub will be mitigated by on-site preservation, on-site restoration, and by making a contribution to the NCCP. Based on a 1.5:1 mitigation ratio, the 50.3 acres of impacts to Venturan-Diegan transitional coastal sage scrub will require preservation or creation of 75.5 acres of habitat. On-site preservation of Venturan-Diegan transitional coastal sage scrub totals 22.9 acres in open space within the proposed NCCP corridor; an additional 52.6 acres of Venturan-Diegan transitional coastal sage scrub is therefore required for mitigation through preservation, restoration, or NCCP acquisition. Approximately 40.4 acres of remedial grading areas are proposed to be revegetated with Venturan-Diegan transitional coastal sage scrub. The remaining mitigation requirement will be met by revegetating 6.1 acres of disturbed areas within open space on site with Venturan-Diegan transitional coastal sage scrub and making a financial contribution to the Endowment Fund for the NCCP to be used for programs such as the Adaptive Management Program.

The Venturan-Diegan transitional coastal sage scrub revegetation aspect of the upland mitigation plan can be implemented with one of two options. The first option will entail topsoil salvage and possibly seeding (Table 5). The second option will involve simply seeding of the revegetation areas. Option 1 has the potential to develop into habitat more quickly than Option 2, although the cost of Option 1 is higher than Option 2.

Table 5

VENTURAN-DIEGAN TRANSITIONAL COASTAL SAGE SCRUB HYDROSEED SPECIES

Scientific Name	Common Name
Baccharis sarothroides	Broom baccharis
Gnaphalum californicum	California everlasting
Lotus scoparius	Deerweed
Lupinus bicolor	Lupine
Nasella lepida	Foothill needlegrass
Nasella pulchra	Purple needlegrass
Mimulus aurantiacus	Monkeyflower
Artemisia californica	California sagebrush
Encelia californica	California encelia
Eriogonum fasciculatum	California buckwheat
Opuntia littoralis	Prickly-pear
Opuntia prolifera	Cholla
Salvia mellifera	Black sage
Yucca whipplei	Yucca

Maintenance and technical monitoring events should occur annually in July over a five-year period. Maintenance monitoring will include general maintenance, weed control, pest control, pruning (if necessary), and protection of the revegetation area with adequate fencing. Technical monitoring will involve sampling the habitat to monitor its progress in meeting the success criteria for the revegetation. The primary goal of the monitoring program is to provide quality assurance to oversee the maintenance of the newly created habitat.

Overall supervision of the installation and maintenance contractors and monitoring in the mitigation area will be the responsibility of the restoration specialist or a biologist familiar with native habitat restoration. The restoration specialist will educate all contractors with regard to mitigation goals and requirements.

The Project proponent will be responsible for financing the installation and monitoring of the mitigation sites. In order to ensure the success of mitigation, the Project proponent should enter into a five year secured agreement with the County of Orange to cover the Projected cost to install, monitor, and report on the mitigation Project. This agreement will be in the form of a 100 percent bond.

CONSISTENCY WITH THE 4(d) RULE

Recently, a special rule under Section 4(d) of the federal ESA was finalized which authorizes incidental take of the coastal California gnatcatcher in conjunction with an approved plan under the NCCP. This program was initiated under the NCCP Act of 1991 in an attempt to develop regional open space planning efforts designed to protect native plants and animals and their habitats in regional preserve systems. Since the Final NCCP Plan has not been completed, NCCP planning is currently based on an Interim Plan. The Interim Plan differs from the Final Plan in that the reserve system outlined in the Interim Plan is conceptual. The Final Plan will describe and implement a detailed reserve system that will incorporate results of site-specific open space planning.

An interim habitat loss permit must be approved prior to Project-related loss of coastal sage scrub. To approve an interim habitat loss application, the local agency must make findings based on the information obtained pursuant to Section 4.1.2 of the November 1993 NCCP Process Guidelines. The following paragraphs describe the findings that have been made for Saddleback Meadows.

(1) The proposed habitat loss is consistent with the interim loss criteria in the conservation guidelines and with any subregional process if established by the subregion.

(a) The habitat loss does not cumulatively exceed the 5 percent guideline.

The NCCP Conservation Guidelines have indicated that a 5 percent loss of coastal sage scrub habitat is acceptable within any individual subregion during the preparation of a subregional NCCP or its equivalent. The habitat loss does not cumulatively exceed the 5 percent guideline. The loss of a maximum of approximately 50.3 acres of Venturan-Diegan transitional coastal sage scrub (including 6.1 acres off site) combined with the current losses of coastal sage scrub within the Southern Subregion, will not exceed 5 percent of the existing coastal sage scrub habitat (Table 6).

Table 6

CURRENT LOSSES OF COASTAL SAGE SCRUB
IN ORANGE COUNTY SOUTHERN SUBREGION

Initial 5% Allowable Habitat Loss in Southern Subregion	1,315.75 out of 26,315 total acres
Cumulative Loss to Date	223.27 acres
Remaining Loss Allowed	1,092.48 acres
Remaining Loss After Proposed Project	1,042.18 acres

(b) The habitat loss will not preclude connectivity between areas of high habitat values.

The three-part corridor described in detail earlier is expected to facilitate all wildlife movement in the site vicinity, ultimately enhancing gene pool protection for a high diversity of species within the NCCP preserve system. The primary NCCP target species, the gnatcatcher, will benefit most by preservation and enhancement of the

Southern Corridor through the existing nursery. This is a more direct connection in this area that has existing or restorable Venturan-Diegan transitional coastal sage scrub.

(c) The habitat loss will not preclude or prevent the preparation of the subregional NCCP.

According to the NCCP Evaluation Logic Flow Chart, the Venturan-Diegan transitional coastal sage scrub on the Project site has intermediate value for long-term conservation because although it is not the most dense coastal sage scrub in the region, it is located next to a higher value district (O'Neill Regional Park and Whiting Ranch Regional Park). Saddleback Meadows does not currently support the coastal California gnatcatcher, and Project impacts will not preclude future planning options in the site vicinity where populations of the gnatcatcher are known to occur.

(d) The habitat loss has been minimized and mitigated to the maximum extent practicable in accordance with Section 4.3.

The NCCP Process Guidelines identify several options for mitigating impacts to coastal sage scrub. These options include acquisition of habitat, dedication of land, management agreements, restoration, etc. The dedication and long-term preservation of 22.9 acres of habitat on Saddleback Meadows, revegetation of 46.5 acres of Venturan-Diegan transitional coastal sage scrub on site, and contribution to the Orange County NCCP are consistent with the NCCP Process Guidelines.

(2) The habitat loss will not appreciably reduce the likelihood of the survival and recovery of listed species in the wild.

The loss of Venturan-Diegan transitional coastal sage scrub habitat will not appreciably reduce the likelihood of the survival and recovery of listed species in the

wild because the proposed habitat loss has been mitigated and minimized, and site development will not preclude connectivity between areas of high quality habitat.

(3) The habitat loss is incidental to otherwise lawful activities.

The proposed loss of approximately 50.3 acres of Venturan-Diegan transitional coastal sage scrub (including 6.1 acres off site) will only occur with approval of the necessary development permits.

COAST LIVE OAK WOODLAND

Coast live oak mitigation can be achieved by off-site mitigation or by making a financial contribution to the Endowment Fund for the NCCP to be used for programs such as the Adaptive Management Program.

MULE FAT SCRUB AND SOUTHERN SYCAMORE RIPARIAN WOODLAND

Impacts to mule fat scrub (3.8 acres including the 0.84 acre wetland portion) will need to be mitigated by off-site restoration of 3.8 acres of habitat (1:1 mitigation ratio) (0.84 acre of this will need to be created as wetland). Impacts to southern sycamore riparian woodland (3.3 acres including the 0.81-acre wetland portion) will need to be mitigated by restoration of 9.9 acre (3:1 mitigation ratio). Some of the restoration may be possible within Aliso Creek near the area being impacted, depending on the topography and development after remedial grading. Restoration would involve a combination of planting and seeding of riparian plant species. The remaining mitigation obligation may be met by restoring habitat off site at a 1:1 ratio or possibly by a contribution to the Orange County NCCP.

Impacts to federal jurisdictional wetlands and Waters of the U.S. require a Section 404 permit with the ACOE and a Section 1600 Streambed Alteration Agreement with the CDFG. Applications for these permits have been filed.

RIVERSIDE FAIRY SHRIMP

Because there are no suitable on-site mitigation areas for creating ephemeral pond habitat, the impact to Riverside fairy shrimp will have to be mitigated off site. This would be done by the purchase of Riverside fairy shrimp habitat off site. The exact amount required for mitigation would be determined during consultation with the resource agencies.

ADDITIONAL SENSITIVE SPECIES

No sensitive plant mitigation is required by the Project; however see additional mitigation recommendations below.

Impacts to the orangethroat whiptail, coastal whiptail, southern California rufous-crowned sparrow, and cactus wren are mitigable in the context of Venturan-Diegan transitional coastal sage scrub mitigation. Sufficient habitat will remain on site, when combined with areas to be revegetated, to support these species after Project development.

CORRIDOR ISSUES

The Central Corridor is not being implemented according to the current plan. This is considered a significant unmitigated impact.

ADDITIONAL MITIGATION RECOMMENDATIONS

The following recommendations are proposed to minimize some of the proposed impacts, although some of the impacts will not be mitigated under the current plan.

- Where possible, bulbs of individual Catalina mariposa lily and intermediate mariposa lily that are to be impacted should be removed and transplanted to a suitable habitat with similar soil, slope exposure, etc.

- A barrier adjacent to preserved areas is recommended.

- Lighting within development Projects adjacent to conserved habitat should be selectively placed, shielded, and directed away from that habitat. In addition, lighting from homes abutting conserved habitat should be screened with vegetation, and large spotlight-type lighting that may affect conserved habitat should be prohibited. These lighting restrictions should be incorporated into the Project's CC&Rs.

- Fuel modification zones should contain as many native plant species as possible, and fuel modification zones should blend into each other, with the innermost zone being the most 'landscaped' and the outermost being the most natural.

299 UNIT SINGLE FAMILY HOUSING ALTERNATIVE

Mitigation to below a level of significance for all habitats impacted would be possible by restoration and preservation in open space on site under this alternative. Maintenance of a 200-foot wide wildlife corridor would occur within the northeast corner of the site.

CLUSTER/REDUCED DEVELOPMENT FOOTPRINT

As with the previous alternative, mitigation to below a level of significance for all habitats impacted would be possible by restoration and preservation on site under this alternative. Maintenance of a 200-foot wide wildlife corridor would occur within the central portion of the site.

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APPENDIX A

PLANT SPECIES LIST FOR SADDLEBACK MEADOWS

(* Non-native species)
(† Sensitive species)

SCIENTIFIC NAME**	COMMON NAME
Achnatherum coronatum	needle grass
Adenostoma fasciculatum	chamise
Agave spp.	agave
Amaranthus albus	tumbleweed
Ambrosia acanthicarpa	annual bur-sage
Ambrosia psilostachya	western ragweed
*Anagallis arvensis**	scarlet pimpernel
Anthemis cotula	may weed
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
*Arundo donax**	giant reed
*Atriplex semibaccata**	Australian saltbush
*Avena barbata.**	slender wild oat
Baccharis pilularis	coyote brush
Baccharis salicifolia	mule fat
Brickellia californica	brickelbush
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Bromus madritensis ssp *rubens**	foxtail chess
Castilleja affinis	indian paintbrush
Calochortus catalinae†	Catalina mariposa lily
Calochortus weedii var. *intermedius*†	intermediate mariposa lily
Ceanothus crassifolius	hoaryleaf ceanothus
*Centaurea melitensis**	tocalote
*Chenopodium murale**	nettle-leaved goosefoot
*Cirsium vulgare**	bull thistle
*Conyza bonariensis**	conyza
*Conyza canadensis**	horseweed
Cordylanthus rigidus	bird's-beak
Cucurbita foetidissima	calabazilla
Cuscuta californica	dodder
*Cynara cardunculus**	cardoon
Datura wrightii	jimson weed
Distichlis spicata	salt grass
Dudleya pulverulenta	chalk live-forever

APPENDIX A (cont.)

PLANT SPECIES LIST FOR SADDLEBACK MEADOWS
(* Non-native species)
(† Sensitive species)

SCIENTIFIC NAME**	COMMON NAME
Eleocharis montevidensis	slender creeping spike-rush
Encelia californica	common encelia
Eremocarpus setigerus	dove weed
Eriastrum sapphirinum	blue wool-stem
Eriogonum elongatum	long-stemmed eriogonum
Eriogonum fasciculatum	California buckwheat
Eriophyllum confertiflorum var. *confertiflorum*	golden yarrow
*Erodium brachycarpum**	short-beaked filaree
*Erodium cicutarium**	red-stem filaree
*Erodium moschatum**	green-stem filaree
*Eucalyptus caldocalyx**	blue gum
Eucalyptus spp.*	eucalyptus
*Foeniculum vulgare**	fennel
Galium angustifolium	narrow-leaved bedstraw
*Galium aparine**	goosegrass
Galium nuttallii	bedstraw
Grindelia camporum	gum plant
Hazardia squarrosa ssp. *grindelioides*	hazzardia
Hemizonia fasciculata	fascicled tarplant
Heteromoles arbutifolia	toyon
Heterotheca grandiflora	telegraph weed
Hordeum murinum ssp. *leporinum**	barley
*Hypochaeris glabra**	smooth cat's-ear
Isocoma menziesii var. vernoniodes	coastal isocoma
Juglans californica	California black walnut
Keckiella cordifolia	heart-leaved penstemon
*Lactuca serriola**	prickly lettuce
Lemna minor	duckweed
Lessingia filaginifolia var *filaginifolia*	sand-aster
Leymus condensatus	giant rye-grass
*Lolium perenne**	perennial ryegrass
Lonicera subspicata	honeysuckle
Lotus purshianus	Spanish clover
Lotus scoparius	deerweed
Lupinus succulentus	arroyo lupine
Malosma laurina	laurel sumac
*Marrubium vulgare**	horehound

APPENDIX A (cont.)

PLANT SPECIES LIST FOR SADDLEBACK MEADOWS

(* Non-native species)
(† Sensitive species)

SCIENTIFIC NAME**	COMMON NAME
*Medicago polymorpha**	bur-clover
*Melilotus alba**	white sweet clover
Mimulus aurantiacus	yellow bush monkey-flower
Nasella lepida	foothill needlegrass
Nasella pulchra	purple needlegrass
*Nicotiana glauca**	tree tobacco
Olea europea	European olive
Opuntia littoralis	coastal prickly pear
Opuntia spp.	cholla
*Piptatherum miliaceum**	smilo grass
Platanus racemosa	western sycamore
Poa annua	annual bluegrass
Quercus agrifolia	coast live oak
*Raphanus sativus**	radish
Rhamnus ilicifolia	holly-leaved redberry
Rhamnus tomentella	hoary redberry
Rhus integrifolia	lemonadeberry
*Ricinus communis**	castor bean
*Robinia psuedoacacia**	black locust
*Rumex crispus**	curly dock
Salix gooddingii	black willow
*Salsola tragus**	tumbleweed
Salvia apiana	white sage
Salvia columbariae	chia
Salvia mellifera	black sage
Sambucus mexicana	blue elderberry
*Schinus molle**	Peruvian pepper-tree
Schismus barbatus	Mediterranean schismus
*Silene gallica**	windmill pink
*Silybum marianum**	milk thistle
Solidago californica	California goldenrod
Stachys ajugoides var. *rigida*	hedge nettle
Symphoricarpos mollis	creeping snowberry
Tamarix sp.*	tamarisk
Toxicodendron diversilobum	western poison oak
Trifolium sp.	clover
Typha domingensis.	southern cattail

APPENDIX A (cont.)

PLANT SPECIES LIST FOR SADDLEBACK MEADOWS
(* Non-native species)
(† Sensitive species)

SCIENTIFIC NAME**	COMMON NAME
Verbena lasiostachys var. *lasiostachys*	verbena
*Vulpia myuros**	fescue
Yucca whipplei	our Lord's candle

**Nomenclature from Hickman, Ed. (1993) and Skinner and Pavlik (1994).

APPENDIX B

ANIMAL SPECIES* OBSERVED ON SADDLEBACK MEADOWS
(† Sensitive species)

Scientific Name	Common Name
Invertebrates	
Streptocephalus woottoni†	Riverside fairy shrimp
Reptiles	
Sceloporus occidentalis	Western fence lizard
Uta stansburiana	Side-blotched lizard
Cnemidophorus tigris multiscutatus†	Coastal whiptail
Cnemidophrous hyperythrus beldingi†	Orangethroat whiptail
Birds	
Cathartes aura	Turkey vulture
Accipter cooperii†	Cooper's hawk
Buteo jamaicensis	Red-tailed hawk
Falco sparverius	American kestrel
Callipepla californica	California quail
Zenaida macroura	Mourning dove
Geococcyx californianus	Greater roadrunner
Tyto alba	Barn owl
Archilochus alexandri	Black-chinned hummingbird
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Selasphorus rufus	Rufous hummingbird
Picoides nuttallii	Nuttal's woodpecker
Colaptes auratus	Northern flicker
Sayornis nigricans	Black phoebe
Sayornis saya	Say's phoebe
Contupus sordidulus	Western wood peewee
Hirundo pyrrhanota	Cliff swallow
Stelgidopteryx serripennis	Northern rough-winged swallow
Aphelocoma coerulescens	Scrub jay
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Thryomanes bewickii	Bewick's wren
Campylorhynchus brunneicapillus†	Cactus wren
Chamaea fasciata	Wrentit
Mimus polyglottos	Northern mockingbird
Toxostoma redivivum	California thrasher
Anthus rubescens	American pipit
Lanius ludovicianus†	Loggerhead shrike
Phainopepla nitens	Phainopepla
Vireo huttoni	Hutton's vireo
Vermivora celata	Orange-crowned warbler
Dendroica coronata	Yellow-rumped warbler
Geothlypis trichas	Common yellowthroat
Pheucticus melanocephalus	Black-headed grosbeak
Guiraca caerulea	Blue grosbeak

APPENDIX B

ANIMAL SPECIES* OBSERVED ON SADDLEBACK MEADOWS (CONT)

(† Sensitive species)

Scientific Name	Common Name
Passerina amoena	Lazuli bunting
Pipilo crissalis	California towhee
Pipilo erythrophthalmus	Rufous-sided towhee
Aimophila ruficeps canescens†	Southern California rufous-crowned sparrow
Melospiza melodia	Song sparrow
Chondestes grammicus	Lark sparrow
Zonotrichia leucophrys	White-crowned sparrow
Junco hyemalis	Dark-eyed junco
Sturnella neglecta	Western meadowlark
Icterus cucullatus	Hooded oriole
Icterus galbula	Northern oriole
Carpodacus mexicanus	House finch
Carduelis tristis	American goldfinch
Carduelis psaltria	Lesser goldfinch
Mammals	
Sylvilagus audubonii	Desert cottontail
Spermophilus beecheyi	California ground squirrel
Thomomys bottae	Botta's pocket gopher
Neotoma sp.	Woodrat
Canis latrans	Coyote
Urocyon cinereoargenteus	Gray fox
Lynx rufus	Bobcat
Odocoileus hemionus	Mule deer

* Nomenclature from Jones et al. (1992), Collins (1990), and American Ornithologist's Union (1983)

APPENDIX C

SENSITIVITY CODES

FEDERAL SPECIES DESIGNATIONS

Category

FE	Federal endangered species
FT	Federal threatened species
PE	Species already proposed to be listed as endangered
PT	Species already proposed to be listed as threatened
C1	Enough data on file to support federal listing
RS	Regionally sensitive

Plants only

RS	Regionally sensitive.

Previously considered for listing, but no longer under consideration because (Skinner & Pavlik 1994)

Ca	Extinct.
Cb	Taxonomically invalid.
Cc	Too widespread and/or not threatened.

STATE SPECIES DESIGNATIONS

SE	State listed as endangered (listed as "CE" in Skinner & Pavlik 1994)
ST	State listed as threatened (listed as "CT" in Skinner & Pavlik 1994)
SCE	State candidate for listing as endangered (listed as "CC" in Skinner & Pavlik 1994)
SCT	State candidate for listing as threatened (listed as "CC" in Skinner & Pavlik 1994).
CSC	CDFG "species of special concern."

Plants only

CR	State-listed, rare.
CEQA	CEQA consideration mandatory
CEQA?	CEQA consideration recommended

CALIFORNIA NATIVE PLANT SOCIETY DESIGNATIONS (Skinner & Pavlik 1994)

The CNPS List

List 1	Plants of highest priority
List 1A	Plants presumed extinct in California.
List 1B	Plants rare, threatened or endangered in California and elsewhere.
List 2	Plants rare, threatened or endangered in California, but common elsewhere
List 3	Plants about which we need more information.
List 4	Plants of limited distribution (A watch list).

The R-E-D Code

R (Rarity)	1	Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time
	2	Occurrence confined to several populations or to one extended population.
	3	Occurrence limited to one or a few highly restricted populations, or present in such numbers that it is seldom reported
E (Endangerment)	1	Not endangered.
	2	Endangered in a portion of its range
	3	Endangered throughout its range
D (Distribution)	1	More or less widespread outside California.
	2	Rare outside California.
	3	Endemic to California.

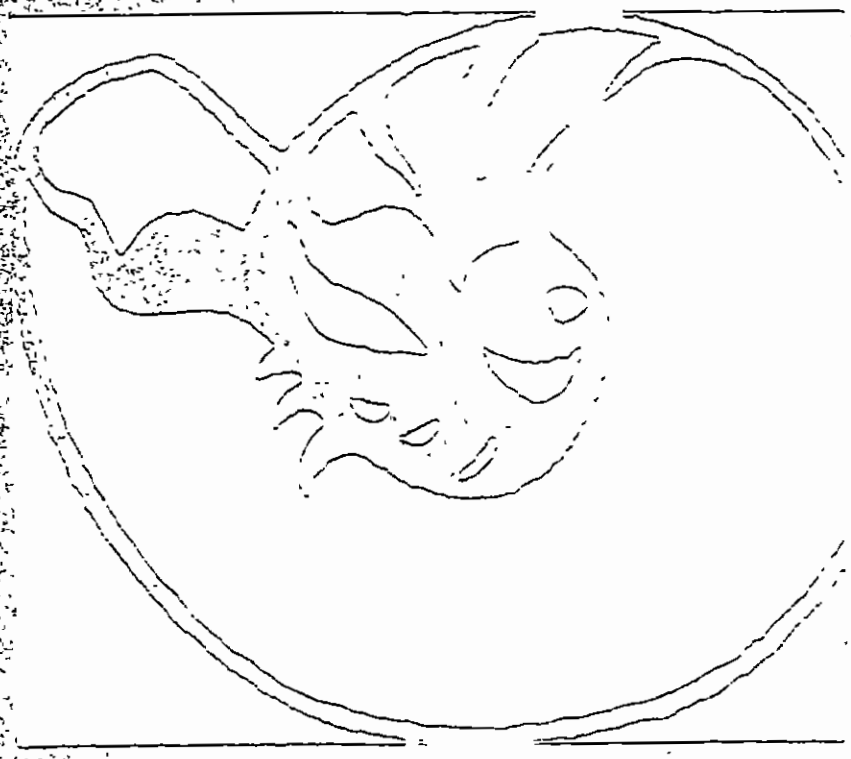
APPENDIX D

CONCEPTUAL WETLAND MITIGATION PLAN

APPENDIX E

CONCEPTUAL UPLAND MITIGATION PLAN

APPENDIX I
CULTURAL RESOURCES ASSESSMENT



RMW

Rec Associates

AUTHOR: Patrick O Maxon

PRINCIPAL INVESTIGATOR: Ronald M Bissell

DATE: March 1997

TITLE: Summary of Cultural Resources Investigation and Recommendations for Further Work Within the Saddleback Meadows Planned Development, Orange County, California

SUBMITTED BY:
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CONTRACT NUMBER: RMW Project Number 97-1006

ACREAGE: 229.2 acres

MAP: USGS Santiago Peak, California 7 5 Minute Quadrangle, 1954, Photorevised 1973

KEYWORDS: Orange County; Saddleback Meadows, Township 6S, Range 7W; San Bernardino Base and Meridian, CA-ORA-710, -711, -712, -713, -714, -715, -716, -1255, -1256, -1257, -1437 & -1435H

TABLE OF CONTENTS

			Page
Figures and Tables			iii
Management Summary/Abstract			iv
Undertaking Information/Introduction			1
Setting:	Natural		7
	Cultural:	Prehistoric	11
		Historic	16
Research Design			17
Previous Research			19
Sites at Saddleback Meadows:			
CA-ORA-710			21
CA-ORA-711			26
CA-ORA-712			29
CA-ORA-713			29
CA-ORA-714			31
CA-ORA-715			33
CA-ORA-716			35
CA-ORA-1255			35
CA-ORA-1256			37
CA-ORA-1257			37
CA-ORA-1435H			38
CA-ORA-1437			38
Response to Comments			41
Summary			46
Recommendations			46
References Cited			48
Appendices A & B			

FIGURES

	Page
Figure 1. 705 Manufactured Single-Family Residential Unit Plan	2
Figure 2: Project Vicinity Map	5
Figure 3: Project Location Map	6
Figure 4. Site Map, CA-ORA-710	22
Figure 5 Site Map, CA-ORA-711	27
Figure 6 Site Map, CA-ORA-713	30
Figure 7 Site Map, CA-ORA-714	32
Figure 8 Site Map, CA-ORA-715	34
Figure 9 Site Map, CA-ORA-1255	36
Figure 10. Site Map, CA-ORA-1435H	39
Figure 11 Site Map, CA-ORA-1437	40

TABLES

Table 1 Koerper and Drover (1983) Chronology	14
Table 2 Archaeological Sites at Saddleback Meadows	21
Table 3 Artifacts Recovered at CA-ORA-710	24
Table 4 Artifacts Recovered at CA-ORA-711	28
Table 5. Artifacts Recovered at CA-ORA-715	35

MANAGEMENT SUMMARY/ABSTRACT

Purpose and Scope: The Presidio Group has produced revised plans to develop Saddleback Meadows in the County of Orange for the purpose of constructing a residential community. The 229.2 acre site will see the construction of 705 manufactured, single-family residential units. EIR 566 will be prepared for the project.

This report has been undertaken for the purpose of inclusion into EIR 566, required for the current project. The report describes all past cultural resource investigation on the Saddleback Meadows property. It further recommends and describes the additional work to be accomplished before implementation of the above mentioned project can occur.

Dates of Investigation: This report was produced between 12 February and 14 March 1997.

Evaluation: Only CA-ORA-710 and CA-ORA-711 have been determined to be important according to Appendix K of the California Environmental Quality Act (Governor's Office of Planning and Research 1995) and significant as defined by the *National Historic Preservation Act* (see below) Although they lie in proposed open space, remedial grading will destroy them and thus data recovery excavation is required The importance/significance of CA-ORA-713, -715, -1437 and -1435H has yet to be established and further work at these sites is necessary.

Undertaking Effects: The revised plans for construction of 705 manufactured, single-family residential units will require extensive grading in preparation for construction. As a result, every cultural resource previously identified on the property will be destroyed The impacts to some of the sites must therefore be mitigated prior to development

Recommendations: CA-ORA-710 and CA-ORA-711 have been determined to be important according to CEQA and significant as defined by the *National Historic Preservation Act* (see below) Although they lie in open space, remedial grading of the proposed open space will destroy the sites. Data recovery excavation of at least 30 one by one meter units at each site must be accomplished. CA-ORA-1437 is the site newly discovered during the previous project (Maxon 1995), no work has been accomplished at the site beyond mapping and recording A surface examination and surface collection and a test excavation consisting of approximately ten, one by one meter units must be accomplished at the site Additional work may become necessary after evaluation CA- ORA-1435H has not yet been evaluated Initial work will entail archival

research and a review of historic aerial photographs. A surface examination and collection and a test excavation consisting of a sufficient number of backhoe trenches (approximately 10-20) must be accomplished on the site. Additional investigation may then become necessary after evaluation All above mentioned investigations must be accomplished prior to the commencement of clearing/grading operations.

No determination of importance/significance has been made for CA-ORA-713 and CA-ORA-715. It is recommended that these sites undergo controlled destruction with the aid of a small, paddlewheel scraper If artifact clusters are discovered, additional excavation may be necessary. This work can be accomplished after grading is underway

All other archaeological sites on the property have been deemed not important/significant and no further work, beyond monitoring of grading is necessary.

Disposition of Data: The material collected during the previous project (Maxon 1995) is being temporarily curated at RMW Paleo Associates, address on title page. The collection will be transferred to a permanent curation facility, specified by the permitting agency and the owners, as soon as possible. All field notes, excavation forms and laboratory documents are on file at RMW Paleo Associates

UNDERTAKING INFORMATION/INTRODUCTION

The Presidio Group has produced revised plans to develop Saddleback Meadows in the County of Orange for the purpose of constructing a residential community

In August 1978, the Orange County Board of Supervisors adopted the "Saddleback Meadows Mobile Home Subdivision" and certified Environmental Impact Report (EIR) 059. This authorized the development of a mobile home park of 617 dwelling units. The plan was never put into effect. In July 1996, The Presidio Group submitted a revised 318 unit Site Development Plan to the County of Orange and circulated EIR 561. In October 1996 the Board of Supervisors denied the 318 unit site development plan and did not certify EIR 561. Currently, The Presidio Group is again planning to revert to the August 1978 plans that have previously been approved and to develop the site for the construction of 705 manufactured, single-family residential units on the 229 2 acre site (see Figure 1 below) EIR 566 will be prepared for this project (Environmental Management Agency 1996.5-7)

A summary of this report will be included in EIR 566, required for the current project The report describes all past cultural resource investigations on the Saddleback Meadows property It further recommends and describes the additional work to be accomplished before implementation of the above mentioned project can occur and that which can be accomplished after grading is underway

The Saddleback Meadows project requires a Section 404 permit Under Section 404, impacts to cultural resources fall under the review of the U S Army Corps of Engineers and must be mitigated to be in compliance with Section 106 of the *National Historic Preservation Act* (NHPA). The NHPA authorizes the maintenance of a *National Register of Historic Places* (NRHP) which facilitates the preservation of properties that meet certain criteria delineated by Section 106 of the NHPA (The Advisory Council on Historic Preservation and the GSA Interagency Training Center 1994.II-26) Those criteria are

> The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and

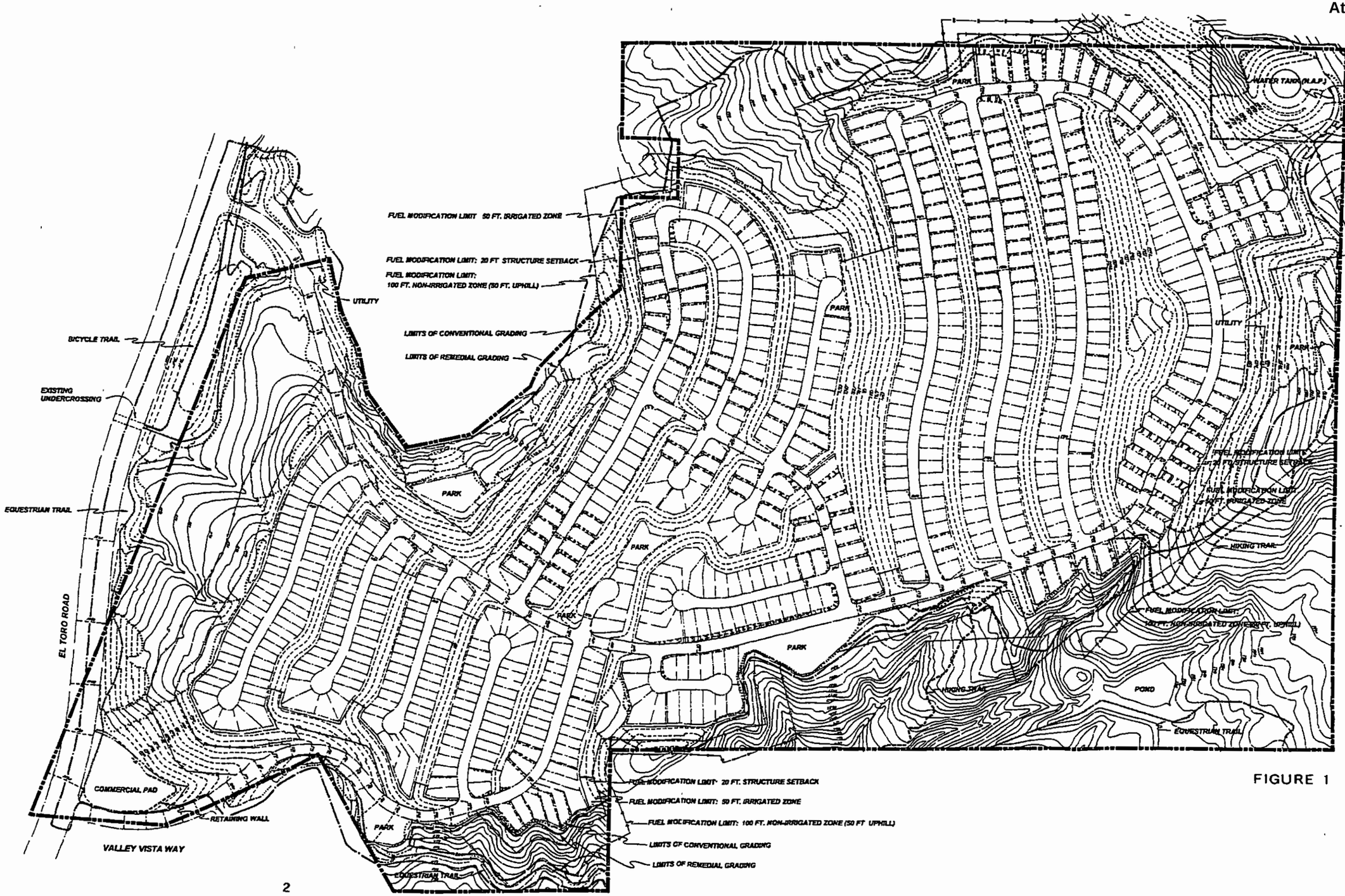

FIGURE 1

2

SADDLEBACK MEADOWS
CALIFORNIA QUARTET, LTD.

705 LOTS
FINAL TRACT MAP 10692
FEBRUARY 3, 1997

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) that are associated with the lives of persons significant in our past; or

(c) that embody the distinctive characteristics of a type, period or method of construction ..; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history

Because the project must be in compliance with Section 106 guidelines, the present study automatically also falls under the provisions of the California Environmental Quality Act (CEQA) as well Appendix K of CEQA requires that if development is unavoidable, significant impacts to important (CEQA definition) archaeological sites must be reduced to a level of insignificance, through avoidance, preservation or excavation According to Appendix K, Section III of CEQA, "...an important archaeological resource" is one which.

A Is associated with an event or person of

1 Recognized significance in California or American history, or

2 Recognized scientific importance in prehistory

B. Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions;

C Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind,

D. Is at least 100 years old and possesses substantial stratigraphic integrity, or

E Involves important research questions that historical research has shown can be answered only with archaeological methods

Recently (September 1992) the *California Register of Historical Resources* (California Register) was created. Its purpose is to identify the state's historical resources and to indicate which properties are to be protected (Office of Historic Preservation 1995 1) The criteria for listing resources on the California Register were expressly developed to be in accordance with previously established criteria developed for listing on the *National Register of Historic Places* (NRHP). A property must be significant at the local, state or national level under the same (with minor variations) criteria as those for the NRHP (Office of Historic Preservation 1995.3) Those criteria are listed on pages one and two of this report

Dillon (1989) has recommended that if subsurface deposits are discovered on any of the present sites, a formal salvage operation must be designed to mitigate any adverse impacts. The project described in this report accomplishes Dillon's recommendations

The revised plans for construction of 705 manufactured, single family residential units will require extensive grading in preparation of construction For this reason, every cultural resource previously identified on the property will be destroyed and impacts must therefore be mitigated prior to development The schedule for completion of the project is unknown

Figure 2 is a portion of the USGS quadrangle map, Santa Ana, California, depicting the general location of the project area. Figure 3 is a portion of the USGS quadrangle map Santiago Peak, California, depicting the specific location of the project area

Ron Bissell served as Principal Investigator for the previous project (Maxon 1995), and will continue in that capacity for any further archaeological investigation Patrick Maxon, the author of this report, served as Field Director for the previous project and will also continue in that capacity

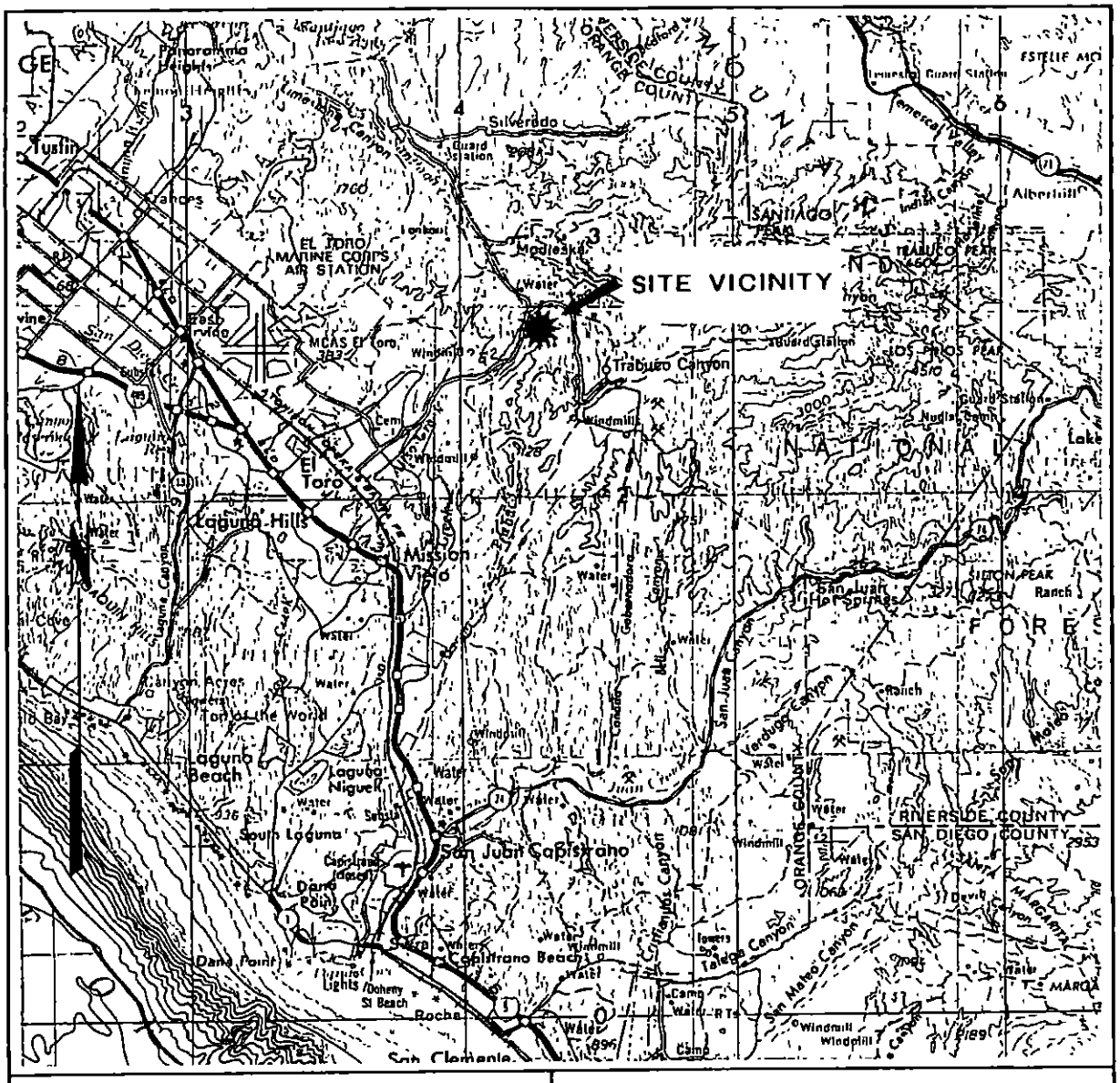

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Figure 2: PROJECT VICINITY MAP

Portion of USGS 1 by 2 Degree, Santa Ana, California, 1959, Revised, 1979

Scale = 1:250,000

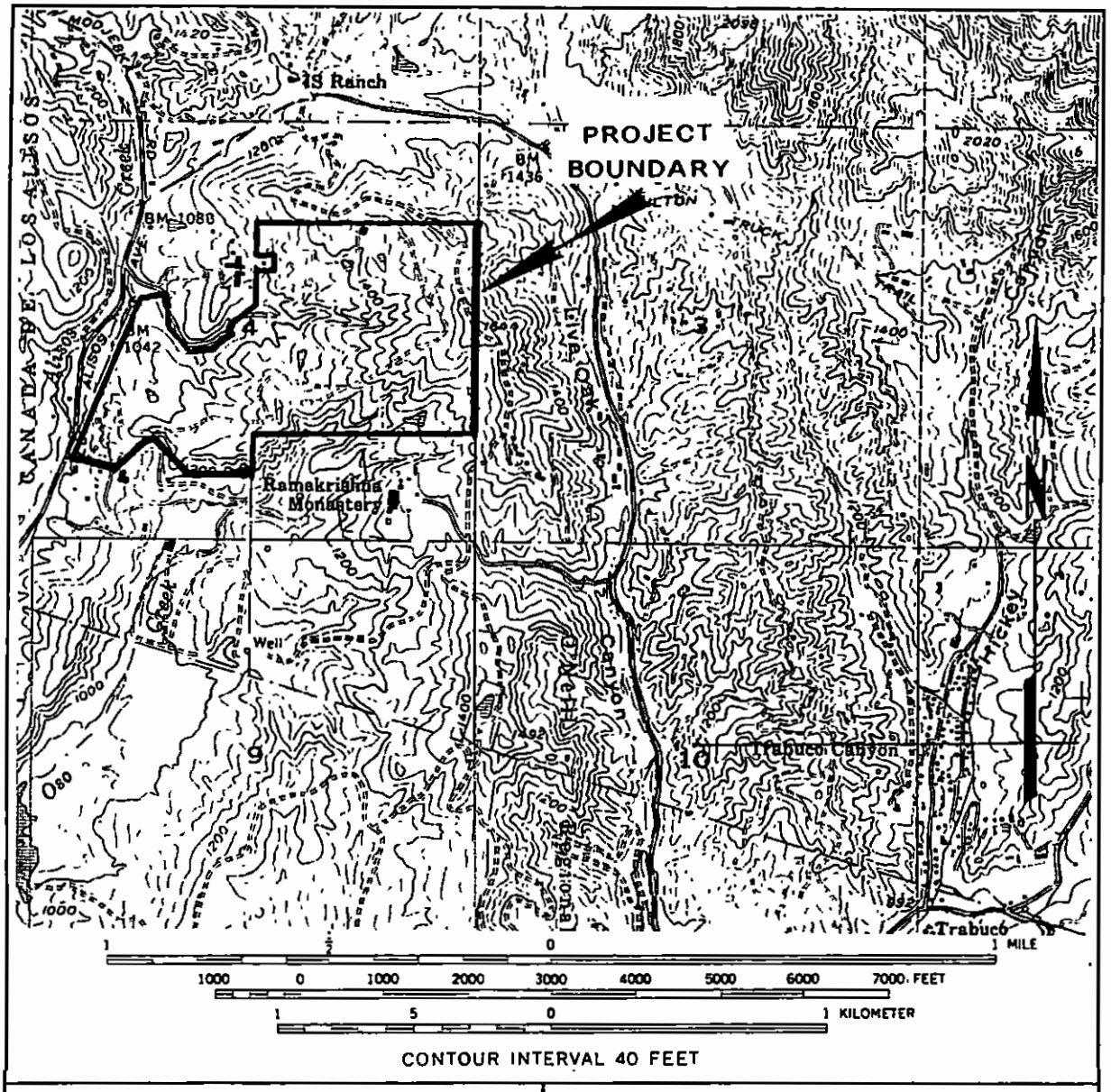

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Figure 3: PROJECT AREA MAP

Portion of USGS 7 5 Minute, Santiago Peak, California, Quadrangle, 1954, Photorevised, 1982

Area shown lies in Township 6S, Range 7W

Scale = 1:24,000

SETTING

Natural: The Saddleback Meadows project area lies in the foothills of the Santa Ana Mountains of Orange County, California Aliso Creek flows southward along its western margin. The property is in Section 4 of Township 6 South, Range 7 West and can be reached via El Toro Road running adjacent to the property, parallel to and west of Aliso Creek Santiago Peak, the highest in the county, is approximately three kilometers northwest of the property

The project area consists of narrow, rugged ridges and rounded knolltops separated by steep sided and narrow canyons. A central east/west canyon drains into Aliso Creek. Elevations range from approximately 1,040 feet where the main drainage empties into Aliso Creek to approximately 1,640 feet along portions of the ridges in the north-western portion of the property

Geologic formations exposed in the Saddleback Meadows study area are the Sespe Formation, the undifferentiated Sespe and Vaqueros Formations, and the Topanga Formation (Raschke 1995) The oldest unit is the late Eocene to early Miocene Sespe Formation and is restricted to the northeastern corner of the property Overlying and interbedded with the Sespe Formation is the early Miocene age undifferentiated Sespe-Vaqueros Formation This unit underlies all except the northeast corner of the Saddleback Meadows property where there appears to be a small exposure of the middle Miocene age (15 million years ago) Topanga Formation. Within the study area there are numerous occurrences of vertebrate fossils in boulders that have apparently eroded from the subsurface These include a variety of large and small fragments of marine mammal bones (Raschke 1995) It is not known if these outcrops were utilized, to any extent, by prehistoric populations.

The climate of the Saddleback Meadows vicinity can be described as mild, uniform and semi arid Temperatures rarely exceed 33 degrees Celsius or drop below five degrees Celsius Rainfall occurs primarily between November and April and averages between 25 and 40 centimeters per year. The current climatic conditions did not prevail during the entire span of time that man has been present in the area. Heusser (1978) suggests that pine forests may have occupied the coastal regions from roughly 10,000 to 6,000 B C.E (Before Common Era). The climate then became warmer and drier, resulting in replacement of the pine forests by oak

woodland and grassland communities. Coastal sage scrub and chaparral communities became pronounced during the few centuries preceding the Common Era (C.E.).

A majority of the property has in recent times been used as a cattle ranch and is therefore now covered predominantly by grasslands including introduced grasses, wild mustard and thistle The slopes and ridges support remnants of the coastal sage scrub community composed of sage, buckwheat, chamise, sumac, prickly pear cactus and other low growing, woody plants A riparian community exists along the Aliso Creek drainage supporting rushes, tules and willows. Mature oaks and sycamores are found in the valleys, drainages and on some of the ridges and knolltops. Hausauer Ranch, along the main drainage emptying into Aliso Creek, is surrounded by introduced eucalyptus trees as well as a large olive grove containing nearly 100 trees.

Several of the ecological communities existing in southern California were readily accessible by the local prehistoric inhabitants of the Saddleback Meadows area, while others were reached only with some difficulty. The following discussion of the plant communities available to the local prehistoric inhabitants is based on Drover and Koerper (1983)

Saltwater Estuary Community and Bay. The estuary and bay communities provided shellfish for the prehistoric peoples . Waterfowl would also have been available, but few plants from the communities were known to have been utilized

Access to the estuary and bay community was relatively easy for persons utilizing the current study area Coastal regions were probably used during the winter months as part of the annual round and direct exploitation by people residing near the current study area could have been accomplished in a day's journey down the Aliso Creek drainage some 20 kilometers to the coast

Beach and Coastal Strand Community: This community, including the beach and intertidal areas, provided a large variety of shellfish and areas for line fishing. Naturally occurring asphaltum occasionally washed ashore and was collected for use as an adhesive Seaweed may have also been collected and used as food

Access to the beach and coastal strand community was also feasible considering the nearness of Saddleback Meadows to the ocean

Marine Community. A wide variety of sea mammals, fish and crustaceans were available in the marine community, but data regarding local prehistoric exploitation of this community is very scant It is known that the Chumash, who lived farther up the California coast, made extensive use of marine community resources during the latter part of archaeological time. Such exploitation in the local area is not well documented. Perhaps this is a reflection of lack of data, rather than an indication that the marine community was not exploited in this area Access to the marine community required some sophisticated technology in the form of watercraft, such as canoes or rafts, as well as fishing and hunting equipment It is unknown if the inhabitants of the Saddleback Meadows area exploited this resource.

Riparian Woodland Community This community exists along streams and around seeps and springs Oaks, alders, willows, sycamores and cottonwoods are common trees associated with this community A large variety of herbs, grasses, cattails and berries grow in the riparian woodland community. Animals and birds attracted by the water and the food resources offered by the vegetation provided ample sustenance for prehistoric and historic peoples. The riparian woodland offers a great variety of easily exploited resources.

The riparian woodland community was found along the local streams and existed throughout the current study area.

Freshwater Marsh Community· The major freshwater marshes near the study area would have been located within the Aliso Creek and Oso Creek flood plain Freshwater marshes resemble the riparian community in terms of the plants and animals they host, but may be surrounded by a greater extent of forest growth. Migratory fowl are attracted to freshwater marshes and would have been an abundant resource during particular seasons of the year.

Access to the freshwater marshes would have been quite easy because they likely existed at various times along Aliso Creek.

Grassland Herbland Community· Located in the lower Aliso Creek valley, around some freshwater marshes and below the steeper foothills of Saddleback Meadows, the grassland herbland community contained a variety of resources Seeds of many annual grasses would have been the primary resource of interest to the prehistoric peoples, but blossoms, greens, fruits, bulbs, the fleshy parts of prickly pear and occasional walnuts were also available, primarily during

the spring. Animals including deer, rabbits, other rodents and quail are associated with this plant community.

Again, access to the grassland herbland community would have required only a short, relatively level walk from the study area.

Oak Woodland. The oak woodland occurs in sheltered valleys where the soil is deep Oak trees can grow to as much as 20 meters in height in such conditions, and are surrounded by grasses and herbs. Acorns were a primary food resource for the native inhabitants, at least during the latter part of the archaeological sequence. Acorns become available in the fall, thus providing a rich resource during the time of year when other plants are far past their peak availability

Access to the oak woodland was very simple since oaks grew in the local drainages of Aliso Creek and could have been exploited with little effort.

Coastal Sage Scrub Community This community consists primarily of shrubs that seldom exceed a height of two meters. Various species of sage, buckwheat, some flowering plants and grasses form the primary vegetation. Seeds are the primary resource of the sage scrub community, but edible stems, stalks, shoots, greens, roots, bulbs and some berries can also be found Rabbits and rodents abound in the sage scrub community The sage scrub community covers the hills around and within the study area The resources of the sage scrub community are primarily available in the spring. During prehistoric times the sage scrub covered a large percentage of the surface, representing a very rich resource

Access to the sage scrub community required only ascending the hills and canyons of the study area.

Chaparral Community: The chaparral community consists of dense brush normally found on rocky slopes, usually at slightly higher elevations than the oak woodland community. Manzanita, chamise, mountain mahogany, scrub oak and ceanothus are typical constituents Seeds, berries, bulbs, shoots and roots are the primary resources available in this community. The chaparral is a primary deer habitat (Moratto 1984)

The chaparral community was located on the higher elevated slopes north of the study area and would have required a day's walk to be reached by prehistoric populations.

Cultural: The current study area is inhabited by a Native American group ethnographically known as the Gabrielino The generally accepted boundary with the Juaneño group to the south is Aliso Creek, flowing directly adjacent to the study area along its western margin (Bean and Smith 1978, Kroeber 1925) It is likely that the study area contains traces of both these cultures.

The names the Native American groups applied to themselves are largely unknown; they are known by the names the Spanish coined as they moved into Native American territories The name "Gabrielino" identifies those people who were under the control of the Spanish Mission San Gabriel, while the name "Juaneño" denotes those people who were under the administration of the Spanish at Mission San Juan Capistrano

The Juaneño and Gabrielino language, as well as that of the Luiseño to the south, was derived from the Takic family, part of the Uto-Aztecan linguistic stock, which can be traced to the Great Basin area (Driver 1969) This language group represents an origin quite different from that of the Chumash to the north and the Ipai and Tipai to the south Their language is derived from the Hokan stock of the Yuman language family originating in the American southwest Linguistic analysis suggests that at one time (probably before 500 B C.E.) the entire southern California coastal region was populated by Hokan speakers who were gradually separated and displaced by Takic speaking immigrants from the Great Basin area The timing and extent of the migrations and their impact on indigenous peoples is not well understood and any data related to it represents a valuable contribution to the understanding of local prehistory

Prehistoric Era· The archaeological heritage of California is quite rich, probably more so than any other North American region north of Mexico However, the archaeology of California is not well known. The native Californians were generally quite peaceful and did not often offer warlike resistance to European settlement. Consequently, they did not gain great notoriety during the settlement period Also, the original Californians were first under the control of the Spanish and then the Mexican governments and only later, after much of their culture had been destroyed by disease and displacement, were they subsumed under the United States government There was only a minor Native American presence remaining in California when it became a United States possession and massive development began For this reason, very little interest in the natives and

their prehistory was initially generated. It was many years later before the size, complexity, and extent of archaeological deposits in the state became apparent.

Homo Sapiens has been present in the New World since perhaps 10,000 to 11,000 years B.C.E. There is some evidence that humans were present long before this date, but it is inconclusive and has not yet been accepted by most archaeologists The earlier sites are all controversial in that they lack definite dateable context and material Such sites can be interpreted in various ways, particularly in relationship to their age The few generally accepted remains indicate a very small, mobile population apparently dependant on hunting of large game animals as the primary subsistence strategy. Other sources were exploited, but the bulk of the traces remaining today are related to game hunting (Chartkoff and Chartkoff 1984, Moratto 1984).

The Chartkoffs identify the earliest portion of the archaeological sequence - to about 9,000 B.C E - as the Paleo-Indian Period (Warren's 1968 San Dieguito Tradition) The surviving material culture of this period consists primarily of large, extremely well made projectile points and large but crude tools such as scrapers and choppers. Encampments were never permanent, based in part on the paucity of significant midden areas that would have degraded to undetectability given the great age, and were probably sited near a major kill. Occupation would have persisted only until the resources of that kill were exhausted. Such an economy, using only a small fraction of the available resources, would not have supported a large population, therefore, it is probable that the Paleo-Indians lived in groups no larger than extended families and that contact with other such groups was infrequent

A general chronology has been developed for the Southern California coastal region by Wallace (1955) for the ensuing periods

The Millingstone Horizon (or Encinitas Tradition, as defined by Wallace (1968)) people (ca 5500-1500 B.C.E.) practiced a mixed hunting and gathering food procurement strategy. Game hunting still played an important role in the economy, but by this time the Native Americans had learned to exploit the hard seed resources of the coastal sage scrub and chaparral ecological communities The rapid extinction of the large mammals that the Paleo-Indian had previously been exploiting necessitated this shift in resource exploitation The principle implements used to process the seeds, manos and metates, appear in large numbers for the first time in this horizon,

and are especially numerous near the end of this tradition Other specialized tools were developed to process the increased resources utilized by Millingstone peoples. Settlement size seems to have increased and an annual round of seasonal migrations may have been practiced as movements coincided with ripening vegetal resources Some formal burials are also evident

The Intermediate Horizon, locally known as the Campbell Tradition (ca 1500 B.C E. to C.E 1000), is characterized by a shift away from primarily vegetable food exploitation to a more maritime subsistence strategy. It is during this time that the mortar and pestle were introduced, enabling acorn processing to begin

In the Late Prehistoric Horizon (or Shoshonean Tradition), groups began to center around trade routes and there was a greater use of food resources with more land and sea mammal hunting to complement collecting The pattern of life in this Late Horizon was more complex More classes of artifacts were being produced and they exhibited a more sophisticated degree of workmanship The recovery of a greater number of small, finely chipped projectile points suggests a greater utilization of the bow and arrow Other items include steatite containers, shell fishhooks, perforated stones, bone tools, personal ornaments, asphalt adhesive and elaborate mortuary customs In addition, the population increased and larger villages evolved (Wallace 1955.223). It is during the Late Prehistoric that the emigrants from the Great basin appeared in the Los Angeles and Orange County area. These peoples were very quick to adopt most of the local traits, because it is difficult to separate the archaeological assemblages of the emigrants from those of the indigenous peoples on the basis of artifact typology alone

The Moratto and Chartkoff chronologies are not the only ones in use and, in fact, are somewhat generalized because they address the entire state of California The latest chronology to appear which has gained local acceptance is that of Koerper and Drover (1983) This chronology is based on extensive work at CA-ORA-119-A, a large multi-component site near the University of California, Irvine The site contained archaeological evidence from the Millingstone to the Historic period. The Koerper and Drover chronology is summarized in Table 1 below

Table 1·

CHRONOLOGY, BASED ON KOERPER AND DROVER (1983)

PERIOD*	TEMPORAL SPAN	MAJOR DIAGNOSTIC TRAITS
Early Man or Paleo-Indian	? to 7,500 B.C.E. +/- ?	1 Lack of grinding implements. 2. Large, well made projectile points.

Characteristics and adaptations:

1 Subsistence through hunting of large Pleistocene game animals.
2 Temporary camps at large kills
3 Group no larger than extended family
4. Widespread. Covered most of North American continent, but no sites known locally.
5. Very small total population.

Milling Stone or Encinitas	7,500 B.C.E +/-? to 1,000 B.C.E. +/- 250	1. Predominance of manos and metates 2 Ornaments made of stone 3 Large and often crude projectile points 4 Cogstones and discoidals 5. Charmstones 6 Some mortars and pestles near the end of the period.

Characteristics and adaptations:

1 Heavy reliance on hunting in early part of period Deer, rabbits and other small game associated with chaparral.
2 In middle to late part of period reliance was on hard seeds associated with chaparral.
3 Coastal groups utilized shellfish and near shore resources.
4 Annual round based on ripening vegetable resources rather than animal migrations This caused increased isolation leading to noticeable differences in culture in much smaller geographic areas
5. Probably about 50 persons in average group.
6 Very little noticeable change in last two thirds of period
7 Colonization of Channel Islands near end of period.

*Both the Chartkoff and Koerper and Drover names are given for the various periods, with the Koerper and Drover names appearing first.

Table 1, continued:

CHRONOLOGY, BASED ON KOERPER AND DROVER (1983)

PERIOD	TEMPORAL SPAN	MAJOR DIAGNOSTIC TRAITS
Intermediate or Campbell	1,000 B C.E +/- 250 to C E 750 +/- 250	1. Bone ornaments 2 Wide use of mortars and pestles along with manos and metates 3 Use of steatite begins. 4 Many discoidals 5 Large projectile points trending to smaller in the last part of the period.
		Characteristics and adaptations: 1 Heavy reliance on acorns as food resource Hard seeds, small animals and coastal resources continue to be used 2 Many more deep water ocean resources utilized. 3 First permanently occupied villages 4. Large increases in local population 5. Atlatl (spear thrower) in use Bow and arrow probably introduced near end of period. 6 Some evidence of trade
Late Prehistoric or Shoshonean	C.E 750 +/- 250 to Spanish contact	1 Shell ornaments. 2 Mortar, pestle, mano and metate use continues 3. Small, finely worked projectile points 4 Wide use of steatite. 5 Some pottery vessels appear near the end of the period.
		Characteristics and adaptations. 1 Increased exploitation of all resources 2 Large populations, some villages had as many as 1,500 persons. 3 Great increase in art objects. 4 Much evidence of trade

Historic Era: Juan Rodriguez Cabrillo sailed along the coast of California in 1542 and, according to available records, stopping only at San Diego and the Channel Islands, was the first European to come into contact with the Gabrielino. The first Europeans to visit the Orange County area arrived in 1769 when Gaspar de Portola led an overland expedition from San Diego to Monterey This expedition of 63 persons passed near the study area, using Arroyo Trabuco as a route to the north (Cramer 1988).

Mission San Gabriel, in Los Angeles County, was founded in September 1771 and all the Native Americans from the Los Angeles plain were persuaded to settle in its vicinity. The first permanent settlement in Orange County came when San Juan Capistrano was selected as the site for a Mission in the spring of 1775. By the early 1820s, all the native Americans from the coastal plains and foothills of what is now Orange County had been settled on Mission lands or on the growing rancho system.

The missions were charged with administering to the Indians within their areas Mission life did give the Indians some skills needed to survive in their rapidly changing world, but the population was decimated by diseases for which they had no immunity After 1810, mission population declined faster than it could be replenished The Mexican Revolution, beginning in 1821, overthrew Spanish control and the new Mexican government had a very different outlook on mission activities. Secularization of the missions, planned under the Spanish was greatly accelerated by the Mexican government. Plans to provide land, training and living quarters for the Indians never developed and the mission lands were soon under the control of a relatively few influential Mexican families. The Mexican-American war ended on 2 February 1848 with the signing of the treaty of Guadalupe Hidalgo. The treaty established California as a United States possession.

The study area was never a part of a Spanish or Mexican land grant The foothill area was not good grazing terrain. Instead, the Santa Ana Mountain area was to be ungranted and for the use of all. The Rancho Canada de los Alisos (Canyon of the Sycamores) abuts a portion of the study area to the west (Morgan 1973). This rancho was granted to José Serrano in 1842 and later expanded to 10,688 acres by Pio Pico (Smith 1977 in Dillon 1989) Present day Lake Forest was part of this grant; the last of Serrano's adobes is still preserved there. The drought of the early

1860s forced Serrano to give up on the rancho. It was broken up into smaller parcels and sold piecemeal, the bulk of the land forming the city of El Toro (now Lake Forest) By the 1880s much of the area had been settled by Anglo-American families. The Hausauer Ranch, within the property boundary, probably dates to the late 1920s and was an active ranch into the 1970s The ranch's main reservoir and olive orchard have been in existence since at least 1939 (Dillon 1989 32)

RESEARCH DESIGN

Theoretical Basis: The theoretical approach of this report is primarily cultural ecological in nature. It is assumed that humans are part of the ecological system in which they exist and patterns of behavior are restricted by ecological constraints. Similarly, human populations have an effect on the environment as well and precipitate ecological change, either intentionally or accidentally (Jochim 1981) This approach applies to prehistoric as well as historic sites

It is thought that Californians from the Middle Archaic Period up to the Pacific Period practiced an annual round adaptation The major habitation camp would be moved periodically as resources ripened. The habitation camp would be surrounded by specialized work stations where resources were collected and initially processed In general, it is thought that the major habitation camps were moved to progressively higher elevations as the year advanced, with a return to near-ocean locations for the winter season. The major habitations were occupied only for a few months each year, but the repeated use may have continued for many generations. By Pacific Period times, storage technology and a broadened resource base allowed settlements to be occupied throughout the year

Pertinent Local Conditions: The Saddleback Meadows area is one of a series of ridges and rounded knolltops bisected by numerous drainages emptying into Aliso Creek The creek makes its way some 20 kilometers southwest into the Pacific Ocean south of present day Laguna Beach The area is ideally suited for exploitation of the range of resources available in the region All could be reached within a day's travel by local inhabitants Aliso, as well as Oso Creek, provided the inhabitants with a reliable, perennial source of water, an easy route leading to the coast and cobbles for lithic tool production.

The little available information indicates that major settlements were located near reliable sources of water, but in areas that commanded a view of the surroundings The area surrounding an encampment or village was used for hunting, resource collecting and initial processing of those resources. Such resources included lithic material for stone tool manufacture, animal resources and vegetable resources (shoots, roots, bulbs, seeds, berries, fibers, nuts, etc.)

Collecting and initial processing of material for chipped lithic tool manufacture leaves evidence in the form of damaged surfaces where material was removed, chipping waste from initial reduction of that material, hammerstones used in the reduction and cores from which viable material had been removed A prehistoric chert quarry (CA-ORA-507 The Hoopaugh site) lying less than one kilometer south of the project area, was studied and recorded by Van Horn (1986) Milling tool production probably relied on the collection of suitable cobbles and would leave no trace Hunting of game animals was an activity pursued in the Saddleback Meadows area. It is a well watered area that in prehistoric time hosted a wide variety of ecological communities Game animals would have been abundant under these conditions and would certainly have been exploited by the prehistoric inhabitants Evidence left by hunting activity may include blinds, lost or broken projectile points and animal bones within the habitation areas

Vegetable resource collecting and initial processing was certainly an activity in the Saddleback Meadows area Evidence for such is the abundance of grinding implements (manos and metates) found at area sites These artifacts found by themselves are evidence of vegetable resource collecting and initial processing. Only with a wide range of other artifact varieties do they constitute evidence of substantial habitation

It is therefore assumed that archaeological sites at Saddleback Meadows will include the possibility of relatively large seasonally occupied village sites located near a reliable water source as well as more numerous specialized use camps Seed collecting and processing stations will be located in more or less level areas in the vicinity of the desired vegetable resources. Chipped lithic tool manufacturing stations will leave traces of chipping waste products and tools such as hammerstones and cores. They will either occur by themselves or within larger site complexes.

PREVIOUS RESEARCH

Early reconnaissance operations were conducted near the present project area that only partially extended onto the Saddleback Meadows property A 1975 reconnaissance by Howard, concerned with the proposed realignment of El Toro Road, included the westernmost edge of the current property, just east of Aliso Creek Howard reported no archaeological sites in the area, even though it is there that CA-ORA-710 and -711 lie.

Tadlock and Tadlock (1978) The first major archaeological investigation on the current project property was undertaken by Tadlock and Tadlock in 1978 The Tadlock's completed a surface examination of the project area - essentially the same boundary as the present project area - and discovered and recorded seven archaeological sites CA-ORA-710, -711, -712, -713, -714, -715 and -716 The sites follow the more level hills and benches of the property's main ridge running from Aliso Creek, near the western property boundary, eastward to the eastern property boundary These sites will be discussed in more detail below.

The Tadlock's recommended that a representative sample of artifacts be collected from the surface of each site as well as from the ridgetop between the sites Test trenches were then to be excavated by backhoe to determine the depth and dimension of the sites (Tadlock and Tadlock 1978:9)

Breece and Padon (1982) In July 1982, William Breece and Beth Padon performed a cultural resource reconnaissance and literature review of the proposed Phase II Foothill Transportation Corridor study. The study encompassed approximately 23 miles of proposed corridor routes from Little San Joaquin Canyon and Irvine Lake to the northwest to Cañada Gobernardo Canyon to the southeast (Breece and Padon 1982:1) The current study area made up only a small portion of this reconnaissance. During the course of the reconnaissance, the authors relocated three of the sites on the current study area: CA-ORA-710, -711, and -713; although CA-ORA-711 was described as containing no artifactual material or midden soil CA-ORA-710 contained chert flakes, a chert core and a possible chopper CA-ORA-713 contained chert flakes and a chert core CA-ORA-712 was also within the reconnaissance area but was not relocated by the researchers (Breece and Padon 1982:31&34)

The authors recommended controlled surface collection and test excavation followed by, if necessary, data recovery excavation at CA-ORA-710 (erroneously identified as -711). CA-ORA-711 was not relocated and was considered destroyed. No further work was deemed necessary (Breece and Padon 1082·33-34) No mention was made as to the recommendations for CA-ORA-713.

Dillon (1989). A cultural resources reconnaissance was undertaken by Brian Dillon in 1989 for Scientific Resource Surveys. Dillon was able to relocate CA-ORA-710, -713, -714, -715 and -716. CA-ORA-711 and -712 were not relocated Dillon surmised that these two sites had been destroyed since they were originally recorded in 1978 (Dillon 1989 48). Dillon also discovered three new sites, now named CA-ORA-1255, -1256 and -1257. The historic Hausauer Ranch was located and described in detail, although not formally recorded. All sites on the property will be discussed in more detail below.

Dillon recommended that each of the sites on the property undergo a comprehensive surface collection and test excavation. Those sites determined to contain a subsurface deposit were to undergo a data recovery excavation that constituted mitigation of adverse impacts (Dillon 1989:92).

Bissell 1984: In October 1984, Ronald Bissell of RMW Paleo Associates discovered a major archaeological site on the grounds of Saint Michael's Priory The site lies on a small knoll above Aliso Creek, adjacent to and immediately north of the current study area The site consisted of a dense scatter of ground and chipped lithic tools, including manos, scrapers, choppers, modified flakes, cores, hammerstones and debitage, in an apparent midden (Bissell 1984 3). The large site is likely to be related to the other sites on the Saddleback Meadows property as it lies only some 200 meters north of CA-ORA-710.

Maxon (1995). The author of the present report performed an archaeological investigation at Saddleback Meadows between September and November 1995 Most previously recorded sites were relocated Some were not relocated. The historic ranch was recorded and a new site was discovered and recorded. Six of the previously recorded sites underwent a surface collection and five of those underwent a test excavation. All sites at Saddleback Meadows are listed in Table 2 below

Table 2· Archaeological Sites at Saddleback Meadows

Site	Recorder	Description	Importance/ Significance
CA-ORA-710	Tadlock & Tadlock 1978	Flakes, scrapers, choppers, hammerstones & manos	Important
CA-ORA-711	Tadlock & Tadlock 1978	Sparse flakes, cores & one chopper	Important
CA-ORA-712	Tadlock & Tadlock 1978	Flakes	Not important
CA-ORA-713	Tadlock & Tadlock 1978	Flakes, scrapers, cores, choppers & manos	Not yet determined
CA-ORA-714	Tadlock & Tadlock 1978	Flakes, cores, some quartz material	Not important
CA-ORA-715	Tadlock & Tadlock 1978	Flakes, cores, scrapers, choppers, hammerstones & manos Sophisticated artifacts exhibiting patination	Not yet determined
CA-ORA-716	Tadlock & Tadlock 1978	Flakes, cores & one chopper	Not important
CA-ORA-1255	Dillon 1989	Metate, core, scraper/spokeshave, blade, flake	Not important
CA-ORA-1256	Dillon 1989	Scraper plane, scraper	Not important
CA-ORA-1257	Dillon 1989	Mano	Not important
CA-ORA-1435H	Knell & Maxon 1995	Ranch complex with olive grove and holding pond	Not yet determined
CA-ORA-1437	Maxon 1995	Groundstone, debitage & thermally modified rock	Not yet determined

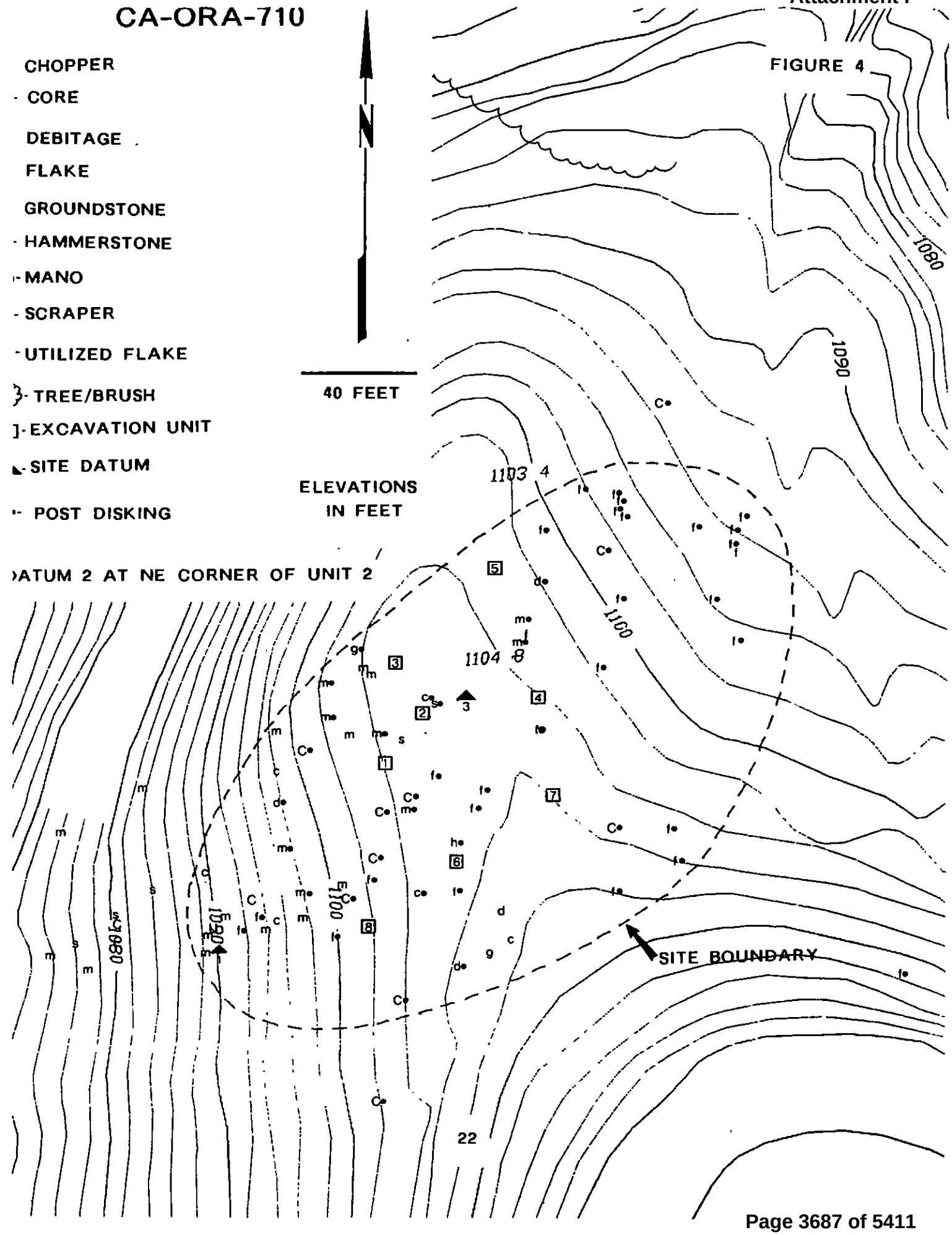
The revised plans for construction of 705 manufactured, single-family residential units will require extensive grading in preparation of construction For this reason, every cultural resource previously identified on the property will be destroyed and impacts must therefore be mitigated prior to development Each of the archaeological sites identified on the property will be discussed in detail below Included will be a summary of work performed and recommendations proposed for each site

CA-ORA-710

The site is located on a relatively flat knoll or terrace, directly east of, adjacent to and 12 meters above Aliso Creek in the northwestern portion of the property (see Figure 4 below) Boundaries of the core of the site are approximately 43 by 55 meters Outcrops of fossiliferous bedrock are evident on the site's surface

CA-ORA-710

FIGURE 4



The original recorders (Tadlock & Tadlock 1978) reported a wide range of artifacts over a rather large area Subsequent archaeologists were not able to see artifacts to that extent Dillon (SRS 1989) discovered a chalcedony core, a chert flake and a burned piece of chert shatter as well as three "truncated" manos, which he apparently collected and removed from the site during his reconnaissance investigation Truncated manos are discussed by Van Horn and Murray (1984). These manos were recovered at CA-ORA-486, along Aliso Creek, just a short distance from site CA-ORA-710 The specimens had been "truncated" or broken off at one end and the rough end pounded smooth They have been associated with the processing of "cacomites" a Spanish term referring to varieties of edible roots, bulbs and corms (bulb-like stems) that are found in the site vicinity

Initial work supervised by the author at the site (Maxon 1995) consisted of a surface examination and surface collection This resulted in the recovery of 26 artifacts including 16 uni- and bifacial manos (one possibly truncated) and mano fragments composed of porphyry, granite and metavolcanics, and chipped stone implements including three choppers, two hammerstones, one core, and four pieces of debitage. Material types include metavolcanics, quartzite and quartz Subsequently, a disk pulled by a small bulldozer was employed to turn up the soil to a depth of approximately ten centimeters, for the purpose of uncovering near surface artifacts This method, after a second surface collection, resulted in the recovery of an additional 56 artifacts including 11 groundstone implements eight manos composed of granite and porphyry, and three metate fragments - two of granite and one quartzite. Chipped stone implements included 12 cores of metavolcanics, chert and quartzite, two hammerstones, two choppers, three scrapers and 25 pieces of debitage made primarily of chert and metavolcanics

Eight one by one meter units were next excavated to determine the spatial extent of the site and verify the existence of a subsurface deposit Fifty-four artifacts were recovered and two of the units produced in situ features. Results of the excavation are summarized in Table 3 below A complete list of artifacts is provided in the artifact catalog in Appendix A

Table 3: CA-ORA-710

Recovered Item	Depth (in centimeters)						Total Items
	0-10	10-20	20-30	30-40	40-50	50-60	
Charcoal				1			1
Chopper	1			1	1		3
Core	2	2	1		1		6
Debitage	21	2	3	1			27
Mammal Bone					1		1
Hammerstone	2			1		1	4
Mano	1	1	2	3	1		8
Metate			2	1			3
Scraper						1	1
Total Level	27	5	8	8	4	2	54

Even though the scope of the test excavation was limited to a small fraction of the total CA-ORA-710 site area, a relatively wide range of tool and material types was recovered. This indicates that a number of activities were performed on the site. Lithic tool production was evidently accomplished on site, based on the total recovery (surface collection and unit excavation) of 19 cores and a variety of waste flakes and other debitage as well as associated hammerstones Scrapers and choppers were used for the processing of vegetable and wood fibers, as well as for working hides and bone The processing of the hard seed resources associated with the coastal sage scrub and chaparral communities is evidenced by the recovery of 33 manos and mano fragments and six metates and metate fragments The sites inhabitants were utilizing a range of material types to fashion tools· chert (31%), metavolcanics (23%), granite (15%), porphyry (11%), quartzite (9%), metasedimentary (7%) and smaller percentages of jasper, sandstone and quartz. Some of the chert may have been heat treated. Van Horn (1986) indicates that some (ca. 5-6%) of the chert at the nearby Hoopaugh site (CA-ORA-507) was heat treated and Dillon (SRS 1989) recovered a piece of burned white chert shatter at CA-ORA-710 Apparently, chert and other silicious materials are "annealed" or made stronger by being heat

treated. The material is heat treated and then slowly cooled to permit the molecular structure to rearrange itself resulting in material that is easier to flake. It has been shown that heat treatment can be used to produce larger flakes (Crabtree & Butler 1964) and thermally altered cores have been recovered at several sites in northern California (Gould 1976, Van Horn 1976). Bordaz (1970) has suggested that the Upper Paleolithic Solutrean points from France were made using thermal modification.

Thermally altered chert can be detected by luster, color change, crazing, potlidding and bleaching (Odell 1979). Van Horn (1986) described the amber chert from CA-ORA-507 as turning red, white and blue after being heated in a barbecue. Some of the chert at CA-ORA-710 shows evidence of being heat treated by a similar change in color and hairline fracturing

Based on the characteristics of the artifacts recovered during the course of the test excavation, it is likely that the site is of Millingstone age. The lack of evidence of the mortar and pestle being used at the site further bolsters this hypothesis The mortar and pestle technology is associated with the later Intermediate period when exploitation of the acorn became widespread

A large portion of the artifacts were recovered from the western portion of the site in Units one through three. Units one and two produced the three in situ features; therefore, it is established that at a minimum, this portion of the site's subsurface remains intact A feature consisting of two slab metates and a core was recovered from the 20-30 centimeter level of Unit 1. Two features were recovered from Unit 2: a mano, core and chopper from the 10-20 centimeter level and a slab metate, three manos and a chopper at the 30-40 centimeter level

It is likely that a substantial subsurface deposit remains relatively undisturbed at the site, therefore, the site is deemed important/significant Preservation of the site is warranted, but not possible based on the current 705 unit plan Data recovery is therefore necessary before ground disturbing activities begin. It is recommended that a data recovery excavation of approximately 30, one by one meter units be accomplished at the site The data recovery excavation should focus on the following research questions.

1 What is the date range of occupation of the site?

2 What activities were accomplished at the site?

3. What was the settlement pattern of the site? Was it used seasonally or occupied year around?
4. Can the chert recovered at the site be associated with the chert quarry (CA-ORA-507) located less than one kilometer from the site?
5. Are truncated manos present on the site that suggest "cacomite" processing (see above)?

CA-ORA-711

The site is located on a low, flat ridge directly east of Aliso Creek and just north of a smaller tributary drainage (see Figure 5 below). The core of the site measures approximately 27 by 30 meters. The original recorders (Tadlock & Tadlock 1978) reported a "sparse distribution of flakes, cores, and one chopper." Dillon (1989) was unable to relocate the site during his reconnaissance

Initial work performed under the supervision of the author (Maxon 1995) consisted of a surface examination and surface collection. This resulted in the recovery of 30 artifacts including 12 uni- and bifacial manos (one or two possibly truncated) of granite, sandstone, metavolcanics and porphyry. Chipped stone implements recovered include two cores, two hammerstones, one uniface, one biface, one scraper plane and 11 pieces of debitage composed of chert, porphyry, metavolcanics and quartzite. Subsequent surface collection during the course of excavation produced 16 additional artifacts including three manos, one metate, four cores, one hammerstone and seven pieces of debitage. Material types included chert, metavolcanics, granite, porphyry and quartzite

Ten 1 x 1 meter excavation units and one feature excavation were then placed in an attempt to delineate the site boundary and verify the existence of a subsurface deposit. One hundred-twelve artifacts, excluding historic or modern items, were recovered from the subsurface including four in situ features Table 4 below summarizes this information

CA-ORA-711

FIGURE 5

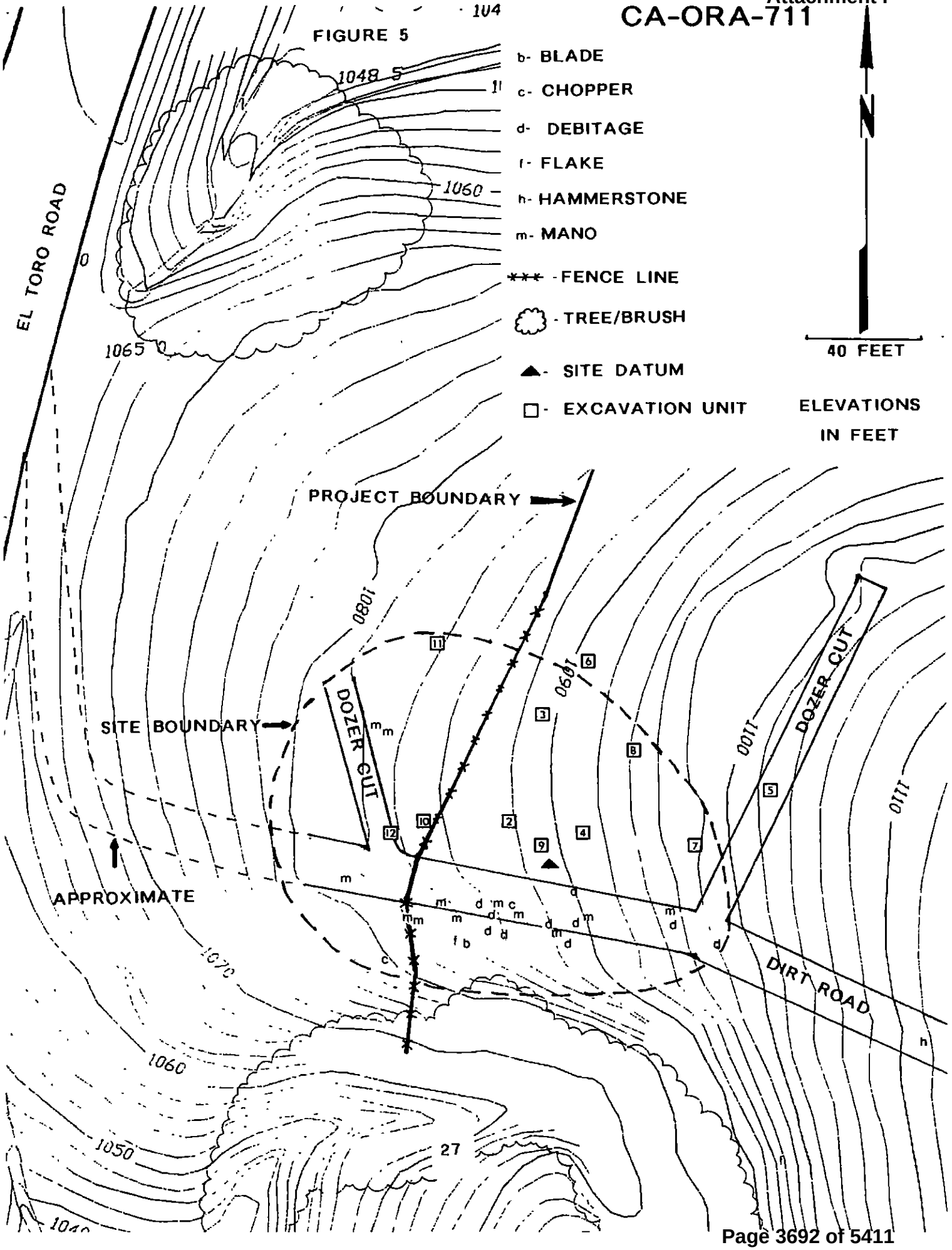


Table 4: CA-ORA-711

Recovered Item	Depth (in centimeters)						Total Items
	0-10	10-20	20-30	30-40	40-50	Feature	
Chopper			2		3		5
Core	1		2		3	1	7
Debitage	25	11	12	4	10	4	66
Hammerstone	1		4		1		6
Mano	2	1	10	1	5	5	24
Metate			1		1	2	4
Total Level	29	12	31	5	23	12	112

As with CA-ORA-710, excavation at CA-ORA-711 was limited to a small fraction of the total site area And similarly, a relatively wide range of tool and material types was recovered This, again, indicates that a number of activities were performed on the site Lithic tool production activities are evidenced by the recovery of 13 cores and a variety of waste flakes and other debitage, as well as associated hammerstones The recovery of 39 manos and mano fragments and five metates and metate fragments is strong evidence that processing of the hard seed resources associated with the coastal sage scrub and chaparral communities was being accomplished Scrapers and choppers were being utilized to process vegetable and wood fibers, as well as for working hides and bone. A single porphyry scraper plane was recovered from the surface of the site, suggesting the possible processing of agave/yucca (Kowta 1969) or other vegetal material (Salls 1985) The sites inhabitants were utilizing a wide range of material types for the manufacture of lithic tools: chert 31%, metavolcanics 25%, granite 17%, quartzite 11%, porphyry 9%, sandstone 5%, and schist 1% Some of the chert recovered may have been heat treated (see discussion of CA-ORA-710 above)

Based on the characteristics of artifacts recovered at CA-ORA-711, as well as the lack of evidence of mortar and pestle technology, it is probable that the site is of Millingstone age

A majority of artifacts recovered from CA-ORA-711 was located in units two, three, four, nine, ten and twelve on both sides of the property boundary fence on the lower, flatter area of the

knoll Units five and six produced no prehistoric artifacts. The existence of in situ features in Units two, nine, ten and twelve suggests an intact subsurface deposit. All of the features contain an assortment of *in situ* lithic tools including manos and metates, hammerstones, cores and debitage CA-ORA-711 is deemed an important/significant site and an intact subsurface deposit remains undisturbed on the site. Preservation of the site is warranted, but not possible based on the current 705 unit plan Data recovery is therefore necessary before ground disturbing activities begin It is recommended that a data recovery excavation of approximately 30 one by one meter units be accomplished at the site. The data recovery excavation should focus on the same research questions that were generated for CA-ORA-710

CA-ORA-712

The site was first recorded by Tadlock and Tadlock (1978) and described as being on a relatively flat hill overlooking CA-ORA-710 and 711 and Aliso Creek It was described as a chipped lithic scatter, heavily damaged by bulldozing. Cultural material could not be relocated by subsequent researchers The site is therefore not important/significant, but the area should be monitored by a qualified archaeologist during mass grading operations If artifacts are discovered, the site can be reevaluated.

CA-ORA-713

The site is located on a ridge between Oso and Aliso Creeks and on the ridge's north facing slopes as well as a relatively flat area at the slopes base (see Figure 6 below) The area measures approximately 150 by 215 meters and could comprise two or more sites The original recorders of the site (Tadlock and Tadlock 1978) reported finding flakes, scrapers, cores, choppers and manos Breece and Padon (1982) reported only three flakes Dillon (SRS 1989) found no "portable artifacts", but discussed a sandstone concretion boulder with a cupule ground into its upper surface

Initial work on the site (Maxon 1995) consisted of a surface examination and surface collection This resulted in the recovery of 14 artifacts including two metavolcanic cores, a quartzite flake, a piece of metavolcanic shatter, a granite chopper, eight uni- and bifacial,

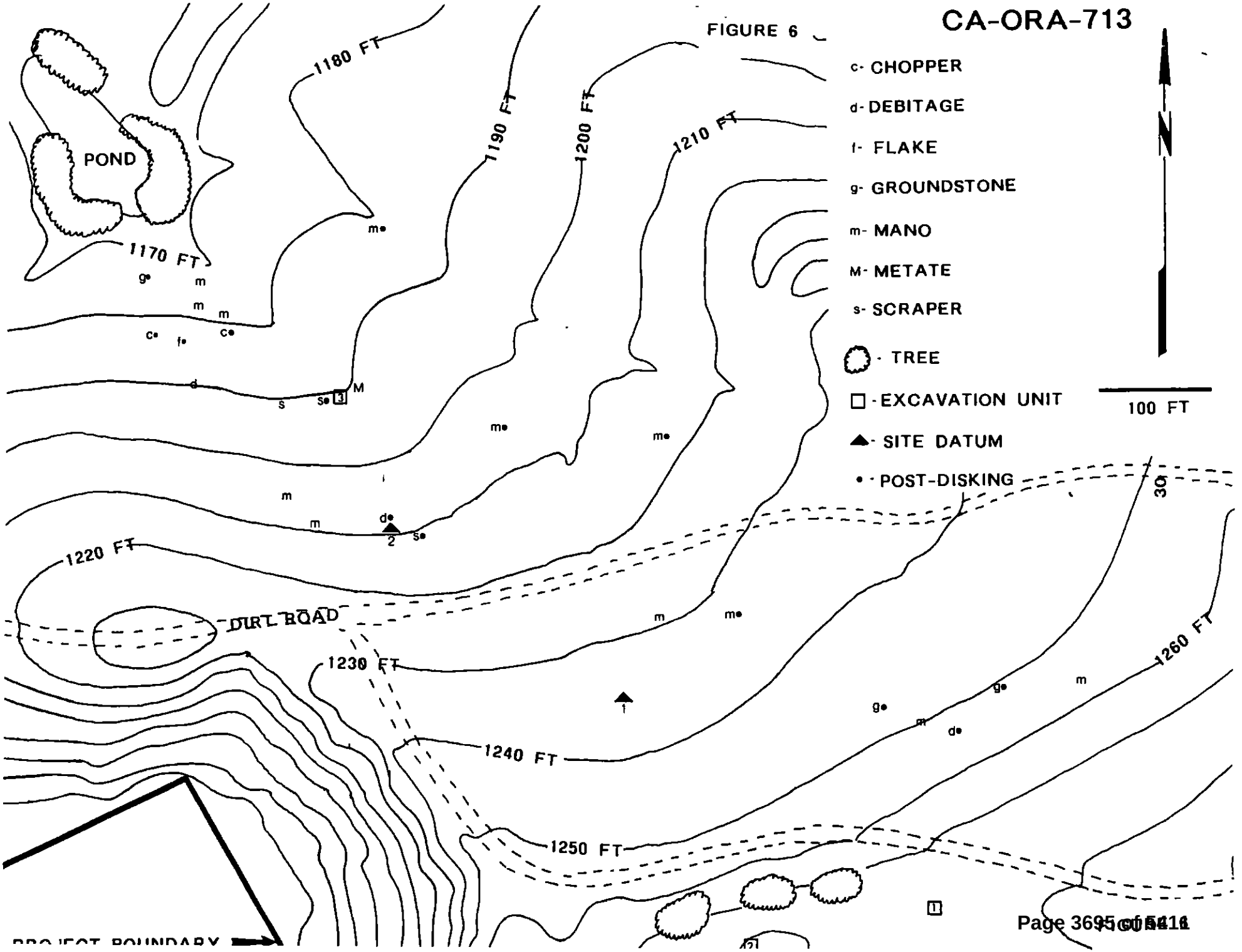


FIGURE 6
CA-ORA-713
c- CHOPPER
d- DEBITAGE
f- FLAKE
g- GROUNDSTONE
m- MANO
M- METATE
s- SCRAPER
- TREE
- EXCAVATION UNIT
- SITE DATUM
• - POST-DISKING
100 FT
N
POND
1170 FT
1180 FT
1190 FT
1200 FT
1210 FT
1220 FT
1230 FT
1240 FT
1250 FT
1260 FT
DIRT ROAD
PROJECT BOUNDARY

porphyry and granite manos and a granite basin metate fragment The cupule noted by Dillon (SRS 1989) was seen, but the current researchers have serious reservations regarding the cultural nature of the cupule Subsequently, a disk pulled by a small bulldozer was employed to turn up the soil to a depth of ten centimeters to expose near surface artifacts. This method resulted in the recovery of an additional 14 artifacts including three scrapers of metavolcanics and granite, two quartzite cores, three pieces of metavolcanic and quartzite debitage and six manos, uni- and bifacially ground, composed of granite and porphyry

Three one by one meter units were excavated in distinct areas of the large site, two on the ridgetop and one at the base of the slope that yielded the majority of the surface artifacts All three units were sterile - producing no cultural material

Since artifacts were scattered over a large area, a number of unrelated encampments occupied over a period of time may be represented The importance/significance of the site is as yet unknown. It is therefore recommended that controlled grading under the guidance of a qualified archaeologist be accomplished before the commencement of mass grading. Should clusters of artifacts be discovered, additional units could be excavated in those specific areas

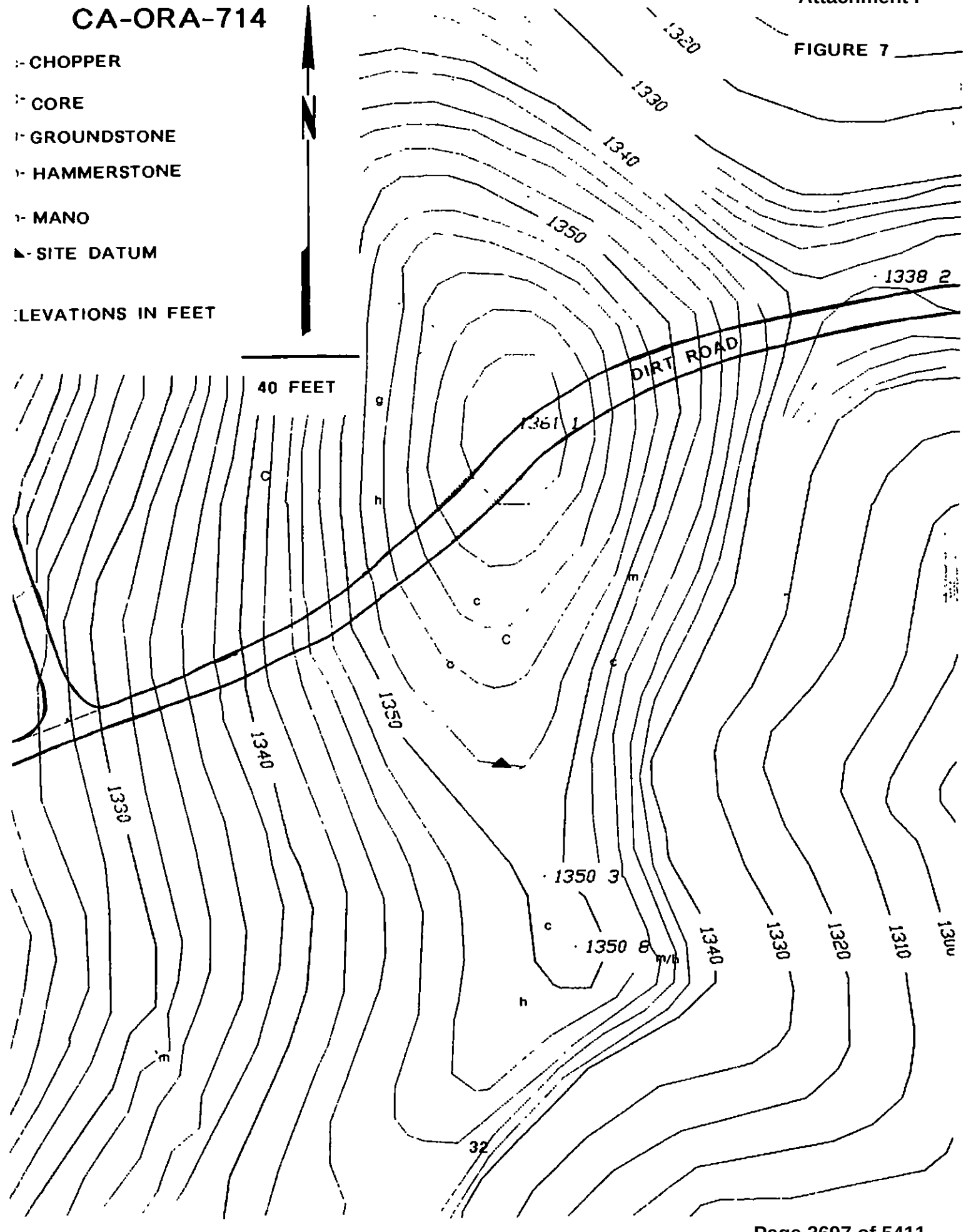
CA-ORA-714

The site is located on a domed hill on the ridge between Oso and Aliso Creeks, west of CA-ORA-713 and just to the south of a steep cliff leading down to a large Oso tributary drainage (see Figure 7 below) Tadlock and Tadlock (1978) called the site a probable quarry containing assayed stones, but Dillon (SRS 1989) reported two artifacts. The presence of bedrock near and at the site's surface eliminates the possibility of extensive subsurface deposits. Bleached cow bones litter the ridgeline indicating either a carcass dumping ground or a carnivore feeding area The site measures some 60 by 30 meters

Work undertaken at this site (Maxon 1995) was essentially a surface examination and surface collection Twelve artifacts were recovered as a result of this procedure including three unmodified hammerstones of metavolcanics and porphyry, two cores of quartz and chert, four choppers of porphyry and metavolcanics and three uni- and bifacial manos of porphyry.

CA-ORA-714

FIGURE 7



No units were excavated on the site because of the presence of bedrock at the surface, which eliminated the possibility of a significant subsurface deposit.

The site was probably a short term encampment, perhaps the result of a single occurrence and because of the presence of exposed bedrock, a subsurface deposit is not expected The site is therefore considered not important/significant and it is recommended that the area be monitored by a qualified archaeologist during mass grading operations. If artifacts are discovered, the site can be reevaluated.

CA-ORA-715

The site is located on a relatively flat, rounded hill comprising the ridge above the headwaters of Oso Creek, overlooking Aliso Creek (see Figure 8 below). Site dimensions are approximately 55 by 65 meters A bulldozer cut in the site area establishes that soils have considerable depth

Initial work on the site (Maxon 1995) consisted of a surface examination and a surface collection Thirty two artifacts were recovered including 13 uni- and bifacially ground manos, four of them fragments, composed of porphyry, sandstone, metavolcanics, quartzite and granite, four choppers of quartzite, metavolcanics, porphyry, and quartz, two bidirectional metavolcanic cores, one metavolcanic anvil, one metavolcanic hammerstone and eleven pieces of debitage of metavolcanics, chert, jasper and quartzite

Subsequently, a disk pulled by a small bulldozer was employed to turn up any subsurface artifacts within ten centimeters of the surface. This procedure resulted in the recovery of nine additional artifacts including two choppers of metavolcanics and quartzite, one quartzite axe, one multidirectional metavolcanic core, two pieces of metavolcanic debitage, one bifacial quartzite mano and two unifacial porphyry mano fragments

Next, four 1 x 1 meter units were excavated to determine if a subsurface deposit existed on the site The existence of a subsurface deposit was not substantiated, because the excavation produced negligible artifacts Those cultural materials recovered could have been deposited via rodent disturbance Table 5 below, summarizes the excavation at CA-ORA-715

FIGURE 8

CA-ORA-715

a- ANVIL
A- AXE
c- CHOPPER
C- CORE
d- DEBITAGE
f- FLAKE
g- GROUNDSTONE
m- MANO
TREE/BRUSH
EXCAVATION UNIT
SITE DATUM
•- POST-DISKING

N

40 FEET

ELEVATIONS IN FEET

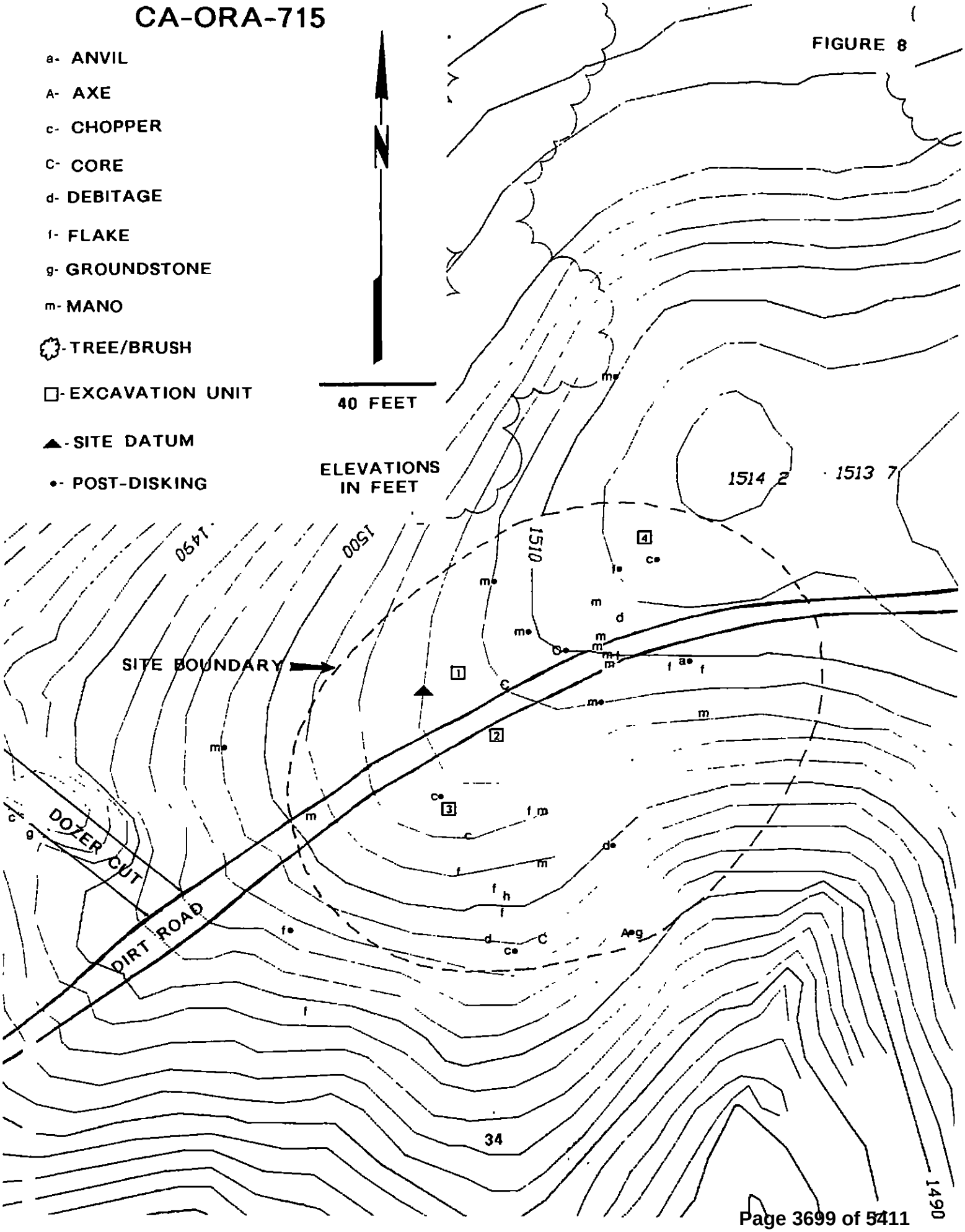


Table 5. CA-ORA-715

Recovered Item	Depth (in centimeters)	Total Items
	0-10	
Debitage	4	4
Total Level	4	4

The importance/significance of the site is as yet unknown It is therefore recommended that controlled grading under the guidance of a qualified archaeologist be accomplished at the site before the commencement of mass grading. Should clusters of artifacts be discovered, additional units could be excavated in those specific areas.

CA-ORA-716

The site is located on a high hilltop in the northeastern corner of the project area Tadlock and Tadlock (1978) reported finding a negligible number of flakes on the westerly portion of the site and flakes, cores and a redeposited chopper on the central and eastern portion Dillon (SRS 1989), then reports finding just one basalt core at the site area and comments that much of the surface of the site has been graded to and below the surface of bedrock

Relative to the current project, the site, or what is left of it, lies off the property to the west, therefore, no further action is required

CA-ORA-1255

The site lies on the lower drainage of a small knoll creating an upland pond and overlooking a steep-sided drainage (see Figure 9 below) It is approximately 25 by 25 meters in size Dillon (SRS 1989) described the site as lying approximately 50 meters southwest of the pond in a natural amphitheater formed by a series of low, rounded knolls The site was apparently on the backslope of the knoll creating the pond Artifacts recovered by Dillon include one sandstone metate fragment, one core, two flakes and a quartzite prismatic blade

Initial work on the site (Maxon 1995) consisted of a surface examination and surface collection One metavolcanic flake was recovered by this method Subsequently, two 50 by one

CA-ORA-1255

FIGURE 9

FLAKE

- TREE/BRUSH

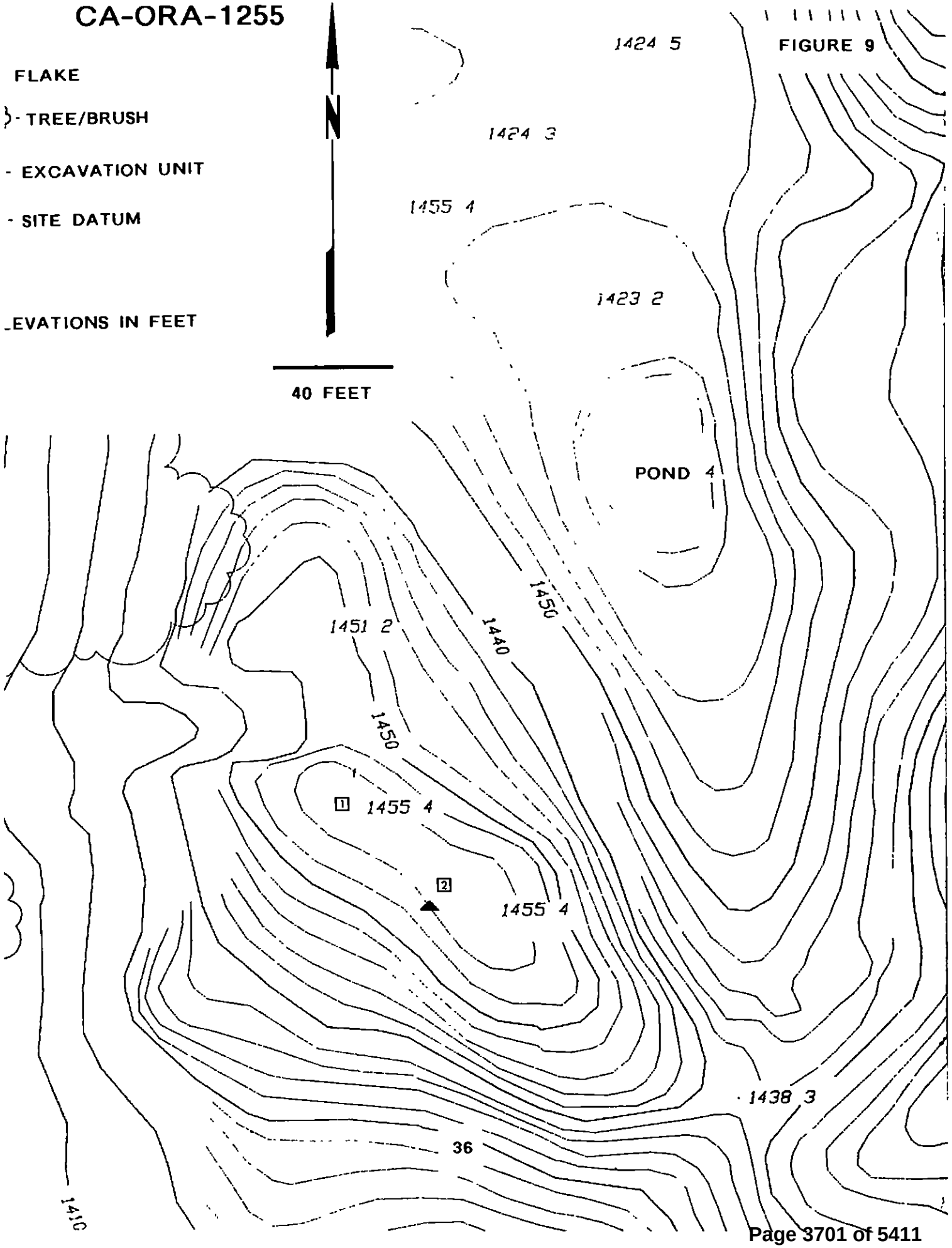
- EXCAVATION UNIT

- SITE DATUM

EVATIONS IN FEET

N

40 FEET



meter units were excavated on the top of the knoll. Unit one was excavated to 20 cm , Unit two to 30 cm The lone artifact recovered was a piece of metavolcanic shatter in the 10-20 cm. level of Unit 2. The units were very shallow, because a very light colored decomposing bedrock sand was encountered at those levels and the units were abandoned

Based on the dearth of cultural materials recovered, the site is deemed not important/significance and no further work is necessary It is recommended, however, that a qualified archaeologist be present to monitor the commencement of clearing/grading. If additional artifacts are recovered, the site can be reevaluated.

CA-ORA-1256

The site lies to the south and downslope from the southwest margin of CA-ORA-715, along a brushy fingerline ridge. Dillon (SRS 1989) first recorded the site and reported finding a large, crude, "early" appearing scraper plane and an andesite core/scraper.

The site was not relocated during the surface examination of the current project and has been likely destroyed The site is not considered important/significant, however, it is recommended that a qualified archaeologist be present to monitor clearing/grading operations If additional artifacts are recovered, the site can be reevaluated.

CA-ORA-1257

The site lies to the west and downslope of a low knoll directly west of Aliso Creek, and north of a steep cliff . Dillon (SRS 1989) recorded the site and reported finding a unifacial granite mano and a sandstone bedrock feature containing two cupules or incipient bedrock mortars He commented that the mano was not truncated like the other three found at CA-ORA-710, but may have been used in conjunction with the bedrock feature for grinding purposes therefore he called it an incipient bedrock mortar

During a prior visit to the site the small boulder containing the purported cupules was seen, and during the current project it was again located The current researchers doubt the cultural nature of the cupules They are in very soft stone and would have been most ineffective as grinding implements

The site was carefully examined for cultural materials during the project (Maxon 1995). No artifacts were seen or recovered. Therefore, the site is considered not important/significant; however, it is recommended that a qualified archaeologist be present during clearing/grading operations. If additional artifacts are recovered, the site can be reevaluated

CA-ORA-1435H (Hausauer Ranch)

The site is located at the bottom of a deep drainage near the center of the property (see Figure 10 below). It is surrounded by dense foliage (oak, eucalyptus and pepper trees) The site is a ranch complex comprised of a residence, barn (collapsed), several out structures and a holding pond surrounded by a large olive grove numbering nearly 100 trees. The ranch buildings are in an advanced state of decay and have additionally been vandalized. The site complex measures approximately 275 by 100 meters.

Work performed on the site (Maxon 1995) included examining the surface of the entire ranch area, mapping and describing all the structures associated with the ranch, and preparing a site recording form.

Because no in depth work has been accomplished on the site, its importance/significance has not yet been determined. It is therefore recommended that a thorough surface collection and excavation of a sufficient number of backhoe trenches (approximately 10-20) be accomplished at the site to provide the data for site evaluation Subsequent work will depend on the results of test excavation of the site Data recovery work may become necessary after evaluation.

CA-ORA-1437

This newly discovered site lies on a rounded knolltop at the northern edge of the property overlooking a small drainage leading south-westward into Aliso Creek (see Figure 11 below). The site is approximately 140 meters northwest of CA-ORA-1255 and measures approximately 20 by 20 meters.

The site was discovered serendipitously (Maxon 1995) as the reconnaissance crew was searching for CA-ORA-1255. Work performed on the site (Maxon 1995) included a surface

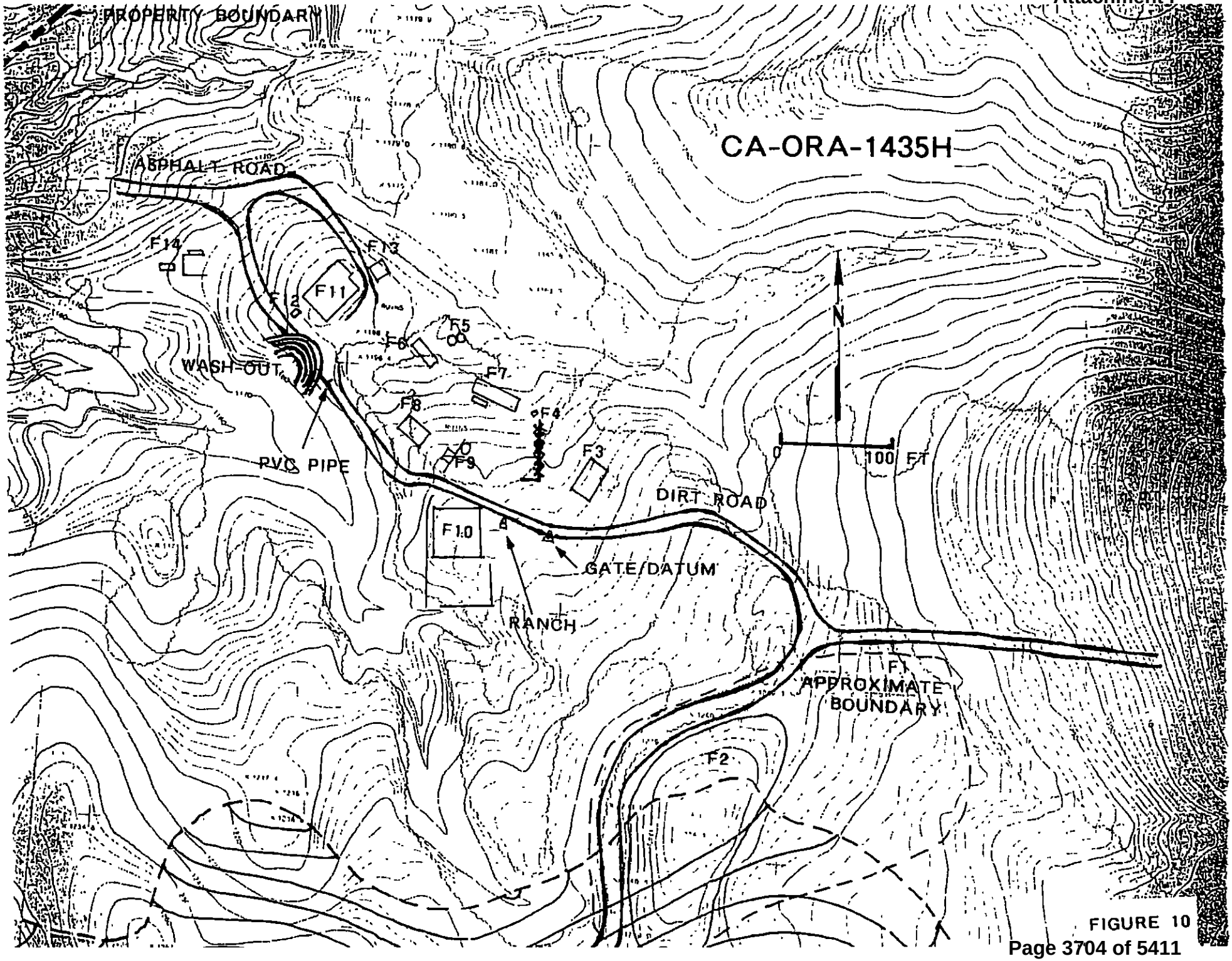
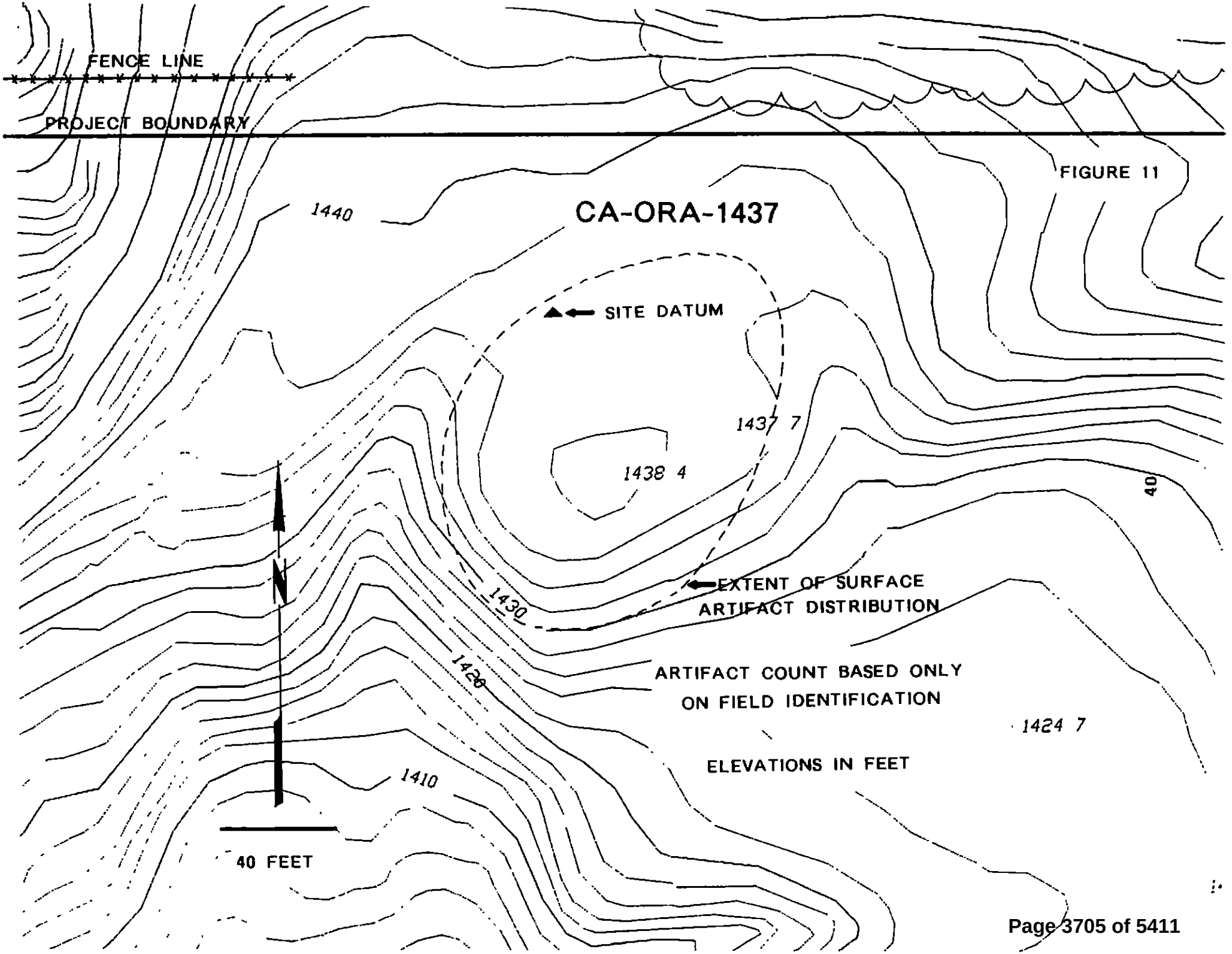

PROPERTY BOUNDARY
CA-ORA-1435H
ASPHALT ROAD
F14
F13
F11
F12
F5
F6
WASH-OUT
F7
F8
F4
F9
F3
PVC PIPE
N
0
100 FT
DIRT ROAD
F10
GATE/DATUM
RANCH
F1
APPROXIMATE
BOUNDARY
F2

FIGURE 10


FENCE LINE
PROJECT BOUNDARY
FIGURE 11
CA-ORA-1437
1440
SITE DATUM
1437 7
1438 4
40
EXTENT OF SURFACE
ARTIFACT DISTRIBUTION
1430
1420
ARTIFACT COUNT BASED ONLY
ON FIELD IDENTIFICATION
1424 7
ELEVATIONS IN FEET
1410
N
40 FEET

examination and the subsequent recording of all identified artifacts by surveyor's transit and stadia radiation methods. Twenty-nine items were identified including mano fragments, metate fragments, cores and flakes The items were not collected, precluding the possibility of further study (material types, measurements, weights) of the artifacts. Finally, an archaeological site recording form was prepared for the site.

Because no in depth work has been accomplished on the site, its importance/significance is not known. It is therefore recommended that a thorough surface collection and unit excavation be accomplished at the site to provide the data for site evaluation. Subsequent work will depend on the results of test excavation of the site

RESPONSE TO COMMENTS

In March 1996, comments to the Draft Environmental Impact Report No. 561 were submitted to Raymond Brantley, Chief of the County of Orange, Environmental and Project Planning Division, by Steve Conkling, a resident of a neighborhood in the vicinity of Saddleback Meadows. Mr. Conkling commented on the entire EIR document, a portion of which concerned the cultural resources research performed at Saddleback Meadows A response to the comments was prepared and sent to Duane Morita of Urban Vision This response is reproduced here Mr. Conkling made some 69 separate comments concerning the EIR document. Those comments were enumerated and any concerning cultural resources (only #s 24 and 64) were responded to.

Comment (#24): "Table 4 states that cultural resources will require EMA approval. However, this table also indicates that a Section 404 permit will be required for the project Under the Section 404 permit, cultural resources should be mitigated to be in compliance with Section 106 of the *National Historic Preservation Act*, and fall under the review of the U S Army Corps of Engineers. The current document does not provide cultural resource mitigation management to this level "

Response: The applicability of completing the project in compliance with Section 106 is discussed in the response to Comment #64 below The statement that "cultural resources should

be mitigated to be in compliance with Section 106" is incorrect. Under Section 106, only the effect of the project on sites determined eligible to be listed in the *National Register of Historic Places* need to be taken into account Sites determined to be ineligible require no additional action.

Comment (#64): "Since the project requires a 404 Permit with the U.S. Army Corps of Engineers (Corps), assessment, testing and data recovery for affected archaeological sites must be conducted in compliance with Section 106 of the *National Historic Preservation Act*. Section 106 requires that the sites be tested for their potential eligibility to the *National Register of Historic Places (National Register)* None of the testing for the EIR was done to these standards "

Response: Throughout the duration of the Saddleback Meadows archaeological study there was no notification that the project required a 404 permit from the Army Corps of Engineers, or that any other Federal involvement in the project was expected Completing the cultural resources study in compliance with Section 106 of the *National Historic Preservation Act* was not warranted Consequently the project was appropriately completed under the *California Environmental Quality Act* (CEQA).

Comment (#64): "The 12 archaeological resources identified in the EIR have not been adequately tested to determine their significance under CEQA."

Response: Eleven prehistoric archaeological sites and one historic site have been recorded within the boundaries of the Saddleback Meadows project area. Three sites (CA-ORA-712, -1256 and -1257) could not be relocated as plotted by previous researchers and no cultural material was found despite a thorough examination of those plotted locations These sites are clearly not important resources.

One site (CA-ORA-716) actually is located just outside the project boundaries and will not be affected by the current project. This site requires no further action relative to the current study

One site (CA-ORA-1435H) lies within the current project area in proposed open space and will not be affected by grading or construction (this has changed because of the new proposed project of 705 manufactured, single-family residential unit development) This site requires no further action unless changes are made to the current plans (those changes to plans have occurred and additional work is necessary).

Six sites (CA-ORA- 710, -711, -713, -714, -715 and -1255) will be affected by the current project (Maxon 1995) and were formally test excavated Test excavation consisted of surface collection and mapping of all visible surface artifacts, and excavation of a sufficient number of one by one meter square excavation units to characterize the nature of any subsurface deposit. These units were excavated using standard archaeological methods Four of these sites (CA-ORA-713, -714, -715 and -1255) are not important since they are highly disturbed and contain no subsurface component. The remaining two sites (CA-ORA-710 and -711) are important since both contain substantial and relatively undisturbed subsurface components

One site (CA-ORA-1437) was discovered during the current project (Maxon 1995) Time constraints prevented testing this site prior to completion of Draft Environmental Impact Report 561 This site requires testing and evaluation prior to development

It is clear from the preceding discussion that eleven of the twelve recorded sites within the project boundaries have been adequately addressed Three are determined to no longer exist, one is actually located outside the current project boundaries, one is located in proposed open space and will not be affected by the project (this has now changed), and six were tested using standard archaeological methods. One site discovered during field work will be test excavated and evaluated prior to the start of grading. The comment that the sites were not adequately tested under CEQA is unfounded

Comment (#64): ". .the sites are not adequately evaluated under a straight CEQA review. The office of Historic Preservation, in 1995, began the *California Register of Historical Places*, based on guidelines very similar to those for Section 106 The sites within the project area have not been evaluated for either *Register* "

Response: The Office of Historic Preservation (OHP) created the *California Register of Historical Resources* which has been adopted as *guidelines* by the Historical Resource Commission In addition, current CEQA Statutes (Public Resource Code 21084.1) state that "an historical resource is a resource listed in, or determined eligible to be listed in, the California Register of Historical Resources (Governor's Office of Planning and Research 1996 51) " However, the *California Register* and the criteria for eligibility have not yet passed through the state legislative process and do not have the weight of formal regulations The legality of requiring evaluation of historical resources for eligibility to be listed in the *California Register*, rather than per the criteria included in Section 21083.2 or Appendix K, is not clear

Regardless, it is our position that the criteria in Appendix K used for evaluation of the archaeological sites to be affected by the proposed project would be sufficient for evaluating these same sites for their eligibility to be listed in the *California Register* Criterion d for eligibility to be listed in the *California Register* states that a historical resource may be listed if "it has yielded or is likely to yield information important in prehistory or history (Office of Historic Preservation 1995 4) " Section III, subsection B of Appendix K of CEQA states that an important archaeological resource is one which "can provide information . useful in addressing scientifically consequential and reasonable or archaeological research questions (Governor's Office of Planning and Research 1996:275) " It is clear that criterion d. for eligibility to be listed in the *California Register* and criterion III, B of Appendix K are similar, and that the evaluation of archaeological sites using section III, B would be nearly identical to an evaluation using criterion d

As stated previously, the project did not require compliance with Section 106 of the *National Historic Preservation Act*

Comment #64: "According to the Office of Historic Preservation (1995), properties are evaluated at 45 years of age, not 100 years."

Response: Citing *Instructions For Recording Historical Resources* (Office of Historic Preservation 1995), Mr. Conkling states that "properties are evaluated at 45 years of age, not 100 years." In reality, the reference cited states that sites to be *recorded* should be at least 45 years

old, but is silent on matters of evaluation All known cultural resources within the project area that are at least 45 years old have been recorded and assigned trinomial designations by the South Central Coastal Archaeological Information Center at the University of California, Los Angeles All sites evaluated for the project are prehistoric sites and far exceed the 45 year criterion The ranch house (CA-ORA-1435H) is not located in an area to be affected by the project (Maxon 1995) as currently planned, and accordingly, was not formally evaluated (this has now changed)

Comment #64: "Yet, no consultation with the Corps has been initiated, and site eligibility assessments have not been completed "

Response: The archaeological investigations were accomplished under CEQA regulations which do not require consultation with the U.S. Army Corps of Engineers

Comment #64: "AM 9-8 is inaccurate and illegal, the Coroner makes the determination of the nature of the Human Remains Also, the Heritage Commission contact information is incorrect

Response: AM 9-8 states that "If human remains of Native American origin are encountered during the project the County Coroner's Office and the Native American Heritage Commission shall be contacted for preservation and protection of the remains." Mr Conkling is correct The proper procedure is that the County Coroner's office is notified whenever human remains are encountered If the Coroner's office determines that the remains are of Native American origin, they have 24 hours in which to notify the Native American Heritage Commission, which in turn will notify the most likely descendant of the deceased Native American

SUMMARY

Archaeological research accomplished at Saddleback Meadows (Maxon 1995) is as follows cultural resource reconnaissance relocated CA-ORA-710, -711, -713, -714, -715, -1255 and -1257, previously recorded on the property, CA-ORA-712, -716 and -1256 were not relocated and are considered destroyed, CA-ORA-1435H, the historic ranch house, was formally recorded; CA-ORA-1437 was discovered during the project

CA-ORA-710, -711, -713, -714, -715 and -1255 were formally test excavated; CA-ORA-1435H did not undergo any testing because it was to be in open space, and was not to be destroyed under the previous 318-unit development; CA-ORA-1437 did not undergo testing because time constraints precluded further work prior to completion of Draft Environmental Impact Report 561. The site was mapped and formally recorded.

RECOMMENDATIONS

CA-ORA-710 and CA-ORA-711 have been determined to be important/significant according to Section 106 of the NHPA and CEQA. Although the sites lie in open space, remedial grading of the proposed open space will destroy them. Data recovery excavation of at least 30 one by one meter units at each site must be accomplished CA-ORA-1437 is the site discovered during the previous project (Maxon 1995); no work has been done as yet A surface examination and surface collection and a test excavation consisting of approximately ten, one by one meter units must be accomplished at the site to characterize the nature of any subsurface deposit. Additional work may become necessary after evaluation. CA- ORA-1435H has not yet been evaluated. Initial work will entail research including archival research and a review of historic aerial photographs. A surface examination and surface collection and a test excavation consisting of a sufficient number of backhoe trenches (approximately 10-20) must then be accomplished at the site Additional investigation may then become necessary after evaluation All above investigations must be accomplished prior to the commencement of clearing/grading operations

No determination of importance/significance has been made for CA-ORA-713 and CA-ORA-715 It is recommended that these sites undergo controlled destruction with the aid of a small,

paddlewheel scraper This work can be accomplished after grading is underway. If artifact clusters are discovered additional excavation may be necessary.

All other archaeological sites on the property have been deemed not important/significant and no further work, beyond monitoring of grading is necessary

Patrick O. Maxon

Patrick O Maxon
Staff Archaeologist

Ronald M. Bissell

Ronald M. Bissell
Principal Investigator

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APPENDIX A
Artifact Catalog

ARTIFACT CATALOG CODE KEY

All artifacts recovered during the Saddleback Meadows project (Maxon 1995) are listed in the following artifact catalog Entries appear on two successive pages. The first page includes the site number and a unique catalog number assigned to each artifact In addition, the first page also depicts the location of the artifact, the subassemblage, class and type of artifact. The second page repeats the catalog number and includes information on the artifacts material, modifications, presence or absence of cortex and thermal alteration, dimensions, weight and any comments In the interest of space, some column headings have been reduced so that only a partial heading is shown. Those column headings are explained below.

Cat	= Catalog Number
Top 1	= Top depth of level
Bottom 1	= Bottom depth of level
Dup	= Duplicate: Multi-use tools were assigned the same cat number, but recognized as two separate artifacts
No	= Number of modified edges
Cort	= The presence or absence of cortex
Th	= Thermal modification
P	= after each dimension measurement, the P denotes partial measurement if the artifact had been broken

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-1255	1	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-1255	2	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-1255	3	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-1255	4	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-1255	5	UNIT 2	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-1255	6	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-1255	7	UNIT 2	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	1	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	2	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	3	SURFACE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	4	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	5	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	6	SURFACE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	7	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	8	SURFACE	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-710	9	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	10	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	11	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	12	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	13	SURFACE	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-710	14	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	15	SURFACE	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-710	16	SURFACE	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-710	17	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	18	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	19	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	20	SURFACE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	21	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	22	SURFACE	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	23	SURFACE	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	24	SURFACE	0	0	CHIPPED STONE	HAMMERSTONE	MODIFIED
CA-ORA-710	25	SURFACE	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	26	SURFACE	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	27	SURFACE COLLECTION #2	0	0	GROUND STONE	METATE	
CA-ORA-710	28	SURFACE COLLECTION #2	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	29	SURFACE COLLECTION #2	0	0	GROUND STONE	METATE	
CA-ORA-710	30	SURFACE COLLECTION #2	0	0	GROUND STONE	METATE	
CA-ORA-710	31	SURFACE COLLECTION #2	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-710	32	SURFACE COLLECTION #2	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	33	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	34	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	35	SURFACE COLLECTION #2	0	0	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-710	36	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CHOPPER	

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
1	METAVOLCANIC/A	N	1	NIBBLED	Y	N	3.63	N	3 11	N	0 75	N	9 39	2 PIECES OF 1
2	10 YR 6/2	N	0	-										-
3	10 YR 7/2	N	0	-										-
4	10 YR 6/2	N	0	-										-
5	METAVOLCANIC/P-A	N	0	-	N	N	3 41	N	3 14	N	1 55	N	13 86	-
6	10 YR 6/2	N	0	-										-
7	10 YR 6/2	N	0	-										-
1	PORPHYRY	N	0	-	Y	N	5 49	Y	2 77	Y	2.58	Y	49 69	VERY LIGHT POLISH
2	GRANITIC	N	2	BATTERED	N	N	15		8 04	Y	6 12		1333 9	-
3	METAVOLCANIC/P-A	N	0	-	Y	N	9 68	Y	8 76	Y	4.89		441 7	-
4	METAVOLCANIC/P-A	N	0	-	N	Y	9 06		5 82	Y	4 59		503.1	LIGHT WEAR
5	PORPHYRY	N	0	-	N	N	12 9		9 13		7 94		1447 7	COLOR DIFFERENCE ON ONE FACE
6	METAVOLCANIC/P-A	N	0	-	Y	N	5 66	Y	5 27	Y	3.4	Y	129.12	-
7	PORPHYRY	N	0	-	Y	N	7.23	Y	5 49	Y	1.97	Y	91 09	MODERATE POLISH
8	METAVOLCANIC/P-A	N	2	BATTERED	Y	N	9 17	Y	7 72	Y	6 53	Y	526.6	-
9	GRANITIC	N	1	-	Y	N	9 08		7 27		3 96		386 5	*RED MARKS, ON SURFACE
10	GRANITIC	N	1	BATTERED	N	N	8 79	Y	8 78		5 91		675 3	MODERATE POLISH
11	GRANITIC	N	0	BATTERED	N	N	11 7		9 5		6.42		1048 8	FAIRLY HIGH POLISH
12	PORPHYRY	N	0	-	Y	N	13		8 92		7 07		1415 1	MODERATE POLISH
13	QUARTZITE	N	0	-	Y	N	6 24	Y	5 56	Y	5 93	Y	296 5	-
14	PORPHYRY	N	0	-	N	N	13 08		7.4		4 6		731 3	*RED MARKS - MODERATE POLISH
15	METAVOLCANIC/A	N	0	-	N	N	6 85	N	5 04	N	2.73	N	114 93	-
16	METAVOLCANIC/P-A	N	4	RETOUCHED	Y	N	6.83	N	6 58	N	1.95	N	127 47	-
17	PORPHYRY	N	0	-	Y	Y	9 8	Y	8 81	Y	5.27	Y	592 7	MODERATE POLISH
18	PORPHYRY	N	0	-	Y	N	6 09	Y	3 5	Y	5 46	N	141 76	MODERATE POLISH
19	PORPHYRY	N	0	-	Y	N	11 42	N	9 19	N	5 82	N	874 1	*RED MARKS, MODERATE POLISH
20	QUARTZ	N	0	-	N	N	4 39	N	2 46	N	1 6	N	16 05	-
21	PORPHYRY	N	0	-	Y	Y	150	Y	9 8	Y	6 09	N	1166 8	*RED MARKS, MODERATE POLISH
22	PORPHYRY	N	0	-	Y	Y	9 43	Y	7.33	Y	5 09	N	415 1	LIGHT POLISH
23	QUARTZITE	N	0	-	Y	N	7 83	N	5 09	N	1 48	N	66 65	-
24	METAVOLCANIC/P-A	N	2	RETOUCHED	Y	N	9 91	N	8 31	N	4 05	N	443 6	*RED MARKS
25	GRANITIC	N	0	-	Y	N	10.11	Y	6 9	Y	4 89	N	453 7	MODERATE POLISH
26	QUARTZITE	N	2	-	Y	Y	14 67	Y	11 15	Y	10 55	Y	1971 1	-
27	QUARTZITE	N	0	-	N	N	13 87	Y	10 26	Y	4 64	Y	966.5	TWO SPOTS OF POLISH
28	PORPHYRY	N	0	-	N	N	13 63	N	7 41	N	5 01	N	840 3	-
29	GRANITIC	N	0	-	N	N	11 03	Y	7 25	Y	8 55	Y	1035.3	-
30	GRANITIC	N	0	-	Y	N	11 3	Y	6 51	Y	10 97	Y	1285.4	-
31	PORPHYRY	N	0	-	Y	N	10 1	Y	9 82	Y	4 56	N	479 2	-
32	PORPHYRY	N	0	-	N	N	9 45	N	6 83	N	6 05	N	539.2	-
33	CHERT	N	1	NIBBLED	N	N	3 59	N	1 6	N	1 03	N	7 62	-
34	CHERT	N	0	-	Y	N	4 2	N	3.17	N	2 05	N	28 12	SEVERAL FLAKE SCARS
35	METAVOLCANIC/P-A	N	0	-	N	N	8 33	N	7 5	N	4 44	N	440	-
36	QUARTZITE	N	0	-	N	N	7 89	N	6.69	N	4 07	N	255 3	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	37	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	38	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	39	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-710	40	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	41	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	42	SURFACE COLLECTION #2	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	43	SURFACE COLLECTION #2	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	44	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	45	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	46	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	47	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	48	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	49	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-710	50	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	51	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CHOPPER	MULTIDIRECTIONAL
CA-ORA-710	52	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	53	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	54	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-710	55	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	56	SURFACE COLLECTION #3	0	0	CHIPPED STONE	SCRAPER	MODIFIED
CA-ORA-710	57	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	SPENT
CA-ORA-710	58	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	59	SURFACE COLLECTION #3	0	0	CHIPPED STONE	SCRAPER	UNMODIFIED
CA-ORA-710	60	SURFACE COLLECTION #3	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	61	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-710	62	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-710	63	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	64	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	64	SURFACE COLLECTION #3	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	65	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	66	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	67	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	68	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	69	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	70	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	71	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	72	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	74	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	75	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	76	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	77	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	78	SURFACE COLLECTION #3	0	0	CHIPPED STONE	CORE	SPENT
CA-ORA-710	79	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
37	CHERT	N	0	-	Y	N	4 42	N	3 18	N	2 2	N	33.61	-
38	METAVOLCANIC/P-A	N	0	-	N	N	2.19	N	1 71	N	0 41	N	1 74	-
39	QUARTZITE	N	0	-	N	N	8.63	N	7 78	N	3.05	N	241 8	-
40	CHERT	N	0	-	Y	N	3 1	N	1 07	N	8.53	N	3 07	SEVERAL FLAKE SCARS
41	CHERT	N	0	-	Y	N	1 76	N	1 45	N	0 42	N	1 58	-
42	METAVOLCANIC/P-A	N	0	-	N	N	5.97	N	3 8	N	2 01	N	48.68	-
43	CHERT	N	0	-	N	N	2.64	N	1 16	N	0 62	N	2 09	1 LARGE FLAKE SCAR, 2 PIECES OF 1
44	QUARTZITE	N	0	-	N	N	7 68	N	5 67	N	4 98	N	200 82	-
45	CHERT	N	0	-	Y	N	3 88	N	3.43	N	2 68	N	26 04	-
46	CHERT	N	0	-	N	N	2 83	N	2.27	N	1 65	N	9 9	-
47	GRANITIC	N	0	-	N	N	6.69	N	8 78	N	3.67	N	352.5	SHAPED, HIT BY DISCER
48	METAVOLCANIC/P-A	N	0	-	Y	N	7 82	N	3 99	N	2 01	N	60 38	-
49	METASEDIMENTARY	N	0	-	N	N	5 88	N	5.76	N	3 65	N	101 19	-
50	METASEDIMENTARY	N	0	-	Y	N	12 01	N	8 42	N	6 26	N	634.3	-
51	METASEDIMENTARY	N	0	-	Y	N	12 62	N	10 59	N	5 51	N	694 2	-
52	PORPHYRY	N	0	-	Y	N	7.05	Y	8.04	Y	5 48	Y	439.5	-
53	METAVOLCANIC/P-A	N	0	-	Y	N	6 9	N	5 08	N	3 32	N	87.11	-
54	METAVOLCANIC/P-A	N	0	-	Y	N	9 17	N	6 07	N	2 97	N	161.32	-
55	CHERT	N	0	-	Y	N	2 31	N	1.48	N	0 7	N	1 91	-
56	CHERT	N	2	NIBBLED	Y	N	5 53	N	2.94	N	1 3	N	18 82	-
57	CHERT	N	0	-	N	N	4 6	N	3.53	N	2 41	N	27 05	MANY FLAKE SCARS
58	METAVOLCANIC/P-A	N	0	-	N	N	4 41	N	3 79	N	1 34	N	15 86	-
59	METAVOLCANIC/P-A	N	1	WORN	Y	N	9 58	N	6 3	N	3.39	N	239 5	-
60	METASEDIMENTARY	N	0	-	N	N	7 87	N	6.4	N	4 27	N	238.2	-
61	METAVOLCANIC/P-A	N	0	-	Y	N	8.74	N	5 45	N	3 59	N	163 02	-
62	GRANITIC	N	0	-	N	N	10 01	N	9.59	N	6 15	N	835 9	-
63	METAVOLCANIC/P-A	N	0	-	Y	N	5 06	N	3 27	N	1.68	N	22 91	-
64	GRANITIC	N	0	-	N	N	12 36	Y	12 09	N	6 43	Y	989.4	ONE OF 2 PIECES
64	GRANITIC	N	0	-	N	N	12 36	Y	12.09	N	6 43	Y	989.4	ONE OF 2 PIECES
65	CHERT	N	1	NIBBLED	N	N	2 53	N	1 88	N	0 69	N	3 26	-
66	METASEDIMENTARY	N	0	-	N	N	3 75	N	2 52	N	1.14	N	8 3	-
67	CHERT	N	0	-	N	N	4.27	N	3 51	N	1 37	N	16.68	-
68	QUARTZITE	N	0	-	N	N	4 35	N	2 72	N	1 23	N	12.18	-
69	METAVOLCANIC/P-A	N	0	-	N	N	5 05	N	3 38	N	1 25	N	23.93	-
70	CHERT	N	0	-	N	N	2 34	N	2 13	N	0 42	N	2 17	-
71	METAVOLCANIC/P-A	N	0	-	N	N	2 59	N	2.23	N	0 8	N	4 58	-
72	CHERT	N	1	NIBBLED	N	N	1.8	N	1.68	N	0 61	N	1 91	-
74	CHERT	N	0	-	N	N	2 37	N	2 17	N	0 59	N	2 76	-
75	CHERT	N	1	CHIPPED	N	N	2 97	N	2 07	N	1.19	N	6	-
76	CHERT	N	0	-	Y	N	2.78	N	1.69	N	1.36	N	4 68	-
77	METAVOLCANIC/P-A	N	0	-	N	N	2 42	N	1 65	N	0 99	N	3 34	-
78	CHERT	N	0	-	N	N	4 08	N	2 82	N	1 94	N	15.72	HAS LARGE ROUND QUARTZ INCLUSION
79	METAVOLCANIC/P-A	N	0	-	N	N	6.18	N	3 36	N	1 28	N	24 65	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	80	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	81	SURFACE COLLECTION #3	0	0	CHIPPED STONE	SCRAPER	MODIFIED
CA-ORA-710	82	SURFACE COLLECTION #3	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	83	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	84	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	85	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	86	UNIT 1	0	10	CHIPPED STONE	CORE	SPENT
CA-ORA-710	87	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	88	UNIT 1	10	20	CHIPPED STONE	CORE	SPENT
CA-ORA-710	89	UNIT 1	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	90	UNIT 1	10	20	CHIPPED STONE	CORE	
CA-ORA-710	91	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	92	UNIT 1	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	93	UNIT 1	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	94	UNIT 1	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	95	UNIT 1 - FEATURE 1	20	30	CHIPPED STONE	CORE	
CA-ORA-710	96	UNIT 1 - FEATURE 1	20	30	GROUND STONE	METATE	SLAB
CA-ORA-710	97	UNIT 1 - FEATURE 1	20	30	GROUND STONE	METATE	SLAB
CA-ORA-710	98	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	99	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	100	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	101	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	102	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	103	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	104	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	105	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	106	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	107	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	108	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	109	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	110	UNIT 2 - FEATURE	10	20	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	111	UNIT 2 - FEATURE	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	112	UNIT 2 - FEATURE	10	20	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-710	113	UNIT 2 - FEATURE	10	20	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-710	114	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	115	UNIT 2	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	116	UNIT 2	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	117	UNIT 2 - FEATURE 2	30	40	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	118	UNIT 2 - FEATURE 2	30	40	SAMPLE	SOIL	FROM UNDER CATALOG #117
CA-ORA-710	119	UNIT 2 - FEATURE 2	30	40	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	121	UNIT 2 - FEATURE 2	30	40	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	122	UNIT 2 - FEATURE 2	30	40	GROUND STONE	METATE	SLAB
CA-ORA-710	123	UNIT 2 - FEATURE 2	30	40	SAMPLE	SOIL	FROM UNDER CATALOG #122

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
80	CHERT	N	1	NIBBLED	Y	N	3 18	N	1.88	N	0 73	N	3.82	-
81	METAVOLCANIC/P-A	N	0	-	Y	N	8 64	N	4 65	N	3.05	N	105 69	-
82	METASEDIMENTARY	N	0	-	N	N	4 73	N	3 25	N	1.91	N	30 58	-
83	CHERT	N	0	-	N	N	1 85	N	1.19	N	0 29	N	0 64	-
84	CHERT	N	0	-	N	N	2 22	N	1 71	N	2.13	N	4 55	FITS WITH #86
85	METASEDIMENTARY	N	0	-	N	N	8 1	N	6 32	N	3 52	N	178 66	-
86	CHERT	N	0	-	N	N	3 34	N	2 45	N	1.76	N	16,51	FITS WITH # 84
87	10 YR 4/4	N	0	-	N									-
88	CHERT	N	0	-	Y	N	1 98	N	1 94	N	1.73	N	10 21	-
89	CHERT	N	0	-	Y	N	2 04	N	1 39	N	0 52	N	1 27	-
90	JASPER	N	0	-	N	N	6 53	N	5 26	N	3 79	N	132.65	-
91	10 YR 4/3	N	0	-										-
92	10 YR 4/3	N	0	-										-
93	10 YR 4/6	N	0	-										-
94	10 YR 6/6	N	0	-										-
95	METAVOLCANIC/P-A	N	0	-	N	N	7 12	N	5 62	N	4 26	N	194.6	BOTTOM DEPTH = 31 CM
96	SANDSTONE	N	0	-	N	N	25 5	N	25	N	5 7	N	4000	BOTTOM DEPTH = 33 CM
97	SANDSTONE	N	0	-	N	N	34 5	N	24	N	4 25	N	4700	BOTTOM DEPTH = 33 CM
98	CHERT	N	0	-	N	N	3 55	N	2 19	N	1 04	N	5.96	-
99	CHERT	N	1	NIBBLED	N	N	3.49	N	3 09	N	1 11	N	8.77	-
100	CHERT	N	0	-	N	N	1 78	N	0 97	N	0 41	N	0 75	-
101	CHERT	N	0	-	N	N	1 62	N	0 79	N	0 31	N	0 37	-
102	CHERT	N	0	-	N	N	0.86	N	0 54	N	0 12	N	0 04	-
103	CHERT	N	0	-	N	N	0 83	N	0 43	N	0 94	N	0 03	-
104	JASPER	N	0	-	N	N	1 25	N	1.15	N	0 2	N	0 3	-
105	CHERT	N	0	-	N	N	1 06	N	1 06	N	0 09	N	0 12	-
106	CHERT	N	0	-	N	N	1 19	N	0 6	N	0 18	N	0 13	-
107	METAVOLCANIC/P-A	N	0	-	N	N	0 84	N	0 71	N	0 24	N	0 13	-
108	METAVOLCANIC/P-A	N	0	-	N	N	0 72	N	0 61	N	0 14	N	0 06	-
109	10 YR 4/3	N	0	-										-
110	PORPHYRY	N	0	-	N	Y	6 09	Y	5 32	Y	3 03	Y	99 86	-
111	10 YR 4/3	N	0	-										-
112	METAVOLCANIC/P-A	N	0	-	Y	N	6 96	N	6 51	N	3.69	N	200 11	BOTTOM DEPTH = 19 CM
113	METAVOLCANIC/P-A	N	1	WORN	N	N	8 69	N	5.57	N	3 5	N	146 43	BOTTOM DEPTH = 16 CM
114	CHERT	N	0	-	Y	N	2 1	N	1.83	N	0 75	N	2 28	-
115	10 YR 4/4	N	0	-										-
116	10 YR 4/4	N	0	-										-
117	GRANITIC	N	2	POLISH	Y	N	10 4	Y	9 07	N	5 26	N	627 5	BOTTOM DEPTH = 48 CM
118		N	0	-										-
119	GRANITIC	N	0	-	N	Y	7.2	Y	5 85	N	3 67	N	179.73	BOTTOM DEPTH = 44 CM
121	GRANITIC	N	1	POLISH	Y	Y	6 34	Y	4 69	Y	4 33	Y	91 12	BOTTOM DEPTH = 46 CM
122	GRANITIC	N	1	POLISH	Y	Y	7 99	Y	5 81	Y	4.78	Y	238 1	BOTTOM DEPTH = 41 CM
123		N	0	-										-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	124	UNIT 2 - FEATURE 2	30	40	CHIPPED STONE	CHOPPER	
CA-ORA-710	125	UNIT 2	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	126	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	127	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	128	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	129	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	136	UNIT 3 - FEATURE 1	20	30	GROUND STONE	/MANO	BIFACIAL, INCOMPLETE
CA-ORA-710	137	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	138	UNIT 4	0	10	CHIPPED STONE	SOIL	LEVEL
CA-ORA-710	139	UNIT 4	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	140	UNIT 4	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	141	UNIT 4	30	40	SAMPLE	SOIL	
CA-ORA-710	142	UNIT 4	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	143	UNIT 4 - FEATURE 1	40	50	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	144	UNIT 4	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-710	145	UNIT 5	10	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	146	UNIT 5	10	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	147	UNIT 5	10	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	148	UNIT 5	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	149	UNIT 5	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	150	UNIT 5	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	151	UNIT 5	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	152	UNIT 5	30	40	SAMPLE	CARBON	
CA-ORA-710	153	UNIT 5	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	154	UNIT 5	40	50	FAUNAL	MAMMAL, LARGE	
CA-ORA-710	155	UNIT 5	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	156	UNIT 6	0	10	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	157	UNIT 6	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	158	UNIT 6	10	20	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	159	UNIT 6	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	160	UNIT 6	20	30	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-710	161	UNIT 6	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	162	UNIT 6	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	163	UNIT 7	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	164	UNIT 7	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	165	UNIT 7	0	10	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	166	UNIT 7	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-710	167	UNIT 7	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	168	UNIT 7	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-710	169	UNIT 7	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	170	UNIT 7	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-710	171	UNIT 7	30	40	CHIPPED STONE	HAMMERSTONE	
CA-ORA-710	172	UNIT 7	40	50	CHIPPED STONE	CHOPPER	

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
124	QUARTZITE	N	1	BATTERED	N	N	9.72	N	5 04	N	3 56	N	182 7	-
125	10 YR 3/4	N	0	-										-
126	CHERT	N	0	-			2 74		1 39		0.84		3 01	-
127	CHERT	N	0	-			0 96		0 96		0.76		0.85	-
128	METAVOLCANIC/P-A	N	0	-			3 27		2 11		0 52		3.59	-
129	10 YR 4/3	N	0	-										-
136	GRANITIC	N	0	-			14 8		9 37		5.52		1135.3	BOTTOM DEPTH = 30 CM
137	CHERT	N	2	FLAKED	Y		1 96				2 65		3 26	-
138	10 YR 5/3	N	0	-										-
139	10 YR 5/3	N	0	-										-
140	10 YR 3/3	N	0	-										-
141	10 YR 3/3	N	0	-										-
142	10 YR 4/4	N	0	-										-
143	GRANITIC	N	0	-	Y		10 52		4 63		3 58		238.1	-
144	10 YR 4/4	N	0	-										-
145	JASPER	N	0	-			1 35		0 94		0 37		0 44	-
146	QUARTZITE	N	0	-			2 84		2 07		0 99		6 07	-
147	10 YR 4/3	N	0	-										-
148	10 YR 4/3	N	0	-										-
149	CHERT	N	0	-			1.36		1.13		0 45		0.55	-
150	10 YR 4/3	N	0	-										-
151	CHERT	N	0	-			1 26		1 4		0 56		1 17	-
152	CARBON	N	0	-							0.05			-
153	10 YR 3/4	N	0	-										-
154	BONE	N	0	-									19 01	10 PIECES
155	10 YR 5/4	N	0	-										-
156	QUARTZITE	N	0	-			6 43		5 32		4 05		207 4	-
157	10 YR 4/3	N	0	-										-
158	GRANITIC	N	0	-	Y	N	4 76	Y	3 83	Y	3.47	Y	92 6	-
159	10 YR 3/3	N	0	-										-
160	GRANITIC	N	0	-	N	N							136 51	UNABLE TO MEASURE - IN 14 PIECES
161	10 YR 3/3	N	0	-										-
162	10 YR 4/6	N	0	-										-
163	CHERT	N	0	-	N	N	1 98	N	1 27	N	0 9	N	1 56	-
164	10 YR 4/3	N	0	-										-
165	QUARTZITE	N	0	-	N	N	7 98	N	6 33	N	4 44	N	310 7	-
166	METASEDIMENTARY	N	0	-	N	N	5 73	N	4 24	N	1 61	N	34 97	-
167	10 YR 4/4	N	0	-										-
168	CHERT	N	3	WORN NIBBLED			2 64		2 53		0 97		7 45	NUMBER OF MODIFIED EDGES IS "3-4"
169	10 YR 4/4	N	0	-										-
170	10 YR 4/4	N	0	-										-
171	METASEDIMENTARY	N	0	-			7 91		6 51		4 44		288.6	BOTTOM DEPTH = 38 CM
172	METAVOLCANIC/P-A	N	0	-			7 19		6 18		3.46		153 48	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-710	173	UNIT 7	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-710	174	UNIT 7	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-710	175	UNIT 7	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-710	176	UNIT 7	50	60	GROUND STONE	HAMMERSTONE	
CA-ORA-710	177	UNIT 7	50	60	CHIPPED STONE	SCRAPER	MODIFIED
CA-ORA-710	178	UNIT 8	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-710	179	UNIT 8	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-710	180	UNIT 8	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-710	181	UNIT 8	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	1	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	2	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	4	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	5	SURFACE COLLECTION	0	0	CHIPPED STONE	UNIFACE	
CA-ORA-711	6	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-711	7	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	8	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	9	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	10	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	11	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	12	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-711	12	SURFACE COLLECTION	0	0	CHIPPED STONE	SCRAPER	PLANE
CA-ORA-711	13	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	14	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	15	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	16	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	17	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	18	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	19	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	20	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	21	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	22	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	23	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-711	24	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	25	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	BIFACE	
CA-ORA-711	26	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	27	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	28	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	29	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	30	NO PROVENIENCE	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	36	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	37	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	38	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
173	10 YR 3/4	N	0 -										-	
174	METAVOLCANIC/P-A	N	0 -		Y		8.27		6 35		3.25		206 3	BOTTOM DEPTH = 47 CM
175	10 YR 3/4	N	0 -										-	
176	GRANITIC	N	0 -				8 08		6 05		5 77		315 5	-
177	METAVOLCANIC/P-A	N	1	FLAKED	Y		10.27		6 62		3 69		311 8	-
178	10 YR 4/3	N	0 -										-	
179	10 YR 4/4	N	0 -										1 -	
180	10 YR 3/4	N	0 -										-	
181	10 YR 3/4	N	0 -										-	
1	GRANITIC	N	1	BATTERED	N	N	12 31	Y	10 05	N	5 26	N	1104 6	-
2	GRANITIC	N	1	BATTERED/GROU	N	Y	13 31	Y	8 87	Y	4.77	N	714 5	-
3	PORPHYRY	N	3	BATTERED	N	N	11.42	N	8 33	N	5 75	N	772 5	-
4	CHERT	N	0 -		N	N	1 64	N	0.86	N	0 38	N	0 69	-
5	METAVOLCANIC/P-A	N	2	EDGEWEAR	N	N	4 89	N	3 32	N	1 03	N	19 89	-
6	METAVOLCANIC/P-A	N	3	BATTERED	N	Y	8 09	N	6 91	N	5 27	N	349 8	-
7	METAVOLCANIC/P-A	N	0 -		N	N	3 27	N	1 75	N	1.11	N	5 58	-
8	CHERT	N	0 -		Y	N	4 59	N	2 93	N	1 99	N	21 44	-
9	CHERT	N	1	EDGEWEAR	N	N	7 61	N	3 44	N	2 09	N	39 5	-
10	METAVOLCANIC/P-A	N	0 -		N	N	9 72	Y	7 41	Y	6 07	Y	520.1	-
11	METAVOLCANIC/P-A	N	2	EDGE WEAR	N	N	6 7	N	4 95	N	1 41	N	42 58	-
12	PORPHYRY	N	0		N	N	9 72	N	9 13	N	5.75	N	489 5	-
12	PORPHYRY	Y	1	EDGE WEAR	N	N	9 72	N	9 13	N	5 75	N	489 5	POSSIBLE BATTERING ON 1 EDGE
13	GRANITIC	N	1 -		N	Y	12 09	N	9 67	Y	5 14	Y	789 4	-
14	OUARTZITE	N	0 -		N	N	3.62	N	2 13	N	1 43	N	7 49	-
15	SANDSTONE	N	0 -		N	Y	9 06	Y	8 46	Y	5 76	Y	410 5	POSSIBLE BATTERING
16	METAVOLCANIC/P-A	N	0 -		N	N	2 23	N	1 49	N	0 71	Y	1 81	-
17	CHERT	N	0 -		N	N	1 78	N	1 28	N	1 31	N	3 02	-
18	GRANITIC	N	1	BATTERED	N	Y	13 57	N	9 6	Y	8 68	Y	1491 5	POSSIBLE BATTERING
19	CHERT	N	0 -		N	N	5 65	N	4.16	N	1 46	N	34 87	-
20	SANDSTONE	N	0 -		N	N	11 83	N	10 81	N	6.89	N	1264 6	-
21	CHERT	N	1	SCRAPING	N	N	3 2	N	2 63	N	0 71	N	4 93	-
22	CHERT	N	0 -		N	N	1 63	N	1 08	N	0 37	N	0 59	-
23	METAVOLCANIC/P-A	N	4	BATTERED	N	N	10 89	N	10 53	N	8 45	N	1264 2	-
24	GRANITIC	N	0 -		N	N	4 37	N	8 56	N	4 97	N	230 3	-
25	CHERT	N	1	EDGE WEAR	N	N	3 45	N	2.11	N	0 75	N	6 94	-
26	GRANITIC	N	0 -		N	N	12 73	Y	9 93	N	5 05	N	859 4	-
27	GRANITIC	N	0 -		N	N	5 59	Y	7 47	Y	5 61	Y	243 4	-
28	GRANITIC	N	1	BATTERED	N	N	9 95	N	8 69	N	6 12	N	727 2	-
29	CHERT	N	2	WORN	N	N	3 99	N	2 72	N	1 22	N	11 39	-
30	CHERT	N	0 -		N	N	3 71	N	2 35	N	1 46	N	14 25	-
36	METAVOLCANIC/P-A	N	0 -		N	N	5 62	N	4 15	N	1 66	N	34 76	
37	METAVOLCANIC/P-A	N	0 -		N	N	3 22	N	2 18	N	0 7	N	3 96	IN 3 PIECES
38	CHERT	N	0 -		N	N	2 24	N	1 63	N	0 8	N	2 59	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	39	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	40	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	41	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	42	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	43	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	44	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	45	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	47	UNIT 2	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	48	UNIT 2	10	20	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	49	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	50	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	51	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	52	UNIT 2	20	30	CHIPPED STONE	HAMMERSTONE	MODIFIED
CA-ORA-711	53	UNIT 2	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	54	UNIT 2	20	30	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	55	UNIT 2	20	30	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	56	UNIT 2	20	30	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	57	UNIT 2	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	58	UNIT 2	20	30	GROUND STONE		INCOMPLETE
CA-ORA-711	59	UNIT 2	20	30	CHIPPED STONE	HAMMERSTONE	MODIFIED
CA-ORA-711	60	UNIT 2	20	30	GROUND STONE	METATE	
CA-ORA-711	61	UNIT 2	20	30	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	62	UNIT 2	20	30	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	63	UNIT 2	20	30	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	64	UNIT 2	20	30	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	65	UNIT 2	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	66	UNIT 2	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	67	UNIT 2	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	68	UNIT 2	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-711	71	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	72	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	74	UNIT 3	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	75	UNIT 3	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	77	UNIT 3	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	78	UNIT 3	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	79	UNIT 3	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	80	UNIT 3	30	40	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	81	UNIT 3	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	82	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	83	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	84	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	85	UNIT 3	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	86	UNIT 3	40	50	GROUND STONE	HAMMERSTONE	UNMODIFIED

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
39	CHERT	N	0	-	N	N	1 81	Y	1 65	N	0.64	N	1.5	IN 2 PIECES
40	CHERT	N	0	-	N	Y	1 97	N	1.31	N	1 14	N	2.37	-
41	CHERT	N	2	WORN	N	N	1 74	Y	1 77	N	0 41	N	1 4	-
42	CHERT	N	0	-	N	N	0 92	N	0 74	N	0.22	N	0 16	-
43	CHERT	N	0	-	N	N	1 65	Y	1 45	Y	0.49	Y	0 82	-
44	CHERT	N	0	-	N	N	1.68	Y	0 64	Y	0 39	Y	0 33	-
45	10 YR 5/3	N	0	-									/	-
47	METAVOLCANIC/P-A	N	0	-	N	N	1 75	Y	2 5	N	0 81	N	2 68	-
48	CHERT	N	2	WORN	Y	N	3 44	N	3 29	N	0 91	N	9 8	-
49	10 YR 4/3	N	0	-										BROWN/DARK BROWN
50	CHERT	N	0	-	N	N	2 54	N	2.33	N	0 97	N	4 92	FEATURE 1 SCREENED MATERIAL
51	QUARTZITE	N	0	-	N	N	2 58	N	2 28	N	1 05	N	4	FEATURE 1 SCREENED MATERIAL
52	METAVOLCANIC/P-A	N	4	BATTERED	N	N	7 97	N	5 79	N	3.07	Y	154 23	FEATURE 1 SCREENED MATERIAL
53	METAVOLCANIC/P-A	N	0	-	N	N	4 8	N	3.91	N	3.52	N	54 72	FEATURE 1 SCREENED MATERIAL
54	GRANITIC	N	0	-	N	Y	6 17	Y	5.26	Y	3 85	Y	130 91	FEATURE 1 SCREENED MATERIAL
55	PORPHYRY	N	0	-	N	Y	8 45	Y	5 54	Y	2 64	Y	140	ITEM TOO FRACTURED TO DETERMINE BIFACIAL
56	SANDSTONE	N	0	-	N	Y	6 62	Y	4 4	Y	4 01	Y	112.72	ITEM TOO FRACTURED TO DETERMINE BIFACIAL
57	10 YR 4/3	N	0	-										BROWN/DARK BROWN
58	GRANITIC	N	0	-	N	N	8 21	Y	5 8	Y	3 28	Y	148 19	ITEM 1
59	QUARTZITE	N	8	BATTERED	Y	N	5 58	N	5 2	N	4 73	N	127 92	ITEM 2
60	GRANITIC	N	2	WORN	Y	Y		Y		Y		Y	465.3	ITEM 3, 8 FRAGMENTS, TOO FRAGMENTED TO ME
61	GRANITIC	N	0	-	Y	Y	9 24	Y	6 83	Y	4 55	Y	337 5	ITEM 4
62	GRANITIC	N	0	-	Y	N	10 7	Y	7 08	N	5 12	N	534 8	ITEM 5
63	GRANITIC	N	0	-	Y	Y	8 69	Y	4.67	Y	4 16	Y	217 1	ITEM 6
64	GRANITIC	N	0	-	Y	Y	8 96	N	7 49	Y	5 99	Y	424.5	ITEM 7
65	QUARTZITE	N	0	-	N	N	1 53	N	0 61	N	0 33	N	0 3	-
66	10 YR 4/3	N	0	-										-
67	10 YR 4/3	N	0	-										-
68	10 YR 4/3	N	0	-										-
71	METAVOLCANIC/P-A	N	1	WORN	Y	N	5 21	N	3 08	N	1 3	N	18 93	-
72	10 YR 4/3	N	0	-										BROWN/DARK BROWN
74	METAVOLCANIC/A	N	0	-	N	N	0 69	N	0 34	N	0.14	N	0 03	-
75	METAVOLCANIC/P-A	N	0	-	N	N	1 29	N	0 77	N	0 41	N	0 39	-
77	METAVOLCANIC/P-A	N	0	-	N	N	1 35	N	0 59	N	0 15	N	0 12	-
78	10 YR 4/3	N	0	-										BROWN/DARK BROWN
79	10 YR 3/3	N	0	-										DARK BROWN
80	CHERT	N	0	-	N	N	0 86	Y	0.47	N	0 18	N	0 07	-
81	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
82	PORPHYRY	N	0	-	Y	N	6 07	N	4 71	Y	1 97	N	46 01	-
83	METAVOLCANIC/P-A	N	0	-	N	N	2.23	N	1 31	N	0 93	N	2 28	-
84	CHERT	N	0	-	Y	N	1 55	N	0 58	N	0 51	N	0 53	-
85	CHERT	N	0	-	N	N	1.03	N	0 47	N	0.23	N	0 1	-
86	QUARTZITE	N	1	BATTERED	N	N	0 54	N	2 93	N	2 13	N	46 92	NO FEATURE NUMBER

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	87	UNIT 3	40	50	GROUND STONE	MANO	INCOMPLETE
CA-ORA-711	88	UNIT 3	40	50	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	89	UNIT 3	40	50	SAMPLE	SOIL	ARTIFACT
CA-ORA-711	90	UNIT 3	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	91	UNIT 3	50	60	SAMPLE	SOIL	LEVEL
CA-ORA-711	92	UNIT 3	60	70	SAMPLE	SOIL	LEVEL
CA-ORA-711	93	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	94	UNIT 4	0	10	GROUND STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-711	94	UNIT 4	0	10	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	96	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	97	UNIT 4	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	100	UNIT 4	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	101	UNIT 4	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	103	UNIT 4	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	104	UNIT 4	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	105	UNIT 4	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	106	UNIT 4	30	40	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	107	UNIT 4	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	108	UNIT 4	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	108	UNIT 4	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	109	UNIT 4	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	110	UNIT 5	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	111	UNIT 5	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	112	UNIT 5	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	113	UNIT 5	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	114	UNIT 5	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	116	UNIT 6	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	117	UNIT 6	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	118	UNIT 6	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	119	UNIT 6	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	121	UNIT 7	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	122	UNIT 7	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	123	UNIT 7	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	124	UNIT 7	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	125	UNIT 7	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	126	UNIT 7	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	128	UNIT 8	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	129	UNIT 8	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	130	UNIT 8	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	131	UNIT 8	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	132	UNIT 8	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	133	UNIT 9	0	10	CHIPPED STONE	CORE	SPENT
CA-ORA-711	134	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
87	QUARTZITE	N	0	-	N	Y	8.15	Y	6 71	Y	3.06	Y	163 26	TOO FRAGMENTED TO DETERMINE WEAR
88	GRANITIC	N	2	BATTERED	N	N	12 94	N	10 13	N	4 47	N	837.1	NO FEATURE NUMBER
89		N	0	-										SOIL SAMPLE FROM UNDER MANO
90	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
91	10 YR 4/3	N	0	-										BROWN/DARK BROWN
92	10 YR 3/3	N	0	-										DARK BROWN
93	CHERT	N	0	-	Y	N	2.44	N	2 05	N	1 08	N	4 93	-
94	SCHIST	Y	2	BATTERED	Y	N	8 86	N	7.12	N	2 25	N	215 4	-
94	SCHIST	N	1	POLISH	Y	N	8 86	N	7 12	N	2 25	N	215.4	-
96	METAVOLCANIC/P-A	N	0	-	N	N	2 05	N	1.37	N	0 43	N	0 94	2 PIECES
97	CHERT	N	0	-	N	N	1.17	N	1 08	N	0 28	N	0.21	-
100	METAVOLCANIC/P-A	N	0	-	N	N	1 73	N	1 14	N	0 5	N	1 09	-
101	QUARTZITE	N	0	-	N	N	1 06	N	0.81	N	0 3	N	0 25	-
103	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
104	METAVOLCANIC/A	N	0	-	N	N	1.54	N	1 67	N	0.53	N	1.39	-
105	CHERT	N	0	-	N	N	0 78	N	0 41	N	0 31	N	0 14	-
106	SANDSTONE	N	1	BATTERED	Y	N	12 6	N	10 11	N	6 19	N	926.6	-
107	10 YR 3/3	N	0	-										DARK BROWN
108	PORPHYRY	N	1	BATTERED	N	N	6 07	N	5 03	N	3 13	N	104 7	-
108	PORPHYRY	N	1	BATTERED	N	N	6 07	N	5 03	N	3 13	N	104.7	-
109	10 YR 3/3	N	0	-										DARK BROWN
110	10 YR 3/3	N	0	-										DARK BROWN
111	10 YR 3/3	N	0	-										DARK BROWN
112	10 YR 3/3	N	0	-										DARK BROWN
113	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
114	10 YR 4/4	N	0	-										DARK YELLOWISH BROWN
116	10 YR 4/3	N	0	-										BROWN/DARK BROWN
117	10 YR 3/3	N	0	-										DARK BROWN
118	10 YR 3/3	N	0	-										DARK BROWN
119	10 YR 5/3	N	0	-										BROWN
121	10 YR 3/3	N	0	-										DARK BROWN
122	PORPHYRY	N	1	WORN	N	N	4	N	1 71	N	0 57	N	3.68	-
123	10 YR 3/2	N	0	-										VERY DARK GRAYISH BROWN
124	CHERT	N	0	-	N	N	2.35	N	1 99	N	0 41	N	1 35	-
125	10 YR 3/3	N	0	-										DARK BROWN
126	10 YR 3/3	N	0	-										DARK BROWN
128	10 YR 3/3	N	0	-										DARK BROWN
129	PORPHYRY	N	0	-	Y		1 68	N	1 55	N	0 46	N	0.75	-
130	10 YR 3/3	N	0	-										DARK BROWN
131	10 YR 3/3	N	0	-										DARK BROWN
132	10 YR 3/3	N	0	-										DARK BROWN
133	CHERT	N	0	-	Y	N	4 88	N	4 38	N	2 73	N	45 31	-
134	CHERT	N	0	-	N	N	1 92	N	1 78	N	1.18	N	4 51	IN 2 PIECES

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	135	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	136	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	137	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	138	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	139	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	140	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	141	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	142	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	143	UNIT 9	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	144	UNIT 9	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	145	UNIT 9	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	146	UNIT 9	10	20	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	147	UNIT 9	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	148	UNIT 9	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	148	UNIT 9	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	149	UNIT 9	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	149	UNIT 9	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	151	UNIT 9	30	40	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	152	UNIT 9	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	153	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	154	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	155	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	156	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	157	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	158	UNIT 9	40	50	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	159	UNIT 9	40	50	GROUND STONE	METATE	UNIFACIAL, INCOMPLETE
CA-ORA-711	160	UNIT 9	40	50	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-711	161	UNIT 9	40	50	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	162	UNIT 9	40	50	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	163	UNIT 9	40	50	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	164	UNIT 9	40	50	GROUND STONE	MANO	UNIFACIAL
CA-ORA-711	165	UNIT 9	40	50	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	165	UNIT 9	40	50	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	166	UNIT 9	40	50	CHIPPED STONE	CORE	SPENT
CA-ORA-711	167	UNIT 9	40	50	SAMPLE	SOIL	LEVEL
CA-ORA-711	168	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	169	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	170	UNIT 10	0	10	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	171	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	172	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	173	UNIT 10	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	174	UNIT 10	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	175	UNIT 10	10	20	SAMPLE	SOIL	LEVEL

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
135	CHERT	N	0	-	N	N	1 1	N	0 83	N	0.28	N	0 21	-
136	CHERT	N	0	-	N	N	1 61	N	1.31	N	0 35	N	0 54	-
137	CHERT	N	0	-	N	N	1 58	N	1 02	N	0 59	N	0.84	-
138	METAVOLCANIC/A	N	0	-	N	N	1 14	N	1.03	N	0 65	N	1 07	-
139	METAVOLCANIC/A	N	0	-	N	N	1 81	N	1 42	N	0 59	N	1 47	-
140	METAVOLCANIC/P-A	N	0	-	N	N	1 66	N	1 42	N	0.61	N	1.39	-
141	METAVOLCANIC/A	N	0	-	N	N	0 63	N	0.73	N	0 17	N	0,08	-
142	METAVOLCANIC/A	N	0	-	N	N	0 73	N	0 43	N	0.23	N	0 07	-
143	QUARTZITE	N	0	-	N	N	1 83	N	0 78	N	0 41	N	0.55	-
144	10 YR 3/3	N	0	-										DARK BROWN
145	CHERT	N	0	-	N	N	1 37	Y	0 69	Y	0.46	N	0.37	-
146	PORPHYRY	N	0	-	N	N	2 63	N	2 26	N	0 83	N	4 6	-
147	10 YR 4/3	N	0	-										BROWN/DARK BROWN
148	CHERT	N	0	-	N	N	1 02	N	0 83	N	0.76	N	0 93	-
148	CHERT	N	0	-	N	N	1 02	N	0 83	N	0 76	N	0 93	-
149	10 YR 4/3	N	0	-										-
149	10 YR 4/3	N	0	-										BROWN/DARK BROWN
151	QUARTZITE	N	0	-	N	Y	2 81	Y	2 41	Y	0 67	N	4 01	6 PIECES
152	10 YR 4/3	N	0	-										BROWN/DARK BROWN
153	PORPHYRY	N	1	BATTERED	Y	N	6 1	N	4 38	N	3 35	N	66 3	NOT MAPPED
154	QUARTZITE	N	0	-	N	N	4.54	N	2 55	N	1 49	N	18 81	NOT MAPPED
155	METAVOLCANIC/P-A	N	0	-	N	N	2 38	N	1 63	N	0 85	N	3 38	NOT MAPPED
156	CHERT	N	0	-	N	N	1.54	N	1 33	N	0 85	N	1.41	NOT MAPPED
157	CHERT	N	0	-	N	N	1 39	N	0 75	N	0 26	N	0 24	NOT MAPPED
158	QUARTZITE	N	0	-	N	N	8 66	N	6 14	N	3 63	N	214 9	-
159	PORPHYRY	N	0	-	N	N	6 74	Y	4 23	Y	5 9	Y	210 2	FRAGMENTS
160	QUARTZITE	N	2	BATTERED	Y	N	11 21	N	7 29	N	7 2	N	477.1	-
161	PORPHYRY	N	2	BATTERED	N	N	12 6	N	9.55	N	6.76	N	934 9	-
162	SANDSTONE	N	0	-	Y	N	8 51	N	6 99	N	4 26	N	295 3	-
163	PORPHYRY	N	2	BATTERED	N	N	6 92	N	4.27	N	2 93	N	130 38	-
164	QUARTZITE	N	1	BATTERED	Y	N	5 19	Y	6 75	Y	3 71	Y	194 91	-
165	QUARTZITE	Y	2	BATTERED	Y	N	9.9	N	8 42	N	4 79	N	615 6	-
165	QUARTZITE	N	2	BATTERED	Y	N	9 9	N	8 42	N	4 79	N	615 6	2 PIECES
166	CHERT	N	0	-	Y	N	3 84	Y	3 85	Y	3 1	Y	63 29	-
167	10 YR 4/3	N	0	-										BROWN/DARK BROWN
168	CHERT	N	1	WORN	N	N	1 53	N	0 71	N	0 23	N	0 26	-
169	CHERT	N	1	NIBBLED	N	N	3 13	N	1 78	N	0 71	N	3 89	-
170	GRANITIC	N	0	-	N	N	3 33	Y	2 25	Y	1.84	Y	18 05	2 PIECES
171	CHERT	N	0	-	Y	N	2 01	N	1 39	N	0 84	N	1 65	-
172	METAVOLCANIC/P-A	N	1	RETOUCHED	N	N	2 34	Y	1 64	Y	0 58	Y	2 4	-
173	CHERT	N	0	-	Y	N	3.24	N	2.24	N	1 47	N	9 5	-
174	10 YR 4/3	N	0	-										-
175	10 YR 4/3	N	0	-										-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	176	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	177	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	178	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	179	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	180	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	181	UNIT 10	20	30	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	182	UNIT 10	20	30	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	182	UNIT 10	20	30	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	183	UNIT 10	20	30	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-711	183	UNIT 10	20	30	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	184	UNIT 10	20	30	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	185	UNIT 10	20	30	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-711	186	UNIT 10	20	30	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-711	187	UNIT 10	20	30	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-711	188	UNIT 10	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	189	UNIT 11	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	190	UNIT 11	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	191	UNIT 11	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-711	192	UNIT 11	10	20	GROUND STONE	MANO	BIFACIAL
CA-ORA-711	193	UNIT 11	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-711	194	UNIT 11	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-711	195	UNIT 11	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-711	196	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	197	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	198	UNIT 12 - NO DEPTH CONTROL			GROUND STONE		
CA-ORA-711	199	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	200	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	201	UNIT 12 - NO DEPTH CONTROL			GROUND STONE	METATE	
CA-ORA-711	202	UNIT 12 - NO DEPTH CONTROL			CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	203	UNIT 12 - NO DEPTH CONTROL			SAMPLE	SOIL	LEVEL
CA-ORA-711	204	UNIT 12 - FEATURE 1			GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	205	UNIT 12 - FEATURE 1			GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	206	UNIT 12 - FEATURE 1			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	207	UNIT 12 - FEATURE 1			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	208	UNIT 12 - FEATURE 1			GROUND STONE	METATE	SLAB
CA-ORA-711	209	UNIT 12 - FEATURE 1			GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-711	211	OUTSIDE OF FENCE, COLLECTED AFTER PASS			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	212	OUTSIDE OF FENCE, COLLECTED AFTER PASS			GROUND STONE	MANO	BIFACIAL
CA-ORA-711	213	OUTSIDE OF FENCE, COLLECTED AFTER PASS			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	214	OUTSIDE OF FENCE, COLLECTED AFTER PASS			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	215	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-711	216	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	217	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	DEBITAGE	SHATTER

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
176	CHERT	N	0	-	N	N	2.29	Y	1.54	Y	0 76	Y	1 96	NOT MAPPED
177	METAVOLCANIC/P-A	N	0	-	N	N	4 65	Y	3 93	Y	1 29	Y	19 35	NOT MAPPED, 5 PIECES
178	METAVOLCANIC/P-A	N	0	-	N	N	5 18	N	4 28	N	2 67	N	50.64	NOT MAPPED
179	METAVOLCANIC/P-A	N	0	-	Y	N	5 67	N	3 41	N	1 42	N	31 4	NOT MAPPED
180	CHERT	N	0	-	N	N	1.8	N	1 42	N	0.68	N	1 51	NOT MAPPED
181	PORPHYRY	N	0	-	N	Y	11 16	Y	5 28	Y	1.72	Y	85.03	NOT MAPPED, 2 PIECES
182	METAVOLCANIC/P-A	Y	0	-	N	N	8 72	N	6 18	N	4 89	N	333 8	-
182	METAVOLCANIC/P-A	N	0	-	N	N	8 72	N	6 18	N	4 89	N	333 8	-
183	METAVOLCANIC/P-A	Y	0	-	N	N	8 47	N	7 48	N	4 67	N	326 9	-
183	METAVOLCANIC/P-A	N	0	-	N	N	8 47	N	7 48	N	4 67	N	326 9	-
184	CHERT	N	0	-	Y	N		Y		Y		Y	57.28	IN 3 PIECES
185	METAVOLCANIC/P-A	N	1	BATTERED	Y		9 13	N	7 05	N	5 54	Y	421 4	3 PIECES OF 1 ARTIFACT
186	METAVOLCANIC/A	N	2	BATTERED	N		7 39	N	5.95	N	5 42	N	220 6	-
187	GRANITIC	N	0	-	N		7 61	Y	10 84	Y	7 77	N	1034 6	-
188	10 YR 3/3	N	0	-										-
189	CHERT	N	0	-	Y	N	3.35	N	2 46	N	0 96	N	7 87	2 FRAGMENTS OF 1
190	METAVOLCANIC/P-A	N	0	-	N	N	1 67	N	1 35	N	0 51	N	1 15	-
191	10 YR 4/3	N	0	-										-
192	GRANITIC	N	0	-	N	N	10 64	N	9 56	N	6 8	N	944 6	-
193	10 YR 4/3	N	0	-										-
194	10 YR 4/3	N	0	-										-
195	10 YR 4/3	N	0	-										-
196	CHERT	N	1	RETOUCHED	N	N	2 05	N	1 54	N	0 59	N	1 55	-
197	CHERT	N	0	-	N	N	2 08	N	1 08	N	0.84	N	2	-
198	GRANITIC	N	0	-	N	Y		Y		Y		Y	73 76	11 PIECES, PROBABLY FIT TOGETHER, COULDN'T
199	METAVOLCANIC/P-A	N	1	FLAKED	N	N	2 82	N	1 17	N	0 76	N	1 39	-
200	QUARTZITE	N	0	-	N	N	5 86	N	5 1	N	1 84	N	58 61	-
201	SANDSTONE	N	0	-	N	N	11 89	Y	10.94	Y	7 2	Y	1060 2	-
202	QUARTZITE	N	0	-	N	N	1 81	N	1 27	N	0 83	N	1 4	-
203		N	0	-										*MISSING
204	GRANITIC	N	0	-	N	N	9 27	Y	7 13	Y	3 14	Y	260 5	-
205	SANDSTONE	N	0	-	N	N	13.22	N	9 91	N	5 28	N	980 4	SHAPED
206	GRANITIC	N	0	-	N	N	12 45	N	13 34	N	5 08	N	1071 5	-
207	GRANITIC	N	0	-	N	N	7 51	Y	5 41	Y	5 43	Y	245	-
208	SANDSTONE	N	0	-	N	N	47 6	N	40 1	N	9 7	N	30000	-
209	GRANITIC	N	0	-	N	N	4 53	Y	4 5	Y	2 81	Y	86 87	-
211	GRANITIC	N	0	-	N	N	10 91	N	7 69	N	4 86	N	633.7	-
212	GRANITIC	N	0	-	N	N	9 65	Y	4 51	Y	5 52	Y	340 3	-
213	QUARTZITE	N	1	NIBBLED	N	N	3 69	N	3 81	N	1 81	N	31 48	-
214	METAVOLCANIC/A	N	0	-	N	N	10 19	N	6 86	N	4.96	N	315 2	-
215	CHERT	N	0	-	Y	N	2 82	N	2 69	N	1 33	N	13 5	-
216	CHERT	N	1	FLAKED	Y	N	3 06	N	2 39	N	0 99	N	5 77	-
217	CHERT	N	1	FLAKED	N	N	3 66	N	3 16	N	1 99	N	17 7	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-711	218	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	219	ROAD COLLECTION AFTER GRADER			CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-711	220	COLLECTED IN BORING AREA			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	221	FROM ROAD AFTER BULLDOZER DROVE OVER			CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-711	222	FROM ROAD AFTER BULLDOZER DROVE OVER			CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-711	223	FROM ROAD AFTER BULLDOZER DROVE OVER			GROUND STONE	METATE	
CA-ORA-711	224	FROM ROAD AFTER BULLDOZER DROVE OVER			GROUND STONE	/HAMMERSTONE	MODIFIED
CA-ORA-711	224	FROM ROAD AFTER BULLDOZER DROVE OVER			GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-711	225	NO PROVENIENCE			HISTORIC	MILL BALL	
CA-ORA-711	226	UNIT 2	0	10	SAMPLE	SOIL	COLUMN
CA-ORA-711	227	UNIT 2	10	20	SAMPLE	SOIL	COLUMN
CA-ORA-711	228	UNIT 2	20	30	SAMPLE	SOIL	COLUMN
CA-ORA-711	229	UNIT 2	30	40	SAMPLE	SOIL	COLUMN
CA-ORA-711	230	UNIT 2	40	50	SAMPLE	SOIL	COLUMN
CA-ORA-711	231	UNIT 2	50	60	SAMPLE	SOIL	COLUMN
CA-ORA-711	232	UNIT 2 - POSTHOLE	100	100	SAMPLE	SOIL	POSTHOLE
CA-ORA-713	1	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	2	SURFACE COLLECTION	0	0	GROUND STONE	CHOPPER	
CA-ORA-713	2	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	4	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	5	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	6	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-713	7	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-713	8	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	9	SURFACE COLLECTION	0	0	GROUND STONE	METATE	BASIN
CA-ORA-713	10	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	11	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	12	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	UNIDIRECTIONAL
CA-ORA-713	13	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-713	14	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-713	15	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-713	16	UNIT 1	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-713	17	UNIT 1	30	40	SAMPLE	SOIL	LEVEL
CA-ORA-713	18	UNIT 2	1	10	SAMPLE	SOIL	LEVEL
CA-ORA-713	19	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-713	20	UNIT 2 (HALF LEVEL)	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-713	21	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-713	22	UNIT 3	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-713	24	UNIT 3	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-713	25	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-713	26	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-713	27	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
218	METAVOLCANIC/P-A	N	0	-	Y	N	10.4	N	8 99	N	3 3	N	302	-
219	METAVOLCANIC/P-A	N	0	-	Y	N	7.88	N	6 12	N	3 8	N	244 3	-
220	QUARTZITE	N	1	NIBBLED	N	N	6 61	N	4 5	N	2 08	N	66 37	-
221	CHERT	N	0	-	N	N	5 7	N	4 22	N	2 5	N	66 82	-
222	METAVOLCANIC/P-A	N	1	NIBBLED	Y	N	6 04	N	5 15	N	1 89	N	63 49	-
223	PORPHYRY	N	1	POLISH	N	N	12 34	Y	8 08	Y	8 77	N	1444.8	2 PIECES OF 1
224	GRANITIC	Y	2	BATTERED	Y	N	11 3	Y	7 45	Y	8 67	Y	864.1	-
224	GRANITIC	N	0	-	Y	N	11 3	Y	7 45	Y	8 67	Y	864.1	-
225		N	0	-		N	1 9	N	1 9	N	1 9	N	7 65	USED IN CLAY PROCESSING
226		N	0	-										-
227		N	0	-										-
228		N	0	-										-
229		N	0	-										-
230		N	0	-										-
231		N	0	-										-
232	10 YR 5/4	N	0	-										-
1	PORPHYRY	N	1	BATTERING	Y	Y	8 01	Y	9 95	Y	6 16	N	579 8	SURFACE LIGHTLY POLISHED
2	GRANITIC	N	1	CRUSHED	Y	N	10 48	N	7 86	N	5 41	Y	584 2	RE-USED AS CHOPPER
2	GRANITIC	N	1	WORN	Y	N	10 48	N	7.86	N	5 41	Y	584 2	SURFACE LIGHTLY POLISHED
3	GRANITIC	N	1	BATTERING	Y	N	10 36	N	7	N	4.67	N	503 1	POSSIBLE CRUSHING ON EDGE
4	GRANITIC	N	0	-	N	N	11 73	N	9.15	N	6 68	N	953	VERY LIGHT POLISH
5	PORPHYRY	N	0	-	N	Y	7 6	N	4 34	N	2 99	N	125.44	-
6	METAVOLCANIC/P-A	N	0	-	Y	N	12 6	N	5 69	N	2 89	N	186.47	2 SHARP EDGES-NO CLEAR MODIFICATIONS
7	QUARTZITE	N	0	-	Y	N	5 29	N	3 34	N	1 3	N	29.54	-
8	GRANITIC	N	0	-	Y	Y	9 92	N	9 49	N	7.18	N	956 8	POSSIBLE BATTERING
9	GRANITIC	N	0	-	N	N	22 2	Y	19	Y	14 5	N	6000	SURFACE MODERATELY POLISHED
10	GRANITIC	N	0	-	Y	N	7.9	Y	7 65	N	6 13	N	606 7	SURFACE LIGHTLY POLISHED
11	PORPHYRY	N	0	-	Y	N	5 71	Y	5 66	N	3 84	Y	162 64	SURFACE LIGHTLY POLISHED
12	METAVOLCANIC/P-A	N	0	-	Y	N	9.72	N	7 81	N	4.9	N	418 9	CRUDE CORTICAL PLATFORM
13	METAVOLCANIC/P-A	N	0	-	Y	N	7 44	N	6 42	N	4 81	N	222 4	CRUDE CORTICAL PLATFORM
14	10 YR 5/2	N	0	-										GRAYISH
15	10 YR 4/2	N	0	-										DARK GRAYISH BROWN
16	10 YR 4/3	N	0	-										BROWN/DARK BROWN
17	10 YR 4/3	N	0	-										BROWN/DARK BROWN
18	10 YR 5/4	N	0	-										YELLOWISH BROWN
19	10 YR 5/4	N	0	-										YELLOWISH BROWN
20	10 YR 5/4	N	0	-										YELLOWISH BROWN
21	10 YR 4/1	N	0	-										DARK GRAY
22	10 YR 4/1	N	0	-										DARK GRAY
24	10 YR 3/1	N	0	-										VERY DARK GRAY
25	METAVOLCANIC/P-A	N	1	NIBBLED	Y	N	5 16	N	4 45	N	1 77	N	40 26	-
26	PORPHYRY	N	0	-	Y	N	12.4	N	5 6	Y	7 26	Y	691 4	-
27	PORPHYRY	N	0	-	Y	N	13 6	N	8 09	N	5 58	N	853 9	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-713	28	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL
CA-ORA-713	29	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-713	30	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-713	31	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	SCRAPER	
CA-ORA-713	32	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-713	33	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-713	34	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-713	35	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	SCRAPER	
CA-ORA-713	36	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CORE	
CA-ORA-713	37	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	SCRAPER	
CA-ORA-713	38	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-714	1	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-714	2	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-714	3	SURFACE COLLECTION	0	0	GROUND STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-714	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-714	4	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-714	5	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-714	6	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-714	7	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-714	9	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	UNMODIFIED
CA-ORA-714	10	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-714	11	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	MODIFIED
CA-ORA-714	12	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-715	1	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	2	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	3	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	4	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	5	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	6	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	7	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	8	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	9	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	10	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	11	SURFACE COLLECTION	0	0	GROUND STONE		
CA-ORA-715	12	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	13	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	14	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	15	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-715	16	SURFACE COLLECTION	0	0	CHIPPED STONE	HAMMERSTONE	
CA-ORA-715	17	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	18	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	19	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	20	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
28	GRANITIC	N	0	-	N	N	7 7	N	7 06	N	3 79	N	292 3	-
29	GRANITIC	N	0	-	N	Y	10 53	Y	10 01	Y	5 36	N	836 4	-
30	GRANITIC	N	0	-	N	Y	5	Y	3 95	Y	4 91	Y	163 26	-
31	METAVOLCANIC/P-A	N	0	-	N	N	5 26	N	3.83	N	1 78	N	35.15	-
32	QUARTZITE	N	0	-	Y	N	6.6	N	2 96	N	1 71	N	42.52	-
33	METAVOLCANIC/P-A	N	1	WORN	Y	N	7.79	N	5 44	N	2.65	N	82 46	-
34	QUARTZITE	N	2	WORN, BATTERE	Y	N	8 85	N	8.12	N	3 94	N	230.8	-
35	GRANITIC	N	0	-	N	N	3 64	N	5 98	N	7 26	N	191 63	-
36	QUARTZITE	N	0	-	Y	N	10 08	N	7.51	N	3 84	N	348 5	-
37	METAVOLCANIC/A	N	1	WORN	N	N	6 92	N	6 36	N	3 47	N	219.5	-
38	GRANITIC	N	0	-	N	N	10 73	Y	8 56	Y	6 1	Y	827 6	-
1	PORPHYRY	N	3	BATTERED	N	N	11 44	N	9 45	N	3 96	N	721	BATTERED ON OUTER EDGES
2	PORPHYRY	N	1	BATTERED	Y	N	10 94	N	7.17	N	5 03	N	493 7	STRONG URINE SMELL ON ROCK
3	PORPHYRY	Y	3	BATTERED	N	N	14.02	N	9 37	N	6 33	N	1163 9	ALSO A MANO
3	PORPHYRY	N	0	-	N	N	14 02	N	9.37	N	6 33	N	1163 9	ALSO A HAMMERSTONE
4	METAVOLCANIC/P-A	N	1	FLAKED, BATTER	Y	N	9 93	N	6 54	N	3 38	N	230 1	FLAKES TAKEN OFF THE EDGE
5	METAVOLCANIC/P-A	N	2	BATTERED	N	N	7.09	N	5.08	N	4 15	N	194.5	-
6	PORPHYRY	N	0	-	N	N	9 15	Y	4 92	Y	2 58	Y	139 97	2 PIECES OF 1 FRAGMENT
7	QUARTZ	N	3	FLAKED, RETOUC	Y	N	6 45	N	5.23	N	3 03	N	102.74	2 FLAKE SCARS, TOOL?, 1 RETOUCHED EDGE
9	METAVOLCANIC/P-A	N	0	-	N	N	7 86	N	6 92	N	4 8	N	317 9	-
10	PORPHYRY	N	1	CRUSHED	N	N	8 74	N	6 74	N	2.95	N	233 4	-
11	PORPHYRY	N	2	NIBBLED	N	N	9 3	N	7 61	N	2 44	N	224.9	-
12	CHERT	N	0	-	Y	N	6 75	N	4 2	N	5 05	N	154 27	-
1	CHERT	N	0	-	Y	N	3 65	N	2 88	N	1 69	N	21 27	-
2	PORPHYRY	N	1	BATTERED	Y	N	9 72	Y	6 31	Y	4.34	Y	400 8	ONE SURFACE HAS A LARGE PIT
3	PORPHYRY	N	3	BATTERED	N	N	10 3	Y	9 52	Y	4 8	Y	700	POLISH EXTENDS ONTO ONE SIDE
4	SANDSTONE	N	4	CRUSHED	N	N	12 37	N	7 43	N	4 18	N	646.2	SHAPED
5	PORPHYRY	N	0	-	N	N	12 23	N	8.1	N	5.94	N	799.6	3 PIECES OF 1
6	METAVOLCANIC/P-A	N	2	NIBBLED	Y	N	4 3	N	3 62	N	1 27	N	17.03	UTILIZED FLAKE
7	CHERT	N	2	RETOUCHED	Y	N	3 24	N	2 13	N	1 23	N	6 01	1 RETOUCHED EDGE, 1 UTILIZED EDGE
8	CHERT	N	1	NIBBLED	N	N	3 62	N	2 91	N	1 34	N	13 98	1 UTILIZED EDGE
9	PORPHYRY	N	0	-	Y	N	6 32	Y	6 12	Y	4 9	N	272 6	-
10	PORPHYRY	N	1	BATTERED	N	N	10 34	N	8 85	N	4 78	N	567 9	-
11	QUARTZITE	N	1	POLISHED	N	N	7 36	N	3.65	Y	2 31	Y	103 97	-
12	METAVOLCANIC/P-A	N	1	BATTERED	N	N	12 45	Y	8 68	Y	6 26	Y	901 7	-
13	JASPER	N	0	-	N	N							2 83	4 FRAGMENTS OF 1 PIECE
14	PORPHYRY	N	0	-	N	N	5 08	Y	5 98	N	3 7	N	170 38	-
15	METAVOLCANIC/P-A	N	0	-	Y	N	8 4	N	7 89	N	4.14	N	298.7	-
16	METAVOLCANIC/P-A	N	1	BATTERED	Y	N	10 13	N	5 73	N	4 69	N	324 6	-
17	CHERT	N	1	RETOUCHED	Y	N	1 9	N	1 23	N	0 53	N	1.2	-
18	QUARTZITE	N	1	NIBBLED	N	N	3.29	N	2 17	N	0 9	N	6.84	-
19	METAVOLCANIC/P-A	N	0	-	N	N	5 27	N	3 5	N	1 46	N	17.64	-
20	QUARTZITE	N	0	-	N	N	8 81	Y	10 02	Y	5 32	N	816 4	-

Trinomial	Cat	Location	Top1	Bottom1	Subassemblage	Class	Type
CA-ORA-715	21	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	22	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	23	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-715	24	SURFACE COLLECTION	0	0	GROUND STONE		
CA-ORA-715	25	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	26	SURFACE COLLECTION	0	0	CHIPPED STONE	CORE	BIDIRECTIONAL
CA-ORA-715	27	SURFACE COLLECTION	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	28	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	29	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	UNIFACIAL, INCOMPLETE
CA-ORA-715	30	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	CHOPPER	UNMODIFIED
CA-ORA-715	31	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CORE	MULTIDIRECTIONAL
CA-ORA-715	32	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	33	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	AX	
CA-ORA-715	34	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	35	SURFACE COLLECTION AFTER DISCING	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	36	SURFACE COLLECTION AFTER DISCING	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	37	UNIT 1	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	38	UNIT 1	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	39	UNIT 1	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	40	UNIT 1	20	30	SAMPLE	SOIL	LEVEL
CA-ORA-715	41	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	42	UNIT 2	0	10	CHIPPED STONE	DEBITAGE	SHATTER
CA-ORA-715	43	UNIT 2	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	44	UNIT 2	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	45	SURFACE COLLECTION	0	0	CHIPPED STONE	CHOPPER	UNMODIFIED
CA-ORA-715	46	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL
CA-ORA-715	47	SURFACE COLLECTION	0	0	CHIPPED STONE	ANVIL	
CA-ORA-715	48	SURFACE COLLECTION	0	0	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	49	SURFACE COLLECTION	0	0	GROUND STONE	MANO	BIFACIAL, INCOMPLETE
CA-ORA-715	50	UNIT 3	0	10	CHIPPED STONE	DEBITAGE	FLAKE
CA-ORA-715	51	UNIT 3	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	52	UNIT 3	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	53	UNIT 4	0	10	SAMPLE	SOIL	LEVEL
CA-ORA-715	54	UNIT 4	10	20	SAMPLE	SOIL	LEVEL
CA-ORA-715	55	UNIT 4	20	30	SAMPLE	SOIL	LEVEL

Saddleback Meadows Catalog (2 sheets)

Cat	Material	Dup	No	Modification Type	Cort	Th	Length	P	Width	P	Thickness	P	Weight	Comments
21	METAVOLCANIC/P-A	N	1	NIBBLED	N	N	1 66	Y	1 5	Y	0 41	N	0 88	-
22	METAVOLCANIC/P-A	N	1	-	N	N	3	N	2 73	N	0 44	N	4 88	UTILIZED FLAKE
23	SANDSTONE	N	0	-	N	N	6 12	Y	7 21	N	3 8	N	270	SHAPED
24	PORPHYRY	N	0	-	Y	Y	12 5	Y	9 68	Y	5 6	Y	647.8	-
25	QUARTZ	N	0	-	N	N	8.58	Y	7 36	Y	5 4	Y	467	-
26	METAVOLCANIC/A	N	0	-	N	N	7 67	N	7 19	N	4.04	N	266 2	-
27	GRANITIC	N	0	-	N	N	12 35	Y	6 99	Y	6.39	N	915	-
28	PORPHYRY	N	1	WORN	N	N	9 85	Y	4.92	Y	61 62	Y	295 4	-
29	PORPHYRY	N	0	-	N	N	7 85	Y	9.67	N	4.96	N	548 4	-
30	METAVOLCANIC/P-A	N	1	WORN	N	N	8 28	N	4 44	N	4 87	N	259 3	-
31	METAVOLCANIC/P-A	N	0	-	Y	N	8 34	N	5 51	N	4 09	N	198 5	-
32	METAVOLCANIC/A	N	0	-	Y	N	3 65	N	2 59	N	2 29	N	27 72	-
33	QUARTZITE	N	1	BATTERED	Y	N	12.54	N	82 82	N	4 94	N	672 2	SHAPED
34	QUARTZITE	N	0	-	Y	N	13 65	N	11.69	N	6.19	N	1150 2	-
35	METAVOLCANIC/A	N	0	-	Y	N	2.59	N	2 46	N	0 75	N	4 17	-
36	QUARTZITE	N	1	PECKED	N	N	10 43	N	8.72	N	5 04	N	724 5	INTERESTING SHAPE
37	CHERT	N	0	-	Y	N	4 25	N	2 83	N	1.99	N	39 38	-
38	10 YR 5/3	N	0	-										-
39	10 YR 4/3	N	0	-										-
40	10 YR 4/3	N	0	-										-
41	CHERT	N	0	-	Y	N	1 92	N	1 13	N	1 13	N	2 82	-
42	CHERT	N	0	-	N	N	0.94	N	0 63	N	0 24	N	0.14	-
43	10 YR 5/4	N	0	-										-
44	10 YR 5/3	N	0	-										-
45	METAVOLCANIC/P-A	N	1	BATTERED	Y	N	71 02	N	58.57	N	2 53	N	119 95	-
46	PORPHYRY	N	0	-	N	N	13.69	N	8.95	N	61.33	N	1113 2	PECKED ON ONE SURFACE
47	METAVOLCANIC/P-A	N	1	BATTERED	N	N	10 51	N	10 96	N	5 61	N	827 1	-
48	METAVOLCANIC/P-A	N	1	NIBBLED	Y	N	8 26	N	6 37	N	2 9	N	158 6	-
49	PORPHYRY	N	0	-	Y	N	11 77	Y	9 63	Y	6.06	N	988 7	-
50	CHERT	N	1	NIBBLED	N	Y	1 09	N	1 01	N	0 56	N	0 6	-
51	10 YR 4/3	N	0	-										-
52	10 YR 4/4	N	0	-										-
53	10 YR 3/3	N	0	-										-
54	10 YR 3/3	N	0	-										-
55	10 YR 4/4	N	0	-										-

APPENDIX B
Personnel Resumes

RESUME

Ronald M. Bissell
24762 Via Del Rio
El Toro, California 92630
(714) 837-9582

EDUCATION

Master of Arts, Anthropology, Archaeological Emphasis
California State University, Fullerton, California, 1983

Master of Science, Library Science.
California State University, Fullerton, California, 1977.

Bachelor of Arts, Geology and History,
San Diego State University, San Diego, California, 1972

Introduction to Federal Projects and Historic Preservation Law.
Sponsored by the Advisory Council on Historic Preservation and the General Services Administration Training Center, 1989

EMPLOYMENT HISTORY

January 1986, Present. President, RMW Paleontological Associates, Incorporated, 23352 Madero, Suite J, Mission Viejo, California 92691 Duties include Principal Investigator responsibilities for all aspects of Cultural Resources Management projects

April 1983, January 1986. Independent Consultant performing archaeological assignments for clients in California

May 1976, April 1983 Information Specialist and Administrative Services Officer, Leighton and Associates, 1151 Duryea Avenue, Irvine, California 92714. Leighton and Associates is a geotechnical consulting firm.

March 1956, April 1976 United States Army. Rank at retirement was Major of Field Artillery.

CREDENTIALS

Certified by the Society of Professional Archaeologist as a Field Archaeologist

Certified as an Archaeologist by the County of Orange Environmental Management Agency. Also certified by the Counties of Ventura, Los Angeles, Riverside and San Bernardino, Kern, Kings, Fresno, Tulare, Madera and San Diego as well as various municipal agencies

California Community College credentials as Instructor in Anthropology, Library Science and Business Administration and as Chief Administrative Officer and Librarian

Certified as Open Water Scuba Diver by the Professional Association of Diving Instructors.

MEMBERSHIPS

Society of Professional Archaeologists
Pacific Coast Archaeological Society
Society for California Archaeology
Southwestern Anthropological Association
California Mission Studies Association
American Library Association
California Library Association
South Coast Geological Society

PUBLICATIONS

Archaeological Site CA-Ora-572, a Two Component Site in Fullerton, California. Master's Thesis on file at the Library, California State University, Fullerton, California.

A Previously Unrecognized Grinding Technology from CA-Ora-572 Paper presented to the Southwestern Anthropological Association, April 1983 Expanded version published in the Quarterly of the Pacific Coast Archaeological Society, Volume 19, Number 3, July 1983

Orange County's First Fairgrounds, 1890-1900 Proceedings of the Conference of Orange County History, 1989.

Archaeological Site CFA-Ven-630: A Solstice observatory in Simi Valley, Ventura County, California.

Archaeological Site CA-Ora-1058 Six Cairns in Orange County, California Proceedings of the Society for California Archaeology, Volume 7, 1994.

OTHER INFORMATION

Completed graduate level classes in Land Use Planning, Computer Programming and Statistical Analysis.

Army trained land surveyor. Organized and taught a two semester hour class in land survey for archaeologists at the Anthropology Department, California State University, Fullerton, California.

RESUME

Patrick O. Maxon
27292 Padilla
Mission Viejo, California 92691
Home: (714) 859-4209
Office: (714) 770-8042

EDUCATION

M A. Anthropology. 1994, California State University, Fullerton Concentration in Archaeology.
B.A Sociology/Psychology. 1987, Towson State University, Maryland.
University of Maryland, Munich Campus, Munich, Germany (one semester)

HONORS

Dean's List, National Honor Society for Sociology (1987), Varsity soccer (TSU), Scholar athlete.

EMPLOYMENT HISTORY

8-94 - present	Staff Archaeologist for RMW Paleo Associates. Responsibilities include project management, developing project proposals, conducting research, accomplishing field work (survey, excavation, monitoring) and completing technical reports
7-90 - 8-94	Behavioral Specialist/Job Trainer Vantage Foundation, Costa Mesa, California. Worked with a group of three developmentally disabled adults teaching daily life and employment skills and managing maladaptive behaviors
7-89 - 10-89	House Manager Pearlmark group home, Anaheim, California Oversaw a home of 30-40 mentally ill individuals. Planned daily activities, managed homes employees, and met with residents' social workers, case managers and health professionals
7-88 - 7-89	Instructor for United Cerebral Palsy, Santa Ana, California. Taught class of 25 developmentally disabled adults basic life skills and community integration

SELECTED ARCHAEOLOGICAL EXPERIENCE

Bryant Ranch, Yorba Linda, California
Primary Number 30-150052
Duties. survey, excavation, monitoring, report preparation
7/96 - 1/97

Leisure World Self Storage, Laguna Niguel, California
CA-ORA-610
Duties· Project Manager; survey, report preparation
6/96 - 7/96

Rancho Los Cerritos Adobe
CA-LAN-696
Duties: excavation, monitoring
4/96 - 5/96

Cal State San Bernardino Master Plan, California
CA-SBR-6581H
Duties Project Manager, survey, report preparation
3/96 - 4/96

Camp Pendleton, San Diego County, California
Duties: Project Manager; monitoring, report preparation
1/96 - 3/96

Marblehead Coastal, San Clemente, California
CA-ORA-MH-1H & MH
Duties· Project Manager; survey, report preparation
1/96 - 3/96

Saddleback Meadows, El Toro, California
CA-ORA-710, -711, -713, -714, -715, -1255, 1435H, -1437
Duties: Field Director, excavation, survey, report preparation
9/95 - 12/95

LaHabra, California
Duties: Project Manager; monitoring, report preparation
7/95 - present

Evans Point, Carlsbad, California
CA-SDI-14140 & CA-SDI-14151
Duties Project Manager; monitoring, report preparation
6/95 - 1/96

Simi Valley, California (Hopetown)
CA-VEN-782
Duties monitoring, excavation, report preparation
2/95 - 5/95

Rose Canyon, San Diego, California
CA-SDI-12557
Duties. field crew, excavation
9/94 - 2/95

Cal State University, Fullerton, Field School
CA-ORA-35, Los Pinos, California
Duties· field crew, excavation
8/92 - 12/92

SELECTED PALEONTOLOGICAL EXPERIENCE

Paleontological Monitoring·

Home Avenue, T.C Construction, San Diego, California

Big Canyon, S & S Construction Co , Laguna Niguel, California

Kaufman & Broad, Chino Hills, California

Toll Bros , San Juan Capistrano, California

Home Depot, Laguna Hills, California

Sun Lakes, Banning, California

Paleontological Salvage

Unocal, West Coyote Hills, California. *Bison latifrons* salvage

Big Canyon, S & S Construction Co.: Baleen whale salvage

SELECTED TECHNICAL REPORTS

Bissell, Ron and Patrick Maxon

1994 Cultural Resources Reconnaissance of Proposed Sewer Lines and Support Facilities, and Test Excavation of Three Sites in Valley Center, San Diego County, California.

Maxon, Patrick

1995 Archaeological Survey and Impact Assessment of the Proposed Upgrade to the Capistrano Beach Water District Waste Water Treatment Facility

1995 Archaeological Survey and Impact Assessment of the Capistrano Beach Water District Stonehill Road Right of Way Acquisition

1995 Archaeological Test Excavation of Cultural Resources Located Within the Saddleback Meadows Planned Development, Orange County, California.

1996 Archaeological Monitoring of Grading for the Evans Point Planned Development, City of Carlsbad, San Diego County, California

1996 Archaeological Reconnaissance and Impact Assessment of the Proposed Development of Marblehead Coastal, San Clemente, California

1996 Archaeological Monitoring of Trenching for the Aircraft Support Equipment Refueling Station, Camp Pendleton, San Diego County, California

1996 Cultural Resources Reconnaissance and Impact Assessment of Proposed Development for the California State University, San Bernardino Master Plan

1996 Cultural Resources Reconnaissance and Impact Assessment for the Proposed Development of the Leisure World Self Storage Facility in Laguna Niguel, California.

1997 Cultural Resources Investigation at the Bryant Ranch, Yorba Linda, Orange County, California, Tentative Tract 15199.

Maxon, Patrick O and Edward J. Knell

1996 Archaeological Test Excavation of a Prehistoric Rock Shelter, Excavation and Recovery of Three Historic Deposits, Collection of an Historic Isolate and Monitoring of Grading at Hopetown, Simi Valley, Ventura County, California

AUTHOR:	Patrick O Maxon
DATE	March 1997
TITLE.	Summary of Cultural Resources Investigation and Recommendations for Further Work Within the Saddleback Meadows Planned Development, Orange County, California **(Confidential Appendix)**
SUBMITTED BY	RMW Paleo Associates, Incorporated 23392 Madero, Suite L Mission Viejo, California 92691 (714) 770-8042 FAX (714) 458-9058
SUBMITTED TO	TPG Management, Incorporated 1601 Dove Street, Suite 105 Newport Beach, California 92660
CONTRACT NUMBER:	RMW Project Number 97-1006
MAP	USGS Santiago Peak, California 7 5 Minute Quadrangle, 1954, Photorevised 1973
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APPENDIX J
FISCAL IMPACT ANALYSIS

FISCAL IMPACT ANALYSIS
SADDLEBACK MEADOWS
COUNTY OF ORANGE

Submitted to:

The Presidio Group
1601 Dove Street, Suite 105
Newport Beach, California 92660

March 25, 1997

STANLEY R. HOFFMAN ASSOCIATES

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TABLE OF CONTENTS

Executive Summary iii

Chapter 1 Introduction 1
1.1 Background 1
1.2 Approach 1
1.3 Overview 4

Chapter 2 Project Description 5
2.1 Land Uses 5
2.2 Infrastructure 7

Chapter 3 Fiscal Analysis 8
3.1 County General Fund 8
3.2 County Road Fund 13
3.3 County Library District 15
3.4 County Harbors, Beaches and Parks 18

Appendix A Land Use, Market and Fiscal Factors 21

LIST OF TABLES AND FIGURES

Table		Page
A	Fiscal Impacts at Buildout	iv
2-1	Development and Infrastructure	6
3-1	General Fund Recurring Revenues and Costs	9
3-2	Road Fund Recurring Revenues and Costs	14
3-3	Library District Recurring Revenues and Costs	16
3-4	Harbors, Beaches and Parks Recurring Revenues and Costs	19
A-1	Land Use and Market Factors	22
A-2	Revenue Factors	23
A-3	Detailed TRA Allocations	24
A-4	Cost Factors	25

Figure		Page
1-1	Regional Location Map	2
1-2	Vicinity Map	3

EXECUTIVE SUMMARY

This report presents the fiscal analysis of the Proposed Project and four development alternatives for Saddleback Meadows. The project site is located in unincorporated Orange County east of Portola Hills.

The Land Use Plans

The Saddleback Meadows project is planned for 222 acres south of the intersection of El Toro Road and Live Oak Canyon Road. Buildout of the Proposed Project will include 705 manufactured single family detached homes, 1.7 acres of neighborhood commercial, local and regional hiking trails and open space. Four development alternatives include residential, trails and open space uses with the following units for each alternative:

Alternative 1 - 150 single family detached units on 20,000 square foot lots
Alternative 2 - 100 single family detached units on 4,000 square foot lots
Alternative 3 - 299 single family detached units on 6,400 square foot lots
Alternative 4 - 140 single family detached units and 178 attached units

Fiscal Impacts

Table A summarizes the projected fiscal impacts to the Orange County General Fund; the County Road Fund; the County Library District; and the Harbor, Beaches and Parks Department at buildout of the five land use plans for Saddleback Meadows.

As shown in Table A, Alternative 3 (299 units) is the only land use plan with recurring annual surpluses projected for all funds. For Alternative 1 (150 units), recurring surpluses are projected for the County General Fund, the Library District and the Harbors, Beaches and Parks Department. Recurring surpluses to the County Road Fund and the Harbors, Beaches and Parks Department are projected for the Proposed Project and Alternative 4 (318 units). Recurring surpluses to the County General Fund and the County Library District for Alternative 2 (100 units).

County General Fund. A recurring annual surplus to the County General Fund is projected for Alternative 1 (150 units), Alternative 2 (100 units) and Alternative 3 (299 units). The County General Fund is projected to have a recurring annual deficit for the Proposed Project and Alternative 4 (318 units).

County Road Fund. Annual recurring surpluses to the County Road Fund are projected for the Proposed Project, Alternative 3 (299 units) and Alternative 4 (318 units). The County Road Fund is projected to have recurring deficits for Alternative 1 (150 units) and Alternative 2 (100 units).

TABLE A
SADDLEBACK MEADOWS
FISCAL IMPACTS AT BUILDOUT
(In Constant 1997 Dollars)

	Proposed Project (705 Units)	Alternatives 1 (150 Units)	2 (100 Units)	3 (299 Units)	4 (318 Units)
County General Fund					
Recurring Revenues	$174,128	$54,214	$25,955	$99,605	$74,477
Recurring Costs	$181,033	$38,117	$25,411	$75,979	$80,808
Recurring Surplus(Deficit)	($6,905)	$16,097	$544	$23,626	($6,331)
Revenue/Cost Ratio	0.96	1.42	1.02	1.31	0.92
County Road Fund					
Recurring Revenues	$13,468	$2,866	$1,910	$5,712	$6,075
Recurring Costs	$5,000	$5,000	$5,000	$5,000	$5,000
Recurring Surplus(Deficit)	$8,468	($2,134)	($3,090)	$712	$1,075
Revenue/Cost Ratio	2.69	0.57	0.38	1.14	1.22
County Library District					
Recurring Revenues	$19,080	$9,953	$4,122	$17,752	$11,120
Recurring Costs	$25,921	$5,515	$3,677	$10,994	$11,692
Recurring Surplus(Deficit)	($6,842)	$4,438	$445	$6,759	($572)
Revenue/Cost Ratio	0 74	1.80	1.12	1.61	0 95
County Harbor, Beach and Parks					
Recurring Revenues	$14,312	$8,448	$3,328	$14,927	$8,761
Recurring Costs	$6,182	$6,182	$6,182	$6,182	$6,182
Recurring Surplus(Deficit)	$8,130	$2,266	($2,854)	$8,745	$2,579
Revenue/Cost Ratio	2.32	1.37	0 54	2 41	1 42

Source: Stanley R Hoffman Associates, Inc.
The Presidio Group
County of Orange, "Fiscal Methodolgy and Interim Fiscal Impact Guidelines Workbook", November 1, 1996

20,667

County Library District. At project buildout, the County Library District is projected to have a net recurring surpluses for Alternative 1 (150 units), Alternative 2 (100 units) and Alternative 3 (299 units). The County Library District is projected to have recurring deficits for the Proposed Project (705 units) and Alternative 4 (318 units).

Harbor, Beaches and Parks. County Harbors, Beaches and Parks is estimated to have annual recurring surpluses for the Proposed Project (705 units), Alternative 1 (150 units), Alternative 3 (299 units) and Alternative 4 (318 units). An annual recurring deficit to the Harbor, Beaches and Parks Department is projected for Alternative 2 (100 units).

Fiscal Assumptions

The projected recurring revenue and recurring costs are based on factors from the Orange County Fiscal Methodology and Interim Fiscal Impact Guidelines Workbook, November 1, 1996. Property tax allocation data for the project site was obtained from the Orange County Auditor Controller.

Residential valuations were provided by The Presidio Group as follows:

Proposed Project	$155,000 per unit
Alternative 1	$440,000 per unit
Alternative 2	$260,000 per unit
Alternative 3	$390,000 per unit
Alternative 4	$260,000 per detached unit; $180,000 per attached unit

CHAPTER 1

INTRODUCTION

This report presents the fiscal impacts for the Proposed Project and four land use alternatives for the Saddleback Meadows area, located in unincorporated Orange County. The fiscal impact analysis projects recurring costs and revenues to the Orange County General Fund; the County Road Fund; the County Library District; and the County Harbors, Beaches and Parks Department at buildout of the Proposed Project and four development alternatives.

1.1 Background

The Saddleback Meadows area is about 222.2 acres in size. Figure 1-1 shows the general location of the Saddleback Meadows area within unincorporated Orange County As shown in Figure 1-2, the project site is located approximately one-quarter mile south of the intersection of El Toro Road and Live Oak Canyon Road. Surrounding land uses to the south include the Hidden Hills residential development; the Ranakrishna Monastery; and O'Neil Regional Park. To the west is the residential community of Portola Hills, to the north is Saint Michael's Prep School and Abbey and to the east is existing and planned residential development.

For purposes of this report, the analysis assumes buildout of the five land use plans. The site plan for the Proposed Project is shown in Figure 1-2 and includes 705 manufactured single family detached homes and 1.7 acres of neighborhood commercial uses. Other uses include regional and local trails and natural open space. The four development alternatives include only residential uses, trails and open space.

1.2 Approach

The fiscal analysis is based on data and assumptions from the following sources

FIGURE 1-1
SADDLEBACK MEADOWS
REGIONAL LOCATION MAP

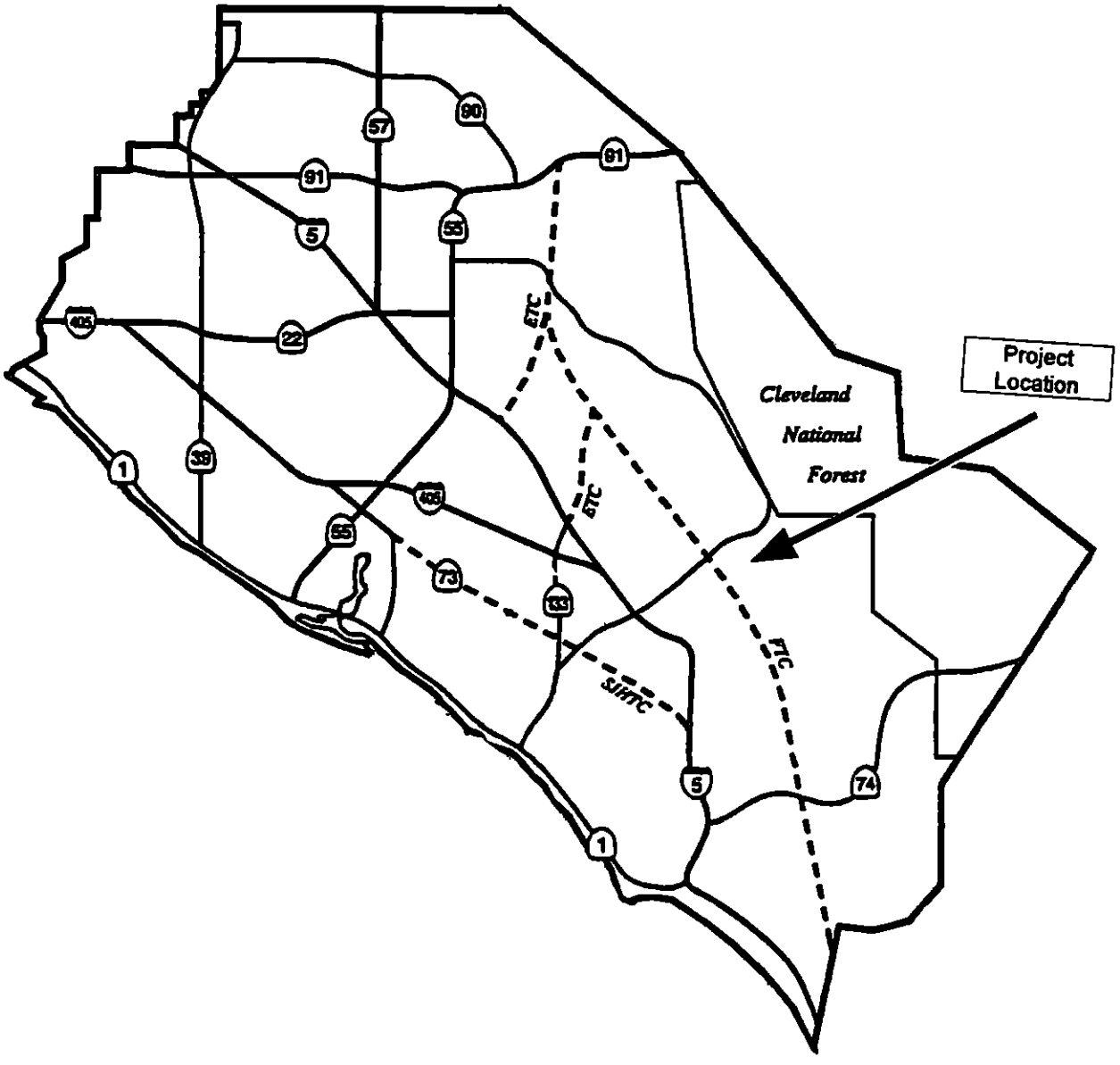
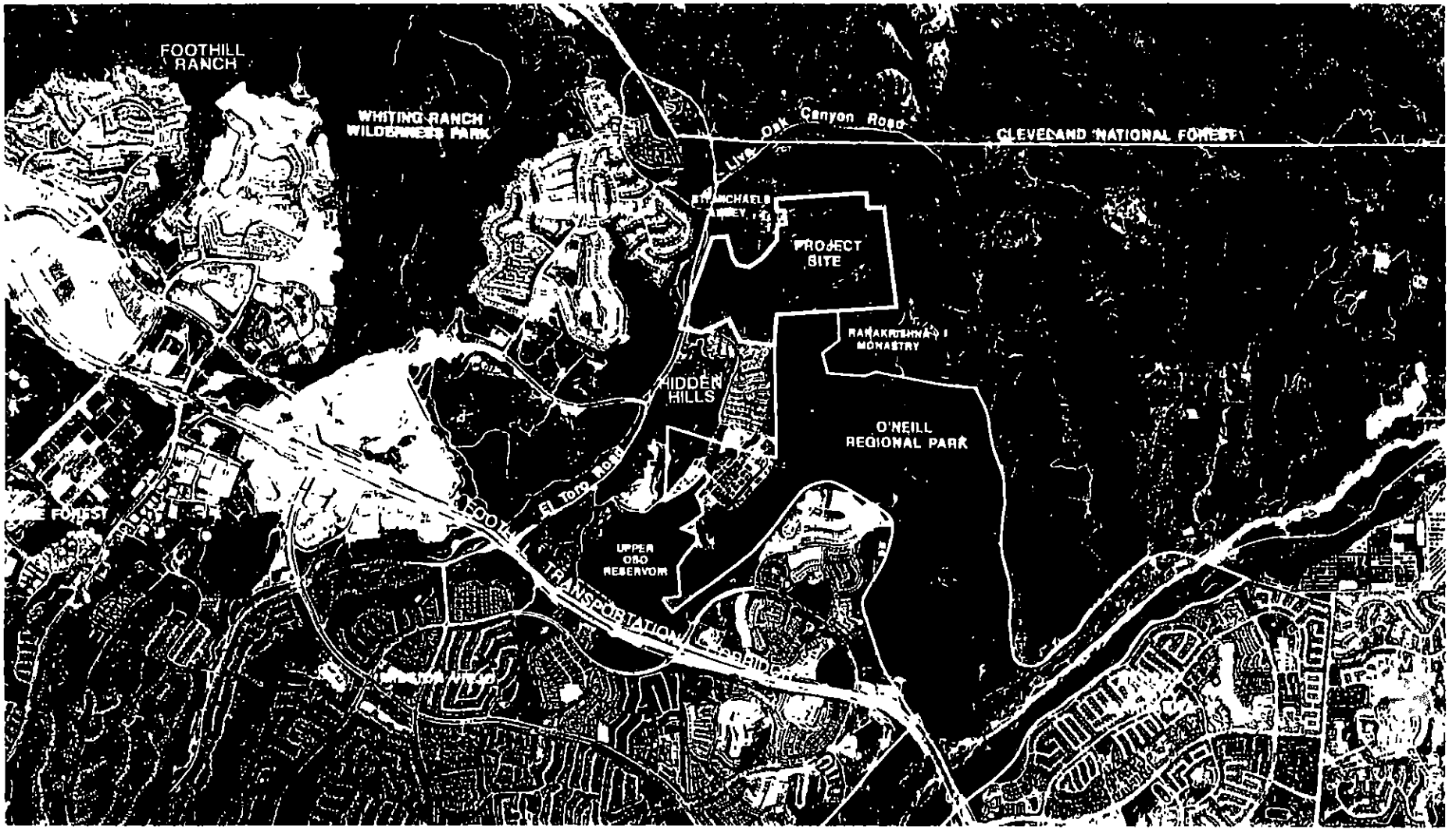


FIGURE 1-2
SADDLEBACK MEADOWS
VICINITY MAP



3

- County cost and revenue factors have been derived from the County of Orange Fiscal Methodology and Interim Fiscal Impact Guidelines Workbook prepared by Stanley R. Hoffman Associates, November 1, 1996.
- Project valuation information was provided by The Presidio Group.
- Various assumptions for public works improvements and other infrastructure have been prepared by the project proponent.
- Cost and revenue factors are projected in constant 1997 dollars with no adjustments for possible future inflation.

1.3 Overview

Chapter 2 is a description of the land uses associated with the Saddleback Meadows proposed development plan and four development alternatives. Chapter 3 presents a summary of the fiscal impact analysis resulting from the development plans for Saddleback Meadows. Fiscal impacts are presented for the Orange County General Fund; Road Fund, Library Fund: and Harbors, Beaches and Parks.

Appendix A presents the land use and market factors; revenue factors; and cost factors used for the fiscal analysis.

CHAPTER 2

PROJECT DESCRIPTION

This chapter presents the land use and infrastructure descriptions for the Saddleback Meadows development plans. The project site is about 222.2 acres. The Proposed Project includes residential, neighborhood commercial, trails and open space uses. The four development alternatives include only residential, trails and open space uses.

2.1 Land Uses

Proposed Project. As shown in Table 2-1, a total of 705 manufactured single family detached homes and 18,500 square feet of neighborhood commercial uses are included in the Proposed Project. Overall residential development density is estimated at 11.17 dwelling units per net acre. The average residential lot size is about 3,200 square feet and the average valuation of the residential units is $155,000 per unit. Population associated with the Saddleback Meadows Proposed Project is estimated at 1,692 based on a household size of 2.40 persons per dwelling unit Total employment estimated for the 18,500 square feet of neighborhood commercial uses is 37, which assumes 500 square feet per employee.

Development Alternatives. Four residential development alternatives for the Saddleback Meadows area are also presented in Table 2-1.

Alternative 1 proposes 150 single family detached units on lots averaging 20,000 square feet. The average valuation of the units for Alternative 1 is $440,000 per unit. Estimated population for Alternative 1 is 360.

Alternative 2 includes 100 single family detached units on lots averaging 4,000 square feet. The average valuation of these units is $260,000 per unit. Total population for Alternative 2 is estimated at 240.

Alternative 3 proposes 299 single family detached units on lots averaging 6,400 square feet. Valuation is assumed at $390,000 per unit. Alternative 3 population is estimated at 718.

TABLE 2-1
COUNTY OF ORANGE
SADDLEBACK MEADOWS
DEVELOPMENT and INFRASTRUCTURE

	Proposed Project (705 Units)	Alternatives 1 (150 Units)	2 (100 Units)	3 (299 Units)	4 (318 Units)
Residenital Development					
Dwelling units:					
Single family detached	705	150	100	299	140
Attached	0	0	0	0	178
Total Units	705	150	100	299	318
Population	1,692	360	240	718	763
Non-Residential Development					
Square feet	18,500	0	0	0	0
Employment	37	0	0	0	0
Infrastructure					
Signalized intersection	1.00	1.00	1.00	1.00	1.00
Regional trails lineal miles	0.21	0.21	0.21	0.21	0.21
Local trails lineal miles	0.76	0.76	0.76	0.76	0 76

Source Stanley R Hoffman Associates, Inc.
The Presidio Group

Alternative 4 includes 318 detached and attached residential units. A mix of 140 single family detached units and 178 attached units are proposed for this Alternative. The lots for the single family units will average 4,000 square feet and the attached units will include clusters of twoplexes and fourplexes. The 140 single family detached units are valued at $260,000 per unit and the 178 attached units are valued at $180,000 per unit. The population for Alternative 4 is estimated at 763.

2.2 Infrastructure

Table 2-1 also presents an overview of the infrastructure associated with the Proposed Project and the development alternatives. One signalized intersection is planned for the project entrance and El Toro Road. Other facilities include an estimated 0.21 lineal miles of regional trails and 0.76 lineal miles of local trails, both of which are assumed to be maintained by the County of Orange.

CHAPTER 3

FISCAL ANALYSIS

This chapter presents an analysis of the projected fiscal impacts from the Saddleback Meadows development plans at project buildout. The analysis focuses on the recurring revenues and costs that impact the Orange County General Fund and other funds, including the Orange County Road Fund, Library District and Harbors, Beaches and Parks Department. Projections are presented in constant 1997 dollars.

3.1 County General Fund

Table 3-1 presents the recurring revenues and costs to the Orange County General Fund for the five Saddleback Meadows development plans. A deficit is projected for the Proposed Project and Alternative 4 (318 units). At buildout of the Proposed Project, recurring revenues are projected at $174.1 thousand, while recurring costs are projected at $181.0 thousand. This results in a projected recurring deficit of $7 5 thousand and a revenue/cost ratio of 0.96. A recurring deficit of $6.3 thousand is projected for Alternative 4, based on projected recurring revenues of $99 6 thousand and projected recurring costs of $80.8 thousand. The revenue/cost ratio for Alternative 4 is projected at 0.92.

A surplus to the County General Fund is projected for Alternative 1(150 units), Alternative 2 (100 units) and Alternative 3 (299 units). The largest recurring surplus is projected for Alternative 3 (299 units). This projected surplus of $23.6 thousand is based on recurring revenues of $99.6 thousand and recurring costs of $76.0 thousand. The projected revenue/cost ratio for Alternative 3 is 1.31. A surplus of $16.1 thousand is projected for Alternative 1 based on projected recurring revenues of $54.2 thousand and projected recurring costs of $38.1 thousand. A revenue/cost ratio of 1.42 is projected for Alternative 1. At buildout of Alternative 2 (100 units) a small surplus of $0.5 thousand is projected. This surplus is based on projected recurring revenues of $26.0 thousand and projected recurring costs of $25 4 thousand. The revenue/cost ratio is 1.02.

TABLE 3-1
COUNTY OF ORANGE
SADDLEBACK MEADOWS
GENERAL FUND RECURRING REVENUES AND COSTS
(In Constant 1997 Dollars)

	Proposed Project (705 Units)	Alternatives 1 (150 Units)	2 (100 Units)	3 (299 Units)	4 (318 Units)
Annual Revenues					
Property tax	$57,749	$34,088	$13,429	$60,228	$35,349
Property transfer tax - turnover	5,512	3,267	1,287	5,772	3,388
Sales and use tax	30,719	0	0	0	0
Franchise fees	13,703	2,876	1,918	5,734	6,098
Forfeitures/penalties	1,335	281	187	560	595
Interest income	2,550	536	358	1,069	1,137
Motor vehicle in-lieu fees	54,567	11,610	7,740	23,143	24,613
Other taxes	3,783	796	530	1,586	1,687
Business licenses	599	0	0	0	0
Vehicle code fines	3,166	666	444	1,328	1,412
Other court fines	445	94	62	187	198
Total Revenues	$174,128	$54,214	$25,955	$99,605	$74,477
Annual Costs					
Sheriff's patrol	$70,553	$14,810	$9,874	$29,522	$31,398
Countywide					
Public protection	32,350	6,804	4,536	13,563	14,424
Health services	13,587	2,891	1,927	5,762	6,128
Community and social services	14,940	3,179	2,119	6,336	6,739
Environmental resources	650	137	91	273	290
General government	22,166	4,662	3,108	9,293	9,883
Capital improvements	2,465	518	346	1,033	1,099
Insurance reserves and miscellaneous	24,322	5,116	3,410	10,197	10,845
Total Costs	$181,033	$38,117	$25,411	$75,979	$80,808
General Fund Annual Surplus	($6,905)	$16,097	$544	$23,626	($6,331)
Revenue/Cost Ratio	0.96	1.42	1.02	1.31	0.92

Source. Stanley R Hoffman Associates, Inc
County of Orange, "Fiscal Methodolgy and Interim Fiscal Impact Guidelines Workbook", November 1, 1996

Recurring Revenues

As Table 3-1 indicates, recurring revenues to the Orange County General Fund include property tax, property transfer tax, sales and use tax, franchise fees, forfeitures/penalties, interest income, motor vehicle in-lieu revenues, other taxes, vehicle code fines and other court fines. The revenues factors utilized in the fiscal analysis are presented in Table A-2 in Appendix A.

Property tax. Revenues accruing to the County General Fund from property tax are projected using an allocation of 5.2 percent of the basic 1 percent property tax levy. The breakdown of the 1 percent property tax levy was obtained from the Orange County Auditor-Controller's Office. The detailed breakdown of the Tax Rate Areas (TRA) is shown Table A-3 in Appendix A. Property tax revenues are based on the assessed valuation of completed development. Residential unit valuations are estimated on a per unit basis and are based on information provided by The Presidio Group.

Property transfer tax. Sales of real property are taxed by the County of Orange at a rate of $1.10 per $1,000 of property value that turns over each year It is assumed that residential and commercial development will change ownership at an average rate of about 5.0 percent, or on the average of once every 20 years. A consideration rate of 90.0 percent is applied to the valuation of the residential property which reflects the amount of turnover valuation that is estimated to be taxed.

Sales and use tax. The County General Fund receives 1.0 percent of all taxable sales that occur within the unincorporated County area. Taxable sales for neighborhood commercial are projected based on $150 per square foot of retail space.

Use tax is distributed to local jurisdictions by the State Board of Equalization to account for retail sales that are not directly tied to a situs based location. Use tax is projected based on a percentage of direct taxable sales generated. The current rate applied to taxable sales in Orange County is 10.7 percent.

Franchise taxes. Franchise fees are estimated at $7.99 per capita and $4.96 per employee based on total budgeted revenues from franchise fees of $1.76 million and a countywide population of 2,748,640 and a countywide employment 1,296,140.

Forfeitures/penalties. Based on 1996/1997 revenues of $2.69 million and the countywide population and employment estimates, revenues from forfeitures/penalties are projected at $0.78 per capita and $0.41 per employee.

Interest income. Interest income is projected at $1.49 per capita and $0.79 per employee based on total County budgeted revenues from this source of $5.11 million and the countywide population and employment estimates.

Motor vehicle in-lieu fees. Based on the State Controller's allocated amount of $99.90 million to Orange County and the County population of 2,748,640, motor vehicle in-lieu fees are estimated at $35.25 per capita.

Other Taxes The County budgeted amount for other taxes is $7.58, resulting in a projected revenue of $2.21 per capita and $1.17 per employee from this source.

Business license revenue Total County revenues from business licenses are estimated at $575.1 thousand. Based on the unincorporated county employment of 35,519, business license revenues are projected at $16.19 per employee.

Vehicle code fines Vehicle code fines are projected using a factor of $1.85 per capita and $0.98 per employee, based on total budgeted revenues of $6.35 million from this source and the total County population and employment estimates.

Other court fines. Based on countywide population and employment estimates and the total budgeted revenues of $888.0 thousand, factors for other court fines are projected at $0.26 per capita and $0.14 per employee.

Recurring Costs

Table 3-1 also presents recurring costs to the County General Fund for the Saddleback Meadows development plans. Recurring costs to the County of Orange General Fund include sheriff's patrol, and other county net operating costs for public protection; health services; community and social services; environmental resources; general government; capital improvements; and insurance reserves and miscellaneous.

Sheriff's patrol. Sheriff protection costs are projected based on the net County cost of $11.13 million and Orange County Projections for unincorporated population of 198,327 and unincorporated employment of 35,519. Based on these estimates the cost factors for sheriff's patrol are projected at $41.14 per capita and $25.53 per employee.

Countywide costs. Countywide costs are associated with functions provided to all residents, and in selected cases all employees, in the County whether they reside in incorporated or unincorporated areas. The net County cost for each countywide service is based on the November 1, 1996 Orange County Fiscal Methodology and Interim Fiscal Impact Guidelines Workbook.

Public protection includes services provided by the District Attorney, Grand Jury, Marshall, Probation, Public Defender, Emergency Management, Institutional Labor, Pedestrian Crossing Guards, Detention Release, Juvenile Justice Commission and Alternative Defense. Costs factors for public protection are $18.90 per capita and $10.02 per employee.

Health services costs are for the Health Care Agency. Health services costs are projected based on a factor of $5.03 per capita.

Community and social services includes services provided by the Community Services Agency, Domestic Violence Programs, Alternate Dispute Resolution, Social Services Agency, Aid to Dependent Families with Children (ADFC), Foster Care, Aid to Refugees, Case Data System and General Relief. Costs for these services are projected based on a factor of $8.83 per capita.

Environmental resources includes services provided by the Local Agency Formation Commission (LAFCO) and the Agricultural Commissioner. Environmental resources costs are projected based on $0.38 per capita and $0.20 per employee.

General government includes the numerous services associated with the operations of the County government. These include Assessor, Auditor-Controller, Board of Supervisors, Clerk of the Board, County Executive Office, Advocacy/Legislation, Protocol Office, County Counsel, Registration and Elections, General Services Agency, Data Systems, Utilities, Human Resources, Clerk-Recorder, Treasurer-Tax Collector, County Clerk and Internal Audit. General government costs are projected based on factors of $12.95 per capita and $6.87 per employee.

Capital Improvements includes minor Capital Projects, Data Systems Development and Real Property Leases. Costs are projected at $1.44 per capita and $0.76 per employee.

Insurance reserves and miscellaneous includes Miscellaneous Costs; Professional Consultants Recovery; Employee Benefits; Employee Retirement; Interest on Notes and Checks; and Provision for Contingencies. Costs for this category are projected based on factors of $14.21 per capita and $7.54 per employee

3.2 County Road Fund

Projected recurring County Road Fund revenues and costs from the Saddleback Meadows development plans are presented in Table 3-2 At buildout, recurring deficits are projected for Alternative 1 (150 units) and Alternative 2 (100 units). A recurring deficit of $2.1 thousand is projected for Alternative 1 based on projected recurring revenues of $2.9 thousand and projected recurring costs of $5 0 thousand. A revenue/costs ratio of 0.57 is projected for Alternative 1. A recurring deficit of $3.1 thousand is projected for Alternative 2 (100 units) based on projected recurring revenues of $1.9 thousand and recurring costs of $5.0 thousand.

Recurring surpluses to the County Road Fund are projected for the Proposed Project, Alternative 4 (318 units) and Alternative 3 (299 units). The largest recurring surplus is projected at buildout of the Proposed Project. A recurring surplus of $8.5 thousand is projected for the Proposed Project based on recurring revenues of $13.5 thousand and recurring costs of $5.0 thousand. A revenue/cost ratio of 2.69 is projected for the Proposed Project. The next largest recurring surplus is projected for Alternative 4 (318 units). The projected surplus for this Alternative is $1.1 thousand based on projected recurring revenues of $6 1 thousand and recurring costs of $5.0 thousand. A revenue/cost ratio of 1.22 is projected for Alternative 4. A recurring surplus of $0.7 thousand is

TABLE 3-2
COUNTY OF ORANGE
SADDLEBACK MEADOWS
ROAD FUND RECURRNG REVENUES AND COSTS
(In Constant 1997 Dollars)

	Proposed Project (705 Units)	Alternatives 1 (150 Units)	2 (100 Units)	3 (299 Units)	4 (318 Units)
Annual Revenues					
State gasoline tax	$11,624	$2,473	$1,649	$4,930	$5,243
Licenses, permits and franchises	305	65	43	129	137
Use of money and property	1,540	328	218	653	695
Total Revenues	$13,468	$2,866	$1,910	$5,712	$6,075
Annual Costs					
Traffic signal operations	$5,000	$5,000	$5,000	$5,000	$5,000
Annual Surplus or (Deficit)	$8,468	($2,134)	($3,090)	$712	$1,075
Revenue/Cost Ratio	2.69	0.57	0.38	1.14	1.22

Source. Stanley R. Hoffman Associates, Inc
County of Orange, "Fiscal Methodolgy and Interim Fiscal Impact Gudelines Workbook", November 1, 1996

projected for Alternative 3 (299 units) based on projected recurring revenues of $5.7 thousand and recurring costs of $5.0 thousand. A revenue/cost ratio of 1.14 is projected for Alternative 3.

Recurring Revenues

Recurring revenues to the County Road Fund are projected for state gasoline tax; licenses, permits and franchises; and revenues from the use of money and property. The revenue factors for the County Road Fund are presented in Appendix Table A-2.

State gasoline tax. Orange County receives state gasoline tax from Sections 2104, 2105 and 2106. Based on the Orange County Fiscal Methodology and Interim Fiscal Impact Guidelines Workbook the state gasoline tax revenues are projected at $3.28 per capita for Section 2104, $1.50 per capita for Section 2105 and $2.09 per capita for Section 2106.

Licenses, permits and franchises. The County Road Fund is budgeted to receive total revenues from these sources of $500.6 thousand. Based on the County population of 2,748,640 these revenues are projected at $0.18 per capita.

Use of money and property. These revenues are projected at $0.91 per capita based on total budgeted revenues of $2.49 million and the total County population.

Recurring Costs

No local roads maintenance costs are associated with the Saddleback Meadows development, since all local roads are assumed to be privately maintained through the homeowners association. Annual traffic signal operation costs to the County are estimated at $5,000 per signalized intersection based on the County of Orange Fiscal Methodology and Interim Fiscal Guidelines Workbook.

3.3 County Library District

Table 3-3 presents the projected recurring Library District revenues and costs for the Saddleback Meadows development plans At project buildout, annual recurring deficits

TABLE 3-3
COUNTY OF ORANGE
SADDLEBACK MEADOWS
LIBRARY DISTRICT RECURRING REVENUES AND COSTS
(In Constant 1997 Dollars)

	Proposed Project (705 Units)	Alternatives 1 (150 Units)	2 (100 Units)	3 (299 Units)	4 (318 Units)
Annual Revenues					
Property Tax	$15,611	$9,215	$3,630	$18,281	$9,556
Use of money and property	118	25	17	50	53
Intergovernmental revenues	609	130	86	258	275
Charges for services	2,673	569	379	1,134	1,206
Miscellaneous revenues	68	14	10	29	31
Total Revenues	$19,080	$9,953	$4,122	$17,752	$11,120
Annual Costs					
Regional library costs	$25,921	$5,515	$3,677	$10,994	$11,692
Annual Surplus or (Deficit)	($6,842)	$4,438	$445	$6,759	($572)
Revenue/Cost Ratio	0.74	1.80	1.12	1.61	0.95

Source: Stanley R. Hoffman Associates, Inc
County of Orange, "Fiscal Methodolgy and Interim Fiscal Impact Guidelines Workbook", November 1, 1996.

are projected for the Proposed Project and Alternative 4 (318 units). The recurring deficit for the Proposed Project is projected at $6.8 thousand based on projected recurring revenues of $19.1 thousand and projected recurring costs of $25.9 thousand. The projected revenue/cost ratio for the Proposed Project is 0.74. Alternative 4 (318 units) is projected to have an annual recurring deficit of $0.6 thousand based on projected recurring revenues of $11.1 thousand and projected costs of $11.7 thousand. The revenue/cost ratio for Alternative 4 is 0.95.

Annual recurring surpluses to the County Library District are projected for Alternative 1 (150 units), Alternative 2 (100 units) and Alternative 3 (299 units) The largest recurring surplus is projected for Alternative 3 (299 units). The projected surplus for Alternative 3 is $6.8 thousand based on projected recurring revenues of $17.8 thousand and projected recurring costs of $11.0 thousand. The revenue/cost ratio for Alternative 3 is a projected 1.61 The next largest recurring surplus is projected for Alternative 1 (150 units). This surplus of $4.4 thousand is based on projected recurring revenues of $10.0 thousand and projected recurring costs of $5.5 thousand. The revenue/cost ratio for Alternative 1 is 1.80. Alternative 2 (100 units) is projected to have a recurring surplus of $0.5 thousand based on recurring revenues of $4.1 thousand and recurring costs of $3.7 thousand. The projected revenue/costs ratio for Alternative 2 is 1.12.

Recurring Reveneus

Annual recurring revenues to the Library District include propert tax; use of money and property, intergovernmental revenues; charges for services; and miscellaneous revenues.

Property tax. The Orange County Library District's share of the basic 1.0 percent property tax levy is 1.3962 percent for the TRA in which the Saddleback Meadows project is located.

Use of money and property. Based on the budgeted amount of $2.14 million and the County Library service population of 1,351,905, this category is projected using a factor of $0.07 per capita.

Intergovernmental revenues. These revenues are estimated to total $491.9 thousand. Based on the Library District service population, intergovernmental revenues are projected at $0.36 per capita.

Charges for services. Based on the Library service population and a budgeted amount of $2.14 million, charges for services are projected based on a factor of $1.58 per capita.

Miscellaneous revenues. These revenues are estimated to total $56.3 thousand. Based on the Library service population, miscellaneous revenues are projected at $0.04 per capita.

Recurring Costs

Current operations and maintenance costs of providing libarary service are calculated in the Orange County Fiscal Methodology and Interim Fiscal Impact Guidelines Workbook at $15.32 per capita.

3.4 County Harbors, Beaches and Parks

The fiscal impacts to the County Harbors, Beaches and Parks Department from the five development plans for Saddleback Meadows are presented in Table 3-4. County Harbors, Beaches and Parks Department is projected to have an annual recurring deficit from Alternative 2 (100 units) and annual recurring surpluses from all other development plan. The annual deficit of $2.9 thousand projected for Alternative 2 is based on projected recurring revenues of $3.3 thousand and annual recurring costs of $6.2 thousand. The revenue/cost ratio for Alternative 2 is projected at 0.54.

The largest recurring surplus to the Harbors, Beaches and Parks Department is projected for Alternative 3 (299 units). The recurring surplus of $8.7 thousand for Alternative 3 is based on projected recurring revenues of $14.9 thousand and projected recurring costs of $6.2 thousand. The projected revenue/cost ratio for Alternative 3 is 2.41. The next largest recurring surplus is projected for the Proposed Project (750 units), at $8.1 thousand. This surplus is based on projected recurring revenues of $14.3 thousand and

TABLE 3-4
COUNTY OF ORANGE
SADDLEBACK MEADOWS
HARBORS, BEACHES AND PARKS RECURRING REVENUES AND COSTS
(In Constant 1996 Dollars)

	Proposed Project (705 Units)	Alternatives 1 (150 Units)	2 (100 Units)	3 (299 Units)	4 (318 Units)
Annual Revenues					
Property Tax	$14,312	$8,448	$3,328	$14,927	$8,761
Annual Costs					
Regional Trails Maintenance	$1,333	$1,333	$1,333	$1,333	$1,333
Local Trails Maintenance	4,848	4,848	4,848	4,848	4,848
Total Costs	$6,182	$6,182	$6,182	$6,182	$6,182
Annual Surplus or (Deficit)	$8,130	$2,266	($2,854)	$8,745	$2,579
Revenue/Cost Ratio	2.32	1.37	0.54	2.41	1.42

Source Stanley R Hoffman Associates, Inc
County of Orange, "Fiscal Methodolgy and Interim Fiscal Impact Guidelines Workbook", November 1, 1996.

projected recurring costs of $6.2 thousand. The revenue/costs ratio is projected at 2.32 for the Proposed Project. Alternatives 1 (150 units) and 4 (318 units) are projected to have similar recuring surpluses of $2.3 thousand and $2.6 thousand, respectively. Recurring revenues for Alternative 1 are projected at $8.4 thousand while recurring revenues for Alternative 4 are projected at $8.8 thousand. The recurring costs are the same for both alternatives, at a projected $6.2 thousand. The projected revenue/cost ratios are 1.37 for Alterantive 1 and 1.42 for Alternative 4.

Recurring Revenues

The only recurring revenue projected for the Harbors, Beaches and Parks Department is property tax. The Department's share of the basic 1.0 percent property tax levy is 1.280 percent, based on the tax rate area in which Saddleback Meadows is located.

Recurring Costs

The only recurring cost to the Department from the development plans for Saddleback Meadows are for maintenance of the regional and local hiking trails. These costs are projected based on a factor of $6,400 per lineal mile.

APPENDIX A

LAND USE, MARKET AND FISCAL FACTORS

TABLE A-1
COUNTY OF ORANGE
SADDLEBACK MEADOWS
LAND USE AND MARKET FACTORS

(In Constant 1997 Dollars)

FACTOR	EXPLANATION
RESIDENTIAL DEVELOPMENT	
Single Family Detached, Manufactured - Proposed Project	
11.17	Dwelling units per net acre
$155,000	Total valuation per unit
2.40	Population per unit
Single Family Detached - Alternative 1 (20,000 square foot lots)	
2.18	Dwelling units per net acre
$440,000	Total valuation per unit
2.40	Population per unit
Single Family Detached - Alternatives 2 and 4 (4,000 square foot lots)	
10.89	Dwelling units per net acre
$260,000	Total valuation per unit
2.40	Population per unit
Single Family Detached - Alternative 3 (6,400 square foot lots)	
6.81	Dwelling units per net acre
$390,000	Total valuation per unit
2.40	Population per unit
Single Family Attached - Alternative 4 (twoplexes and fourplexes)	
17.42	Dwelling units per net acre
$180,000	Total valuation per unit
2.40	Population per unit
NON-RESIDENTIAL DEVELOPMENT	
Neighborhood Commercial	
0.25	Floor area ratio
$8.00	Land value per site square foot
$80.00	Improvement valuation per building square foot
$25.00	Unsecured valuation per buiding square foot
$150.00	Taxable sales per square foot
500	Square feet per employee

Source: Stanley R. Hoffman Associates, Inc.
The Presidio Group

TABLE A-2
COUNTY OF ORANGE
SADDLEBACK MEADOWS
REVENUE FACTORS

(In Constant 1997 Dollars)

FACTOR	EXPLANATION
Taxes	
0.01	Property tax rate, total
0.110%	Property transfer tax rate
90.00%	Consideration rate (for transfer tax)
5.0%	Turnover rates - Residential and Commercial
County General Fund Revenues	
5.1649%	Orange County General Fund TRA allocation
0.011	Sales and use tax factor
$7.99	Franchise fees per capita
$4.96	Franchise fees per employee
$0.78	Forfeitures/penalties per capita
$0.41	Forfeitures/penalties per employee
$1.49	Interest income per capita
$0.79	Interest income per employee
$32.25	Motor vehicle in-lieu per capita
$2.21	Other taxes per capita
$1.17	Other taxes per employee
$16.19	Business licenses per employee
$1.85	Vehicle code fines per capita
$0.98	Vehicle code fines per employee
$0.26	Other court fines per capita
$0 14	Other court fines per employee
County Road Fund Revenues	
$3.28	State gasoline tax per capita - Section 2104
$1.50	State gasoline tax per capita - Section 2105
$2.09	State gasoline tax per capita - Section 2106
$0.18	Road fund licenses, permits and franchises per capita
$0.91	Road fund revenues from use of money and property per capita
County Library District Revenues	
1.3962%	Orange County Library District TRA allocation
$0.07	Use of money and property per capita
$0.36	Intergovernmental revenues per capita
$1.58	Charges for sevices per capita
$0.04	Miscellaneous revenues per capita
County Harbors, Beaches and Parks Revenues	
1.2800%	Orange County Harbors, Beaches and Parks TRA allocation

Source Stanley R Hoffman Associates, Inc
County of Orange, "Fiscal Methodolgy and Interim Fiscal Impact Guidelines Workbook", November 1, 1996.

TABLE A-3
COUNTY OF ORANGE
SADDLEBACK MEADOWS
DETAILED TRA ALLOCATIONS

	Fund[1]	Description	TRA Number 88-233
	0084-01	Trabuco Canyon Water District	0.11874661752
	0088-01	Orange Co. Transportation Authority	0.00235002528
	0100-01	Orange Co. General Fund	0.05164893727
	1201-01	Orange Co. Library District	0.01396215073
	1211-01	Orange Co. Fire Department	0.09412077887
*	2131-01	Orange Co. General Fund	0.08567540765
*	2131-01	Orange Co. Library District	0.01605705677
*	2131-01	Orange Co. Cemetery District	0.00061285248
*	2131-01	Orange Co. Fire Department	(0.00533671878)
*	2131-01	Orange Co. Transit District	0.00156668353
*	2131-01	Orange Co. Flood Control District	0.00680285457
*	2131-01	Orange Co. Harbors, Beaches and Parks	0.00244861960
*	2131-01	Orange Co. Vector Control District	0.00076577061
*	2131-01	Trabuco Canyon Water District	0.11259711110
	4001-01	Orange Co. Flood Control District	0.01655952799
	4051-01	Orange Co. Harbors, Beaches and Parks	0.01280004514
	5321-01	Orange Co. Vector Control District	0.00093508141
	5541-01	Orange Co. Cemetry District	0.00041625418
	7481-01	Saddleback CC	0.07411636895
	7901-01	Saddleback Valley Unified	0.37949577011
	8841-01	Orange Co. Dept. of Education	0.01365880502
		Total	1.00000000000

Notes: 1. The codes indicated with an asterisk represent that funds' transfer to ERAF.

Source: Stanley R. Hoffman Associates, Inc.
County of Orange, Auditor-Controller's Office

TABLE A-4
COUNTY OF ORANGE
SADDLEBACK MEADOWS
COST FACTORS

(In Constant 1997 Dollars)

FACTOR	EXPLANATION
County General Fund Costs	
Municipal-type costs:	
$41.14	Sheriff's patrol costs per capita
$25.53	Sheriff's patrol costs per employee
Countywide costs.	
$18.90	Public protection costs per capita
$10.02	Public protection costs per employee
$8.03	Health services costs per capita
$8.83	Community and social services costs per capita
$0.38	Environmental resources costs per capita
$0.20	Environmental resources costs per employee
$12.95	General government and services costs per capita
$6.87	General government and services costs per employee
$1.44	Capital improvement costs per capita
$0.76	Capital improvement costs per employee
$14.21	Insurance reserves and miscellaneous costs per capita
$7.54	Insurance reserves and miscellaneous costs per employee
County Road Fund Costs	
$5,000	Cost per signalized intersection
County Library District Costs	
$15.32	Regional library costs per capita
County Harbors, Beaches and Parks Costs	
$6,400	Annual trails maintenance costs per lineal mile

Source: Stanley R. Hoffman Associates, Inc.
County of Orange, "Fiscal Methodolgy and Interim Fiscal Impact Guidelines Workbook", November 1, 1996.

APPENDIX K
OAK TREE INVENTORY

OAK TREE INVENTORY FOR SADDLEBACK MEADOWS

Prepared for:

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SWEETWATER
ENVIRONMENTAL
BIOLOGISTS, INC.

November 21, 1995

TABLE OF CONTENTS

INTRODUCTION 1

METHODS 2

RESULTS 3

LITERATURE CITED 4

APPENDIX A. Coast Live Oak (*Quercus agrifolia*) Tree Survey Data A-1

FIGURE 1. Oak Tree Inventory ..... Map Pocket

INTRODUCTION

This report presents the results of a coast live oak (*Quercus agrifolia*) tree inventory of Saddleback Meadows and describes the number of oak trees impacted and preserved by development of 318 detached residential lots and associated facilities on Saddleback Meadows. Saddleback Meadows occurs on 222.2 acres in an unincorporated portion of Orange County, south of El Toro Road and east of the Foothills Transportation Corridor.

METHODS

Previous work by Pacific Southwest Biological Services' (PSBS) original tree inventory from 1989 (PSBS 1994) was reviewed by Deborah Pudoff and Scott Taylor of Sweetwater Environmental Biologists, Inc. (SEB) on October 20, 1995. Trees that were missing from the PSBS map but were in PSBS' inventory were located and added. SEB also added trees that PSBS did not include in its inventory. Tree heights were visually estimated, and each tree was assigned a qualitative assessment number (Appendix A, numbers 360 through 380). The additional trees were not tagged.

Based on the remedial grading line, the number of trees within the remedial grading zone were compiled, and these trees are considered impacted. The number of trees outside the remedial grading zone were also compiled, and these trees are considered preserved.

RESULTS

The PSBS oak tree inventory (PSBS 1994) states that 289 trees were inventoried Actually, it appears that 279 trees were inventoried along with two scrub oaks (for a total of 281). Only 276 trees appear on the PSBS oak tree maps. We found that four of the trees were left off of the map (tag numbers 125, 126, 228, and 238), and PSBS included one scrub oak on the map (tag number 244) but not the other scrub oak (tag number 85). Two-hundred seventy-six mapped trees including one mapped scrub oak, plus four omitted trees and one omitted scrub oak equals 281 plants inventoried. SEB mapped the missing trees, added two new trees (numbers 379 and 380), and deleted two trees that appear to have fallen into a ravine for a total of 279 trees (Figure 1–map pocket). In the southern portion of the site, 19 oak trees were counted and have been included on the attached map (Figure 1, numbers 360 through 378).

As an aside, most of the trees that were tagged by PSBS no longer retain the tags, and some no longer retain even the nails. Many of the remaining tags were very mangled, and bark is growing around them. In most cases we believe that the trees have grown to a point where the tags were pushed out. In other cases the nail only penetrated the bark, and the bark has fallen off.

A total of 140 oak trees (approximately 47 percent) occur within the remedial grading zone and are considered impacted. A total of 158 oak trees (approximately 53 percent) occur outside the remedial grading zone and are considered preserved (Figure 1 and Appendix A).

LITERATURE CITED

PSBS (Pacific Southwest Biological Services, Inc.). 1994. Biological assessment and oak tree inventory of the Saddleback Meadow site. May 17.

APPENDIX A

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
3	24	25	30	1		Impacted
4	17	35	35	1		Impacted
5	31	45	50	1		Impacted
6	34	48	50	1		Impacted
7	7	22	12	1		Impacted
8	12	35	14	1		Impacted
9	18	16	25	3	Dead limbs	Impacted
10	21	28	24	2		Impacted
11	56	55	60	1		Impacted
12	10	20	25	1	Group of 3	Impacted
13	11	25	20	1		Preserved
14	16	28	25	1	Leans west	Preserved
15	12	24	26	1		Preserved
16	24	40	36	1		Impacted
17	17	40	22	1		Impacted
18	11	28	20	1	Leans east	Preserved
19	22	38	36	1	2 stems	Preserved
20	21	40	30	1		Preserved
21	16	32	25	1		Preserved
22	13	32	20	1		Preserved
23	11	30	30	1	Group of 3	Preserved
24	21	45	65	1	8 stems	Preserved
25	12	26	36	1	Group of 3	Preserved
26	15	32	38	1	3 stems	Preserved
27	15	32	30	1	3 stems	Preserved
28	12	18	20	1		Preserved
29	20	18	24	1		Preserved
30	9	18	14	1		Preserved
31	17	26	38	1	3 stems	Preserved
32	–	–	–	–	Tag not used	
33	12	32	18	1		Impacted
34	11	20	24	1		Impacted
35	22	24	22	1	2 stems	Impacted
36	21	28	30	1		Impacted
37	11	18	22	1	5 stems	Impacted
38	20	35	28	1	2 stems	Impacted
39	9	28	16	2	3 stems	Impacted
40	29	40	45	1	3 stems	Impacted
41	18	16	24	2	3 stems	Preserved
42	10	18	12	1		Preserved
43	8	12	12	3	Appears dead	Preserved
44	13	20	25	2	2 stems	Preserved
45	11	26	15	2	3 stems	Preserved
46	12	18	15	2		Preserved
47	10	22	18	1	3 stems	Preserved
48	9	20	15	1	2 stems	Preserved

APPENDIX A (cont.)

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
49	9	14	15	2		Preserved
50	18	32	40	1	3 stems	Preserved
51	13	16	20	2	2 stems	Preserved
52	8	22	16	1	4 stems; 1 dead	Preserved
53	11	24	14	2	2 stems	Preserved
54	10	20	14	2	2 stems	Preserved
55	11	26	12	2		Preserved
56	8	18	14	1		Preserved
57	13	24	32	1	7 stems	Preserved
58	18	35	34	1	3 stems	Preserved
59	10	30	25	1		Preserved
60	12	25	22	1		Preserved
61	9	23	24	1		Preserved
62	31	28	30	1	5 stems; some dead branches	Preserved
63	13	16	22	2	3 stems	Preserved
64	11	30	23	2	2 stems	Preserved
65	12	23	18	1		Preserved
66	18	38	60	1	6 stems	Preserved
67	9	30	36	1	6 stems	Preserved
68	8	22	30	2	4 stems	Preserved
69	21	32	38	1	2 stems	Preserved
70	21	24	24	1		Preserved
71	14	28	35	1	3 stems	Preserved
72	18	28	40	1	2 stems	Preserved
73	11	26	32	1	4 stems	Preserved
74	11	26	28	1	3 stems	Preserved
75	12	26	26	1	3 stems	Preserved
76	8	18	14	2		Preserved
77	16	26	34	1	5 stems	Preserved
78	16	26	32	1	3 stems	Preserved
79	12	27	24	2	3 stems	Preserved
80	12	28	16	2	2 stems	Preserved
81	8	12	8	3		Preserved
82	17	24	30	1	2 stems	Preserved
83	13	20	14	2		Preserved
84	20	28	36	1	2 stems	Preserved
85	9	22	35	1	*Quercus dumosa*; 14 stems	Preserved
86	16	32	24	1	On fenceline	Preserved
87	19	32	32	1	2 stems	Preserved
88	21	32	36	1	4 stems	Preserved
89	16	28	24	1	3 stems	Preserved
90	19	40	30	1	2 stems	Preserved
91	19	40	32	1	2 stems	Preserved
92	22	42	42	1		Preserved

APPENDIX A (cont.)

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
93	15	36	20	1		Preserved
94	10	25	17	1		Impacted
95	40	55	85	1	Nice tree!	Impacted
96	--	--	--	--	Tag not used	
97	52	50	85	1	Owl nest	Impacted
98	39	40	52	1		Preserved
99	33	40	54	1		Preserved
100	23	30	35	2	2 stems	Preserved
101	14	32	25	1	On fenceline	Preserved
102	24	32	30	1		Preserved
103	38	42	80	1	2 stems	Preserved
104	30	38	35	1	2 stems	Preserved
105	30	42	40	1	3 stems	Preserved
106	23	45	65	1	2 stems	Preserved
107	10	25	26	1		Preserved
108	14	34	35	1	2 stems	Preserved
109	13	27	34	2	4 stems, leans northwest	Preserved
110	16	30	45	1	7 stems	Preserved
111	15	32	35	1	3 stems	Preserved
112	12	20	27	2	3 stems; 1 dead	Preserved
113	16	32	50	1	3 stems	Preserved
114	14	26	32	1	4 stems	Preserved
115	12	32	40	1	Forks to 5	Impacted
116	12	36	52	1	4 stems	Impacted
117	16	45	60	1	3 stems	Impacted
118	10	22	8	2		Impacted
119	14	22	18	2	Forks to 3	Impacted
120	15	36	24	1	2 stems; not tagged	Impacted
121	13	28	32	2	4 stems	Impacted
122	12	27	24	1	5 stems	Impacted
123	14	32	30	1	3 stems	Impacted
124	40	46	1(?)	1		Impacted
125	21	30	40	1	6 stems (Appears to have fallen in ravine)	
126	11	24	19	1	(Appears to have fallen in ravine)	
127	--	--	--	--	Tags 127 through 200 not used	
201	17	35	30	1	With mistletoe	Impacted
202	17	32	28	2	Split trunk	Impacted
203	9	28	10	2		Impacted
204	12	25	24	3	4 stems; some dead material	Impacted

APPENDIX A (cont.)

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
205	16	18	35	2	2 stems	Impacted
206	28	34	44	1	2 stems	Impacted
207	19	42	34	2		Impacted
208	24	44	72	1	2 stems	Impacted
209	18	32	45	1		Impacted
210	17	26	34	1	3 stems	Impacted
211	16	24	21	2	3 stems	Impacted
212	28	28	18	2		Impacted
213	12	20	12	2		Impacted
214	17	36	34	2	3 stems	Impacted
215	14	36	32	1	8 stems	Impacted
216	8	26	16	1		Impacted
217	10	36	28	1		Impacted
218	19	38	44	2	8 stems; lots of dead wood	Impacted
219	30	18	15	1		Impacted
220	19	36	24	1	2 stems	Impacted
221	13	21	25	2	2 stems	Impacted
222	20	28	14	2	2 stems; dead wood	Impacted
223	9	28	10	1		Impacted
224	14	14	10	3	Leaning way over	Impacted
225	14	28	32	2	2 stems	Impacted
226	15	28	17	2		Impacted
227	22	38	52	1		Impacted
228	15	26	38	2	4 stems	Preserved
229	15	30	18	2	4 stems	Impacted
230	17	36	38	1	4 stems	Impacted
231	12	26	26	3	3 stems; basal heart rot	Impacted
232	22	26	36	3	2 stems	Impacted
233	16	42	44	2	4 stems	Impacted
234	15	30	22	2		Impacted
235	11	28	16	3		Impacted
236	11	26	24	2	4 stems	Impacted
237	15	28	22	2	4 stems	Impacted
238	21	42	34	1		Preserved
239	12	32	30	2	4 stems	Impacted
240	10	28	18	3	2 stems; falling over; split	Impacted
241	21	14	8	3	Dead wood	Impacted
242	18	28	26	1	2 stems	Impacted
243	18	28	32	2	3 stems	Impacted
244	7	16	24	1	*Quercus dumosa*; 6 stems	Impacted
245	21	18	24	2	2 stems	Impacted

APPENDIX A (cont.)

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
246	24	32	21	1	Excellent form	Impacted
247	31	34	55	1	3 stems	Impacted
248	28	32	44	1		Impacted
249	9	26	20	1		Impacted
250	19	32	36	1		Impacted
251	14	32	20	2		Impacted
252	36	32	41	1	2 stems	Impacted
253	52	32	42	1		Impacted
254	35	26	24	1		Impacted
255	13	25	10	3		Preserved
256	23	28	21	1		Preserved
257	22	26	20	2		Preserved
258	42	28	42	1	2 stems	Impacted
259	27	26	32	1		Impacted
260	26	28	28	3	6 stems; lots of dead wood	Impacted
261	14	24	20	2		Impacted
262	29	32	40	1	2 stems	Impacted
263	11	24	14	2	2 stems	Impacted
264	15	15	12	3	Rotted stump regrowth	Impacted
265	15	22	20	2		Impacted
266	14	15	10	3	Dead	Impacted
267	18	38	25	1		Impacted
268	14	32	20	2	2 stems	Impacted
269	10	32	28	2	4 stems	Impacted
270	11	20	18	2	2 stems	Impacted
271	15	20	18	2		Impacted
272	11	20	20	1		Impacted
273	14	24	21	2	2 stems, heart rot	Impacted
274	9	16	5	3	Dead	Impacted
275	13	30	31	2	3 stems	Impacted
276	10	26	32	2	2 stems	Impacted
277	9	12	15	3		Impacted
278	20	27	27	2	2 stems	Impacted
279	18	26	28	1	Supporting large deadfall	Impacted
280	18	30	31	1		Impacted
281	19	25	21	1		Impacted
282	18	37	20	1		Impacted
283	13	30	31	2	4 stems	Impacted
284	11	23	18	1		Impacted
285	12	18	18	1		Impacted
286	18	32	32	1		Impacted
287	10	24	28	1	Forks to 2	Impacted

APPENDIX A (cont.)

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
288	18	32	36	1	Forks to 2	Impacted
289	18	24	26	2	Some dead branches	Impacted
290	10	18	15	1		Impacted
291	13	20	24	1	5 stems	Impacted
292	34	40	42	2	Some dead branches	Impacted
293	17	34	38	1	2 stems	Preserved
294	14	24	28	1		Preserved
295	19	34	32	1	3 stems	Preserved
296	15	27	30	1	3 stems	Preserved
297	16	32	20	1		Preserved
298	14	33	45	1	5 stems	Preserved
299	15	18	15	2		Preserved
300	13	20	25	1	5 stems	Preserved
301	13	22	14	1	Forks to 2	Preserved
302	16	30	35	1		Preserved
303	10	28	26	1	4 stems	Preserved
304	5	11	8	1		Preserved
305	13	24	33	3	3 stems; nearly dead	Preserved
306	14	35	46	1	6 stems	Preserved
307	7	15	16	1	2 stems	Preserved
308	11	22	20	2		Preserved
309	9	26	14	1		Preserved
310	12	38	32	2	4 stems	Preserved
311	9	0(?)	0(?)	2	3 stems	Preserved
312	10	30	12	1		Preserved
313	27	35	46	1		Preserved
314	24	38	50	1		Preserved
315	5	18	9	1		Preserved
316	20	30	38	1	4 stems	Preserved
317	11	28	35	1	2 stems	Preserved
318	19	33	42	1	3 stems	Preserved
319	20	34	35	1		Preserved
320	18	34	38	1	5 stems	Preserved
321	20	17	28	1		Preserved
322	15	32	35	1		Preserved
323	15	36	35	1		Preserved
324	15	32	28	1		Preserved
325	14	38	42	1	3 stems	Preserved
326	25	38	45	1	2 stems	Preserved
327	10	31	22	1		Preserved
328	15	28	38	1	2 stems	Preserved
329	40	50	70	1	Good form	Preserved
330	41	55	80	1	3 stems	Preserved
331	18	40	30	1	2 stems	Preserved
332	20	45	50	1	4 stems	Preserved

APPENDIX A (cont.)

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
333	28	43	45	1		Preserved
334	16	30	32	1		Preserved
335	11	26	28	2	Some dead branches	Impacted
336	13	28	20	2		Impacted
337	12	30	22	2		Impacted
338	12	28	20	1	2 stems	Impacted
339	17	40	42	1	3 stems	Impacted
340	13	26	24	1		Impacted
341	17	28	26	1		Impacted
342	9	16	15	1		Preserved
343	9	18	28	1	6 stems	Preserved
344	57	55	85	1		Preserved
345	13	32	24	1		Preserved
346	41	42	90	1	2 stems; split	Preserved
347	36	50	65	1		Preserved
348	15	40	36	1	2 stems	Preserved
349	33	40	28	1	Hollow base	Preserved
350	35	55	65	1		Preserved
351	13	29	30	1		Preserved
352	70	65	95	1		Preserved
353	34	44	0(?)	0(?)		Preserved
354	11	23	16	1		Preserved
355	8	12	11	1		Preserved
356	50	65	70	1	Not tagged	Impacted
357	20	40	45	1	Estimated; inaccessible; no tag	Impacted
358	20	40	45	1	Estimated; inaccessible, no tag	Preserved
359	20	40	45	1	Estimated; inaccessible, no tag	Preserved
360	--	20	--	1		Preserved
361	--	20	--	1		Preserved
362	--	20	--	1		Preserved
363	--	20	--	1		Preserved
364	--	20	--	1		Preserved
365	--	20	--	1		Preserved
366	--	20	--	1		Preserved
367	--	10	--	1		Impacted
368	--	10	--	1		Impacted
369	--	20	--	1		Impacted
370	--	15	--	1		Impacted
371	--	20	--	1		Impacted
372	--	15	--	1		Impacted
373	--	15	--	1		Impacted
374	--	15	--	1		Impacted
375	--	10	--	1		Impacted

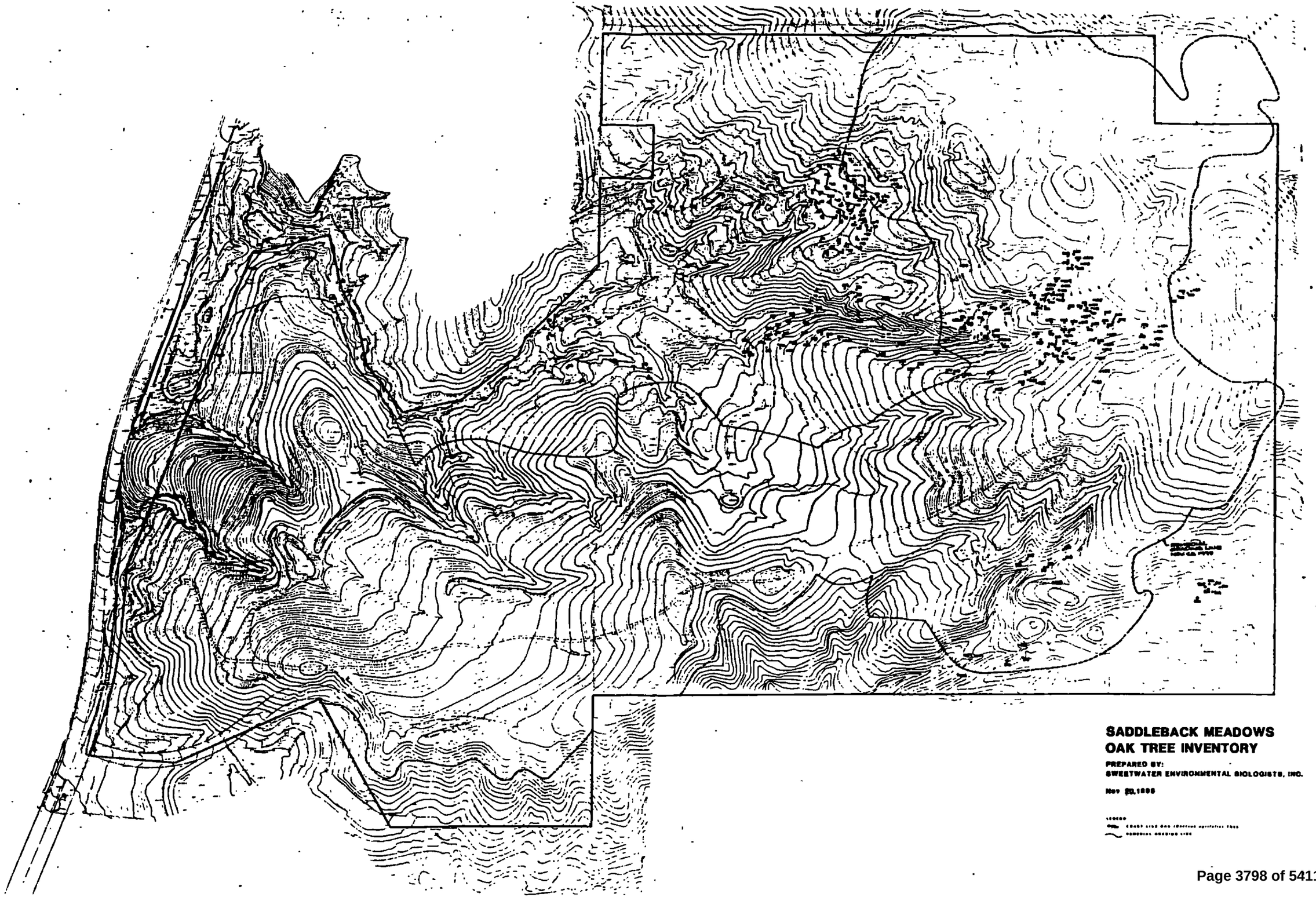
APPENDIX A (cont.)

Coast Live Oak (*Quercus agrifolia*) Tree Survey Data

Tag/Tree Number	Diameter at Breast Height (inches)	Height (feet)	Canopy (feet)	Qualitative Assessment*	Comments	Preserved/ Impacted
376	--	15	--	1		Impacted
377	--	20	--	1		Impacted
378	--	15	--	1		Preserved
379	--	15	--	1		Preserved
380	--	25	--	1		Impacted

* 1=Healthy tree with good form
2=Some rot or dead limbs, tree leans excessively, etc
3=Tree in poor health

Numbers 3 through 359 represent PSBS work. Numbers 360 through 380 represent SEB work. Notes in parentheses within PSBS' portion of the inventory are SEB's.



SADDLEBACK MEADOWS
OAK TREE INVENTORY

PREPARED BY:
SWEETWATER ENVIRONMENTAL BIOLOGISTS, INC.

Nov 20, 1998

APPENDIX L
HYDROLOGY REPORT

HYDROLOGY ANALYSIS

FOR

TRACT 10692

SADDLEBACK MEADOWS

PREPARED UNDER THE SUPERVISION OF:

8/28/95

GARY A. MARTIN
R.C.E. 50318 EXP. 6/30/97

TABLE OF CONTENTS

SECTION NUMBER	TITLE	PAGE
I	INTRODUCTION A. Project Location B. Study Purpose C. Project Staff	1
II	DISCUSSION	2
III	APPENDICES	3

Hunsaker & Associates, Inc.

I. INTRODUCTION

A. PROJECT LOCATION

Tract 10692 is located in the County of Orange South of Santiago Canyon Road and East of El Toro Road. (See Figure One).

B. STUDY PURPOSE

The purpose of this study is to determine the drainage facilities necessary for Tract 10692 (Saddleback Meadows).

C. PROJECT STAFF

Hunsaker & Associates, Inc. engineering staff involved in this study include:

Doug Snyder, R.C.E., Principal
Gary Martin, R.C.E.
G. Eshaghi

Hunsaker & Associates, Inc.

VICINITY MAP
PROJECT LOCATION
PACIFIC
OCEAN

DISCUSSION

The hydrology calculations submitted with this report for Tract 10692 is done per the 1986 O.C.E.M.A. Hydrology manual.

Tract 10692 is a proposed residential development known as Saddleback Meadows.

Total of 318 single family residential lots with the average lot size of 7500 square feet. The hydrology map for proposed condition in the back of this report depicts the storm drain alignments and catch basin locations. Node numbers are used to correlate the computer printouts to the development plan. All catch basins in the sump condition were sized to pickup the 100 year storm event.

The hydrology analysis for Tract 10692 (Saddleback Meadows) has been divided into five different files plus an existing 100 years storm event analysis of total tract area.

The hydrology map for existing condition in the back of this report is only for the purpose of comparing areas tributary at each point for Tract 10692 under developed and undeveloped stage and is not the actual discharge flow comparison nor total discharge tributary at each point.

III. APPENDICES

TITLE

HYDRAULIC CALCULATIONS

HYDROLOGY MAPS

Hunsaker & Associates, Inc.

HYDROLOGY CALCULATIONS

Humsaker & Associates, Inc.

1665-1

100 - YEAR STORM
(PROPOSED CONDITION)

Hunsaker & Associates, Inc.

1665-1

100 - YEAR STORM
LINE "A"

Hunsaker & Associates, Inc.

1665-1

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
        (c) Copyright 1983-94 Advanced Engineering Software (aes)
            Ver. 3.1B  Release Date:  6/01/94  License ID 1239

                        Analysis prepared by:

                      HUNSAKER  &  ASSOCIATES
                            Irvine, Inc.
                    Planning * Engineering * Surveying
          Three Hughes * Irvine , California 92718 * (714) 538-1010

 *************************** DESCRIPTION OF STUDY ***************************
* 100 YEAR HYDROLOGY ANALYSIS FOR LINE "A"                                  *
*                                                                           *
*                                                                           *
 ***************************************************************************

  FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665A.100
  TIME/DATE OF STUDY: 10:48   8/25/1995
===========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
===========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  ====  =======
  1   20.0     15.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   18.0     13.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =   .00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


**************************************************************************
  FLOW PROCESS FROM NODE     2.00 TO NODE     4.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
===========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  ELEVATION DATA: UPSTREAM(FEET) =   1650.00  DOWNSTREAM(FEET) =   1510.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.343
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.891
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 PUBLIC PARK                 D        3.00       .20        .85    91   11.34
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .85
 SUBAREA RUNOFF(CFS) =     10.05
 TOTAL AREA(ACRES) =      3.00   PEAK FLOW RATE(CFS) =     10.05


****************************************************************************
 FLOW PROCESS FROM NODE     4.00 TO NODE     6.00 IS CODE =  5.1
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================

 UPSTREAM NODE ELEVATION =    1510.00
 DOWNSTREAM NODE ELEVATION =   1481.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   380.00
 CHANNEL SLOPE =    .0750
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =    .000
 MANNING'S FACTOR =  .015   MAXIMUM DEPTH(FEET) =    .50
 CHANNEL FLOW THRU SUBAREA(CFS) =     10.05
 FLOW VELOCITY(FEET/SEC) =   5.32   FLOW DEPTH(FEET) =    .09
 TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  12.53


 ****************************************************************************
 FLOW PROCESS FROM NODE     6.00 TO NODE     6.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================

 MAINLINE Tc(MIN) =  12.53
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.655
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 D        1.30       .20        .85    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .85
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    4.08
 EFFECTIVE AREA(ACRES) =     4.30   AREA-AVERAGED Fm(INCH/HR) =   .17
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .85
 TOTAL AREA(ACRES) =     4.30       PEAK FLOW RATE(CFS) =      13.49


****************************************************************************
 FLOW PROCESS FROM NODE     6.00 TO NODE    10.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================

 JPSTREAM ELEVATION(FEET) = 1481.50  DOWNSTREAM ELEVATION(FEET) = 1475.00
 STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
```

```
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.15
   ***STREET FLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =     .44   FLOOD WIDTH(FEET) =   18.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.09
   SPLIT DEPTH(FEET) =     .32   SPLIT FLOOD WIDTH(FEET) =   10.84
   SPLIT FLOW(CFS) =    3.41   SPLIT VELOCITY(FEET/SEC.) =    3.04
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .44
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.09
   PRODUCT OF DEPTH&VELOCITY =    1.78
 STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  13.84
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.467
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.10       .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =    1.10      SUBAREA RUNOFF(CFS) =    3.33
 EFFECTIVE AREA(ACRES) =    5.40    AREA-AVERAGED Fm(INCH/HR) =   .16
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .78
 TOTAL AREA(ACRES) =    5.40       PEAK FLOW RATE(CFS) =      16.09

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .44   HALFSTREET FLOOD WIDTH(FEET) = 18.00
 FLOW VELOCITY(FEET/SEC.) =  4.09   DEPTH*VELOCITY =   1.78


****************************************************************************
 FLOW PROCESS FROM NODE    10.00 TO NODE    10.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.84
 RAINFALL INTENSITY(INCH/HR) =   3.47
 AREA-AVERAGED Fm(INCH/HR) =   .16
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .78
 EFFECTIVE STREAM AREA(ACRES) =    5.40
 TOTAL STREAM AREA(ACRES) =    5.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.09


****************************************************************************
 FLOW PROCESS FROM NODE     8.00 TO NODE    10.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   800.00
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   1594.00  DOWNSTREAM(FEET) =   1475.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.255
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.677
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        4.20       .20        .50    91    8.25
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =     17.30
 TOTAL AREA(ACRES) =      4.20   PEAK FLOW RATE(CFS) =     17.30


****************************************************************************
 FLOW PROCESS FROM NODE    10.00 TO NODE    10.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.25
 RAINFALL INTENSITY(INCH/HR) =   4.68
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    4.20
 TOTAL STREAM AREA(ACRES) =    4.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.30
 ** CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     16.09   13.84    3.467   .20( .16)   .78    5.40       2.00
    2     17.30    8.25    4.677   .20( .10)   .50    4.20       8.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)      NODE
    1       28.8   13.84    3.467  .200( .131)  .66       9.6        2.00
    2       30.4    8.25    4.677  .200( .124)  .62       7.4        8.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     30.41   Tc(MIN.) =    8.255
 EFFECTIVE AREA(ACRES) =      7.42  AREA-AVERAGED Fm(INCH/HR) =   .12
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .62
 TOTAL AREA(ACRES) =      9.60
 LONGEST FLOWPATH FROM NODE     2.00 TO NODE    10.00 =  1700.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE    10.00 TO NODE    22.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
UPSTREAM NODE ELEVATION(FEET) =  1468.00
DOWNSTREAM NODE ELEVATION(FEET) =  1445.00
FLOW LENGTH(FEET) =   310.00   MANNING'S N =  .013

DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.65
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     30.41
PIPEFLOW TRAVEL TIME(MIN.) =    .28    Tc(MIN.) =   8.53

****************************************************************************
FLOW PROCESS FROM NODE    22.00 TO NODE    22.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   8.53
RAINFALL INTENSITY(INCH/HR) =   4.59
AREA-AVERAGED Fm(INCH/HR) =   .12
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =   .62
EFFECTIVE STREAM AREA(ACRES) =    7.42
TOTAL STREAM AREA(ACRES) =    9.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.41

****************************************************************************
FLOW PROCESS FROM NODE    12.00 TO NODE    14.00 IS CODE =  2.1
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.00
ELEVATION DATA: UPSTREAM(FEET) =   1483.00  DOWNSTREAM(FEET) =   1452.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.799
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.219
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       D        1.40       .20        .50    91    9.80
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
SUBAREA RUNOFF(CFS) =      5.19
TOTAL AREA(ACRES) =      1.40   PEAK FLOW RATE(CFS) =      5.19

****************************************************************************
FLOW PROCESS FROM NODE    14.00 TO NODE    22.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
TOTAL NUMBER OF STREAMS =  2
```

```
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.80
 RAINFALL INTENSITY(INCH/HR) =    4.22
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =     1.40
 TOTAL STREAM AREA(ACRES) =     1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.19
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      28.82   14.12     3.427    .20( .13)   .66     9.60       2.00
    1      30.41    8.53     4.595    .20( .12)   .62     7.42       8.00
    2       5.19    9.80     4.219    .20( .10)   .50     1.40      12.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1        35.3    8.53     4.595   .200( .121)  .60       8.6       8.00
    2        33.0   14.12     3.427   .200( .127)  .64      11.0       2.00
    3        35.2    9.80     4.219   .200( .122)  .61       9.3      12.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      35.34   Tc(MIN.) =    8.532
 EFFECTIVE AREA(ACRES) =       8.64  AREA-AVERAGED Fm(INCH/HR) =    .12
 AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .60
 TOTAL AREA(ACRES) =     11.00
 LONGEST FLOWPATH FROM NODE      2.00 TO NODE     22.00 =  2010.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     22.00 TO NODE     36.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1445.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1443.50
 FLOW LENGTH(FEET) =   340.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.66
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     35.34
 PIPEFLOW TRAVEL TIME(MIN.) =     .85    Tc(MIN.) =   9.38

****************************************************************************
 FLOW PROCESS FROM NODE     36.00 TO NODE     36.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
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```
 FLOW PROCESS FROM NODE    24.00 TO NODE    28.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   410.00
 ELEVATION DATA: UPSTREAM(FEET) =   1470.00  DOWNSTREAM(FEET) =   1447.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.678
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.847
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.10       .20        .50    91    7.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      4.70
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.70


****************************************************************************
 FLOW PROCESS FROM NODE    28.00 TO NODE    28.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.68
 RAINFALL INTENSITY(INCH/HR) =   4.85
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.10
 TOTAL STREAM AREA(ACRES) =    1.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.70


****************************************************************************
 FLOW PROCESS FROM NODE    26.00 TO NODE    28.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   440.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.00  DOWNSTREAM(FEET) =   1447.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.481
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.064
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.60       .20        .50    91   10.48
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      5.71
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      5.71
```

```
**************************************************************************
 FLOW PROCESS FROM NODE     28.00 TO NODE     28.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.48
 RAINFALL INTENSITY(INCH/HR) =   4.06
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.60
 TOTAL STREAM AREA(ACRES) =    1.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.71
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap   Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1       4.70    7.68     4.847    .20( .10)  .50     1.10       24.00
    2       5.71   10.48     4.064    .20( .10)  .50     1.60       26.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap      Ae         SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)      NODE
    1        9.7    7.68     4.847  .200( .100)  .50       2.3        24.00
    2        9.6   10.48     4.064  .200( .100)  .50       2.7        26.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      9.71   Tc(MIN.) =    7.678
 EFFECTIVE AREA(ACRES) =      2.27  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =      2.70
 LONGEST FLOWPATH FROM NODE    26.00 TO NODE    28.00 =   440.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     28.00 TO NODE     36.00 IS CODE =  11
--------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap   Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1       9.71    7.68     4.847    .20( .10)  .50      2.3       24.00
    2       9.63   10.48     4.064    .20( .10)  .50      2.7       26.00
 LONGEST FLOWPATH FROM NODE    26.00 TO NODE    36.00 =   440.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap   Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1      35.34    9.38     4.343    .20( .12)  .60      8.6        8.00
    2      35.24   10.65     4.030    .20( .12)  .61      9.3       12.00
```

```
   3     33.01    15.00     3.299    .20( .13)   .64      11.0       2.00
 LONGEST FLOWPATH FROM NODE     2.00 TO NODE    36.00 =  2350.00 FEET.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity     Fp(Fm)      Ap      Ae        SOURCE
 NUMBER   (CFS)    (MIN.) (INCH/HR)   (INCH/HR)             (ACRES)     NODE
   1       42.1     7.68     4.847   .200( .116)   .58        9.3       24.00
   2       44.9    10.48     4.064   .200( .117)   .58       11.9       26.00
   3       45.0     9.38     4.343   .200( .116)   .58       11.2        8.00
   4       44.8    10.65     4.030   .200( .117)   .59       12.0       12.00
   5       40.8    15.00     3.299   .200( .122)   .61       13.7        2.00
  TOTAL AREA =      13.70

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     45.00   Tc(MIN.) =    9.382
 EFFECTIVE AREA(ACRES) =     11.17  AREA-AVERAGED Fm(INCH/HR) =    .12
 AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .58
 TOTAL AREA(ACRES) =     13.70
 LONGEST FLOWPATH FROM NODE     2.00 TO NODE    36.00 =  2350.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    36.00 TO NODE    36.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    30.00 TO NODE    34.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   380.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1447.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.025
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.955
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D         .80       .20        .50    91   11.03
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      2.78
 TOTAL AREA(ACRES) =       .80   PEAK FLOW RATE(CFS) =      2.78


****************************************************************************
 FLOW PROCESS FROM NODE    34.00 TO NODE    34.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.03
```

```
 RAINFALL INTENSITY(INCH/HR) =   3.95
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =      .80
 TOTAL STREAM AREA(ACRES) =      .80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.78

****************************************************************************
 FLOW PROCESS FROM NODE    32.00 TO NODE    34.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   440.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.00  DOWNSTREAM(FEET) =   1447.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.481
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.064
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.30       .20        .50    91   10.48
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      4.64
 TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      4.64

****************************************************************************
 FLOW PROCESS FROM NODE    34.00 TO NODE    34.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.48
 RAINFALL INTENSITY(INCH/HR) =   4.06
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.64
 ** CONFLUENCE DATA **
 STREAM     Q       Tc   Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1      2.78   11.03    3.955   .20( .10)   .50     .80      30.00
    2      4.64   10.48    4.064   .20( .10)   .50    1.30      32.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc   Intensity    Fp(Fm)      Ap      Ae        SOURCE
```

```
NUMBER    (CFS)    (MIN.)  (INCH/HR)   (INCH/HR)          (ACRES)      NODE
   1        7.3    11.03     3.955   .200( .100)   .50        2.1       30.00
   2        7.4    10.48     4.064   .200( .100)   .50        2.1       32.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      7.35   Tc(MIN.) =   10.481
EFFECTIVE AREA(ACRES) =     2.06  AREA-AVERAGED Fm(INCH/HR) =   .10
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
TOTAL AREA(ACRES) =      2.10
LONGEST FLOWPATH FROM NODE    32.00 TO NODE    34.00 =   440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    34.00 TO NODE    36.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
STREAM      Q       Tc   Intensity   Fp(Fm)      Ap   Ae        SOURCE
NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
   1       7.35   10.48     4.064   .20( .10)   .50       2.1      32.00
   2       7.29   11.03     3.955   .20( .10)   .50       2.1      30.00
LONGEST FLOWPATH FROM NODE    32.00 TO NODE    36.00 =   440.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM      Q       Tc   Intensity   Fp(Fm)      Ap   Ae        SOURCE
NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
   1      42.08    7.68     4.847   .20( .12)   .58       9.3      24.00
   2      45.00    9.38     4.343   .20( .12)   .58      11.2       8.00
   3      44.88   10.48     4.064   .20( .12)   .58      11.9      26.00
   4      44.79   10.65     4.030   .20( .12)   .59      12.0      12.00
   5      40.79   15.00     3.299   .20( .12)   .61      13.7       2.00
LONGEST FLOWPATH FROM NODE     2.00 TO NODE    36.00 =  2350.00 FEET.

 ** PEAK FLOW RATE TABLE **

STREAM      Q       Tc   Intensity    Fp(Fm)      Ap     Ae        SOURCE
NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
   1       52.2   10.48     4.064  .200( .114)  .57      14.0      32.00
   2       51.7   11.03     3.955  .200( .115)  .57      14.3      30.00
   3       48.5    7.68     4.847  .200( .114)  .57      10.9      24.00
   4       52.0    9.38     4.343  .200( .114)  .57      13.0       8.00
   5       52.2   10.48     4.064  .200( .114)  .57      14.0      26.00
   6       52.1   10.65     4.030  .200( .115)  .57      14.1      12.00
   7       46.8   15.00     3.299  .200( .119)  .60      15.8       2.00
  TOTAL AREA =     15.80

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     52.23   Tc(MIN.) =   10.481
 EFFECTIVE AREA(ACRES) =     13.99  AREA-AVERAGED Fm(INCH/HR) =   .11
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .57
 TOTAL AREA(ACRES) =     15.80
 LONGEST FLOWPATH FROM NODE     2.00 TO NODE    36.00 =  2350.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    36.00 TO NODE    36.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
```

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**********************************************************************************
 FLOW PROCESS FROM NODE    36.00 TO NODE    36.00 IS CODE =  12
----------------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
==================================================================================

**********************************************************************************
 FLOW PROCESS FROM NODE    36.00 TO NODE    38.00 IS CODE =  3.1
----------------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==================================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1443.50
 DOWNSTREAM NODE ELEVATION(FEET) =  1350.00
 FLOW LENGTH(FEET) =   410.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  32.55
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     52.23
 PIPEFLOW TRAVEL TIME(MIN.) =    .21    Tc(MIN.) =  10.69

**********************************************************************************
 FLOW PROCESS FROM NODE    38.00 TO NODE    38.00 IS CODE =   1
----------------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==================================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.69
 RAINFALL INTENSITY(INCH/HR) =   4.02
 AREA-AVERAGED Fm(INCH/HR) =   .11
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .57
 EFFECTIVE STREAM AREA(ACRES) =   13.99
 TOTAL STREAM AREA(ACRES) =   15.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.23

**********************************************************************************
 FLOW PROCESS FROM NODE   400.00 TO NODE   402.00 IS CODE =  2.1
----------------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==================================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
 ELEVATION DATA: UPSTREAM(FEET) =   1594.00  DOWNSTREAM(FEET) =   1440.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  16.267
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.158
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
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"OPEN BRUSH"                D      6.50      .20      1.00     96    16.27
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =     17.31
TOTAL AREA(ACRES) =      6.50   PEAK FLOW RATE(CFS) =     17.31

****************************************************************************
 FLOW PROCESS FROM NODE   402.00 TO NODE    38.00 IS CODE =  5.1
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1440.00
 DOWNSTREAM NODE ELEVATION =   1350.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   450.00
 CHANNEL SLOPE =   .2000
 CHANNEL BASE(FEET) =      .00   "Z" FACTOR =   1.500
 MANNING'S FACTOR =  .015   MAXIMUM DEPTH(FEET) =   1.50
 CHANNEL FLOW THRU SUBAREA(CFS) =     17.31
 FLOW VELOCITY(FEET/SEC) =  20.38   FLOW DEPTH(FEET) =     .75
 TRAVEL TIME(MIN.) =     .37   Tc(MIN.) =  16.63

****************************************************************************
 FLOW PROCESS FROM NODE    38.00 TO NODE    38.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  16.63
 RAINFALL INTENSITY(INCH/HR) =   3.12
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    6.50
 TOTAL STREAM AREA(ACRES) =    6.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.31
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      52.23   10.69     4.022    .20( .11)   .57    13.99      32.00
    1      51.73   11.24     3.913    .20( .11)   .57    14.26      30.00
    1      48.53    7.89     4.784    .20( .11)   .57    10.85      24.00
    1      52.04    9.59     4.281    .20( .11)   .57    13.02       8.00
    1      52.23   10.69     4.022    .20( .11)   .57    13.99      26.00
    1      52.12   10.86     3.988    .20( .11)   .57    14.09      12.00
    1      46.84   15.23     3.275    .20( .12)   .60    15.80       2.00
    2      17.31   16.63     3.117    .20( .20)  1.00     6.50     400.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap      Ae       SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
   1        61.4    7.89     4.784   .200( .133)   .66      13.9      24.00
```

```
    2       66.0     9.59     4.281   .200( .133)   .67       16.8        8.00
    3       66.8    10.69     4.022   .200( .134)   .67       18.2       32.00
    4       66.8    10.69     4.022   .200( .134)   .67       18.2       26.00
    5       66.8    10.86     3.988   .200( .134)   .67       18.3       12.00
    6       66.6    11.24     3.913   .200( .135)   .67       18.7       30.00
    7       63.5    15.23     3.275   .200( .141)   .71       21.8        2.00
    8       61.8    16.63     3.117   .200( .143)   .71       22.3      400.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     66.80   Tc(MIN.) =   10.691
  EFFECTIVE AREA(ACRES) =     18.16  AREA-AVERAGED Fm(INCH/HR) =   .13
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .67
  TOTAL AREA(ACRES) =     22.30
  LONGEST FLOWPATH FROM NODE     2.00 TO NODE    38.00 =  2760.00 FEET.


****************************************************************************
  FLOW PROCESS FROM NODE    38.00 TO NODE   409.00 IS CODE =  5.2
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION =   1350.00
  DOWNSTREAM NODE ELEVATION =   1146.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1080.00
  CHANNEL SLOPE =   .1889
  CHANNEL FLOW THRU SUBAREA(CFS) =     66.80
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  FLOW VELOCITY(FEET/SEC) =  13.32 (PER LACFCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =  12.04


****************************************************************************
  FLOW PROCESS FROM NODE   409.00 TO NODE   409.00 IS CODE =  8.1
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.752
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       11.00       .20       1.00    96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   11.00      SUBAREA RUNOFF(CFS) =   35.16
  EFFECTIVE AREA(ACRES) =    29.16   AREA-AVERAGED Fm(INCH/HR) =   .16
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .79
  TOTAL AREA(ACRES) =    33.30       PEAK FLOW RATE(CFS) =      94.29

  ** PEAK FLOW RATE TABLE **

  STREAM     Q        Tc    Intensity     Fp(Fm)      Ap     Ae        SOURCE
  NUMBER   (CFS)    (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)     NODE
     1       94.5     9.28     4.374   .200( .162)   .81       24.9       24.00
     2       95.2    10.95     3.970   .200( .160)   .80       27.8        8.00
     3       94.3    12.04     3.752   .200( .159)   .79       29.2       32.00
     4       94.3    12.04     3.752   .200( .159)   .79       29.2       26.00
     5       93.9    12.21     3.718   .200( .159)   .79       29.3       12.00
```

6	93.1	12.59	3.647	.200(.159)	.80	29.7	30.00
7	87.2	16.60	3.121	.200(.161)	.80	32.8	2.00
8	84.3	18.02	2.974	.200(.162)	.81	33.3	400.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 95.22 Tc(MIN.) = 10.95
AREA-AVERAGED Fm(INCH/HR) = .16 AREA-AVERAGED Fp(INCH/HR) = .20
AREA-AVERAGED Ap = .80 EFFECTIVE AREA(ACRES) = 27.76

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 33.30 TC(MIN.) = 10.95
EFFECTIVE AREA(ACRES) = 27.76 AREA-AVERAGED Fm(INCH/HR)= .16
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .80
PEAK FLOW RATE(CFS) = 95.22

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	94.5	9.28	4.374	.200(.162)	.81	24.9	24.00
2	95.2	10.95	3.970	.200(.160)	.80	27.8	8.00
3	94.3	12.04	3.752	.200(.159)	.79	29.2	32.00
4	94.3	12.04	3.752	.200(.159)	.79	29.2	26.00
5	93.9	12.21	3.718	.200(.159)	.79	29.3	12.00
6	93.1	12.59	3.647	.200(.159)	.80	29.7	30.00
7	87.2	16.60	3.121	.200(.161)	.80	32.8	2.00
8	84.3	18.02	2.974	.200(.162)	.81	33.3	400.00

END OF RATIONAL METHOD ANALYSIS

100 - YEAR STORM
LINE "B"

Hunsaker & Associates, Inc.

1665-1

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
               (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                          Analysis prepared by:

                          HUNSAKER  &  ASSOCIATES
                                Irvine, Inc.
                        Planning * Engineering * Surveying
                Three Hughes * Irvine , California 92718 * (714) 538-1010

 ************************** DESCRIPTION OF STUDY **************************
* 100 YEAR HYDROLOGY STUDY FOR LINE "B"                                   *
*                                                                         *
*                                                                         *
 *************************************************************************

  FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665B.100
  TIME/DATE OF STUDY: 10:54   8/25/1995
=========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO    STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH   CROSSFALL  IN-  / OUT-/PARK-   HEIGHT  WIDTH  LIP   HIKE   FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY     (FT)    (FT)   (FT)  (FT)     (n)
===  =====  ==========  ==================  ======  =====  ======  =====  =======
  1   20.0      15.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   18.0      13.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =   .00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


**************************************************************************
  FLOW PROCESS FROM NODE    42.00 TO NODE    44.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ------------------------------------------------------------------------
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   350.00
  ELEVATION DATA: UPSTREAM(FEET) =   1606.00  DOWNSTREAM(FEET) =   1482.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.50       .20        .50    91    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      8.22
 TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      8.22


****************************************************************************
 FLOW PROCESS FROM NODE    44.00 TO NODE    50.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1482.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1468.00
 FLOW LENGTH(FEET) =   220.00   MANNING'S N =  .013

 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.73
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      8.22
 PIPEFLOW TRAVEL TIME(MIN.) =    .29    Tc(MIN.) =   5.29


****************************************************************************
 FLOW PROCESS FROM NODE    50.00 TO NODE    50.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.29
 RAINFALL INTENSITY(INCH/HR) =   6.04
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.50
 TOTAL STREAM AREA(ACRES) =    1.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.22


****************************************************************************
 FLOW PROCESS FROM NODE    46.00 TO NODE    48.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
 ELEVATION DATA: UPSTREAM(FEET) =   1586.00  DOWNSTREAM(FEET) =   1475.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
```

```
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       D        1.50       .20        .50    91    5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
SUBAREA RUNOFF(CFS) =      8.22
TOTAL AREA(ACRES) =      1.50   PEAK FLOW RATE(CFS) =      8.22


****************************************************************************
FLOW PROCESS FROM NODE    48.00 TO NODE    50.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   5.00
RAINFALL INTENSITY(INCH/HR) =   6.19
AREA-AVERAGED Fm(INCH/HR) =   .10
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =   .50
EFFECTIVE STREAM AREA(ACRES) =    1.50
TOTAL STREAM AREA(ACRES) =    1.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.22
** CONFLUENCE DATA **
STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
   1      8.22    5.29    6.041   .20( .10)   .50    1.50      42.00
   2      8.22    5.00    6.190   .20( .10)   .50    1.50      46.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
   1      16.2    5.29    6.041  .200( .100)  .50       3.0       42.00
   2      16.2    5.00    6.190  .200( .100)  .50       2.9       46.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     16.24   Tc(MIN.) =    5.288
EFFECTIVE AREA(ACRES) =      3.00  AREA-AVERAGED Fm(INCH/HR) =   .10
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
TOTAL AREA(ACRES) =      3.00
LONGEST FLOWPATH FROM NODE    42.00 TO NODE    50.00 =   570.00 FEET.


****************************************************************************
FLOW PROCESS FROM NODE    50.00 TO NODE    62.00 IS CODE =  3.1
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
UPSTREAM NODE ELEVATION(FEET) =  1468.00
DOWNSTREAM NODE ELEVATION(FEET) =  1465.00
```

```
 FLOW LENGTH(FEET) =    30.00   MANNING'S N =  .013

 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.97
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     16.24
 PIPEFLOW TRAVEL TIME(MIN.) =    .03    Tc(MIN.) =   5.32

****************************************************************************
 FLOW PROCESS FROM NODE    62.00 TO NODE    62.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    52.00 TO NODE    54.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   540.00
 ELEVATION DATA: UPSTREAM(FEET) =   1648.00  DOWNSTREAM(FEET) =   1490.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.161
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.591
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        2.70       .20        .50    91    6.16
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =     13.34
 TOTAL AREA(ACRES) =      2.70   PEAK FLOW RATE(CFS) =     13.34


****************************************************************************
 FLOW PROCESS FROM NODE    54.00 TO NODE    60.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.16
 RAINFALL INTENSITY(INCH/HR) =   5.59
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    2.70
 TOTAL STREAM AREA(ACRES) =    2.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.34

****************************************************************************
 FLOW PROCESS FROM NODE    56.00 TO NODE    58.00 IS CODE =  2.1
----------------------------------------------------------------------------
```

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

INITIAL SUBAREA FLOW-LENGTH(FEET) = 720.00
ELEVATION DATA: UPSTREAM(FEET) = 1644.00 DOWNSTREAM(FEET) = 1473.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.632
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.864
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
COMMERCIAL	D	2.10	.20	.10	91	5.63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = .10
SUBAREA RUNOFF(CFS) = 11.04
TOTAL AREA(ACRES) = 2.10 PEAK FLOW RATE(CFS) = 11.04

```
**********************************************************************
```
FLOW PROCESS FROM NODE 58.00 TO NODE 60.00 IS CODE = 1
```
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 5.63
RAINFALL INTENSITY(INCH/HR) = 5.86
AREA-AVERAGED Fm(INCH/HR) = .02
AREA-AVERAGED Fp(INCH/HR) = .20
AREA-AVERAGED Ap = .10
EFFECTIVE STREAM AREA(ACRES) = 2.10
TOTAL STREAM AREA(ACRES) = 2.10
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.04
** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	13.34	6.16	5.591	.20(.10)	.50	2.70	52.00
2	11.04	5.63	5.864	.20(.02)	.10	2.10	56.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	23.9	6.16	5.591	.200(.065)	.32	4.8	52.00
2	23.8	5.63	5.864	.200(.063)	.32	4.6	56.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 23.87 Tc(MIN.) = 6.161
EFFECTIVE AREA(ACRES) = 4.80 AREA-AVERAGED Fm(INCH/HR) = .06
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .32
TOTAL AREA(ACRES) = 4.80
LONGEST FLOWPATH FROM NODE 56.00 TO NODE 60.00 = 720.00 FEET.

```
**********************************************************************
```

```
 FLOW PROCESS FROM NODE    60.00 TO NODE    62.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1      23.85     5.63     5.864    .20( .06)   .32       4.6      56.00
    2      23.87     6.16     5.591    .20( .06)   .32       4.8      52.00
 LONGEST FLOWPATH FROM NODE    56.00 TO NODE    62.00 =   720.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1      16.19     5.03     6.176    .20( .10)   .50       2.9      46.00
    2      16.24     5.32     6.027    .20( .10)   .50       3.0      42.00
 LONGEST FLOWPATH FROM NODE    42.00 TO NODE    62.00 =   600.00 FEET.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1       39.6     5.63     5.864   .200( .078)  .39       7.6      56.00
    2       38.9     6.16     5.591   .200( .078)  .39       7.8      52.00
    3       38.6     5.03     6.176   .200( .079)  .39       7.0      46.00
    4       39.4     5.32     6.027   .200( .078)  .39       7.3      42.00
   TOTAL AREA =      7.80

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     39.64   Tc(MIN.) =    5.632
 EFFECTIVE AREA(ACRES) =     7.57  AREA-AVERAGED Fm(INCH/HR) =  .08
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .39
 TOTAL AREA(ACRES) =     7.80
 LONGEST FLOWPATH FROM NODE    56.00 TO NODE    62.00 =   720.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    62.00 TO NODE    62.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    62.00 TO NODE    68.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1465.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1458.00
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  23.56
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     39.64
 PIPEFLOW TRAVEL TIME(MIN.) =     .04    Tc(MIN.) =   5.67
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     68.00 TO NODE     68.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    5.67
 RAINFALL INTENSITY(INCH/HR) =    5.84
 AREA-AVERAGED Fm(INCH/HR) =    .08
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .39
 EFFECTIVE STREAM AREA(ACRES) =     7.57
 TOTAL STREAM AREA(ACRES) =     7.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      39.64


****************************************************************************
 FLOW PROCESS FROM NODE     64.00 TO NODE     66.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    510.00
 ELEVATION DATA: UPSTREAM(FEET) =    1485.00  DOWNSTREAM(FEET) =    1468.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =     9.298
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.368
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.50       .20        .50    91    9.30
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .50
 SUBAREA RUNOFF(CFS) =       5.76
 TOTAL AREA(ACRES) =       1.50   PEAK FLOW RATE(CFS) =       5.76


****************************************************************************
 FLOW PROCESS FROM NODE     66.00 TO NODE     68.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.30
 RAINFALL INTENSITY(INCH/HR) =    4.37
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =     1.50
 TOTAL STREAM AREA(ACRES) =     1.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.76
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity   Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
```

```
   1      39.64     5.67     5.842    .20( .08)   .39     7.57      56.00
   1      38.92     6.20     5.569    .20( .08)   .39     7.80      52.00
   1      38.62     5.07     6.154    .20( .08)   .39     7.00      46.00
   1      39.38     5.36     6.005    .20( .08)   .39     7.31      42.00
   2       5.76     9.30     4.368    .20( .10)   .50     1.50      64.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q        Tc    Intensity     Fp(Fm)       Ap      Ae        SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)   (INCH/HR)              (ACRES)     NODE
    1       43.1     5.07     6.154   .200( .081)   .40        7.8       46.00
    2       44.0     5.36     6.005   .200( .081)   .40        8.2       42.00
    3       44.4     5.67     5.842   .200( .080)   .40        8.5       56.00
    4       43.8     6.20     5.569   .200( .081)   .40        8.8       52.00
    5       36.2     9.30     4.368   .200( .082)   .41        9.3       64.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     44.37   Tc(MIN.) =    5.675
 EFFECTIVE AREA(ACRES) =      8.48  AREA-AVERAGED Fm(INCH/HR) =   .08
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .40
 TOTAL AREA(ACRES) =      9.30
 LONGEST FLOWPATH FROM NODE    56.00 TO NODE    68.00 =   780.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    68.00 TO NODE    78.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1458.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1415.50
 FLOW LENGTH(FEET) =   520.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.28
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     44.37
 PIPEFLOW TRAVEL TIME(MIN.) =    .41    Tc(MIN.) =   6.08


****************************************************************************
 FLOW PROCESS FROM NODE    78.00 TO NODE    78.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.08
 RAINFALL INTENSITY(INCH/HR) =   5.63
 AREA-AVERAGED Fm(INCH/HR) =   .08
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .40
 EFFECTIVE STREAM AREA(ACRES) =    8.48
 TOTAL STREAM AREA(ACRES) =    9.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.37
```

```
****************************************************************************
 FLOW PROCESS FROM NODE    16.00 TO NODE    18.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   800.00
 ELEVATION DATA: UPSTREAM(FEET) =   1594.00  DOWNSTREAM(FEET) =   1474.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.241
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.681
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.80       .20        .50    91    8.24
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      7.42
 TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      7.42


****************************************************************************
 FLOW PROCESS FROM NODE    18.00 TO NODE    20.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
 ===========================================================================
 UPSTREAM ELEVATION(FEET) = 1474.00  DOWNSTREAM ELEVATION(FEET) = 1452.00
 STREET LENGTH(FEET) =   290.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      8.99
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .34
   HALFSTREET FLOOD WIDTH(FEET) =   12.36
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.33
   PRODUCT OF DEPTH&VELOCITY =    2.16
 STREET FLOW TRAVEL TIME(MIN.) =    .76   Tc(MIN.) =   9.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.455
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D         .80       .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =     .80      SUBAREA RUNOFF(CFS) =    3.14
 EFFECTIVE AREA(ACRES) =    2.60    AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =    2.60        PEAK FLOW RATE(CFS) =      10.19
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 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .35   HALFSTREET FLOOD WIDTH(FEET) = 13.07
 FLOW VELOCITY(FEET/SEC.) =  6.47   DEPTH*VELOCITY =   2.28

****************************************************************************
 FLOW PROCESS FROM NODE    20.00 TO NODE    72.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1452.00  DOWNSTREAM ELEVATION(FEET) = 1422.50
 STREET LENGTH(FEET) =   900.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 20.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.19
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .45
   HALFSTREET FLOOD WIDTH(FEET) =   18.54
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.32
   PRODUCT OF DEPTH&VELOCITY =    2.37
 STREET FLOW TRAVEL TIME(MIN.) =   2.82   Tc(MIN.) =  11.82
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.795
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        3.60      .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =    3.60      SUBAREA RUNOFF(CFS) =   11.97
 EFFECTIVE AREA(ACRES) =    6.20    AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =    6.20        PEAK FLOW RATE(CFS) =      20.62

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .47   HALFSTREET FLOOD WIDTH(FEET) = 20.00
 FLOW VELOCITY(FEET/SEC.) =  5.54   DEPTH*VELOCITY =   2.61

****************************************************************************
 FLOW PROCESS FROM NODE    72.00 TO NODE    78.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.82
 RAINFALL INTENSITY(INCH/HR) =   3.80
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
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```
 EFFECTIVE STREAM AREA(ACRES) =    6.20
 TOTAL STREAM AREA(ACRES) =    6.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.62


****************************************************************************
 FLOW PROCESS FROM NODE    74.00 TO NODE    76.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
 ELEVATION DATA: UPSTREAM(FEET) =   1452.00  DOWNSTREAM(FEET) =   1422.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.095
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.741
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        2.90       .20        .50    91   12.10
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      9.50
 TOTAL AREA(ACRES) =      2.90   PEAK FLOW RATE(CFS) =      9.50


****************************************************************************
 FLOW PROCESS FROM NODE    76.00 TO NODE    78.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.10
 RAINFALL INTENSITY(INCH/HR) =   3.74
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    2.90
 TOTAL STREAM AREA(ACRES) =    2.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.50
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity   Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1      43.08     5.48     5.942   .20( .08)   .40     7.81      46.00
    1      43.98     5.77     5.795   .20( .08)   .40     8.18      42.00
    1      44.37     6.08     5.632   .20( .08)   .40     8.48      56.00
    1      43.84     6.61     5.358   .20( .08)   .40     8.80      52.00
    1      36.17     9.73     4.240   .20( .08)   .41     9.30      64.00
    2      20.62    11.82     3.795   .20( .10)   .50     6.20      16.00
    3       9.50    12.10     3.741   .20( .10)   .50     2.90      74.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	65.1	5.48	5.942	.200(.088)	.44	12.0	46.00
2	66.6	5.77	5.795	.200(.087)	.44	12.6	42.00
3	67.5	6.08	5.632	.200(.087)	.44	13.1	56.00
4	67.8	6.61	5.358	.200(.088)	.44	13.9	52.00
5	63.9	9.73	4.240	.200(.090)	.45	16.7	64.00
6	62.4	11.82	3.795	.200(.091)	.45	18.3	16.00
7	61.6	12.10	3.741	.200(.091)	.45	18.4	74.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 67.76 Tc(MIN.) = 6.612
EFFECTIVE AREA(ACRES) = 13.85 AREA-AVERAGED Fm(INCH/HR) = .09
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .44
TOTAL AREA(ACRES) = 18.40
LONGEST FLOWPATH FROM NODE 16.00 TO NODE 78.00 = 1990.00 FEET.

****
FLOW PROCESS FROM NODE 78.00 TO NODE 80.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
===
UPSTREAM NODE ELEVATION(FEET) = 1415.50
DOWNSTREAM NODE ELEVATION(FEET) = 1310.00
FLOW LENGTH(FEET) = 340.00 MANNING'S N = .013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 38.75
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 67.76
PIPEFLOW TRAVEL TIME(MIN.) = .15 Tc(MIN.) = 6.76

****
FLOW PROCESS FROM NODE 80.00 TO NODE 408.00 IS CODE = 5.2

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
===
UPSTREAM NODE ELEVATION = 1310.00
DOWNSTREAM NODE ELEVATION = 1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 910.00
CHANNEL SLOPE = .1341
CHANNEL FLOW THRU SUBAREA(CFS) = 67.76
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
FLOW VELOCITY(FEET/SEC) = 13.37 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.13 Tc(MIN.) = 7.89

****
FLOW PROCESS FROM NODE 408.00 TO NODE 408.00 IS CODE = 8.1

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
===
MAINLINE Tc(MIN) = 7.89
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.784
SUBAREA LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

```
     LAND USE                GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
NATURAL FAIR COVER
"OPEN BRUSH"                   D       13.70        .20        1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   13.70      SUBAREA RUNOFF(CFS) =   56.52
EFFECTIVE AREA(ACRES) =    27.55   AREA-AVERAGED Fm(INCH/HR) =   .14
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .72
TOTAL AREA(ACRES) =    32.10       PEAK FLOW RATE(CFS) =     115.07

** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)     NODE
   1     118.6     6.78     5.274   .200( .147)   .74      25.7      46.00
   2     117.9     7.05     5.131   .200( .146)   .73      26.3      42.00
   3     116.5     7.36     4.970   .200( .145)   .72      26.8      56.00
   4     115.1     7.89     4.784   .200( .144)   .72      27.6      52.00
   5     104.5    11.03     3.953   .200( .139)   .70      30.4      64.00
   6      98.9    13.13     3.569   .200( .138)   .69      32.0      16.00
   7      98.0    13.41     3.529   .200( .137)   .69      32.1      74.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    118.59  Tc(MIN.) =   6.78
AREA-AVERAGED Fm(INCH/HR) =   .15  AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =   .74  EFFECTIVE AREA(ACRES) =    25.70


****************************************************************************
 FLOW PROCESS FROM NODE   408.00 TO NODE   408.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================

 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.78
 RAINFALL INTENSITY(INCH/HR) =   5.27
 AREA-AVERAGED Fm(INCH/HR) =   .15
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .74
 EFFECTIVE STREAM AREA(ACRES) =   25.70
 TOTAL STREAM AREA(ACRES) =   32.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    118.59


****************************************************************************
 FLOW PROCESS FROM NODE   404.00 TO NODE   406.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================

 INITIAL SUBAREA FLOW-LENGTH(FEET) =   750.00
 ELEVATION DATA: UPSTREAM(FEET) =   1365.00  DOWNSTREAM(FEET) =   1240.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.271
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.405
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)   (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
```

```
"OPEN BRUSH"                D        8.50       .20       1.00     96   14.27
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =     24.52
TOTAL AREA(ACRES) =      8.50   PEAK FLOW RATE(CFS) =     24.52

****************************************************************************
 FLOW PROCESS FROM NODE   406.00 TO NODE   408.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1240.00
 DOWNSTREAM NODE ELEVATION =   1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   220.00
 CHANNEL SLOPE =   .2364
 CHANNEL FLOW THRU SUBAREA(CFS) =     24.52
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =  10.02 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .37  Tc(MIN.) =  14.64

****************************************************************************
 FLOW PROCESS FROM NODE   408.00 TO NODE   408.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.64
 RAINFALL INTENSITY(INCH/HR) =   3.35
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    8.50
 TOTAL STREAM AREA(ACRES) =    8.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.52
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     118.59     6.78     5.274   .20( .15)   .74    25.70     46.00
    1     117.90     7.05     5.131   .20( .15)   .73    26.28     42.00
    1     116.53     7.36     4.970   .20( .14)   .72    26.83     56.00
    1     115.07     7.89     4.784   .20( .14)   .72    27.55     52.00
    1     104.47    11.03     3.953   .20( .14)   .70    30.44     64.00
    1      98.93    13.13     3.569   .20( .14)   .69    32.03     16.00
    1      97.98    13.41     3.529   .20( .14)   .69    32.10     74.00
    2      24.52    14.64     3.352   .20( .20) 1.00     8.50    404.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap     Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      136.9     6.78     5.274  .200( .154)  .77     29.6      46.00
    2      136.4     7.05     5.131  .200( .153)  .77     30.4      42.00
```

```
    3       135.2     7.36     4.970   .200( .152)   .76       31.1       56.00
    4       134.3     7.89     4.784   .200( .152)   .76       32.1       52.00
    5       126.5    11.03     3.953   .200( .150)   .75       36.8       64.00
    6       122.4    13.13     3.569   .200( .150)   .75       39.7       16.00
    7       121.7    13.41     3.529   .200( .150)   .75       39.9       74.00
    8       117.4    14.64     3.352   .200( .151)   .75       40.6      404.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    136.85   Tc(MIN.) =    6.775
  EFFECTIVE AREA(ACRES) =     29.64  AREA-AVERAGED Fm(INCH/HR) =   .15
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .77
  TOTAL AREA(ACRES) =     40.60
  LONGEST FLOWPATH FROM NODE    16.00 TO NODE   408.00 =  3240.00 FEET.


****************************************************************************
  FLOW PROCESS FROM NODE   408.00 TO NODE   410.00 IS CODE =  5.2
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION =   1188.00
  DOWNSTREAM NODE ELEVATION =   1148.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   460.00
  CHANNEL SLOPE =   .0870
  CHANNEL FLOW THRU SUBAREA(CFS) =    136.85
  FLOW VELOCITY(FEET/SEC) =  15.39 (PER LACFCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =    .50   Tc(MIN.) =   7.27


****************************************************************************
  FLOW PROCESS FROM NODE   410.00 TO NODE   410.00 IS CODE =  8.1
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   7.27
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.017
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        3.10       .20       1.00    96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =   13.44
  EFFECTIVE AREA(ACRES) =    32.74   AREA-AVERAGED Fm(INCH/HR) =   .16
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .79
  TOTAL AREA(ACRES) =    43.70      PEAK FLOW RATE(CFS) =     143.14


****************************************************************************
  FLOW PROCESS FROM NODE   410.00 TO NODE   410.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
  ============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE   409.00 TO NODE   409.00 IS CODE = 15.1
----------------------------------------------------------------------------
```

```
>>>>>DEFINE MEMORY BANK # 3 <<<<<
```

PEAK FLOWRATE TABLE FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665A.PFT
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	94.52	9.28	.20(.16)	.81	24.94	24.00
2	95.22	10.95	.20(.16)	.80	27.76	8.00
3	94.29	12.04	.20(.16)	.79	29.16	32.00
4	94.29	12.04	.20(.16)	.79	29.16	26.00
5	93.94	12.21	.20(.16)	.79	29.33	12.00
6	93.08	12.59	.20(.16)	.80	29.65	30.00
7	87.24	16.60	.20(.16)	.80	32.75	2.00
8	84.30	18.02	.20(.16)	.81	33.30	400.00

TOTAL AREA = 33.30
LONGEST FLOWPATH FROM NODE 2.00 TO NODE 409.00 = 3840.00 FEET.

```
**********************************************************************************
FLOW PROCESS FROM NODE   409.00 TO NODE   409.00 IS CODE =  14
----------------------------------------------------------------------------------
>>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==================================================================================
```

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	94.52	9.28	.20(.16)	.81	24.94	24.00
2	95.22	10.95	.20(.16)	.80	27.76	8.00
3	94.29	12.04	.20(.16)	.79	29.16	32.00
4	94.29	12.04	.20(.16)	.79	29.16	26.00
5	93.94	12.21	.20(.16)	.79	29.33	12.00
6	93.08	12.59	.20(.16)	.80	29.65	30.00
7	87.24	16.60	.20(.16)	.80	32.75	2.00
8	84.30	18.02	.20(.16)	.81	33.30	400.00

TOTAL AREA = 33.30
LONGEST FLOWPATH FROM NODE 2.00 TO NODE 409.00 = 3840.00 FEET.

```
**********************************************************************************
FLOW PROCESS FROM NODE   409.00 TO NODE   409.00 IS CODE =  11
----------------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==================================================================================
```

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	94.52	9.28	4.374	.20(.16)	.81	24.9	24.00
2	95.22	10.95	3.970	.20(.16)	.80	27.8	8.00
3	94.29	12.04	3.752	.20(.16)	.79	29.2	32.00
4	94.29	12.04	3.752	.20(.16)	.79	29.2	26.00
5	93.94	12.21	3.718	.20(.16)	.79	29.3	12.00
6	93.08	12.59	3.647	.20(.16)	.80	29.7	30.00
7	87.24	16.60	3.121	.20(.16)	.80	32.8	2.00
8	84.30	18.02	2.974	.20(.16)	.81	33.3	400.00

LONGEST FLOWPATH FROM NODE 2.00 TO NODE 409.00 = 3840.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	SOURCE

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	143.14	7.27	5.017	.20(.16)	.79	32.7	46.00
2	142.43	7.55	4.885	.20(.16)	.79	33.5	42.00
3	142.72	7.86	4.792	.20(.16)	.78	34.2	56.00
4	142.06	8.39	4.636	.20(.16)	.78	35.2	52.00
5	132.92	11.54	3.851	.20(.15)	.77	39.9	64.00
6	128.59	13.65	3.495	.20(.15)	.77	42.8	16.00
7	127.72	13.93	3.455	.20(.15)	.77	43.0	74.00
8	123.03	15.16	3.282	.20(.15)	.77	43.7	404.00

LONGEST FLOWPATH FROM NODE 16.00 TO NODE 409.00 = 3700.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	234.0	9.28	4.374	.200(.158)	.79	61.5	24.00
2	229.9	10.95	3.970	.200(.156)	.78	66.8	8.00
3	226.2	12.04	3.752	.200(.156)	.78	69.8	32.00
4	226.2	12.04	3.752	.200(.156)	.78	69.8	26.00
5	225.5	12.21	3.718	.200(.156)	.78	70.2	12.00
6	223.9	12.59	3.647	.200(.156)	.78	71.0	30.00
7	203.9	16.60	3.121	.200(.157)	.79	76.5	2.00
8	195.2	18.02	2.974	.200(.157)	.79	77.0	400.00
9	228.6	7.27	5.017	.200(.160)	.80	52.3	46.00
10	228.7	7.55	4.885	.200(.159)	.80	53.8	42.00
11	230.8	7.86	4.792	.200(.159)	.79	55.3	56.00
12	232.9	8.39	4.636	.200(.158)	.79	57.8	52.00
13	227.6	11.54	3.851	.200(.156)	.78	68.5	64.00
14	220.1	13.65	3.495	.200(.156)	.78	73.2	16.00
15	218.9	13.93	3.455	.200(.156)	.78	73.7	74.00
16	212.4	15.16	3.282	.200(.157)	.78	75.3	404.00

TOTAL AREA = 77.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 234.02 Tc(MIN.) = 9.277
EFFECTIVE AREA(ACRES) = 61.49 AREA-AVERAGED Fm(INCH/HR) = .16
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .79
TOTAL AREA(ACRES) = 77.00
LONGEST FLOWPATH FROM NODE 2.00 TO NODE 409.00 = 3840.00 FEET.

****
FLOW PROCESS FROM NODE 409.00 TO NODE 409.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

****
FLOW PROCESS FROM NODE 410.00 TO NODE 410.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<
==========

****
FLOW PROCESS FROM NODE 410.00 TO NODE 411.00 IS CODE = 5.2

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

```
 UPSTREAM NODE ELEVATION =    1148.00
 DOWNSTREAM NODE ELEVATION =    1120.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    420.00
 CHANNEL SLOPE =    .0667
 CHANNEL FLOW THRU SUBAREA(CFS) =     234.02
 FLOW VELOCITY(FEET/SEC) =  15.90 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =     .44    Tc(MIN.) =    9.72


****************************************************************************
 FLOW PROCESS FROM NODE    411.00 TO NODE    411.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================

 MAINLINE Tc(MIN) =    9.72
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.244
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       10.40       .20        1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    10.40      SUBAREA RUNOFF(CFS) =    37.85
 EFFECTIVE AREA(ACRES) =    71.89    AREA-AVERAGED Fm(INCH/HR) =    .16
 AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .82
 TOTAL AREA(ACRES) =    87.40        PEAK FLOW RATE(CFS) =     263.96

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      264.0    9.72     4.244   .200( .164)  .82      71.9      24.00
    2      258.5   11.39     3.882   .200( .162)  .81      77.2       8.00
    3      252.6   12.49     3.663   .200( .162)  .81      80.2      32.00
    4      252.6   12.49     3.663   .200( .162)  .81      80.2      26.00
    5      252.0   12.66     3.637   .200( .162)  .81      80.6      12.00
    6      250.6   13.04     3.583   .200( .161)  .81      81.4      30.00
    7      227.2   17.06     3.069   .200( .162)  .81      86.9       2.00
    8      218.0   18.48     2.933   .200( .162)  .81      87.4     400.00
    9      263.4    7.72     4.836   .200( .167)  .83      62.7      46.00
   10      265.0    8.00     4.753   .200( .166)  .83      64.2      42.00
   11      266.0    8.31     4.661   .200( .165)  .83      65.7      56.00
   12      266.4    8.83     4.505   .200( .165)  .82      68.2      52.00
   13      255.6   11.99     3.763   .200( .162)  .81      78.9      64.00
   14      246.0   14.10     3.430   .200( .161)  .81      83.6      16.00
   15      244.3   14.38     3.390   .200( .161)  .81      84.1      74.00
   16      236.8   15.61     3.231   .200( .162)  .81      85.7     404.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    266.40  Tc(MIN.) =   8.83
 AREA-AVERAGED Fm(INCH/HR) =    .16  AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .82  EFFECTIVE AREA(ACRES) =     68.20


 ****************************************************************************
 FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
```

```
 UPSTREAM NODE ELEVATION =   1120.00
 DOWNSTREAM NODE ELEVATION =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00
 CHANNEL SLOPE =   .0593
 CHANNEL FLOW THRU SUBAREA(CFS) =    266.40
 FLOW VELOCITY(FEET/SEC) =  15.61 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .58   Tc(MIN.) =   9.41


****************************************************************************
 FLOW PROCESS FROM NODE   412.00 TO NODE   412.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.41
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.334
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       16.60       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   16.60      SUBAREA RUNOFF(CFS) =   61.77
 EFFECTIVE AREA(ACRES) =    84.80   AREA-AVERAGED Fm(INCH/HR) =   .17
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .86
 TOTAL AREA(ACRES) =   104.00       PEAK FLOW RATE(CFS) =     317.69

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc   Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      313.0   10.30    4.101  .200( .171)  .85      88.5      24.00
    2      303.7   11.97    3.765  .200( .169)  .85      93.8       8.00
    3      296.9   13.07    3.577  .200( .168)  .84      96.8      32.00
    4      296.9   13.07    3.577  .200( .168)  .84      96.8      26.00
    5      296.0   13.24    3.553  .200( .168)  .84      97.2      12.00
    6      293.7   13.62    3.498  .200( .168)  .84      98.0      30.00
    7      264.2   17.66    3.006  .200( .168)  .84     103.5       2.00
    8      253.8   19.10    2.879  .200( .168)  .84     104.0     400.00
    9      320.5    8.30    4.665  .200( .174)  .87      79.3      46.00
   10      320.6    8.57    4.582  .200( .173)  .87      80.8      42.00
   11      320.0    8.88    4.491  .200( .172)  .86      82.3      56.00
   12      317.7    9.41    4.334  .200( .172)  .86      84.8      52.00
   13      299.1   12.57    3.650  .200( .169)  .84      95.5      64.00
   14      286.6   14.69    3.345  .200( .168)  .84     100.2      16.00
   15      284.2   14.97    3.305  .200( .168)  .84     100.7      74.00
   16      276.0   16.21    3.164  .200( .168)  .84     102.3     404.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    320.57  Tc(MIN.) =   8.57
 AREA-AVERAGED Fm(INCH/HR) =   .17  AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .87  EFFECTIVE AREA(ACRES) =     80.78
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =    104.00  TC(MIN.) =      8.57
 EFFECTIVE AREA(ACRES) =     80.78  AREA-AVERAGED Fm(INCH/HR)=   .17
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .87
 PEAK FLOW RATE(CFS)    =    320.57
```

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	320.5	8.30	4.665	.200(.174)	.87	79.3	46.00
2	320.6	8.57	4.582	.200(.173)	.87	80.8	42.00
3	320.0	8.88	4.491	.200(.172)	.86	82.3	56.00
4	317.7	9.41	4.334	.200(.172)	.86	84.8	52.00
5	313.0	10.30	4.101	.200(.171)	.85	88.5	24.00
6	303.7	11.97	3.765	.200(.169)	.85	93.8	8.00
7	299.1	12.57	3.650	.200(.169)	.84	95.5	64.00
8	296.9	13.07	3.577	.200(.168)	.84	96.8	26.00
9	296.9	13.07	3.577	.200(.168)	.84	96.8	32.00
10	296.0	13.24	3.553	.200(.168)	.84	97.2	12.00
11	293.7	13.62	3.498	.200(.168)	.84	98.0	30.00
12	286.6	14.69	3.345	.200(.168)	.84	100.2	16.00
13	284.2	14.97	3.305	.200(.168)	.84	100.7	74.00
14	276.0	16.21	3.164	.200(.168)	.84	102.3	404.00
15	264.2	17.66	3.006	.200(.168)	.84	103.5	2.00
16	253.8	19.10	2.879	.200(.168)	.84	104.0	400.00

END OF RATIONAL METHOD ANALYSIS

100 - YEAR STORM
LINE "C"

Hunsaker & Associates, Inc.

1665-1

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

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 *************************** DESCRIPTION OF STUDY ***************************
* 100 YEAR HYDROLOGY FOR LINE "C"                                           *
*                                                                           *
*                                                                           *
 ***************************************************************************

  FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665C.100
  TIME/DATE OF STUDY: 14: 8    8/25/1995
===========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
===========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
==  =====  ========  ==================  ======  ====== ======= ====== =======
  1   20.0     15.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   18.0     13.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =   .00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


**************************************************************************
  FLOW PROCESS FROM NODE    92.00 TO NODE    94.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
--------------------------------------------------------------------------
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   590.00
  ELEVATION DATA: UPSTREAM(FEET) =   1522.00  DOWNSTREAM(FEET) =   1473.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.211
```

```
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.689
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       D        1.70       .20        .50    91    8.21
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
SUBAREA RUNOFF(CFS) =      7.02
TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      7.02

****************************************************************************
 FLOW PROCESS FROM NODE    94.00 TO NODE    96.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1473.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
 STREET LENGTH(FEET) =   530.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.99
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .32
   HALFSTREET FLOOD WIDTH(FEET) =   11.14
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.78
   PRODUCT OF DEPTH&VELOCITY =    2.17
 STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =   9.51
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.304
 SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 D         .50       .20        .10    91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
SUBAREA AREA(ACRES) =     .50     SUBAREA RUNOFF(CFS) =    1.93
EFFECTIVE AREA(ACRES) =    2.20    AREA-AVERAGED Fm(INCH/HR) =    .08
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .41
TOTAL AREA(ACRES) =    2.20        PEAK FLOW RATE(CFS) =       8.36

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .32   HALFSTREET FLOOD WIDTH(FEET) = 11.35
 FLOW VELOCITY(FEET/SEC.) =  6.87   DEPTH*VELOCITY =   2.23

****************************************************************************
 FLOW PROCESS FROM NODE    96.00 TO NODE   102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
 TIME OF CONCENTRATION(MIN.) =   9.51
 RAINFALL INTENSITY(INCH/HR) =   4.30
 AREA-AVERAGED Fm(INCH/HR) =   .08
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .41
 EFFECTIVE STREAM AREA(ACRES) =    2.20
 TOTAL STREAM AREA(ACRES) =    2.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.36


****************************************************************************
 FLOW PROCESS FROM NODE    98.00 TO NODE   100.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   610.00
 ELEVATION DATA: UPSTREAM(FEET) =   1465.00  DOWNSTREAM(FEET) =   1420.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.521
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.598
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.60       .20        .50    91    8.52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      6.48
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      6.48


****************************************************************************
 FLOW PROCESS FROM NODE   100.00 TO NODE   102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.52
 RAINFALL INTENSITY(INCH/HR) =   4.60
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.60
 TOTAL STREAM AREA(ACRES) =    1.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.48
 ** CONFLUENCE DATA **
 STREAM     Q       Tc   Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1      8.36    9.51    4.304   .20( .08)   .41    2.20      92.00
    2      6.48    8.52    4.598   .20( .10)   .50    1.60      98.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
```

```
 STREAM      Q       Tc    Intensity     Fp(Fm)      Ap      Ae        SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)   (INCH/HR)             (ACRES)     NODE
    1       14.4     9.51     4.304   .200( .089)  .45        3.8       92.00
    2       14.5     8.52     4.598   .200( .090)  .45        3.6       98.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     14.49   Tc(MIN.) =    8.521
 EFFECTIVE AREA(ACRES) =      3.57  AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .45
 TOTAL AREA(ACRES) =     3.80
 LONGEST FLOWPATH FROM NODE    92.00 TO NODE   102.00 =  1120.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   102.00 TO NODE   104.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    82.00 TO NODE    84.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   310.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1448.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.582
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.044
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.80       .20        .50    91   10.58
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      6.39
 TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      6.39


****************************************************************************
 FLOW PROCESS FROM NODE    84.00 TO NODE    90.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1448.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1409.00
 FLOW LENGTH(FEET) =   580.00   MANNING'S N =  .013

 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.11
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      6.39
 PIPEFLOW TRAVEL TIME(MIN.) =     .80    Tc(MIN.) =  11.38
```

```
****************************************************************************
 FLOW PROCESS FROM NODE    90.00 TO NODE    90.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.38
 RAINFALL INTENSITY(INCH/HR) =   3.88
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =    1.80
 TOTAL STREAM AREA(ACRES) =    1.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.39


****************************************************************************
 FLOW PROCESS FROM NODE    86.00 TO NODE    88.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   780.00
 ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1416.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.523
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.597
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        2.40       .20        .50    91    8.52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      9.71
 TOTAL AREA(ACRES) =      2.40   PEAK FLOW RATE(CFS) =      9.71


****************************************************************************
 FLOW PROCESS FROM NODE    88.00 TO NODE    90.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.52
 RAINFALL INTENSITY(INCH/HR) =   4.60
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =    2.40
 TOTAL STREAM AREA(ACRES) =    2.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.71
 ** CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap    Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
```

```
   1       6.39    11.38     3.884    .20( .10)   .50     1.80       82.00
   2       9.71     8.52     4.597    .20( .10)   .50     2.40       86.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q        Tc    Intensity     Fp(Fm)       Ap      Ae         SOURCE
 NUMBER    (CFS)    (MIN.) (INCH/HR)   (INCH/HR)             (ACRES)      NODE
   1        14.6    11.38     3.884   .200( .100)   .50        4.2        82.00
   2        15.4     8.52     4.597   .200( .100)   .50        3.7        86.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     15.40   Tc(MIN.) =    8.523
 EFFECTIVE AREA(ACRES) =      3.75  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =      4.20
 LONGEST FLOWPATH FROM NODE    82.00 TO NODE    90.00 =   890.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE    90.00 TO NODE   104.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1409.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1407.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.45
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.40
 PIPEFLOW TRAVEL TIME(MIN.) =    .07    Tc(MIN.) =   8.59


****************************************************************************
 FLOW PROCESS FROM NODE   104.00 TO NODE   104.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM      Q        Tc    Intensity     Fp(Fm)       Ap    Ae         SOURCE
 NUMBER    (CFS)    (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)      NODE
   1       15.40     8.59     4.577    .20( .10)   .50        3.7        86.00
   2       14.56    11.45     3.870    .20( .10)   .50        4.2        82.00
 LONGEST FLOWPATH FROM NODE    82.00 TO NODE   104.00 =   940.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      Q        Tc    Intensity     Fp(Fm)       Ap    Ae         SOURCE
 NUMBER    (CFS)    (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)      NODE
   1       14.49     8.52     4.598    .20( .09)   .45        3.6        98.00
   2       14.41     9.51     4.304    .20( .09)   .45        3.8        92.00
 LONGEST FLOWPATH FROM NODE    92.00 TO NODE   104.00 =  1120.00 FEET.

 ** PEAK FLOW RATE TABLE **
```

```
 STREAM      Q       Tc    Intensity     Fp(Fm)      Ap      Ae        SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)   (INCH/HR)           (ACRES)     NODE
    1       29.9    8.59     4.577   .200( .095)   .48       7.3       86.00
    2       27.5   11.45     3.870   .200( .095)   .47       8.0       82.00
    3       29.8    8.52     4.598   .200( .095)   .48       7.3       98.00
    4       29.5    9.51     4.304   .200( .095)   .47       7.7       92.00
  TOTAL AREA =      8.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     29.88   Tc(MIN.) =    8.590
 EFFECTIVE AREA(ACRES) =      7.33  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .48
 TOTAL AREA(ACRES) =      8.00
 LONGEST FLOWPATH FROM NODE    92.00 TO NODE   104.00 =  1120.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   104.00 TO NODE   104.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE   104.00 TO NODE   114.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1407.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1403.00
 FLOW LENGTH(FEET) =   130.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.29
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     29.88
 PIPEFLOW TRAVEL TIME(MIN.) =    .16    Tc(MIN.) =   8.75


****************************************************************************
 FLOW PROCESS FROM NODE   114.00 TO NODE   114.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.75
 RAINFALL INTENSITY(INCH/HR) =   4.53
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .48
 EFFECTIVE STREAM AREA(ACRES) =    7.33
 TOTAL STREAM AREA(ACRES) =    8.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.88


****************************************************************************
 FLOW PROCESS FROM NODE   106.00 TO NODE   108.00 IS CODE =  2.1
----------------------------------------------------------------------------
```

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   170.00
ELEVATION DATA: UPSTREAM(FEET) =   1420.00  DOWNSTREAM(FEET) =   1410.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
COMMERCIAL                  D         .20       .20        .10    91    5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
SUBAREA RUNOFF(CFS) =      1.11
TOTAL AREA(ACRES) =       .20   PEAK FLOW RATE(CFS) =      1.11


****************************************************************************
FLOW PROCESS FROM NODE   108.00 TO NODE   114.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   5.00
RAINFALL INTENSITY(INCH/HR) =   6.19
AREA-AVERAGED Fm(INCH/HR) =   .02
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =   .10
EFFECTIVE STREAM AREA(ACRES) =     .20
TOTAL STREAM AREA(ACRES) =     .20
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.11


****************************************************************************
FLOW PROCESS FROM NODE   110.00 TO NODE   112.00 IS CODE =  2.1
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   730.00
ELEVATION DATA: UPSTREAM(FEET) =   1432.00  DOWNSTREAM(FEET) =   1410.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.951
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.970
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D        1.90       .20        .50    91   10.95
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
SUBAREA RUNOFF(CFS) =      6.62
TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      6.62


****************************************************************************
```

```
 FLOW PROCESS FROM NODE   112.00 TO NODE   114.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.95
 RAINFALL INTENSITY(INCH/HR) =   3.97
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.90
 TOTAL STREAM AREA(ACRES) =    1.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.62
 ** CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     29.88    8.75    4.529    .20( .10)  .48    7.33     86.00
    1     27.49   11.61    3.837    .20( .10)  .47    8.00     82.00
    1     29.83    8.68    4.549    .20( .10)  .48    7.29     98.00
    1     29.54    9.68    4.256    .20( .09)  .47    7.69     92.00
    2      1.11    5.00    6.190    .20( .02)  .10     .20    106.00
    3      6.62   10.95    3.970    .20( .10)  .50    1.90    110.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1      29.4    5.00    6.190   .200( .093)  .47       5.3     106.00
    2      36.7    8.68    4.549   .200( .094)  .47       9.0      98.00
    3      36.7    8.75    4.529   .200( .094)  .47       9.1      86.00
    4      36.6    9.68    4.256   .200( .094)  .47       9.6      92.00
    5      34.6   11.61    3.837   .200( .094)  .47      10.1      82.00
    6      35.5   10.95    3.970   .200( .094)  .47      10.0     110.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     36.75   Tc(MIN.) =    8.753
 EFFECTIVE AREA(ACRES) =      9.05  AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .47
 TOTAL AREA(ACRES) =     10.10
 LONGEST FLOWPATH FROM NODE    92.00 TO NODE   114.00 =  1250.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   114.00 TO NODE   120.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1403.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1402.00
 FLOW LENGTH(FEET) =    30.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.18
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
```

```
 PIPE-FLOW(CFS) =     36.75
 PIPEFLOW TRAVEL TIME(MIN.) =     .04    Tc(MIN.) =   8.79

 ****************************************************************************
 FLOW PROCESS FROM NODE   120.00 TO NODE   120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.79
 RAINFALL INTENSITY(INCH/HR) =   4.52
 AREA-AVERAGED Fm(INCH/HR) =    .09
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .47
 EFFECTIVE STREAM AREA(ACRES) =    9.05
 TOTAL STREAM AREA(ACRES) =   10.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.75


****************************************************************************
 FLOW PROCESS FROM NODE   116.00 TO NODE   118.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   170.00
 ELEVATION DATA: UPSTREAM(FEET) =   1422.50  DOWNSTREAM(FEET) =   1413.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D         .10       .20        .10    91    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =       .56
 TOTAL AREA(ACRES) =       .10   PEAK FLOW RATE(CFS) =       .56


****************************************************************************
 FLOW PROCESS FROM NODE   118.00 TO NODE   120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   6.19
 AREA-AVERAGED Fm(INCH/HR) =    .02
  REA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .10
 EFFECTIVE STREAM AREA(ACRES) =     .10
 TOTAL STREAM AREA(ACRES) =     .10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       .56
 ** CONFLUENCE DATA **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	29.37	5.04	6.171	.20(.09)	.47	5.26	106.00
1	36.68	8.72	4.539	.20(.09)	.47	9.00	98.00
1	36.75	8.79	4.519	.20(.09)	.47	9.05	86.00
1	36.58	9.71	4.245	.20(.09)	.47	9.57	92.00
1	34.57	11.65	3.830	.20(.09)	.47	10.10	82.00
1	35.52	10.99	3.963	.20(.09)	.47	10.00	110.00
2	.56	5.00	6.190	.20(.02)	.10	.10	116.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	29.9	5.04	6.171	.200(.092)	.46	5.4	106.00
2	37.1	8.72	4.539	.200(.093)	.47	9.1	98.00
3	37.2	8.79	4.519	.200(.093)	.47	9.2	86.00
4	37.0	9.71	4.245	.200(.093)	.47	9.7	92.00
5	35.9	10.99	3.963	.200(.094)	.47	10.1	110.00
6	34.9	11.65	3.830	.200(.094)	.47	10.2	82.00
7	29.8	5.00	6.190	.200(.092)	.46	5.3	116.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 37.15 Tc(MIN.) = 8.788
EFFECTIVE AREA(ACRES) = 9.15 AREA-AVERAGED Fm(INCH/HR) = .09
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .47
TOTAL AREA(ACRES) = 10.20
LONGEST FLOWPATH FROM NODE 92.00 TO NODE 120.00 = 1280.00 FEET.

****
FLOW PROCESS FROM NODE 120.00 TO NODE 126.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========

UPSTREAM NODE ELEVATION(FEET) = 1402.00
DOWNSTREAM NODE ELEVATION(FEET) = 1366.00
FLOW LENGTH(FEET) = 390.00 MANNING'S N = .013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 21.16
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 37.15
PIPEFLOW TRAVEL TIME(MIN.) = .31 Tc(MIN.) = 9.10

****
FLOW PROCESS FROM NODE 126.00 TO NODE 126.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.10
RAINFALL INTENSITY(INCH/HR) = 4.43
AREA-AVERAGED Fm(INCH/HR) = .09

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 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .47
 EFFECTIVE STREAM AREA(ACRES) =    9.15
 TOTAL STREAM AREA(ACRES) =   10.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.15


****************************************************************************
 FLOW PROCESS FROM NODE   122.00 TO NODE   124.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   340.00
 ELEVATION DATA: UPSTREAM(FEET) =   1410.00  DOWNSTREAM(FEET) =   1373.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D          .60       .20        .10    91    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      3.33
 TOTAL AREA(ACRES) =      .60   PEAK FLOW RATE(CFS) =      3.33


****************************************************************************
 FLOW PROCESS FROM NODE   124.00 TO NODE   126.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   6.19
 AREA-AVERAGED Fm(INCH/HR) =   .02
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .10
 EFFECTIVE STREAM AREA(ACRES) =     .60
 TOTAL STREAM AREA(ACRES) =     .60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.33
 ** CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     29.92    5.37    5.999   .20( .09)   .46    5.36     106.00
    1     37.09    9.03    4.448   .20( .09)   .47    9.10      98.00
    1     37.15    9.10    4.428   .20( .09)   .47    9.15      86.00
    1     36.97   10.02    4.156   .20( .09)   .47    9.67      92.00
    1     35.88   11.30    3.901   .20( .09)   .47   10.10     110.00
    1     34.91   11.96    3.768   .20( .09)   .47   10.20      82.00
    1     29.80    5.33    6.018   .20( .09)   .46    5.33     116.00
    2      3.33    5.00    6.190   .20( .02)   .10     .60     122.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity     Fp(Fm)      Ap      Ae        SOURCE
NUMBER   (CFS)   (MIN.)  (INCH/HR)   (INCH/HR)             (ACRES)     NODE
   1      33.0     5.33     6.018   .200( .084)   .42        5.9      116.00
   2      33.1     5.37     5.999   .200( .084)   .42        6.0      106.00
   3      39.5     9.03     4.448   .200( .089)   .44        9.7       98.00
   4      39.5     9.10     4.428   .200( .089)   .44        9.8       86.00
   5      39.2    10.02     4.156   .200( .089)   .45       10.3       92.00
   6      38.0    11.30     3.901   .200( .090)   .45       10.7      110.00
   7      36.9    11.96     3.768   .200( .090)   .45       10.8       82.00
   8      32.1     5.00     6.190   .200( .084)   .42        5.6      122.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     39.53   Tc(MIN.) =    9.095
EFFECTIVE AREA(ACRES) =      9.75  AREA-AVERAGED Fm(INCH/HR) =   .09
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .44
TOTAL AREA(ACRES) =     10.80
LONGEST FLOWPATH FROM NODE    92.00 TO NODE   126.00 =  1670.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   126.00 TO NODE   138.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1366.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1361.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.11
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     39.53
 PIPEFLOW TRAVEL TIME(MIN.) =    .04    Tc(MIN.) =   9.13

****************************************************************************
 FLOW PROCESS FROM NODE   138.00 TO NODE   138.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE   128.00 TO NODE   130.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   730.00
 ELEVATION DATA: UPSTREAM(FEET) =   1430.00  DOWNSTREAM(FEET) =   1372.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.021
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.450
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        2.30       .20       .50    91     9.02
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      9.00
 TOTAL AREA(ACRES) =      2.30   PEAK FLOW RATE(CFS) =      9.00

****************************************************************************
 FLOW PROCESS FROM NODE   130.00 TO NODE   136.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.02
 RAINFALL INTENSITY(INCH/HR) =   4.45
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    2.30
 TOTAL STREAM AREA(ACRES) =    2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.00

****************************************************************************
 FLOW PROCESS FROM NODE   132.00 TO NODE   134.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.00
 ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1372.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.001
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.160
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        2.00       .20       .50    91    10.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      7.31
 TOTAL AREA(ACRES) =      2.00   PEAK FLOW RATE(CFS) =      7.31

****************************************************************************
 FLOW PROCESS FROM NODE   134.00 TO NODE   136.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.00
 RAINFALL INTENSITY(INCH/HR) =   4.16
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
```

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 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    2.00
 TOTAL STREAM AREA(ACRES) =    2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.31
 ** CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1      9.00    9.02    4.450   .20( .10)  .50    2.30     128.00
    2      7.31   10.00    4.160   .20( .10)  .50    2.00     132.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)          (ACRES)      NODE
    1      16.1    9.02    4.450   .200( .100)  .50       4.1      128.00
    2      15.7   10.00    4.160   .200( .100)  .50       4.3      132.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     16.07   Tc(MIN.) =    9.021
 EFFECTIVE AREA(ACRES) =      4.10  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =      4.30
 LONGEST FLOWPATH FROM NODE   128.00 TO NODE   136.00 =   730.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   136.00 TO NODE   138.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1365.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1361.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  .013

 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.47
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     16.07
 PIPEFLOW TRAVEL TIME(MIN.) =    .05    Tc(MIN.) =   9.07


****************************************************************************
 FLOW PROCESS FROM NODE   138.00 TO NODE   138.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     16.07    9.07    4.435   .20( .10)  .50      4.1    128.00
    2     15.71   10.05    4.150   .20( .10)  .50      4.3    132.00
 LONGEST FLOWPATH FROM NODE   128.00 TO NODE   138.00 =   780.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	32.08	5.04	6.170	.20(.08)	.42	5.6	122.00
2	33.04	5.37	5.998	.20(.08)	.42	5.9	116.00
3	33.15	5.41	5.979	.20(.08)	.42	6.0	106.00
4	39.48	9.06	4.437	.20(.09)	.44	9.7	98.00
5	39.53	9.13	4.417	.20(.09)	.44	9.8	86.00
6	39.20	10.06	4.149	.20(.09)	.45	10.3	92.00
7	37.97	11.33	3.893	.20(.09)	.45	10.7	110.00
8	36.94	12.00	3.760	.20(.09)	.45	10.8	82.00

LONGEST FLOWPATH FROM NODE 92.00 TO NODE 138.00 = 1720.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	55.6	9.07	4.435	.200(.092)	.46	13.8	128.00
2	54.9	10.05	4.150	.200(.092)	.46	14.6	132.00
3	44.6	5.04	6.170	.200(.089)	.44	7.9	122.00
4	46.0	5.37	5.998	.200(.089)	.44	8.4	116.00
5	46.1	5.41	5.979	.200(.089)	.44	8.4	106.00
6	55.5	9.06	4.437	.200(.092)	.46	13.8	98.00
7	55.6	9.13	4.417	.200(.092)	.46	13.9	86.00
8	54.9	10.06	4.149	.200(.092)	.46	14.6	92.00
9	52.7	11.33	3.893	.200(.093)	.46	15.0	110.00
10	51.1	12.00	3.760	.200(.093)	.46	15.1	82.00

TOTAL AREA = 15.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 55.58 Tc(MIN.) = 9.133
EFFECTIVE AREA(ACRES) = 13.87 AREA-AVERAGED Fm(INCH/HR) = .09
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .46
TOTAL AREA(ACRES) = 15.10
LONGEST FLOWPATH FROM NODE 92.00 TO NODE 138.00 = 1720.00 FEET.

****
FLOW PROCESS FROM NODE 138.00 TO NODE 138.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<
==========

****
FLOW PROCESS FROM NODE 138.00 TO NODE 148.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========

UPSTREAM NODE ELEVATION(FEET) = 1361.00
DOWNSTREAM NODE ELEVATION(FEET) = 1333.00
FLOW LENGTH(FEET) = 280.00 MANNING'S N = .013

DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 24.10
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 55.58
PIPEFLOW TRAVEL TIME(MIN.) = .19 Tc(MIN.) = 9.33

```
****************************************************************************
 FLOW PROCESS FROM NODE   148.00 TO NODE   148.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.33
 RAINFALL INTENSITY(INCH/HR) =   4.36
 AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .46
 EFFECTIVE STREAM AREA(ACRES) =   13.87
 TOTAL STREAM AREA(ACRES) =   15.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     55.58


****************************************************************************
 FLOW PROCESS FROM NODE   140.00 TO NODE   142.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   310.00
 ELEVATION DATA: UPSTREAM(FEET) =   1370.00  DOWNSTREAM(FEET) =   1340.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 D         .20       .20        .10    91    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      1.11
 TOTAL AREA(ACRES) =       .20   PEAK FLOW RATE(CFS) =      1.11


****************************************************************************
 FLOW PROCESS FROM NODE   142.00 TO NODE   148.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   6.19
 AREA-AVERAGED Fm(INCH/HR) =   .02
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .10
 EFFECTIVE STREAM AREA(ACRES) =     .20
 TOTAL STREAM AREA(ACRES) =     .20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.11


****************************************************************************
 FLOW PROCESS FROM NODE   144.00 TO NODE   146.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
------------------------------------------------------------------------
INITIAL SUBAREA FLOW-LENGTH(FEET) =   850.00
ELEVATION DATA: UPSTREAM(FEET) =   1422.00  DOWNSTREAM(FEET) =   1340.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.222
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.390
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D        2.90       .20         .50    91    9.22
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
SUBAREA RUNOFF(CFS) =     11.20
TOTAL AREA(ACRES) =      2.90   PEAK FLOW RATE(CFS) =     11.20


****************************************************************************
FLOW PROCESS FROM NODE   146.00 TO NODE   148.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
----------------------------------------------------------------------------
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   9.22
RAINFALL INTENSITY(INCH/HR) =   4.39
AREA-AVERAGED Fm(INCH/HR) =   .10
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =   .50
EFFECTIVE STREAM AREA(ACRES) =    2.90
TOTAL STREAM AREA(ACRES) =    2.90
PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.20
** CONFLUENCE DATA **
STREAM     Q       Tc    Intensity   Fp(Fm)      Ap    Ae       SOURCE
NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
   1     55.55     9.27     4.377    .20( .09)   .46    13.81    128.00
   1     54.91    10.25     4.111    .20( .09)   .46    14.57    132.00
   1     44.58     5.25     6.063    .20( .09)   .44     7.87    122.00
   1     45.98     5.58     5.891    .20( .09)   .44     8.36    116.00
   1     46.14     5.62     5.872    .20( .09)   .44     8.41    106.00
   1     55.54     9.26     4.380    .20( .09)   .46    13.80     98.00
   1     55.58     9.33     4.359    .20( .09)   .46    13.87     86.00
   1     54.91    10.25     4.110    .20( .09)   .46    14.57     92.00
   1     52.69    11.53     3.854    .20( .09)   .46    15.00    110.00
   1     51.14    12.19     3.721    .20( .09)   .46    15.10     82.00
   2      1.11     5.00     6.190    .20( .02)   .10      .20    140.00
   3     11.20     9.22     4.390    .20( .10)   .50     2.90    144.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae       SOURCE
NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
   1      53.1     5.00     6.190  .200( .089)   .45      9.3    140.00
   2      54.5     5.25     6.063  .200( .089)   .45      9.7    122.00
```

```
    3       56.2     5.58     5.891  .200( .089)   .45      10.3      116.00
    4       56.4     5.62     5.872  .200( .090)   .45      10.4      106.00
    5       67.5     9.26     4.380  .200( .093)   .46      16.9       98.00
    6       67.5     9.27     4.377  .200( .093)   .46      16.9      128.00
    7       67.5     9.33     4.359  .200( .093)   .46      17.0       86.00
    8       66.1    10.25     4.111  .200( .093)   .46      17.7      132.00
    9       66.1    10.25     4.110  .200( .093)   .46      17.7       92.00
   10       63.2    11.53     3.854  .200( .093)   .46      18.1      110.00
   11       61.3    12.19     3.721  .200( .093)   .46      18.2       82.00
   12       67.4     9.22     4.390  .200( .093)   .46      16.8      144.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    67.50   Tc(MIN.) =    9.265
  EFFECTIVE AREA(ACRES) =    16.91  AREA-AVERAGED Fm(INCH/HR) =   .09
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .46
  TOTAL AREA(ACRES) =    18.20
  LONGEST FLOWPATH FROM NODE    92.00 TO NODE   148.00 =  2000.00 FEET.


****************************************************************************
  FLOW PROCESS FROM NODE   148.00 TO NODE   150.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1333.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1300.00
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  .013

  )EPTH OF FLOW IN  21.0 INCH PIPE IS  16.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  33.38
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    67.50
  PIPEFLOW TRAVEL TIME(MIN.) =    .07    Tc(MIN.) =   9.34


****************************************************************************
  FLOW PROCESS FROM NODE   150.00 TO NODE   424.00 IS CODE =  5.2
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION =   1300.00
  DOWNSTREAM NODE ELEVATION =   1150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   470.00
  CHANNEL SLOPE =   .3191
  CHANNEL FLOW THRU SUBAREA(CFS) =    67.50
  NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  FLOW VELOCITY(FEET/SEC) =  13.36 (PER LACFCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =    .59   Tc(MIN.) =   9.93


****************************************************************************
  FLOW PROCESS FROM NODE   424.00 TO NODE   424.00 IS CODE =  8.1
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.182
  SUBAREA LOSS RATE DATA(AMC III):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        4.00       .20       1.00    96
 UBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    4.00      SUBAREA RUNOFF(CFS) =   14.33
EFFECTIVE AREA(ACRES) =   20.91   AREA-AVERAGED Fm(INCH/HR) =   .11
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .57
TOTAL AREA(ACRES) =    22.20      PEAK FLOW RATE(CFS) =      76.55

****************************************************************************
FLOW PROCESS FROM NODE   424.00 TO NODE   430.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   9.93
RAINFALL INTENSITY(INCH/HR) =   4.18
AREA-AVERAGED Fm(INCH/HR) =   .11
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =   .57
EFFECTIVE STREAM AREA(ACRES) =   20.91
TOTAL STREAM AREA(ACRES) =   22.20
PEAK FLOW RATE(CFS) AT CONFLUENCE =     76.55

 ****************************************************************************
FLOW PROCESS FROM NODE   420.00 TO NODE   421.00 IS CODE =  2.1
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   970.00
ELEVATION DATA: UPSTREAM(FEET) =   1644.00  DOWNSTREAM(FEET) =   1350.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.035
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.439
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                D        5.20       .20       1.00    96   14.03
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =     15.16
TOTAL AREA(ACRES) =     5.20   PEAK FLOW RATE(CFS) =     15.16

****************************************************************************
FLOW PROCESS FROM NODE   421.00 TO NODE   422.00 IS CODE =  5.2
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM NODE ELEVATION =   1350.00
DOWNSTREAM NODE ELEVATION =   1170.00
```

```
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00
 CHANNEL SLOPE =   .1500
 CHANNEL FLOW THRU SUBAREA(CFS) =     15.16
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   8.80 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =  16.31

****************************************************************************
 FLOW PROCESS FROM NODE   422.00 TO NODE   422.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.31
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.154
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       11.20       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   11.20      SUBAREA RUNOFF(CFS) =   29.77
 EFFECTIVE AREA(ACRES) =   16.40   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   16.40       PEAK FLOW RATE(CFS) =      43.60

****************************************************************************
 FLOW PROCESS FROM NODE   422.00 TO NODE   430.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  16.31
 RAINFALL INTENSITY(INCH/HR) =   3.15
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   16.40
 TOTAL STREAM AREA(ACRES) =   16.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     43.60

****************************************************************************
 FLOW PROCESS FROM NODE   426.00 TO NODE   428.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   400.00
 ELEVATION DATA: UPSTREAM(FEET) =   1330.00  DOWNSTREAM(FEET) =   1180.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.437
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.327
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
NATURAL FAIR COVER
"OPEN BRUSH"                D        2.30       .20       1.00    96    9.44
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      8.54
TOTAL AREA(ACRES) =      2.30   PEAK FLOW RATE(CFS) =      8.54

****************************************************************************
FLOW PROCESS FROM NODE   428.00 TO NODE   430.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   9.44
RAINFALL INTENSITY(INCH/HR) =   4.33
AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =    2.30
TOTAL STREAM AREA(ACRES) =    2.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.54
** CONFLUENCE DATA **
STREAM     Q       Tc    Intensity    Fp(Fm)      Ap    Ae       SOURCE
NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
   1     68.13     5.71     5.825   .20( .12)   .61    13.27     140.00
   1     68.91     5.95     5.701   .20( .12)   .61    13.72     122.00
   1     69.70     6.27     5.532   .20( .12)   .60    14.31     116.00
   1     69.79     6.31     5.514   .20( .12)   .60    14.38     106.00
   1     76.55     9.92     4.184   .20( .11)   .57    20.90      98.00
   1     76.55     9.93     4.182   .20( .11)   .57    20.91     128.00
   1     76.44     9.99     4.164   .20( .11)   .57    20.97      86.00
   1     75.38    10.91     3.978   .20( .11)   .56    21.67     132.00
   1     75.37    10.92     3.977   .20( .11)   .56    21.67      92.00
   1     71.73    12.20     3.720   .20( .11)   .56    22.10     110.00
   1     69.81    12.87     3.606   .20( .11)   .56    22.20      82.00
   1     76.56     9.88     4.194   .20( .11)   .57    20.84     144.00
   2     43.60    16.31     3.154   .20( .20)  1.00    16.40     420.00
   3      8.54     9.44     4.327   .20( .20)  1.00     2.30     426.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae       SOURCE
NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
   1     104.2     5.71     5.825   .200( .150)   .75     20.4     140.00
   2     105.7     5.95     5.701   .200( .149)   .75     21.2     122.00
   3     107.3     6.27     5.532   .200( .149)   .74     22.2     116.00
   4     107.5     6.31     5.514   .200( .149)   .74     22.3     106.00
   5     120.6     9.88     4.194   .200( .145)   .73     33.1     144.00
   6     120.6     9.92     4.184   .200( .145)   .73     33.2      98.00
   7     120.6     9.93     4.182   .200( .145)   .73     33.2     128.00
   8     120.5     9.99     4.164   .200( .145)   .73     33.3      86.00
   9     120.5    10.91     3.978   .200( .146)   .73     34.9     132.00
  10     120.5    10.92     3.977   .200( .146)   .73     35.0      92.00
  11     117.9    12.20     3.720   .200( .147)   .74     36.7     110.00
```

12	116.6	12.87	3.606	.200(.148)	.74	37.4	82.00
13	110.5	16.31	3.154	.200(.152)	.76	40.9	420.00
14	119.3	9.44	4.327	.200(.146)	.73	31.8	426.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 120.57 Tc(MIN.) = 9.920
EFFECTIVE AREA(ACRES) = 33.17 AREA-AVERAGED Fm(INCH/HR) = .15
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .73
TOTAL AREA(ACRES) = 40.90
LONGEST FLOWPATH FROM NODE 92.00 TO NODE 430.00 = 2620.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 40.90 TC(MIN.) = 9.92
EFFECTIVE AREA(ACRES) = 33.17 AREA-AVERAGED Fm(INCH/HR)= .15
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .73
PEAK FLOW RATE(CFS) = 120.57

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	104.2	5.71	5.825	.200(.150)	.75	20.4	140.00
2	105.7	5.95	5.701	.200(.149)	.75	21.2	122.00
3	107.3	6.27	5.532	.200(.149)	.74	22.2	116.00
4	107.5	6.31	5.514	.200(.149)	.74	22.3	106.00
5	119.3	9.44	4.327	.200(.146)	.73	31.8	426.00
6	120.6	9.88	4.194	.200(.145)	.73	33.1	144.00
7	120.6	9.92	4.184	.200(.145)	.73	33.2	98.00
8	120.6	9.93	4.182	.200(.145)	.73	33.2	128.00
9	120.5	9.99	4.164	.200(.145)	.73	33.3	86.00
10	120.5	10.91	3.978	.200(.146)	.73	34.9	132.00
11	120.5	10.92	3.977	.200(.146)	.73	35.0	92.00
12	117.9	12.20	3.720	.200(.147)	.74	36.7	110.00
13	116.6	12.87	3.606	.200(.148)	.74	37.4	82.00
14	110.5	16.31	3.154	.200(.152)	.76	40.9	420.00

END OF RATIONAL METHOD ANALYSIS

100 - YEAR STORM
LINE "D", "E", "F" AND "G"

Hunsaker & Associates, Inc.

1665-1

```
**********************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
               (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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              Ver. 3.1B  Release Date:  6/01/94  License ID 1239

                          Analysis prepared by:

                          HUNSAKER  &  ASSOCIATES
                                Irvine, Inc.
                        Planning * Engineering * Surveying
                    Three Hughes * Irvine , California 92718 * (714) 538-1010

 ************************** DESCRIPTION OF STUDY **************************
* 100 YEAR HYDROLOGY STUDY FOR LINE "D" "E" "F" "G"                        *
*                                                                          *
*                                                                          *
 **************************************************************************

  FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665D.100
  TIME/DATE OF STUDY: 11: 7   8/25/1995
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                        --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:   MANNING
     WIDTH   CROSSFALL  IN-  / OUT-/PARK-   HEIGHT  WIDTH  LIP    HIKE   FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY     (FT)    (FT)   (FT)   (FT)     (n)
===  =====  =========  ================    ======  =====  =====  =====  =======
  1   20.0      15.0     .017/ .017/ .020     .50    1.50 .03125 .1250  .01500
  2   18.0      13.0     .017/ .017/ .020     .50    1.50 .03125 .1250  .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =   .00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


**********************************************************************************
  FLOW PROCESS FROM NODE   216.00 TO NODE   218.00 IS CODE =  2.1
----------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   ->USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
  ELEVATION DATA: UPSTREAM(FEET) =   1340.00  DOWNSTREAM(FEET) =   1296.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.809
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.998
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        3.50       .20        .50    91   10.81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =     12.28
 TOTAL AREA(ACRES) =      3.50   PEAK FLOW RATE(CFS) =     12.28

****************************************************************************
 FLOW PROCESS FROM NODE   218.00 TO NODE   224.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.81
 RAINFALL INTENSITY(INCH/HR) =   4.00
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    3.50
 TOTAL STREAM AREA(ACRES) =    3.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.28

****************************************************************************
 FLOW PROCESS FROM NODE   220.00 TO NODE   222.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   900.00
 ELEVATION DATA: UPSTREAM(FEET) =   1340.00  DOWNSTREAM(FEET) =   1296.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.809
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.998
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.60       .20        .50    91   10.81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      5.61
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      5.61

 ****************************************************************************
 FLOW PROCESS FROM NODE   222.00 TO NODE   224.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```

```
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.81
 RAINFALL INTENSITY(INCH/HR) =   4.00
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.60
 TOTAL STREAM AREA(ACRES) =    1.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.61
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      12.28    10.81     3.998    .20( .10)   .50     3.50     216.00
    2       5.61    10.81     3.998    .20( .10)   .50     1.60     220.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1        17.9    10.81     3.998  .200( .100)   .50       5.1     216.00
    2        17.9    10.81     3.998  .200( .100)   .50       5.1     220.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     17.89   Tc(MIN.) =   10.809
 EFFECTIVE AREA(ACRES) =      5.10  AREA-AVERAGED Fm(INCH/HR) =   .10
 \REA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =      5.10
 LONGEST FLOWPATH FROM NODE   216.00 TO NODE   224.00 =   900.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   224.00 TO NODE   228.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1289.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1270.00
 FLOW LENGTH(FEET) =   300.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.42
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     17.89
 PIPEFLOW TRAVEL TIME(MIN.) =    .32    Tc(MIN.) =  11.13


****************************************************************************
 FLOW PROCESS FROM NODE   228.00 TO NODE   228.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.13
 RAINFALL INTENSITY(INCH/HR) =   3.93
```

```
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =    5.10
 TOTAL STREAM AREA(ACRES) =    5.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.89

****************************************************************************
 FLOW PROCESS FROM NODE   225.00 TO NODE   226.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1296.00  DOWNSTREAM(FEET) =   1270.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D         .30       .20        .10    91    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      1.67
 TOTAL AREA(ACRES) =       .30   PEAK FLOW RATE(CFS) =      1.67

****************************************************************************
 FLOW PROCESS FROM NODE   226.00 TO NODE   228.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   6.19
 AREA-AVERAGED Fm(INCH/HR) =    .02
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .10
 EFFECTIVE STREAM AREA(ACRES) =     .30
 TOTAL STREAM AREA(ACRES) =     .30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.67
 ** CONFLUENCE DATA **
 STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     17.89   11.13    3.933   .20( .10)   .50    5.10    216.00
    1     17.89   11.13    3.933   .20( .10)   .50    5.10    220.00
    2      1.67    5.00    6.190   .20( .02)   .10     .30    225.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc   Intensity    Fp(Fm)      Ap     Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
```

```
    1       18.9    11.13     3.933  .200( .096)   .48       5.4      216.00
    2       18.9    11.13     3.933  .200( .096)   .48       5.4      220.00
    3       14.4     5.00     6.190  .200( .091)   .45       2.6      225.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     18.95   Tc(MIN.) =   11.134
  EFFECTIVE AREA(ACRES) =      5.40  AREA-AVERAGED Fm(INCH/HR) =   .10
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .48
  TOTAL AREA(ACRES) =      5.40
  LONGEST FLOWPATH FROM NODE   216.00 TO NODE   228.00 =  1200.00 FEET.


****************************************************************************
  FLOW PROCESS FROM NODE   228.00 TO NODE   238.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1263.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1256.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  .013

  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     18.95
  PIPEFLOW TRAVEL TIME(MIN.) =    .06    Tc(MIN.) =  11.20


****************************************************************************
  FLOW PROCESS FROM NODE   238.00 TO NODE   238.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE   230.00 TO NODE   232.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
  ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1265.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.891
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.488
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        D        4.20       .20        .50    91    8.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
  SUBAREA RUNOFF(CFS) =     16.59
  TOTAL AREA(ACRES) =      4.20   PEAK FLOW RATE(CFS) =     16.59
```

```
****************************************************************************
 FLOW PROCESS FROM NODE   232.00 TO NODE   236.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.89
 RAINFALL INTENSITY(INCH/HR) =   4.49
 AREA-AVERAGED Fm(INCH/HR) =  .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    4.20
 TOTAL STREAM AREA(ACRES) =    4.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.59


****************************************************************************
 FLOW PROCESS FROM NODE   233.00 TO NODE   234.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
 ELEVATION DATA: UPSTREAM(FEET) =   1290.00  DOWNSTREAM(FEET) =   1265.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.661
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.852
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.30       .20        .50    91    7.66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      5.56
 TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      5.56


****************************************************************************
 FLOW PROCESS FROM NODE   234.00 TO NODE   236.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.66
 RAINFALL INTENSITY(INCH/HR) =   4.85
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.56
 ** CONFLUENCE DATA **
 STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     16.59    8.89    4.488   .20( .10)   .50    4.20    230.00
```

```
   2      5.56     7.66     4.852    .20( .10)   .50     1.30     233.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **

  STREAM      Q        Tc    Intensity     Fp(Fm)       Ap      Ae         SOURCE
  NUMBER    (CFS)    (MIN.) (INCH/HR)   (INCH/HR)             (ACRES)      NODE
     1       21.7     8.89     4.488   .200( .100)   .50         5.5      230.00
     2       21.0     7.66     4.852   .200( .100)   .50         4.9      233.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     21.72   Tc(MIN.) =    8.891
  EFFECTIVE AREA(ACRES) =      5.50  AREA-AVERAGED Fm(INCH/HR) =   .10
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
  TOTAL AREA(ACRES) =      5.50
  LONGEST FLOWPATH FROM NODE   230.00 TO NODE   236.00 =   700.00 FEET.


****************************************************************************
  FLOW PROCESS FROM NODE   236.00 TO NODE   238.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1258.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1255.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  .013

  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.14
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     21.72
  PIPEFLOW TRAVEL TIME(MIN.) =    .04    Tc(MIN.) =   8.93


****************************************************************************
  FLOW PROCESS FROM NODE   238.00 TO NODE   238.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      Q        Tc    Intensity     Fp(Fm)       Ap    Ae         SOURCE
  NUMBER    (CFS)    (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)      NODE
     1      21.04     7.70     4.841   .20( .10)   .50         4.9      233.00
     2      21.72     8.93     4.477   .20( .10)   .50         5.5      230.00
  LONGEST FLOWPATH FROM NODE   230.00 TO NODE   238.00 =   740.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      Q        Tc    Intensity     Fp(Fm)       Ap    Ae         SOURCE
  NUMBER    (CFS)    (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)      NODE
     1      14.43     5.07     6.155   .20( .09)   .45         2.6      225.00
     2      18.95    11.20     3.921   .20( .10)   .48         5.4      220.00
     3      18.95    11.20     3.921   .20( .10)   .48         5.4      216.00
  LONGEST FLOWPATH FROM NODE   216.00 TO NODE   238.00 =  1270.00 FEET.

  ** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	37.4	7.70	4.841	.200(.097)	.48	8.7	233.00
2	39.0	8.93	4.477	.200(.097)	.49	9.9	230.00
3	32.1	5.07	6.155	.200(.096)	.48	5.8	225.00
4	37.9	11.20	3.921	.200(.098)	.49	10.9	220.00
5	37.9	11.20	3.921	.200(.098)	.49	10.9	216.00

TOTAL AREA = 10.90

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39.00 Tc(MIN.) = 8.930
EFFECTIVE AREA(ACRES) = 9.86 AREA-AVERAGED Fm(INCH/HR) = .10
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .49
TOTAL AREA(ACRES) = 10.90
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 238.00 = 1270.00 FEET.

****
FLOW PROCESS FROM NODE 238.00 TO NODE 238.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 238.00 TO NODE 242.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

UPSTREAM NODE ELEVATION(FEET) = 1255.00
DOWNSTREAM NODE ELEVATION(FEET) = 1233.00
FLOW LENGTH(FEET) = 230.00 MANNING'S N = .013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 21.65
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 39.00
PIPEFLOW TRAVEL TIME(MIN.) = .18 Tc(MIN.) = 9.11

****
FLOW PROCESS FROM NODE 242.00 TO NODE 242.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.11
RAINFALL INTENSITY(INCH/HR) = 4.42
AREA-AVERAGED Fm(INCH/HR) = .10
AREA-AVERAGED Fp(INCH/HR) = .20
AREA-AVERAGED Ap = .49
EFFECTIVE STREAM AREA(ACRES) = 9.86
TOTAL STREAM AREA(ACRES) = 10.90
PEAK FLOW RATE(CFS) AT CONFLUENCE = 39.00

****
FLOW PROCESS FROM NODE 240.00 TO NODE 241.00 IS CODE = 2.1

```
------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   240.00
 ELEVATION DATA: UPSTREAM(FEET) =   1265.00  DOWNSTREAM(FEET) =   1240.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D         .30       .20        .10    91    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      1.67
 TOTAL AREA(ACRES) =       .30   PEAK FLOW RATE(CFS) =      1.67


****************************************************************************
 FLOW PROCESS FROM NODE   241.00 TO NODE   242.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   6.19
 AREA-AVERAGED Fm(INCH/HR) =   .02
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .10
 EFFECTIVE STREAM AREA(ACRES) =     .30
 TOTAL STREAM AREA(ACRES) =     .30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.67
 ** CONFLUENCE DATA **
 STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     37.41    7.88    4.788   .20( .10)  .48     8.72    233.00
    1     39.00    9.11    4.424   .20( .10)  .49     9.86    230.00
    1     32.12    5.25    6.061   .20( .10)  .48     5.83    225.00
    1     37.91   11.37    3.885   .20( .10)  .49    10.90    220.00
    1     37.91   11.37    3.885   .20( .10)  .49    10.90    216.00
    2      1.67    5.00    6.190   .20( .02)  .10      .30    240.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc   Intensity    Fp(Fm)      Ap      Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)    NODE
    1      33.7    5.25    6.061  .200( .092)  .46       6.1    225.00
    2      38.7    7.88    4.788  .200( .094)  .47       9.0    233.00
    3      40.2    9.11    4.424  .200( .095)  .47      10.2    230.00
    4      39.0   11.37    3.885  .200( .096)  .48      11.2    220.00
    5      39.0   11.37    3.885  .200( .096)  .48      11.2    216.00
    6      32.9    5.00    6.190  .200( .092)  .46       5.8    240.00
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     40.19   Tc(MIN.) =    9.107
 EFFECTIVE AREA(ACRES) =     10.16  AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .47
 TOTAL AREA(ACRES) =     11.20
 LONGEST FLOWPATH FROM NODE   216.00 TO NODE   242.00 =  1500.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   242.00 TO NODE   250.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1233.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1228.00
 FLOW LENGTH(FEET) =    50.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.16
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     40.19
 PIPEFLOW TRAVEL TIME(MIN.) =     .04    Tc(MIN.) =   9.14

****************************************************************************
 FLOW PROCESS FROM NODE   250.00 TO NODE   250.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   243.00 TO NODE   244.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   660.00
 ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1235.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.934
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.476
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        2.10       .20        .50    91    8.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      8.27
 TOTAL AREA(ACRES) =      2.10   PEAK FLOW RATE(CFS) =      8.27

****************************************************************************
 FLOW PROCESS FROM NODE   244.00 TO NODE   248.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.93
 RAINFALL INTENSITY(INCH/HR) =   4.48
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    2.10
 TOTAL STREAM AREA(ACRES) =    2.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.27


****************************************************************************
 FLOW PROCESS FROM NODE   245.00 TO NODE   246.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================

 INITIAL SUBAREA FLOW-LENGTH(FEET) =   430.00
 ELEVATION DATA: UPSTREAM(FEET) =   1242.00  DOWNSTREAM(FEET) =   1235.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.023
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.155
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.20       .20        .50    91   10.02
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      4.38
 TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      4.38


****************************************************************************
 FLOW PROCESS FROM NODE   246.00 TO NODE   248.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================

 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.02
 RAINFALL INTENSITY(INCH/HR) =   4.16
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.20
 TOTAL STREAM AREA(ACRES) =    1.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.38
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity   Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1       8.27    8.93     4.476    .20( .10)   .50     2.10     243.00
    2       4.38   10.02     4.155    .20( .10)   .50     1.20     245.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)     NODE
    1      12.5    8.93     4.476  .200( .100)  .50        3.2      243.00
    2      12.0   10.02     4.155  .200( .100)  .50        3.3      245.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     12.48   Tc(MIN.) =    8.934
 EFFECTIVE AREA(ACRES) =      3.17  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =      3.30
 LONGEST FLOWPATH FROM NODE   243.00 TO NODE   248.00 =   660.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   248.00 TO NODE   250.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1229.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1228.00
 FLOW LENGTH(FEET) =    30.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.09
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     12.48
 'IPEFLOW TRAVEL TIME(MIN.) =    .05    Tc(MIN.) =   8.98


****************************************************************************
 FLOW PROCESS FROM NODE   250.00 TO NODE   250.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)          (ACRES)     NODE
    1     12.48    8.98     4.462   .20( .10)  .50        3.2     243.00
    2     12.04   10.07     4.146   .20( .10)  .50        3.3     245.00
 LONGEST FLOWPATH FROM NODE   243.00 TO NODE   250.00 =   690.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)          (ACRES)     NODE
    1     32.91    5.04     6.170   .20( .09)  .46        5.8     240.00
    2     33.75    5.29     6.041   .20( .09)  .46        6.1     225.00
    3     38.70    7.92     4.777   .20( .09)  .47        9.0     233.00
    4     40.19    9.14     4.413   .20( .09)  .47       10.2     230.00
    5     38.95   11.41     3.878   .20( .10)  .48       11.2     216.00
    6     38.95   11.41     3.878   .20( .10)  .48       11.2     220.00
  ONGEST FLOWPATH FROM NODE   216.00 TO NODE   250.00 =  1550.00 FEET.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)           (ACRES)     NODE
```

```
    1       52.5    8.98    4.462  .200( .096)  .48      13.2      243.00
    2       51.7   10.07    4.146  .200( .096)  .48      13.9      245.00
    3       42.7    5.04    6.170  .200( .094)  .47       7.6      240.00
    4       43.8    5.29    6.041  .200( .094)  .47       8.0      225.00
    5       50.5    7.92    4.777  .200( .096)  .48      11.8      233.00
    6       52.6    9.14    4.413  .200( .096)  .48      13.4      230.00
    7       50.2   11.41    3.878  .200( .097)  .48      14.5      216.00
    8       50.2   11.41    3.878  .200( .097)  .48      14.5      220.00
  TOTAL AREA =     14.50

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     52.61   Tc(MIN.) =    9.144
 EFFECTIVE AREA(ACRES) =     13.35  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .48
 TOTAL AREA(ACRES) =     14.50
 LONGEST FLOWPATH FROM NODE   216.00 TO NODE   250.00 =  1550.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   250.00 TO NODE   250.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE   250.00 TO NODE   260.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1228.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1178.00
 FLOW LENGTH(FEET) =   400.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  25.19
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     52.61
 PIPEFLOW TRAVEL TIME(MIN.) =    .26    Tc(MIN.) =   9.41


****************************************************************************
 FLOW PROCESS FROM NODE   260.00 TO NODE   260.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.41
 RAINFALL INTENSITY(INCH/HR) =   4.33
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .48
 EFFECTIVE STREAM AREA(ACRES) =   13.35
 TOTAL STREAM AREA(ACRES) =   14.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.61


****************************************************************************
```

```
 FLOW PROCESS FROM NODE   252.00 TO NODE   254.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   420.00
 ELEVATION DATA: UPSTREAM(FEET) =   1235.00  DOWNSTREAM(FEET) =   1185.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.670
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.328
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        .40       .20        .50    91    6.67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      1.88
 TOTAL AREA(ACRES) =       .40   PEAK FLOW RATE(CFS) =      1.88

****************************************************************************
 FLOW PROCESS FROM NODE   254.00 TO NODE   260.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 'IME OF CONCENTRATION(MIN.) =   6.67
 RAINFALL INTENSITY(INCH/HR) =   5.33
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =     .40
 TOTAL STREAM AREA(ACRES) =     .40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.88

****************************************************************************
 FLOW PROCESS FROM NODE   256.00 TO NODE   258.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
 ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1185.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.201
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.693
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 'OMMERCIAL                 D       1.10       .20        .10    91    8.20
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      4.63
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.63
```

```
**************************************************************************
 FLOW PROCESS FROM NODE   257.00 TO NODE   258.00 IS CODE =  8.1
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =   8.20
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.693
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D         .90       .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =     .90     SUBAREA RUNOFF(CFS) =    3.72
 EFFECTIVE AREA(ACRES) =    2.00   AREA-AVERAGED Fm(INCH/HR) =   .06
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .28
 TOTAL AREA(ACRES) =    2.00       PEAK FLOW RATE(CFS) =       8.35


**************************************************************************
 FLOW PROCESS FROM NODE   258.00 TO NODE   260.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.20
 RAINFALL INTENSITY(INCH/HR) =   4.69
 AREA-AVERAGED Fm(INCH/HR) =   .06
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .28
 EFFECTIVE STREAM AREA(ACRES) =    2.00
 TOTAL STREAM AREA(ACRES) =    2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.35
 ** CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     52.47     9.24     4.384   .20( .10)   .48    13.18    243.00
    1     51.73    10.33     4.093   .20( .10)   .48    13.88    245.00
    1     42.66     5.31     6.030   .20( .09)   .47     7.63    240.00
    1     43.76     5.56     5.901   .20( .09)   .47     7.99    225.00
    1     50.50     8.18     4.698   .20( .10)   .48    11.81    233.00
    1     52.61     9.41     4.335   .20( .10)   .48    13.35    230.00
    1     50.20    11.68     3.825   .20( .10)   .48    14.50    216.00
    1     50.20    11.68     3.825   .20( .10)   .48    14.50    220.00
    2      1.88     6.67     5.328   .20( .10)   .50      .40    252.00
    3      8.35     8.20     4.693   .20( .06)   .28     2.00    256.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae       SOURCE
 NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      51.3     5.31     6.030   .200( .089)   .44      9.2    240.00
    2      52.6     5.56     5.901   .200( .089)   .44      9.7    225.00
```

```
    3       56.2     6.67     5.328   .200( .089)   .45       11.6      252.00
    4       60.5     8.18     4.698   .200( .090)   .45       14.2      233.00
    5       61.8     9.24     4.384   .200( .091)   .46       15.6      243.00
    6       61.8     9.41     4.335   .200( .091)   .46       15.8      230.00
    7       60.4    10.33     4.093   .200( .092)   .46       16.3      245.00
    8       58.3    11.68     3.825   .200( .092)   .46       16.9      220.00
    9       58.3    11.68     3.825   .200( .092)   .46       16.9      216.00
   10       60.5     8.20     4.693   .200( .090)   .45       14.2      256.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     61.83   Tc(MIN.) =    9.409
  EFFECTIVE AREA(ACRES) =     15.75  AREA-AVERAGED Fm(INCH/HR) =   .09
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .46
  TOTAL AREA(ACRES) =     16.90
  LONGEST FLOWPATH FROM NODE   216.00 TO NODE   260.00 =  1950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   260.00 TO NODE   266.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1178.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1103.00
  FLOW LENGTH(FEET) =   590.00   MANNING'S N =  .013

  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.11
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     61.83
  PIPEFLOW TRAVEL TIME(MIN.) =    .36    Tc(MIN.) =   9.77

****************************************************************************
  FLOW PROCESS FROM NODE   266.00 TO NODE   266.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.77
  RAINFALL INTENSITY(INCH/HR) =   4.23
  AREA-AVERAGED Fm(INCH/HR) =   .09
  AREA-AVERAGED Fp(INCH/HR) =   .20
  AREA-AVERAGED Ap =   .46
  EFFECTIVE STREAM AREA(ACRES) =   15.75
  TOTAL STREAM AREA(ACRES) =   16.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.83

****************************************************************************
  FLOW PROCESS FROM NODE   262.00 TO NODE   264.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   630.00
  ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =   1110.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.787
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.784
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D        .80       .20        .10     91    5.79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      4.15
 TOTAL AREA(ACRES) =       .80   PEAK FLOW RATE(CFS) =      4.15


****************************************************************************
 FLOW PROCESS FROM NODE   264.00 TO NODE   266.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.79
 RAINFALL INTENSITY(INCH/HR) =   5.78
 AREA-AVERAGED Fm(INCH/HR) =   .02
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .10
 EFFECTIVE STREAM AREA(ACRES) =     .80
 TOTAL STREAM AREA(ACRES) =     .80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.15
 ** CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)        (ACRES)    NODE
    1     51.32     5.70     5.830   .20( .09)   .44     9.24    240.00
    1     52.63     5.95     5.701   .20( .09)   .44     9.68    225.00
    1     56.21     7.04     5.138   .20( .09)   .45    11.64    252.00
    1     60.49     8.55     4.590   .20( .09)   .45    14.21    233.00
    1     61.80     9.61     4.277   .20( .09)   .46    15.58    243.00
    1     61.83     9.77     4.228   .20( .09)   .46    15.75    230.00
    1     60.44    10.70     4.020   .20( .09)   .46    16.28    245.00
    1     58.32    12.04     3.751   .20( .09)   .46    16.90    220.00
    1     58.32    12.04     3.751   .20( .09)   .46    16.90    216.00
    1     60.53     8.56     4.585   .20( .09)   .45    14.24    256.00
    2      4.15     5.79     5.784   .20( .02)   .10      .80    262.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae       SOURCE
 NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      55.4     5.70     5.830  .200( .083)   .42     10.0    240.00
    2      56.7     5.95     5.701  .200( .084)   .42     10.5    225.00
    3      59.9     7.04     5.138  .200( .085)   .43     12.4    252.00
    4      63.8     8.55     4.590  .200( .086)   .43     15.0    233.00
    5      63.8     8.56     4.585  .200( .086)   .43     15.0    256.00
    6      64.9     9.61     4.277  .200( .088)   .44     16.4    243.00
    7      64.9     9.77     4.228  .200( .088)   .44     16.6    230.00
    8      63.3    10.70     4.020  .200( .088)   .44     17.1    245.00
    9      61.0    12.04     3.751  .200( .089)   .44     17.7    216.00
```

```
   10       61.0    12.04     3.751  .200( .089)   .44       17.7      220.00
   11       55.9     5.79     5.784  .200( .083)   .42       10.2      262.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     64.87   Tc(MIN.) =    9.606
  EFFECTIVE AREA(ACRES) =     16.38  AREA-AVERAGED Fm(INCH/HR) =   .09
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .44
  TOTAL AREA(ACRES) =     17.70
  LONGEST FLOWPATH FROM NODE   216.00 TO NODE   266.00 =  2540.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   266.00 TO NODE   268.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1103.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1098.00
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  .013

  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.06
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     64.87
  PIPEFLOW TRAVEL TIME(MIN.) =    .05    Tc(MIN.) =   9.66

****************************************************************************
  FLOW PROCESS FROM NODE   268.00 TO NODE   268.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   190.00 TO NODE   192.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  ELEVATION DATA: UPSTREAM(FEET) =   1342.00  DOWNSTREAM(FEET) =   1220.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.390
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.340
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       D        4.00       .20        .50    91    9.39
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
  SUBAREA RUNOFF(CFS) =     15.27
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =     15.27

****************************************************************************
  FLOW PROCESS FROM NODE   192.00 TO NODE   202.00 IS CODE =  3.1
```

```
------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1213.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1164.00
 FLOW LENGTH(FEET) =   620.00   MANNING'S N =  .013

 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.19
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.27
 PIPEFLOW TRAVEL TIME(MIN.) =     .64    Tc(MIN.) =  10.03


************************************************************************
 FLOW PROCESS FROM NODE   202.00 TO NODE   202.00 IS CODE =   1
------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.03
 RAINFALL INTENSITY(INCH/HR) =   4.15
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    4.00
 TOTAL STREAM AREA(ACRES) =    4.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.27


************************************************************************
 FLOW PROCESS FROM NODE   194.00 TO NODE   196.00 IS CODE =  2.1
------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   620.00
 ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1171.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.900
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.782
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        2.80       .20        .50    91    7.90
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =     11.80
 TOTAL AREA(ACRES) =      2.80   PEAK FLOW RATE(CFS) =     11.80


************************************************************************
 FLOW PROCESS FROM NODE   196.00 TO NODE   202.00 IS CODE =   1
------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.90
 RAINFALL INTENSITY(INCH/HR) =   4.78
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    2.80
 TOTAL STREAM AREA(ACRES) =    2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.80


****************************************************************************
 FLOW PROCESS FROM NODE   198.00 TO NODE   200.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.00
 ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1171.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.295
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.665
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.70       .20        .50    91    8.29
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      6.98
 TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      6.98


****************************************************************************
 FLOW PROCESS FROM NODE   200.00 TO NODE   202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.29
 RAINFALL INTENSITY(INCH/HR) =   4.66
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.70
 TOTAL STREAM AREA(ACRES) =    1.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.98
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity   Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      15.27   10.03     4.154   .20( .10)   .50     4.00     190.00
    2      11.80    7.90     4.782   .20( .10)   .50     2.80     194.00
    3       6.98    8.29     4.665   .20( .10)   .50     1.70     198.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)             (ACRES)     NODE
    1      32.5    7.90     4.782   .200( .100)   .50        7.6      194.00
    2      31.7   10.03     4.154   .200( .100)   .50        8.5      190.00
    3      32.7    8.29     4.665   .200( .100)   .50        7.8      198.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     32.70   Tc(MIN.) =    8.295
 EFFECTIVE AREA(ACRES) =      7.81  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =      8.50
 LONGEST FLOWPATH FROM NODE   190.00 TO NODE   202.00 =  1620.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   202.00 TO NODE   208.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1164.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1163.00
 FLOW LENGTH(FEET) =    30.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.96
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     32.70
 PIPEFLOW TRAVEL TIME(MIN.) =    .04    Tc(MIN.) =   8.33


****************************************************************************
 FLOW PROCESS FROM NODE   208.00 TO NODE   208.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.33
 RAINFALL INTENSITY(INCH/HR) =   4.65
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    7.81
 TOTAL STREAM AREA(ACRES) =    8.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.70


****************************************************************************
 FLOW PROCESS FROM NODE   204.00 TO NODE   206.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   120.00
 ELEVATION DATA: UPSTREAM(FEET) =   1185.00  DOWNSTREAM(FEET) =   1173.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 D         .10       .20        .10     91    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =       .56
 TOTAL AREA(ACRES) =       .10   PEAK FLOW RATE(CFS) =       .56


****************************************************************************
 FLOW PROCESS FROM NODE   206.00 TO NODE   208.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================

 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   6.19
 AREA-AVERAGED Fm(INCH/HR) =   .02
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .10
 EFFECTIVE STREAM AREA(ACRES) =     .10
 TOTAL STREAM AREA(ACRES) =     .10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       .56
 ** CONFLUENCE DATA **
 STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     32.51    7.94    4.771   .20( .10)   .50    7.57    194.00
    1     31.69   10.06    4.147   .20( .10)   .50    8.50    190.00
    1     32.70    8.33    4.654   .20( .10)   .50    7.81    198.00
    2       .56    5.00    6.190   .20( .02)   .10     .10    204.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc   Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1       32.9    7.94    4.771  .200( .099)   .49      7.7     194.00
    2       33.1    8.33    4.654  .200( .099)   .49      7.9     198.00
    3       32.1   10.06    4.147  .200( .099)   .50      8.6     190.00
    4       27.3    5.00    6.190  .200( .098)   .49      4.9     204.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     33.12   Tc(MIN.) =    8.331
 EFFECTIVE AREA(ACRES) =      7.91  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .49
 TOTAL AREA(ACRES) =      8.60
 LONGEST FLOWPATH FROM NODE   190.00 TO NODE   208.00 =  1650.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   208.00 TO NODE   214.00 IS CODE =  3.1
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

UPSTREAM NODE ELEVATION(FEET) = 1163.00
DOWNSTREAM NODE ELEVATION(FEET) = 1123.00
FLOW LENGTH(FEET) = 580.00 MANNING'S N = .013

DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.39
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 33.12
PIPEFLOW TRAVEL TIME(MIN.) = .53 Tc(MIN.) = 8.86

```
**********************************************************************
FLOW PROCESS FROM NODE   214.00 TO NODE   214.00 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 8.86
RAINFALL INTENSITY(INCH/HR) = 4.50
AREA-AVERAGED Fm(INCH/HR) = .10
AREA-AVERAGED Fp(INCH/HR) = .20
AREA-AVERAGED Ap = .49
EFFECTIVE STREAM AREA(ACRES) = 7.91
TOTAL STREAM AREA(ACRES) = 8.60
PEAK FLOW RATE(CFS) AT CONFLUENCE = 33.12

```
**********************************************************************
FLOW PROCESS FROM NODE   210.00 TO NODE   212.00 IS CODE =  2.1
----------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

INITIAL SUBAREA FLOW-LENGTH(FEET) = 750.00
ELEVATION DATA: UPSTREAM(FEET) = 1160.00 DOWNSTREAM(FEET) = 1130.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.461
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.068
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL "5-7 DWELLINGS/ACRE"	D	3.50	.20	.50	91	10.46

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = .50
SUBAREA RUNOFF(CFS) = 12.50
TOTAL AREA(ACRES) = 3.50 PEAK FLOW RATE(CFS) = 12.50

```
**********************************************************************
FLOW PROCESS FROM NODE   212.00 TO NODE   214.00 IS CODE =   1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.46
 RAINFALL INTENSITY(INCH/HR) =   4.07
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    3.50
 TOTAL STREAM AREA(ACRES) =    3.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.50
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      32.93    8.46     4.615    .20( .10)   .49     7.67     194.00
    1      33.12    8.86     4.499    .20( .10)   .49     7.91     198.00
    1      32.06   10.59     4.041    .20( .10)   .50     8.60     190.00
    1      27.26    5.55     5.908    .20( .10)   .49     4.87     204.00
    2      12.50   10.46     4.068    .20( .10)   .50     3.50     210.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap     Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1       37.0    5.55     5.908  .200( .099)   .49      6.7     204.00
    2       44.4    8.46     4.615  .200( .099)   .50     10.5     194.00
    3       44.9    8.86     4.499  .200( .099)   .50     10.9     198.00
    4       44.5   10.59     4.041  .200( .099)   .50     12.1     190.00
    5       44.6   10.46     4.068  .200( .099)   .50     12.0     210.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     44.85   Tc(MIN.) =   8.856
 EFFECTIVE AREA(ACRES) =     10.87  AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =    12.10
 LONGEST FLOWPATH FROM NODE   190.00 TO NODE   214.00 =  2230.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   214.00 TO NODE   268.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1123.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1098.00
 FLOW LENGTH(FEET) =   130.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  29.47
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    44.85
 PIPEFLOW TRAVEL TIME(MIN.) =    .07    Tc(MIN.) =   8.93


****************************************************************************
 FLOW PROCESS FROM NODE   268.00 TO NODE   268.00 IS CODE =  11
```

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	36.96	5.62	5.868	.20(.10)	.49	6.7	204.00
2	44.44	8.54	4.593	.20(.10)	.50	10.5	194.00
3	44.85	8.93	4.477	.20(.10)	.50	10.9	198.00
4	44.64	10.53	4.053	.20(.10)	.50	12.0	210.00
5	44.47	10.67	4.027	.20(.10)	.50	12.1	190.00

LONGEST FLOWPATH FROM NODE 190.00 TO NODE 268.00 = 2360.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	55.44	5.75	5.801	.20(.08)	.42	10.0	240.00
2	55.94	5.84	5.755	.20(.08)	.42	10.2	262.00
3	56.72	6.00	5.672	.20(.08)	.42	10.5	225.00
4	59.90	7.09	5.110	.20(.09)	.43	12.4	252.00
5	63.78	8.60	4.575	.20(.09)	.43	15.0	233.00
6	63.82	8.62	4.569	.20(.09)	.43	15.0	256.00
7	64.87	9.66	4.261	.20(.09)	.44	16.4	243.00
8	64.86	9.82	4.212	.20(.09)	.44	16.6	230.00
9	63.32	10.75	4.010	.20(.09)	.44	17.1	245.00
10	61.01	12.10	3.741	.20(.09)	.44	17.7	220.00
11	61.01	12.10	3.741	.20(.09)	.44	17.7	216.00

LONGEST FLOWPATH FROM NODE 216.00 TO NODE 268.00 = 2610.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	91.8	5.62	5.868	.200(.090)	.45	16.5	204.00
2	108.1	8.54	4.593	.200(.092)	.46	25.4	194.00
3	109.0	8.93	4.477	.200(.092)	.46	26.3	198.00
4	108.3	10.53	4.053	.200(.093)	.46	29.0	210.00
5	107.9	10.67	4.027	.200(.093)	.46	29.1	190.00
6	92.7	5.75	5.801	.200(.090)	.45	16.9	240.00
7	93.5	5.84	5.755	.200(.090)	.45	17.2	262.00
8	94.7	6.00	5.672	.200(.090)	.45	17.7	225.00
9	100.6	7.09	5.110	.200(.091)	.45	21.1	252.00
10	108.3	8.60	4.575	.200(.092)	.46	25.6	233.00
11	108.3	8.62	4.569	.200(.092)	.46	25.6	256.00
12	109.6	9.66	4.261	.200(.092)	.46	27.8	243.00
13	109.6	9.82	4.212	.200(.092)	.46	28.1	230.00
14	107.6	10.75	4.010	.200(.093)	.46	29.2	245.00
15	102.2	12.10	3.741	.200(.093)	.47	29.8	220.00
16	102.2	12.10	3.741	.200(.093)	.47	29.8	216.00

TOTAL AREA = 29.80

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 109.62 Tc(MIN.) = 9.659
EFFECTIVE AREA(ACRES) = 27.78 AREA-AVERAGED Fm(INCH/HR) = .09
REA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .46
TOTAL AREA(ACRES) = 29.80
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 268.00 = 2610.00 FEET.

```
****************************************************************************
 FLOW PROCESS FROM NODE   268.00 TO NODE   268.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE   268.00 TO NODE   274.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1098.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1078.00
 FLOW LENGTH(FEET) =   200.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  28.33
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    109.62
 PIPEFLOW TRAVEL TIME(MIN.) =    .12    Tc(MIN.) =   9.78

****************************************************************************
 FLOW PROCESS FROM NODE   274.00 TO NODE   274.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.78
 RAINFALL INTENSITY(INCH/HR) =   4.23
 AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .46
 EFFECTIVE STREAM AREA(ACRES) =   27.78
 TOTAL STREAM AREA(ACRES) =   29.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    109.62

****************************************************************************
 FLOW PROCESS FROM NODE   270.00 TO NODE   272.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   780.00
 ELEVATION DATA: UPSTREAM(FEET) =   1180.00  DOWNSTREAM(FEET) =   1085.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.646
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.340
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 D        1.20       .20        .10     91    6.65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      5.75
```

TOTAL AREA(ACRES) = 1.20 PEAK FLOW RATE(CFS) = 5.75

****
FLOW PROCESS FROM NODE 272.00 TO NODE 274.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.65
RAINFALL INTENSITY(INCH/HR) = 5.34
AREA-AVERAGED Fm(INCH/HR) = .02
AREA-AVERAGED Fp(INCH/HR) = .20
AREA-AVERAGED Ap = .10
EFFECTIVE STREAM AREA(ACRES) = 1.20
TOTAL STREAM AREA(ACRES) = 1.20
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.75
** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	91.78	5.75	5.803	.20(.09)	.45	16.53	204.00
1	108.06	8.65	4.559	.20(.09)	.46	25.40	194.00
1	108.98	9.05	4.442	.20(.09)	.46	26.31	198.00
1	108.31	10.65	4.030	.20(.09)	.46	29.01	210.00
1	107.93	10.78	4.003	.20(.09)	.46	29.14	190.00
1	92.73	5.88	5.736	.20(.09)	.45	16.92	240.00
1	93.46	5.96	5.692	.20(.09)	.45	17.21	262.00
1	94.66	6.12	5.610	.20(.09)	.45	17.70	225.00
1	100.63	7.21	5.049	.20(.09)	.45	21.07	252.00
1	108.29	8.72	4.540	.20(.09)	.46	25.57	233.00
1	108.34	8.74	4.534	.20(.09)	.46	25.61	256.00
1	109.62	9.78	4.226	.20(.09)	.46	27.78	243.00
1	109.59	9.94	4.177	.20(.09)	.46	28.08	230.00
1	107.60	10.87	3.986	.20(.09)	.46	29.18	245.00
1	102.24	12.22	3.717	.20(.09)	.47	29.80	220.00
1	102.24	12.22	3.717	.20(.09)	.47	29.80	216.00
2	5.75	6.65	5.340	.20(.02)	.10	1.20	270.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	97.2	5.75	5.803	.200(.086)	.43	17.6	204.00
2	98.2	5.88	5.736	.200(.086)	.43	18.0	240.00
3	99.0	5.96	5.692	.200(.086)	.43	18.3	262.00
4	100.2	6.12	5.610	.200(.086)	.43	18.8	225.00
5	106.1	7.21	5.049	.200(.087)	.43	22.3	252.00
6	113.0	8.65	4.559	.200(.088)	.44	26.6	194.00
7	113.2	8.72	4.540	.200(.089)	.44	26.8	233.00
8	113.2	8.74	4.534	.200(.089)	.44	26.8	256.00
9	113.8	9.05	4.442	.200(.089)	.44	27.5	198.00
10	114.2	9.78	4.226	.200(.089)	.45	29.0	243.00
11	114.1	9.94	4.177	.200(.090)	.45	29.3	230.00
12	112.6	10.65	4.030	.200(.090)	.45	30.2	210.00
13	112.2	10.78	4.003	.200(.090)	.45	30.3	190.00

```
   14       111.9    10.87     3.986  .200( .090)  .45       30.4      245.00
   15       106.2    12.22     3.717  .200( .090)  .45       31.0      220.00
   16       106.2    12.22     3.717  .200( .090)  .45       31.0      216.00
   17       103.3     6.65     5.340  .200( .086)  .43       20.5      270.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    114.16   Tc(MIN.) =    9.777
 EFFECTIVE AREA(ACRES) =     28.98  AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .45
 TOTAL AREA(ACRES) =     31.00
 LONGEST FLOWPATH FROM NODE   216.00 TO NODE   274.00 =  2810.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   274.00 TO NODE   276.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1078.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1058.00
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  44.76
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    114.16
 PIPEFLOW TRAVEL TIME(MIN.) =    .02    Tc(MIN.) =   9.80


****************************************************************************
 FLOW PROCESS FROM NODE   276.00 TO NODE   500.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1058.00
 DOWNSTREAM NODE ELEVATION =   1018.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   220.00
 CHANNEL SLOPE =   .1818
 CHANNEL FLOW THRU SUBAREA(CFS) =    114.16
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =  15.62 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .23   Tc(MIN.) =  10.03


****************************************************************************
 FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.03
 RAINFALL INTENSITY(INCH/HR) =   4.15
 AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .45
 EFFECTIVE STREAM AREA(ACRES) =   28.98
 TOTAL STREAM AREA(ACRES) =   31.00
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    114.16

****************************************************************************
 FLOW PROCESS FROM NODE   278.00 TO NODE   280.00 IS CODE =  2.1
 ----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   650.00
 ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1085.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.795
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.813
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        4.60       .20        .50    91    7.79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =     19.51
 TOTAL AREA(ACRES) =      4.60   PEAK FLOW RATE(CFS) =     19.51


****************************************************************************
 FLOW PROCESS FROM NODE   280.00 TO NODE   282.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1078.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1077.00
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.72
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     19.51
 PIPEFLOW TRAVEL TIME(MIN.) =     .37    Tc(MIN.) =   8.17


****************************************************************************
 FLOW PROCESS FROM NODE   282.00 TO NODE   500.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1077.00
 DOWNSTREAM NODE ELEVATION =   1018.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00
 CHANNEL SLOPE =   .1686
 CHANNEL FLOW THRU SUBAREA(CFS) =     19.51
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   9.41 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =     .62   Tc(MIN.) =   8.79


****************************************************************************
```

```
 FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.79
 RAINFALL INTENSITY(INCH/HR) =    4.52
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =     4.60
 TOTAL STREAM AREA(ACRES) =     4.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.51


****************************************************************************
 FLOW PROCESS FROM NODE    284.00 TO NODE    286.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   660.00
 ELEVATION DATA: UPSTREAM(FEET) =   1110.00  DOWNSTREAM(FEET) =   1060.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.836
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.243
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D         .80       .20        .10    91    6.84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =     3.76
 TOTAL AREA(ACRES) =      .80   PEAK FLOW RATE(CFS) =     3.76


****************************************************************************
 FLOW PROCESS FROM NODE    286.00 TO NODE    288.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1053.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1052.00
 FLOW LENGTH(FEET) =    40.00   MANNING'S N =  .013

 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.31
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     3.76
 PIPEFLOW TRAVEL TIME(MIN.) =    .09    Tc(MIN.) =   6.93


****************************************************************************
 FLOW PROCESS FROM NODE    288.00 TO NODE    500.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
```

```
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 UPSTREAM NODE ELEVATION =    1052.00
 DOWNSTREAM NODE ELEVATION =    1018.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    200.00
 CHANNEL SLOPE =    .1700
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.76
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =    6.25 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =     .53   Tc(MIN.) =    7.46


**************************************************************************
 FLOW PROCESS FROM NODE    500.00 TO NODE    500.00 IS CODE =   1
--------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =    7.46
 RAINFALL INTENSITY(INCH/HR) =    4.92
 AREA-AVERAGED Fm(INCH/HR) =    .02
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .10
 EFFECTIVE STREAM AREA(ACRES) =      .80
 TOTAL STREAM AREA(ACRES) =      .80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.76
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae       SOURCE
  UMBER    (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      97.18     6.02     5.664    .20( .09)   .43    17.57     204.00
    1      98.19     6.15     5.598    .20( .09)   .43    17.98     240.00
    1      98.96     6.23     5.554    .20( .09)   .43    18.29     262.00
    1     100.22     6.39     5.473    .20( .09)   .43    18.81     225.00
    1     106.06     7.47     4.913    .20( .09)   .43    22.27     252.00
    1     112.96     8.91     4.482    .20( .09)   .44    26.60     194.00
    1     113.17     8.97     4.464    .20( .09)   .44    26.77     233.00
    1     113.22     8.99     4.458    .20( .09)   .44    26.81     256.00
    1     113.76     9.30     4.366    .20( .09)   .44    27.51     198.00
    1     114.16    10.03     4.153    .20( .09)   .45    28.98     243.00
    1     114.08    10.20     4.120    .20( .09)   .45    29.28     230.00
    1     112.64    10.91     3.978    .20( .09)   .45    30.21     210.00
    1     112.23    11.04     3.951    .20( .09)   .45    30.34     190.00
    1     111.88    11.13     3.935    .20( .09)   .45    30.38     245.00
    1     106.24    12.48     3.664    .20( .09)   .45    31.00     220.00
    1     106.24    12.48     3.664    .20( .09)   .45    31.00     216.00
    1     103.27     6.91     5.204    .20( .09)   .43    20.52     270.00
    2      19.51     8.79     4.519    .20( .10)   .50     4.60     278.00
    3       3.76     7.46     4.920    .20( .02)   .10      .80     284.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap     Ae       SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      117.5     6.02     5.664   .200( .086)  .43     21.4     204.00
    2      118.7     6.15     5.598   .200( .086)  .43     21.9     240.00
```

```
    3      119.6     6.23     5.554   .200( .086)   .43       22.2      262.00
    4      121.1     6.39     5.473   .200( .086)   .43       22.8      225.00
    5      124.7     6.91     5.204   .200( .086)   .43       24.9      270.00
    6      127.9     7.47     4.913   .200( .087)   .43       27.0      252.00
    7      135.3     8.79     4.519   .200( .088)   .44       31.6      278.00
    8      135.7     8.91     4.482   .200( .088)   .44       32.0      194.00
    9      135.8     8.97     4.464   .200( .088)   .44       32.2      233.00
   10      135.9     8.99     4.458   .200( .088)   .44       32.2      256.00
   11      135.9     9.30     4.366   .200( .089)   .44       32.9      198.00
   12      135.2    10.03     4.153   .200( .089)   .45       34.4      243.00
   13      135.0    10.20     4.120   .200( .089)   .45       34.7      230.00
   14      132.8    10.91     3.978   .200( .090)   .45       35.6      210.00
   15      132.3    11.04     3.951   .200( .090)   .45       35.7      190.00
   16      131.8    11.13     3.935   .200( .090)   .45       35.8      245.00
   17      124.8    12.48     3.664   .200( .090)   .45       36.4      220.00
   18      124.8    12.48     3.664   .200( .090)   .45       36.4      216.00
   19      127.8     7.46     4.920   .200( .087)   .43       26.9      284.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    135.93   Tc(MIN.) =    9.305
 EFFECTIVE AREA(ACRES) =     32.91  AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .44
 TOTAL AREA(ACRES) =     36.40
 LONGEST FLOWPATH FROM NODE   216.00 TO NODE   500.00 =  3090.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE   300.00 TO NODE   302.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   880.00
 ELEVATION DATA: UPSTREAM(FEET) =   1330.00  DOWNSTREAM(FEET) =   1258.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.664
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.259
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        4.80       .20        .50    91    9.66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =     17.97
 TOTAL AREA(ACRES) =      4.80   PEAK FLOW RATE(CFS) =     17.97


****************************************************************************
 FLOW PROCESS FROM NODE   302.00 TO NODE   304.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
================================================================================
UPSTREAM ELEVATION(FEET) = 1258.00  DOWNSTREAM ELEVATION(FEET) = 1235.00
STREET LENGTH(FEET) =   250.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =   .017
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.49
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =   .34
  HALFSTREET FLOOD WIDTH(FEET) =   12.57
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.00
  PRODUCT OF DEPTH&VELOCITY =    2.41
STREET FLOW TRAVEL TIME(MIN.) =    .60   Tc(MIN.) =  10.26
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.108
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       D        1.40       .20         .50    91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    5.05
EFFECTIVE AREA(ACRES) =    6.20    AREA-AVERAGED Fm(INCH/HR) =   .10
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .50
TOTAL AREA(ACRES) =    6.20        PEAK FLOW RATE(CFS) =      22.37

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  .35   HALFSTREET FLOOD WIDTH(FEET) = 12.97
FLOW VELOCITY(FEET/SEC.) =  7.21   DEPTH*VELOCITY =   2.53


****************************************************************************
FLOW PROCESS FROM NODE   304.00 TO NODE   306.00 IS CODE =  3.1
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
UPSTREAM NODE ELEVATION(FEET) =  1228.00
DOWNSTREAM NODE ELEVATION(FEET) =  1130.00
FLOW LENGTH(FEET) =   370.00   MANNING'S N =  .013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  28.03
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     22.37
PIPEFLOW TRAVEL TIME(MIN.) =    .22    Tc(MIN.) =  10.48


****************************************************************************
FLOW PROCESS FROM NODE   306.00 TO NODE   413.00 IS CODE =  5.2
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
```

```
>>>>>TRAVELTIME THRU SUBAREA<<<<<
UPSTREAM NODE ELEVATION =   1130.00
DOWNSTREAM NODE ELEVATION =   1088.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  300.00
CHANNEL SLOPE =    .1400
CHANNEL FLOW THRU SUBAREA(CFS) =     22.37
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
FLOW VELOCITY(FEET/SEC) =   9.77 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =     .51   Tc(MIN.) =  10.99

****************************************************************************
FLOW PROCESS FROM NODE    413.00 TO NODE    413.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<

****************************************************************************
FLOW PROCESS FROM NODE    412.00 TO NODE    412.00 IS CODE = 15.1
----------------------------------------------------------------------------
>>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665B.PFT
MEMORY BANK #  3 DEFINED AS FOLLOWS:
STREAM      Q       Tc       Fp(Fm)       Ap      Ae        SOURCE
NUMBER    (CFS)   (MIN.)    (INCH/HR)             (ACRES)     NODE
   1     320.46     8.30    .20( .17)   .87      79.29      46.00
   2     320.57     8.57    .20( .17)   .87      80.78      42.00
   3     320.04     8.88    .20( .17)   .86      82.34      56.00
   4     317.69     9.41    .20( .17)   .86      84.80      52.00
   5     313.00    10.30    .20( .17)   .85      88.49      24.00
   6     303.66    11.97    .20( .17)   .85      93.82       8.00
   7     299.11    12.57    .20( .17)   .84      95.47      64.00
   8     296.93    13.07    .20( .17)   .84      96.77      26.00
   9     296.93    13.07    .20( .17)   .84      96.77      32.00
  10     296.01    13.24    .20( .17)   .84      97.17      12.00
  11     293.71    13.62    .20( .17)   .84      97.99      30.00
  12     286.60    14.69    .20( .17)   .84     100.23      16.00
  13     284.21    14.97    .20( .17)   .84     100.67      74.00
  14     275.97    16.21    .20( .17)   .84     102.34     404.00
  15     264.17    17.66    .20( .17)   .84     103.45       2.00
  16     253.75    19.10    .20( .17)   .84     104.00     400.00
  TOTAL AREA =    104.00
LONGEST FLOWPATH FROM NODE     2.00 TO NODE   412.00 =  4800.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    412.00 TO NODE    412.00 IS CODE =  14
----------------------------------------------------------------------------
>>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
'TREAM      Q       Tc       Fp(Fm)       Ap      Ae        SOURCE
NUMBER    (CFS)   (MIN.)    (INCH/HR)             (ACRES)     NODE
   1     320.46     8.30    .20( .17)   .87      79.29      46.00
   2     320.57     8.57    .20( .17)   .87      80.78      42.00
   3     320.04     8.88    .20( .17)   .86      82.34      56.00
```

4	317.69	9.41	.20(.17)	.86	84.80	52.00
5	313.00	10.30	.20(.17)	.85	88.49	24.00
6	303.66	11.97	.20(.17)	.85	93.82	8.00
7	299.11	12.57	.20(.17)	.84	95.47	64.00
8	296.93	13.07	.20(.17)	.84	96.77	26.00
9	296.93	13.07	.20(.17)	.84	96.77	32.00
10	296.01	13.24	.20(.17)	.84	97.17	12.00
11	293.71	13.62	.20(.17)	.84	97.99	30.00
12	286.60	14.69	.20(.17)	.84	100.23	16.00
13	284.21	14.97	.20(.17)	.84	100.67	74.00
14	275.97	16.21	.20(.17)	.84	102.34	404.00
15	264.17	17.66	.20(.17)	.84	103.45	2.00
16	253.75	19.10	.20(.17)	.84	104.00	400.00

TOTAL AREA = 104.00

LONGEST FLOWPATH FROM NODE 2.00 TO NODE 412.00 = 4800.00 FEET.

****

FLOW PROCESS FROM NODE 412.00 TO NODE 413.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	320.46	8.30	4.665	.20(.17)	.87	79.3	46.00
2	320.57	8.57	4.582	.20(.17)	.87	80.8	42.00
3	320.04	8.88	4.491	.20(.17)	.86	82.3	56.00
4	317.69	9.41	4.334	.20(.17)	.86	84.8	52.00
5	313.00	10.30	4.101	.20(.17)	.85	88.5	24.00
6	303.66	11.97	3.765	.20(.17)	.85	93.8	8.00
7	299.11	12.57	3.650	.20(.17)	.84	95.5	64.00
8	296.93	13.07	3.577	.20(.17)	.84	96.8	26.00
9	296.93	13.07	3.577	.20(.17)	.84	96.8	32.00
10	296.01	13.24	3.553	.20(.17)	.84	97.2	12.00
11	293.71	13.62	3.498	.20(.17)	.84	98.0	30.00
12	286.60	14.69	3.345	.20(.17)	.84	100.2	16.00
13	284.21	14.97	3.305	.20(.17)	.84	100.7	74.00
14	275.97	16.21	3.164	.20(.17)	.84	102.3	404.00
15	264.17	17.66	3.006	.20(.17)	.84	103.5	2.00
16	253.75	19.10	2.879	.20(.17)	.84	104.0	400.00

LONGEST FLOWPATH FROM NODE 2.00 TO NODE 413.00 = 4800.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	22.37	10.99	3.962	.20(.10)	.50	6.2	300.00

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 413.00 = 1800.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	340.4	8.30	4.665	.200(.170)	.85	84.0	46.00
2	340.8	8.57	4.582	.200(.169)	.84	85.6	42.00
3	340.6	8.88	4.491	.200(.168)	.84	87.4	56.00
4	338.7	9.41	4.334	.200(.167)	.84	90.1	52.00
5	334.7	10.30	4.101	.200(.167)	.83	94.3	24.00
6	324.9	11.97	3.765	.200(.165)	.82	100.0	8.00

```
     7      319.7    12.57     3.650   .200( .164)   .82      101.7       64.00
     8      317.1    13.07     3.577   .200( .164)   .82      103.0       26.00
     9      317.1    13.07     3.577   .200( .164)   .82      103.0       32.00
    10      316.0    13.24     3.553   .200( .164)   .82      103.4       12.00
    11      313.4    13.62     3.498   .200( .164)   .82      104.2       30.00
    12      305.4    14.69     3.345   .200( .164)   .82      106.4       16.00
    13      302.8    14.97     3.305   .200( .164)   .82      106.9       74.00
    14      293.7    16.21     3.164   .200( .164)   .82      108.5      404.00
    15      281.0    17.66     3.006   .200( .164)   .82      109.7        2.00
    16      269.9    19.10     2.879   .200( .165)   .82      110.2      400.00
    17      331.5    10.99     3.962   .200( .166)   .83       96.9      300.00
   TOTAL AREA =     110.20

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    340.81   Tc(MIN.) =    8.573
  EFFECTIVE AREA(ACRES) =     85.61  AREA-AVERAGED Fm(INCH/HR) =   .17
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .84
  TOTAL AREA(ACRES) =    110.20
  LONGEST FLOWPATH FROM NODE     2.00 TO NODE   413.00 =  4800.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   412.00 TO NODE   412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   413.00 TO NODE   413.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   413.00 TO NODE   414.00 IS CODE =  5.2
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION =   1088.00
  DOWNSTREAM NODE ELEVATION =  1040.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1180.00
  CHANNEL SLOPE =   .0407
  CHANNEL FLOW THRU SUBAREA(CFS) =   340.81
  FLOW VELOCITY(FEET/SEC) =  13.98 (PER LACFCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.41   Tc(MIN.) =   9.98

****************************************************************************
  FLOW PROCESS FROM NODE   414.00 TO NODE   414.00 IS CODE =  8.1
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.166
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
NATURAL FAIR COVER
"OPEN BRUSH"                D        3.60       .20       1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    3.60      SUBAREA RUNOFF(CFS) =   12.85
EFFECTIVE AREA(ACRES) =    89.21   AREA-AVERAGED Fm(INCH/HR) =   .17
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .85
TOTAL AREA(ACRES) =   113.80       PEAK FLOW RATE(CFS) =     340.81
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE


****************************************************************************
 FLOW PROCESS FROM NODE   414.00 TO NODE   500.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1040.00
 DOWNSTREAM NODE ELEVATION =   1018.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00
 CHANNEL SLOPE =   .0355
 CHANNEL FLOW THRU SUBAREA(CFS) =    340.81
 FLOW VELOCITY(FEET/SEC) =  13.06 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .79   Tc(MIN.) =  10.77


****************************************************************************
 FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.77
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.006
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.90       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    5.90      SUBAREA RUNOFF(CFS) =   20.21
 EFFECTIVE AREA(ACRES) =    95.11   AREA-AVERAGED Fm(INCH/HR) =   .17
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .86
 TOTAL AREA(ACRES) =   119.70       PEAK FLOW RATE(CFS) =     340.81
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE


****************************************************************************
 FLOW PROCESS FROM NODE   500.00 TO NODE   500.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap    Ae        SOURCE
 NUMBER   (CFS)   (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1    340.41   10.49     4.061    .20( .17)   .86      93.5      46.00
    2    340.81   10.77     4.006    .20( .17)   .86      95.1      42.00
    3    340.59   11.08     3.944    .20( .17)   .86      96.9      56.00
    4    338.69   11.61     3.837    .20( .17)   .85      99.6      52.00
```

5	334.70	12.51	3.659	.20(.17)	.85	103.8	24.00
6	331.49	13.21	3.558	.20(.17)	.84	106.4	300.00
7	324.89	14.21	3.414	.20(.17)	.84	109.5	8.00
8	319.67	14.81	3.327	.20(.17)	.84	111.2	64.00
9	317.07	15.32	3.264	.20(.17)	.84	112.5	32.00
10	317.07	15.32	3.264	.20(.17)	.84	112.5	26.00
11	316.00	15.50	3.245	.20(.17)	.84	112.9	12.00
12	313.40	15.88	3.201	.20(.17)	.83	113.7	30.00
13	305.39	16.96	3.080	.20(.17)	.83	115.9	16.00
14	302.77	17.25	3.048	.20(.17)	.83	116.4	74.00
15	293.71	18.52	2.931	.20(.17)	.84	118.0	404.00
16	282.32	20.00	2.800	.20(.17)	.84	119.2	2.00
17	271.63	21.46	2.689	.20(.17)	.84	119.7	400.00

LONGEST FLOWPATH FROM NODE 2.00 TO NODE 500.00 = 6600.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	117.50	6.02	5.664	.20(.09)	.43	21.4	204.00
2	118.70	6.15	5.598	.20(.09)	.43	21.9	240.00
3	119.59	6.23	5.554	.20(.09)	.43	22.2	262.00
4	121.05	6.39	5.473	.20(.09)	.43	22.8	225.00
5	124.68	6.91	5.204	.20(.09)	.43	24.9	270.00
6	127.82	7.46	4.920	.20(.09)	.43	26.9	284.00
7	127.89	7.47	4.913	.20(.09)	.43	27.0	252.00
8	135.32	8.79	4.519	.20(.09)	.44	31.6	278.00
9	135.73	8.91	4.482	.20(.09)	.44	32.0	194.00
10	135.84	8.97	4.464	.20(.09)	.44	32.2	233.00
11	135.87	8.99	4.458	.20(.09)	.44	32.2	256.00
12	135.93	9.30	4.366	.20(.09)	.44	32.9	198.00
13	135.23	10.03	4.153	.20(.09)	.45	34.4	243.00
14	134.98	10.20	4.120	.20(.09)	.45	34.7	230.00
15	132.80	10.91	3.978	.20(.09)	.45	35.6	210.00
16	132.25	11.04	3.951	.20(.09)	.45	35.7	190.00
17	131.81	11.13	3.935	.20(.09)	.45	35.8	245.00
18	124.77	12.48	3.664	.20(.09)	.45	36.4	216.00
19	124.77	12.48	3.664	.20(.09)	.45	36.4	220.00

LONGEST FLOWPATH FROM NODE 216.00 TO NODE 500.00 = 3090.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	474.5	10.49	4.061	.200(.150)	.75	128.5	46.00
2	474.0	10.77	4.006	.200(.150)	.75	130.5	42.00
3	472.6	11.08	3.944	.200(.149)	.75	132.6	56.00
4	468.0	11.61	3.837	.200(.149)	.75	135.6	52.00
5	459.3	12.51	3.659	.200(.149)	.74	140.2	24.00
6	452.5	13.21	3.558	.200(.149)	.74	142.8	300.00
7	440.9	14.21	3.414	.200(.148)	.74	145.9	8.00
8	432.7	14.81	3.327	.200(.148)	.74	147.6	64.00
9	427.9	15.32	3.264	.200(.148)	.74	148.9	32.00
10	427.9	15.32	3.264	.200(.148)	.74	148.9	26.00
11	426.1	15.50	3.245	.200(.148)	.74	149.3	12.00
12	422.0	15.88	3.201	.200(.148)	.74	150.1	30.00
13	409.8	16.96	3.080	.200(.148)	.74	152.3	16.00
14	406.0	17.25	3.048	.200(.148)	.74	152.8	74.00
15	392.9	18.52	2.931	.200(.149)	.74	154.4	404.00
16	376.9	20.00	2.800	.200(.149)	.75	155.6	2.00
17	362.3	21.46	2.689	.200(.149)	.75	156.1	400.00

18	393.2	6.02	5.664	.200(.148)	.74	75.0	204.00
19	396.9	6.15	5.598	.200(.148)	.74	76.6	240.00
20	399.4	6.23	5.554	.200(.148)	.74	77.7	262.00
21	403.6	6.39	5.473	.200(.148)	.74	79.8	225.00
22	414.7	6.91	5.204	.200(.148)	.74	86.4	270.00
23	423.3	7.46	4.920	.200(.148)	.74	93.4	284.00
24	423.5	7.47	4.913	.200(.148)	.74	93.5	252.00
25	453.9	8.79	4.519	.200(.148)	.74	109.9	278.00
26	456.1	8.91	4.482	.200(.148)	.74	111.4	194.00
27	457.1	8.97	4.464	.200(.149)	.74	112.1	233.00
28	457.4	8.99	4.458	.200(.149)	.74	112.3	256.00
29	461.4	9.30	4.366	.200(.149)	.74	115.8	198.00
30	468.4	10.03	4.153	.200(.149)	.75	123.7	243.00
31	470.8	10.20	4.120	.200(.150)	.75	125.5	230.00
32	473.5	10.91	3.978	.200(.149)	.75	131.5	210.00
33	472.9	11.04	3.951	.200(.149)	.75	132.4	190.00
34	472.2	11.13	3.935	.200(.149)	.75	132.9	245.00
35	459.6	12.48	3.664	.200(.149)	.74	140.1	216.00
36	459.6	12.48	3.664	.200(.149)	.74	140.1	220.00
TOTAL AREA =		156.10					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 474.49 Tc(MIN.) = 10.495
EFFECTIVE AREA(ACRES) = 128.53 AREA-AVERAGED Fm(INCH/HR) = .15
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .75
TOTAL AREA(ACRES) = 156.10
LONGEST FLOWPATH FROM NODE 2.00 TO NODE 500.00 = 6600.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 156.10 TC(MIN.) = 10.49
EFFECTIVE AREA(ACRES) = 128.53 AREA-AVERAGED Fm(INCH/HR)= .15
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .75
PEAK FLOW RATE(CFS) = 474.49

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	393.2	6.02	5.664	.200(.148)	.74	75.0	204.00
2	396.9	6.15	5.598	.200(.148)	.74	76.6	240.00
3	399.4	6.23	5.554	.200(.148)	.74	77.7	262.00
4	403.6	6.39	5.473	.200(.148)	.74	79.8	225.00
5	414.7	6.91	5.204	.200(.148)	.74	86.4	270.00
6	423.3	7.46	4.920	.200(.148)	.74	93.4	284.00
7	423.5	7.47	4.913	.200(.148)	.74	93.5	252.00
8	453.9	8.79	4.519	.200(.148)	.74	109.9	278.00
9	456.1	8.91	4.482	.200(.148)	.74	111.4	194.00
10	457.1	8.97	4.464	.200(.149)	.74	112.1	233.00
11	457.4	8.99	4.458	.200(.149)	.74	112.3	256.00
12	461.4	9.30	4.366	.200(.149)	.74	115.8	198.00
13	468.4	10.03	4.153	.200(.149)	.75	123.7	243.00
14	470.8	10.20	4.120	.200(.150)	.75	125.5	230.00
15	474.5	10.49	4.061	.200(.150)	.75	128.5	46.00
16	474.0	10.77	4.006	.200(.150)	.75	130.5	42.00
17	473.5	10.91	3.978	.200(.149)	.75	131.5	210.00
18	472.9	11.04	3.951	.200(.149)	.75	132.4	190.00
19	472.6	11.08	3.944	.200(.149)	.75	132.6	56.00
20	472.2	11.13	3.935	.200(.149)	.75	132.9	245.00
21	468.0	11.61	3.837	.200(.149)	.75	135.6	52.00
22	459.6	12.48	3.664	.200(.149)	.74	140.1	216.00

23	459.6	12.48	3.664	.200(.149)	.74	140.1	220.00
24	459.3	12.51	3.659	.200(.149)	.74	140.2	24.00
25	452.5	13.21	3.558	.200(.149)	.74	142.8	300.00
26	440.9	14.21	3.414	.200(.148)	.74	145.9	8.00
27	432.7	14.81	3.327	.200(.148)	.74	147.6	64.00
28	427.9	15.32	3.264	.200(.148)	.74	148.9	26.00
29	427.9	15.32	3.264	.200(.148)	.74	148.9	32.00
30	426.1	15.50	3.245	.200(.148)	.74	149.3	12.00
31	422.0	15.88	3.201	.200(.148)	.74	150.1	30.00
32	409.8	16.96	3.080	.200(.148)	.74	152.3	16.00
33	406.0	17.25	3.048	.200(.148)	.74	152.8	74.00
34	392.9	18.52	2.931	.200(.149)	.74	154.4	404.00
35	376.9	20.00	2.800	.200(.149)	.75	155.6	2.00
36	362.3	21.46	2.689	.200(.149)	.75	156.1	400.00

END OF RATIONAL METHOD ANALYSIS

100 - YEAR STORM
LINE "H" AND EXISTING LINES "A", "B" AND "C"

Hunsaker & Associates, Inc.

1665-1

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**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                        Analysis prepared by:

                        HUNSAKER  &  ASSOCIATES
                              Irvine, Inc.
                      Planning * Engineering * Surveying
                Three Hughes * Irvine , California 92718 * (714) 538-1010

 ************************** DESCRIPTION OF STUDY **************************
* 100 YEAR HYDROLOGY FOR LINE "H" AND EXISTING LINE "A", "B" AND "C"       *
*                                                                          *
*                                                                          *
 **************************************************************************

  FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665H.100
  TIME/DATE OF STUDY:  8:57   8/29/1995
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO    STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH   CROSSFALL   IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP    HIKE  FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY     (FT)    (FT)   (FT)   (FT)    (n)
===  =====  ==========  ====================  ======  =====  =====  =====  ======
  1   20.0      15.0      .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   18.0      13.0      .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =   .00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


**************************************************************************
  FLOW PROCESS FROM NODE   164.00 TO NODE   165.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   610.00
  ELEVATION DATA: UPSTREAM(FEET) =   1135.00  DOWNSTREAM(FEET) =   1100.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.003
```

```
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.157
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
COMMERCIAL                 D        1.30       .20        .10     91    7.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
SUBAREA RUNOFF(CFS) =      6.01
TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      6.01

****************************************************************************
FLOW PROCESS FROM NODE   165.00 TO NODE   166.00 IS CODE =  6.2
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1100.00  DOWNSTREAM ELEVATION(FEET) = 1079.00
STREET LENGTH(FEET) =   530.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =   .017
OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.46
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =   .38
  HALFSTREET FLOOD WIDTH(FEET) =   14.39
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.03
  PRODUCT OF DEPTH&VELOCITY =    1.89
STREET FLOW TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =   8.76
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.527
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 D        1.70       .20        .10     91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    6.90
EFFECTIVE AREA(ACRES) =    3.00    AREA-AVERAGED Fm(INCH/HR) =   .02
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .10
TOTAL AREA(ACRES) =    3.00        PEAK FLOW RATE(CFS) =      12.17

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  .40   HALFSTREET FLOOD WIDTH(FEET) = 16.02
FLOW VELOCITY(FEET/SEC.) =  5.28   DEPTH*VELOCITY =   2.13

****************************************************************************
FLOW PROCESS FROM NODE   166.00 TO NODE   172.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   8.76
```

```
 RAINFALL INTENSITY(INCH/HR) =   4.53
 AREA-AVERAGED Fm(INCH/HR) =    .02
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .10
 EFFECTIVE STREAM AREA(ACRES) =    3.00
 TOTAL STREAM AREA(ACRES) =    3.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.17

****************************************************************************
 FLOW PROCESS FROM NODE   168.00 TO NODE   169.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   550.00
 ELEVATION DATA: UPSTREAM(FEET) =   1105.00  DOWNSTREAM(FEET) =   1100.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.427
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.675
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.80       .20        .50    91   12.43
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      5.79
 TOTAL AREA(ACRES) =      1.80   PEAK FLOW RATE(CFS) =      5.79

****************************************************************************
 FLOW PROCESS FROM NODE   169.00 TO NODE   170.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1100.00  DOWNSTREAM ELEVATION(FEET) = 1079.00
 STREET LENGTH(FEET) =   510.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      8.33
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .36
   HALFSTREET FLOOD WIDTH(FEET) =   13.58
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.93
   PRODUCT OF DEPTH&VELOCITY =    1.78
 STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  14.15
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.422
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D        1.70        .20        .50     91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .50
SUBAREA AREA(ACRES) =     1.70      SUBAREA RUNOFF(CFS) =     5.08
EFFECTIVE AREA(ACRES) =    3.50     AREA-AVERAGED Fm(INCH/HR) =    .10
AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .50
TOTAL AREA(ACRES) =     3.50        PEAK FLOW RATE(CFS) =       10.47

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  .38   HALFSTREET FLOOD WIDTH(FEET) = 14.90
FLOW VELOCITY(FEET/SEC.) =  5.21   DEPTH*VELOCITY =   2.00


****************************************************************************
FLOW PROCESS FROM NODE    170.00 TO NODE    172.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  14.15
RAINFALL INTENSITY(INCH/HR) =   3.42
AREA-AVERAGED Fm(INCH/HR) =    .10
AREA-AVERAGED Fp(INCH/HR) =    .20
AREA-AVERAGED Ap =    .50
EFFECTIVE STREAM AREA(ACRES) =    3.50
TOTAL STREAM AREA(ACRES) =    3.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.47
** CONFLUENCE DATA **
STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
   1      12.17    8.76     4.527    .20( .02)   .10     3.00     164.00
   2      10.47   14.15     3.422    .20( .10)   .50     3.50     168.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM      Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
   1       20.8    8.76     4.527   .200( .054)  .27       5.2     164.00
   2       19.7   14.15     3.422   .200( .063)  .32       6.5     168.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     20.80   Tc(MIN.) =    8.760
EFFECTIVE AREA(ACRES) =      5.17  AREA-AVERAGED Fm(INCH/HR) =    .05
AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .27
TOTAL AREA(ACRES) =      6.50
LONGEST FLOWPATH FROM NODE   164.00 TO NODE   172.00 =  1140.00 FEET.


****************************************************************************
FLOW PROCESS FROM NODE    172.00 TO NODE    178.00 IS CODE =  3.1
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
 UPSTREAM NODE ELEVATION(FEET) =  1072.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1061.00
 FLOW LENGTH(FEET) =   380.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.85
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     20.80
 PIPEFLOW TRAVEL TIME(MIN.) =    .53    Tc(MIN.) =   9.29


****************************************************************************
 FLOW PROCESS FROM NODE   178.00 TO NODE   178.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.29
 RAINFALL INTENSITY(INCH/HR) =   4.37
 AREA-AVERAGED Fm(INCH/HR) =   .05
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .27
 EFFECTIVE STREAM AREA(ACRES) =    5.17
 TOTAL STREAM AREA(ACRES) =    6.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.80


****************************************************************************
 FLOW PROCESS FROM NODE   174.00 TO NODE   176.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   330.00
 ELEVATION DATA: UPSTREAM(FEET) =   1079.00  DOWNSTREAM(FEET) =   1068.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.812
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.808
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D         .60       .20        .50    91    7.81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      2.54
 TOTAL AREA(ACRES) =       .60   PEAK FLOW RATE(CFS) =      2.54


****************************************************************************
 FLOW PROCESS FROM NODE   176.00 TO NODE   178.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.81
```

```
 RAINFALL INTENSITY(INCH/HR) =   4.81
 AREA-AVERAGED Fm(INCH/HR) =   .10
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =     .60
 TOTAL STREAM AREA(ACRES) =     .60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.54
 ** CONFLUENCE DATA **
 STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae       SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     20.80    9.29    4.369   .20( .05)  .27    5.17    164.00
    1     19.65   14.69    3.345   .20( .06)  .32    6.50    168.00
    2      2.54    7.81    4.808   .20( .10)  .50     .60    174.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc   Intensity    Fp(Fm)     Ap     Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)        (ACRES)     NODE
    1       23.1    9.29    4.369  .200( .058)  .29       5.8    164.00
    2       21.4   14.69    3.345  .200( .066)  .33       7.1    168.00
    3       21.8    7.81    4.808  .200( .059)  .30       4.9    174.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     23.11   Tc(MIN.) =    9.295
 EFFECTIVE AREA(ACRES) =      5.77  AREA-AVERAGED Fm(INCH/HR) =   .06
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .29
 TOTAL AREA(ACRES) =      7.10
 LONGEST FLOWPATH FROM NODE   164.00 TO NODE   178.00 =  1520.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   178.00 TO NODE   180.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1061.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1050.00
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  .013

 DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.16
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     23.11
 PIPEFLOW TRAVEL TIME(MIN.) =    .15    Tc(MIN.) =   9.44


****************************************************************************
 FLOW PROCESS FROM NODE   180.00 TO NODE   182.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1050.00
 DOWNSTREAM NODE ELEVATION =   1028.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   100.00
 CHANNEL SLOPE =   .2150
```

```
 CHANNEL FLOW THRU SUBAREA(CFS) =     23.11
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   9.85 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =     .17   Tc(MIN.) =   9.61

****************************************************************************
 FLOW PROCESS FROM NODE   182.00 TO NODE   182.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.61
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.276
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        2.10       .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    7.89
 EFFECTIVE AREA(ACRES) =     7.87   AREA-AVERAGED Fm(INCH/HR) =   .07
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .35
 TOTAL AREA(ACRES) =     9.20       PEAK FLOW RATE(CFS) =      29.78

****************************************************************************
 FLOW PROCESS FROM NODE   152.00 TO NODE   154.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   940.00
 ELEVATION DATA: UPSTREAM(FEET) =   1171.00  DOWNSTREAM(FEET) =   1075.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.418
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.942
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D        2.30       .20        .10    91    7.42
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =     10.19
 TOTAL AREA(ACRES) =      2.30   PEAK FLOW RATE(CFS) =     10.19

****************************************************************************
 FLOW PROCESS FROM NODE   154.00 TO NODE   156.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1075.00  DOWNSTREAM ELEVATION(FEET) = 1020.00
 STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
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 OUTSIDE STREET CROSSFALL(DECIMAL)  =    .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =    .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.62
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =    .39
   HALFSTREET FLOOD WIDTH(FEET) =   15.21
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.88
   PRODUCT OF DEPTH&VELOCITY =    3.85
 STREET FLOW TRAVEL TIME(MIN.) =    .64   Tc(MIN.) =   8.06
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.734
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D         5.00       .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =    5.00      SUBAREA RUNOFF(CFS) =   20.86
 EFFECTIVE AREA(ACRES) =    7.30    AREA-AVERAGED Fm(INCH/HR) =   .07
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .37
 TOTAL AREA(ACRES) =    7.30        PEAK FLOW RATE(CFS) =      30.61

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .43   HALFSTREET FLOOD WIDTH(FEET) = 17.85
 FLOW VELOCITY(FEET/SEC.) = 10.82   DEPTH*VELOCITY =   4.70


 ****************************************************************************
 FLOW PROCESS FROM NODE   156.00 TO NODE   164.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.06
 RAINFALL INTENSITY(INCH/HR) =   4.73
 AREA-AVERAGED Fm(INCH/HR) =   .07
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .37
 EFFECTIVE STREAM AREA(ACRES) =    7.30
 TOTAL STREAM AREA(ACRES) =    7.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.61


****************************************************************************
 FLOW PROCESS FROM NODE   158.00 TO NODE   160.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   460.00
 ELEVATION DATA: UPSTREAM(FEET) =   1142.00  DOWNSTREAM(FEET) =   1133.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.926
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.182
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
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```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D        2.60       .20        .50     91    9.93
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
SUBAREA RUNOFF(CFS) =      9.55
TOTAL AREA(ACRES) =      2.60   PEAK FLOW RATE(CFS) =      9.55


****************************************************************************
 FLOW PROCESS FROM NODE   160.00 TO NODE   162.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1133.00  DOWNSTREAM ELEVATION(FEET) = 1053.50
 STREET LENGTH(FEET) =   510.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.26
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .32
   HALFSTREET FLOOD WIDTH(FEET) =   11.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.58
   PRODUCT OF DEPTH&VELOCITY =    2.76
 STREET FLOW TRAVEL TIME(MIN.) =    .99   Tc(MIN.) =  10.92
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.977
 SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 D         .40       .20        .10     91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
SUBAREA AREA(ACRES) =     .40      SUBAREA RUNOFF(CFS) =    1.42
EFFECTIVE AREA(ACRES) =    3.00    AREA-AVERAGED Fm(INCH/HR) =   .09
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .45
TOTAL AREA(ACRES) =    3.00        PEAK FLOW RATE(CFS) =      10.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .32   HALFSTREET FLOOD WIDTH(FEET) = 11.35
 FLOW VELOCITY(FEET/SEC.) =  8.63   DEPTH*VELOCITY =   2.79


****************************************************************************
 FLOW PROCESS FROM NODE   162.00 TO NODE   164.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.92
```

```
 RAINFALL INTENSITY(INCH/HR) =   3.98
 AREA-AVERAGED Fm(INCH/HR) =   .09
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .45
 EFFECTIVE STREAM AREA(ACRES) =    3.00
 TOTAL STREAM AREA(ACRES) =    3.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.50
 ** CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)         (ACRES)    NODE
    1     30.61    8.06     4.734    .20( .07)   .37     7.30    152.00
    2     10.50   10.92     3.977    .20( .09)   .45     3.00    158.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1       39.9    8.06     4.734   .200( .078)  .39       9.5    152.00
    2       36.1   10.92     3.977   .200( .079)  .40      10.3    158.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     39.87   Tc(MIN.) =    8.059
 EFFECTIVE AREA(ACRES) =      9.51  AREA-AVERAGED Fm(INCH/HR) =   .08
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .39
 TOTAL AREA(ACRES) =     10.30
 LONGEST FLOWPATH FROM NODE   152.00 TO NODE   164.00 =  1320.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE   164.00 TO NODE   168.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.06
 RAINFALL INTENSITY(INCH/HR) =   4.73
 AREA-AVERAGED Fm(INCH/HR) =   .08
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =   .39
 EFFECTIVE STREAM AREA(ACRES) =    9.51
 TOTAL STREAM AREA(ACRES) =   10.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.87


****************************************************************************
 FLOW PROCESS FROM NODE   165.00 TO NODE   166.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   770.00
 ELEVATION DATA: UPSTREAM(FEET) =   1110.00  DOWNSTREAM(FEET) =   1005.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.272
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.672
```

```
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        4.60       .20        .50    91    8.27
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .50
 SUBAREA RUNOFF(CFS) =      18.93
 TOTAL AREA(ACRES) =       4.60   PEAK FLOW RATE(CFS) =     18.93

****************************************************************************
 FLOW PROCESS FROM NODE    166.00 TO NODE    168.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.27
 RAINFALL INTENSITY(INCH/HR) =    4.67
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =     4.60
 TOTAL STREAM AREA(ACRES) =     4.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      18.93
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      39.87     8.06     4.734   .20( .08)   .39     9.51    152.00
    1      36.13    10.92     3.977   .20( .08)   .40    10.30    158.00
    2      18.93     8.27     4.672   .20( .10)   .50     4.60    165.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1        58.6     8.06     4.734  .200( .085)  .43      14.0     152.00
    2        52.2    10.92     3.977  .200( .086)  .43      14.9     158.00
    3        58.5     8.27     4.672  .200( .085)  .43      14.2     165.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      58.57   Tc(MIN.) =     8.059
 EFFECTIVE AREA(ACRES) =      14.00  AREA-AVERAGED Fm(INCH/HR) =    .09
 AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .43
 TOTAL AREA(ACRES) =      14.90
 LONGEST FLOWPATH FROM NODE    152.00 TO NODE    168.00 =  1320.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =      14.90  TC(MIN.) =       8.06
 EFFECTIVE AREA(ACRES) =      14.00  AREA-AVERAGED Fm(INCH/HR)=    .09
 AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .43
 PEAK FLOW RATE(CFS)    =      58.57

 ** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	58.6	8.06	4.734	.200(.085)	.43	14.0	152.00
2	58.5	8.27	4.672	.200(.085)	.43	14.2	165.00
3	52.2	10.92	3.977	.200(.086)	.43	14.9	158.00

END OF RATIONAL METHOD ANALYSIS

100 - YEAR STORM
(EXISTING CONDITION)

Humsaker & Associates, Inc.

1665-1

```
**********************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

                      HUNSAKER  &  ASSOCIATES
                             Irvine, Inc.
                    Planning * Engineering * Surveying
          Three Hughes * Irvine , California 92718 * (714) 538-1010

 ************************** DESCRIPTION OF STUDY **************************
*                                                                        *
*                                                                        *
*                                                                        *
 **************************************************************************

  FILE NAME: H:\AES\AES94\RATSC4\D\1665\G1665EX.100
  TIME/DATE OF STUDY: 14:20   8/25/1995
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-   HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY     (FT)    (FT)  (FT)  (FT)    (n)
==  =====  ========  ==================   ======  =====  ====  =====  ======
  1   20.0     15.0     .017/ .017/ .020     .50    2.00 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =   .00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*


**********************************************************************
  FLOW PROCESS FROM NODE     4.00 TO NODE     6.00 IS CODE =  2.1
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
  ELEVATION DATA: UPSTREAM(FEET) =   1172.00  DOWNSTREAM(FEET) =   1028.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
```

```
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.310
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.543
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        6.40       .20       1.00    96   13.31
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     19.26
 TOTAL AREA(ACRES) =      6.40   PEAK FLOW RATE(CFS) =     19.26


****************************************************************************
 FLOW PROCESS FROM NODE    10.00 TO NODE    12.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================

 INITIAL SUBAREA FLOW-LENGTH(FEET) =   880.00
 ELEVATION DATA: UPSTREAM(FEET) =   1232.00  DOWNSTREAM(FEET) =   1010.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.003
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.444
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.20       .20       1.00    96   14.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     15.18
 TOTAL AREA(ACRES) =      5.20   PEAK FLOW RATE(CFS) =     15.18


****************************************************************************
 FLOW PROCESS FROM NODE    12.00 TO NODE    18.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================

 UPSTREAM NODE ELEVATION =   1010.00
 DOWNSTREAM NODE ELEVATION =   1006.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00
 CHANNEL SLOPE =   .0222
 CHANNEL FLOW THRU SUBAREA(CFS) =     15.18
 FLOW VELOCITY(FEET/SEC) =   4.15 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .72   Tc(MIN.) =  14.73


****************************************************************************
 FLOW PROCESS FROM NODE    18.00 TO NODE    18.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 ==========================================================================

 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.73
 RAINFALL INTENSITY(INCH/HR) =   3.34
```

```
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    5.20
 TOTAL STREAM AREA(ACRES) =    5.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.18

****************************************************************************
 FLOW PROCESS FROM NODE    14.00 TO NODE    16.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   960.00
 ELEVATION DATA: UPSTREAM(FEET) =   1267.60  DOWNSTREAM(FEET) =   1034.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.604
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.357
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        6.20       .20       1.00    96   14.60
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     17.62
 TOTAL AREA(ACRES) =      6.20   PEAK FLOW RATE(CFS) =     17.62

****************************************************************************
 FLOW PROCESS FROM NODE    16.00 TO NODE    18.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1034.00
 DOWNSTREAM NODE ELEVATION =   1006.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00
 CHANNEL SLOPE =   .1217
 CHANNEL FLOW THRU SUBAREA(CFS) =     17.62
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   9.16 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .42   Tc(MIN.) =  15.02

****************************************************************************
 FLOW PROCESS FROM NODE    18.00 TO NODE    18.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.297
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        3.60       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
```

```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     3.60      SUBAREA RUNOFF(CFS) =   10.04
 EFFECTIVE AREA(ACRES) =     9.80    AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     9.80        PEAK FLOW RATE(CFS) =      27.32

****************************************************************************
 FLOW PROCESS FROM NODE    18.00 TO NODE    18.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================

 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.02
 RAINFALL INTENSITY(INCH/HR) =   3.30
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    9.80
 TOTAL STREAM AREA(ACRES) =    9.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.32
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
    1     15.18    14.73     3.339   .20( .20) 1.00    5.20      10.00
    2     27.32    15.02     3.297   .20( .20) 1.00    9.80      14.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1       42.3    14.73     3.339  .200( .200) 1.00      14.8       10.00
    2       42.3    15.02     3.297  .200( .200) 1.00      15.0       14.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     42.32   Tc(MIN.) =   14.726
 EFFECTIVE AREA(ACRES) =     14.81  AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     15.00
 LONGEST FLOWPATH FROM NODE    14.00 TO NODE    18.00 =  1190.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    20.00 TO NODE    22.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================

 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
 ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1215.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.464
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.136
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                D        7.60       .20       1.00     96   16.46
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA RUNOFF(CFS) =     20.08
TOTAL AREA(ACRES) =      7.60   PEAK FLOW RATE(CFS) =     20.08


****************************************************************************
FLOW PROCESS FROM NODE    22.00 TO NODE    24.00 IS CODE =  5.2
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM NODE ELEVATION =   1215.00
DOWNSTREAM NODE ELEVATION =   1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00
CHANNEL SLOPE =   .1038
CHANNEL FLOW THRU SUBAREA(CFS) =     20.08
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
FLOW VELOCITY(FEET/SEC) =   9.49 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =    .46   Tc(MIN.) =  16.92


****************************************************************************
FLOW PROCESS FROM NODE    24.00 TO NODE    24.00 IS CODE =  8.1
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  16.92
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.085
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        4.10       .20       1.00     96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) =    4.10     SUBAREA RUNOFF(CFS) =   10.65
EFFECTIVE AREA(ACRES) =    11.70   AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    11.70       PEAK FLOW RATE(CFS) =      30.38


****************************************************************************
FLOW PROCESS FROM NODE    24.00 TO NODE    26.00 IS CODE =  5.2
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM NODE ELEVATION =   1188.00
DOWNSTREAM NODE ELEVATION =   1166.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   360.00
CHANNEL SLOPE =   .0611
CHANNEL FLOW THRU SUBAREA(CFS) =     30.38
FLOW VELOCITY(FEET/SEC) =   8.31 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =    .72   Tc(MIN.) =  17.64
```

```
**************************************************************************
 FLOW PROCESS FROM NODE    26.00 TO NODE    26.00 IS CODE =  8.1
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  17.64
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.007
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        8.90       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    8.90      SUBAREA RUNOFF(CFS) =   22.49
 EFFECTIVE AREA(ACRES) =   20.60    AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   20.60        PEAK FLOW RATE(CFS) =      52.05

**************************************************************************
 FLOW PROCESS FROM NODE    26.00 TO NODE    28.00 IS CODE =  5.2
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 UPSTREAM NODE ELEVATION =   1166.00
 DOWNSTREAM NODE ELEVATION =   1050.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   760.00
 CHANNEL SLOPE =   .1526
 CHANNEL FLOW THRU SUBAREA(CFS) =     52.05
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =  12.38 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  18.67

**************************************************************************
 FLOW PROCESS FROM NODE    28.00 TO NODE    28.00 IS CODE =  8.1
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  18.67
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.917
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.80       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   11.74
 EFFECTIVE AREA(ACRES) =   25.40    AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   25.40        PEAK FLOW RATE(CFS) =      62.12

**************************************************************************
 FLOW PROCESS FROM NODE    28.00 TO NODE    68.00 IS CODE =  5.2
--------------------------------------------------------------------------
```

```
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
UPSTREAM NODE ELEVATION =    1050.00
DOWNSTREAM NODE ELEVATION =    1018.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    100.00
CHANNEL SLOPE =    .3200
CHANNEL FLOW THRU SUBAREA(CFS) =      62.12
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
FLOW VELOCITY(FEET/SEC) =  13.04 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =     .13    Tc(MIN.) =  18.79

****************************************************************************
FLOW PROCESS FROM NODE     68.00 TO NODE     68.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==========================================================================

****************************************************************************
FLOW PROCESS FROM NODE     30.00 TO NODE     32.00 IS CODE =  2.1
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
ELEVATION DATA: UPSTREAM(FEET) =    1652.00  DOWNSTREAM(FEET) =    1424.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    15.039
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.296
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                D       10.30       .20       1.00    96   15.04
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      28.70
TOTAL AREA(ACRES) =      10.30   PEAK FLOW RATE(CFS) =      28.70

****************************************************************************
FLOW PROCESS FROM NODE     32.00 TO NODE     34.00 IS CODE =  5.2
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
UPSTREAM NODE ELEVATION =    1424.00
DOWNSTREAM NODE ELEVATION =    1330.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    620.00
CHANNEL SLOPE =    .1516
CHANNEL FLOW THRU SUBAREA(CFS) =      28.70
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
FLOW VELOCITY(FEET/SEC) =  10.46 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =     .99    Tc(MIN.) =  16.03

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    34.00 TO NODE    34.00 IS CODE =  8.1
----------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
======================================================================
 MAINLINE Tc(MIN) =  16.03
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.185
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        7.60       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =   20.42
 EFFECTIVE AREA(ACRES) =    17.90   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    17.90       PEAK FLOW RATE(CFS) =      48.09


**********************************************************************
 FLOW PROCESS FROM NODE    34.00 TO NODE    50.00 IS CODE =  5.2
----------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
======================================================================
 UPSTREAM NODE ELEVATION =   1330.00
 DOWNSTREAM NODE ELEVATION =   1146.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1010.00
 CHANNEL SLOPE =    .1822
 CHANNEL FLOW THRU SUBAREA(CFS) =     48.09
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =  12.10 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  17.42


**********************************************************************
 FLOW PROCESS FROM NODE    50.00 TO NODE    50.00 IS CODE =  8.1
----------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
======================================================================
 MAINLINE Tc(MIN) =  17.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.029
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       12.60       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   12.60      SUBAREA RUNOFF(CFS) =   32.08
 EFFECTIVE AREA(ACRES) =    30.50   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    30.50       PEAK FLOW RATE(CFS) =      77.66


**********************************************************************
 FLOW PROCESS FROM NODE    50.00 TO NODE    50.00 IS CODE =  10
----------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
======================================================================
```

```
**********************************************************************************
 FLOW PROCESS FROM NODE    36.00 TO NODE    38.00 IS CODE =  2.1
 ---------------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=================================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   920.00
 ELEVATION DATA: UPSTREAM(FEET) =   1652.00  DOWNSTREAM(FEET) =   1458.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.775
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.332
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.40       .20       1.00     96   14.77
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     15.22
 TOTAL AREA(ACRES) =      5.40   PEAK FLOW RATE(CFS) =     15.22


**********************************************************************************
 FLOW PROCESS FROM NODE    38.00 TO NODE    42.00 IS CODE =  5.2
---------------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ================================================================================
 UPSTREAM NODE ELEVATION =   1458.00
 DOWNSTREAM NODE ELEVATION =   1308.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   730.00
 CHANNEL SLOPE =   .2055
 CHANNEL FLOW THRU SUBAREA(CFS) =     15.22
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   8.81 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =  16.16


**********************************************************************************
 FLOW PROCESS FROM NODE    42.00 TO NODE    42.00 IS CODE =  8.1
---------------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=================================================================================
 MAINLINE Tc(MIN) =  16.16
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.171
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.90       .20       1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     5.90      SUBAREA RUNOFF(CFS) =   15.77
 EFFECTIVE AREA(ACRES) =    11.30   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    11.30       PEAK FLOW RATE(CFS) =      30.21
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  16.16
 RAINFALL INTENSITY(INCH/HR) =   3.17
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   11.30
 TOTAL STREAM AREA(ACRES) =   11.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.21

****************************************************************************
 FLOW PROCESS FROM NODE     39.00 TO NODE     40.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.00
 ELEVATION DATA: UPSTREAM(FEET) =   1648.00  DOWNSTREAM(FEET) =   1445.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.427
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.675
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        6.20       .20       1.00    96   12.43
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     19.39
 TOTAL AREA(ACRES) =      6.20   PEAK FLOW RATE(CFS) =     19.39

****************************************************************************
 FLOW PROCESS FROM NODE     40.00 TO NODE     42.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1445.00
 DOWNSTREAM NODE ELEVATION =   1308.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   610.00
 CHANNEL SLOPE =   .2246
 CHANNEL FLOW THRU SUBAREA(CFS) =     19.39
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   9.40 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  13.51

****************************************************************************
 FLOW PROCESS FROM NODE     42.00 TO NODE     42.00 IS CODE =  8.1
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  13.51
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.515
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        4.40       .20        1.00    96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    4.40      SUBAREA RUNOFF(CFS) =   13.13
  EFFECTIVE AREA(ACRES) =    10.60   AREA-AVERAGED Fm(INCH/HR) =   .20
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    10.60       PEAK FLOW RATE(CFS) =      31.62


****************************************************************************
  FLOW PROCESS FROM NODE    42.00 TO NODE    42.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.51
  RAINFALL INTENSITY(INCH/HR) =   3.51
  AREA-AVERAGED Fm(INCH/HR) =   .20
  AREA-AVERAGED Fp(INCH/HR) =   .20
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =   10.60
  TOTAL STREAM AREA(ACRES) =   10.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.62
  ** CONFLUENCE DATA **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae       SOURCE
  NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
     1     30.21   16.16    3.171   .20( .20) 1.00   11.30      36.00
     2     31.62   13.51    3.515   .20( .20) 1.00   10.60      39.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **

  STREAM     Q       Tc   Intensity    Fp(Fm)      Ap     Ae        SOURCE
  NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1      58.6   16.16    3.171   .200( .200) 1.00      21.9       36.00
     2      59.8   13.51    3.515   .200( .200) 1.00      20.0       39.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     59.81   Tc(MIN.) =   13.509
  EFFECTIVE AREA(ACRES) =     20.05  AREA-AVERAGED Fm(INCH/HR) =   .20
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     21.90
  LONGEST FLOWPATH FROM NODE    36.00 TO NODE    42.00 =  1650.00 FEET.


****************************************************************************
  FLOW PROCESS FROM NODE    42.00 TO NODE    49.00 IS CODE =  5.2
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
UPSTREAM NODE ELEVATION =    1308.00
DOWNSTREAM NODE ELEVATION =    1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    880.00
CHANNEL SLOPE =    .1364
CHANNEL FLOW THRU SUBAREA(CFS) =      59.81
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
FLOW VELOCITY(FEET/SEC) =  12.89 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =    1.14   Tc(MIN.) =  14.65

**************************************************************************
FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =  8.1
--------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
MAINLINE Tc(MIN) =  14.65
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.351
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D       12.50       .20       1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   12.50      SUBAREA RUNOFF(CFS) =   35.45
EFFECTIVE AREA(ACRES) =    32.55   AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    34.40       PEAK FLOW RATE(CFS) =      92.30

**************************************************************************
FLOW PROCESS FROM NODE     49.00 TO NODE     49.00 IS CODE =   1
--------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  14.65
RAINFALL INTENSITY(INCH/HR) =   3.35
AREA-AVERAGED Fm(INCH/HR) =  .20
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   32.55
TOTAL STREAM AREA(ACRES) =   34.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =     92.30

**************************************************************************
FLOW PROCESS FROM NODE     44.00 TO NODE     46.00 IS CODE =  2.1
--------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
ELEVATION DATA: UPSTREAM(FEET) =   1504.00  DOWNSTREAM(FEET) =   1280.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
```

```
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.092
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.290
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.50       .20       1.00     96   15.09
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     12.51
 TOTAL AREA(ACRES) =      4.50   PEAK FLOW RATE(CFS) =     12.51

****************************************************************************
 FLOW PROCESS FROM NODE    46.00 TO NODE    48.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1280.00
 DOWNSTREAM NODE ELEVATION =   1240.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00
 CHANNEL SLOPE =   .1333
 CHANNEL FLOW THRU SUBAREA(CFS) =     12.51
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   8.37 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .60   Tc(MIN.) =  15.69

 ****************************************************************************
 FLOW PROCESS FROM NODE    48.00 TO NODE    48.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.69
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.223
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       13.20       .20       1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   13.20     SUBAREA RUNOFF(CFS) =   35.91
 EFFECTIVE AREA(ACRES) =    17.70   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    17.70      PEAK FLOW RATE(CFS) =      48.15

****************************************************************************
 FLOW PROCESS FROM NODE    48.00 TO NODE    49.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1240.00
 DOWNSTREAM NODE ELEVATION =   1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   220.00
 CHANNEL SLOPE =   .2364
 CHANNEL FLOW THRU SUBAREA(CFS) =     48.15
```

```
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =  12.11 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .30   Tc(MIN.) =  15.99


 FLOW PROCESS FROM NODE    49.00 TO NODE    49.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.99
 RAINFALL INTENSITY(INCH/HR) =   3.19
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   17.70
 TOTAL STREAM AREA(ACRES) =   17.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.15
 ** CONFLUENCE DATA **
 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1      88.00   17.30     3.042    .20( .20) 1.00    34.40      36.00
    1      92.30   14.65     3.351    .20( .20) 1.00    32.55      39.00
    2      48.15   15.99     3.189    .20( .20) 1.00    17.70      44.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      138.8   14.65     3.351   .200( .200) 1.00      48.8      39.00
    2      133.8   17.30     3.042   .200( .200) 1.00      52.1      36.00
    3      138.3   15.99     3.189   .200( .200) 1.00      51.2      44.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    138.79   Tc(MIN.) =   14.647
 EFFECTIVE AREA(ACRES) =     48.76  AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     52.10
 LONGEST FLOWPATH FROM NODE    36.00 TO NODE    49.00 =  2530.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE    49.00 TO NODE    50.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1188.00
 DOWNSTREAM NODE ELEVATION =   1146.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   460.00
 CHANNEL SLOPE =   .0913
 CHANNEL FLOW THRU SUBAREA(CFS) =   138.79
 FLOW VELOCITY(FEET/SEC) =  15.84 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .48   Tc(MIN.) =  15.13
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     50.00 TO NODE     50.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.13
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.285
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        3.10       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    8.61
 EFFECTIVE AREA(ACRES) =    51.86   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    55.20       PEAK FLOW RATE(CFS) =     144.00

****************************************************************************
 FLOW PROCESS FROM NODE     50.00 TO NODE     50.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1    144.00   15.13    3.285    .20( .20) 1.00      51.9      39.00
    2    143.38   16.48    3.135    .20( .20) 1.00      54.3      44.00
    3    138.83   17.79    2.994    .20( .20) 1.00      55.2      36.00
 LONGEST FLOWPATH FROM NODE    36.00 TO NODE    50.00 =  2990.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae        SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1     77.66   17.42    3.029    .20( .20) 1.00      30.5      30.00
 LONGEST FLOWPATH FROM NODE    30.00 TO NODE    50.00 =  2630.00 FEET.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q      Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
    1     217.6   15.13    3.285   .200( .200) 1.00      78.4      39.00
    2     219.6   16.48    3.135   .200( .200) 1.00      83.1      44.00
    3     215.5   17.79    2.994   .200( .200) 1.00      85.7      36.00
    4     217.8   17.42    3.029   .200( .200) 1.00      85.4      30.00
   TOTAL AREA =     85.70

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    219.58   Tc(MIN.) =   16.477
 EFFECTIVE AREA(ACRES) =     83.14  AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     85.70
 LONGEST FLOWPATH FROM NODE    36.00 TO NODE    50.00 =  2990.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     50.00 TO NODE     50.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     50.00 TO NODE     52.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =    1146.00
 DOWNSTREAM NODE ELEVATION =    1116.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    410.00
 CHANNEL SLOPE =    .0732
 CHANNEL FLOW THRU SUBAREA(CFS) =     219.58
 FLOW VELOCITY(FEET/SEC) =  16.33 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =     .42    Tc(MIN.) =  16.90

****************************************************************************
 FLOW PROCESS FROM NODE     52.00 TO NODE     52.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.90
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.088
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       10.40       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    10.40      SUBAREA RUNOFF(CFS) =    27.03
 EFFECTIVE AREA(ACRES) =     93.54   AREA-AVERAGED Fm(INCH/HR) =    .20
 AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     96.10      PEAK FLOW RATE(CFS) =     243.11

****************************************************************************
 FLOW PROCESS FROM NODE     52.00 TO NODE     64.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =    1116.00
 DOWNSTREAM NODE ELEVATION =    1100.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    470.00
 CHANNEL SLOPE =    .0340
 CHANNEL FLOW THRU SUBAREA(CFS) =     243.11
 FLOW VELOCITY(FEET/SEC) =  11.50 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =     .68    Tc(MIN.) =  17.58

****************************************************************************
 FLOW PROCESS FROM NODE     64.00 TO NODE     64.00 IS CODE =  8.1
----------------------------------------------------------------------------
```

```
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
MAINLINE Tc(MIN) =  17.58
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.013
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D       11.20       .20       1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   11.20      SUBAREA RUNOFF(CFS) =   28.36
EFFECTIVE AREA(ACRES) =   104.74   AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =   107.30       PEAK FLOW RATE(CFS) =     265.19

** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
NUMBER   (CFS)   (MIN.)  (INCH/HR)   (INCH/HR)           (ACRES)     NODE
   1      266.5   16.23     3.162   .200( .200) 1.00      100.0      39.00
   2      265.2   17.58     3.013   .200( .200) 1.00      104.7      44.00
   3      260.5   18.90     2.897   .200( .200) 1.00      107.3      36.00
   4      263.0   18.52     2.930   .200( .200) 1.00      107.0      30.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    266.46  Tc(MIN.) =  16.23
AREA-AVERAGED Fm(INCH/HR) =   .20  AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =     99.95


****************************************************************************
FLOW PROCESS FROM NODE    64.00 TO NODE    64.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
==========================================================================


****************************************************************************
FLOW PROCESS FROM NODE    54.00 TO NODE    56.00 IS CODE =  2.1
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   490.00
ELEVATION DATA: UPSTREAM(FEET) =   1354.00  DOWNSTREAM(FEET) =   1206.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.687
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.023
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                D        1.90       .20       1.00    96   10.69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      6.54
TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      6.54
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     56.00 TO NODE     62.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =    1206.00
 DOWNSTREAM NODE ELEVATION =    1104.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    540.00
 CHANNEL SLOPE =    .1889
 CHANNEL FLOW THRU SUBAREA(CFS) =       6.54
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =    7.11 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    1.27    Tc(MIN.) =   11.95

****************************************************************************
 FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.95
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.769
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.40       .20        1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.40      SUBAREA RUNOFF(CFS) =   14.14
 EFFECTIVE AREA(ACRES) =     6.30    AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     6.30        PEAK FLOW RATE(CFS) =      20.24

****************************************************************************
 FLOW PROCESS FROM NODE     62.00 TO NODE     62.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.95
 RAINFALL INTENSITY(INCH/HR) =   3.77
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    6.30
 TOTAL STREAM AREA(ACRES) =    6.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.24

****************************************************************************
 FLOW PROCESS FROM NODE     58.00 TO NODE     60.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   1361.00  DOWNSTREAM(FEET) =   1155.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.347
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.261
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.30       .20       1.00     96   15.35
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     11.85
 TOTAL AREA(ACRES) =      4.30   PEAK FLOW RATE(CFS) =     11.85


****************************************************************************
 FLOW PROCESS FROM NODE    60.00 TO NODE    62.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1155.00
 DOWNSTREAM NODE ELEVATION =   1104.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00
 CHANNEL SLOPE =   .2217
 CHANNEL FLOW THRU SUBAREA(CFS) =     11.85
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   8.25 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .46   Tc(MIN.) =  15.81


****************************************************************************
 FLOW PROCESS FROM NODE    62.00 TO NODE    62.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.209
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.10       .20       1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    1.10      SUBAREA RUNOFF(CFS) =    2.98
 EFFECTIVE AREA(ACRES) =     5.40   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     5.40       PEAK FLOW RATE(CFS) =      14.62


****************************************************************************
 FLOW PROCESS FROM NODE    62.00 TO NODE    62.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
```

```
 TIME OF CONCENTRATION(MIN.) =  15.81
 RAINFALL INTENSITY(INCH/HR) =   3.21
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    5.40
 TOTAL STREAM AREA(ACRES) =    5.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.62
 ** CONFLUENCE DATA **
 STREAM      Q       Tc   Intensity    Fp(Fm)      Ap   Ae       SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      20.24   11.95     3.769    .20( .20) 1.00    6.30      54.00
    2      14.62   15.81     3.209    .20( .20) 1.00    5.40      58.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM      Q       Tc   Intensity    Fp(Fm)      Ap      Ae        SOURCE
 NUMBER    (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1       33.4   11.95     3.769   .200( .200) 1.00      10.4       54.00
    2       31.7   15.81     3.209   .200( .200) 1.00      11.7       58.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     33.35   Tc(MIN.) =   11.953
 EFFECTIVE AREA(ACRES) =     10.38   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     11.70
 LONGEST FLOWPATH FROM NODE    58.00 TO NODE    62.00 =  1230.00 FEET.


****************************************************************************
 FLOW PROCESS FROM NODE    62.00 TO NODE    64.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1104.00
 DOWNSTREAM NODE ELEVATION =   1100.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   190.00
 CHANNEL SLOPE =   .0211
 CHANNEL FLOW THRU SUBAREA(CFS) =     33.35
 FLOW VELOCITY(FEET/SEC) =   5.00 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .63   Tc(MIN.) =  12.59


****************************************************************************
 FLOW PROCESS FROM NODE    64.00 TO NODE    64.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.59
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.648
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D         .50       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
```

```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =      .50      SUBAREA RUNOFF(CFS) =     1.55
 EFFECTIVE AREA(ACRES) =    10.88    AREA-AVERAGED Fm(INCH/HR) =    .20
 AREA-AVERAGED Fp(INCH/HR) =   .20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    12.20        PEAK FLOW RATE(CFS) =      33.77

****************************************************************************
 FLOW PROCESS FROM NODE    64.00 TO NODE    64.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     33.77   12.59     3.648   .20( .20) 1.00      10.9      54.00
    2     32.25   16.45     3.137   .20( .20) 1.00      12.2      58.00
 LONGEST FLOWPATH FROM NODE    58.00 TO NODE    64.00 =  1420.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1    266.46   16.23     3.162   .20( .20) 1.00     100.0      39.00
    2    265.19   17.58     3.013   .20( .20) 1.00     104.7      44.00
    3    263.02   18.52     2.930   .20( .20) 1.00     107.0      30.00
    4    260.46   18.90     2.897   .20( .20) 1.00     107.3      36.00
 LONGEST FLOWPATH FROM NODE    36.00 TO NODE    64.00 =  3870.00 FEET.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1     274.2   12.59     3.648  .200( .200) 1.00      88.4      54.00
    2     298.5   16.45     3.137  .200( .200) 1.00     112.9      58.00
    3     298.8   16.23     3.162  .200( .200) 1.00     112.1      39.00
    4     296.1   17.58     3.013  .200( .200) 1.00     116.9      44.00
    5     293.0   18.52     2.930  .200( .200) 1.00     119.2      30.00
    6     290.1   18.90     2.897  .200( .200) 1.00     119.5      36.00
   TOTAL AREA =    119.50

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    298.80   Tc(MIN.) =  16.232
 EFFECTIVE AREA(ACRES) =    112.08  AREA-AVERAGED Fm(INCH/HR) =    .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    119.50
 LONGEST FLOWPATH FROM NODE    36.00 TO NODE    64.00 =  3870.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    64.00 TO NODE    64.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    64.00 TO NODE    66.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
```

```
>>>>>TRAVELTIME THRU SUBAREA<<<<<
UPSTREAM NODE ELEVATION =   1100.00
DOWNSTREAM NODE ELEVATION =   1038.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1190.00
CHANNEL SLOPE =    .0521
CHANNEL FLOW THRU SUBAREA(CFS) =    298.80
FLOW VELOCITY(FEET/SEC) =  15.18 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  17.54

****************************************************************************
FLOW PROCESS FROM NODE    66.00 TO NODE    66.00 IS CODE =  8.1
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
MAINLINE Tc(MIN) =  17.54
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.017
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        6.70       .20       1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    6.70      SUBAREA RUNOFF(CFS) =   16.98
EFFECTIVE AREA(ACRES) =   118.78   AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =   126.20       PEAK FLOW RATE(CFS) =    301.10

** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity    Fp(Fm)      Ap      Ae        SOURCE
NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)            (ACRES)     NODE
   1      278.5   13.93     3.454   .200( .200) 1.00      95.1      54.00
   2      301.2   17.76     2.997   .200( .200) 1.00     119.6      58.00
   3      301.1   17.54     3.017   .200( .200) 1.00     118.8      39.00
   4      300.2   18.89     2.898   .200( .200) 1.00     123.6      44.00
   5      296.3   19.84     2.814   .200( .200) 1.00     125.9      30.00
   6      293.5   20.22     2.784   .200( .200) 1.00     126.2      36.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =   301.18  Tc(MIN.) =  17.76
AREA-AVERAGED Fm(INCH/HR) =   .20  AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =   119.64

****************************************************************************
FLOW PROCESS FROM NODE    66.00 TO NODE    68.00 IS CODE =  5.2
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
UPSTREAM NODE ELEVATION =   1038.00
DOWNSTREAM NODE ELEVATION =   1018.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   660.00
CHANNEL SLOPE =    .0303
CHANNEL FLOW THRU SUBAREA(CFS) =    301.18
FLOW VELOCITY(FEET/SEC) =  11.60 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =    .95   Tc(MIN.) =  18.71
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     68.00 TO NODE     68.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  18.71
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.914
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       8.30       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    8.30     SUBAREA RUNOFF(CFS) =   20.27
 EFFECTIVE AREA(ACRES) =   127.94   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   134.50       PEAK FLOW RATE(CFS) =     312.47

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc   Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      289.8   14.90    3.314  .200( .200) 1.00      103.4      54.00
    2      312.5   18.71    2.914  .200( .200) 1.00      127.9      58.00
    3      312.6   18.49    2.933  .200( .200) 1.00      127.1      39.00
    4      310.5   19.84    2.814  .200( .200) 1.00      131.9      44.00
    5      306.9   20.79    2.740  .200( .200) 1.00      134.2      30.00
    6      304.0   21.17    2.711  .200( .200) 1.00      134.5      36.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =   312.59  Tc(MIN.) =  18.49
 AREA-AVERAGED Fm(INCH/HR) =   .20  AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =   127.08

****************************************************************************
 FLOW PROCESS FROM NODE     68.00 TO NODE     68.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q       Tc   Intensity   Fp(Fm)      Ap    Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1    289.78   14.90    3.314   .20( .20) 1.00     103.4      54.00
    2    312.59   18.49    2.933   .20( .20) 1.00     127.1      39.00
    3    312.47   18.71    2.914   .20( .20) 1.00     127.9      58.00
    4    310.45   19.84    2.814   .20( .20) 1.00     131.9      44.00
    5    306.89   20.79    2.740   .20( .20) 1.00     134.2      30.00
    6    303.96   21.17    2.711   .20( .20) 1.00     134.5      36.00
 LONGEST FLOWPATH FROM NODE    36.00 TO NODE    68.00 =  5720.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     Q       Tc   Intensity   Fp(Fm)      Ap    Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1     62.12   18.79    2.906   .20( .20) 1.00      25.4      20.00
 LONGEST FLOWPATH FROM NODE    20.00 TO NODE    68.00 =  2480.00 FEET.

 ** PEAK FLOW RATE TABLE **
```

```
 STREAM      Q       Tc    Intensity     Fp(Fm)      Ap       Ae        SOURCE
 NUMBER    (CFS)   (MIN.)  (INCH/HR)   (INCH/HR)              (ACRES)     NODE
    1       346.5   14.90     3.314   .200( .200) 1.00       123.5       54.00
    2       374.3   18.49     2.933   .200( .200) 1.00       152.1       39.00
    3       374.5   18.71     2.914   .200( .200) 1.00       153.2       58.00
    4       370.5   19.84     2.814   .200( .200) 1.00       157.3       44.00
    5       365.2   20.79     2.740   .200( .200) 1.00       159.6       30.00
    6       361.6   21.17     2.711   .200( .200) 1.00       159.9       36.00
    7       374.4   18.79     2.906   .200( .200) 1.00       153.6       20.00
  TOTAL AREA =     159.90

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    374.48   Tc(MIN.) =   18.709
 EFFECTIVE AREA(ACRES) =    153.23  AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    159.90
 LONGEST FLOWPATH FROM NODE    36.00 TO NODE    68.00 =  5720.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    68.00 TO NODE    68.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================


****************************************************************************
 FLOW PROCESS FROM NODE    70.00 TO NODE    72.00 IS CODE =  2.1
 ---------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   970.00
 ELEVATION DATA: UPSTREAM(FEET) =   1644.00  DOWNSTREAM(FEET) =   1350.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.035
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.439
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.20       .20        1.00    96   14.03
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     15.16
 TOTAL AREA(ACRES) =      5.20   PEAK FLOW RATE(CFS) =     15.16


****************************************************************************
 FLOW PROCESS FROM NODE    72.00 TO NODE    74.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1350.00
 DOWNSTREAM NODE ELEVATION =   1311.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   480.00
 CHANNEL SLOPE =   .0812
```

```
 CHANNEL FLOW THRU SUBAREA(CFS) =     15.16
 FLOW VELOCITY(FEET/SEC) =   7.93 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  15.04

****************************************************************************
 FLOW PROCESS FROM NODE    74.00 TO NODE    74.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.04
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.295
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        7.80       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =   21.73
 EFFECTIVE AREA(ACRES) =    13.00   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    13.00       PEAK FLOW RATE(CFS) =      36.21

****************************************************************************
 FLOW PROCESS FROM NODE    74.00 TO NODE    80.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1311.00
 DOWNSTREAM NODE ELEVATION =   1208.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   480.00
 CHANNEL SLOPE =   .2146
 CHANNEL FLOW THRU SUBAREA(CFS) =     36.21
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =  11.16 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .72   Tc(MIN.) =  15.76

****************************************************************************
 FLOW PROCESS FROM NODE    80.00 TO NODE    80.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.76
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.215
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.50       .20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    1.50      SUBAREA RUNOFF(CFS) =    4.07
 EFFECTIVE AREA(ACRES) =    14.50   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    14.50       PEAK FLOW RATE(CFS) =      39.34
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     80.00 TO NODE     80.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.76
 RAINFALL INTENSITY(INCH/HR) =   3.21
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   14.50
 TOTAL STREAM AREA(ACRES) =   14.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.34


****************************************************************************
 FLOW PROCESS FROM NODE     76.00 TO NODE     78.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
 ELEVATION DATA: UPSTREAM(FEET) =   1602.00  DOWNSTREAM(FEET) =   1326.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.475
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.376
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.60       .20       1.00    96   14.48
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     16.00
 TOTAL AREA(ACRES) =      5.60   PEAK FLOW RATE(CFS) =     16.00


****************************************************************************
 FLOW PROCESS FROM NODE     78.00 TO NODE     80.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1326.00
 DOWNSTREAM NODE ELEVATION =   1200.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   640.00
 CHANNEL SLOPE =   .1969
 CHANNEL FLOW THRU SUBAREA(CFS) =     16.00
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   8.93 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  15.67


****************************************************************************
 FLOW PROCESS FROM NODE     80.00 TO NODE     80.00 IS CODE =  8.1
----------------------------------------------------------------------------
```

```
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
MAINLINE Tc(MIN) =  15.67
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.225
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        5.00       .20        1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    5.00      SUBAREA RUNOFF(CFS) =   13.61
EFFECTIVE AREA(ACRES) =    10.60   AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    10.60       PEAK FLOW RATE(CFS) =      28.86

********************************************************************************
FLOW PROCESS FROM NODE    80.00 TO NODE    80.00 IS CODE =   1
--------------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  15.67
RAINFALL INTENSITY(INCH/HR) =   3.22
AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   10.60
TOTAL STREAM AREA(ACRES) =   10.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.86
** CONFLUENCE DATA **
STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     39.34   15.76     3.215   .20( .20) 1.00   14.50     70.00
   2     28.86   15.67     3.225   .20( .20) 1.00   10.60     76.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM     Q       Tc    Intensity   Fp(Fm)      Ap     Ae       SOURCE
NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1       68.1   15.76     3.215  .200( .200) 1.00      25.1     70.00
   2       68.1   15.67     3.225  .200( .200) 1.00      25.0     76.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     68.11   Tc(MIN.) =   15.670
EFFECTIVE AREA(ACRES) =     25.02  AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     25.10
LONGEST FLOWPATH FROM NODE    70.00 TO NODE    80.00 =  1930.00 FEET.

********************************************************************************
FLOW PROCESS FROM NODE    80.00 TO NODE    82.00 IS CODE =  5.2
--------------------------------------------------------------------------------
```

```
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
UPSTREAM NODE ELEVATION =   1200.00
DOWNSTREAM NODE ELEVATION =   1160.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00
CHANNEL SLOPE =   .1739
CHANNEL FLOW THRU SUBAREA(CFS) =     68.11
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
FLOW VELOCITY(FEET/SEC) =  13.39 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =    .29   Tc(MIN.) =  15.96

**************************************************************************
FLOW PROCESS FROM NODE    82.00 TO NODE    82.00 IS CODE =  8.1
--------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
MAINLINE Tc(MIN) =  15.96
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.193
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        1.20       .20        1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    3.23
EFFECTIVE AREA(ACRES) =    26.22   AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    26.30       PEAK FLOW RATE(CFS) =      70.62

**************************************************************************
FLOW PROCESS FROM NODE    82.00 TO NODE   100.00 IS CODE =   1
--------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  15.96
RAINFALL INTENSITY(INCH/HR) =   3.19
AREA-AVERAGED Fm(INCH/HR) =   .20
AREA-AVERAGED Fp(INCH/HR) =   .20
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   26.22
TOTAL STREAM AREA(ACRES) =   26.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =     70.62

**************************************************************************
FLOW PROCESS FROM NODE    84.00 TO NODE    86.00 IS CODE =  2.1
--------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1250.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
```

```
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.885
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.316
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        3.80       .20        1.00    96   14.89
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     10.66
 TOTAL AREA(ACRES) =      3.80   PEAK FLOW RATE(CFS) =     10.66


****************************************************************************
 FLOW PROCESS FROM NODE    86.00 TO NODE    88.00 IS CODE =  5.2
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION =   1250.00
 DOWNSTREAM NODE ELEVATION =   1145.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   420.00
 CHANNEL SLOPE =   .2500
 CHANNEL FLOW THRU SUBAREA(CFS) =     10.66
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 FLOW VELOCITY(FEET/SEC) =   8.03 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =    .87   Tc(MIN.) =  15.76


****************************************************************************
 FLOW PROCESS FROM NODE    88.00 TO NODE    88.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.76
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.215
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.80       .20        1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   13.03
 EFFECTIVE AREA(ACRES) =     8.60   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     8.60       PEAK FLOW RATE(CFS) =      23.34


****************************************************************************
 FLOW PROCESS FROM NODE    88.00 TO NODE   100.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.76
 RAINFALL INTENSITY(INCH/HR) =   3.22
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
```

```
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    8.60
 TOTAL STREAM AREA(ACRES) =    8.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.34

****************************************************************************
 FLOW PROCESS FROM NODE    90.00 TO NODE    92.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   510.00
 ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1150.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.207
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.119
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        3.60       .20       1.00    96   10.21
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     12.70
 TOTAL AREA(ACRES) =      3.60   PEAK FLOW RATE(CFS) =     12.70

****************************************************************************
 FLOW PROCESS FROM NODE    92.00 TO NODE   100.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.21
 RAINFALL INTENSITY(INCH/HR) =   4.12
 AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    3.60
 TOTAL STREAM AREA(ACRES) =    3.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.70
 ** CONFLUENCE DATA **
 STREAM     Q       Tc    Intensity   Fp(Fm)      Ap   Ae       SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     70.60   16.05    3.183   .20( .20) 1.00   26.30      70.00
    1     70.62   15.96    3.193   .20( .20) 1.00   26.22      76.00
    2     23.34   15.76    3.215   .20( .20) 1.00    8.60      84.00
    3     12.70   10.21    4.119   .20( .20) 1.00    3.60      90.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **

 STREAM     Q       Tc    Intensity    Fp(Fm)      Ap     Ae        SOURCE
 NUMBER   (CFS)   (MIN.) (INCH/HR)   (INCH/HR)          (ACRES)     NODE
```

1	103.4	15.76	3.215	.200(.200)	1.00	38.1	84.00
2	103.5	15.96	3.193	.200(.200)	1.00	38.4	76.00
3	103.4	16.05	3.183	.200(.200)	1.00	38.5	70.00
4	91.5	10.21	4.119	.200(.200)	1.00	25.9	90.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 103.48 Tc(MIN.) = 15.956
EFFECTIVE AREA(ACRES) = 38.42 AREA-AVERAGED Fm(INCH/HR) = .20
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 38.50
LONGEST FLOWPATH FROM NODE 70.00 TO NODE 100.00 = 2160.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 38.50 TC(MIN.) = 15.96
EFFECTIVE AREA(ACRES) = 38.42 AREA-AVERAGED Fm(INCH/HR)= .20
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = 1.00
PEAK FLOW RATE(CFS) = 103.48

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	SOURCE NODE
1	91.5	10.21	4.119	.200(.200)	1.00	25.9	90.00
2	103.4	15.76	3.215	.200(.200)	1.00	38.1	84.00
3	103.5	15.96	3.193	.200(.200)	1.00	38.4	76.00
4	103.4	16.05	3.183	.200(.200)	1.00	38.5	70.00

END OF RATIONAL METHOD ANALYSIS

HYDROLOGY MAPS

Humsaker & Associates, Inc.

1665-1

PRELIMINARY MASTER PLAN OF STORM DRAIN IMPROVEMENTS

SEPTEMBER 12, 1995

NOTES

LOT SUMMARY TABLE

LEGAL DESCRIPTION

SLOPE DESIGNATIONS

STATEMENT OF OWNERSHIP

DATE

VICINITY MAP

PREPARED FOR

CALIFORNIA QUARTET, LTD

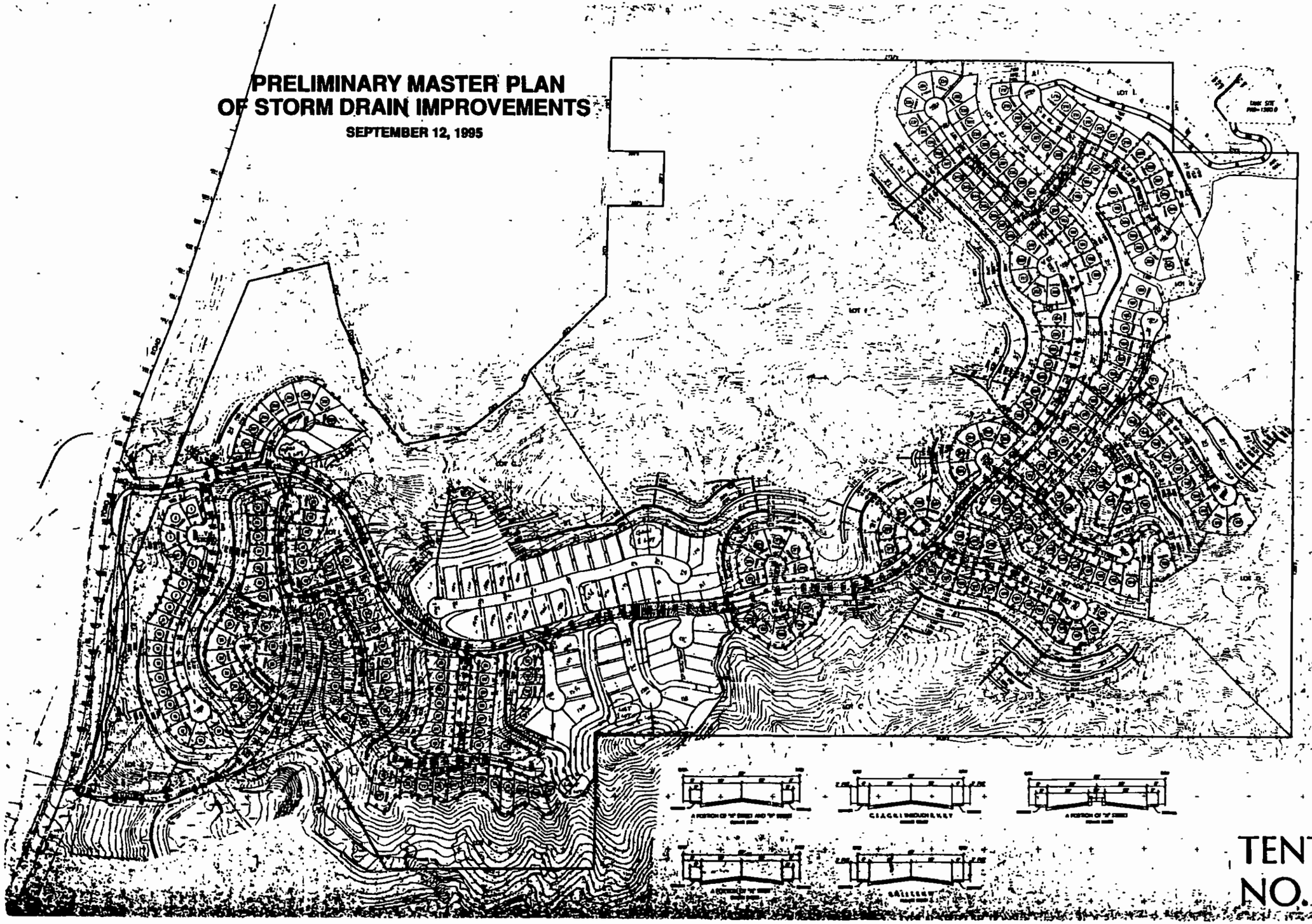
PREPARED BY:

-TYPICAL STREET SECTIONS

TENTATIVE TRACT NO. 15230

PRELIMINARY MASTER PLAN OF STORM DRAIN IMPROVEMENTS

SEPTEMBER 12, 1995



NOTES

LOT SUMMARY TABLE

LEGAL DESCRIPTION

SLOPE DESIGNATIONS

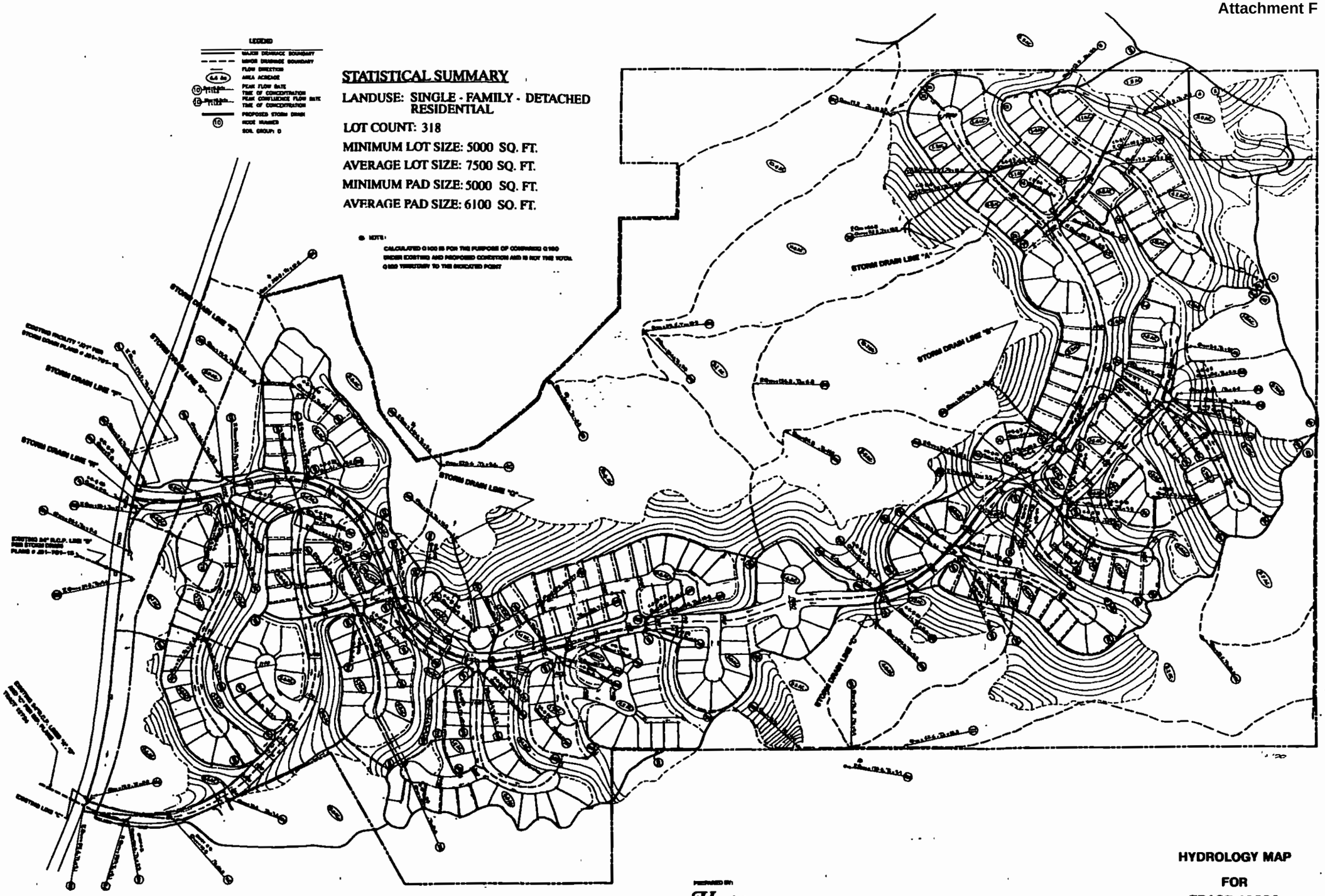
STATEMENT OF OWNERSHIP

VICINITY MAP

PREPARED FOR:

PREPARED BY:

TENTATIVE TRACT NO. 15230



SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

PLAN DATE IDENTIFIER
DATE OF LATEST REVISION
AUGUST 1995

PREPARED BY
Hunsaker & Associates

HYDROLOGY MAP

FOR

TRACT 10692

PROPOSED CONDITION

SADDLEBACK MEADOWS

ADDENDUM PA980103

CERTIFIED FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

STATE CLEARINGHOUSE NO. 96121072

ZONE CHANGE 98-3 and AREA PLAN 98-2
299 SINGLE-FAMILY-UNIT PROJECT

LEAD AGENCY:

COUNTY OF ORANGE
PLANNING & DEVELOPMENT SERVICES DEPARTMENT
ENVIRONMENTAL & PROJECT PLANNING SERVICES DIVISION

300 North Flower Street
P.O. Box 4048
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PREPARED BY:

URBAN VISION
359 SAN MIGUEL, SUITE 105
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AUGUST 1998

TABLE OF CONTENTS

SECTION		PAGE
I.	INTRODUCTION	1
II.	PROJECT DESCRIPTION	5
1.	Location	5
2.	Background	5
3.	Project Description	10
III.	ANALYSIS OF IMPACTS/MITIGATION	15
1.	Land Use	15
2.	Soils and Geology	20
3.	Water/Hydrology	32
4.	Transportation and Circulation	38
5.	Air Quality	47
6.	Noise	61
7.	Biological Resources	71
8.	Aesthetics	89
9.	Cultural/Scientific Resources	97
10.	Recreation	109
11.	Hazards	112
12.	Public Services	117
13.	Utilities and Service Systems	123
14.	Findings	132
15.	Determination	133
IV.	LIST OF EXHIBITS	

Exhibit 1 – Regional Location Map
Exhibit 2 – Vicinity Map
Exhibit 3 – Illustrative Site Plan – Contingency Plan 299 Units
Exhibit 4 – Development Plan Concept – Contingency Plan 299 Units
Exhibit 5 - Contour Grading Concept – Contingency Plan 299 Units
Exhibit 6 - Landscape and Revegetation Concept – Contingency Plan 299 Units
Exhibit 7 - Open Space Trail Concept – Contingency Plan 299 Units
Exhibit 8 - Computer Modeled Visual Analysis – Overall View from Monastery
Exhibit 9 - Computer Modeled Visual Analysis – Birdseye View from Portola Hills
Exhibit 10 - Computer Modeled Visual Analysis – East View from St. Michael Abbey

V. APPENDICES

A Contingency Plan – 299 Lots/Area Plan 98-2
B Alternative 4 – 299 Lots
C Alternative 8 - 299 Lots
D Alternative 9 - 318 Lots
E Staff Report, Board of Supervisors, October 22, 1996
F Letter to Board of Supervisors, December 17, 1997
G Revised Biological Assessment - Helix Environmental Planning, Inc.
H Geology Report, Volume I, June 25, 1998, G.A. Nicoll and Associates, Inc. (Computer Output Document, Volume II, G.A. Nicoll and Associates, Inc., available at the County of Orange, PD&S for review)

I. INTRODUCTION

This Addendum to certified subsequent EIR (SEIR 566) has been prepared to evaluate the environmental effects associated with a contingency plan for 299 single-family dwelling units, as proposed by the applicant for the 222.2-acre Saddleback Meadows project site. This revised project has been developed by the applicant, based upon direction given at the December 3, 1997 Orange County Planning Commission public hearing and identified comments during the public review period and is referred to as the proposed project within this addendum. The Area Plan and Site Development Permit application had been submitted to implement the direction given to County Staff by the Board of Supervisors per their motion of June 2, 1998 (Agenda item #S86A) which directs County Staff to immediately begin processing General Plan Amendment, Specific Plan Amendment, Zone Change, Area Plan, Tentative Tract Map applications and any other required plan/application for the 299-Lot Development Plan, in accordance with the conceptual terms of a settlement agreement regarding the potential purchase of the Saddleback Meadows property as described at the June 2, 1998 Board of Supervisors hearing. This Addendum evaluates the environmental effects associated with this project and is based on Final SEIR 566, which was certified by the Planning Commission on December 3, 1997 and affirmed by the Orange County Board of Supervisors on January 27, 1998.

The currently proposed contingency plan for 299 residential units was examined previously for this site in the form of alternatives, contained in Final EIR 561 and Certified Final EIR 566, although with slightly differing site plans. The alternatives contained in the appendix of this document are Alternatives 4, 8 and 9 which were previously evaluated. The contingency plan results from an extended evaluation by the applicant to address environmental concerns previously analyzed by reconfiguring the proposed project density, land use and location.

The Addendum is based on certified SEIR (EIR 566) which was prepared to evaluate 705 manufactured homes (referred herein as the "approved project") and evaluates the currently proposed 299 unit project, which includes strategically designed landform grading and landscaping to screen and filter views of the proposed development area from surrounding land uses. This has been accomplished by shortening cul-de-sac street lengths and eliminating residential lots in order to allow space for landform berming and contour grading, designed to substantially reduce views of the development area from both Saint Michael's Abbey and the Ramakrishna Monastery. In addition, the majority of the development area is now located south of the primary on-site spine road, creating a single loaded collector street through the majority of the project site. The proposed project represents a substantial reduction in density and associated environmental effects, in comparison to the 705-unit previously approved project evaluated in certified SEIR 566.

The following design features have been incorporated into the proposed contingency plan for 299 single-family dwelling units:

- 299 single-family lots with conventional housing.

- Contour grading that emphasizes and extends existing landforms working in concert with landscaping to screen and filter views of the development.

- Berming at selected locations to blend with natural terrain features while providing screening and buffering views into the project site from The Ramakrishna Monastery, St. Michael's Abbey and the Hidden Ridge community.

- Site planning techniques that minimize rows of backyards along highly visible edges, incorporating slopes, landscape zones, and landforms between homes and surrounding land uses.

- Community-wide landscaping that provides visual enhancement through perimeter and interior plantings, providing filtered views of the proposed development area from the surrounding areas.

The scope of this Initial Study will be to analyze the contingency plan in comparison with the previously approved project. Final SEIR 566 was certified as final and adequate on January 27, 1998.

The CEQA Guidelines (Cal. Code of Regulations §15000 et seq.) authorize the use of an Addendum for the purpose of determining whether a previously prepared EIR can be used for a project (CEQA Guidelines §15063(c)(7)). This document will analyze each topical area for disclosure of any new or more severe impacts based on the proposed project, not previously anticipated.

Section 21166 of the California Environmental Quality Act (CEQA, Pub. Res. Code §21000, et seq.) sets the standard to determine whether another EIR should be prepared when a previous EIR has been prepared. Section 21166 states:

> "When an environmental impact report has been prepared for a project pursuant to this division, no subsequent or supplemental environmental impact report shall be required by the lead agency or by any responsible agency, unless one or more of the following events occurs:
>
> (a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report.
>
> (b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report.
>
> (c) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available."

Section 21166 is further explained in the CEQA Guidelines at §15162, in the following language;

"(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following.

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken, which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation Measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation Measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

(b) If changes to a project or its circumstances occur or new information becomes available after adoption of a negative declaration, the lead agency shall prepare a subsequent EIR if required under subsection (a). otherwise, the lead agency shall determine whether to prepare a subsequent negative declaration, an addendum, or no further documentation.

(c) If the project was approved prior to the occurrence of the conditions described in the subsection (a), a subsequent EIR or negative declaration shall be prepared by the public agency which grants the next discretionary approval for the project. In this situation no other Responsible Agency shall grant an approval for the project until the subsequent EIR has been certified or subsequent negative declaration adopted.

(d) A subsequent EIR or negative declaration shall be given the same notice and public review as required under Section 15087 or Section 15072. A Subsequent EIR or negative declaration shall state where the previous document is available and can be reviewed."

The key to sections 21166 and 15162 is to determine if any circumstances have changed dramatically enough to justify repeating a substantial portion of the environmental documentation process. If conditions do not justify a new or supplemental EIR, but minor additional or technical changes (such as traffic updates) are appropriate to keep the document current and useful, an agency may prepare an Addendum (CEQA Guidelines §15164).

Based upon the foregoing information, it was determined that preparation of an Addendum is the appropriate CEQA document to provide project specific analysis and to provide clarification and minor changes to Final SEIR 566. This document is prepared under the authority of §15164 of the California Environmental Quality Act (CEQA) since only minor technical changes or additions are necessary to make previously certified Final SEIR 566 adequate under CEQA.

Additionally, this Addendum does not raise important new issues about the significant effects on the environment. There is no substantial evidence that the project, as mitigated by the mitigation measures required within the Final SEIR 566 would have a significant adverse effect on the environment (§15070).

Finally, Final SEIR 566 was certified for the development of the previously proposed project in connection with earlier approvals. The certification of an EIR is a recognition of the continuing utility of the document for subsequent development approval within the scope of the original approval.

The §21166 test provides evidence under state law on the question of whether a new environmental document is necessary. This test is a tangible one, and does not challenge the age of a document, only provides the criteria to test its continuing accuracy and utility.

II. PROJECT DESCRIPTION

1. Location

The project site is situated on 222.2 acres of vacant land located on the easterly side of El Toro Road, approximately ½-mile south of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road, in east-central unincorporated Orange County. The incorporated cities of Mission Viejo and Lake Forest lie approximately three (3) miles to the south and southwest, with the Cleveland National Forest boundary located approximately ½-mile north of the project site. Aliso Creek is located adjacent to the northwest portion of the project site. in addition, a small strip of County owned land is located between the project site and El Toro Road (Please refer to Exhibit 1, Regional Location Map and Exhibit 2, Vicinity Map).

2. Background

The following chronology identifies key dates in the projects' history.

SADDLEBACK MEADOWS PROJECT CHRONOLOGY

DATE	PROJECT RELATED EVENT
August 8, 1978	- The Orange County Board of Supervisors adopted GPA 78-1, Item 4, the "Saddleback Meadows Mobile Home Subdivision" which granted a change in the Land Use Element designation for the site from 5.4 Other Open Space to 1.22 Medium Low Density Residential and 2.1 Local Commercial. Maximum number set at 617 dwelling units. Triggering mechanism to revert land use designation to original after 2 years commenced. EIR 059 certified.
February 6, 1979	- Board adopted Site Plan conditions as requirements for implementing the subject amendment. Draft EIR 059, which was the CEQA documentation for the site plan, identified major grading impacts as project related impacts; these impacts were also shown on grading plans for Tentative Tract Map TT10692, prepared for the project.
March 7, 1979	- Zone change application, Tentative Tract Map and Addendum requests submitted to County for a maximum of 617 mobile home units and a neighborhood convenience commercial center on the project site.
March 29, 1979	- Determination of requirement for an EIR transmitted to applicant by Environmental Services Division (ESD).
June 5, 1979	- Appeal of EIR requirement by Cliff Russell, representing Worthington/McNiff.

June 11, 1979 - The Orange County Planning Commission denied the appeal. Supplemental EIR required for proposed 617 unit tentative tract map.

June 25, 1979 - Zone Change 79-24 submitted to County. The project proposed at the time consisted of 617 units.

December 13, 1979 - TT10692 approved by the Planning Commission with recommendation that Zone Change ZC79-24 be approved by Board of Supervisors for 705-unit residential.

January 9, 1980 - Saddleback Meadows properties placed in the PC "Planned Community" District and adopted by Board of Supervisors, Ordinance Number 3177. Final EIR 203 certified.

October 28, 1981 - Two year extension of time to record to expire December 12, 1983 approved by the Subdivision Committee.

December 7, 1981 - Appeal to deny two year extension of time affirmed by Planning Commission. One year extension of time to record to expire December 12, 1982 granted by Planning Commission.

November 17, 1982 - An additional one year extension of time to record to expire December 12, 1983 approved by Subdivision Committee.

July 13, 1983 - Saddleback Meadows Planned Community District Regulations amended by Planning Commission and adopted by Board of Supervisors, Ordinance Number 3398 (ZC82-63P).

October 26, 1983 - Third one year extension of time to record approved.

June 13, 1984 - Saddleback Meadows Planned Community District Regulations amended by Planning Commission and adopted by Board of Supervisors, Ordinance 3486 (ZC84-3P) to allow manufactured housing in PC.

October 24, 1984 - 589-day stay of time in which to record a final tract map approved by Subdivision Committee. Expiration date extended to July 24, 1986.

July 24, 1986 - Water district could not provide sewer service; recordation not allowed until sewer capacity available.

September 21, 1988 - Execution between Southmark and the Trabuco Canyon Water District of "Agreement for Designing Construction of Master Plan Facilities, Tract No. 10692";

September 21, 1988 - Execution between Southmark and the Trabuco Canyon Water District as a document entitled "Agreement for Construction of On-site Water and Sewer Facilities, Tract No. 10692";

December 16, 1988 - Tract Map 10692 recorded.

February, 1989	-	Payment of $973,528.58, purchase of sewer treatment capacity rights in Trabuco Canyon Water District's Chiquita Wastewater System Facilities by predecessor to Applicant;
1989	-	Payment by predecessor to applicant to the Trabuco Canyon Water District in the amount of $904,475.00 for capital improvement charges based on the Equivalent Density Units of Recorded Tract No. 10692;
December 10, 1991	-	Foothill/Trabuco Specific Plan approved and Final EIR 531 certified by Orange County Board of Supervisors. The Specific Plan incorporated the Saddleback Meadows Planned Community Regulations as the Bridlewood Residential District.
April, 1994	-	Grading Permit Application GA940031 submitted for Phase I, Grading (98.3 acres) of the site.
August, 1994	-	Environmental Impact Report Determination Letter issued by County.
August 11, 1994	-	Letter of Appeal filed with County, appealing EIR requirement.
November, 1994	-	Appeal Hearing postponed to January 7, 1995.
January 31, 1995	-	Applicant withdraws appeal. Planning Commission directs applicant to develop a more compatible project in response to public testimony, staff concerns, and Planning Commission's direction.
July 27, 1995	-	Revised Zone Change and Area Plan, 318-unit Site Development Plan and Tentative Tract Map submitted to County of Orange.
August 11, 1995	-	Notice of Preparation circulated for EIR 561
October 17, 1995	-	Screencheck Draft EIR 561 submitted to OCPDS for review.
July 30, 1996	-	After five public Planning Commission hearings, the Planning Commission was unable to reach a decision and make a recommendation to the Board of Supervisors. The Commissioners voted four times on varying lot yields ranging from 318 down to 260 units. However, a majority of the commissioners were in agreement on the general development envelope as depicted by Staff recommended Alternative 8 for 299 units. The Commission did, however, recommend certification of the EIR document. The Planning Commission recommended moving the project along to the Board of Supervisors for its consideration.
August 2, 1996	-	The applicant appeals Planning Commission action of July 30, 1996 because the Commission's inaction on making recommendation to the Board of Supervisors on the substantive issues of the Zone Change and Area Plan was procedurally a de-facto project denial.

September 10, 1996 - Applicant submits Alternative 9 (318 lots) to County staff and requests that the alternative be considered by the Board of Supervisors as a plan which better addresses the concerns and issues raised by the public and the Planning Commission at the last public hearing.

October 2, 1996 - Saddleback Valley Unified School District Board approves Mitigation Agreement for Saddleback Meadows based on the 318 unit project.

October 22, 1996 - Board of Supervisors public hearing on appeal of Planning Commission Action. The Board denied the Appeal. The Supervisors then motion to approve a project with a density cap of 100 lots (Draft EIR alternative No. 4). The motion did not carry and the Board directs staff to report back to the Board by November 5th, regarding the process to initiate a reversion to acreage on the Saddleback Meadows property, (i.e. remove the existing Recorded Final Tract Map).

November 5, 1996 - Board of Supervisors hear County staff's report concerning the reversion to acreage procedure. The motion to initiate the reversion to acreage does not carry. Supervisor Saltarelli requests staff to inquire about the potential acquisition of the Saddleback Meadows property for public purposes. The Board does not certify the EIR No. 561.

November 8, 1996 - Applicant receives transmittal from County expressing the desire to explore possible full or partial acquisition of the Saddleback Meadows property.

November 18, 1996 to March 7, 1996 - Applicant works with County staff and representatives of the community and the Foothill Trabuco Review Board to explore the possibility of negotiating a reduced development project in conjunction with a partial acquisition of the property.

December 3, 1996 - County accepts Grading application for Tract 10692 (for 705 units). Assigned Grading Application Number GA960048.

December 16, 1996 - County determines that a Subsequent EIR is required to evaluate the effects of the grading application.

December 24, 1996 - County circulates Notice of Preparation (NOP) of a Draft Subsequent Environmental Impact Report (#566) related to the Grading Application GA960048, for Tract Map 10692.

February 6, 1997 - County re-circulates NOP document for SEIR #566.

May 30, 1997 - Applicant submits application for Use Permit to allow construction of a temporary project identification/future construction sign on the Saddleback Meadows property.

September 9, 1997	-	Planning Commission denies Use Permit for sign.
September 19, 1997	-	Applicant appeals Use Permit denial to Board of Supervisors.
December 3, 1997	-	Planning Commission certifies Final Subsequent EIR 566.
December 9, 1997	-	Board of Supervisors denies applicants appeal and affirms Planning Commission's denial of Use Permit for a site sign on Saddleback Meadows.
February 9, 1998	-	St. Michael's Abbey transmits an offer to California Quartet for a partial purchase of Saddleback Meadows through their legal representative.
February 24, 1998	-	Board of Supervisors hearing upholding certification of Final Subsequent EIR 566. Supervisor Spitzer to provide Board with an update regarding potential settlement negotiations with Applicant regarding pending litigation against the County, within 45 days (April 14, 1998).
March 6, 1998 to August 1998	-	First in a series of settlement negotiation meetings involving St. Michael's Abbey, the Ramakrishna Monastery, California Quartet, and the County. CQ agrees to study a series of reduced development alternatives in conjunction with partial acquisition.
June 2, 1998	-	Board of Supervisors Hearing. Supervisor Spitzer presents status report on Saddleback Meadows project with direction to County Counsel and Planning & Development Services Department staff to prepare for consideration by the Board a settlement agreement containing the following "Conceptual" terms: 1) $1.5 million in appropriated County funds (Strawberry Field funds) will be utilized to acquire an interest in the subject property with the understanding that it is to be used only in conjunction with $10.5 million from St. Michael's Abbey to purchase the entire property with escrow to close on or before October 29, 1998 with language that if the "Strawberry Field funds" are not available for this proposal that it will not trigger the development option until the Board has had an opportunity to explore alternative funding and that County's contribution of $1.5 million shall be reimbursed in the event the property is used for a purchase which derives financial benefit; 2) request that all litigation by St. Michael's Abbey and/or California Quartet will be tolled; 3) County staff will immediately begin processing general plan, specific plan, zone change, area plan, tentative tract map applications and any other required plan/application for the 299-lot development plan to be considered for approval if the acquisition is not completed by October 29, 1998; and 4) request that California Quartet cease processing any permits related to the 705-unit manufactured home subdivision until October 30, 1998.

June 12, 1998 - Letter of intent regarding purchase and sale of Saddleback Meadows property to CQ from St. Michael's Abbey. Abbey indicates that as part of the terms, they would be allowed to develop the property.

June 15, 1998 - CQ formally requests County cease processing of the grading plan check application based on Recorded Tract Map 10692 (705 units), in accordance with the conceptual terms of the settlement agreement referenced in the Board of Supervisors motion of June 2, 1998.

June 22, 1998 - Area Plan and Zone Change application for the 299-unit "Contingency Plan" submitted to County.

June 23, 1998 - Board of Supervisors' Hearing – Supervisor Spitzer's update on Saddleback Meadows.

3. Project Description

The project proposes the construction of 299 single-family detached dwelling units (the proposed project). The average lot size for this project is approximately 6,672 s.f., with a minimum lot size of 5,000 s.f. Access to the project would be provided via a gate guarded private street off El Toro Road immediately south of the existing Aliso Creek/Trail under-crossing structure. An emergency only access connects with Valley Vista Way. All habitable structures are proposed to be protected by automatic fire sprinkler systems. The project site is approximately 222.2 acres in size. Total open space exceeds approximately 70%.

The project acreage (222.2 acres) does not include the adjacent off-site water tank site. A water tank with a maximum capacity of 1.4 million gallons, and associated access road, are proposed off-site adjacent to the northeast corner of the project site to provide water service to the proposed project. The proposed water tank site was previously dedicated to the Trabuco Canyon Water District when the existing Final Tract Map was recorded (Tract No. 10692). The water tank will be approximately 30-feet tall, 100 to 110-feet in diameter, and will be bermed, landscaped, and painted a complimentary color to the surrounding setting. A total of approximately 8 acres of off-site area would be affected as a result of project implementation to accommodate slope area, access roads, related remedial grading, the water tank, and County of Orange fuel modification requirements.

On-site circulation is proposed with a system of private streets consisting of a primary spine street (56-foot r.o.w.) and a series of cul-de-sacs (41-, 45-, and 52-foot r.o.w.). An encroachment easement is required from the County of Orange to accommodate the project access road where it traverses County owned property along the western-most boundary of the site.

The project has been designed to minimize impact on the existing landform. The homes have been located on the relatively level areas in a broad crescent shape flowing along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off the eastern

and northern major ridgelines bordering the property. A primary design consideration in establishing the rural-like character of Saddleback Meadows is presenting a landscape enveloped community when viewed from the surrounding areas and from within the development. In response to this design intent and the interests of St. Michael's Abbey, the Ramakrishna Monastery and the neighboring Hidden Ridge community, specific grading techniques, site planning, and landscape elements will be incorporated within the project. The intent of these features will be to enhance the views of Saddleback Meadows from the surrounding areas.

Design features such as landform grading, resource enhancement, and recreation/open space components are summarized as follows:

- Landform grading along the northern side of the primary spine road, and the majority of the southern development edge, designed to screen off-site views of the development area.
- A wildlife movement corridor system designed to accommodate primary wildlife movement through a 400 foot wide east-west corridor (not counting 50' wide buffer zones on either side of the corridor).
- Preservation of the southerly ephemeral pond.
- A ±90-acre extension of O'Neill Regional Park that may include a trail head/pocket park and ridge top lookout park as possible amenities.
- A hiking trail connecting the Aliso Creek Riding/Hiking Trail and the Live Oak Hiking Trail to the trail staging area and O'Neill Regional Park.
- Relocation of residential lots adjacent to the wildlife corridor and St. Michael's Abbey.
- Preservation of the oak woodland associated with the east-west wildlife movement corridor.
- Revegetation of the wildlife movement corridors with native plant materials.
- Elimination of side yard slope retaining walls.
- The elimination of a commercial use.
- Approximately 68.6 acres of Restricted Scenic Preservation Easement (open space).

Implementation of the proposed project would require grading totaling approximately 8.6 million cubic yards. The above outlined features of the proposed project would result in an incremental reduction in impacts to biological resources, traffic, noise, air quality, aesthetics, recreation, as compared to the approved project for a 705-unit manufactured housing project. In addition, the proposed project incorporates the most recent position of the resource agencies (U.S. Fish and Wildlife Service, California Department of Fish and Game, and the Army Corps of Engineers) pertaining to the location and width of the on-site wildlife movement corridor.

The proposed project site plan is shown in Exhibit 3, with the contour grading concept shown in Exhibit 5 and the landscape and revegetation plan shown in Exhibit 6 in this document. The proposed project land uses are summarized in the following table.

Proposed 299-Lot Project
Land Use Summary

ON-SITE	ACREAGE	% OF SITE
Residential Lots	45.8	21%
Streets (private)	17.8	8%
Regional Park	90.0	41%
Restricted Scenic Preservation Easement	68.6	30%
Subtotal	222.2	100%

The 299-unit project proposes a total of 158.6 acres or 71% of on-site open space, approximately 30.47 acres more than the approved project.

Orange County General Plan

The project site is subject to policies contained in Land Use Element, Circulation Element, Housing Element, Public Services and Facilities Element, Noise Element, Recreation and Safety Element of the Orange County General Plan.

Land Use Element

The Orange County General Plan Land Use Element (Adopted June 1982), designates the Saddleback Meadows project site as 1B (Suburban Residential - 0.5 to 18 du/ac). The Community Profile, which is not a part of the General Plan, designates the site as 1.2 low density residential (0.5 to 2.0 du/ac.)

Housing Element

The Orange County General Plan Housing Element was adopted September 13, 1993 and is a comprehensive statement of broad and specific policies to facilitate development of housing in the County. The project site is located in Regional Statistical Area (RSA) 43-C. RSA 43-C had a 1995 population of 190,700 with a year 2000 population projection of 212,700 (2.3 percent growth). RSA 43-C had a 1995 jobs to housing ratio of 3.80, the highest in the County.

In 1979, the County adopted the Inclusionary Housing Program (IHP), which required developers to provide 25 percent of all new dwellings within the affordable category (i.e., 120 percent or less of median income). In 1983, the IHP was replaced by the Housing Opportunities Program (HOP), which phased out mandatory requirements over a three-year period in favor of voluntary compliance with affordable housing objectives encouraged by County incentives and market forces. Adoption of the HOP did not rescind prior approvals of mandatory affordable housing requirements placed on projects as conditions of approval under the IHP.

A total of 26,907 mandatory affordable units have been required to date as part of General Plan amendments or zone changes. The vast majority of these (24,268) are found within planned communities, with the remainder scattered in conventionally-zoned parcels.

The previously approved and recorded Final Tract Map 10692 was required in the IHP/HOP to provide 66 2/3 percent of total construction as affordable housing (mobile homes). Since it was an original Condition of Approval, this requirement still applies to the project even though the County-mandated affordable housing requirements have since been rescinded.

Foothill-Trabuco Specific Plan

In December 1991, the Foothill-Trabuco Specific Plan was adopted by the County Board of Supervisors, and replaced the Foothill-Trabuco Feature Plan. This action converted the then policy level Foothill-Trabuco Feature Plan into a regulatory-zoning level Specific Plan The Specific Plan sets forth goals, policies, land use district regulations, development guidelines, and implementation programs designed to preserve the area's rural character and to guide future development in Foothill-Trabuco area.

To facilitate planning efforts, three (3) individual planning areas were created within the overall Specific Plan Area: 1) Upper Aliso Planning Area; 2) Trabuco Canyon Planning Area, and 3) Plano Trabuco Planning Area. The project site is located within the Upper Aliso Planning Area and is designated, the "Bridlewood Residential District".

While the Foothill-Trabuco Specific Plan was adopted with the intent of guiding future land use within the Specific Plan area, its approval post-dated that of Tract Map 10692 by some 12 years. Accordingly, the current project, originally approved in 1979, is effectively exempt from the provisions of the Foothill-Trabuco Specific Plan.

The following passages are excerpted from the Land Use Regulations section of the Specific Plan:

> *As long as the site is developed in accordance with the existing Saddleback Meadows Planned Community zoning (Zone Change 84-3P) and Recorded Tract 10692, the project site shall be exempt from all of the Regulations and Guidelines included in this Specific Plan other than those provided for by this District.* (Emphasis added)
>
> *The Bridlewood Residential District is established to recognize the existing zoning and tract map approvals for the Bridlewood (Saddleback Meadows) property which permit the development of 705 manufactured homes on the site. While the Board of Supervisors does not believe that these approvals are consistent with the Goals and Objectives of the Specific Plan, the property owner has recently declared bankruptcy. A legal stay precludes the Board of supervisors from taking any action related to the property that would affect its*

value. However, the provisions of this District require that the Specific Plan be amended to determine an appropriate density cap and District Regulations for the property in the event that it cannot be developed in a manner which is consistent with the approved zoning and tract map (Foothill-Trabuco Specific Plan p. III-20).

Aliso Creek Corridor Specific Plan

The Aliso Creek Corridor Specific Plan (concept) was adopted in July 1978 and outlines open space and recreational policies and programs for Aliso Creek and proximal surrounding areas, from it's headwaters in the Cleveland National Forest to its outlet into the Pacific Ocean at Laguna Beach. The goals of the Aliso Creek Corridor Specific Plan area as follows:

- The preservation of the natural character of the Aliso Creek Corridor from the forest to the sea, including the creek course and banks, irreplaceable resources and environmental features.

- The utilization of the Aliso Creek Corridor as an organizer for various systems including, but not limited to, recreation, circulation, public service and development.

- The provision of opportunities to provide for alternative means of transportation and recreation within the Aliso Creek Corridor utilizing bicycle, pedestrian, and equestrian trails, while minimizing conflicts with vehicular traffic along and across the corridor.

- The utilization of the Aliso Creek Corridor as a regional recreation/open space amenity providing a variety of recreation opportunities.

- Provision of a well-organized program designed to implement the Aliso Creek Corridor Specific Plan.

The project site is partially located within the Aliso Creek Corridor Specific Plan, with the Specific Plan's boundary formed by the Aliso Creek watershed limits. The site is located within Planning Unit 5 and more specifically Sub-area 33. Sub-area 33 is designated for open space and recreation land uses. In addition, the Concept Plan shows a regional bike trail on-site.

Zoning

The entire project site is currently zoned "S"-Foothill-Trabuco Specific Plan with "SR"-Sign Restriction overlay district. The Bridlewood/Saddleback Meadows Residential District was established within the Foothill-Trabuco Specific Plan, adopted December, 1991, to recognize the existing zoning and tract map approvals for the Bridlewood/Saddleback Meadows property. A zone change (ZC98-3) will be required to

amend the Foothill-Trabuco Specific Plan ("Bridlewood Residential District") (Specific Plan Amendment), Page III-20 (Section III.D.3.0 through 3.4). Although not a project-specific requirement, the County of Orange would be required to implement a General Plan Amendment to modify project-related affordable housing requirements no longer in effect. Once Zone Change 98-3 is adopted, the proposed project would be in substantial compliance with the Foothill-Trabuco Specific Plan.

III. ANALYSIS OF IMPACTS/MITIGATION:

The impact analysis contained in this Addendum compares project level and cumulative impacts of the previously approved project for 705 manufactured homes to the currently proposed project for 299 units for Saddleback Meadows. This section does not contain the full body of text from Certified SEIR 566, however, incorporates those sections by reference which are not duplicated herein in order to avoid redundancy.

1. LAND USE AND PLANNING ANALYSIS

PROJECT IMPACTS

Land Use Compatibility

The approved project for 705 units would construct manufactured single-family detached dwelling units, streets, slopes and associated infrastructure on the currently vacant project site. Minimum lot size for the approved project would be about 2,630 sf., which is smaller than the 3,000 sf. and 5,000 sf. required for the neighboring Portola Hills and Hidden Ridge single family detached residential communities, respectively. Both Hidden Ridge and Portola Hills also have attached residential units. A comparison of surrounding project gross densities is shown in EIR 566, Table 5 of Section 3. The approved project has a higher gross density than surrounding area projects.

O'Neill Regional Park is located adjacent to and directly south of the project site. The portion of the park adjacent to the site is primarily devoted to wilderness activities. As a result, implementation of the previous and proposed project would not be compatible with existing and planned park uses.

The Ramakrishna Monastery is also located adjacent to the southern boundary of the project site. This religious facility is occupied by seven resident monks and serves a limited number of visitors. Due to the contemplative purposes for which this facility exists, the previous and proposed project would not be compatible with the Ramakrishna Monastery.

Scattered estate density residential land uses are located adjacent to the eastern and northern project boundaries, although they would be physically separated from the project site by an intervening major ridgeline. These surrounding areas contain minimum one and 2.5-acre lots, and would not be considered compatible with the previous or proposed projects.

St. Michael's Abbey is located north of the project site and functions as a religious and educational facility. Introduction of the approved project adjacent to the Abbey would result in a land use incompatibility. The incompatibility between development and the Ramakrishna Monastery and St. Michael's Abbey is partially offset by some natural open space buffering and topographic landscape screening.

The proposed project does provide additional buffering through site design, with landform berming and contour grading, working in concert with landscaping to further screen and filter views of the development edges. A major design feature of the proposed project for 299 units is the single loaded primary spine road (residential development south of the spine road and landform grading to the north), which is intended to screen off-site views of the on-site development area. Landform grading and limited use of loffel walls are proposed to minimize the views of the development area from off-site locations. In addition, the proposed project would provide for a wildlife movement corridor system, which would effectively apportion the development into three residential enclaves. Additional single-family residential dwellings were located within the north central portion of the project site in the approved project, as compared to the proposed project, which has undisturbed open space in the same area.

The discussion on pages 4-1 through 4-13 of Certified Final SEIR 566 remains appropriate for this project. The reader is also directed to pages 4-1 to 4-17 of Final EIR 561. The proposed project would be in conformance with the Orange County General Plan, Foothill Trabuco Specific Plan and zoning, through the implementation of appropriate mitigation measures.

No significant unavoidable adverse impacts to land use would occur with implementation of the proposed project beyond those previously identified and addressed in Certified Final Subsequent EIR 566 for which a Statement of Overriding Considerations was adopted.

Orange County General Plan

Land Use Element

After approval of General Plan Amendment and Zone Change, the proposed project will be in conformance with all elements of the County General Plan, including the Land Use Element, Noise Element, Transportation Element, Housing Element, Growth Management Element, Safety Element, Public Services and Facilities Element, Recreation Element, and Resource Element.

Housing Element

The approved project would have supplied 705 manufactured single-family residential dwelling units into RSA 43-C, a jobs-rich, housing-poor area. This would have provided a significant addition to the County's stock of affordable housing units. This is noteworthy because the project was conditionally approved in 1979 with a 66 2/3

percent affordable housing requirement in accordance with the County's Inclusionary Housing Program (IHP). Although this mandate has since been rescinded, the original affordable housing requirements are still attached to Final Recorded Tract Map 10692. As per the Conditions of Approval originally placed on Tentative Tract 10692, a total of 470 lots are to be sold in the affordable range. This figure is further broken down as follows: 188 low/ moderate, and 282 Medium I, as defined by the County. The proposed project would not provide affordable housing stock to the County's housing stock.

Foothill-Trabuco Specific Plan

The approved project is inconsistent with many of the goals, objectives, and policies of the Foothill-Trabuco Specific Plan which generally calls for the preservation of the rural character and natural habitat of the Foothill-Trabuco area. The current proposal for 299 units is more consistent with the provisions of the plan. The proposed site has been designated "Bridlewood Residential District" by and was made a part of the Specific Plan. Accordingly, the project is exempt from provisions of the Specific Plan. The Specific Plan reads as follows:

> *The Bridlewood (Saddleback Meadows), Lyon Ranch (Saddleback Community Church), Santiago Ranch and Zadeh properties currently have approved or recorded tract maps in effect. Except in the event that proposed development on these individual properties cannot be found consistent with previous approvals, the subject properties shall be exempt from all of the Regulations and Guidelines included in this Specific Plan and shall be subject to the zoning in effect at the time of . . . project approval.*

Although the Saddleback Meadows area is deemed exempt from the goals, objectives and policies of the Foothill-Trabuco Specific Plan, there are certain features of the project which attempt to satisfy community amenities and standards for development. Specifically, these include the incorporation of riding, hiking and bicycle trails, and eight private park sites.

The previously proposed project conflicts with the Foothill-Trabuco Specific Plan specifically with regard to the preservation of a regionally contiguous wildlife corridor. Furthermore, the Specific Plan states that the type of homes previously proposed (manufactured homes) would be incompatible with site topography and biological resources. The Specific Plan reads as follows:

> *It is recognized that the Specific Plan Area, due to its steep terrain and sensitive biological resources, is inappropriate for the provision of affordable housing. The provision of (high density) affordable housing conflicts with the goals and objectives of the Specific Plan which include maintaining the rural character of the area, providing a buffer between urban development and the Cleveland National Forest and preserving significant biological resources and natural landforms.*

The Saddleback Meadows "Rural Character Statement" establishes the community design concept of the project. It responds to the project team's intent for a rural community theme and character and to design considerations expressed by Saint Michael's Abbey, Hidden Ridge residential community, and the Ramakrishna Monastery. Further, it is used as a guideline for community design and as a "tool of measure" to be used by the Planning commissioners during the review of the Use Permit. The Saddleback Meadows community will incorporate community wide design elements and features reflective of the rural character. A primary design consideration in establishing the rural character of Saddleback Meadows is presenting a landscaped enveloped community when viewed from the surrounding areas and from within. This is accomplished through creative contour grading, berming at select and appropriate locations, creative site planning techniques, and an aesthetic community wide landscape.

Aliso Creek Corridor Specific Plan

The previous and the proposed project do incorporate regional riding and hiking trail connections into the design, however, conflict with several other aspects of the Aliso Creek Corridor Specific Plan. The proposed project does not warrant the need to channelize Aliso Creek along El Toro Road as the previous 705-unit project does. The approved project (705 units) is in direct conflict with the Natural Communities Conservation Planning Program (NCCP) in that it would further disturb a sensitive wildlife habitat area and inhibit the movement of wildlife through the area. However, the proposed project would not preclude the viable movement of small and medium size mammals and birds, because of the incorporation of a wildlife movement corridor into the design of the project.

Zoning

The previous and proposed projects are in conformance with County zoning standards. No conflicts would result.

Impact Significance Criteria

The effects of a project on existing or planned land uses are considered to be significant if the proposed project conflicts with one or more of the following:

A. Conflicts with General Plan land use or zoning designations or policies;

B. Conflicts with existing or planned land uses on-site or adjacent to the project site, e.g., disrupts the physical arrangement of an established community or causes development within or adjacent to open space preserved for habitat value;

C. Results in conversion of prime agricultural land to non-agricultural uses, or impairs the productivity of prime agricultural land;

D. Causes significant urban growth.

These criteria are derived from the County PDS/Environmental Analysis Checklist.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the approved proposed project, would result in significant land use compatibility impacts to O'Neill Regional Park, the Ramakrishna Monastery St. Michael's Abbey, and surrounding residential communities. The project would also conflict with policies of the Aliso Creek Corridor Specific Plan.

CUMULATIVE IMPACTS

Implementation of the approved or proposed project, in conjunction with the identified related projects, would result in additional urban intensity within and adjacent to the Foothill-Trabuco Specific Plan area.

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

SC 1-1 Prior to the issuance of any building permits for residential construction, the developer shall comply with Board of Supervisors Resolution 82-1368 (Buyer Notification Program) which requires the developer to prepare a map denoting the existing and proposed land uses, arterial highways, and public facilities within the surrounding area for the approval of the Manager, PDS/Current Planning Services Division. The map content, display, and distribution shall be in accordance with the Buyer Notification Program guidelines approved by the Board of Supervisors and available at the Development Processing Center.

SC 1-2 Prior to the issuance of any certificates of use and occupancy, the developer shall provide evidence to the Manager, PDS/Building Inspection Services Division, that the Department of Real Estate has been notified that the project area is within the boundaries of a Community Facilities District (CFD), and will be subject to special taxes for public facilities and/or services.

Land Use Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project consists of 299 units on 160 acres (1.9 du/ac), compared to 705 units on 191 acres (3.7 du/ac) for the approved project., and it includes 62.2 acres of open space, compared to 31 acres for the approved project. The proposed project also provides more recreational amenities (a passive park and trailhead staging area) and a wildlife movement corridor system.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	Although the proposed project will continue to have a significant impact on land use compatibility, no new adverse impacts will occur.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

2. SOILS AND GEOLOGY ANALYSIS

PROJECT IMPACTS

Grading

Implementation of the approved project for 705 manufactured homes would require the following grading actions:

- Multiple cuts and fills (2.6 million cubic yards of conventional grading) to achieve planned elevations and profiles, and associated access roadways.
- Remedial grading (8.9 million cubic yards) to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills;

- Removal (clean out) of all or major portions of the graben materials and softer alluvium and colluvium under most of the variable thickness fills;

- Installation of appropriate subdrain systems within natural drainage courses and within stability fills prior to fill placement;

- Adequate foundation and slab subgrade conditioning for the proposed development, including overexcavation, capping and measures related to expansive soils;

- Achieving suitable surface gradients, to preclude ponding anywhere on-site and to control water run-off via paved/closed drainage devices.

Implementation of the proposed remedial grading features, including removals/cleaners, buttress construction, subdrain systems, and temporary stockpiling are not anticipated to result in any impact to the stability of adjacent properties.

Based on average daily grading of 30,000 cubic yards/day, total proposed project-related grading (8.9 million cubic yards) would require approximately 10 months to complete. All preliminary grading would be completed in one continuous phase.

Geotechnical Conditions

The document entitled "Geotechnical Environmental Impact Report for Draft EIR No. 566 for Final Tract Map 10692 Saddleback Meadows Development" concludes that the site is geotechnically suitable for the previous and proposed project. This conclusion is based on the following conditions:

1. On-site bedrock and large landslide blocks have low settlement potential.

2. There is sufficient low to non-expansive materials to generate select fills

3. On-site liquefaction is not expected.

4. Bedrock can be excavated; no blasting is anticipated.

5. Grading east of the Abbey property will produce fill in the gully area which will stabilize slopes on the Abbey property.

6. No known active faults are present at the site and surface rupture during earthquakes is not expected.

7. Planned remedial grading will reduce the potential for earthquake-induced landsliding.

8. The site does not lie within the 100-year flood zone.

9. Subsidence at the site due to fluid withdrawal should not occur since no major ground water aquifers or petroleum reservoirs are known to underlie the site.

10. Site grading will reduce the potential for surficial erosion and the consequential siltation of nearby Aliso Creek.

The geotechnical report contained in Certified Final SEIR 566 also describes several unfavorable geotechnical conditions that could compromise the site's ability to support the project. Mitigation measures are recommended however, to correct these conditions and ensure that future development would be adequately and safely supported. The geotechnical report identifies the following conditions as being unfavorable: presence of unstable landslides, occurrence of some moderately to highly expansive soils and bedrock units, and presence of adverse bedding conditions and the presence of some perched ground water.

These unfavorable conditions can be mitigated by implementing corrective grading concepts, such as the construction of buttresses and shear keys, placement of expansive materials in deep fills, buttressing of cut slopes where necessary, construction of canyon subdrains and back drains to minimize or eliminate the affects of ground water, removal of compressible materials and replacement with compacted fill, and construction of large buttress cuts in segments to reduce the possibility of backcut failure.

In comparison, implementation of the proposed project for 299 units would require approximately 2.1 million cubic yards of cut and fill conventional grading and 6.8 million cubic yards of remedial grading (remove and replace) for a total grading quantity of 8.9 million cubic yards. The required grading for the proposed project would require 2.6 million cubic yards less than that required to implement of the proposed project. Grading quantities incrementally decreased under the proposed project as a result of the reduced earthwork required to create the landform grading along the visually prominent project edges. A supplemental geotechnical evaluation of the proposed project is included in Appendix A of this document. The supplemental investigation for the proposed project was conducted on June 22, 1998 by G.A. Nicoll and Associates, Inc. The purpose of the study was to evaluate the proposed project and its impact on the site conditions, to revise the previous geotechnical cross sections to reflect the new grades, to conduct stability analyses and to provide other additional geotechnical data to supplement the previous Geotechnical investigation of November, 1995.

The remedial grading required for the proposed project (299 lots) is significantly reduced from the 705-unit grading concept for the original entitled plan. The total remedial grading quantity for the proposed project is approximately 6.8 million cubic yards compared to the approved project with 8.9 million cubic yards. The study concluded that the site is developable.

Much of the general discussion on pages 4-13 through 4-33 of SEIR 566 and in Appendix D (Geotechnical Evaluation) of the Certified SEIR remain appropriate for the

proposed project Prior to implementation of mitigation measures, grading would result in significant impact related to slope stability, landslides, mudslides, subsidence and erosion. Review by County geotechnical experts, implementation of the proposed remedial grading features, including removals/cleaners, buttress construction, subsurface systems, and temporary stockpiling, would not result in any impact to the stability of adjacent properties. An average daily grading quantity of 30,000 cubic yards/day (total grading 8.9 million cubic yards) would require approximately 300 days (10 months) to complete grading operations.

The proposed project will eliminate an existing geotechnical hazard by remediating the existing deep seated ancient and surficial landslides on the property.

No significant unavoidable adverse impacts to soil and geology would occur with implementation of the proposed project.

Impact Significance Criteria

Earth resource impacts resulting from the proposed project could be considered significant if it causes any of the following impacts:

A. Changes in the geologic substructure or unstable earth conditions.

B. Exposures of people of property to geological hazards like landslides, mudslides, ground failure or similar hazards.

C. Substantial disruptions, displacements, compaction or overcovering of the soil.
D. Substantial increase in wide erosion of soils.

E. Changes in siltation, deposition or erosion that may modify the channel of a river or stream, or the bed of any bay, inlet or lake.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to the application of mitigation measures would result in significant impacts related to slope stability, landslides, mudslides, subsidence and erosion.

CUMULATIVE IMPACTS

Geotechnical impacts are not considered on a cumulative basis.

MITIGATION MEASURES

Project Design Features

PDF 2-1 A comprehensive remedial grading mitigation plan has been designed to stabilize the project site, in accordance with OCPDS requirements. The plan is depicted in Exhibit 19 of SEIR 566, p. 4-26, included in Appendix D of SEIR 566 and proposes measures including shear keys, buttresses, removals/recompaction to reduce hazards associated with landslides, erosion and subsidence.

Standard County Conditions and Mitigation Measures

SC 2-2 Prior to the issuance of a grading permit, the applicant shall submit a geotechnical report to the Manager, PDS/Subdivision and Grading Services Division for approval. The report shall include the information and be in a form as required by the Grading Manual.

SC 2-3 Prior to the issuance of any grading permits, the Manager, PDS/Subdivision and Grading Services Division, shall determine if the proposed grading complies with the grading illustrated in the plans approved by the decision-maker with regard to grading concepts, slope heights, slope ratios, and pad elevations and configuration. Significant deviations shall be reviewed by the decision-maker for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised application per Orange County Zoning Code Section 7-9-139 and 7-9-150.

SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.

SC 2-5 Prior to the issuance of any grading permit, off-site grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting

the approval of the Manager, PDS/Subdivision and Grading Services Division:

- Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content.

- For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the on-site material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.

- Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.

Seismic

SC 2-7 Conformance with the Uniform Building Code and Orange County codes will insure that seismic considerations are incorporated into the structural designs. All recommendations of the geotechnical report shall be incorporated and utilized in the final construction plans for the parcels in a manner meeting the approval of the Manager, PDS/Building Permit Services Division. Larger buildings, structures with extraordinary architectural configurations, or those of tilt-up construction may require seismic analysis.

SC 2-8 The seismic exposure of the site shall be considered in the design of the proposed structures in a manner meeting the approval of the Manager, PDS/Building Permit Services Division.

SC 2-9 Geologic inspections shall be required during site grading for each parcel to confirm the absence of major faults in the local area in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-10 Prior to the issuance of any grading permits, if review of the grading plan for this property by the Manager, PDS/Subdivision and Grading Services Division, indicates significant deviation from the proposed grading

illustrated on the approved tentative tract map, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative tract map; or, if a final tract/parcel map has been recorded, a new tentative tract/parcel map or a site development permit application per Orange County Zoning Code Section 7-9-139 and 7-9-150. Additionally, a new environmental assessment and determination is required.

SC 2-11 Prior to the issuance of any grading permit, if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the affected property owners for off-site grading and/or drainage. The owner/applicant shall record said letters of consent for off-site drainage and/or cross-lot drainage prior to recordation of the tract/parcel map or prior to the issuance of any grading permit, whichever comes first.

SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-13 Prior to issuance of grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 2-14 Prior to the issuance of any grading or building permits, whichever comes first, the applicant shall provide, in accordance with criteria supply by EMA, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Monitoring Programs Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

Grading

AM 2-15 Multiple cuts and fills (approximately 2.1 million cubic yards) to achieve planned elevations and profiles, and associated access roadways shall be required.

AM 2-16 Remedial grading (approximately 6.8 million cubic yards) to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills shall be required. Back cut failure guidelines shall be provided to the Grading Services Division prior to issuance of grading permits.

AM 2-17 Removal (clean out) of all or major portions of the graben materials and softer alluvium and colluvium under most of the variable thickness fills shall be required.

AM 2-18 Installation of appropriate subdrain systems within natural drainage courses and within stability fills prior to fill placement shall be required.

AM 2-19 Adequate foundation and slab subgrade conditioning for the proposed development, including over excavation, capping and measures related to expansive soils shall be required.

AM 2-20 Achieving suitable surface gradients to preclude ponding anywhere on-site and to control water run-off via paved/closed drainage devices shall be required.

Compaction

AM 2-21 Wherever structural fills are to be placed, the upper 6 to 8 inches of the exposed subgrade (after stripping and/or over excavation/clean-out) shall first be scarified and reworked. In general, the dry density of the in-situ (native) material shall be at least 85 percent of maximum. In the event that lower densities are determined by field testing to exist, the depth of over excavation will be determined on-site, given due consideration to the geology of the exposed material, as well as its relative location. It is at present expected that typical depths of over excavation will be on the order of 4 to 5 feet.

AM 2-22 Fill shall be placed in lifts of 6 to 8 inches (loose) in thickness. Rocks exceeding 4 inches in maximum dimension are best not incorporated

within the upper fill zone (say 3 feet) where foundations and most utility systems are expected to be housed.

AM 2-23 In all fill areas where active gradients are steeper than 5:1 (horizontal:vertical), those surfaces shall be prepared to receive fill by excavating standard keyways and benches in a stair-step configuration.

AM 2-24 Any loosening of reworked or in-place (native material, consequent to weathering and/or passage of construction traffic, shall be made competent.

AM 2-25 Temporary fills, typically associated with access ramps built to accommodate grading equipment shall be subject to removal when their use is discontinued.

AM 2-26 The depths of excavation shall be subject to on-site monitoring by the Soil Engineer, normally during the actual removal operations. Any surface or subsurface obstructions, or questionable material encountered during grading, shall be brought immediately to the attention of the Soil Engineer, for his determination as to proper exposure, removal and/or processing as directed.

Material Selection

AM 2-27 After the site has been stripped of any debris, vegetation and organic soils, such exposed on-site shall be considered satisfactory for reuse in the construction of on-site fills, provided the organic content does not exceed 3% by volume. It is recommended that highly expansive soils not be placed within the upper 4 to 5 feet thick zone underlying final pad and street grades. More importantly, no such soil is to be placed (as backfill) within a horizontal distance equal to the wall height immediately behind retaining walls.

AM 2-28 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal off-site.

AM 2-29 All borrow sites shall be approved by the Soil Engineer/Geologist prior to on-site delivery. This will permit the timely allocation of such available materials for use on the project site.

Compaction Requirements

AM 2-30 Reworking/compaction shall include water addition or drying-out as needed, to bring the soils close to their optimum moisture content. All such reworked soils, placed as structural fills, shall be densified to achieve at least 90 percent relative compaction with reference to the laboratory

compaction standard. The optimum moisture content and maximum dry density, for each identified soil type, will be determined in the laboratory in accordance with ASTM Test Designation D1557.

Shrinkage/Subsidence

AM 2-31 For preliminary earthwork computations, an approximate (overall) shrinkage factor of 12 percent shall be required, for the existing site soils. The above value does not include allowance for stripping nor handling losses.

AM 2-32 Subsidence shall be assumed as 3/4 to 1-1/2 inches for grading design purposes.

Excavating Conditions

AM 2-33 Excavation of on-site soils shall be accomplished with standard heavy duty earthmoving or trenching equipment. Some hard cemented sandstone beds were encountered during the field exploration on portions of the site and some minor, isolated blasting may be required to remove these hard materials. If they are not rippable with conventional heavy duty earth moving equipment.

AM 2-34 Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5 days after exposure. Additional nuisance water (seepage) is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher site elevations as well as in cuts made late in the year. All nuisance water shall be accommodated in accordance with County requirements.

Expansion Potential

AM 2-35 On-site materials are considered to be moderately expansive, generally. Soils of high and low expansivity are expected to comprise less than 25% of the overall pad areas. The expansivity of the actual soils placed within structural areas shall be verified during grading, prior to construction.

Utility Trenching

AM 2-36 The typical walls of temporary construction trenches shall stand nearly vertical, with only minor sloughing, provided the total depth does not exceed 4 to 5 feet. Shoring of excavation walls and/of flattening of side slopes may be required, if greater depths are necessary.

AM 2-37 Trenches shall be located so as not to impair the bearing capacity nor settlement under planned foundations. As a guide, trenches shall be aligned perpendicular to foundations, and the Structural Engineer so informed to modify the foundation at the crossing, as needed. All other trenches shall observe a lateral off-set equal to their total depth.

AM 2-38 Existing soils shall be utilized for trench backfill, provided they are essentially free of organic materials and oversized materials (rock, gravel, etc. in excess of 1-inch maximum size, unless within an approved soil matrix). Alternately, select granular materials (sand equivalent of 30 or greater) may be imported as backfill. Compaction should be accomplished entirely by mechanical means, subject to on-site assessment during pipeline installation.

Surface Drainage

AM 2-39 Positive surface gradients shall be provided away from slope tops per approved grading plans and adjacent to the future buildings, so as to direct surface water run-off away from structural areas and toward suitable discharge facilities.

Sulphate Content

AM 2-40 The soils sulphate content shall be ascertained during the concluding stages of rough grading, and the type of cement to be used determined at that time.

Grading Control

AM 2-41 All grading and earthwork shall be subject to on-going testing and observation by the applicants geotechnical consultant, including engineers, engineering geologists and/or technicians.

Slabs-on-Grade

AM 2-42 Concrete slabs shall be founded on approved (reworked) in-place soils and/or on properly compacted fill. The subgrade shall be proof-rolled just prior to construction to provide a firm, unyielding surface, especially if the surface has been disturbed by the passage of time and/or exposure to construction traffic.

AM 2-43 Floor slabs shall be at least 4 inches thick. The Finished Floor Level should be at least 6 inches above highest adjacent exterior grade. Joints shall be provided.

AM 2-44 If flooring that would be affected by moisture is to be used, the slab shall be underlain by 2 inches of sand, with a 10-mil plastic sheet between the sand and the subgrade.

AM 2-45 Precautions in respect to expansive soils shall be taken.

Foundations

AM 2-46 The proposed structures shall be supported on conventional spread footings, supported into approved compacted fill and/or reworked native material.

Long Term Settlement

AM 2-47 The grading concept, as presently proposed, includes several areas where deep fill will result, exceeding 50 feet in depth. These soil masses may experience significant, but considered normal, settlements, with time, of 4 to 6 inches or more. Such downward movements can be tolerated by most improvements, provided these occur at a reasonably uniform rate and rather evenly over a well distributed area. However, the degrees and rates of settlement shall be analyzed during the final design phase.

Phasing of Earthwork

AM 2-48 Unstable Ground
Initial stability evaluations have determined that several natural slopes subject to grading are inherently unstable. Removals, therefore, shall be planned and carried out with care in order to minimize deep-seated, in-construction failures. Typically, statistically about 10 percent of back cuts for buttresses have the potential to fail during grading. Extra care, the use of segmented back-cuts, along with allowances for schedule and budget contingencies will further minimize the potential for back-cut failure during construction.

AM 2-49 Required Clean-Out Work
Prior to improving the gross stability of hillsides, clean-out work will be necessary along their lowest (toe) elevations. Whereas such selective removals are essential prior to placement of additional fill, this process can trigger undesired slippage if proper care is not taken. Therefore, selective unloading of the slide mass shall be required before stabilization can effectively begin.

AM 2-50 Slide Unloading
Where existing slope faces are marginally safe in their present condition, the higher portions of each such slide shall require removals toward the top, prior to clean-out, and subsequent loading at the toe.

Soils and Geology Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will result in 8.9 million cubic yards of total grading, compared to 11.5 million cubic yards of total grading for the approved project. Grading for the proposed project will take 10 months to complete compared to 18 months for the approved project. The proposed project will also result in 31 acres of less disturbance area.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	Although the proposed project will continue to have a significant impact on landform/topography, no new adverse impacts will occur.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

3. WATER/HYDROLOGY ANALYSIS

PROJECT IMPACTS

Implementation of the previous and proposed project will result in the introduction of impervious surfaces (streets, driveways, residential units) and will result in a decrease in the area available for stormwater percolation and a subsequent increase in stormflow runoff. Implementation of the approved project would result in substantially more landform modification than the current proposal for 299 units therefore, redirecting drainage throughout the site.

Post development drainage is proposed to be accommodated through a series of storm drains, catch basins and inlet/outlet structures designed to accommodate a 100 year storm event. The proposed storm drain facilities parallel to El Toro Road will join the existing dual 96-inch diameter CSP storm drain which currently crosses underneath El

Toro Road. The proposed Orange County Flood Control District facility J01 storm drain plans were approved and signed by the County of Orange on November 16, 1988. The storm drain facilities consist of extending the dual 96-inch CSP storm drain to connect with an open channel riprap facility and a 14-foot by 12-foot reinforced concrete box culvert (RCB) that will run underneath the proposed entry road to Saddleback Meadows.

The on-site private storm drain improvement plans were approved and signed by the County of Orange on November 15, 1988. All of the proposed storm drain system is to be constructed of reinforced concrete pipe (RCP) ranging in size from 18 inches to 48 inches. All hydraulic calculations and the related hydrology have been previously approved by the County of Orange. Minor updating of the hydrology might be needed in the future depending on input from the County during review of the 40-scale rough grading plans. Proposed drainage facilities are shown in the following table.

PROPOSED DRAINAGE FACILITY SUMMARY

Storm Drain	Size	Q25 cfs (Discharge	Q_{100} cfs (Discharge)	Outlet Location / Connector
A	27-48 inch	277	300	Aliso Creek
B	18-24 inch	68.2	--	Line "A"
E	30 inch	48.5	--	Line "A"
H	27 inch	41.2	--	Line "A"

Water Quality

On-site surface and groundwater quality has not been evaluated from an analytical constituent standpoint due to: 1) its location at the headwaters of Aliso Creek and Oso Creek, 2) the undeveloped nature of the project site and upstream areas, and 3) the lack of pollutant generation sources. Ongoing livestock grazing activities have resulted in continued contamination of the on-site watering ponds with cattle manure. All organic material will be removed during grading operations.

Discharge of increased and concentrated runoff volumes into on-site natural drainage courses would result in increased erosion and associated sedimentation, primarily due to the unstable condition of drainage course banks.

Urban runoff associated with proposed on-site streets, driveways and manufactured slopes would be directly discharged into on-site drainage courses ultimately discharged to Aliso and Oso Creeks and the Pacific Ocean. Urban runoff constitutes would typically include oil, grease, cleaning products, herbicides, pesticides and fertilizers. Project urban runoff would be subject to an National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Discharge Permit, issued by Regional Water

Quality Control Board (RWQCB). In addition, the proposed project is subject to the County's NPDES requirements.

Project related post-development urban runoff would incrementally impact the ability of Aliso Creek to recover from its currently impaired designation.

In comparison, the proposed project for 299 units would generate substantially reduced storm water runoff volumes and similar domestic water supply requirements, as compared to the approved project. Due to the enhanced habitat restoration and landform/contour grading provided with this alternative, temporary irrigation related water supply impacts are expected to be greater than the approved project with long term domestic supply impacts substantially less than the approved project. In addition, the proposed project would require less alteration of on-site natural drainages than the approved project, incrementally reducing the potential for increased urban runoff impacts.

Much of the discussion on pages 4-33 through 4-43 of SEIR 566 and Appendix E (Hydrology Study) in the Technical Appendices of Certified SEIR 566 remain appropriate for this alternative. Twelve (12) standard conditions/mitigation measures requiring compliance with the Master Plan of Drainage, NPDES, erosion control strategies, construction of site drainage systems and compliance with county and state water quality management standards will result in no significant effects to water/hydrology under this alternative.

Impact Significance Criteria

An impact is considered significant if:

A. There will be substantial and adverse increased inundation, sedimentation and/or damage from water forces to the subject property or downstream areas; the project will adversely affect the collection and conveyance of runoff and sediment. The design hydrologic standard is the 100 year storm event with an 85 percent (85%) confidence level.

B. Runoff from the completed project area would adversely impact the designated beneficial uses in the runoff receiving watershed, or would substantially impact Public Agency effects to improve any currently recognized conditions of water quality impairment.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the approved project would increase on-site storm flows by 17-54% over existing Q_{100} levels. Discharge of urban runoff, discharge of post development runoff into on-site natural drainage courses would result in increased erosion and sedimentation. Urban runoff would be directly discharged into on-site natural drainage

courses, resulting in impacts to downstream water quality in Aliso Creek and ultimately the Pacific Ocean.

CUMULATIVE IMPACTS

Implementation of the approved or the proposed project, in conjunction with related projects located within the watershed of both Aliso Creek and Oso Creek, would result in increased flows and increased urban runoff, ultimately discharging into the Pacific Ocean. Cumulative impacts to Oso Creek would also effect surface flows and water quality in San Juan Creek. These related projects are located within several jurisdictions, including the County of Orange, the Cities of Mission Viejo, Lake Forest, Aliso Viejo, Laguna Niguel, San Juan Capistrano, Dana Point and Laguna Beach, and Doheney State Park.

MITIGATION MEASURES

Project Design Features

PDF 3-1 A master drainage concept has been incorporated into the project design to mitigate hydrology impacts to existing OCPDS requirements and standards. The master drainage concept, shown in Exhibit 22 of SEIR 566, p. 4-40, and contained in its entirety in Appendix L of SEIR 566, proposes a series of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to control project drainage.

Standard County Conditions and Mitigation Measures

SC 3-2 Prior to the issuance of any grading permits the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. Prepare a drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities.

b. Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities.

SC 3-3 Prior to the issuance of any grading permits the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division:

a. Design and convey construction funds for surface drainage improvements; and

b. Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and

c. Dedicate the associated easements to the County of Orange, if determined necessary.

SC 3-4 Prior to the issuance of any certificates of use and occupancy, said improvements shall be constructed in a manner meeting the approval of the Manager, PFRD/Construction Division.

SC 3-5 Prior to the issuance of any grading permit, and if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the upstream and/or downstream property owners permitting drainage diversions and/or unnatural concentrations.

SC 3-6 Prior to issuance of any building permits, the applicant shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division, including payment of fees and the construction of the necessary facilities.

SC 3-7 Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering design and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

Water Quality

SC 3-8 Prior to issuance of building permits, or grading permits, whichever come first, permit applicant shall submit for approval of the Manager, PDS/Subdivision and Grading Services Division, a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on-site to control predictable pollutant runoff. This WQMP shall identify at a minimum the routine structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of the BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association, lessee, etc.); and, shall reference the location(s) of structural BMPs.

SC 3-9 Prior to the issuance of precise grading permits or building permits, whichever comes first, the applicant shall submit and obtain approval from

the Manager, PDS/Subdivision and Grading Services Division, of a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on-site to control predictable pollutant runoff. This WQMP shall identify, at a minimum, the routine, structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association shall reference the location(s) of structural BMPs.

Flood Plain Elevation

SC 3-10 Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.

Easements

SC 3-11 Prior to the issuance of any certificates of use and occupancy, the applicant shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, PDS/Subdivision and Grading Services Division, for review and approval. Further, a copy of the approved easement shall be furnished to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificate of use and occupancy.

Water/Hydrology Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will generate 160 acres of surface storm water runoff compared to 191 acres for the approved project. The proposed project will also result in less alteration of on-site natural drainages reducing potential for increased urban runoff.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	The conclusion of no unavoidably adverse water/hydrology impacts reached in Certified SEIR 566 remains appropriate for the proposed project.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

4. TRANSPORTATION AND CIRCULATION ANALYSIS

PROJECT IMPACTS

Project access will be off of El Toro Road; an emergency only access at Valley Vista Way will also be provided. The entry street will be designed as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median. The Collector cross-section should be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane.

Traffic Impact Modeling

The current modeling source for traffic projections in the study area is the Orange County Transportation Analysis Model (OCTAM), Version 2.5, South County Subarea (SCTM). The Year 2000 and 2020 daily forecasts were projected to include the project, therefore, Year 2000 and 2020 traffic conditions without the project involved subtracting project volumes from the SCTM model volumes.

The Year 2000 and 2020 peak hour forecasts were developed using the previously described daily forecasts, along with peak hour traffic count data collected at each analysis location. Future baseline ADT volumes are shown in SEIR 566. The approved project is projected to generate approximately 6,220 trip-ends per day with 345 vehicles per hour during the AM peak hour and 635 vehicles per hour during the PM peak hour.

Trip Distribution/Assignment

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the proximity to the regional freeway system, existing/future residential development, other commercial and community facilities. The directional orientation of traffic was determined by evaluating existing and proposed land uses within the community and the Master Plan of Arterial Highways (MPAH).

Existing plus project intersection ICU/LOS is shown in the following table.

EXISTING PLUS PROJECT ICU/LOS

Intersection	PEAK HOUR ICU		PEAK HOUR LOS	
	AM	PM	AM	PM
Santiago Canyon Road (NS) at:				
• Modjeska Canyon Road (EW)	0.87	0.61	D	B
• Ridgeline Road (EW)	0.82	0.60	D	A
El Toro Road (NS) at:				
• Live Oak Canyon Road (EW)	0.78	0.49	C	A
• Ridgeline Road (EW)	0.68	0.62	B	B
• Project Entrance (EW)	0.62	0.57	B	A
• Valley Vista Way (EW)	0.64	0.59	B	A
• Glenn Ranch Road (EW)	0.57	0.69	A	B
Saddleback Ranch Road (NS) at:				
• Glenn Ranch Road (EW)	0.32	0.33	A	A
Marguerite Parkway (NS) at:				
• El Toro Road (EW)	0.34	0.49	A	A
Portola Parkway (NS) at:				
• Glenn Ranch Road (EW)	0.57	0.46	A	A
• Foothill Transportation Corridor (EW)	0.40	0.58	A	A
• El Toro Road (EW)	0.41	0.50	A	A

Trip distribution for this study has been based upon near-term conditions, based upon those highway facilities which are in place. This assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distribution and proposed arterial highway and local street systems. The Projected ADT volumes along El Toro Road in the vicinity of the site do not exceed 30,000 vehicles per day. The projected ADT's along El Toro Road between the Foothill Transportation Corridor (SR-241) and Live Oak Canyon Road are well within the Level of Service "C" volumes for a Primary (four-lane divided) Arterial highway facility.

As shown in the above table, intersections in the vicinity of the site for the previous and proposed project would continue to operate at Level of Service "D" or better during peak hours. A traffic signal is projected to be warranted at the intersection of El Toro Road/Project Entrance for existing plus project traffic conditions.

Year 2000 intersection ICU/LOS projections with and without the project and with and without improvements are shown in Table 15 of the SEIR 566. As shown in that table, all intersections will operate at LOS D or better, except for the intersection of Portola Parkway at Foothill Transportation Corridor, which will operate at LOS E during morning peak hours for the with project/without improvements scenario. A traffic signal would be warranted at the intersection of Santiago Canyon Road at Modjeska Canyon Road for the Year 2000 without project traffic conditions.

Year 2020 intersection ICU/LOS projections with and without the project and with and without improvements are shown in Table 15a of the SEIR 566. As shown in Table 15a several intersections would operate at unacceptable levels of service in Year 2020 without improvements in place. With project improvements in place, all intersections would operate at acceptable levels of service. Improvements would include the ultimate widening of El Toro Road and Santiago Canyon Road to four through travel lanes (two in each direction).

Santiago Canyon Road Analysis

Pursuant to the County of Orange Growth Management Plan (GMP), segments of Santiago Canyon Road are required to function at a Level of Service "C" Capacity improvements along Santiago Canyon Road will be required in conjunction with future growth to achieve Level of Service "C". The Santiago Canyon Road Major Thoroughfare and Bridge Fee Program has been designed to provide up to $34 million in improvements to Santiago Canyon Road from Chapman Avenue to Live Oak Canyon Road. However, the March, 1994 Project Report for improvements to Santiago Canyon Road indicates that the total cost of improvements is approximately $52.3 million for a "limited project" scenario. To address the difference between the ultimate cost of $52.3 million and the fee program allocation of $34 million, the project must provide an additional contribution beyond the payment of normal fees based upon its traffic share. Santiago Canyon Road Project Share Analysis is shown in the following table.

SANTIAGO CANYON ROAD PROJECT SHARE ANALYSIS

Volume Component	Roadway Segment					
	Live Oak Cyn. Rd. to Ridgeline Rd.		Ridgeline Rd. to Modjeska Cyn. Rd.		North of Modjeska Cyn. Rd.	
	AM	PM	AM	PM	AM	PM
Existing Volume (two way)	1,478	1,276	1,640	1,441	1,650	1,375
Project Volume (two way)						
-Residential	40	49	38	49	40	49
-Commercial	3	13	4	10	2	7
Project Increases						
-Residential	2.7%	3.8%	2.2%	3.4%	2.4%	3.6%
-Commercial	0.2%	1.0%	0.2%	0.7%	0.1%	0.5%

In comparison, estimated average daily traffic generation volumes associated with the proposed project for 299 units would be approximately 3,820 trips per day, 2,400 ADT

less than the proposed project. In addition, AM/PM peak hour volumes would be reduced to approximately 42% of the approved project ADT. The resulting impacts to existing level of service values would be substantially less than identified in the Final SEIR for the proposed project.

The proposed 299-unit project will not have a commercial land use component, therefore, it will not have traffic associated with such use.

The discussion on pages 4-44 through 4-83 of SEIR 566 and Appendix F (Traffic Report) of the Certified Final EIR of the Technical Appendices remain appropriate for this project. Because of its reduction in traffic impacts from the recorded tract map and imposition of (41) Project Design Features (PDFs), Standard Conditions (SCs) and additional Mitigation Measures (AMS), the proposed project would not result in any additional negative impacts. Implementation of the proposed project would result in the same improvements to El Toro Road through the existing Road Fee programs, similar to the proposed project.

No significant unavoidable adverse traffic and circulation impacts would occur with the proposed project, following implementation of outlined mitigation measures.

Impact Significance Criteria

The impact evaluation in this analysis focuses on intersection capacity, and uses peak hour intersection capacity utilization (ICU) values to express level of service (LOS). For the year 2010 evaluation, the GMP requires an evaluation of intersections where the project impact is greater than one percent. Satisfactory intersection operation is expressed as LOS D or better (ICU values from 0.00 to 0.90). Therefore, a significant circulation impact would occur if the project caused any intersection to exceed LOS D.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Under existing plus project intersection ICU/LOS conditions, the surrounding circulation would continue to operate at acceptable levels of service. The appropriate tables are contained in the Certified SEIR 566.

Year 2000 intersection conditions, without mitigation measures, would exceed Level of Service "D" significance criteria at the following intersections:

- Santiago Canyon Road at Modjeska Canyon/ Ridgeline Road
- Portola Parkway at Foothill Transportation Corridor
- El Toro Road at Live Oak Canyon Road/Glenn Ranch Road
- Portola Parkway at Glenn Ranch Road

Year 2020 intersection conditions, without mitigation measures, would exceed Level of Service "D" significance criteria at the following intersections:

- Santiago Canyon Road at Modjeska Canyon Road

- Santiago Canyon Road at Ridgeline Road
- El Toro Road at Live Oak Canyon Road
- El Toro Road at Ridgeline Road
- El Toro Road at Project Entrance
- El Toro Road at Glenn Ranch Road
- El Toro Road at Valley Vista Way
- Saddleback Ranch Road at Glenn Ranch Road
- Marguerite Parkway at El Toro Road
- Portola Parkway at Glenn Ranch Road
- Portola Parkway at Foothill Transportation Corridor
- Portola Parkway at El Toro Road

CUMULATIVE IMPACTS

The OCTAM/SCTM Year 2000/2020 model accounts for all cumulative projects within the region which could affect future traffic conditions. Refer to Section 4.4.3 for a complete analysis of cumulative impacts.

MITIGATION MEASURES

Project Design Features

Primary project access will be off of El Toro Road with an emergency access at Valley Vista Way.

PDF 4-1 The on-site circulation system will accommodate project related traffic generation, including design of the entry street as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median. The entry's cross-section shall be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. Secondary emergency only access will be provided via a gated connection to existing Valley Vista Way. Minimum fire access roadway width of 28 feet shall be required.

PDF 4-2 The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane. The applicant shall provide a cash deposit for the design and construction of the traffic signal.

PDF 4-3 All weather access to the proposed water tank shall be provided by the applicant. This access shall be designed with a minimum 28 foot width and a maximum grade of 10%.

Standard County Conditions and Mitigation Measures

SC 4-4 Prior to the issuance of any building permits, the applicant shall participate in design, construction, and/or financing of the cost of a traffic signal in the project vicinity in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-5 Prior to the issuance of building permits, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Programs listed below, in a manner meeting the approval of the Manager, PFRD/Programs Division.

a. Foothill Circulation Phasing Program

b. Prior to recordation of a final tract map, the subdivider shall enter into an agreement with the County of Orange for participation in a fee program (if adopted by the Board of Supervisors) for implementation of the Foothill/Eastern Transportation Corridor. Said agreement shall provide that:

1. The fee shall be $158.00 per trip end times the County standard trip end generation rate for the type of development proposed, times the number of units (footage) proposed, or the fee payable under the program, whichever is less.

2. Subdivider's obligation to pay fees would arise only after the County establishes the fee program, prior to issuance of building permits.

3. Subdivider's obligation to pay the fee would be extinguished if the fee program were not established within three (3) years of the date of issuance of the first building permit for subject development.

4. Subdivider shall furnish surety bond, letter of credit, money or such other security approved by the Director, PFRDD, to assure payment of the fees related to subject development.

5. This condition shall be void if a trial court of competent jurisdiction, in a final judgement, or an appellate court, if the matter is appealed, sets aside a condition imposed by the County which was substantially the same as said condition.

c. El Toro Road

d. Santiago Canyon Road

SC 4-6 Building permit issuance shall be phased in accordance with the Foothill Circulation Phasing Plan (FCPP) Development Phasing Plan, and shall also be subject to any other Board of Supervisors approved growth management phasing plan pertaining to the timely provision of public services and facilities.

SC 4-7 Building permit issuance shall be phased in accordance with any Board of Supervisors approved Growth Management Phasing Plan pertaining to the timely provision of public services and facilities.

SC 4-8 Prior to the issuance of any grading permits, adequate sight distance shall be provided at all street intersections per Standard Plan 1117, in a manner meeting the approval of the Manager, PFRD/Programs Division. This includes any necessary revisions to the plan such as removing slopes or other encroachments from the limited use area.

SC 4-9 Prior to the issuance of any certificates of use and occupancy, the developer shall construct the approved internal circulation improvements in a manner meeting the approval of the Manager, PFRD/Construction Division. Further, a copy of the approved plans shall be furnished to the Manager, Building Inspection Services, prior to the issuance of any certificates of use and occupancy.

SC 4-10 When monuments exist which control the location of subdivisions, streets or highways, or provide survey control, the monuments shall be located and referenced prior to any street construction or relocation, and shall be reset after construction as required by Section 8771 of the Business and Professions Code, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.

SC 4-11 Prior to issuance of a building permit, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manager, PFRD/Programs Division. In addition, the applicant shall participate in the Santiago Canyon Road Safety Improvement Program.

SC 4-12 Prior to issuance of a building permit, the applicant shall design and construct roadway improvements for El Toro Road including a deceleration lane and a left turn pocket into the project entrance based on a 60 mph minimum design speed in a manner meeting the approval of the Manager, PFRD/Programs Division.

SC 4-13 Prior to issuance of a building permit, the applicant shall provide a cash deposit for the difference in cost of designing and constructing the roadway improvements condition.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, Transportation Planning.

AM 4-14 El Toro Road lane improvements needed at the Project Entrance to serve Year 2000 and 2020 conditions shall be completed in conjunction with development.

AM 4-15 Traffic signing/striping shall be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking shall be analyzed for the project site in conjunction with approval of the site plan.

AM 4-16 The project shall participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program. Both existing traffic patterns and SCTM traffic projections for Years 2000 and 2020 indicate the attraction of Glenn Ranch Road, Portola Parkway, and the Foothill Transportation Corridor (SR-241) for increased traffic volumes in the project study area. North of the Foothill Transportation Corridor, El Toro Road can accommodate projected traffic volumes with the proposed project on four travel lanes divided by a raised or striped median.

Transportation/Circulation Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will generate 3,820 ADT (Average Daily Trips), 2,400 ADT less than the approved project with 6,220 ADT.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	The conclusion of no unavoidably adverse transportation/circulation impacts reached in Certified SEIR 566 remains appropriate for the proposed project.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

5. AIR QUALITY ANALYSIS

PROJECT IMPACTS

The analysis methodology utilizes procedures outlined in the SCAQMD 1993 "CEQA Air Quality Handbook" where appropriate. In areas where more site-specific information was available beyond the default values recommended in the handbook, they were used to supplement the SCAQMD-suggested input parameters.

Vehicular emissions were calculated using the SCAQMD "MAAQI" computer model. Microscale emissions impacts were calculated using one generic run of the CALINE4 computer model adjusted for site-specific traffic volumes, travel speeds and emission data for intersections near Saddleback Meadows potentially affected by project-related traffic.

Many air quality impacts from dispersed mobile sources, i.e., the dominant pollution generators in the basin, often occur hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants

such as ozone. The incremental regional air quality impact of an individual source is generally immeasurably small.

In comparison, implementation of the proposed project for 299 units would result in a reduction in vehicular generated emissions as compared to the previously approved project, and incrementally reduced impacts to regional air quality. Temporary short-term emissions associated with grading and construction operations would decrease slightly over those associated with the previously project, as a result of the reduced grading requirements associated with the landform grading.

All of the discussion on pages 4-83 through 4-101 and Appendix G (Air Quality Assessment) of the SEIR 566 remain adequate for this alternative.

As with any large project located within the South Coast Air Basin, a non-attainment area, not projected to reach attainment until 2010 or later. The proposed project would result in unavoidable adverse cumulative air quality impacts.

Significance Impact Criteria

Criteria for determining the potential significance of new air quality impacts are based on Federal, state and local pollution standards/regulations. Impacts are considered potentially significant if project emissions meet any of the following criteria:

A. If the project is capable of an increase in daily emissions that exceeds the following SCAQMD recommended threshold criteria:

SCAQMD RECOMMENDED SIGNIFICANCE THRESHOLD CRITERIA

Pollutant	Operational Emissions	Construction Emissions
Reactive Organic Gases (ROG)	55 lbs/day	75 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Suspended Particulates (PM_{10})	150 lbs/day	150 lbs/day
Nitrogen Oxides (NO_x)	55 lbs/day	100 lbs/day
Sulphur Oxides (SO_x)	150 lbs/day	150 lbs/day

B. If project emissions increase ambient carbon monoxide levels from below the NAAQS/CAAQS to above these standards.

C. If project emissions result in the accedence of any State, Federal or local ambient standards.

These thresholds do not take into account several important considerations, namely:

1. Emission levels from one large project may exceed thresholds while those from numerous smaller projects with identical emissions might not, even though the regional impact is the same.

2. Large developments have a greater opportunity to effectively implement TCMs because of a greater potential participant pool in trip/VMT diversion programs.

3. Project-related emissions and their regional impact may already have been incorporated into regional growth projections.

4. Emissions generated in or near El Toro have essentially the same regional air quality impact if they were released in a nearby community. If the anticipated demand for residential use is not met at Saddleback Meadows but in some other community, the no-project alternative will have basically the same regional air quality impact.

Additional indicators should be used as screening criteria to evaluate the need for further analysis with respect to air quality. Whenever possible, the project should be evaluated in a quantitative analysis; otherwise a qualitative analysis is appropriate. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation;

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP;

- Project could generate vehicle trips that cause a CO hot spot;

- Project might have the potential to create or be subjected to objectionable odors;

- Project could have hazardous materials on site and could result in an accidental release of air toxic emissions;

- Project could emit an air toxic contaminant regulated by District rules or that is on a federal or state air toxic list;

- Project could involve disposal of hazardous waste;

- Project could be occupied by sensitive receptors near a facility that emits air toxics or near CO hot spots;

- Project could emit carcinogenic air contaminants that could pose a cancer risk.

Project-Related Sources of Potential Impact

Intensification of land uses in Orange County potentially impacts ambient air quality on two scales of motion. As cars drive throughout Southern California, the small incremental contribution to the basin air pollution burden from any single vehicle is added to that from several million other vehicles. The impact from this project, even if it generates a significant number of new vehicle trips, is very small on a regional scale. Basin-wide air quality impacts are, therefore, addressed in terms of project compatibility with regional air quality plans. If any given project or plan has been properly incorporated into basin-wide growth projections which are the basis for regional air quality/transportation planning, then the basin-wide impact of any proposed development is presumed, by definition, to be less than significant.

Locally, changes in the location of any collection of automotive sources, or changes in the number of vehicles or travel speeds may impact the microscale air quality around any given development site. Traffic increases not only contribute air pollutants in direct proportion to their cumulative percentage of traffic volume growth, but they may slow all existing traffic to slower, more inefficient travel speeds. The development traffic/air quality impact is thus potentially compounded.

Temporary construction activity emissions will occur during project buildout. Such emissions include on-site generation of dust and equipment exhaust, and off-site emissions from construction employee commuting and/or trucks delivering building materials. Because of their temporary nature, air quality impacts from construction have often been considered as individually less than significant. Also, construction activity emissions are difficult to quantify, since the exact type and amount of equipment that will be used or the acreage that may be disturbed on any given day in the future is not known with any reasonable certainty. The emphasis in environmental documents relative to construction activity emission impacts has therefore been to minimize the emissions as fully as possible through comprehensive mitigation even if the precise amount of emissions can not be precisely quantified.

Historical use of agricultural pesticides or herbicides on the project site may have left residues within the soil that may be lofted during site development. Such concern, however, are more common for cultivated fields where DDT or other chlorinated compounds were used than for open rangeland such as the project site.

Construction workers, and to some extent the public at large, could also be exposed to any spores, viruses or other materials in the soil released during site grading. Grading activities are not likely to create any unacceptable health impacts from biological organisms in that organisms such as Valley Fever are not endemic to the El Toro area. Thousands of acres of Orange County have been tilled for many years or graded for new development with minimal evidence of any health impacts from soil-borne pathogens.

Construction Activity Impacts

Dust is normally the primary concern during construction of new buildings and infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Because of such variations, regulatory agencies use one universal factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into mid-range average values.

The PM-10 fraction of fugitive dust emissions are predicted to be around 55 pounds per day per acre disturbed in the absence of any dust control measures being applied. Mandatory measures required by South Coast AQMD Rule 403 (Fugitive Dust) are generally assumed to reduce this rate by 50%. Average daily PM-10 emissions during site grading and other disturbance are stated in the SCAQMD Handbook to be 26.4 pounds/ acre. Enhanced dust control procedures such as continual soil wetting, use of supplemental binders, early paving, etc. can theoretically achieve a 90% PM-10 control efficiency, or around 5.3 pounds per day per acre.

With "normal" dust control procedures, daily PM-10 emissions during construction of any individual project would exceed the SCAQMD emissions significance threshold of 150 pounds per day if more than 5.7 acres (150 lb □ 26.4 lb/acre = 5.7 acres) were under simultaneous disturbance. With assumed maximum achievable dust control, up to 28.4 acres (150 □ 5.7 = 28.4) could be under simultaneous disturbance.

The proposed project would be mass graded in one phase, with a total area of disturbance of 211 acres. Project development would exceed the PM-10 emissions significance threshold if a very substantial fraction of the project area were under simultaneous construction. It is highly doubtful, however, that heavy equipment operations will cover more than 25 acres because it would take an armada of equipment moving furiously to cover that much ground on any given day. It is possible, however, that more than 5.7 acres may be under simultaneous disturbance as the significance threshold for standard dust abatement. Enhanced dust control procedures thus need to be implemented during construction. With an effective dust control program implemented during construction, PM-10 impacts can be maintained at a less-than-significant level.

In addition to the fine particulates that remain suspended in the air semi-indefinitely, soil disturbance during construction may release considerable amounts of larger particles that have short atmospheric residence times. These larger particulates are generally inert silicates that are readily filtered out in the upper respiratory tract. They therefore have no adverse health effects. They may, however, create a soiling nuisance as they settle out on parked cars, landscaping foliage or other horizontal surfaces. Clouds of such dust may also locally impair visibility. Soiling nuisance at St. Michael's Abbey

during daytime on-shore flow or in Hidden Hills during nocturnal drainage winds is therefore a possible concern that further prompts the use of efficient dust control.

It is through these larger particulates that the public is aware of a dust problem in a construction area rather than through PM-10. Because such large particles are more readily lofted by turbulence during strong winds, extra dust control or cessation of soil disturbance activities is recommended when wind speeds exceed a heavy particulate lofting threshold of around 25 mph.

Construction also entails use of internal combustion engines to power on-road trucks and off-road mobile, semi-mobile and semi-stationary equipment. Such sources are mainly diesel-powered and are poorly regulated in terms of allowable emission levels. Off-road sources are sometimes not well maintained because there is no regulatory mechanism to enforce efficient combustion as there is for on-road sources. The SCAQMD has calculated the total area under construction that would cause the significance thresholds to be exceeded from construction-related equipment combustion emissions. For single family residences, the threshold is 1.3 million square feet of gross floor area (SCAQMD Handbook, Table 6-2). For 705 units even at 2,630 square feet per unit, total improved footage from simultaneous construction of the entire project will be less than the stated threshold. With the use of a comprehensive dust control program, construction activity air quality impacts in the project vicinity can be maintained at less than significant levels.

Construction activities are concentrated at the construction site, but they also spill over into the adjacent community. Spill-over may be physical spillage, or it may be from off-site congestion effects. Vehicles may track dirt off-site, lane closures may create congestion on public roadways and construction worker vehicles and supply trucks may compete with the general public for sometimes inadequate roadway capacity. Trucks may be left idling near off-site sensitive receptors while waiting to load or unload. Each of these small impacts nevertheless may be cumulatively significant when spread over several years of project area buildout. As with the on-site impacts, a heightened level of impact mitigation will need to be utilized to maintain an overall tolerable level of impact from site activity construction. Housekeeping and construction activity management procedures are identified in the impact mitigation discussion relative to "spill-over" minimization.

Mobile Source Impacts

The bulk of the proposed project's impact will derive from the approximately 5,410 daily trips that will be generated at full site buildout. At a typical trip length of around 9 miles per trip, project implementation would add around 50,000 vehicle miles traveled (VMT) to the basin-wide mobile source emissions burden.

The emissions associated with project buildout can be readily calculated using the SCAQMD's MAAQI computer model. Emissions from project-related travel were calculated for a buildout year of 1997 as the earliest likely project completion year. The

results of these calculations are summarized in the following table. The computer output from the emissions model is contained in Appendix G of this document.

PROJECT-RELATED OPERATIONAL EMISSIONS (POUNDS/DAY)

Land Use	CO	ROG	NO_x	SO_x	PM-10
750 D.U. (Mfg. Housing	1311.8	107.7	149.0	10.3	15.2
20 KSF Commercial	397.3	34.0	43.1	3.2	5.1
Total	1709.1	141.7	192.1	13.5	20.3
SCAQMD	550.0				
Proj. Share of Threshold	311%	55.0	55.0	150.0	150.0
		258%	349%	9%	14%

Source: MAAQI Computer Model (output in Appendix)

- Assuming a 1998 buildout.

- Stationary source emissions are slightly over predicted because project size was artificially modified upward to force MAAQI model trip projections to match the project traffic study forecasts.

Mobile Source Emissions

As shown in Table 19, mobile source emissions for the three primary exhaust pollutants (ROG, CO and NO_x) exceed the SCAQMD significance threshold by a wide margin. This conclusion is generally consistent with the SCAQMD Handbook ... which, in Table 6-2, states that single family residential projects of 166 units or more may have a significant environmental impact. Although the SCAQMD Air Quality Handbook states strongly that such emission levels will have a significant impact on the environment, that finding is not necessarily binding. The SCAQMD is only an advisory agency on this project, such that the Lead Agency must evaluate whether there will actually be a measurable degradation of the regional air quality environment resulting from project implementation. While the proposed project would cause the suggested AQMD emissions threshold to be exceeded by a wide margin, several considerations may mitigate against considering the resulting air quality impact as individually significant as follows:

1. Similar emissions would result from development of the same project in an adjacent jurisdiction or elsewhere in Orange County.

2. The project is consistent with growth assumptions that were used for regional emissions forecasts in the AQMP. The AQMP forecasts regional

attainment of the federal ozone standard by 2010 as long as the rate of predicted regional growth is not exceeded. The Saddleback Meadows project is only a minute part of predicted Orange County growth.

3. The transportation infrastructure is in place to efficiently service the site with good access to multiple transportation modes.

4. The project is located near the Foothill Transportation Corridor that provides good linkage between the Orange County concentrated employment centers and the project site.

The above considerations would allow for the Lead Agency to find that the air quality impact is individually less than significant despite the considerable emissions magnitude. If the emissions total alone were to be judged as sufficient evidence for a finding of significance, then the above considerations should be incorporated into a statement of overriding consideration.

Relative to a finding of (in)significance for the mobile source emissions, it should also be noted that the calculations do not take into account mandatory conversion of the basin travel fleet to methanol or a similar "clean" fuel. Clean fuel market penetration is mandated to be 25 percent by 1997 and then rise steadily into the early 21st Century. Zero emissions vehicle (ZEV) availability is also currently mandated under state law by the end of this decade with accelerated market penetration expected in the first decade of the next century. The assumption of 100 percent use of gasoline and diesel fuel in the analysis thus overstates project regional air quality impacts. However, independent of any reason to reduce the stated burden, traffic from all future growth will contribute significantly to the sub-regional and regional air pollution burden, and, therefore, creates a cumulatively significant air quality impact, regardless of project size. This is a function of growth and the dependence upon the single occupant fossil-fueled vehicle as the primary means of transportation. All growth delays the ultimate attainment of regional clean air standards. This project, within a loose definition of "cumulative projects", would contribute to that impediment to clean air. Regardless of any finding of individual impact significance, the proposed Saddleback Meadows development should be identified as having a cumulatively significant air quality impact.

Because vehicular sources from all combined growth will contribute so substantially to regional emissions total, it correspondingly represents a significant opportunity to reduce that contribution. A reasonable reduction percentage through the implementation of an aggressive transportation system management (TSM) will achieve a measurable reduction when applied to such a large baseline emissions level. If the air quality impact from mobile source emissions is to be maintained at an acceptable level, a viable TSM program is an imperative strategy toward achieving that end.

Orange County has been extensively involved in trip/VMT reduction programs through the trip reduction ordinances (TRO) and various geographically focused transportation management programs. Several countywide programs that monitor city and county

response to AQMP TCMs have shown that the county collectively has exceeded the 1994 trip reduction target of the 1991 AQMP when the county is allocated its fair share of the basin-wide reduction target. While progress toward reducing the dependence on the single occupant vehicle (SOV) is slow, continued progress toward higher average vehicle ridership (AVR) is to be expected during the Saddleback Meadows buildout time frame.

While regional mobile source emissions do not have a very direct impact on local El Toro air quality, the incremental addition of growth-related traffic over a wide area may change microscale air quality distributions. To determine whether future traffic changes will create an adverse air quality impact, a microscale air quality analysis was performed for the traffic analysis grid around the project site. A screening procedure based on the California line source roadway dispersion model CALINE4 was run for a number of traffic scenarios to evaluate any changes due to changes in patterns of growth anticipated as part of the Saddleback Meadows development.

The model combines the results of the traffic analysis with very restrictive dispersion conditions in order to generate a worst-case impact assessment. Carbon monoxide (CO) was used as an indicator of any "hot spot" potential because CO, unlike regional pollutants such as ozone, is directly related to source activity immediately adjacent to the receptor (a primary, unreacted pollutant impact). Calculations were made for an hourly exposure in the immediate vicinity of 10 roadway intersections where baseline traffic volumes were calculated in the traffic analysis.

The results of the microscale impact analysis are summarized in the following table. The values in the following table must be added to any non-local background CO distribution. If one assumes that the maximum level measured near the El Toro and Jeronimo Roads intersection is the regional background, and that the worst-case, one-hour level of 6 ppm observed in 1995 occurs at the exact same hour as any worst-case project impact, then it would take a local contribution of 14 ppm to threaten the one-hour California CO standard of 20 ppm. Microscale hourly CO levels, both without and with the proposed project are forecast to be below the 14 ppm threshold. Combined CO concentrations will thus remain below the California 1-hour CO standard of 20 ppm, and far below the federal standard of 35 ppm.

MICROSCALE AIR QUALITY IMPACT ANALYSIS

(Hourly CO concentration [ppm] above non-local background at edge of each indicated intersection).

	– Existing –		2020			
Intersection	Base	+Proj.	No. Proj.	Mitig.	W/Proj.	Miti.
Portola Pkwy/Glenn Ranch Road	3.2	3.3	6.5	3.7	6.5	3.8
El Toro Road/Valley Vista Way	1.7	2.4	1.1	0.6	1.2	0.6
Portola Pkwy/El Toro Road	2.9	3.0	5.3	3.0	5.3	3.0
El Toro Road/Glenn Ranch Road	1.7	1.9	1.7	0.4	1.9	0.8
El Toro Road/Live Oak Canyon Road	2.9	3.0	2.1	0.9	2.2	1.0
Santiago Canyon Road/Modjeska Canyon Road	4.7	4.9	2.6	0.9	2.6	0.9
El Toro Road/Ridgeline Road South	2.1	2.3	1.1	0.5	1.5	1.0
Portola Pkwy/Foothill T.C.	2.4	2.4	5.7	2.5	5.7	2.5
Marguerite Pkwy/El Toro Road	1.7	1.9	1.7	1.3	2.0	1.5
Santiago Canyon Road/Ridgeline Road North	2.6	4.5	2.5	1.1	2.6	1.1
Saddleback Ranch Road/Glenn Ranch Road	0.8	0.8	0.9	0.9	1.0	1.2
El Toro Road/Project Entrance	—	2.4	–	—	1.2	0.6

Source: Screening Procedure based upon CALINE4 Model; Caltrans Air Quality Technical Analysis Notes (AQTAN), 1988.

Project-related CO contributions are seen in Table 20 to range from 0.0 to 1.9 ppm. The only increase exceeding 1 ppm occurs at El Toro Road and Ridgeline, where a change in level of service increases queuing times for all vehicles. The average increase at all intersections is 0.2 ppm compared to the most stringent standard of 20 ppm (1.0 percent average change). There are not now, nor will there be with the project, any microscale air pollution "hot spots" at any project area intersections.

Increased area-wide traffic and associated congestion is offset by continued improvements in vehicular CO emissions per average vehicle. Future (2020) CO levels with the proposed project and with anticipated intersection improvements are generally less than in 1997. At no intersection are 2020 "with project" levels greater than in 1997 by no more than 1.0 ppm. SCAQMD Rule 1303 identifies a CO increment of less than 5 percent of the hourly standard of 20 ppm, i.e., 1.0 ppm, to be a de minimis increment requiring no further impact analysis. The findings of the microscale impact assessment are therefore that CO levels under theoretical worst-case conditions do not exceed clean air standards and the Saddleback meadows traffic will add an insignificant amount to the total CO exposure. Microscale impacts are less than significant.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the previous and proposed project prior to the application of mitigation measures would result in significant impacts to short term dust (PM-10) generation, and operational emissions. Potentially significant impacts were identified during construction from dust (PM-10) generated by surface disturbance and from construction equipment operations. Operational emissions will be in excess of thresholds of significance for regionally significant pollutants as identified by the South Coast AQMD. As a minimum, vehicular emissions from project-related traffic should be identified as having a cumulatively significant air quality impact.

CUMULATIVE IMPACTS

Cumulative impacts are evaluated in Section 4.5.3 of SEIR 566. Regardless of any finding of individual impact significance, the proposed project would have an unavoidable adverse cumulative impact on air quality because of the site's location within the South Coast Air Basin.

MITIGATION MEASURES

A number of mitigations, as related to the project, are already incorporated into rules, regulations or ordinances. They are included in the following list of mitigation measures in that compliance mitigates a potentially adverse impact. They are not discretionary measures, however, which a developer can implement or the County of Orange can additionally require since compliance is already assumed in the impact analysis.

Project Design Features

No air quality PDF's have been proposed.

Standard Conditions and Mitigation Measures

SC 5-1 Grading and excavation shall be halted during periods of high winds meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. According to AQP Measure F-4, high winds are defined

as 25 mph or greater. This level occurs only under unusually extreme conditions, such as Santa Ana wind conditions. Notations in the above format, included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

SC 5-2 Prior to issuance of grading permits, the project applicant shall demonstrate measures to ensure compliance with SCAQMD Rule 403, and shall identify the dust suppression measures, such as regular watering, which shall be implemented to reduce emissions during construction and grading in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. This will help reduce the short-term impacts from particles which could result in nuisances that are prohibited by Rule 403.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations:

AM 5-3 As previously noted, no credit was taken for mobile source emissions reductions either from technology improvements (reformulated gasoline, alternative fuels and/or electric cars), nor from transportation behavior modification in response to programs such as South Coast AQMD Reg. XV or by the trip reduction programs. These programs will mitigate the identified significant growth-related cumulative air quality impact to some extent. Because the projected effectiveness of such programs and because the time frame for technology development is uncertain, the degree of possible mitigation can not be quantified with certainty. Similarly, the buildout date for Saddleback Meadows will depend on economic forces that can not be predicted. The following discussion structures the recommended mitigation as comprehensively as possible, but quantification of mitigation effectiveness is speculative at currently known levels of detail.

AM 5-4 Contractors will comply with SCAQMD Rule 403.

AM 5-5 Contractors will utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and will wash or sweep the construction access points at El Toro Road on a routine basis on a frequency specified by the County of Orange as well as whenever dirt is visible more than 50 feet from the access point independent of the routine clean-up schedule.

AM 5-6 Trucks hauling dirt on public roads to and from the site will be covered or will maintain a six inch differential between the maximum height of any

hauled material and the top of the haul trailer. Haul truck drivers will water the load prior to leaving the site to prevent soil loss during transport.

AM 5-7 Construction management procedures required by the County of Orange and other jurisdictions shall be implemented. Contractor personnel responsible for supervision and the appropriate actions to be taken for the following measures shall be identified:

- Cessation of activities during a Stage-2 smog episode. Call 1-800-242-4022 for the daily forecast.
- Truck routes and schedules for receipt of materials shall be coordinated with County of Orange staff.
- Where feasible, on-road vehicles and off-road equipment shall be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes.

AM 5-8 Graded surfaces used for off-road parking, materials lay-down or awaiting future construction shall be stabilized for dust control as needed. Frequently accessed unpaved areas shall be paved as early as possible to minimize dirt trackout to public rights of way.

AM 5-9 Equipment will be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and use low-sulfur fuel as required by SCAQMD regulation.

Flag persons and appropriate traffic control devices will be used as needed to minimize construction activity interference with off-site traffic.

AM 5-11 Implementation of the above measures is expected to maintain construction activity air quality impacts at less than significant levels.

Operational Activities:

- Traffic flow at the project access will be maintained at acceptable levels of service through mitigation measures identified in the project traffic study.
- 220v electric power for future use to charge electric-powered vehicles will be made available in homeowner garages.

AM 5-12 Emissions calculations and the corresponding ambient air quality impact assessment for project-related construction and Saddleback Meadows operations presumed compliance with SCAQMD rules regarding dust

control. The potential for additional emissions reduction beyond the mandatory requirements of existing rules and regulations was evaluated based on Appendix 11 of the SCAQMD Air Quality Handbook which quantifies reduction potential of a variety of project construction and operation emissions control measures.

Dust emissions can be controlled from their 50 percent control assumed for Rule 403 compliance by an additional 50-80 percent of the uncontrolled fraction. The net effective dust control level is therefore 75-90 percent.

Unless the entire project site is under simultaneous massive grading, attaining the optimum level of dust control will maintain dust impacts at less than significant levels. Operational emissions reduction from mobile sources of 5 percent of their non-TCM implementation level can not reduce the substantial emission level to less than the SCAQMD advisory level significance thresholds. A number of secondary considerations were identified, however, that would either allow for a finding of an individually less than significant air quality impact.

Air Quality Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	Yes	The proposed project will result in reduced vehicular generated emissions, thus decreasing regional air quality impacts.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will result in a lower 299 du based emission generation. The proposed project will also have less short-term impacts associated with 8.9 million cubic yards of total grading compared to 11.5 million cubic yards for the approved project.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	Although the proposed project will continue to have a significant impact on air quality, no new adverse impacts will occur.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

6. NOISE ANALYSIS

PROJECT IMPACTS

Three noise concerns are typically identified with land use intensification such as that of the previous or proposed project. Construction activities, especially heavy equipment, will create short-term noise increases near the project site. Upon completion, project-related traffic will cause an incremental increase in area-wide noise levels throughout the El Toro area. Since, however, the number of trips generated by this small housing project is limited, the impact of ambient noise on the project site, rather than project traffic noise impacts on the rest of the community, is the important noise environment concern.

Construction Noise Impacts

Temporary construction noise impacts will vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by site clearing and grading, then by foundation construction, and finally for finish construction. The earth-moving (grading) activities are anticipated to be the noisiest sources during construction with equipment noise ranging from 75 to 90 dB(A) at 50 feet from the source.

Spherically radiating point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. The quieter construction noise sources will, therefore, drop below 60 dB by about 300 feet from the source while the loudest sources might still be detectable above the local background beyond 1,000' from the construction area. With hilly topography in the project vicinity, the terrain shielding effects will limit the "noise envelope" around each construction site to considerably less than its theoretical maximum.

Construction noise sources are not strictly relatable to a noise standard because they occur only during selected times and the source strength varies sharply with time. The penalty associated with noise disturbance during quiet hours and the nuisance factor accompanying such disturbance usually leads to time limits on grading activities imposed as conditions on grading permits. The weekday (including Saturday) hours from 7 a.m. to 8 p.m. are the times allowed in the Orange County Noise Ordinance for construction or grading. Division 6 (Sec. 4-6-1, et seq.) of the County Code also contains standard requirements related to the distance separation between construction activities and any occupied dwellings. EMA's "Standard Condition for Approval" N10 requires:

1. All powered equipment operating within 1,000 feet of a dwelling must have a properly operating and maintained muffler.

2. Stockpiling and staging activities must be located as far as practicable from dwellings.

Construction activities in areas of noise-sensitive biotic habitats such as coastal sage scrub containing gnatcatchers may affect bird behavior. Little actual evidence of noise effects on gnatcatchers has been documented, but many wildlife management agencies believe such effects exist. In San Diego County, a standard of 60 dB Leq (one hour average) derived from studies on least Bells Vireo has been applied to gnatcatchers. Use of this standard ignores the fact that a large number of successful breeding pairs have been found directly under the take-off end of major airport runways or next to freeways where peak hourly noise levels reach almost 80 dB. Many San Diego County grading projects have nevertheless been conditioned to avoid the breeding season for possibly noise-sensitive birds, or to erect temporary berms or other buffers to reduce avian noise exposure if seasonal avoidance is not practical.

Development-Related Vehicular Noise Impacts

Long term noise concerns from the increased urbanization of the project area center primarily on mobile source emissions surrounding the project site. These concerns were addressed using the California specific vehicle noise curves (CALVENO) in the federal highway noise prediction model (FHWA-RD-77-108) in a computerized version of the model developed by Caltrans. The model calculates the Leq noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers.

Project-related traffic may incrementally contribute to the noise exposure of off-site receiver locations. Of the 3780 daily project-generated trips, 75% will travel southwestward on El Toro Road, while the other 25% will turn right at El Toro Road to travel inland. At each subsequent turning opportunity, fractions of each traffic stream will split into different directions and thus dilute any off-site project traffic noise impact. The CNEL at 100 feet from area roadways for various scenarios is shown in the following table.

As shown in the following table, Valley Vista Way and Glenn Ranch Road would experience noise increases exceeding 2 dB noise level increases of 1 dB or greater are considered distinguishable. However, as shown in the table on page 59, the 65 dB CNEL contour will remain within 50 feet of the roadway centerline when project traffic noise is superimposed upon existing noise levels. This offsets any degree of noise impact occurring on these roadways. It should also be noted that in areas of concentrated traffic, such as at the project area, the high noise levels already experienced will substantially mask most project noise contribution. The project is too limited in scope to create a discernible change in off-site traffic noise levels. Noise impact on the ambient acoustic environment is judged to be less than significant.

CNEL (dB[A]) at 100' to CENTERLINE

Link	Existing	Exist. + Project	2000 No Project	2000 W/Project	2020 Cumul.
Santiago Canyon Road:					
• N. of Modjeska Canyon Road	65	65	65	65	67
• Modjeska Canyon Rd. to Ridgeline	65	65	65	66	67
• Ridgeline Rd. to Live Oak Cyn. Rd.	63	64	65	66	67
Modjeska Canyon Road:	53	54	55	55	55
• East of Santiago Cyn. Rd.					
El Toro Road:					
• Ridgeline Road to Project	65	66	65	66	68
• Project to Valley Vista	65	66	65	67	68
• Valley Vista - Glenn Ranch	65	66	65	66	68
• Glenn Ranch Rd. to SR-241	66	66	66	67	68
• SR-241 to Santa Margarita Parkway	66	66	66	67	68
• Marguerite Pkwy to Santa Marg. Pkwy	65	65	66	66	68
• West of Santa Margarita Parkway	67	67	67	67	69
Portola Parkway:					
• North of SR-241	67	67	69	69	71
Santa Margarita Parkway:					
• SR-241 to El Toro Road	66	67	70	70	72
• South of El Toro Road	68	68	69	69	70
Ridgeline Road:					
• Santiago Cyn Rd to Saddleback Ranch	56	57	60	60	61
• Saddleback Ranch Rd. to El Toro Rd	56	57	59	80	60
Saddleback Ranch Road:					
• Ridgeline Rd. to Glenn Ranch Road	61	61	63	63	64
Glenn Ranch Road:					
• Portola Pkwy to Saddleback Rnch Rd	60	62	66	66	68
• Saddleback Ranch Rd. to El Toro Rd	59	61	63	64	67
Live Oak Canyon Road:					
• East of El Toro Road	60	61	62	62	63
Valley Vista Way:					
• East of El Toro Road	53	57	57	59	59
Marguerite Parkway:					

Link	Existing	Exist. + Project	2000 No Project	2000 W/Project	2020 Cumul.
• South of El Toro Road	64	64	67	67	70
Project Access Road:					
• East of El Toro Road	N/A	59	N/A	61	61

N/A = no data available

DISTANCE FROM CENTERLINE TO 65 dB CNEL CONTOUR (feet)

Link	Existing	Exist. + Project	2000 No Project	2000 W/Project	2020 Cumul.
Santiago Canyon Road:					
• N. of Modjeska Canyon Road	100	105	100	105	140
• Modjeska Canyon Rd. to Ridgeline	100	105	100	110	135
• Ridgeline Rd. to Live Oak Cyn. Rd.	80	85	105	110	130
Modjeska Canyon Road:					
• East of Santiago Cyn. Rd.	<50	<50	<50	<50	<50
El Toro Road:					
• Ridgeline Road to Project	100	110	105	115	155
• Project to Valley Vista	110	120	105	122	165
• Valley Vista - Glenn Ranch	100	120	105	125	165
• Glenn Ranch Rd. to SR-241	110	115	120	130	165
• SR-241 to Santa Margarita Parkway	110	115	120	130	165
• Marguerite Pkwy to Santa Marg. Pkwy	100	100	110	120	165
• West of Santa Margarita Parkway	135	140	140	145	180
Portola Parkway:					
• North of SR-241	130	135	190	195	240
Santa Margarita Parkway:					
• SR-241 to El Toro Road	125	125	230	230	295
• South of El Toro Road	150	150	175	175	220
Ridgeline Road:					
• Santiago Cyn Rd to Saddleback Rnch Rd	<50	<50	<50	<50	55
• Saddleback Ranch Rd. to El Toro Rd	<50	<50	<50	<50	50
Saddleback Ranch Road:					
• Ridgeline Rd. to Glenn Ranch Road	55	55	75	75	90
Glenn Ranch Road:					
• Portola Parkway to Saddleback	<50	60	110	120	160

Ranch • Saddleback Ranch Rd. to El Toro Rd	<50	50	70	80	135
Live Oak Canyon Road: • East of El Toro Road	<50	50	85	65	75
Valley Vista Way: • East of El Toro Road	<50	<50	<50	<50	<50
Marguerite Parkway: • South of El Toro Road	90	95	130	135	215
Project Access Road: • East of El Toro Road	N/A	<50	N/A	<50	50

N/A = no data available Source: FHWA-RD-77-108 (Calveno mod.)

The roadway that could affect project on-site noise exposure is El Toro Road. At the maximally exposed lot at around 400 feet from El Toro Road, the traffic noise level will be 63.5 dB CNEL at area buildout. Inclusion of a 60 dB CNEL aircraft contribution increases the noise exposure to 65.0 dB CNEL at the nearest property line. This just meets the County exterior noise standards and requires no extensive noise mitigation. This calculation assumes a semi-infinite line of sight to El Toro Road. Terrain irregularities will reduce the actual noise exposure to well below the worst-case maximum. There, is, therefore, no required exterior noise mitigation because of adequate setback from El Toro Road.

Mitigation in the form of exterior to interior noise attenuation will be required to meet the 45 dB CNEL interior standard for all units within the development since a 62 dB CNEL aircraft noise contour will cover the site as long as El Toro MCAS operations occur. Meeting the interior standard requires the option to close the window. Such ability, in turn, requires that there is supplemental mechanical ventilation to replace the natural draft eliminated by such closure. For new homes in inland valleys of Orange County, air conditioning is normally a standard feature meeting this requirement.

Noise reduction of 20 dB is normally attainable with closed windows, which will reduce any aircraft-related CNEL from 62 to 42 dB. As previously noted, however, CNEL is not the best predictor of noise annoyance due to single event phenomena such as individual overflights. Measured peak noise levels from helicopter operations were 86.5 dB in the center of the project site. A comparable level would likely occur from El Toro jet aircraft operations. A 20 dB attenuation would create a 65+ dB single event level that may be annoying to occupants even with windows closed. Most new developments within the fringes of the El Toro noise impact envelope thus have been built with acoustically enhanced windows.

Use of windows rated with a sound transmission class (STC) of 25 or better is recommended to reduce noise annoyance potential from single events. Such windows reduce single event noise, reduce vibration response (rattle) to aircraft noise often found in single-pane windows and are more energy efficient.

Residential activities may affect adjacent noise-sensitive land uses such as contemplative religious facilities. These facilities are, however, already exposed to single event aircraft noise that is much louder than a distant barking dog, lawnmower or auto horn associated with project residential use. The combination of irregular terrain, distance buffering and normally quiet residential activities are not expected to create a significant noise impact on any adjacent abbey or monastery uses.

In comparison, the proposed project for 299 units still has a number of noise sensitive land uses located in the vicinity of the project site including, St. Michael's Abbey, Ramakrishna Monastery, O'Neill Regional Park and residential land uses. Since the site currently contains no noise generating uses, development of 299 single-family residential dwelling units would result in an increase in noise levels emanating from the project site. This change in noise levels, would be less than the noise expected to be generated by the approved project and could be perceived to be intrusive to surrounding land uses. Noise impacts to St. Michael's Abbey would be incrementally reduced under the proposed project, as compared to the approved project, as a result of relocation of the lots in close proximity to the Abbey on the north side of the spine road and the intervening topography that would be created by the landform grading. The proposed project extends the limits of the upper portion spine road further to the west than the approved project, resulting in residential lots being located within 600 feet of the eastern Abbey property boundary. These noise impacts would be offset by the buffering effects of the landform grading proposed to screen views of the site from surrounding land uses. Impacts to the Ramakrishna Monastery, adjacent residential land uses and O'Neill Regional Park would be substantially reduced in comparison to those created by the approved project.

All of the discussion on pages 4-101 through 4-118 of Certified SEIR 566 and Appendix H (Acoustical Analysis) remain appropriate for the proposed project. The 14 mitigation measures in Certified SEIR 566 remain adequate to effectively attenuate noise impacts.

No significant unavoidable adverse impacts to noise would occur with implementation of the proposed project.

Impact Significance Criteria

According to CEQA guidelines, a significant noise impact is one that substantially increases the ambient noise levels for adjoining or nearby sensitive receptors. For purposes of community noise assessment, changes in noise levels of three dB or greater are typically identified as significant, while changes of less than one dB are not discernable. In the one dB to three dB range, residents sensitive to noise may perceive a slight change.

Transportation related noise standards have been established for noise sensitive land use areas (e.g., residences, schools, hospitals, churches, etc.) in the Orange County Noise Element. These standards are 65 dB CNEL for exterior noise sensitive areas and 45 dB CNEL for interior areas.

Thus, a noise impact will be considered potentially significant if the project results in a noise level increase of greater than three dB, and if that increase, or a lesser increase, causes the County noise standard of 65 dB CNEL to be exceeded.

A significant noise impact would occur if residential units are located within the MCAS El Toro 65 dB CNEL contour or higher.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project would result in short-term construction related impacts to adjacent land uses including: 1) St. Michael's Abbey; 2) Ramakrishna Monastery; 3) Hidden Hills Planned Community.

No on-site or off-site significant noise impacts would occur since 1) on-site residential lots would not be affected by 65 CNEL plus noise levels, 2) off-site roadway CNEL levels would not increase by more than 2 dB at 100 feet from the roadway centerline, and 3) the project site is outside of the MCAS 65 dB CNEL contour.

CUMULATIVE IMPACTS

Cumulative noise impacts are evaluated in Section 4.6.3 of the EIR.

MITIGATION MEASURES

Project Design Features

No PDF mitigation measures are proposed.

Standard County Conditions and Mitigation Measures

SC 6-1 All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dBA CNEL all habitable rooms and a source specific exterior standard of 65 DBA CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137.5, shall be submitted as follows:

a. Prior to the issuance of grading permits, as determined by the Manager, PDS/ Building Permit Services Division, the applicant shall submit an acoustical analysis report to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report, in which case it may also satisfy "B" below.

b. Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards to the Manager, PDS/Building Permits Services Division, for approval along with satisfactory evidenced which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

c. Prior to the issuance of any building permits, the applicant shall show all freestanding acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-2 Prior to the issuance of grading permits, as determined by the Manager, PDS/Building Permits Services Division, an acoustical analysis report shall be submitted to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report in which case it may also satisfy SC 6-3 below.

SC 6-3 Prior to the issuance of any building permits for residential construction, an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards shall be submitted for review and approval to the Manager, PDS/Building Permits Services Division, along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

SC 6-4 Prior to the issuance of any building permits, all freestanding acoustical barriers must be shown on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-5 Prior to the issuance of any certificates of use and occupancy, the developer shall produce evidence acceptable to the Manager, PDS/Building Inspection Services Division, that information stating this property is subject to the overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station) has been provided to the Department of Real Estate of the State of California for inclusion into the Final Subdivision Public Report.

SC 6-6 Prior to the issuance of any certificates of use and occupancy, the applicant shall post aircraft noise impact notification signs in all sales

offices associated with new residential development located within an aircraft 63 dB CNEL contour. The number and location of said signs shall be as approved by the Manager, PDS/Building Permits Services Division.

SC 6-7 Prior to the issuance of any building permit, an aviation easement over this property shall be offered for dedication to the County of Orange in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 6-8 Prior to the sale, lease or rental of any structure or portion thereof, the applicant/owner shall provide to each prospective purchaser, lessee, or tenant a notice and statement of acknowledgment that the property is subject to overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station). The form and method of distribution of said notice and statement of acknowledgment shall be as approved by the Manager, PDS/Building Permits Services Division.

A. Prior to the issuance of any grading permits, the proponent shall produce evidence acceptable to the Manager, Building Permit, that:

(1) all construction vehicles or equipment, fixed or mobile, operated within 1000 feet of a dwelling shall be equipped with properly operating and maintained mufflers.
(2) All operations shall comply with Orange County "Codified Ordinance Division 6 (Noise Control); and
(3) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this requirement.

SC 6-9 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that excavation, grading and other construction-related activities shall be restricted to daytime hours as promulgated in the County's Codified Ordinance Division 6 (Noise Control).

SC 6-10 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that all construction equipment, stationary or mobile, shall be equipped with properly operating and maintained mufflers.

SC 6-11 Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division, that:

a) All construction vehicles or equipment, fixed or mobile, operated within 1,000-feet of a dwelling shall be equipped with properly operating and maintained mufflers.

b) All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

c) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

Notations in the above format, appropriately identified and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations, in manner meeting approval of the Manager, PDS/Building Permits Services Division.

AM 6-12 Prior to the issuance of building permits, all operative windows exceeding 6 sq.ft. of glazing shall be rated SR=25 or greater.

Noise Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will result in less noise impact associated with 3,820 ADT related noise generation compared to 6,220 ADT related noise generation. The proposed project will also result in reduced noise impacts to St. Michael's Abbey, Ramakrishna Monastery, adjacent residential land uses and O'Neill Regional Park.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	The conclusion of no unavoidably adverse noise impacts reached in Certified SEIR 566 remains appropriate for the proposed project.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

7. BIOLOGICAL RESOURCES ANALYSIS

PROJECT IMPACTS

Vegetation communities

Implementation of the approved project for 705 manufactured homes results in the direct removal of 191.4 acres (86 percent) of on-site and 19.8 acres of off-site vegetation as shown in the following table. A total of 30.8 acres (14 percent) of undeveloped land would remain in open space.

IMPACTED VEGETATION (ACRES) SUMMARY

Habitat	Existing	On-site Impacts	Percent Impact (%)	Preserved On-site	Percent Impact (%)	Off-site Impacts	Total
• Venturan-Diegan Transitional Coastal Sage Scrub (disturbed and undisturbed)	67.1	44.2	66	22.9	34	6.1	50.3
• Southern Mixed Chaparral	5.4	1.8	33	3.6	67	1.9	3.7
• Coast Live Oak Woodland (acreage/individuals)	14.5/29	14.0/28	97	0.5/14	3	0.6/5	14.6
• Southern Sycamore Riparian Woodland	6	4	100	0.0	0	2.8	3.3
• Mulefat Scrub	0.5	0.5	97	0.1	3	1.0	3.8
• Ephemeral Pond	2.9	2.8	75	0.2	25	0	0.6
• Annual Grassland	0.8	0.6	97	3.5	3	4.8	126.0
• Agriculture	125.3	121.8	100	0.0	0		
• Disturbed	4.6	4.6	100	0.0	0	2.6	3.7
	1.1	1.1					
TOTAL	222.2	191.4	84	30.8	16	19.8	211.19

Venturan-Diegan Transition Coastal Sage Scrub/NCCP

For the approved project, a total of 50.3 acres of coastal sage scrub would be impacted by implementation of the proposed project. The Natural Communities Conservation Planning (NCCP) program Southern Subregions is currently in preparation and is anticipated to be completed in late 1997 or early 1998. The USFWS/CDFG have developed interim loss procedures for coastal sage scrub habitat, which may occur during preparation of the subregional NCCP. Under the requirements of the Interim Take 4(d) Rule and guidelines, up to 5% of the coastal sage scrub habitat may be impacted during preparation of the southern subregional NCCP. In addition, the following NCCP findings must be made prior to coastal sage scrub impacts:

1) The proposed habitat loss is consistent with the interim loss criteria in the Conservation Guidelines.

   a) The habitat loss does not cumulatively exceed the five percent guideline for loss of CSS within a subregion.
   b) The habitat loss will not preclude connectivity between areas of high habitat values.
   c) The habitat loss will not preclude or prevent the preparation of the subregional NCCP.
   d) The habitat loss has been minimized and mitigated to the maximum extent practicable, in accordance with the Interim Mitigation Criteria of the NCCP Process Guidelines.

2) The habitat loss will not appreciably reduce the likelihood of the survival and recovery of listed species in the wild.

3) The habitat loss is incidental to otherwise lawful activity.

Implementation of the approved project would not result in the cumulative exceedance of the five percent loss of coastal sage scrub in the southern subregion. When added to the current total loss to date of 296 acres (authorized and pending), and 274 acres recorded from non-NCCP authorized projects, the maximum loss of 50.3 acres associated with this project would bring the total loss to 620 acres, which is about 2.4% of the 26,315 acres of coastal sage scrub in the Southern Subregional NCCP program area.[1]

Impacts to the following habitats occur with implementation of the approved project for 705 manufactured homes:

Southern Mixed Chaparral

Approximately 1.8 acres (33 percent) of southern mixed chaparral would be directly impacted on-site by the approved project, and an additional 1.9 acres would be impacted off-site. These impacts are not considered to be significant because of the small amount of impact and the fact that southern mixed chaparral is not considered a sensitive habitat.

Mulefat Scrub and Southern Sycamore Riparian Woodland

Mulefat scrub (3.8 acres) would be impacted where it is associated with three of the ephemeral ponds and in three intermittent streambeds, and southern sycamore riparian woodland (3.3 acres) would be impacted by remedial grading along the western boundary of the site. These impacts would be significant because of the two habitats' values as wildlife habitats and because of their function as wetlands or Waters of the United States. Impacts to these habitats would require permitting as discussed below.

Coast Live Oak Woodland

A total of 14.6 acres (97 percent) of coast live oak woodlands (312 individuals) would be impacted by the approved project, while 0.5 acres (14 individuals) will be preserved. Impacts to oak woodlands are considered significant because of their wildlife values, their function in watershed protection and, in the case of the project site, their function as part of the planned NCCP regional wildlife corridor.

Ephemeral Ponds

0.6 acres of the existing ephemeral ponds would be impacted as a result of project implementation. The 0.6 acres of impact to ephemeral ponds is significant due to the presence of Riverside fairy shrimp. In addition, impacts to portions of this habitat would require permitting as discussed below because of its function as a Waters of the United States.

Agriculture and Annual Grassland

Approximately 4.6 acres (100 percent) of agriculture, 121.79 acres (97 percent) of annual grassland, and 1.1 acres of disturbed land (100 percent) will also be impacted. An additional 4.8 acres of annual grassland and 2.6 acres of disturbed land will be impacted off-site. These impacts are not considered significant because the habitats are not sensitive.

Wetlands and Waters of the United States

Implementation of the approved project would result in impacts to jurisdictional Wetlands/Waters of the United States, as regulated by the U.S. Army Corps of Engineers, summarized in the following table.

IMPACTED WETLANDS/WATERS OF THE UNITED STATES

Type of Habitat	Acres
Wetlands (0.84 ac Mulefat/0.81 ac Sycamore Woodland)	1.65
Non-Wetlands Waters of the U.S. (Intermittent Streams and Man-Made Stock Ponds)	1.78
Total	**3.43**

A Federal Clean Water Act section 404 individual permit issued by the U.S. Army Corps of Engineers would be necessary for direct impacts to 1.65 acres of wetlands (0.84 acre of mulefat scrub and 0.81 acre of southern sycamore riparian woodland) and 1.78 acres of Waters of the United States (intermittent streams and ephemeral ponds). As part of the permitting process, there may be required mitigation measures independent of the requirements of CEQA for impacts to wetlands. Only a portion of the mule fat scrub being impacted was delineated as a wetland (0.84 acres), although the total impact to this community is 3.8 acres. Only a portion of the southern sycamore riparian woodland being impacted was delineated as a wetland (0.81 acres), though the total impact to this community is 3.3 acres (0.5 acres on-site and 2.8 acres off-site). A Streambed Alteration Agreement with CDFG will also be required for the 8.1 acres of impacts to wetland habitats (southern sycamore riparian woodland, mule fat scrub, and ephemeral pond).

Sensitive Plants

Seven of the eight stands of Catalina mariposa lily, including approximately 314 (72 percent) of the estimated 435 individuals, would be eliminated by the approved project. Approximately 121 individuals of the remaining stand would remain in open space. Impacts to this species are not considered to be significant due to its relatively low level of sensitivity, the relatively small population size on-site, and the relatively board distribution of this species throughout its range.

Two of the three stands of intermediate mariposa lily would be totally impacted by the approved project. Only one of the estimated 18 individuals (5 percent) would be directly impacted. Impacts to this species are considered to be adverse but not significant due to the small size of the total site population and, therefore, low regional significance of the on-site population.

Sensitive Animals

The following sensitive animals would be impacted by the approved project for 705 manufactured homes:

Riverside Fairy Shrimp

Impacts to all ponds where fairy shrimp were detected are significant because of the limited distribution of the species, and because it is federally-listed as endangered.

Western Spadefoot Toad

One of the two ponds where larvae were found will be impacted by the approved project. The impact to this species is not significant because of the species low level of sensitivity and because the population on-site is not of regional significance due to its small size.

Orangethroat Whiptail, Coastal Whiptail, Coastal Cactus Wren, and Southern California Rufous-Crowned Sparrow

The orangethroat whiptail and coastal whiptail prefer the open coastal sage scrub and southern mixed chaparral areas of the site. Two orangethroat whiptails and one coastal whiptail were observed, although many more are expected. Approximately 54.0 acres of combined coastal sage scrub and chaparral would be directly impacted (including off-site impacts), leaving 26.5 acres in open space. Ten coastal cactus wrens and twelve southern California rufous-crowned sparrows are distributed throughout the coastal sage scrub on-site and just off-site. Approximately 50.3 acres of potential nesting and foraging habitat (coastal sage scrub) would be impacted on and off-site, including at least portions of areas occupied by all twelve pairs of sparrows and at least six pairs of coastal cactus wrens. Impacts to these four species combined are considered significant but mitigable.

Cooper's Hawk

No direct impacts to known Cooper's hawk nesting habitat are anticipated, because no nests were observed during the surveys. Impacts to foraging habitat on-site are considered adverse but not significant since it is unlikely that any active nests would be disturbed. Should Cooper's hawks breed on the site, the loss of foraging habitat could affect, at most, a portion of one territory of one pair of Cooper's hawks, and this impact would not be considered significant.

Loggerhead shrikes were observed on-site, but it is unknown how many or whether they were breeding on-site. Assuming that they still use the site, the project impacts will still not be significant because of the low sensitivity of this species.

Coastal California Gnatcatcher

Previous field surveys (1993/1994) have determined that on-site coastal sage scrub habitat is not occupied by coastal California gnatcatchers, although current 1997 gnatcatcher surveys have not been completed to USFWS presence/absence protocol. As such, on-site coastal sage scrub habitats must be considered occupied by coastal California gnatcatcher until proven otherwise.

Raptor Foraging Habitat

Impacts to all habitats on-site would total 206.2 acres, while off-site impacts would total 7.0 acres. These impacts would generally add to the loss of raptor foraging areas in the region. However, because of the disturbed nature of most of the present habitat and the restoration of oak woodland and project slopes, sufficient habitat would remain so that these impacts are not considered significant.

Potentially Occurring Species

A list of potentially occurring mammals and additional species are shown in SEIR 566. Additional focused surveys (that is, small mammal trapping) would be required to determine the status of potentially occurring sensitive mammal species on-site. Given the low sensitivity of the potentially occurring species, their distribution throughout other parts of Orange County, and the low amount of anticipated impacts to their respective habitats, these impacts are considered to be adverse but not significant.

Wildlife Movement

Implementation of the approved project would directly impact wildlife movement through the project site, as it does not contain any design features which seek to facilitate wildlife movement. It can not be assumed that wildlife would be able to move through the project site as currently designed. The project, as currently

proposed, may hinder or preclude the preparation of the southern subregional preserve, due to restricted wildlife movement.

The following analysis has been prepared for the current proposal for 299 units:

In comparison, the proposed project for 299 units has been designed in response to the Chairman of the Planning Commission and comments received on the Draft EIR from State and Federal resource agencies and the public pertaining to the location and dimension of the proposed on-site wildlife movement corridor. The biological issues of concern were analyzed for an update of the impacts and for inclusion in the Addendum PA980103 which is the proposed project. The results of the analysis are categorized as, corridor analysis, vegetation impacts, oak tree impacts, and sensitive species impacts. This analysis is based on the Alternative 4 – 299 Lots Development Plan Concept map (February 10, 1998).

Corridor Analysis

The study concludes that an "ideal" corridor provides at least 500 feet of vegetative cover with 250-foot native vegetation buffers. A narrower buffer would be acceptable if development is not visible from the corridor. For corridors of less than 500 feet long, the corridor should not be less than 400 feet in total width. Vegetative or opaque fencing was recommended where there is an interface with the developed areas to reduce visibility.

The wildlife corridor through Saddleback Meadows under the proposed project would traverse the southern and eastern site boundary next to O'Neill Regional Park, then cross through the site in the northern half. It is planned on a west-facing slope on the west side of an existing saddle that is approximately 1,540 feet in elevation above sea level. The narrowest point of the corridor is where it crosses through a 'pinch point' between residential development blocks.

The corridor pinch point for the proposed project is 400 feet wide with 50-foot setbacks on each side and approximately 800 feet long. Most of this pinch point falls within the remedial grading zone, except for a patch approximately 300-feet long and 200-feet wide at the eastern end of the corridor that would remain undisturbed. A 50-foot wide spine road for the development would cross the corridor at grade. The middle strip of the graded portion of the corridor, approximately 200-feet wide, would be restored to native vegetation. The next 200 feet out (100 feet on each side) would be within the non-irrigated fuel modification zone. The outer 100 feet (50 feet on each side) would be landscaped as an irrigated fuel modification zone.

Overall, positive and negative aspects of the corridor's design and revegetation plans for this project's mitigation will increase the viability of the wildlife connectivity through Saddleback Meadows. The corridor, as planned in this alternative, is expected to be wide enough for wildlife movement. Topography on either side of the corridor is conducive to wildlife movement because it coincides with an area of natural canyon

topography. The revegetation within the corridor is expected to provide the necessary cover for wildlife to add to the corridor's viability. The 50-foot wide spine road crossing the corridor is not expected to inhibit wildlife due to the low traffic levels anticipated for this road. This wildlife corridor is expected to function adequately.

Vegetation Impacts

Impacts due to this proposed project would be similar to those for the approved project. The proposed project would impact approximately 160.0 acres of the site, leaving 62.2 acres in undisturbed open space (see following table).

Approximately 45.8 acres of Venturan-Diegan transitional coastal sage scrub (including 2.5 acres off-site), 5.7 acres of coast live oak woodland (175 individual oaks), 0.21 acre of southern sycamore riparian woodland, and 2.01 acres of mule fat scrub will be impacted by the proposed project. In addition, all but two of the manmade stock ponds (0.6 acre) supporting the Riverside fairy shrimp will be directly impacted. One of the preserved ponds is just west of the former ranch while the other is in the southeast corner of the site near O'Neill Canyon. All of the above impacts are significant according to the California Environmental Quality Act. A federal Clean Water Act permit issued by the U.S. Army Corps of Engineers will be necessary for direct impacts to 3.1 acres of wetlands (2.01 acre of mule fat scrub and 0.21 acre of southern sycamore riparian woodland and 0.88 acre of Waters of the U.S. (intermittent streams [0.28 acre] and manmade stock ponds [0.6 acre]). A streambed alteration agreement with the California Department of Fish and Game will also be required for the 2.62 acres of impacts to wetland vegetation.

Oak Tree Impacts

Based on the recent oak tree inventory (SEB 1995), total of 175 oak trees (approximately 59 percent) occur within the remedial grading zone and are considered impacted. A total of 123 oak trees (approximately 41 percent) occur outside the remedial grading zone and are considered preserved.

Sensitive Species Impacts

Eight stands of Catalina mariposa lily and three stands of intermediate mariposa lily fall completely or partially within the impact area of the proposed project. Two stands of Catalina mariposa lily and one stand of intermediate mariposa lily will likely remain to some degree despite the impact. An estimated 259 of the 435 individuals of Catalina mariposa lily will likely be lost, leaving an estimate 176 individuals in two stands in open space or within the non-irrigated fuel modification zones. These impacts are not significant because of the low level of sensitivity of the plant, its generally wide distribution in southern California, and the relatively small population size on site. Two stands of intermediate mariposa lily (9 individuals) will be graded, while one stands (9 individuals) are within the non-irrigated fuel modification zone and are assumed to

remain. This impact is not significant because of the small size of the on-site population.

The orangethroat whiptail, coastal whiptail, at least five cactus wren territories, and at least 10 southern California rufous-crowned sparrow territories would be affected by the loss of 45.8 acres of Venturan-Diegan transitional coastal sage scrub. The western spadefoot occurs on the property in at least two ponds, one of which would be impacted by the proposed project. These impacts are significant but mitigable considered the low level of sensitivity of these observed. Impacts to Cooper's hawks will, therefore, be limited to foraging habitat and are not significant. The 0.6 acre of impacts to manmade stock ponds will impact the Riverside fairy shrimp, and this impact is considered significant.

In accordance with the NCCP, the loss of 45.8 acres of Venturan-Diegan transitional coastal sage scrub due to the project is less than the allowable 5 percent of the total coastal sage scrub in the subregion. According to the NCCP Evaluation Logic Flow Chart, the coastal sage scrub on the project site has intermediate value for long-term conservation because although it is not the most dense coastal sage scrub in the region, it is located next to a higher value district (O'Neill Regional Park).

Saddleback Meadows Proposed Project – 299 Units
Existing Vegetation and Project Impacts

Habitat	Existing Acreage	On-Site Impacts	Percent	Preserved On-Site	Percent	Off-Site Impact
Venturan-Diegan transitional coastal sage scrub (disturbed and undisturbed)	67.1	43.3	65%	23.8	35%	2.5
Coast Live Oak Woodland (acreage/individuals)	14.5/298	5.7/175	39%/ 59%	8.8/123	61% 41%	0.0
Southern Mixed Chaparral	5.4	3.3	61%	2.1	39%	1.25
Southern Sycamore Riparian Woodland	0.5	0.2	40%	0.3	60%	0.01
Mule fat scrub	2.9	2.0	69%	0.9	31%	0.0
Ephemeral Pond	0.8	0.6	75%	0.2	25%	0.0
Annual Grassland	126.4	101.8	81%	24.6	19%	3.0
Agriculture	4.6	3.1	67%	1.5	33%	0.0
TOTAL	**222.2**	**160.0**	**72%**	**62.2**	**28%**	**6.76**

Much of the discussion on pages 4-118 through 4-154 of SEIR 566 and Appendices I, J and K (Biological Assessment, Pak Tree Report and Pond Mitigation Plan) remain appropriate for the proposed project. Imposition of the 14 mitigation measures in the SEIR will mitigate most biological impacts. However, incremental decreases in impacts to coastal sage scrub, oak woodland, ephemeral ponds and the Riverside fairy shrimp would remain significant under this alternative following mitigation.

Impact Significance Criteria

The impact significance criteria listed below, are based on a combination of the following: the Natural Community Conservation Planning (NCCP) information from the County of Orange, including acreages of habitat types proposed to be included in the Southern Subregion reserves; significance criteria, adopted regulations and stated policies of the California Department of Fish and Game, California Resources Agency, U.S. Army Corps of Engineers, and the U.S. Department of the Interior Fish and Wildlife Service.

The criteria listed below have been developed with the knowledge of the habitat resources on the project site. They have been focused to address the project site, including the context of this site within the NCCP Southern Subregion.

The project will have a potentially significant effect if it results in one of the following:

- For the federally listed coastal California gnatcatcher, other NCCP "target and identified species," coastal sage scrub (CSS) habitat, and wildlife movement corridors, the project would impair the ability of the Lead Agency (the County of Orange) to prepare an effective subregional NCCP consistent with the requirements of the Special 4(d) Rule for the coastal California gnatcatcher, FESA Section 10, and the NCCP Planning guidelines.

  The California Resources Agency and Department of Fish and Game have stated their intent to declare that significant impacts for individual projects addressed by a NCCP should be evaluated and determined based on the above standard (consistency with the subregional NCCP). Once a subregional NCCP has been approved by State and Federal agencies, a project whose CSS impacts have been addressed by the approved NCCP should be considered to be mitigated to below a level of significant effect.

- For other species of limited distribution in a subregion, or otherwise of high sensitivity; a) loss of habitat such that the potential benefits of any current or expected process to maintain viable levels of the species, through study, listing or a proposal to list the species would be diminished by a loss of the habitat at this time; b) the loss would be a non-recoverable loss during a time when the species and its habitat are undergoing a rapid decline; or c) loss of a consequential portion of a known population in the subregion.

- Project implementation results in notable net loss of a biotic community that is subject to local, State and/or Federal regulations (e.g., riparian communities) or that is otherwise of very limited occurrence in the subregion (e.g., oak woodland and native grassland).

- Project implementation results in the direct impairment of wildlife movement on a local or regional scale.

SIGNIFICANT IMPACTS OF PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to application of outlined mitigation measures, would result in significant impacts to the following resources:

Sensitive Vegetation

Approved project implementation would result in the direct impact to : 1) 50.3 acres of Venturan-Diegan transitional coastal sage scrub; 2) 14.6 acres of coast live oak woodland; 3) 5.0 acres of southern sycamore riparian woodland; 4) 3.8 acres if mulefat scrub; and 5) 0.6 acres of ephemeral pond.

Sensitive Animals

Implementation of the approved project would result in direct impacts to the Riverside fairy shrimp, a Federal endangered species. In addition, impacts to the orange-throated whiptail, western spadefoot toad, coastal whiptail, coastal cactus wren, and Southern California rufous-crowned sparrow, cooper's hawk, and loggerhead shrike will also result. Based on the absence of a current (1997) coastal California gnatcather survey conducted to USFWS presence/absence survey protocol requirements, impacts to coastal California gnatcatchers must be considered significant until proven otherwise by future surveys.

Wildlife Movement

Implementation of the approved project for 705 units would conflict with existing wildlife movement corridors, as depicted in the Foothill-Trabuco Specific Plan, Exhibit 52 of SEIR 566, p. 4-132, and is identified in Section 4.7.1 of SEIR 566.

CUMULATIVE IMPACTS

Contributions to Cumulatively Significant Impacts

Considered alone, many impacts associated with implementation of a single project may not meet the criteria of significance, either because project implementation impacts a relatively small area or because the resources impacted are only moderately sensitive; many candidates for federal listing fall under this category. However, when considered in the context of past and ongoing development of the region, a single project's impacts can be seen as a contribution to cumulatively significant effects.

In light of the fact that the Southern Subregional NCCP preserve has not been finalized, cumulative impacts to coastal sage scrub habitat are considered significant.

- Implementation of the proposed project in conjunction with other projects would result in cumulative impacts to oak woodland and sycamore riparian habitat.

- Implementation of the proposed project would contribute to cumulatively significant impacts to wildlife movement in the vicinity of the proposed project.

- Implementation of the proposed project would contribute significant impacts to the coastal California gnatcatcher, until such time as future field surveys, conducted to 1997 USFWS presence/absence protocol, demonstrates that on-site coastal sage scrub habitat is not occupied by California gnatcatchers.

- Implementation of the proposed project would contribute to cumulatively significant impacts to Riverside fairy shrimp.

- Implementation of the proposed project would contribute to cumulatively significant impacts to coast live oak and southern sycamore/riparian woodland.

- Implementation of the proposed project would contribute to cumulatively significant impacts the completion of the NCCP Southern Subregional reserve.

MITIGATION MEASURES

Conceptual Mitigation Program

The following conceptual mitigation program has been developed based upon input from the USFWS and CDFG during the scoping and public review processes for EIR 561 and EIR 566.

Impacts to Venturan-Diegan transitional coastal sage scrub habitat will require a mitigation ratio of 1.5:1 because although it is ranked as intermediate value habitat (under the NCCP), in its current condition much of the habitat being impacted is fragmented, is at least partially disturbed, and it may not support the coastal California gnatcatcher. According to the NCCP Evaluation Logic Flow Chart, the coastal sage scrub on the project site is considered intermediate value for long-term conservation because although it is not the most dense coastal sage scrub in the region, it is located next to a higher value district (O'Neill Regional Park). Impacts to mulefat scrub will be mitigated at 1:1 because of the poor quality of the existing habitat, and because it is surrounded by agriculture and annual grassland habitats. Southern sycamore riparian woodland will be mitigated at a ratio of 3:1 because of its high habitat quality. Oak woodland habitat will be mitigated at a ratio of 1:1, due to its moderate habitat values. Ephemeral pond habitat will also need to be replaced at a 2:1 ratio. Refer to the following table for a summary of the biological mitigation requirements.

CONCEPTUAL BIOLOGICAL MITIGATION PLAN REQUIREMENTS
APPROVED PROJECT (705 UNITS)

Habitat	Sensitive Habitat Impact Acreage	Mitigation Ratio	Mitigation Acreage
Venturan-Diegan Coastal Sage Scrub	50.3	1.5:1	75.5 Acres
Mulefat Scrub	3.8	1:1	3.8 Acres
Southern Sycamore Riparian Woodland	3.3	3:1	9.9 Acres
Oak Woodland	14.6	1:1	14.6 Acres
Ephemeral Pond	0.6	2:1	1.2 Acres
Total	**72.6**		**105.0 Acres**

The biological resource mitigation measure outlined above and summarized in Table 30 of Certified SEIR 566, cannot be implemented on-site for the approved project and must be implemented off-site, however, the proposed 299-unit project will allow for most if not all mitigation to occur on-site. Specific standard county conditions and mitigation measures have been developed to ensure that a comprehensive biological resources mitigation program is devised and approved by the County of Orange, in conjunction with USFWS and CDFG prior to the issuance of grading permits.

Project Design Features

No PDFs proposed.

Standard County Conditions and Mitigation Measures

SC 7-1 Pursuant to Section 711.4 of the Fish and Game Code, the applicant shall comply with the requirements of AB 3158, prior to the filing of the Notice of Determination for the project, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services Division.

SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game. A 1603 Streambed Application has been submitted to CDFG. All Streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement.

SC 7-3 Prior to the issuance of any grading permits, the applicant shall obtain the necessary individual or nationwide permit (pursuant to Section 404 of the Federal Clean Water Act) covering all affected wetland areas from the U.S. Army Corps of Engineers, Los Angeles District. All wetland areas shall be subject to the specifications of the 404 permit as determined by the Corps of Engineers. A copy of the 404 permit shall be submitted with the first grading permit application for the proposed project to the Manager, PDS/Subdivision and Grading Services Division.

SC 7-4 Prior to the issuance of a grading permit, as required by participation in the Natural Community Conservation Planning/Coastal Sage Scrub (NCCP) agreement signed by the County on May 1, 1992, the project applicant shall provide an accounting summary, in acres or portions thereof, of coastal sage scrub scheduled to be impacted by removal through grading in a manner meeting the approval of the Administrator, Planning & Zoning. (See Section 4.7.3.)

SC 7-5 Prior to the issuance of a grading permit, the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the U.S. Fish and Wildlife Service, in a manner meeting the approval of the Administrator, Planning & Zoning and Manager, PDS/Grading Services Division, in consultation with the Administrator, Planning & Zoning.

SC 7-6 Notwithstanding the tentative map, no grading shall occur within the Natural Community Conservation Plan (NCCP) enrolled area except as in a manner meeting the approval of the Administrator, Planning and Zoning.

SC 7-7 Prior to the issuance of any grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. This evidence shall be submitted to the Manager, PDS/Subdivision and Grading Services Division, for review and approval, in consultation with the Administrator, Planning and Zoning.

SC 7-8 Prior to the issuance of grading permits the applicant shall submit a landscape and tree preservation plan to the Manager, PFRD/Harbors Beaches and Parks Division, for review and approval in accordance with the following guidelines:

A. To the maximum extent feasible, all existing native and exotic trees and other significant vegetation shall be preserved in conjunction with any development activity.

B. A tree preservation plan shall be prepared by a landscape architect for all development projects which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and one-half feet above ground level) and shrubs having a trunk or branch diameter of 3 inches or greater. The plan shall show which plants are proposed for removal and where transplanted and/or replacement plants will be located. Tree preservation plans shall be approved prior to issuance of grading permits, or where grading permits are not required, prior to issuance of building permits.

C. Trees removed in accordance with an approved tree preservation plan shall be replaced by a combination of transplanting to another location on the subject property and/or replacement by a combination of 1 and 15-gallon plants at a minimum ratio of 5:1. The following sliding scale shall also be used for trees to determine if more than the minimum number of replacement trees are required.

Tree Replacement Scale

Trunk Diameter (inches) of Tree Removed At 4½ Feet Above Ground Level	Total Number of Replacement
5 to 11	5 (1-15 gal / 4-1 gal)
12 to 17	7 (1-15 gal / 6-1 gal)
18 to 23	10 (2-15 gal / 8-1 gal)
24 to 35	12 (2-15 gal / 10-1 gal

Any oak exceeding 35 inches in diameter should be preserved, transplanted or replaced in accordance with the provisions outlined in Section E of the mitigation measure. In the event that all required replacement trees will not fit on the property, increase in container size will be considered in conjunction with reductions in replacement quality.

D. Significant shrubs removed in accordance with an approved tree preservation plan should be replaced by a combination of transplanting to another location on the subject property and/or replacement by 5-gallon plants at a minimum ration of 3:1.

E. All other plants not specified in Guidelines C and D above that are removed in accordance with an approved tree preservation plan should be either transplanted to another location on the subject property or replaced by 15-gallon plants for trees and 5-gallon plants for shrubs at a minimum ration of 1:1. The two 35" + oak trees impacted by project implementation, will be mitigated by an enhanced replacement ratio (5-15 gal/10-1 gal) to

the satisfaction of the Manager, PFRD/Harbors Beaches and Parks Division.

F. All transplanting of trees shall be performed by an experienced nursery or other landscape contractor, who shall care for the trees for at least six months after transplanting.

G. Prior to issuance of final certificates of use and occupancy, all transplanted or replacement trees and shrubs shall be installed in accordance with the tree preservation plan.

H. Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc.

I. Natural drainage courses and natural grades in proximity of, and providing seasonal irrigation to oak trees shall not be altered.

J. Grading, placement of fill, storage of building materials and heavy equipment, structural development, and hardscape (e.g., roads, sidewalks, patio slabs and pool decks) shall be prohibited within the drip line (outer edge of branches) of any tree. During grading and construction operations, all trees shall be temporarily fenced off with chain link fencing to protect such areas.

K. Use of pre-emergent weed killers shall be prohibited within 10 feet of the drip line of any individual tree and within any natural drainage course which seasonally irrigates trees.

L. Use of soil sterilizes shall be prohibited because they kill everything in the soil.

SC 7-9 Specify areas/lots to be dedicated or irrevocably offered to the County in fee or easement for landscape maintenance purposes, scenic or resource preservation purposes or resource replacement shall be landscaped, equipped for irrigation, and improved in accordance with an approved plan as stated below:

a) Preliminary Plan -An agreement shall be entered into and financial security posed guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, with a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFR/Harbors Beaches and Parks Division. Said plan shall take into account the previously approved landscape plan for AP 95-7, the EMA Standard Plans for landscape areas,

adopted plant palette guides, applicable scenic and Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).

b) Detailed Plan - Prior to the issuance of any building permit(s), a detailed landscape plan shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFR/Harbors Beaches and Parks Division. Detailed plans shall show the detailed irrigation and landscaping design.

c) Installation Certification - Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, said improvements shall be installed and shall be certified by a licensed landscape architect or licensed landscape contractor, as required, as having been installed in accordance with the approved detailed plans. Said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable, shall be furnished in writing to the Manager, PFR/Construction Division, and the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy.

SC 7-10 Prior to the issuance of precise grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan. The plan shall be certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan (if any), EMA Standard Plans, area plan 95-7, scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures) and Board Resolution 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed by the future homeowners association and be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division.

SC 7-11 Prior to the issuance of grading permits, the applicant shall provide additional evidence that the on-site coastal sage scrub habitat is not occupied by California gnatcatchers, in accordance with current USFWS protocol (7 in season/9 out of season pass surveys) to the satisfaction of the USFWS and the Administrator, Planning and Zoning. Should occupied coastal sage scrub habitat be identified on-site by the surveys consultation shall be initiated with the USFWS, and a coastal sage scrub/gnatcatcher

mitigation plan shall be developed to the satisfaction of the USFWS and the Administrator, Planning and Zoning prior to the issuance of grading permits.

SC 7-12 Prior to the issuance of grading permits, the applicant shall provide assurances to the satisfaction of the County NCCP coordinator and the Administrator, Planning and Zoning, that the proposed project will participate in the NCCP planning process and not preclude the finalization of the Southern Subregional reserve component of the NCCP.

SC 7-13 Prior to the issuance of grading permits, the applicant shall prepare a relocation and establishment mitigation plan, designed to mitigate impacts to Riverside fairy shrimp/pond habitat, wetlands, and southern sycamore woodland, to the satisfaction of the Administrator, Planning and Zoning, in consultation with USFWS and CDFG. Mitigation shall consider on-site as well as off-site mitigation options, as well as, established fee programs.

Additional Mitigation Recommendations

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner acceptable to the Manager, Environmental and Project Planning Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division.

AM 7-14 The following recommendations are proposed to further minimize some of the proposed impacts.

- Where possible, bulbs of individual Catalina Mariposa Lily and Intermediate Mariposa Lily that are to be impacted shall be dug up and transplanted to a suitable habitat with similar soil, slope exposure, etc.

- Lighting within development projects adjacent to conserved habitat should be selectively placed, shielded, and directed away from that habitat. In addition, lighting from homes abutting conserved habitat should be screened with vegetation, and large spotlight-type lighting that may affect conserved habitat should be prohibited. These lighting restrictions should be incorporated into the project's CC&Rs.

Biological Resources Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will result in 160.0 acres of impact on-site (included in this overall impact area, the proposed project will result in disturbance to 45.8 acres Venturan-Diegan transitional coastal sage scrub; 5.7 acres coast live oak woodland; 0.21 acre southern sycamore riparian woodland; and 2.01 acres of mule fat scrub) compared to 191 acres of impact for the approved project (included in this overall impact area, the proposed project will result in disturbance to 50.3 acres Venturan-Diegan transitional coastal sage scrub; 14.6 acres coast live oak woodland). The project will also result in reduced impact to on-site plant communities/habitats, and it will consist of dual wildlife movement corridor.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	Although the proposed project will continue to have a significant impact on biological resources, no new adverse impacts will occur.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

8. AESTHETICS ANALYSIS

PROJECT IMPACTS

Substantial alteration of the existing on-site aesthetic visual resources will occur with the development of the approved project (705 units). Viewshed impacts will be primarily due to substantial direct and remedial site grading and the subsequent construction of 705 manufactured single family residences on site. Grading volumes are estimated to

total approximately 11.5 million cubic yards (2.6 million cubic yards of conventional and 8.9 million cubic yards of remedial). Significant change to existing landforms, due to the substantial cut and fill required to create flat buildable pad areas from the steep rolling terrain on site, will generate permanent alteration of the natural topography and have an associated aesthetic impact on the site's viewshed. Visual impact is not limited to topographic alteration, but will also include loss of a portion of an oak woodland, on-site ponds, and annual grasslands. Approximately 211.12 acres of the site (191.4 on-site and 19.8 off-site) will be altered or disturbed by project development. 14% of the site will remain in undisturbed open space.

In addition, site development will change the surrounding property's viewshed of the site from essentially undisturbed natural rolling rangeland and oak woodland to an urban environment. Although approximately 14% of the site will be retained in natural open space, the predominant view will be of man-made slopes, roads, manufactured single family residences, and planted landscaping. This impact is permanent and unavoidable with site development.

The approved project proposes development of 705 manufactured residential units on minimum 2,630 square foot pads. This intensity and scale of development could be perceived as aesthetically objectionable by nearby residents.

Another potential impact of site development is glare from night lighting of project streets and residences. The site currently generates no night lighting. As a result, adjacent land uses experience a more natural night sky and view of the site. Glare from night lighting may impact the ability to view stars and the visual aesthetic resource of a naturally lit environment.

Potential impacts to visual and aesthetic site resources have been evaluated from the following specific locations listed below. Exhibits 60 - 62 in the SEIR 566, pp. 4-165-166, show computer generated post development views and cross-sections from the following locations:

Saint Michael's Abbey and School - Located northwest and adjacent to the project site. Views of the project site from the main abbey compound are generally screened by intervening buildings on the abbey property, mature vegetation and topography (see Exhibit 61 of SEIR 566, p. 4-166). Proposed residences would be located approximately 300 feet from existing Abbey facility. A significant portion of the proposed development will be visible however, from other parts of the abbey grounds including the pool, recreation field and "Stations of the Cross" knoll. Views of the project from these various locations on the abbey grounds are considered potentially significant. Glare from night lighting will directly impact this property due to its proximity and its lower elevation from the project site allowing street and residence lighting to shine directly down on the abbey property.

Ramakrishna Monastery - The Ramakrishna Monastery has occupied this location directly adjacent to the southeast portion of the project site since 1946. Normally, the

monastery is occupied by seven resident monks and an occasional small number of short term visitors. Due to the contemplative purposes for which this facility exists, potential visual impact of site development may be particularly intrusive to monastery residents. Existing on site vegetation near the main monastery buildings and revegetation and common area landscaping of the project's graded slopes may provide additional screening of the site from the monastery property. Nevertheless, it appears that complete site screening will not be possible due to the project site's higher elevation and its proximity to the monastery grounds. Therefore, even with extensive project site landscaping a significant number of residences will remain visible from the monastery, particularly the shrine trail surrounding the monastery property.

Night lighting glare may also have a significant aesthetic impact on monastery residents from both street and normal residence lighting. Resident monks have indicated that night lighting glare from recently constructed residential development in the vicinity has already negatively impacted the quality of life at their facility.

A church and two dwellings are located immediately north of the Ramakrishna Monastery, and would be impacted to the same degree as the outlying areas of the monastery.

O'Neill Regional Park - Residential elevations and man-made slopes located near the south project property line will be visible to the public from the Live Oak Trail within O'Neill Regional Park. The trail view points are located over ½ mile approximately 2,900 feet from the project boundary. Though project views will be far enough away so that elevation details are not apparent, the mere visual presence of a large number of homes from a wilderness hiking trail is considered a significant aesthetic impact.

Portola Hills - Portola Hills is a 2,200 unit planned community located directly west of the project site, across El Toro Road at a similar elevation. Views of the project site will be extensive as indicated in the viewshed analysis, and will encompass the entire proposed project and off site water tank (see Exhibit 60 of SEIR 566, p. 4-165). Due to Portola Hills' elevation, mitigation of potential visual impacts to a level of insignificance is not possible.

Portola Hills residents night views of the site are currently of a dark naturally lit area. Subsequent project buildout will change their view of natural open space to a view of an artificially lighted urban hillside development. As with all aesthetic impacts, some individuals may find this night lighting change to be a negative impact, while others may consider night lighting when viewed from a higher elevation to be aesthetically pleasing.

Hidden Hills - Hidden Hills is located directly adjacent to the southwest portion of the project site. Viewshed analysis indicates that residents of this tract will have significant uphill view of residences constructed along the southern boundary of the proposed project (see Exhibit 62 of SEIR 566, p. 4-167). This visual impact is considered potentially significant because of the close proximity of the proposed project to existing residences built at a lower elevation. This proximity between the two tracts may

generate a feeling to existing residents that Saddleback Meadow homes are looming over their Hidden Hills tract, creating a sense of crowding and associated loss of privacy.

El Toro Road - The proposed project will be visible to motorists on El Toro Road and to bicyclists, equestrians and hikers utilizing the regional trail located parallel to El Toro Road and Aliso Creek west of the project site.

Live Oak Canyon Road - A small portion of the upper portions of the project will be visible from the intersection of Live Oak Canyon Road and Harris Truck Trail. Views of the project site from Live Oak Canyon Road north of the site are partially screened by intervening topography.

In comparison, the proposed project for 299 units, as with the approved project, would substantially alter the existing topography and visual character of the project site. The land form/contour grading, berming, and wildlife corridor system included in the proposed project would help to break up the long linear massing of housing which would result with implementation of the proposed project and create areas of housing separated by 150 to 500 foot stretches of open space. Open space corridors within the design of the proposed project are larger and more significant than those of the approved project. In addition, overall aesthetic impacts to surrounding land uses would be reduced under the proposed project, as compared to the approved project, due to the extensive use of landform grading along the visually prominent portions of the development edge. Further, the approved project illustrated "soldiering" or "linear" design techniques which did not allow any relief for landscape elements.

Visual impacts to St. Michael's Abbey would be substantially reduced under this project as compared to the proposed project due to the relocation of residential lots north of the on-site spine road, extensive landform grading and implementation of a trail head/staging area. Also, the proposed project has no development in the near foreground view from St. Michael's Abbey. View impacts of the project site from the Ramakrishna Monastery would be reduced as compared with the approved project by implementation of the berming/contour grading, the wildlife corridor system and associated open space areas, and through the elimination of several loffel walls which would reduce the height and intensity of adjacent manufactured slopes. The wildlife corridor would replace manufactured slope, housing and associated lighting with natural and revegetated open space. In addition, the proposed project incorporates manufactured knolls strategically placed to assist in the screening of proposed development. The landscape concept will work in concert with the landform grading and berming to further help screen and filter the project from view. Furthermore, specialized grading proposed under this project to preserve the highest quality on-site ephemeral pond would create substantially less manufactured slope adjacent to the Monastery. (Refer to Exhibits 6 to 8 of this document for computer modeled visual analysis).

Most of the discussion on pages 4-154 through 4-173 of Certified SEIR 566 remain appropriate for the proposed project. The 19 mitigation measures in the SEIR will reduce most impacts to below a level of significance. However, significant viewshed impacts to the Ramakrishna Monastery and O'Neill Regional Park would remain significant under the proposed project.

Impact Significance Criteria

The determination of whether an aesthetic impact is significant or not is subjective, and there is no universally adopted standard or set of criteria for this issue. The impact significance criteria listed below are based on the CEQA Guidelines, Appendix G, and the Foothill Trabuco Specific Plan Development and Design Guidelines.

The project will have a potentially significant aesthetic impact if it results in one of the following:

- Degradation of, or significant interference with, the public's enjoyment of the site's existing visual resources (from designated public open space or public roads).
- Substantial alteration of the site's natural character, including extensive removal/changes or fill of slopes, canyons, rock outcroppings and/or vegetation.
- Impacts visual resources of "Major Ridgelines/Major Rock Outcroppings" as identified in the Foothill-Trabuco Specific Plan.
- Elimination of a unique geologic or physical landform feature.
- Areas where the elevation change along the length of a graded slope meets or exceeds 100 feet.
- Areas where the depth of cut or fill meets or exceeds 50 feet.
- Elimination or modification of a significant landform feature that is part of a larger, contiguous, unmodified off-site landform feature.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to application of mitigation measures, would result in significant impacts to the following surrounding land uses:

- O'Neill Regional Park
- Ramakrishna Monastery
- St. Michael's Abbey

These significant impacts would be related to the following visible project features: 1) grading, including cut and fill slopes; 2) proposed residences 3) drainage improvements; 4) native vegetation removal; and 5) night lighting.

CUMULATIVE IMPACTS

The proposed Saddleback Meadows project would result in the encroachment of large scale residential development into a rural transition area that is currently undeveloped. The project will contribute to the cumulative impacts to existing rural and natural open space, and to a continuing urbanization of foothill areas in South Orange County.

MITIGATION MEASURES

Project Design Features

PDF 8-1 All public utilities shall be situated underground.

PDF 8-2 Where feasible, drainage devices (terrace drains, benches, and intervening terraces) shall be bermed and placed in swales.

PDF 8-3 Concrete drainage swales and other similar drainage infrastructure shall be tinted with an appropriate earth tone to assist in concealing them from surrounding view.

PDF 8-4 The water tank shall be bermed, landscaped and painted to blend with the surrounding environment.

Standard County Conditions and Mitigation Measures

SC 8-5 Prior to the issuance of any building permits, an agreement shall be entered into and financial security posted guaranteeing landscape improvements and the maintenance thereof based upon a detailed landscape plan showing landscape design and irrigation with a cost estimate for the landscape improvements approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division. Said plan shall take into account previously approved landscape plan(s), PFRDD Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, water conservation measures contained in Board Resolutions 90-487 (Water Conservation Measures), and 90-1341 (Water Conservation Implementation Plan).

SC 8-6 Prior to the issuance of preliminary grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary

landscape plan(s), PFRDD Standard Plans, area plan 95-7 scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolutions 90-487 (Water Conservation Measures) and 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed and approved by Manager, PDS/Building Permits Services Division, Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PFRD/Harbors Beaches & Parks Division, and Manager, PDS/ Environmental and Projects Planning Services Division.

SC 8-7 Prior to the issuance of certificates of use and occupancy and release of financial security, applicant shall install the approved landscaping and irrigation system and shall have a licensed landscape architect or licensed landscape contractor, as applicable, certify that it was installed in accordance with the certified plan. Said certification, including an irrigation management report for each landscape irrigation system, and any other implementation report determined applicable, shall be furnished in writing to the Manager, Building Inspection Services, prior to the issuance of any certificates of use and occupancy.

SC 8-8 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations:

AM 8-9 Prior to issuance of any grading permit, the project proponent shall provide evidence to the Manager, PDS/Subdivision and Grading Services Division indicating that graded areas will be compatible with natural landform characteristics to the greatest extent possible. Criteria to achieve the desired effect shall include:

a) Recontouring the existing landforms to provide a smooth and gradual transition between graded slopes and existing grade while preserving the basic topographic character of the site.

b) Variation and combination of slopes 2:1, 3:1 and 4:1 to create a more natural character wherever possible within the graded areas.

c) Attempting to balance cut and fill within the overall project area to eliminate off-site and import/export related grading operations.

d) Obscuring slope drainage structures with a variety of plant materials.

e) Preservation of visual opportunities from hillsides by providing for panoramic views from selected locations (e.g., view corridors, sensitive landscape placement).

AM 8-10 Manufactured slopes shall be replanted with vegetation native to the site to blend the new topography with existing natural on site vegetation, immediately following precise grading operations.

AM 8-11 Fuel modification areas shall be planted with fire resistant vegetation.

AM 8-12 Use of the California Sycamore or other species similar to trees currently existing on-site shall be used in appropriate common area and street landscape locations where feasible.

AM 8-13 Common area landscaping and habitat transition zones shall utilize the FTSP recommended plant palette (Appendix H) when selecting plant material.

AM 8-14 Slope landscaping shall occur as soon as feasible after grading and be maintained by the applicant until a homeowners association has been organized and assumes long term maintenance responsibility.

Light and Glare

AM 8-15 Prior to issuance of any certificate of use and/or occupancy, the potentially adverse impact of night lighting on surrounding land use shall be mitigated to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division by the following measures:

a) Street lights shall only be installed at intersections and as required to insure public safety.

b) Low intensity halogen street lamps shall be used.

b) Street lights shall be shielded to direct the light beam downward and to avoid direct glare into open space areas and adjacent property.

Aesthetics Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will result in reduced grading related aesthetic impacts, and it will also include major landform screening.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	Although the proposed project will continue to have a significant impact on aesthetics, no new adverse impacts will occur.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

9. CULTURAL / SCIENTIFIC RESOURCES ANALYSIS

PROJECT IMPACTS

Archaeology

A number of the known archeological sites on the subject property were initially found to contain a high density of artifact deposits which for the most part have been removed by previous site researchers. Some of these sites may still contain significant deposits below ground. Without mitigation, potentially culturally significant sites may be destroyed by project development. The recommended course of action for these potentially significant sites is to collect the visible surface artifacts, disk the site to determine if there are significant artifact deposits below current grade, and then if warranted excavate up to 12 one meter by one meter excavation units to determine the extent and cultural significance of the site. Depending on the significance of the find, the site can either be preserved in place, artifacts collected and cataloged, or no further action taken if the site proves unimportant.

CA-ORA-710: The site is located on a relatively flat knoll or terrace, directly east of, adjacent to and 40 feet above Aliso Creek in the northwestern portion of the property. Boundaries of the site are approximately 165 x 245 feet.

The original recorders (Tadlock & Tadlock 1978) reported a wide range of artifacts over a rather large area. Subsequent archaeologists were not able to locate artifacts to that extent. Dillon (SRS 1989) discovered a chalcedony core, a chert flake and a burned piece of C\chert shatter as well as three "truncated" manos, which he apparently collected and removed from the site during his reconnaissance investigation. Truncated manos are discussed by Van Horn and Murray (1984). These manos were recovered at CA-ORA-486, along Aliso Creek, just a short distance away from site CA-ORA-710. The specimens had been "truncated" or broken off at one end and the rough end pounded smooth. They have been associated with the processing of "cacomites": a Spanish term referring to varieties of edible roots, bulbs and corms (bulb-like stems) that are found in the site vicinity.

Work consisted of a surface examination and surface collection. This resulted in the recovery of 26 artifacts including 16 uni- and bifacial manos (one possibly truncated) and mano fragments composed of porphyry, granite and metavolcanics, and chipped stone implements including three choppers, two hammerstones, one core, and four pieces of debitage. Material types here include metavolcanics, quartzite and quartz. subsequently, a disker pulled by a small bulldozer was employed to turn up the soil to a depth of three to five inches, with the purpose of uncovering near surface artifacts. This method, after a second surface collection, resulted in the recovery of an additional 56 artifacts including 11 groundstone implements; eight manos composed of granite (4) and porphyry (4), and three metate fragments - two of granite and one quartzite. chipped stone implements included 12 cores of metavolcanics, chert and quartzite; two hammerstones; two choppers; three scrapers and 25 pieces of debitage made primarily of chert and metavolcanics.

Eight 1 x 1 meter units were next excavated to determine the spatial extent of the site and verify the existence of a subsurface deposit. Fifty-eight artifacts were recovered and two of the units produced in situ features.

The sites inhabitants were utilizing a range of material types to fashion tools: chert (31%), metavolcanics (23%), granite (15%), porphyry (11%), quartzite (9%), metasedimentary (7%) and smaller percentages of jasper, sandstone and quartz. Some of the chert may have been heat treated.

Based on the characteristics of the artifacts recovered during the course of the test excavation, it is likely that the site is of Millingstone age. The lack of evidence of the mortar and pestle being used at the site further bolsters this hypothesis. The mortar and pestle technology is associated with the later Intermediate period when exploitation of the acorn became widespread.

A large portion of the artifacts were recovered from the western portion of the site in Units 1 through 3. Units 1 and 2 produced the three in situ features; therefore, it is established that this portion of the site's subsurface remains intact.

It is likely that a substantial subsurface deposit remains relatively undisturbed at the site; therefore, the site is deemed important and further data recovery is warranted during ground disturbing activities.

CA-ORA-711: The site is located on a low, flat ridge directly east of Aliso Creek and just north of a smaller tributary drainage. It measures approximately 170 x 170 feet. The original recorders (Tadlock & Tadlock 1978) reported a "sparse distribution of flakes, cores, and one chopper." Dillon (1989) was unable to relocate the site during his reconnaissance.

Work performed consisted of a surface examination and surface collection. This resulted in the recovery of 30 artifacts including 12 uni- and bifacial manos (one or two possibly truncated) of granite, sandstone, metavolcanics and porphyry. Chipped stone implements recovered include two cores, two hammerstones, one uniface, one biface, one scraper plane and 11 pieces of debitage composed of chert, porphyry, metavolcanics and quartzite. Subsequently surface collection during the course of excavation produced 16 additional artifacts including three manos, one metate, four cores, one hammerstone and seven pieces of debitage. Material types included chert, metavolcanics, granite, porphyry and quartzite.

As with CA-ORA-710, excavation at CA-ORA-711 was limited to a small fraction of the total site area. And similarly, a relatively wide range of tool and material types was recovered. This, again, indicates that a number of activities were probably performed on the site. Lithic tool production activities are evidenced by the recovery of 13 cores and a variety of waste flakes and other debitage, as well as associated hammerstones. The recovery of 39 manos and mano fragments and five metates and metate fragments is strong evidence that processing of the hard seed resources associated with the coastal sage scrub and chaparral communities was being accomplished. Scrapers and choppers were being utilized to process vegetable and wood fibers, as well as for working hides and bone.

CA-ORA-712: The site was described by Tadlock and Tadlock (1978) as being on a relatively flat hill overlooking CA-ORA-710 and 711 and Aliso Creek. It was described as a chipped lithic scatter, heavily damaged by bulldozing. Cultural material could not be relocated by subsequent researchers. The site is therefore not important, but the area should be monitored by a qualified archaeologist during mass grading operations.

CA-ORA-713: The site is located on a ridge between Oso and Aliso Creeks and on the ridge's north facing slopes as well as a relatively flat area at the slopes base. The area measures approximately 500 x 700 feet and could comprise two or more sites.

The original recorders of the site (Tadlock and Tadlock 1978) reported finding flakes, scrapers, cores, choppers and manos. Breece and Padon (1982) reported only three flakes. Dillon (SRS 1989) found no "portable artifacts", but discussed a sandstone concretion boulder with a cupulae ground into its upper surface.

Work on the site during the current project consisted of a surface examination and surface collection. This resulted in the recovery of 14 artifacts including two metavolcanic cores, a quartzite flake, a piece of metavolcanic shatter, a granite chopper, eight uni- and bifacial, porphyry and granite manos and a granite basin metate fragment. The cupulae noted by Dillon (SRS 1989) was seen, but the current researchers have serious reservations regarding the cultural nature of the cupulae. Subsequently, a disker pulled by a small bulldozer was employed to turn up the soil to a depth of 3-5 inches to expose near surface artifacts. This method resulted in the recovery of an additional 14 artifacts including three scrapers of metavolcanics (2) and granite, two quartzite cores, three pieces of metavolcanic (2) and quartzite debitage and six manos, uni- and bifacilly ground, composed of granite (4) and porphyry.

Since artifacts were scattered over a large area, a number of unrelated encampments occupied over a period of time may be represented. It is therefore recommended that controlled grading under the guidance of a qualified archaeologist be accomplished before the commencement of mass grading. Should clusters of artifacts be discovered, additional units could be excavated in those specific areas.

CA-ORA-714: The site is located on a domed hill on the ridge between Oso and Aliso Creeks, west of CA-ORA-713 and just to the south of a steep cliff leading down to a large Oso tributary drainage. Tadlock and Tadlock (1978) called the site a probably quarry containing assayed stones and Dillon (SRS 1989) only reported two artifacts. The presence of bedrock near and at the site's surface eliminated the possibility of extensive subsurface deposits. Bleached cow bones litter the ridgeline indicating either a carcass dumping ground or a carnivore feeding area. The site measures some 200 x 90 feet.

Work undertaken at this site was essentially surface examination and surface collection. Twelve artifacts were recovered as a result of this procedure including three unmodified hammerstones of metavolcanics (2) and porphyry, two cores of quartz and chert, four choppers of porphyry (3) and metavolcanics and three uni- and bifacial manos of porphyry.

The site was probably a short term encampment, perhaps the result of a single occurrent and because of the presence of exposed bedrock, a subsurface deposit is not expected.

CA-ORA-715: The site is located on a relatively flat, rounded hill comprising the ridge above the headwaters of Oso Creek, overlooking Aliso Creek. The site measures approximately 180 x 210 feet. A bulldozer cut in the site area establishes that soils have considerable depth.

Work on the site consisted of a surface examination and a surface collection. Thirty two artifacts were recovered including 13 uni- and bifacially ground manos, four of them fragments, composed of porphyry (8), sandstone (2), metavolcanics, quartzite and granite, four choppers of quartzite, metavolcanics, porphyry, and quartz, two bidirectional metavolcanic cores, one metavolcanic anvil, one metavolcanic hammerstone and eleven pieces of debitage of metavolcanics (5), chert (4), jasper and quartzite.

Although few artifacts were recovered from the subsurface, the relatively large number of artifacts recovered during the surface collection indicates that prehistoric activity did take place at the site. The presence of groundstone implements suggests the processing of hard seed resources associated with the area's coastal sage scrub and chaparral. Choppers were used to process vegetable and wood fibers, as well as for working hides and bone. Lithic tool production and/or maintenance is evidenced by the recovery of cores, debitage and associated hammerstones. Material types represented at the site included metavolcanics 33%, porphyry 24%, chert 18%, quartzite 13%, and small percentages of sandstone, quartz, jasper and granite.

CA-ORA-716: The site is located on a high hilltop in the northeastern corner of the project area. Tadlock and Tadlock (1978) reported finding a negligible number of flakes on the westerly portion of the site and flakes, cores and a redeposited chopper on the central and eastern portion. Dillon (SRS 1989), then reports finding just one basalt core at the site area and comments that much of the surface of the site has been graded to and below the surface of bedrock.

Relative to the current project, the site, or what is left of it, lies off the property to the west; therefore, no further action is required.

CA-ORA-1255: The site lies on the lower drainage of a small knoll creating an upland pond and overlooking a steep-sided drainage. It is approximately 80 x 80 feet in size. Dillon (SRS 1989) described the site as lying approximately 50 meters southwest of the pond in a natural amphitheater formed by a series of low, rounded knolls. Artifacts recovered by Dillon include one sandstone metate fragment, one core, two flakes and quartzite prismatic blade.

Previous work on the site consisted of a surface examination and surface collection. One metavolcanic flake was recovered by this method. Subsequently, two .50 x 1 meter units were excavated on the top of the knoll. Unit 1 was excavated to 20 cm, Unit 2 to 30 cm. The lone artifact recovered was a piece of metavolcanic shatter in the 10-20 cm level of Unit 2. The units were very shallow because a very light colored decomposing bedrock sand was encountered at those levels and the units were abandoned.

CA-ORA-1256: The site lies to the south and downslope from the southwest margin of CA-ORA-715, along a brushy fingerline ridge. Site dimensions are approximately 100 x 16 feet. Dillon (SRS 1989) first recorded the site and reported finding a large, crude,

"early" appearing scraper plane and an and site core/scraper. Dillon's photographs leave some doubt as to the cultural nature of the objects.

CA-ORA-1257: The site lies to the west and downslope of a low knoll directly west of Aliso Creek, and north of a steep cliff. Dillon (SRS 1989) recorded the site and reported finding a unifacial granite mano and a sandstone bedrock feature containing two cupules or incipient bedrock mortars. He commented that the mano was not truncated like the other three found at CA-ORA-710, but may have been used in conjunction with the bedrock feature for grinding purposes: therefore he called it an incipient bedrock mortar.

During a prior visit to the site the small boulder containing the purported cupules was seen, and during the current project it was again located.

CA-ORA-1435H (Hausauer Ranch): The site is located at the bottom of a deep drainage in the center of the property. It is surrounded by dense foliage (oak, eucalyptus and pepper trees). The site is a ranch complex comprised of the remnants of a residence, a small barn (collapsed), several out structures, a holding pond and a large olive grove numbering nearly 100 trees. The ranch buildings are in an advanced state of decay and have additionally been vandalized. The site complex measures approximately 900 x 330 feet.

CA-ORA-1437: This newly discovered site lies on a rounded knolltop at the northern edge of the property overlooking a small drainage leading south-westward into Aliso Creek. The site is approximately 450 feet northwest of CA-ORA-1255 and measures ca. 60 x 60 feet.

The site was discovered serendipitously as the reconnaissance crew was searching for CA-ORA-1255. Work performed on the site included a surface examination and the subsequent recording of all identified artifacts. Twenty-nine items were identified including mano fragments, metate fragments, cores and flakes. The items were not collected, precluding the possibility of further study (material types, measurements, weights) of the artifacts. Finally, an archaeological site record was prepared for the site.

Paleontology

The rock units underlying the project site have a history of fossil production dating from the 1930's and represent a significant scientific resource. The most abundant concentration of fossils appear to be located in the Topanga and undifferentiated Sespe Vaqueros Formations. Initial project site investigation has uncovered numerous fossil concentrations at various locations within the Sespe-Vaqueros Formation on the subject property. The Topanga Formation has yielded numerous occurrences of vertebrate fossils in boulders which have apparently eroded from higher elevation. One of these boulders contains a portion of a baleen whale skull and another contains what appears to be the skeleton of a large toothed whale. Based on the abundance of observed fossils currently exposed on site, it is anticipated that project grading and construction

will unearth additional fossil concentrations which may be destroyed without adequate precaution to document, recover and preserve what is found.

History

The remains of a ranch house and out buildings are located in an area that will be directly impacted by the approved project.

In comparison, the proposed project for 299 units would result in incrementally less disturbance to the project site, as compared to the proposed project, and would not impact potential on-site cultural and scientific resources. CA-ORA-710 has been recorded in the vicinity of the knoll adjacent to the Abbey property, and would be preserved under this project.

All of the discussion on pages 4-173 through 4-192 of SEIR 566 and Appendix L (Cultural Resources Assessment) remain adequate for this alternative. Imposition of the 21 mitigation measures in the SEIR, including PDFs, SCs and AMs will ensure that all project impact are reduced to below a level of significance.

No significant unavoidable adverse impacts to cultural scientific resources would occur with implementation of the proposed project.

Impact Significance Criteria

If the project may cause damage to an important archaeological resource, the project may have a significant effect on the environment. For the purposes of CEQA, an "important archaeological resource" is one that:

- Is associated with an event or person of: 1) recognized significance in California or American History, or 2) recognized scientific importance in history.
- Can provide information which is both of demonstratable public interest and useful in addressing scientifically consequential and reasonable or archaeological research questions.
- Has a special or particular quality such as oldest, best example, largest, or last surviving example of its kind.
- Is at least 100 years old and possesses substantial stratigraphic integrity.
- Involves important research questions that historical research has shown can be answered only with archaeological methods.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Archaeology

Both the previous and proposed project may have significant impacts on the following archaeological sites: CA-ORA-710, CA-ORA-713, CA-ORA-715 and CA-ORA-1435H unless adequate safeguards are taken to document and recover any artifacts found at these locations. All other archeological sites have been determined to be not important.

Paleontology

Disturbance of potential paleontological resources may occur with project development without adequate mitigation.

History

Project implementation will directly impact CA-ORA-1435H, which may be considered significant.

CUMULATIVE IMPACTS

Archaeology

Cultural archeological resources are non-renewable in character. Once disturbed or destroyed, they can never be recovered. Cumulative impact to archeological and culture resources stems from their irreplaceable loss due to site development. The recommended mitigation measures will reduce the potential impact of site development, particularly to the known archeological sites on the subject property. Complete mitigation of the potential effects of site development on cultural resources is not fully possible however, because other archeological sites often remain hidden until project grading activities uncover them.

Paleontology

Fossils recovered at other locations from the rock formations underlying the project site have contributed to the understanding of the regions geologic and evolutionary history. Fossils are unique and irreplaceable scientific resources which can be lost forever unless adequate mitigation measures are taken to ensure their recovery and preservation.

Historical

No significant impact is anticipated.

MITIGATION MEASURES

Standard County Conditions and Mitigation Measures

Archaeology

SC 9-1 Prior to the issuance of any grading permit, a County-certified archaeologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified archaeologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PFRD/Harbors Beaches and Parks Division. A report of the literature and records search and the field survey shall be submitted to and approved by the Manager, PFRD/Harbors Beaches and Parks Division. Mitigation measures may be required depending upon the recommendations of this report. This mitigation measure has been completed as part of the Draft EIR.

SC 9-2 Prior to issuance of any grading permit, a county-certified archaeologist shall be retained by the applicant to perform a subsurface test level investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PFRD/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.

SC 9-3 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained to conduct pregrade salvage excavation of the archaeological resources in the permit area. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. A final report of the salvage operation shall submitted to and approved by the Manager, PFRD/Harbors Beaches and Parks Division, prior to any grading.

SC 9-4 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained, shall be present at the pregrading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate. If the archaeological resources are found to be significant, the archaeological observer shall determine appropriate

actions, in cooperation with the project developer, for exploration and/or salvage. The archaeologist shall submit a follow-up report to the Manager, PFRD/Harbors Beaches and Parks Division, which shall include the period of inspection, an analysis of any artifacts found and the present repository of the artifacts. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, PFRD/Harbors Beaches and Parks Division.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations in a manner acceptable to the Manager, PFRD/Harbors Beaches and Parks Division Facilities.

AM 9-5 Prior to site grading the project site shall be examined by a qualified archeologist, all potential archeological sites identified, and surface collection and documentation of artifacts be conducted.

AM 9-6 As indicated by the project archeologist, sites warranting further study shall be disced to ascertain the extent and significance of the deposit. If the project archeologist determines that a site is potentially of cultural worth, then additional excavation in a manner determined by the project archeologist shall occur prior to further grading or construction activities at these locations.

AM 9-7 During initial grading, the project site shall be monitored by a qualified archeologist who shall have the authority to order a temporary cessation of grading activities and take appropriate action to preserve any culturally significant materials if uncovered.

AM 9-8 If human remains of Native American origin are encountered during the project the County Coroner's Office and the Native American Heritage Commission shall be contacted for preservation and protection of the remains.

Paleontology

SC 9-9 Prior to the issuance of any grading permit, a County-certified paleontologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified paleontologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PFRD/Harbors Beaches and Parks Division. A report of the literature and records search and field survey shall be submitted to and approved by the

Manager, PFRD/Harbors Beaches and Parks Division, Future mitigation shall depend upon the recommendations of the report. This mitigation measure has been completed.

SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pregrade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PFRD/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalogue of artifacts, and their present repository. This mitigation measure has been completed.

SC 9-11 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pregrading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first-refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PFRD/Harbors Beaches and Parks Division, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, PFRD/Harbors Beaches and Parks Division.

Additional Mitigation Measures

AM 9-12 A qualified paleontologist shall be retained to perform periodic inspections of excavations and, if necessary, salvage exposed fossils. The frequency of inspections will depend on the rate of excavation, the materials being excavated, and the abundance of fossils. Initially, monitoring shall be on a full time basis in all excavations because of the high potential for the discovery of fossils in all the rock units present in the study area.

AM 9-13 The paleontologist shall be allowed to divert or direct grading in the area of an exposed fossil to facilitate evaluation and if necessary, salvage.

AM 9-14 To recover small fossils, it will be necessary to collect sediment samples from promising horizons discovered during grading monitoring for processing through fine mesh screens. Once the samples have been screened, they will be examined microscopically for small fossils.

AM 9-15 Fossils shall be prepared to the point of identification and catalogued before they are donated to their final repository.

AM 9-16 All fossils collected should be donated the County of Orange's designated repository.

AM 9-17 A report detailing the results of these efforts, listing the fossils collected, and naming the repository shall be submitted to the lead agency at the completion of the project.

Historical Resources

SC 9-18 Prior to issuance of a grading permit, project applicant shall provide written evidence to Manager, PFRD/Harbors Beaches and Parks Division that an historian has been retained by the applicant to implement final mitigation measures. A final report shall be submitted to and approved by the Manager, PFRD/Harbors Beaches & Parks Division prior to any alteration of the historical site area.

SC 9-19 Development adjacent to a place, structure, or object of historic significance shall be designed so that permitted uses and architectural design will protect the visual setting of the historic site. Such design shall be submitted to and approved by the Manager, PFRD/Harbors Beaches & Parks Division prior to any alteration of the historical site area.

Cultural/Scientific Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The proposed project will result in preservation of CA-ORA-710 and historic ranch house.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	Although the proposed project will continue to have a significant impact on cultural resources, no new adverse impacts will occur.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

10. RECREATION ANALYSIS

PROJECT IMPACTS

A primary goal in the County's Recreation Element is to provide adequate local park sites to meet the recreation needs of existing and future residents and preserve the natural resources within unincorporated Orange County. To comply with this goal the County acquires park land by requiring residential developers to provide a minimum of 2.5 net useable acres for every prospective 1,000 residents. Based on the projected population, local park requirements would total approximately 4.0 acres. The nearest facility containing playground equipment is the Portola Hills Elementary School located approximately 3/4 of a mile west of the site. Playground equipment is also found near the entrance to O'Neill Park located over two miles southeast of the subject property.

Mitigation of project-related local park impacts may be provided by the payment of local park fees as required by the Orange County Department of Harbors, Beaches and Parks. County regulations permit the payment of fees in lieu of actual on site park construction, allowing for the construction and maintenance of local parks at other more appropriate locations.

Although the approved 705-unit project is not proposing to improve the view park site and connecting trail, the project is proposing the construction of other regional recreational facilities which may mitigate this omission. As previously indicated, the applicant will be providing on site relocation and connection to the Aliso Creek Regional Riding and Hiking Trail. Provision of these recreational trail improvements in conjunction with required park fees, will provide mitigation for the lack of on-site park facilities.

In comparison, the proposed project for 299 units would provide for enhanced recreational amenities as compared to the approved project including access to existing and proposed trails, and an interpretive trail head park / staging area, and an passive ridge top lookout park as possible amenities associated with a ±90-acre extension of O'Neill Regional Park. The proposed project would achieve the goals outlined in the Recreation Element of the Foothill/Trabuco Specific Plan.

Much of the discussion on pages 4-192 through 4-199 of DEIR 566 remains appropriate for the proposed project. The SEIR includes 15 mitigation measures relating to recreation, which require the applicant to provide trail connections and develop the view/lookout park.

No significant unavoidable adverse impacts to recreation would occur with implementation of the proposed project.

Impact Significance Criteria

The effects of a project on recreation are considered to be significant if the project will result in the following:

- The demand generated by the project meets or exceeds the capacity of existing park lands, bicycle trails and hiking trails, or otherwise requires their expansion or requires the construction of major new facilities.
- The project will cause permanent removal or relocation of existing recreational trails, parks or other facilities in the area.
- The project would be in conflict with existing or planned recreational uses in the project area of effect.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Implementation of the proposed project, prior to mitigation, would result in significant impacts to existing local public park demand. This impact however will be reduced by the provision of in-lieu fees.

CUMULATIVE IMPACTS

The proposed project will increase area population by approximately 1,000 persons which will contribute to the cumulative impact on local and regional recreational

facilities. This potential impact is considered incidental given the overall increase of recreational facilities to be provided by other regional development and is not considered significant.

MITIGATION MEASURES

Project Design Features

PDF 10-1 The Live Oak and Aliso Creek riding and hiking trail shall be located on the Project Site as shown in Exhibit 7 and Exhibit 63 of SEIR 566, pp. 3-11 and 4-200).

PDF 10-2 Live Oak Canyon Trail shall be constructed on-site, ultimately connecting O'Neil Regional Park to the Aliso Creek riding and hiking trail, as shown in Exhibit 7, Site Plan, of SEIR 566, p. 3-11.

Additional Mitigation Measures

The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations:

AM 10-5 Prior to first building occupancy, the applicant shall pay all park mitigation fees as required by the Department Manager, PFRD/Harbors Beaches & Parks Division.

AM 10-6 Prior to final building occupancy the applicant shall dedicate and construct all required regional trail connections and improvements as approved and required by the Department Manager, PFRD/Harbors Beaches & Parks Division.

Recreation Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	No	No changes in significant impacts occurred.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	Although the proposed project will continue to have a significant impact on recreation, no new adverse impacts will occur.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

11. HAZARDS ANALYSIS

PROJECT IMPACTS

The proposed project site is located in a high fire hazard area, and as a result, all future development would be subject to risk during wildfires. The circulation system proposed by the proposed project provides for similar emergency access as the approved project, with 224 units served off of a single means of access. It should be noted that the proposed project proposes a single loaded primary spine road on-site, which would reduce fire hazards to proposed residents by allowing for direct access to major on-site wildland areas and allowing for additional non combustible areas adjacent to residential areas. The location of the proposed project hiking trail is proposed to travel through the primary east-west wildlife movement corridor, which could result in an increase in human/wildlife interaction hazards.

All of the discussion on pages 4-199 through 4-208 of Certified SEIR 566 remain appropriate for the proposed project. Because of the inclusion of nine (9) PDFs and (21) SCs, as well as the design features of the project, potential hazard impacts are reduced to below a level of significance.

No significant unavoidable adverse impacts to hazards would occur with the proposed project.

Impact Significance Criteria

The risks posed to public health and safety are considered to be significant if the project will result in the following:

- Provision of insufficient fire protection measures, and/or design plans inconsistent with the Development/Open Space policies of the LUP (Land Use Plan, Chapter 3M, I-3.35).

- The placement of habitable structures within 1,000 feet of a landfill boundary without monitoring gas migration to the satisfaction of the Local Enforcement Agency (LEA), as specified in Title 14, CC&R 17783.5.

- Exposure of humans to radio frequency (RF) energy that exceeds the standards and guidelines established by the American National Standards Institute (ANSI) or National Council on Radiation Protection and Measurements (NCRP). The Ansi standards are set in the *American National Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz* (ANSI 1992), and are similar to the NCRP maximum personal exposure limits.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Wildfire

Due to topography, biology, and weather conditions the project site is located in area classified as a "Special Fire Protection Area" by the Orange County Fire Authority. To help mitigate property damage and risk to project residents in the event of a wildfire in the project vicinity, a number design measures would be incorporated into this project.

First the project site will implement a comprehensive fuel modification program in accordance with County standards. Typically fuel modification consists of a twenty-foot setback zone (Zone A), a minimum of fifty foot irrigated zone (Zone B), with an additional minimum of one hundred feet (100') of brush thinning zone (Zones C and D). Exhibits 64 and 65 of SEIR 566, pp. 4-208-209, illustrate these standards. Manufactured slope and remedial grading areas will be replanted with native low fuel plant species to further reduce the fire risk.

The site is also located ½ mile east of the Portola Hills Fire Station and less than a 30-second flight time from the upper Oso Reservoir, which will be used by OCFA helicopters, and a ten minute flight time to the site from the helicopter station at Fullerton Airport. (Helicopter dispatch is only included in dispatch to Wildland fires not structural fires on-site.) Therefore, during wildfire suppression operations, emergency response times to the subject property are expedite. To ensure fire fighter access to

wilderness areas surrounding the site, individual lots around the project perimeter will provide a recorded unobstructed fire access easement through these properties ensuring adequate emergency access to all portions of the project's perimeter. Finally project construction will use alternative fire resistant materials and methods including concrete tile roofs, closed eaves and soffits, double paned/dual glazed windows, and noncombustible exterior building facing. Wet and dry utilities will be located on opposite sides of the street to minimize lane closures during maintenance periods.

Emergency Access

Due to site constraints, only one primary access roadway can be provided to the eastern portion of the site. The provision of only one main access road is of concern since this roadway could become obstructed and impassible in emergency situations creating an impact to public safety. As indicated on the site plan, primary project access is provided from El Toro Road by the main spine road extending the length of the site, with secondary access via Valley Vista Way in the Hidden Hills tract south of the project site. This roadway design leaves a majority of the proposed lots with one single access point east of Valley Vista Way. In the event that this east access point is blocked or impassible in an emergency situation, residents and emergency personnel have no other all weather access alternatives. As indicated by the OCFA, mitigation of this restricted access may be provided by the proposed fire mitigation features and by providing internal fire sprinklers for the single access lots in the proposed project.

Wildlife Interaction

Conflict between wildlife and project residents and pets is an associated project risk due to the proximity of wild areas to the subject site. As more residential development occurs at the interface with wilderness areas, the potential for increased contact with dangerous wild animals increases. In the past, when development encroached into previously undeveloped areas, the wildlife would move on to new more remote foraging ranges. Unfortunately, due to developmental encroachment which now encircles the remaining wilderness areas, the ability for animals to relocate to new grounds is limited. A number of animal species, particularly coyotes and raccoons have proved particularly adaptable to human presence, foraging and hunting in proximity to residential housing tracts.

CUMULATIVE IMPACTS

Implementation of the proposed project will add to the cumulative encroachment of residential tract development into existing remaining rural and wilderness areas, further reducing the natural foraging habitat area available to area wildlife and increasing the opportunities for human/animal conflict within the interface zone between the built manmade and natural environments.

Project construction within extreme fire risk areas adds to the potential cumulative impact of increased fire frequency and increased property and human loss due to fire events.

MITIGATION MEASURES

PDF 11-1 Implement a comprehensive fuel modification program in accordance with Section 27 of Appendix II-A of the 1994 Uniform Fire Code as adopted by County Ordinance 3954 (the Wildland Urban Interface Task Force report was not adopted and is not enforced by the OCFA). Exhibits 9 and 64 of SEIR 566, pp. 3-13 and 4-208, illustrate the fuel modification zones and, although adequately described, it should be noted that the distances are horizontal measurements rather than vertical and, therefore, may actually be larger zones as measured vertically up or down a slope (based on topography).

PDF 11-2 Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.

PDF 11-3 Provide for the construction of a water tank off site to ensure adequate on site water supply and OCFA fire flow requirements. The minimum fireflow requirements for this project of 1500 gpm for a minimum of 2 hours at 20 psi residual pressure. This flow must be available 24 hours per day .

PDF 11-4 Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.

PDF 11-5 Residential structures shall be constructed of fire-resistant material, including but not limited to, "Class A roof assemblies", closed eaves and offsets, double paned or dual glazed windows. The exterior walls of structures will be constructed of " 1-hour fire resistant materials" and all structures will have fire sprinklers.

PDF 11-6 All residential structures shall be required to have automatic interior fire sprinkler systems.

PDF 11-7 The interface area between residential lots and open space areas within the project boundary shall be wrought iron fenced to minimize intrusion of wildlife into the built portions of the project site.

Standard County Conditions and Mitigation Measures

SC 11-8 Prior to the issuance of any preliminary grading permits, applicant shall request that the Manager, HCA/Environmental Health, determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, HCA/Environmental Health.

SC 11-9 Prior to the issuance of any building permits for combustible construction, a letter and plan from the developer shall be submitted stating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site. Said letter shall be approved by the Fire Chief prior to the issuance of any building permits.

SC 11-10 Prior to the issuance of any building permits on those lots determined applicable by the Fire Chief, plans for an automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. This system shall be operational prior to the issuance of a certificate of use and occupancy.

SC 11-11 Prior to the issuance of any building permits, the applicant shall submit a detailed letter of intended use for each building to the Fire Chief for review and approval.

SC 11-12 Prior to the issuance of any grading permits, preliminary plans for all street and courts, public or private, shall be submitted to and approved by the Fire Chief. The plans shall include the plan view, sectional view, and indicate the width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be clearly marked.

SC 11-13 Prior to the issuance of any certificates of use and occupancy, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief. The plans shall indicate the locations of red curbing and signage, and provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color.

SC 11-14 Prior to the issuance of any grading permits, construction details for any emergency access gate shall be submitted to and approved by the Fire Chief. Contact the Orange County Fire Department at (714)744-6623 for a copy of the "Guidelines for Fire Department Emergency Access".

SC 11-15 Prior to the issuance of any grading permits, a fuel modification plan and program shall be submitted and approved by the Fire Chief in consultation with the Manger, Environmental and Project Planning Services Division. The Planning and Development Section shall be contacted at 744-0403 for requirements to be met and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation, include the method (mechanical or hand labor) for removal of flammable vegetation and provide for the planting of drought tolerant fire resistant plants.

SC 11-16 Prior to the issuance of any building permits, the developer shall have completed, under the supervision of the Fire Chief, that portion of the approved fuel modification plan determined to be necessary by the Fire Chief before the introduction of any combustible construction material into the project area.

SC 11-17 Prior to the issuance of any certificates of use and occupancy, the remaining fuel modification shall be installed and completed under the supervision of the Fire Chief. Further, the installed fuel modification shall be established to a degree meeting the approval of the Fire Chief.

Hazards Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	No	No changes in significant impacts occurred.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	The conclusion of no unavoidably adverse hazard impacts reached in Certified SEIR 566 remains appropriate for the proposed project.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

12. PUBLIC SERVICES ANALYSIS

PROJECT IMPACTS

Sheriff

The Orange County Sheriff's Department has indicated that it can provide adequate police service to the project area. The new response time varies with the location of the deputies at the time of the call, and range from five (5) to fifteen (15) minutes. Based on

an officer/population ratio of 2:1000, three additional officers would be required by the project.

Fire

The approved project proposes 705 manufactured single family residential dwelling units on 222.23 acres of land that is classified as a High Fire Hazard Severity Zone by the OCFA. A 1.4 million-gallon water tank will be constructed in the northeast corner of the project site. This tank will be able to meet the water demand and fire flow requirements for the project (860,000 gallon water supply/540,000 gallon fire flow).

The previous and proposed project is a residential community with two points of access (spine road at El Toro Road and Valley Vista Way). Valley Vista Way is proposed as an emergency access only. Portions of the project above Valley Vista Way would be served by only one access, El Toro Road. Emergency medical response to areas above Valley Vista Way could be delayed, if the main spine road is blocked or made impassable.

Education

Implementation of the previous and proposed project would add additional students to an already overcrowded system. Project-related student generation is shown in Table 33.

PROJECT-RELATED STUDENT GENERATION

Grade	Units	Student Generation Factor	Student Generation
K-6	299	0.340/du	102
7-8	299	0.065/du	19
9-12	299	0.160 du	48
Total			169

As shown, 169 K-12 students would be generated at buildout of the approved project.

Library

Implementation of the previous and proposed project would result in additional demand for library services in the project area.

The local branches of the Orange County Public Library System will be able to serve the needs of the project's residents. The system has established the following standards for service:

- .2 square feet of library space per capita;
- 1.3 volumes per capita.

Based on an average of 2.57 persons per dwelling unit countywide, the proposed project will increase population by 768 persons using the above figures. Development of the proposed project will require approximately 154 square feet of additional library space and approximately 998 additional volumes. Currently, according to the County, most Orange County public libraries are within current service guidelines. However, due to County budget constraints, branch libraries vary their hours and reduce services to cut spending. The County also requires participation in the County's Development Fee Program for Libraries. Currently the fee is set at $185.00 per dwelling unit.

Solid Waste

The project will have trash and recycling collection services provided by Waste Management of Orange County (WMOC). WMOC will provide storage containers for refuse collection and recycling bins for recyclable materials. Refuse is collected once a week and recyclable materials will be collected every other week. Currently WMOC charges $13.96 per dwelling unit per month. WOC estimates an average of 65 pounds of refuse per month per household unit in unincorporated Orange County. The following table shows the estimated solid waste generation for the proposed project.

PROJECT-RELATED SOLID WASTE GENERATION

Land Use	# of Units	Generation Factor	Monthly		Annual	
			Lbs.	Tons	Lbs.	Tons
Single Family Residential	299	65 lbs/du/mo	19,435	9.72	233,220	116.6

Refuse will be transported by the County run Integrated Waste Management Department to one of two (2) County owned landfills. They are Prima Deshecha, a 1500 acre facility in San Juan Capistrano and the Frank Bowerman landfill, a 725 acre facility in Irvine. The Integrated Waste Management Department of Orange County runs five (5) landfills in Orange County, which the County indicates will have available landfill capacity for 50 years.

Recyclable materials are transported to Sunset Environmental in Irvine for processing.

The demand for public services and utilities by the proposed project for 299 units would be reduced as compared to the approved project (705 units), due to a substantial

decrease in the number of proposed residential lots and associated residents. No unavoidable adverse impacts to public services and utilities would result.

All of the discussion on pages 4-209 through 4-222 of Certified SEIR 566 remain appropriate for the provision of public services, including sheriff, fire, schools, library and solid waste. Because of the ten (10) PDFs and eighteen (18) SCs, no unavoidable impacts will be generated with the proposed project.

No significant unavoidable adverse impacts to public services would occur with the proposed project.

Impact Significance Criteria

The effects of the project on public services is considered significant if the project will result in the following:

- The demand for school facilities, police and fire protection, library services, or solid waste facilities meets or exceeds their capacity.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Sheriff

The project will have no significant impact on the Orange County Sheriff's Departments ability to provide adequate police services.

Fire

Due to topography, vegetation and climatic conditions, the project site is located in an area classified as a "Special Fire Protection Area" by the OCFA.

Because much of the project would be served by a single access road, the OCFA has expressed concern that public safety could be compromised should this road become blocked or impassable.

Education

Implementation of the proposed project would result in the generation of about 168 additional students into the currently overcrowded Saddleback Valley Unified School District.

Library

The project will not have a significant impact on the Orange County Public Library System's ability to provide services.

Solid Waste

WMOC would be able to provide refuse collection and Integrated Waste management does have landfill space available. There are no significant impacts from the project.

CUMULATIVE IMPACTS

Sheriff

Anticipated countywide growth combined with the project impacts would have a cumulative impact on Sheriff Department services over time.

Fire

The anticipated countywide growth in combination with the project impacts would have a cumulative impact on fire and emergency services in Orange County.

Education

District-wide growth in combination with project-related impacts would result in cumulative impacts to the Saddleback Valley Unified School District.

Library

This project in combination with regional growth would have a cumulative impact on the Orange County Public Library System.

Solid Waste

The Integrated Waste Management Department indicates that landfill space is available for the next 50 years and the project will not have a significant impact on landfill capacity; however, regional development will have a cumulative impact on available landfill space.

MITIGATION MEASURES

Project Design Features

Sheriff

SC 11-8 Prior to the issuance of any preliminary grading permits, applicant shall request that the Manager, HCA/Environmental Health, determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, HCA/Environmental Health.

SC 11-9 Prior to the issuance of any building permits for combustible construction, a letter and plan from the developer shall be submitted stating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site. Said letter shall be approved by the Fire Chief prior to the issuance of any building permits.

SC 11-10 Prior to the issuance of any building permits on those lots determined applicable by the Fire Chief, plans for an automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. This system shall be operational prior to the issuance of a certificate of use and occupancy.

SC 11-11 Prior to the issuance of any building permits, the applicant shall submit a detailed letter of intended use for each building to the Fire Chief for review and approval.

SC 11-12 Prior to the issuance of any grading permits, preliminary plans for all street and courts, public or private, shall be submitted to and approved by the Fire Chief. The plans shall include the plan view, sectional view, and indicate the width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be clearly marked.

SC 11-13 Prior to the issuance of any certificates of use and occupancy, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief. The plans shall indicate the locations of red curbing and signage, and provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color.

SC 11-14 Prior to the issuance of any grading permits, construction details for any emergency access gate shall be submitted to and approved by the Fire Chief. Contact the Orange County Fire Department at (714)744-6623 for a copy of the "Guidelines for Fire Department Emergency Access".

SC 11-15 Prior to the issuance of any grading permits, a fuel modification plan and program shall be submitted and approved by the Fire Chief in consultation with the Manger, Environmental and Project Planning Services Division. The Planning and Development Section shall be contacted at 744-0403 for requirements to be met and clearance of this condition. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation, include the method (mechanical or hand labor) for removal of flammable vegetation and provide for the planting of drought tolerant fire resistant plants.

SC 11-16 Prior to the issuance of any building permits, the developer shall have completed, under the supervision of the Fire Chief, that portion of the approved fuel modification plan determined to be necessary by the Fire Chief before the introduction of any combustible construction material into the project area.

SC 11-17 Prior to the issuance of any certificates of use and occupancy, the remaining fuel modification shall be installed and completed under the supervision of the Fire Chief. Further, the installed fuel modification shall be established to a degree meeting the approval of the Fire Chief.

Public Services Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The 299-unit proposed project will result in less demand for fire, police and school services compared to the previous 705-unit project.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	The conclusion of no unavoidably adverse public services impacts reached in Certified SEIR 566 remains appropriate for the proposed project.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

13. UTILITIES & SERVICE SYSTEMS ANALYSIS

PROJECT IMPACTS

Water

The Trabuco Canyon Water District (TCWD) has indicated that the project's water needs can be met. Water demands were estimated using current Orange County Fire

Authority criteria plus current TCWD standard guidelines. TCWD has established the average annual water demand at 450 gallons per dwelling unit (du) per day for residential land uses. The following table shows the project-related water demand.

PROJECT-RELATED WATER DEMAND

Land Use	# of Units	Generation Factor	Gallons Per Day
Single-Family Residential	299	450 gal/du/day	134,550
Irrigation	51.0 ac	2.5 af/ac/yr	127,500
Total			**262,050**

Water for irrigation has been estimated to require 2.5 acre feet per acre, per year (af/ac/yr). Maximum day demand has been calculated using TCWD's 2.0 multiplier for residential and 2.5 multiplier for irrigation uses.

Since the project will have a single water source it is classified as a "stand alone" zoned water distribution system. Proposed service zones for the project are:

Zone 0	Existing systems at point of connection 865-feet to 1065 feet.
Zone 1	Elevation 1,085 feet to 1,200 feet.
Zone 2	Elevation 1,200 feet to 1,400 feet.
Zone 3	Elevation 1,400 feet to 1,510 feet.

Because of the elevation gain at the project site a booster pump station near the main water line connection is necessary to pump water to a reservoir located just outside the property's northeast tract boundary at pad elevation 1,590 feet. The water tank site was dedicated to TCWD when Tract Map 10692 recorded. In addition, a $904,425 capital improvement charge was paid to the Trabuco Canyon Water District when Tract Map 10692 recorded in 1988. TCWD will construct the water tank concurrent with project development.

Wastewater

TCWD indicates that the project's waste water needs can be met. Most of the project will be served by an 8-inch line which will gravity flow beneath the collector street into the TCWD's 15-inch line in El Toro Road. The remaining lots in the southwest corner of the project will connect to the 8-inch line in Valley Vista Way and gravity flow into the 15-inch line in El Toro Road.

TCWD has established a discharge factor of 90 gallons per person with 3 persons per unit. The following table shows the estimated project-related sewage discharge flow.

PROJECT-RELATED WASTEWATER GENERATION

Land Use	# of Lots	Discharge Factor (90 gal/pp @ 3 persons/unit)	Discharge Gallons (per day)
Single Family Residential	299	270 gal/day	80,730

The existing TCWD 15-inch line serving the project has reserved capacity for the project in the amount of approximately 200,000 gallons per day. In addition, substantial sewer capacity fees amounting to $973,528.58 was paid to Trabuco Canyon Water District when the Tract Map 10692 recorded in 1988.

Electricity

SCE indicates that the electrical loads of the project are within parameters of the overall projected load growth which SCE is planning to meet. Unless the demand for electrical generating capacity exceeds SCE's estimates, and provided that there are no unexpected outages to major sources of electrical supply, SCE expects to meet the demand for electricity from the project site. SCE's estimates for residential electrical consumption are based on a figure of 700 kilowatt (kwh) hours per dwelling unit (du) per month. The following table shows the monthly and yearly project related electrical consumption.

PROJECT-RELATED ELECTRICAL CONSUMPTION

Land Use	Number of Units	Generation Factor	Monthly kwh of Electricity	Annual kwh of Electricity
Single-Family Residential	299	700 kwh/month	209,300	2,511,600

Natural Gas

SCG indicates that the project's natural gas needs can be met without major system expansion.

Gas consumption has been estimated by SCG at 1,095 therms per year per single family dwelling unit. The following table shows annual project-related natural gas consumption.

PROJECT-RELATED NATURAL GAS CONSUMPTION

Land Use	No. of Lots	Generation Factor	Therms Per Year
Single Family Residential	299	1,095 Therms/du/yr	327,405

Note: 1 Therm = 100 cu.ft. of natural gas

Cable

Cox Communications has indicated that it can provide cable service to the area. There will be no charge to the applicant or homeowners to have cable TV services provided to the project site.

Communications

Pacific Bell has indicated that it can provide telephone service to the area. There will be no charge to the applicant or homeowners to have telephone services provided to the project site.

Summary

In comparison, Demand for utilities and service systems would be substantially reduced under the proposed project for 299 units, as compared to the previous proposed project, since a substantially reduced number of residential units are proposed. All of the discussion on pages 4-223 through 4-235 of Certified SEIR 566 remain appropriate for the proposed project regarding utilities and service systems, and the provision of water, wastewater, electricity, natural gas, cable and communications. Because of ten (10) PDFs and eight (8) SCs, no unavoidable impacts would occur under proposed project, in these service areas.

Impact Significance Criteria

The effects of a project on utilities and service systems is considered to be significant if the project will result in the following:

- The demand generated by the project meets or exceeds the capacity of existing, or otherwise requires their expansion, or requires the construction of major new facilities.
- The project's demands for fuel or energy meet or exceed existing supplies, or otherwise cause supply and/or capacity constraints.
- The project's demands exceed the capacity of existing utility systems, or otherwise require the expansion or construction of major new facilities.

- The project causes significant disruption of service.

SIGNIFICANT IMPACTS OF THE PROJECT PRIOR TO MITIGATION

Water

Project implementation would not result in significant impacts on TCWD's ability to provide water service. Due to the elevation change between the water line connection and the reservoir, a booster pump station will be required to provide adequate water supply for the site.

Wastewater

The project will have no significant impacts on TCWD's ability to provide wastewater service to the area.

Electricity

The project will have no significant impacts on SCE's ability to supply electricity to the area.

Natural Gas

The project will have no significant impacts on SCG's ability to provide natural gas service to the area.

Cable

The project will have no significant impact on Cox Communications ability to supply cable TV service to the area.

Communications

The project will have no significant impact on Pacific Bell's ability to supply telephone service to the area.

CUMULATIVE IMPACTS

Water

The cumulative impacts of the project are not significant. The project falls within the plans of the TCWD for long range growth.

Wastewater

The cumulative impacts of the project are not significant. The project falls within the plans of the TCWD for long range growth.

Electricity

The cumulative impacts of the project are not significant. The project falls within the plans of SCE for long range growth.

Natural Gas

The cumulative impacts of the project are not significant. The project falls within the plans of SCG for long range growth.

Cable

This project along with other proposed projects would not have a cumulative impact on Cox Communication's ability to provide services to the area.

Communications

This project along with other proposed projects would not have a cumulative impact on Pacific Bell's ability to provide service to the area.

MITIGATION MEASURES

Project Design Features

Water

PDF 13-1 The new booster pump station shall be paid for by the applicant and designed and function according to TCWD's guidelines and standards.

PDF 13-2 Operational capacities and pressure parameters for design of the booster pump station (approved by OCFA) shall be determined at design stage and should incorporate but not be limited to the following requirements:

- It shall meet the maximum day demand for the "stand alone" zones of Saddleback Meadows with an operating time of 24 hours and without its largest unit in service.
- It shall be designed with a back-up generator for the booster pump, as well as fuel and maintenance provisions.
- It shall incorporate the typical 3 or 4 pump system with an alternating state sequence.
- It shall pump from TCWD's El Toro Road zone (1,165 feet HWL) to the storage facility (reservoir) proposed.

- It shall have the ability to refill the proposed reservoir, if it were empty, within 72 hours while also providing for maximum day demands on the water system during that time.

PDF 13-3 Water conservation measures to be implemented consist of water-conserving features in the design and construction of residential homes and uses, plus use of drought-tolerant plant materials in the slope and streetscape plantings. Proposed water conservation measures also include:

- Supply line pressure: Water pressure greater than 50 pounds per square inch (psi) reduced to 50 psi or less by means of pressure-reducing valves.
- Ultra-low-flush toilets: 1.5 gallon-per-flush toilets installed in all new construction.
- Landscape with low-water-using plants wherever feasible.
- Grouping of plants of similar water use to reduce over-irrigation of low-water-using plants.
- Extensive use of mulch as top cover to improve water-holding capacity of the soil.
- Installation of efficient irrigation systems that minimize runoff and evaporation, and maximize the amount of water reaching plant roots. Drip irrigation, soil moisture sensors, and automatic irrigation systems are proposed methods of increasing irrigation efficiency.

PDF 13-4 All design and landscape features shall comply with TCWD's guidelines and standards.

Wastewater

PDF 13-5 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Electricity

PDF 13-6 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Natural Gas

PDF 13-7 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Cable

PDF 13-8 All utilities shall be installed by Cox Cable in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Communications

PDF 13-9 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.

Standard County Conditions and Mitigation Measures

Water

SC 13-10 Prior to the issuance of any building permit(s), the applicant shall provide a report to the Manager, PDS/Building Permits Services Division, indicating that plans showing the location of all proposed reclaimed water lines used to irrigate open spaces, parks, and other landscaped areas, have been submitted to and approved by the Trabuco Canyon Water District.

SC 13-11 Prior to the issuance of building permits, water conservation measures shall be incorporated into the development design plans and which shall be submitted for approval to the Trabuco Canyon Water District.

Wastewater

SC 13-12 Prior to the issuance of a certificate of use and occupancy, sewer lines, connections, and structures shall be installed in a manner meeting the approval of the Manager, HCA/Environmental Health.

A. All waste water facilities and line shall be constructed and maintained to meet TCWD standards and requirements.

B. All sewer lines shall be underground facilities.

C. The project shall comply with all State of California Health and Safety Codes.

Electricity

SC 13-13 Prior to the issuance of a building permit, project proponent shall consult with the local gas and electric companies regarding feasible energy conservation features that should be included in the design of the proposed project. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

SC 13-14 Prior to the issuance of a building permit, the project proponent shall incorporate passive or natural heating and cooling opportunities in the design of the proposed project including but not limited to the following: solar energy use; thermal insulation; tinted or solar reflective glass; orientation to sunlight; use of deciduous trees in landscaping; installation of roof fans; utilize fluorescent lighting, switches and thermostat, utilize time-controlled lighting; and, utilize AC units with 100% outdoor air economize. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.

Natural Gas

SC 13-15 The applicant shall provide for all lines and mains necessary to provide natural gas to the project.

SC 13-16 The applicant shall obtain all required permits and follow all SCG, State and County regulations and requirements regarding natural gas service.

Cable

No standard condition requirements.

Communications

SC 13-17 Applicant shall comply with the requirements of the California Public Utilities Commission and Pacific Bell Telephone Company for the provision of telephone service.

Utilities & Service Systems Summary Findings

	Yes/No	Status/Comment
Changes in regional or local conditions?	No	No change in regional or local conditions occurred which exceed the thresholds established in Certified SEIR 566.
Changes in impact thresholds?	No	The impact thresholds established in Certified SEIR 566 remain adequate.
Changes in mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate for the proposed project.
Changes in significant impacts?	Yes	The 299-unit proposed project will result in less demand for water, wastewater, electricity, natural gas and communication services compared to the previous 705-unit project.
Changes in cumulative impacts?	No	The assessment of cumulative impacts within Certified SEIR 566 remain adequate for the proposed project.
New significant adverse impacts?	No	The conclusion of no unavoidably adverse utilities and service systems impacts reached in Certified SEIR 566 remains appropriate for the proposed project.
Additional mitigation required?	No	The mitigation measures within Certified SEIR 566, including PDFs, SCs, & AMs, remain adequate in scope for the proposed project. No additional mitigation measures are required.

14. FINDINGS:

1. AB 3158 FEE EXEMPTION: Find that pursuant to Section 711.4 of the California Fish and Game Code, this project is exempt from payment of required fees as it has been determined that the required fees have been paid.

2. The proposed project will be beneficial in achieving both long-term and short-term goals; it will provide both employment opportunities as well as additional housing opportunities for the future.

3. The impacts associated with implementation of the proposed project would be substantially less than those associated with implementation of the previously approved project evaluated in Certified SEIR 566 for biological resources, public services, traffic, air quality, cultural resources, aesthetics and recreation, with all of the other environmental factors expected to experience similar impacts. Impacts considered significant, unavoidable and adverse for the proposed project, as identified in Certified SEIR 566, would remain as such, with the

exception of aesthetic impacts to St. Michael's Abbey and the Ramakrishna Monastery, which would be greatly reduced through the use of landform grading in conjunction with landscaping, as well as the elimination of residential lots north of the on-site spine road. No additional significant adverse effects would occur as a result of implementation of the proposed project beyond those identified for the proposed project in Certified SEIR 566. Additional mitigation measures have not been proposed or required.

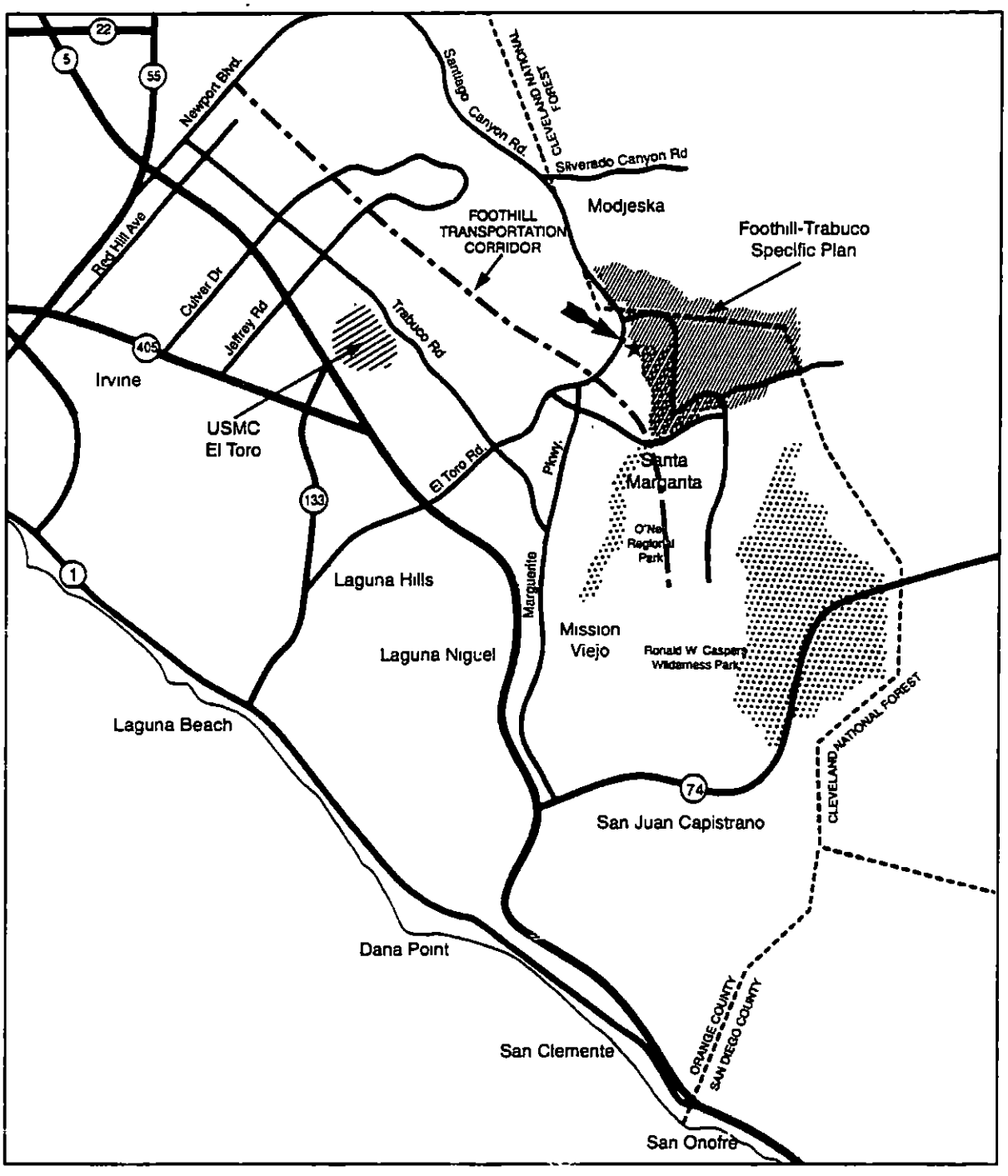
4. Find that the project as proposed will not have any adverse effects or impacts on humans or otherwise.

5. Find that Final SEIR, which was certified in January 27, 1998, satisfies the requirements of CEQA for this project.

15. DETERMINATION:

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because Final SEIR 566, certified December 3, 1997 has been prepared, with mitigation measures which will ensure that any project related impacts will be mitigated to a level of insignificance.

EXHIBITS



Regional Location Map Exhibit 1

URBAN VISION

County of Orange P&DS

Scale:

Source:

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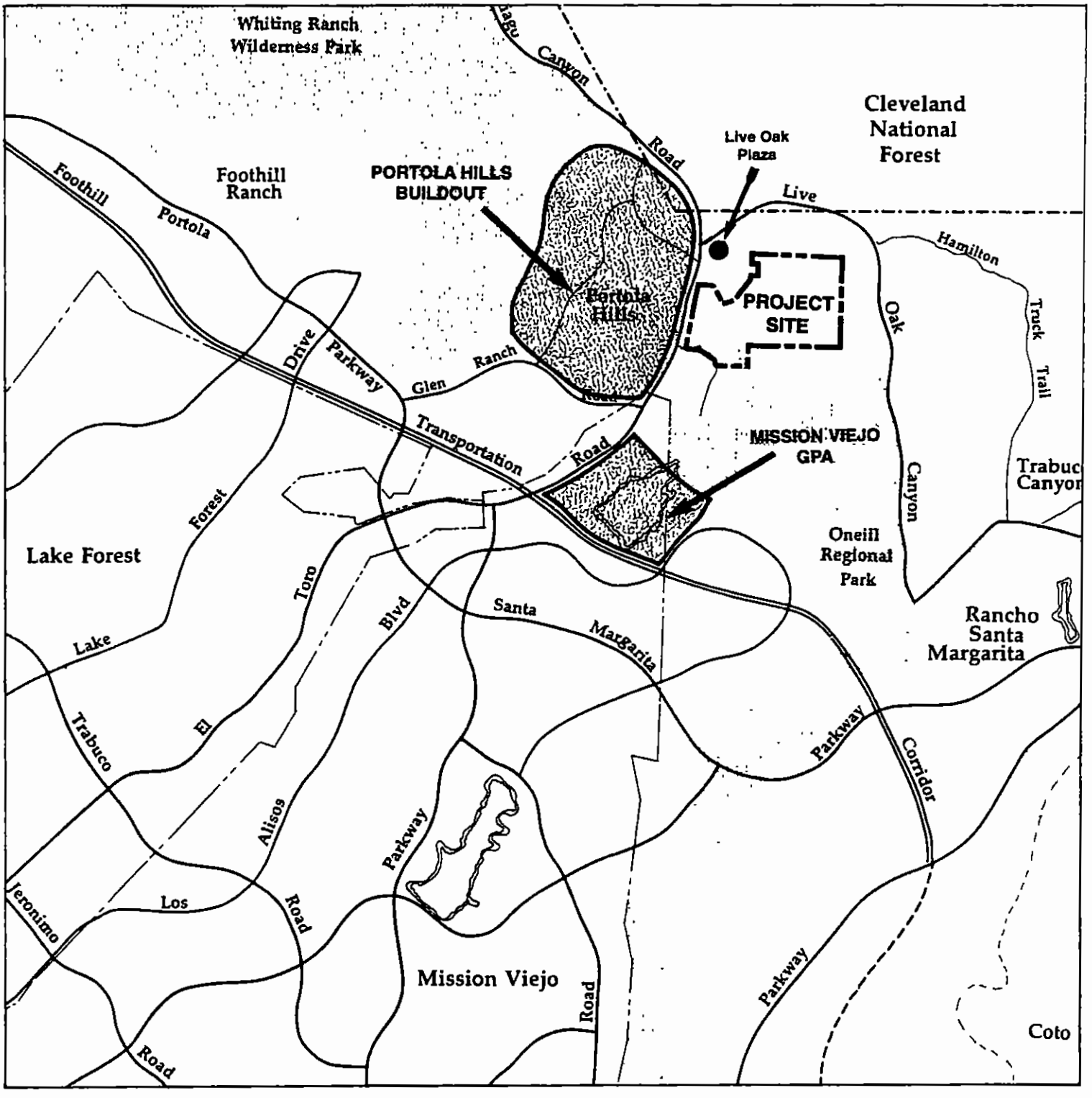


SADDLEBACK MEADOWS -
RECORDED TRACT MAP 10692
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT 566

URBAN VISION

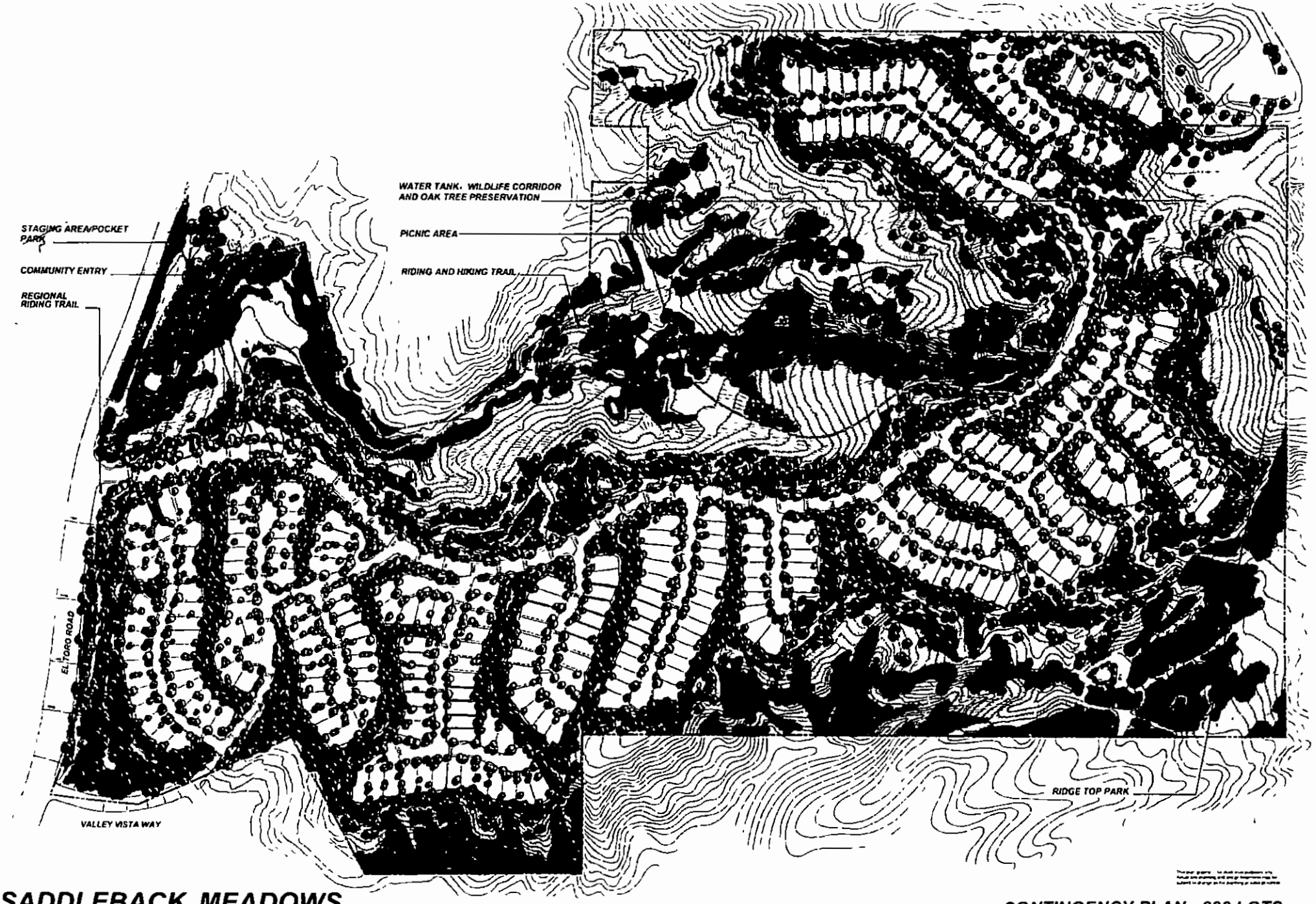
County of Orange P&DS

Scale:

Source

N

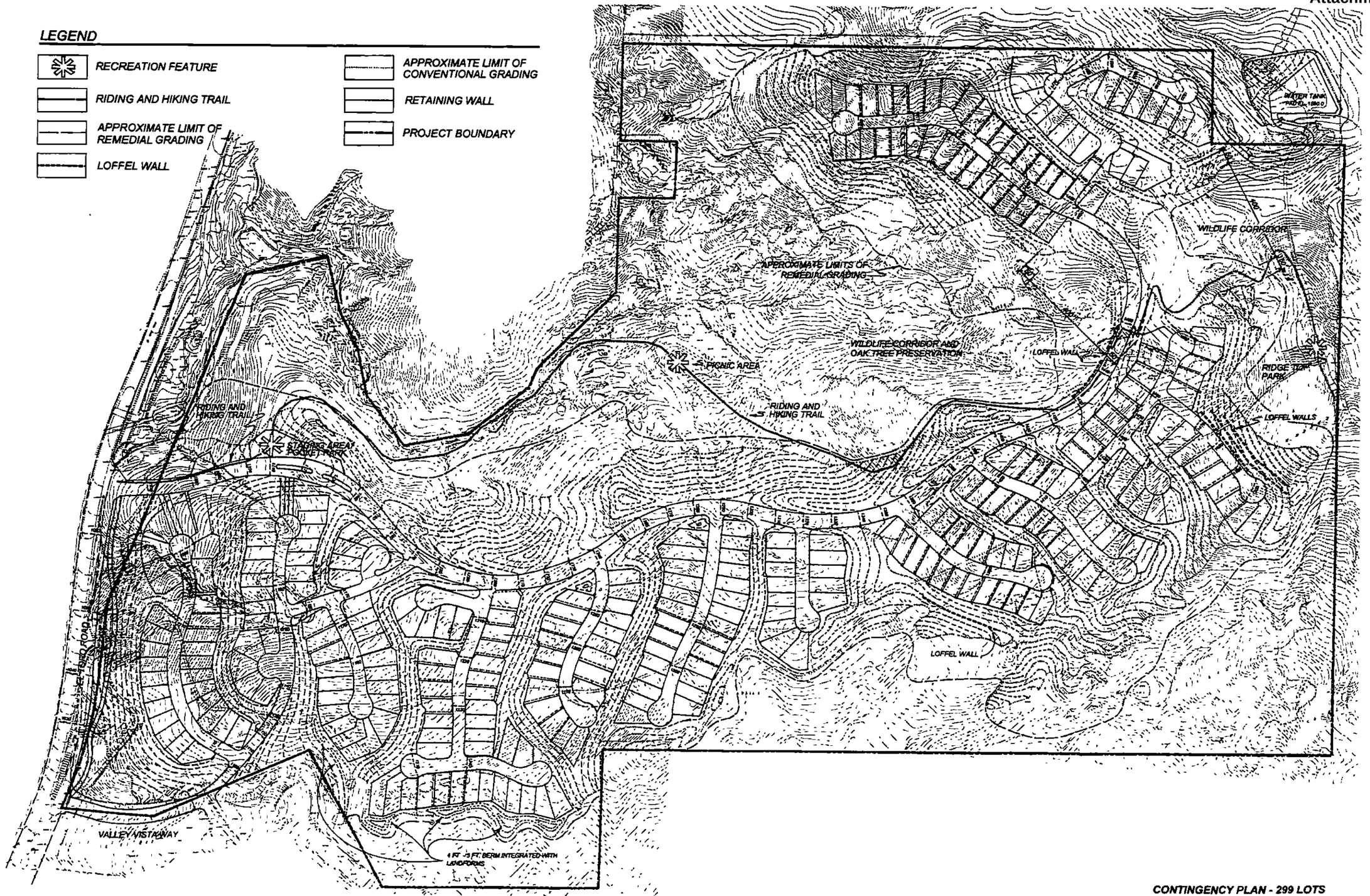
Vicinity Map
Exhibit 2



SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

CONTINGENCY PLAN - 299 LOTS



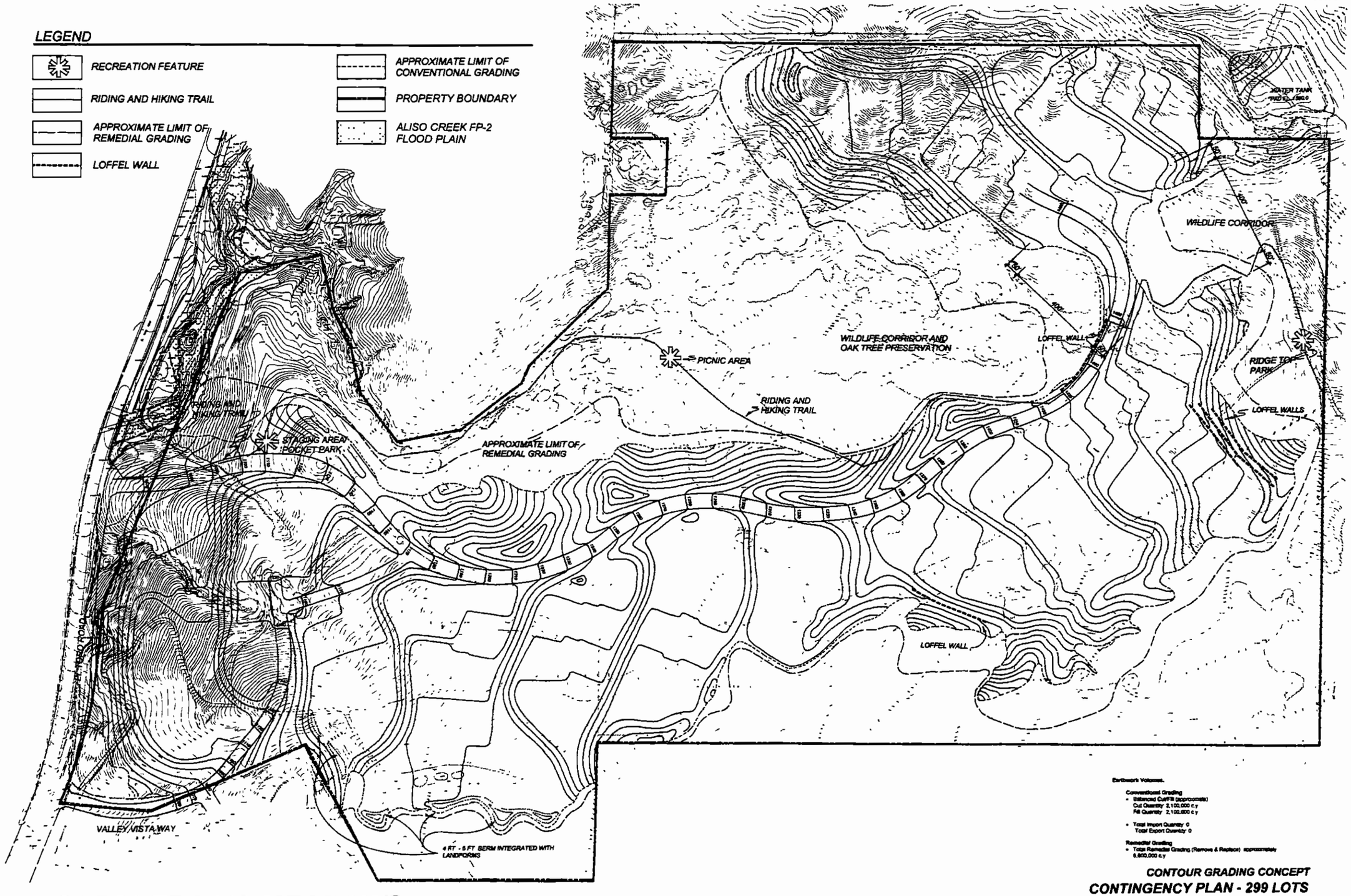
SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

CONTINGENCY PLAN - 299 LOTS
DEVELOPMENT PLAN CONCEPT
AREA PLAN - SITE DEVELOPMENT PERMIT

MICHAEL MADDEN ASSOCIATES
JUNE 22, 1998

Exhibit 4



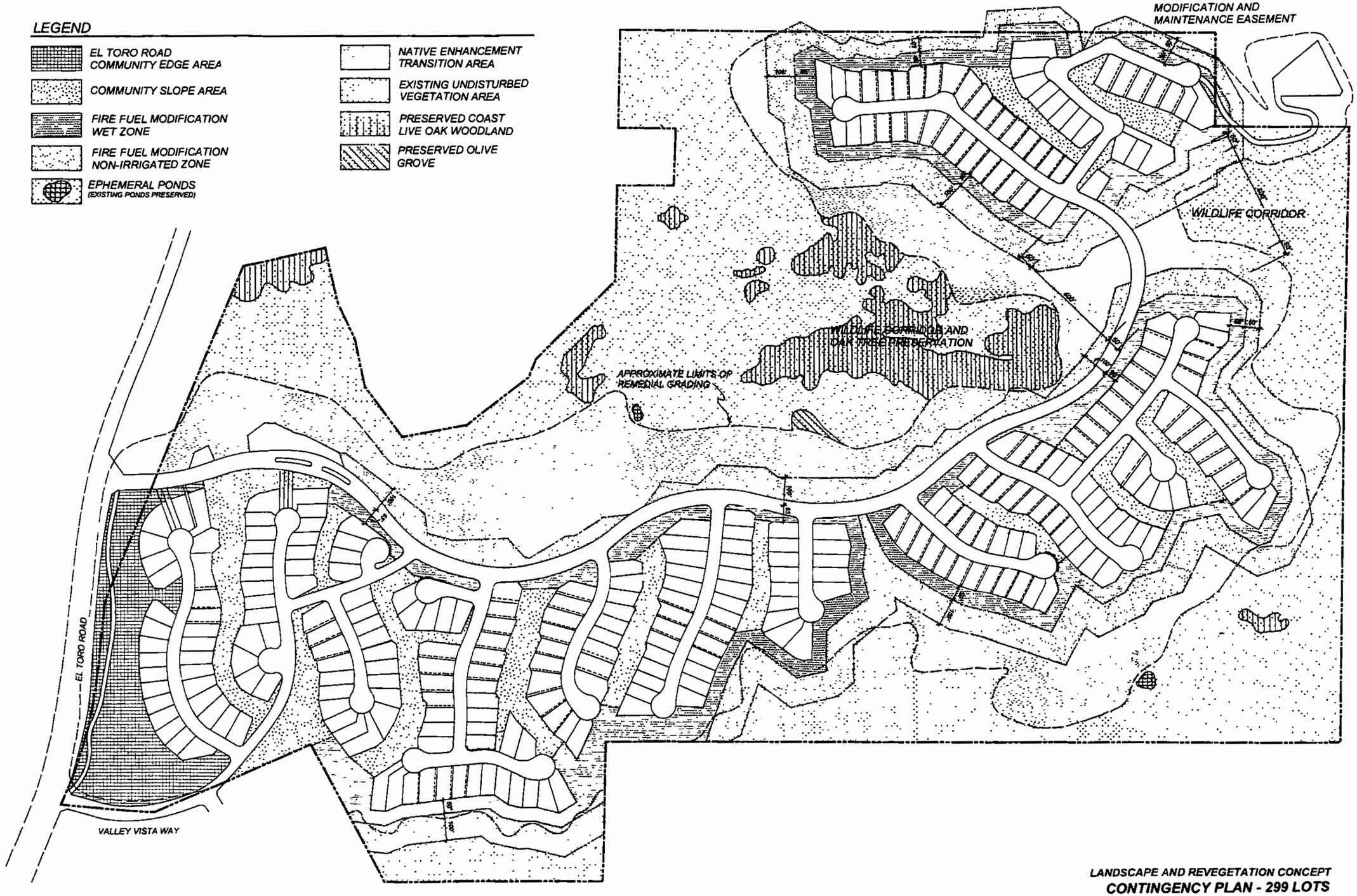
CONTOUR GRADING CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

MICHAEL MADDEN ASSOCIATES
JUNE 22, 1998
0 50 100 200 400

Exhibit 5



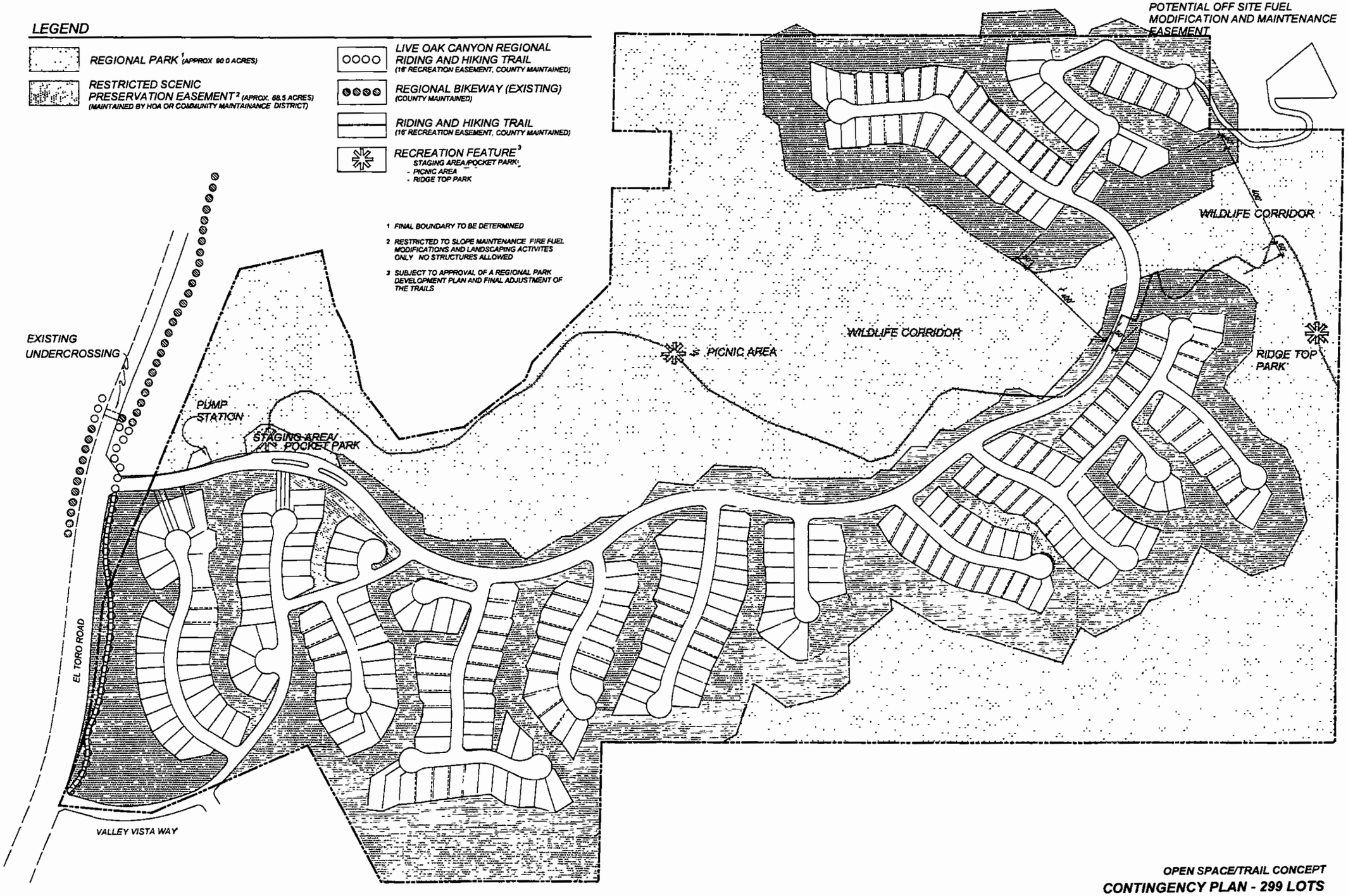
SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

LANDSCAPE AND REVEGETATION CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

MICHAEL MADDEN ASSOCIATES — JUNE 22, 1993 — 0 50 100 200 400

Exhibit 6



OPEN SPACE/TRAIL CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

Exhibit 7

SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

MICHAEL MADDEN ASSOCIATES
LAND PLANNING AND DESIGN LAGUNA BEACH, CA

JUNE 22, 1993

0 50 100 200 400

Overall View
From Ramakrishna Monastery

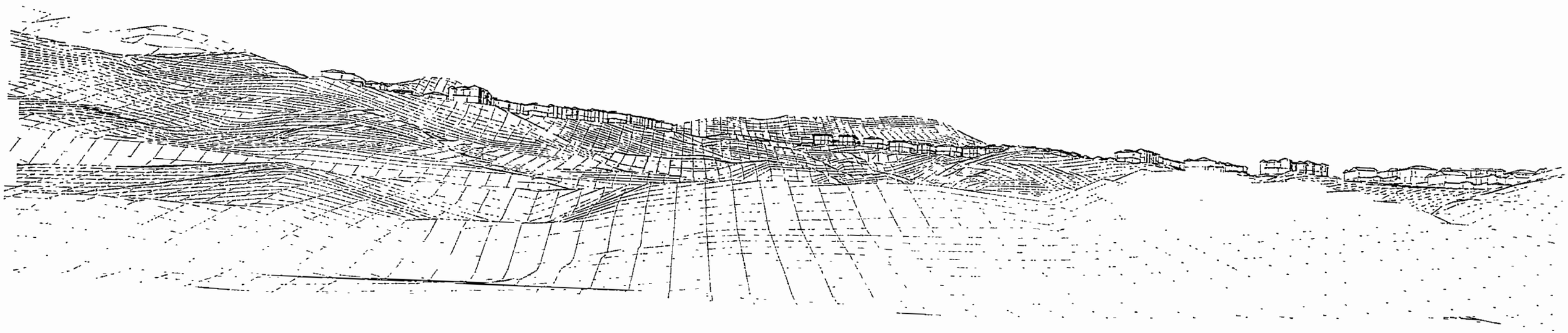
Saddleback Meado
299 Lo

Exhibit 9

Birds Eye View
From Portola Hil s

Saddleback Meadows
299 Lots

Saddleback Meadows
299 Lots



East View
From St. Michael's Abbey

APPENDICES

APPENDIX A

Contingency Plan – 299 Lots
Area Plan 98-2

SADDLEBACK MEADOWS

CONTINGENCY PLAN – 299 LOTS
AREA PLAN 98-2

Prepared for:

County of Orange
Planning and Development Services Department

Prepared by:

TPG Management, Inc.
On behalf of
California Quartet, Ltd.

August 4, 1988

TABLE OF CONTENTS

SECTION	PAGE
Area Plan Background	1
Area Plan Description	1
Open Space/Trail Concept Description	3
Grading Concept Description	5
Landscape/Re-vegetation Concept Description	7

EXHIBITS

Development Plan Concept

Open Space/Trail Concept

Contour Grading Concept

Landscape/Re-vegetation Concept

ATTACHMENTS

Attachment A· Saddleback Meadows Rural Character Statement

AREA PLAN 98-2
SADDLEBACK MEADOWS
CONTINGENCY PLAN- 299 LOTS

BACKGROUND

This plan has 299 single-family detached dwelling units and originated from the "Staff recommended" 299-Lot Alternative (a.k.a. Alternative 8 in EIR No. 561 and presented as Alternative 4 in the recently certified SEIR No. 566). However, this Area Plan submittal is nearly *identical* to a plan (referred to as "Alternative 9") submitted for consideration before the Board of Supervisors on October 22, 1996 The differences between Alternative 9 and the proposed "Contingency Plan - 299 Lots" can be summarized as follows: 1) A reduction in density from 318 lots, to 299 lots, 2) Significant buffering and landform berming has been added along the project edge adjacent to the Ramakrishna Monastery, 3) The need for three extensive "loffel walls" near the project edge adjacent to the Ramakrishna Monastery have been eliminated, and 4) The majority of side-yard retaining walls throughout the project have been eliminated. The intent of this alternative Area Plan, as was its predecessor, Alternative 9, is to provide a project that directly responds to the view impact concerns expressed by St. Michael's Abbey, the Ramakrishna Monastery, the Hidden Ridge Community, and to a lesser degree, Portola Hills This Area Plan also incorporates community-wide design concepts, elements and features reflective of a "*rural-like*" character within the context and constraints of the site and the developer's objectives These design elements and features were also first presented at the July 30, 1996 Planning Commission Hearing, in a document entitled "Saddleback Meadows Rural Character Statement", a copy of which has been included in this document.

DESCRIPTION

The average lot size for this project is approximately 6,672 s.f, with a minimum lot size of 5,000 s.f.. Access to the project would be provided via a gate guarded private street off El Toro Road immediately south of the existing Aliso Creek/Trail under-crossing structure An emergency only access connects with Valley Vista Way. All habitable structures are proposed to be protected by automatic fire sprinkler systems The project site is approximately 222.2 acres in size. Total open space exceeds approximately 70%

The project acreage (222.2 acres) does not include the adjacent off-site water tank site. A water tank with a maximum capacity of 1.4 million gallons, and associated access road, are proposed off-site adjacent to the northeast corner of the project site to provide water service to the proposed project The proposed water tank site was previously dedicated to the Trabuco Canyon Water District when the existing Final Tract Map was recorded (Tract No. 10692). The water tank will be approximately 30-feet tall, 100 to 110-feet in diameter, and will be bermed,

landscaped, and painted a complimentary color to the surrounding setting. A total of approximately 8 acres of off-site area would be affected as a result of project implementation to accommodate slope area, access roads, related remedial grading, the water tank, and County of Orange fuel modification requirements

Onsite circulation is proposed with a system of private streets consisting of a primary spine street (56-foot r.o.w.) and a series of cul-de-sacs (41-,45-, and 52-foot r.o.w) An encroachment easement is required from the County of Orange to accommodate the project access road where it traverses County owned property along the western-most boundary of the site

The project has been designed to minimize impact on the existing land form. The homes have been located on the relatively level areas in a broad crescent shape flowing along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off the eastern and northern major ridgelines bordering the property. A primary design consideration in establishing the rural-like character of Saddleback Meadows is presenting a landscape enveloped community when viewed from the surrounding areas and from within the development. In response to this design intent and the interests of St. Michael's Abbey, the Ramakrishna Monastery and the neighboring Hidden Ridge community, specific grading techniques, site planning, and landscape elements will be incorporated within the project. The intent of these features will be to enhance the views of Saddleback Meadows from the surrounding areas This will be accomplished through

1 Creative contour grading that emphasizes and expands upon landforms,

2. Berming at select and appropriate locations to blend with natural terrain features while providing screening and buffering views into the project site from St. Michael's Abbey, the Ramakrishna Monastery and Hidden Ridge;

3. Creative site planning techniques that minimize rows of backyards along highly visible edges, incorporates slopes, landscape zones and landforms between homes and the surrounding neighbors, and neighborhood streets that climb with the terrain rather than flat roads common to non-terrain sites, and

4 An aesthetic community-wide landscape program that provides visual enhancement through significant perimeter and interior plantings (plant pallets will require OCFA approval), responds to seasonal changes, and provides filtered views of the community from the surrounding areas

This plan goes to great lengths to mitigate off-site views of the project from neighboring properties, specifically St Michael's Abbey, the Ramakrishna Monastery, and the Hidden Ridge Community. This will be accomplished through a combination of thoughtful landscape design and the extensive use of berming techniques which will be integrated with the landform contouring, especially along the Main Spine Road, and along view sensitive development edges. This

approach will also enhance the project's edge conditions which will provide for more sensitive edge transitions to the project's large open space areas and O'Neill Regional Park.
A wildlife movement corridor has been incorporated into the project design to address the importance of regional wildlife movement linkages between regionally important open space areas such as O'Neill Regional Park, Whiting Ranch Wilderness Park and the Cleveland National Forest. This plan utilizes an east/west corridor alignment similar to that shown in the Foothill/Trabuco Specific Plan. This wildlife corridor, which bisects the project (called the central corridor), is a component of a three corridor concept which together is designed primarily to accommodate small and medium size mammals and birds, but would not preclude the occasional potential movement of large mammals as well. This corridor is comprised of a minimum 400' wide wildlife corridor with 50' setbacks located on either side. The onsite wildlife corridor is proposed to utilize an at-grade crossing (400') where the wildlife corridor traverses the development's main spine road. Due to the low level of traffic on this end of the project, the at-grade crossing is not anticipated to inhibit wildlife movement. Loffel walls are used in select locations to minimize the extent of manufactured slopes Loffel walls allow for the growth of plant materials on and around the wall, eventually helping to screen the wall behind a blanket of vegetation.

Statistical Summary*

ONSITE	ACREAGE	% OF SITE
Residential Lots	45 8	21%
Streets (private)	17 8	8%
Regional Park	90.0	41%
Restricted Scenic Preservation Easement	68 5	30%
Subtotal	222.2	100%

* Acreages and percentages are approximations subject to refinement at the Tentative Map/Final Map stages.

OPEN SPACE/ TRAIL CONCEPT

The proposed Open Space/Trail Concept for Saddleback Meadows incorporates a variety of refinements which result in minimizing environmental impacts In response to the Natural Communities Conservation Program (NCCP) goals and objectives, the project provides for a viable Wildlife Movement Corridor incorporated into the design of the project providing access from the Aliso Creek Corridor to O'Neill Regional Park. The design proposes the primarily undisturbed open space areas, along with re-vegetated slope areas of the project, for fee dedication to serve as an extension of O'Neill Regional Park Trail connections are provided, linking the project to existing regional riding and hiking trails and bikeways. The project proposes a Trail Staging Area/Pocket Park, Ridgetop Park and the dedication of a significant amount of natural and re-vegetated open space. The proposed Trail Staging Area/Pocket Park provides a

direct link to the regional trail located on El Toro Road and the other proposed recreation features (Ridgetop Park and the Picnic area).

The Open Space/Trail Concept is composed of the following major elements:

1. Trails

a. Live Oak Canyon Regional Riding and Hiking Trail

- Project proposes the dedication of a 16' wide Recreation Easement along the El Toro Road frontage (approx. 1350 l f) Final Alignment is subject to approval by the Manager, Harbors Beaches and Parks.

- Maintenance for this Trail/Recreation Easement will be the responsibility of the County of Orange

b. Local Riding and Hiking Trail

- Project proposes the dedication of a 16' wide Recreation Easement (approx. 4800 l.f., for local riding and hiking trail purposes, of which approximately 1,550 l.f traverses Restricted Scenic Preservation Easement areas , while approximately 3,250 l f will traverse the Regional Park dedicated areas Final Alignment is subject to approval by the Manager, Harbors Beaches and Parks.

- This plan provides a linkage from the proposed Trail Staging Area/Pocket Park to the Live Oak Canyon Regional Riding and Hiking Trail on El Toro Road. Another trail will link the proposed Trail Staging Area/Pocket Park to the proposed Ridgetop Park (a.k a "Bridlewood Look-Out Park") and the "Picnic Area".

- Maintenance for this Trail/Recreation Easement will be the responsibility of the County of Orange

2. Regional Park

As designated on the Open Space/Trail Concept Map:

- This category of open space will serve as an extension of O' Neill Regional Park

- This category of open space encompasses approximately ±90 acres (±41% of the project)

- As a extension of O' Neill Regional Park, these open space areas, which include the wildlife movement corridor, would be offered for dedication to the County of Orange.
- The Regional Park will encompass areas which include the following areas which lie outside of the required fuel modification zones "undisturbed" open space; Native

Enhancement Transition Areas; re-vegetated remedial graded and manufactured slope areas; Oak Woodlands; Oak Restoration Areas; undisturbed portions of the existing Olive Grove, as well as the preserved existing and re-created Ephemeral Ponds.

- Coastal Sage Scrub, Oaks, and other biological resources requiring on-site mitigation would take place in the areas dedicated for Regional Park purposes

- The proposed Trail Staging/Pocket Park , Ridge Top Park (a.k a.Bridlewood Look-Out Park) and Picnic Area will be located in the Regional Park extension. These features will be subject to approval of the Regional Park Development Plan

- The final boundary of the Regional Park and the Riding and Hiking Trail alignments will be subject to the approval of the Manager of Harbors, Beaches, and Parks.

3. Restricted Scenic Preservation Easements

Areas designated as the following (approx. 68.5 acres) on the Open Space/Trail Concept Plan Map are to ensure that the scenic qualities of these edge areas are not impacted in the future by structures and development after they have been established

- El Toro Road Community Edge Area
- Fuel Modification Zones (Wet Zone and Non-Irrigated Zones only)
- These areas will be maintained by an HOA and/or Community Maintenance District
- Community slopes(Between residential lots and Roads).

CONTOUR GRADING CONCEPT

The grading concept for this alternative reflects a contour grading approach which utilizes techniques emphasizing variations and takes advantage of the curvilinear street and lotting design, rather than repetitive uniformity Contour grading and the creative use of berms and landforms along the community's spine road provide for screening and buffering of views into the project site from various offsite locations Numerous design features work together to establish the rural-like character. Contour grading with landform enhancement provides for edge treatments responsive to the natural terrain The community's spine road alignment responds to the terrain and allows for landscape plantings on both sides to create the rural-like experience while driving through the community Creative site planning responds to the intended rural character with setbacks from the spine road. This allows the project a more natural and organic ambiance in keeping with the rolling hillside setting. These contour grading techniques consist of the following·

1 Integrate grading into the context of existing topography using horizontal rounding of contours;

2 Blending of manufactured contours with natural existing contours,

3. Rounding at the top and toe of slopes to avoid harsh transitions, and

4. Design of development enclaves of varying size and irregular spacing to avoid a uniformly "terraced" appearance.

Earthwork Volumes:

Conventional Grading

- Balanced Cut/Fill (approximate)
  Cut Quantity ±2,100,000 c y
  Fill Quantity: ±2,100,000 c.y.

- Total Import Quantity 0
  Total Export Quantity: 0

Remedial Grading

- Total Remedial Grading (Remove & Replace) approximately ±6,800,000 c.y

MAXIMUM GRADING STATISTICS

Manufactured Slopes	10-20 ft.	Over 20 ft.	Highest
Building Lots (with Type C slopes)*	N/A	N/A	N/A
Type B Slopes** (between building lots)	0 L.F	5,700 L F	50 ft.
Roads	2,500 L.F	3,100 L.F	120 ft.

Contour Elevation Changes	10-20 ft.	Over 20 ft.	Highest
Building Sites	92 places	134 places	80 ft
Roads	4,250 L.F.	7,300 L.F.	91 ft

Retaining Walls	0 - 6 ft.	Over 6 ft.	Highest
	3,500 L F.	N/A	6 ft.

Loffel Walls	0 - 6 ft.	Over 6 ft.	Highest
	0 L F	1,640 L F.	40 ft.

* Type "C" slopes are owned and maintained by private owners

** Type "B" slopes are owned and maintained by the H.O.A./Community Maintenance District

Note: These figures are approximations subject to refinement at the Tentative Map and Final Map stages.

LANDSCAPE / REVEGETATION CONCEPT

The Landscape / Revegetation Concept for Saddleback Meadows seeks to integrate the landscape of the proposed project with the site's existing setting and that of the surrounding foothill region. The use of landscape materials (with native and introduced plant pallets approved by the OCFA), and the manner in which the landscape design concept is integrated into the project will reinforce the ability of Saddleback Meadows to respond to the following:

1 Views into the community from surrounding properties;
2. Views from within the Saddleback Community,
3. The desire to create a community character which reflects the transitional nature of the property from a suburban to semi-rural setting.

Interspersing primarily sycamore tree groupings at strategic locations throughout the project will blend the different landscape zones and integrate this community into the surrounding preserved natural open space areas. A predominant image of nature, open space and natural vegetation will be accomplished via:

1 Tall trees and shrub massings planted on slopes between the residential enclaves and within natural open spaces, on slopes between homes, and along community streets;

2. A priority given to landscape plantings, i.e views of the community shall be through the landscape which blankets the architecture of the neighborhoods, thus allowing the landscape (incorporating Sycamores, Oaks, and other appropriate trees) to predominate over the built environment, and

3 Side slope and street tree plantings in the neighborhoods to provide for visible tree canopies above the roof lines.

4. An interlace of the natural and introduced landscape as one fabric.

The Landscape Concept consists of five (5) functional, yet integrated, areas and zones as shown on the Landscape / Revegetation Concept Plan These areas and zones are as follows:

1) El Toro Road Community Edge Area

The El Toro Road Community Edge area will play a key role in providing a physical and visual buffer for the project from off-site views. Predominantly manufactured slopes are planned along El Toro Road In addition, a key component of this edge is the preservation of Aliso Creek and it's existing riparian habitat along El Toro Road, just north of the proposed main project entry point Therefore, this community edge adjacent to the road will be landscaped with introduced and native compatible plants reflecting and continuing the riparian landscape found along the Aliso Creek/El Toro Road Corridor. The California Sycamore, commonly found in riparian areas, will be the major slope tree along the El Toro Road Community Edge.

Further up the manufactured slope, the landscape will transition from riparian plants to ornamental and native compatible plants suitable for erosion control and for buffering and screening. Tree plantings at side-yard property lines of the residential lots located at the top of slopes will reduce the visual impact of dwellings when viewed from off-site. Meanwhile these tree groupings are intended to maintain views for individual lots. Additionally, this edge treatment is designed to provide visual screening of the project from vehicles traveling along El Toro Road

2) Community Slope Area

Manufactured slopes will be landscaped to visually enhance the project, to control erosion, and to provide buffering/screening where appropriate and feasible. Trees will be located at the top of slopes and clustered near side-yard property lines of residential lots as well as on the slope itself. Trees planted on the slope will take into consideration the maximum tree height at maturity relative to its vertical location to the top of slope, so that views from residential lots will not be impaired when slope landscaping reaches full maturity. This will blend the manufactured on-site slopes with off-site natural areas, integrating the community landscape into the surrounding environs. California Sycamore and some Coastal Live Oak trees will be used in strategic locations throughout the community slopes, continuing the community landscape theme.

Major oak woodland areas and areas of the olive grove which are not impacted by development and/or remedial grading activities are identified on the Landscape/Revegetation Concept Plan as preserved. These areas identify major preserved tree stands and tree groupings only. For identification of individual preserved and impacted oak trees, refer to Sweetwater Environmental Biologists' Oak Tree Inventory, dated December 21, 1995.

3) Fire Fuel Modification Zones

The proposed project is within a designated "Special Fire Protection Area", consequently, the development and construction of the project are subject to requirements designed to mitigate the increased fire hazard (Ordinance 3960). The Orange County Fire Authority (OCFA) requires a fuel modification program along all edges of residential development exposed to fire hazard areas. The fuel modification program addresses three zones consisting of a "Setback Zone", "Wet Zone", and a "Non-Irrigated Zone", as shown on the Landscape and Revegetation Concept Plan Map. Maintenance responsibility for the setback zone lies with the private owner Maintenance responsibility for the other zones will be with the H.O.A./ Community Maintenance District.

Saddleback Meadows' residential edges contain both upslope and downslope conditions with a combination of both manufactured and natural undisturbed slopes. The intent of the fuel modification is to utilize these slopes as a transition area between natural open space (fire hazard areas) and the residential edge and to provide an acceptable level of fire safety. The revegetated portion of these slopes will be landscaped using native compatible plant species which will meet

the public safety goals of the OCFA, reinforce the naturalized appearance of the manufactured slopes, and satisfy the aesthetic requirements of the project. Fire Fuel Modification Zones are designed to reflect the native enhancement transition zone criteria for plant material selection The plant palettes for both of the Fire Fuel Modification Zones and the Native Enhancement Transition Zone overlap and contain many of the same species and varieties of plants. These plant pallets will be required to meet the approval of the OCFA.

Setback Zone - Is a twenty-foot (20') wide area within the rear yard setback of all residential lots abutting the fuel modification zone. No combustible construction or materials will be allowed in this zone. This zone will be maintained by the individual homeowner. (Not shown on the Landscape / Revegetation Concept Plan, see Preliminary Fuel Modification Plan).

Wet Zone - is a fifty-foot (50') wide landscape area, beginning at the residential rear yard property line. This zone includes an automatic irrigation system and low fuel fire resistive, native compatible plants.

Non-Irrigated Zone - Fire fuel modification zones are 100' wide. However, several upslope areas with 50' widths will be permitted with O.C.F.A. approval. In natural undisturbed slopes, existing native planting will be non-irrigated, pruned and thinned. The OCFA requires that all "dead and dying" materials be removed, pruned and thinned in non-irrigated zones Manufactured slopes will be **temporarily** irrigated and landscaped with native and native-compatible plant materials. Landscaping is intended to naturalize over time with irrigation to be abandoned upon establishment and naturalization.

Application of the Orange County Fire Authority's (OCFA) fuel modification criteria to the area located along the upper north-easterly project boundary, dictates that the fuel modification zone traverse off-site onto private property. This will require that an easement be obtained from the adjacent property owner, for the purposes of fuel modification, prior to the issuance of a grading permit. Maintenance responsibility for any off-site fuel modification zones will be the same as for on-site fuel modification zones (i.e. H O.A. / Community Maintenance District)

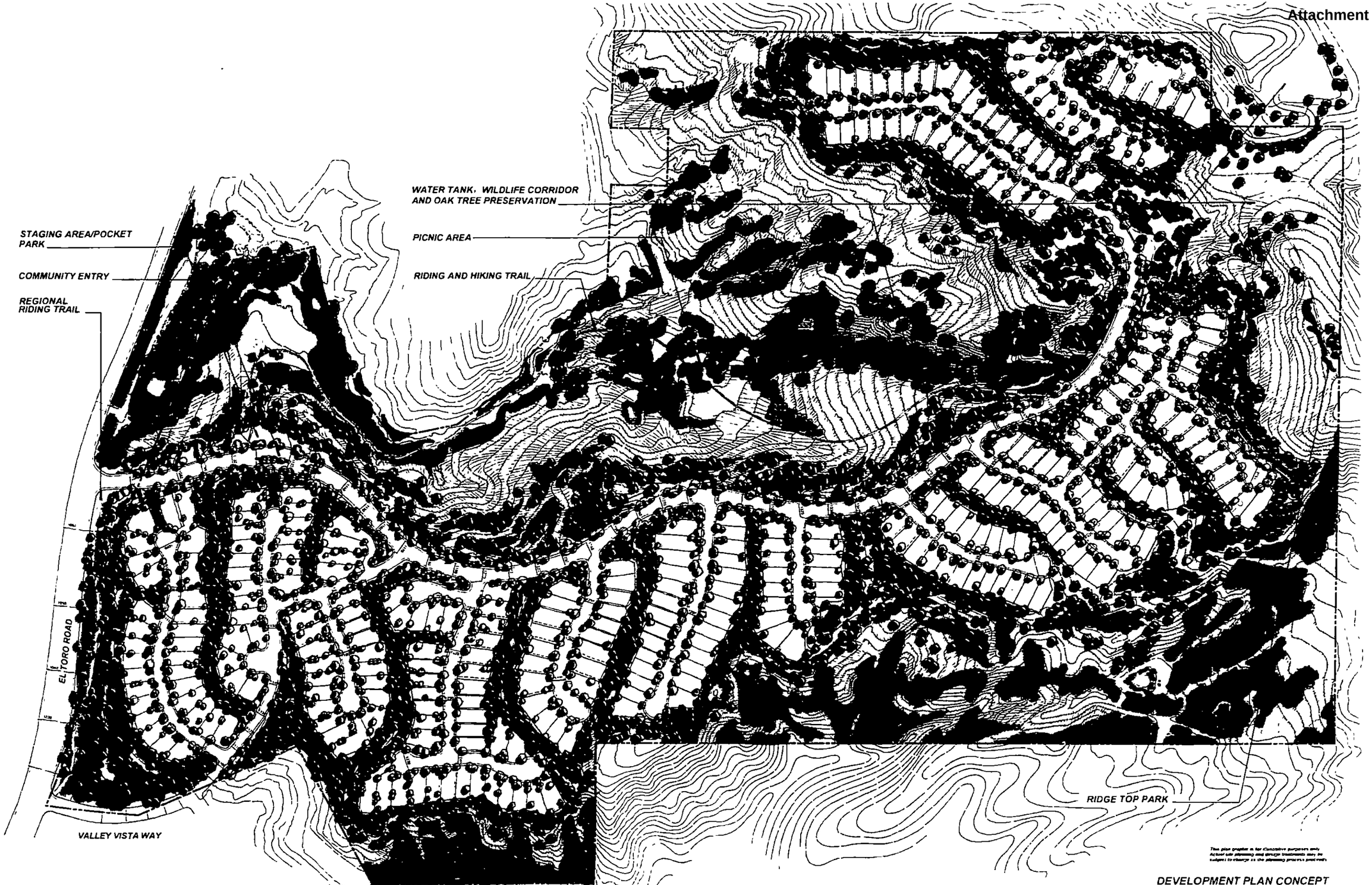
4) Native Enhancement Transition Area

Natural areas disturbed by remedial grading and located within designated open space areas will require revegetation with native or naturalized plant material to re-establish the previous coastal sage scrub (CSS). A high priority will be placed upon selecting plant material which is indigenous to the undisturbed natural areas and surrounding areas and which will provide a landscape with as much habitat value as is practical.

5) Existing Undisturbed Vegetation Area.

Open space areas undisturbed by remedial grading activities will be preserved and incorporated into the overall landscape concept. Only minimal clean-up of abandoned agricultural uses , if

necessary is planned The elimination of livestock grazing on the property will allow the natural transition and succession of grasses to CSS and Chaparral plant communities over time. The majority of Oak Woodland mitigation will occur in this area within stands of existing non-native vegetation.

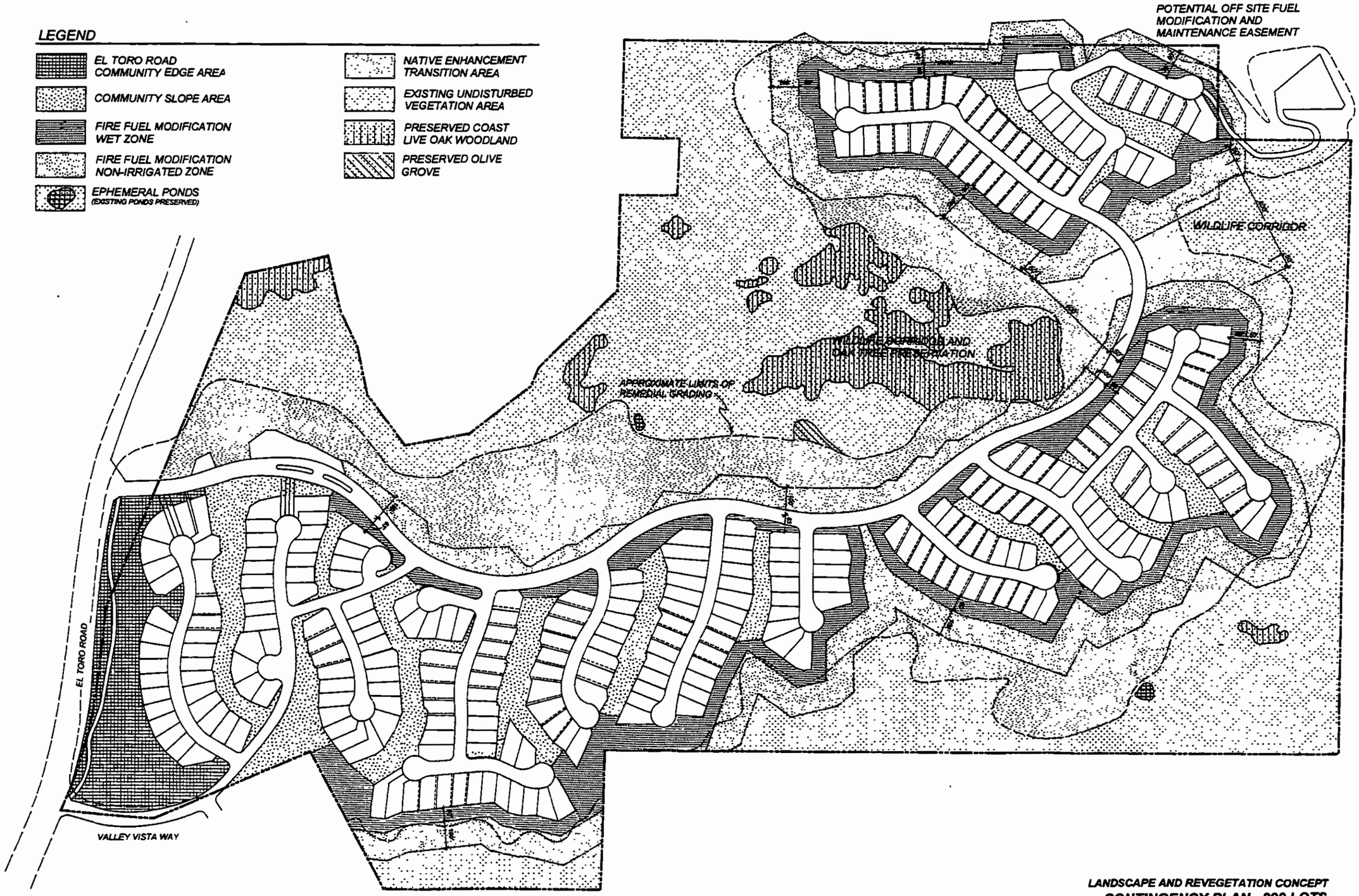


DEVELOPMENT PLAN CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

JUNE 15 1993

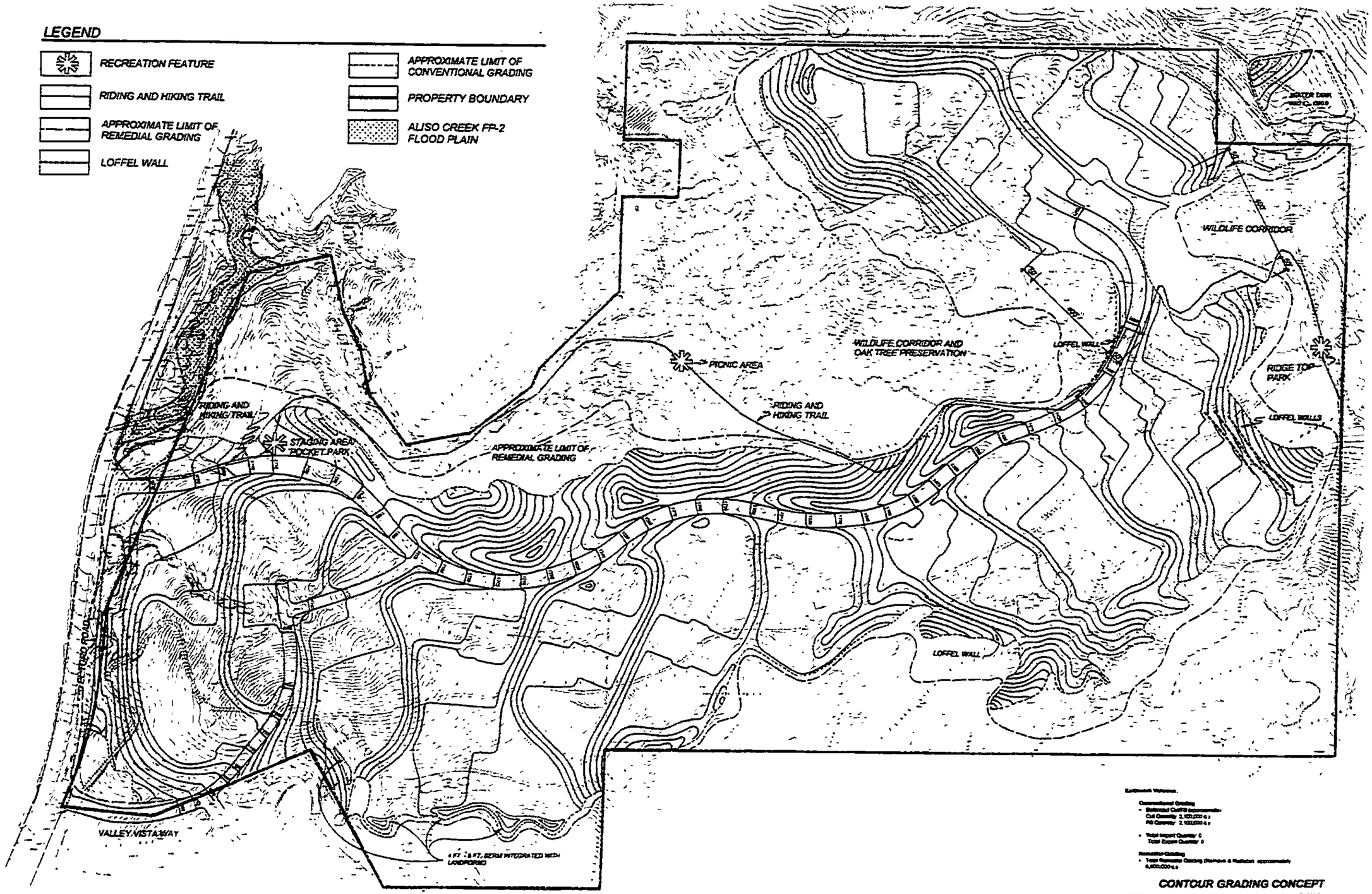


SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

LANDSCAPE AND REVEGETATION CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

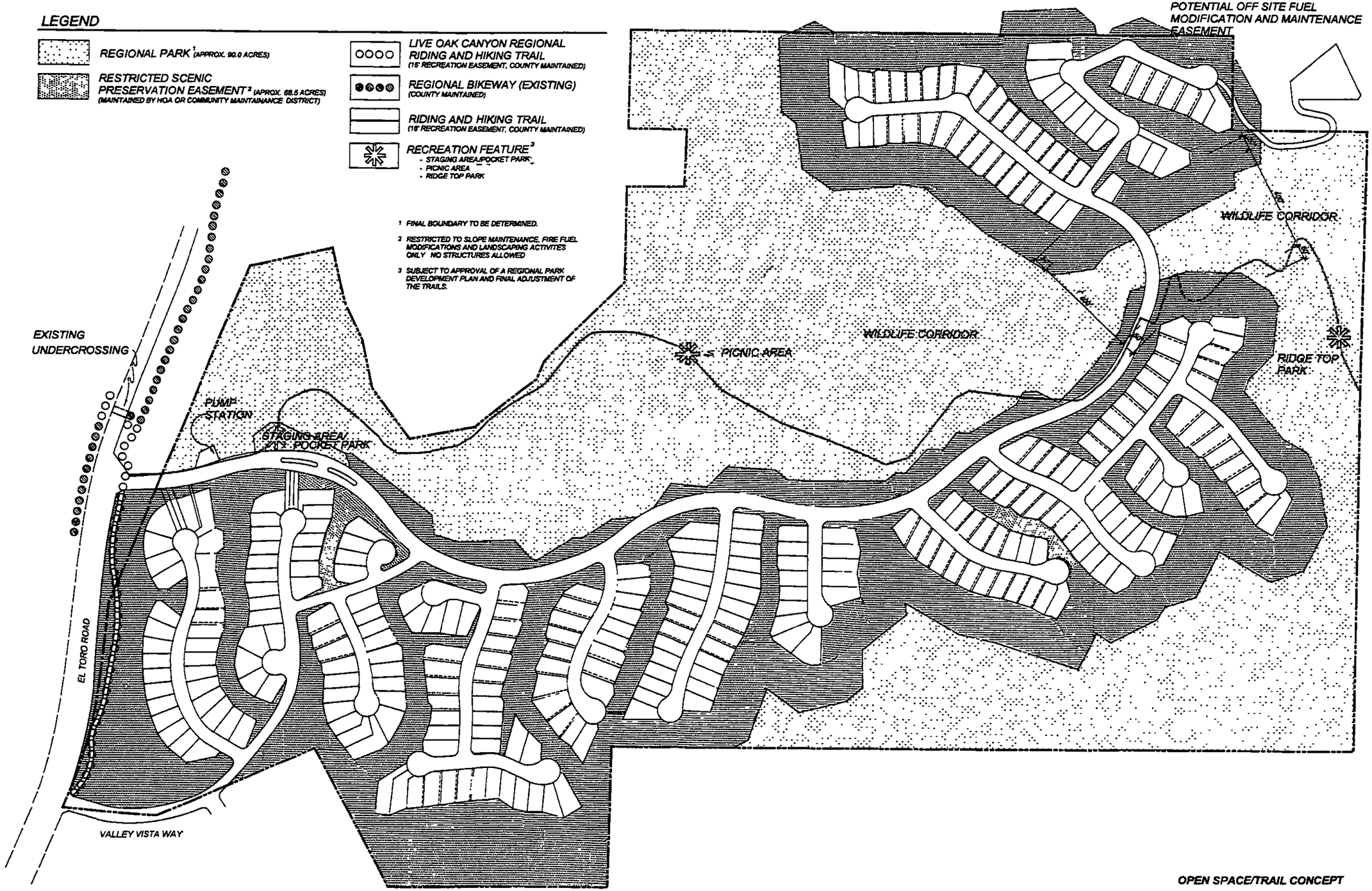
MICHAEL BADDEN ASSOCIATES JUNE 22, 1998 0 50 100 200 400



SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

MICHAEL BADDER & ASSOCIATES JUNE 22, 1998 0 50 100 200 400



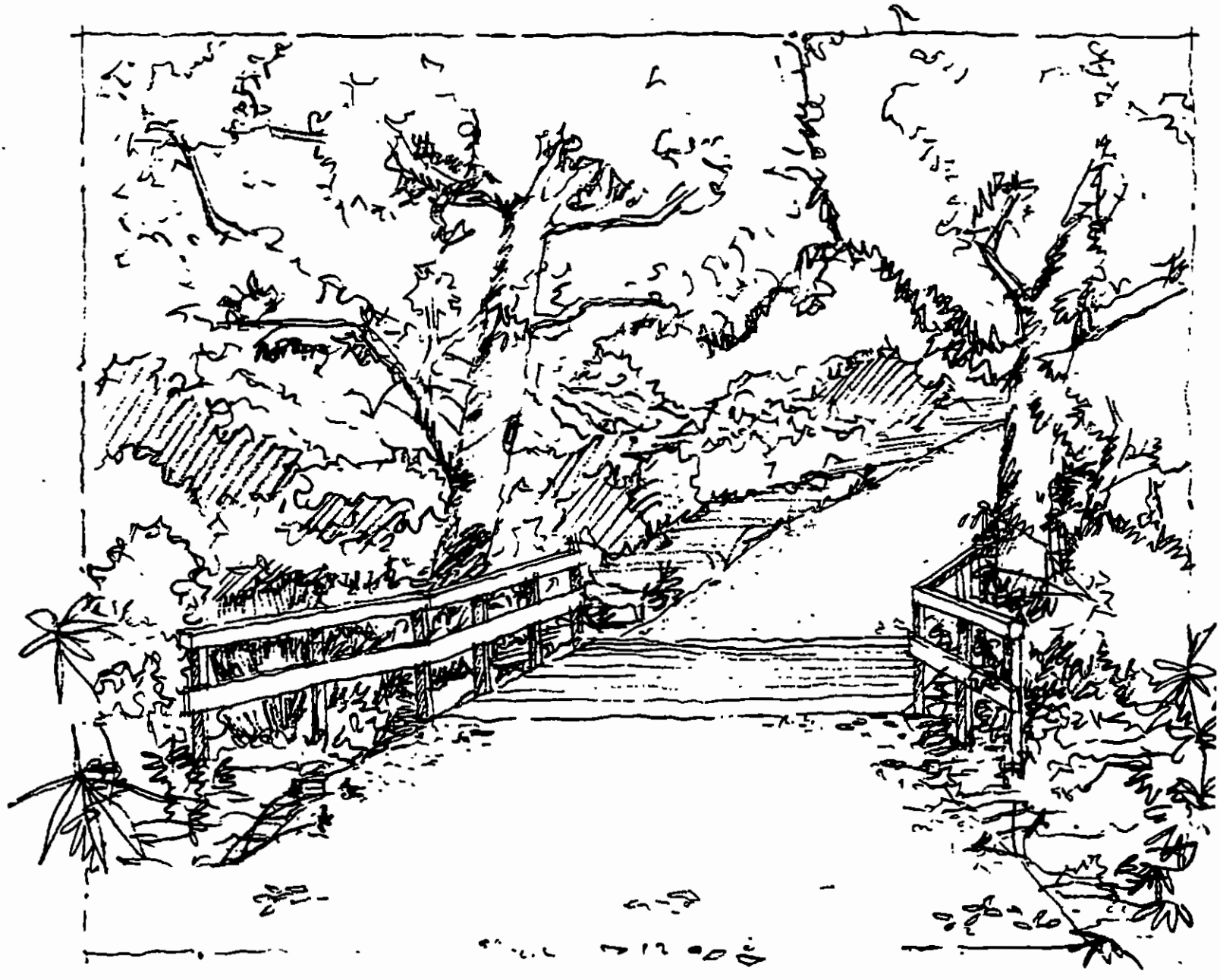
SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

OPEN SPACE/TRAIL CONCEPT
CONTINGENCY PLAN - 299 LOTS
AREA PLAN 98-2

MICHAEL MADDEN ASSOCIATES — JUNE 22, 1998 — 0 50 100 200 400

ATTACHMENT "A"



SADDLEBACK MEADOWS

RURAL CHARACTER STATEMENT

Prepared for:

California Quartet, Ltd.

SADDLEBACK MEADOWS
RURAL CHARACTER STATEMENT

July 24, 1996

Prepared for
California Quartet, Ltd.

Prepared by
Michael Madden Associates

SADDLEBACK MEADOWS
RURAL CHARACTER STATEMENT

Purpose and Intent

The purpose and intent of this "character statement" booklet is to express the preliminary community design concepts that will eventually create the visual and physical character that the Saddleback Meadows community will have. This booklet addresses the basic design elements and considerations necessary in developing any community character, and ties those elements and considerations to the Saddleback Meadows community. It responds to the project teams intent for a rural community theme and character, as well as responding to design considerations expressed by Saint Michael's Abbey, Hidden Ridge residential community, and the Ramakrishna Monastery. It is a preliminary study intended to reflect the underlying design vocabulary that has been a consistent component of all land use and site planning studies conducted for this property.

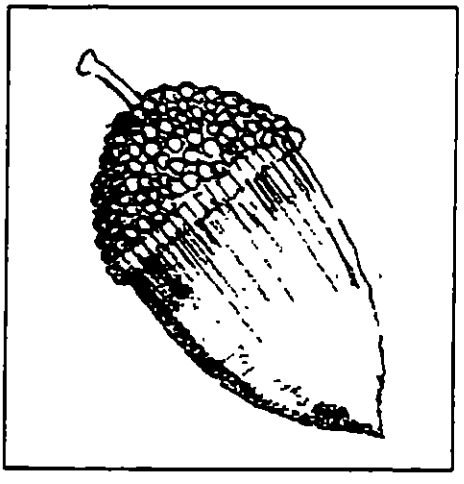
This "Rural Character Statement" is intended to be used as a guideline for community design and as a "tool of measure" to be used by the Planning Commissioners during the review of the Use Permit. The Use Permit requires a precise grading plan, detailed landscape plans, fuel modification plans and programs, architectural plans for all structures, and the precise location of all building and structures.

The planning and design of any proposed community is a combination of the physical site plan on the land and the design parameters initially established relating to the desired community character. The end result is a community whose physical character and composition relates directly with the landscape, streetscape and architectural fabric.

Approaching the Saddleback Meadows project with this philosophy, and with the desire to plan and design a community reflecting the qualities and character of a rural townscape, the initial community design elements establishing the rural character are presented in this booklet.

The "Rural Townscape" Character

The term "rural character" conjures up images of small towns set upon the land amidst a country setting. Winding roads are enveloped in trees and tree canopies. Rolling hills, field walls of stone and rock, woodlands, grasslands and fields surround the towns and provide a separation between each town. Natural areas outside of the towns are enjoyed by the people of the area for hiking, bicycling and horseback riding, exploring and treasure hunting, picnics, and rides in the country. Seasonal color through changing foliage and wild flowers accent the landscape, further emphasizing the character and appeal of the rural townscape and surrounding environment.



Villages and towns are visible and apparent within the landscape, yet blend with the land through a multitude of introduced, as well as natural features and elements. These include:

A. Country roads that transition into a town's main street;
B Open fields or woodlands filtering into the outskirts of the town through open fields and parks, eliminating the visual boundary of the town and the country;
C. In hillside environments, steep winding streets that climb with the hillside;
D. Streetside elements such as wood rail fencing, simple wooden signs, and old street lamp;
E. The informal arrangement of trees and other plantings, whether curbside or used in other manners, accenting the natural appeal rather than rigid uniformity; and
F. Buildings and related architecture presenting softer earth tone qualities and utilizing materials that blend and are in harmony with the landscape and the natural elements.

The Rural Character of Saddleback Meadows

The character of the Saddleback Meadows community will be observed from two perspectives, these being:

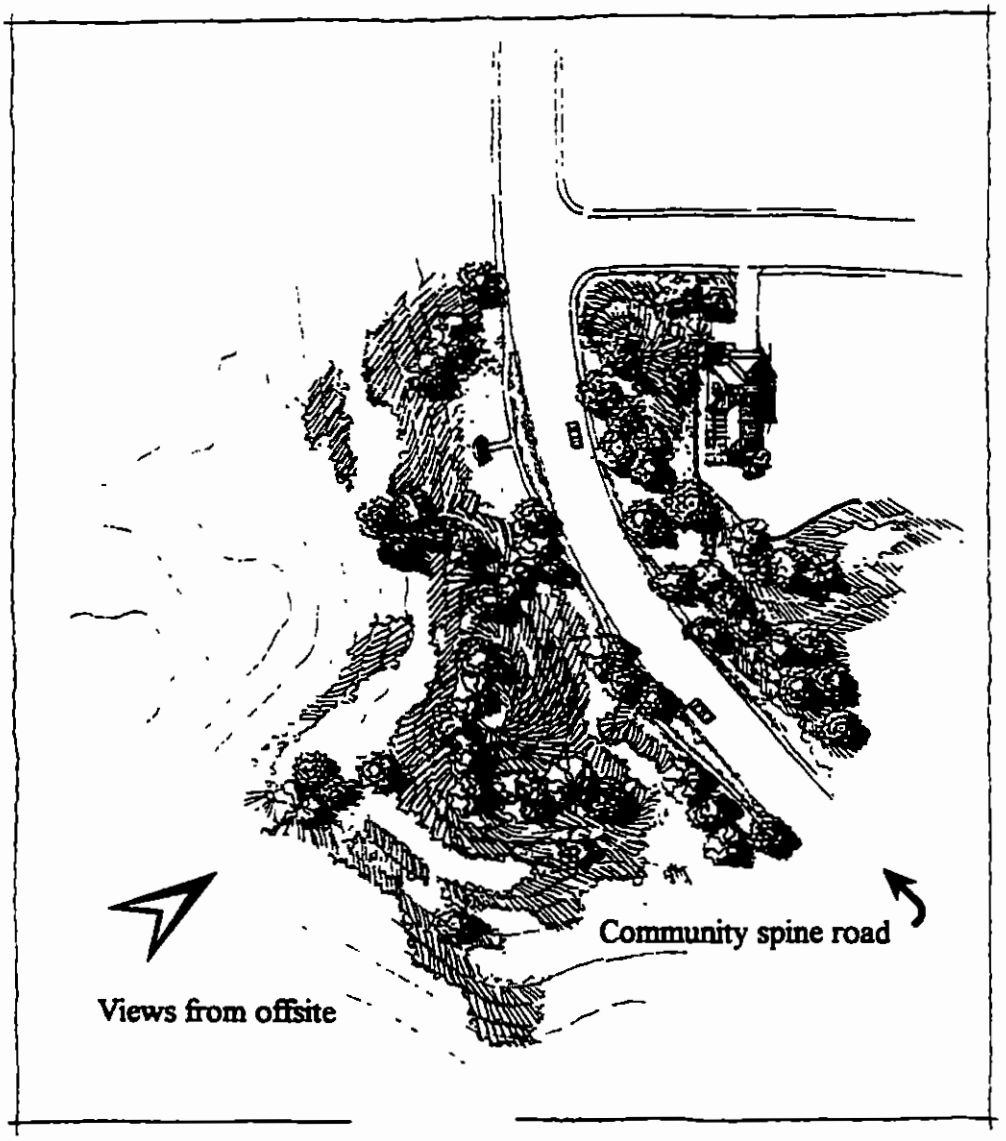
A. The "macro" scale.
    1. Public views into the community from off-site (El Toro Road, Saint Michael's Abbey, Hidden Ridge and the Ramakrishna Monastery), and
    2. Views of the community from within.

B. The "micro" scale:
    1. Views of community elements along highly visible public edges noticeable by the passing public, such as the El Toro Road edge and natural slopes adjacent to Saint Michael's Abbey, Hidden Ridge, and the Ramakrishna Monastery; and
    2. Visual elements and design details throughout the community noticeable from within the community.

The Saddleback Meadows community will incorporate community wide design elements and features reflective of the rural character. These features and elements will respond to the "macro" and "micro" levels of concern, as well as addressing the design considerations expressed by the adjacent neighbors.

A primary design consideration in establishing the rural character of Saddleback Meadows is presenting a landscaped enveloped community when viewed from the surrounding areas and from within. In response to this design intent and the interests of the Abbey, Hidden Ridge and the Monastery, specific grading techniques, site planning, and landscape elements will be incorporated within the plan The intent of these features will be to enhance the views of Saddleback Meadows from the surrounding areas. This will be accomplished through:

1. Creative contour grading that emphasizes and expands upon landforms;
2. Berming at select and appropriate locations to blend with natural terrain features while providing screening and buffering views into the project site from the Abbey, Hidden Ridge and the Monastery;
3. Creative site planning techniques that minimize rows of backyards along highly visible edges, incorporates slopes, landscape zones and landforms between homes and the surrounding neighbors, and neighborhood streets that climb with the terrain rather than flat roads common to non-terrain sites; and
4. An aesthetic community wide landscape that provides visual enhancement through significant perimeter and interior plantings, providing filtered views of the community from the surrounding areas and responds to seasonal changes.



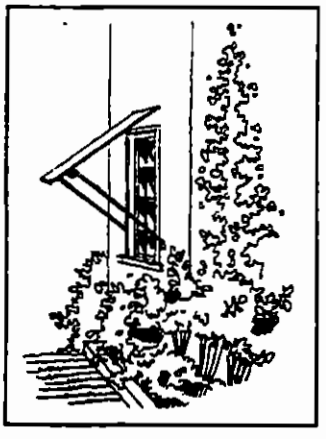
Numerous design features work together to establish the rural character. Contour grading with landform enhancement provides for edge treatments responsive to the natural terrain. The community's spine road alignment responds to the terrain and allows for landscape plantings on both sides to create the rural experience while driving through the community. Creative site planning responds to the intended rural character with setbacks from the spine road.

Contour grading and the creative use of berms and landforms along the community's spine road provide for screening and buffering of views into the project site from offsite.

Based upon the above described design considerations, the following design elements will be part of the Saddleback Meadows community to respond to views into the community from the surrounding areas and the desire to create the rural community character.

A. Blend the homes, streets and community elements with the natural surroundings This is accomplished through:

1.) Color compatibility of architecture with the natural landscape;
2.) The use of natural and natural-like materials in architecture and streetscape elements;
3.) Site planning and grading design encouraging landforms and berming, particularly along main community streets; and
4.) An interlace of the natural and introduced landscape as one fabric

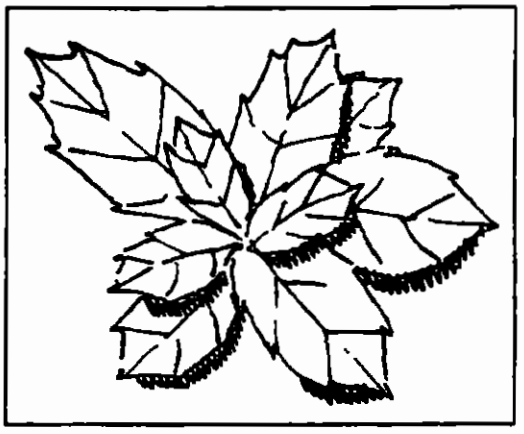


B Predominant image of green, nature, open space and plant materials, accomplished via:

1.) Tall trees and shrub massings planted on slopes between the residential neighborhoods and within natural open spaces, on slopes between homes, and along community streets;
2.) Priority given to landscape plantings, i.e. views of the community shall be through the landscape which blankets the architecture of the neighborhoods, thus allowing the landscape (incorporating Sycamores, Oaks, and other appropriate trees) to predominate over the built environment; and

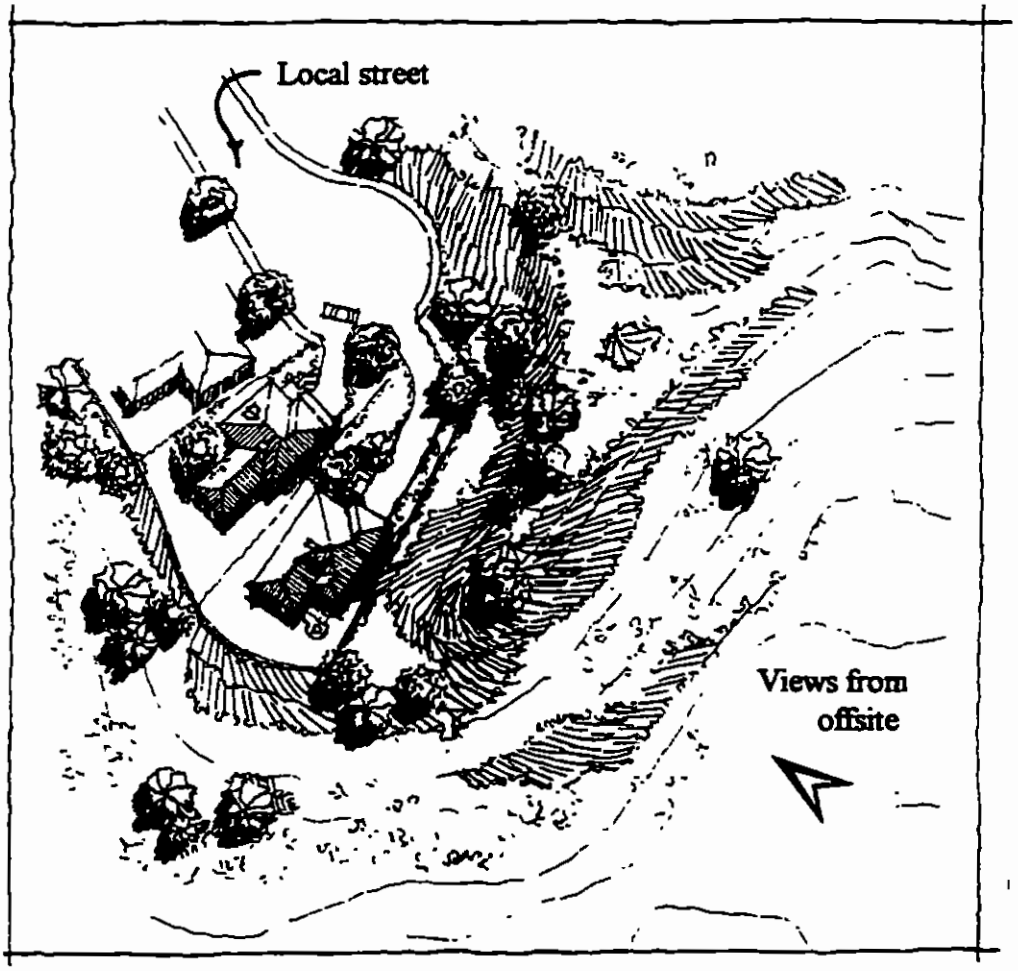
3.) Side slope and street tree plantings in the neighborhoods to provide for visible tree canopies above the rooflines.

The following design parameters will be part of Saddleback Meadows in response to views from within the community and the desire to create the rural community character:

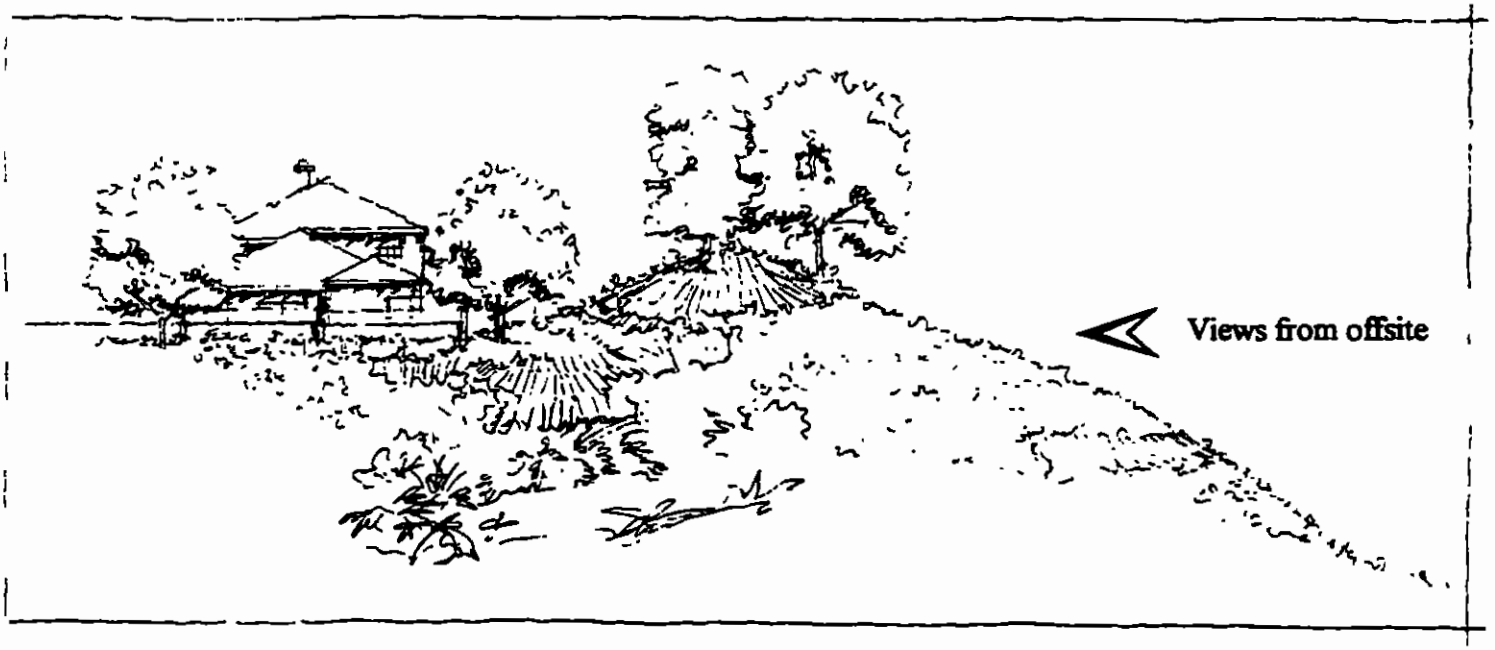


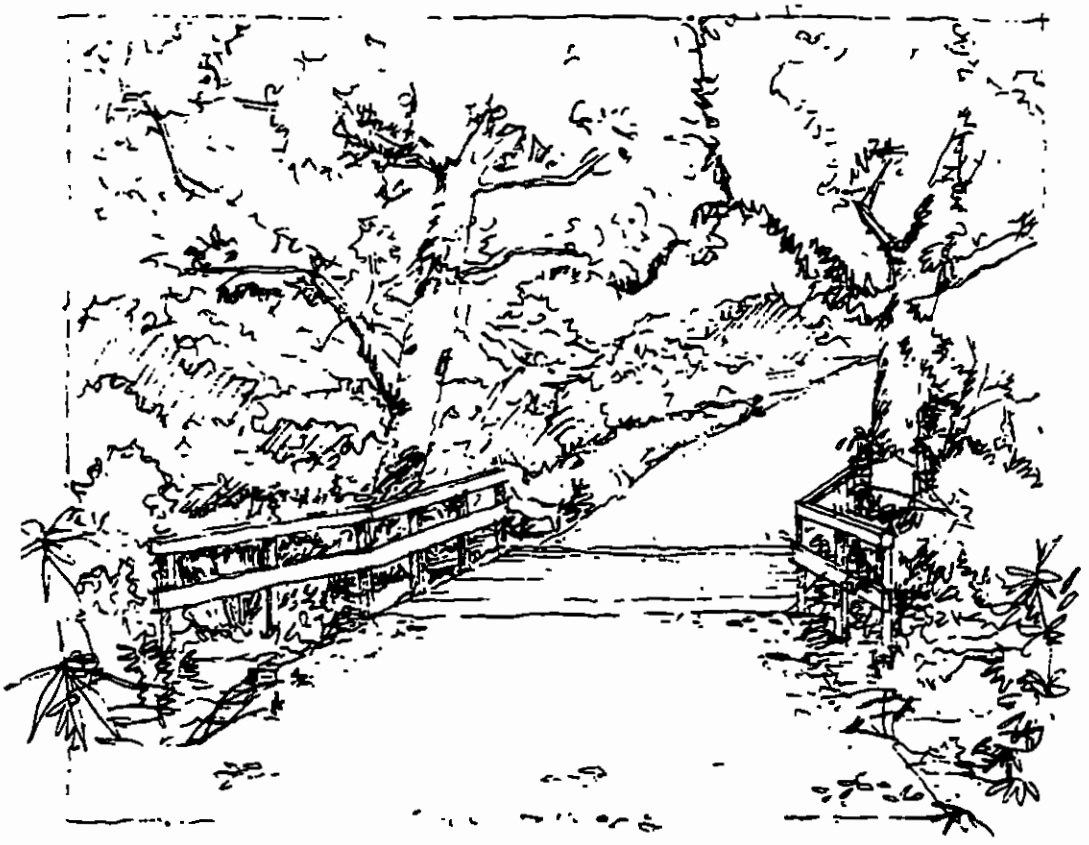
A. View windows into natural open spaces from the community streets and "pocket parks";
B. Informal plantings of landscape elements along the community streets, slopes and within the neighborhoods;
C. Blending of landscape elements and landform features transitioning from the natural to the man-made;
D. Movement in three-dimensions through landforms and plant massings, curvilinear, winding streets, and grade elevation in streets to accommodate the natural terrain;
E. Architecture: roofs, facades, design elements and details having a theme of natural materials and elements; and
F. Visual imagery along the community streets:
    1.) Informal slope plantings with tall canopy type trees for visual enclosure, presence and seasonal color;
    2.) Natural appearing materials such as wood rail fencing, stone/rock walls;
    3.) Narrow meandering walks and trails;
    4.) Minimal but thematic street signs and street lighting; and
    5.) Neighborhood tree planting requirements.

Based upon the above description of design intent in creating the rural character for the Saddleback Meadows community and responding to neighboring design interests, the following pages provide examples of design features and elements of the Saddleback Meadows project

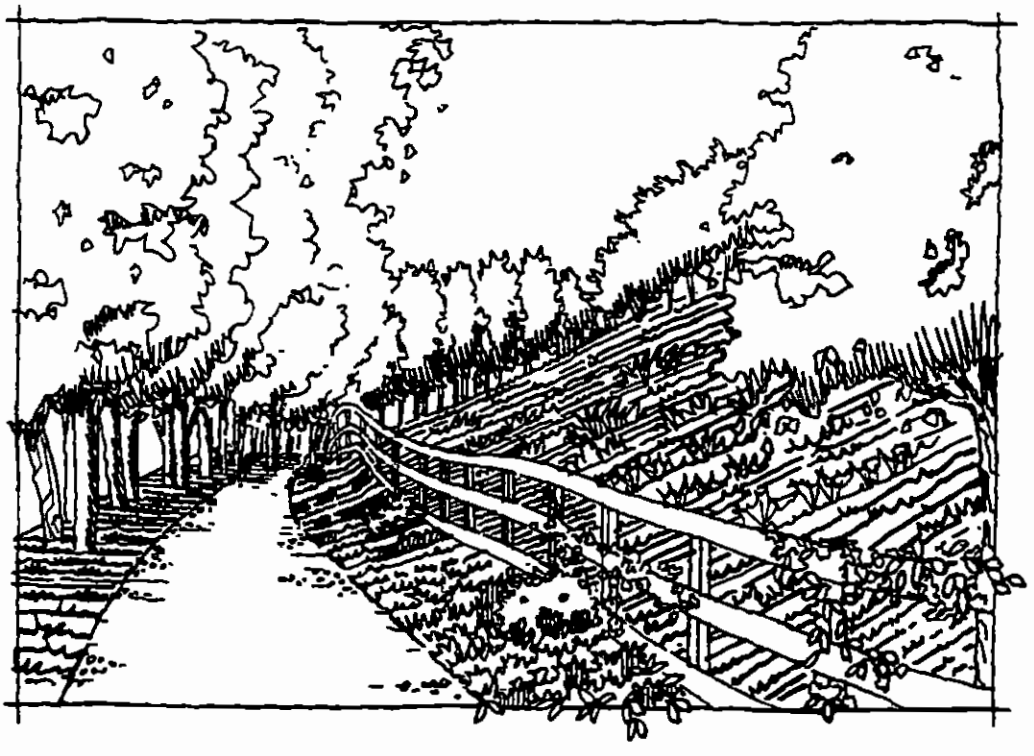


Consideration given to landforms and the replication of the existing terrain features along select project edges provides for a sense of "enclosure" for the neighborhoods while buffering views into the project from surrounding areas.

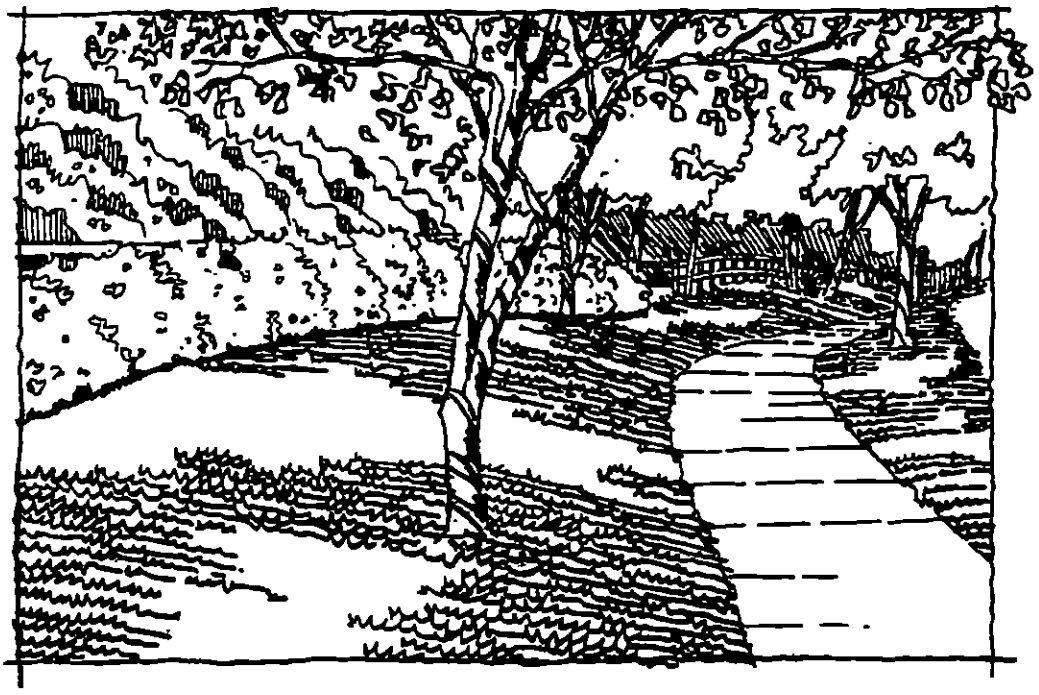




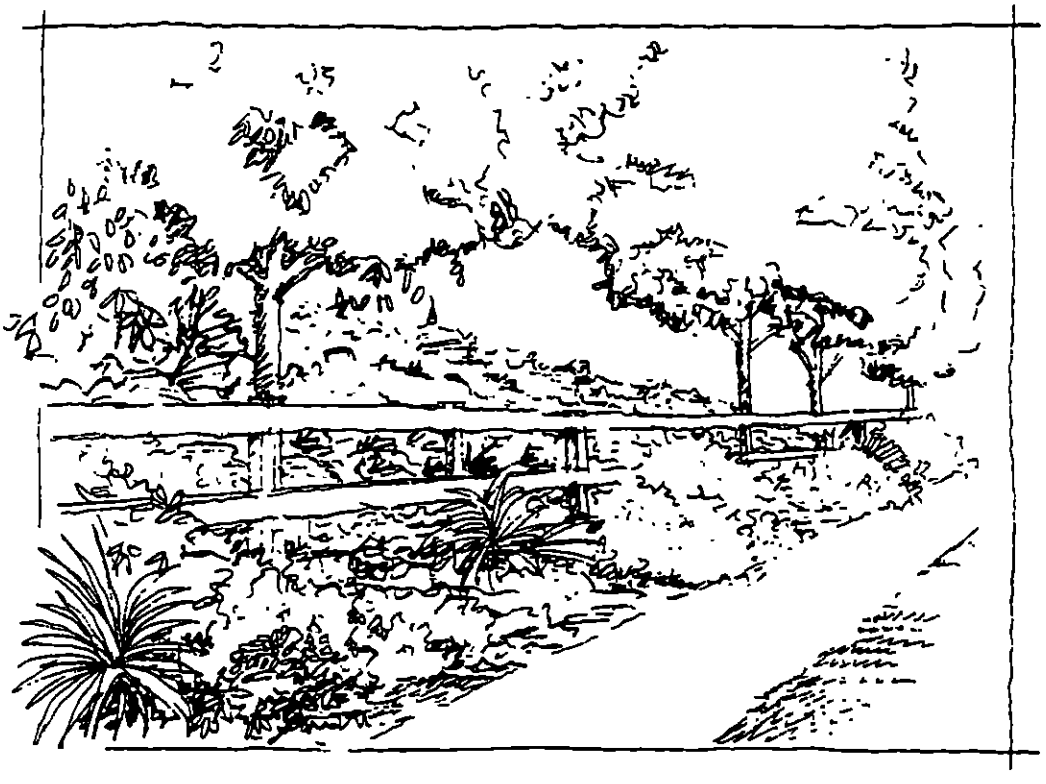
Riding, hiking and bicycling trails provide access to natural open spaces and should feature natural elements and materials. Wooden bridges provide access across swales while visually reinforcing the rural character.



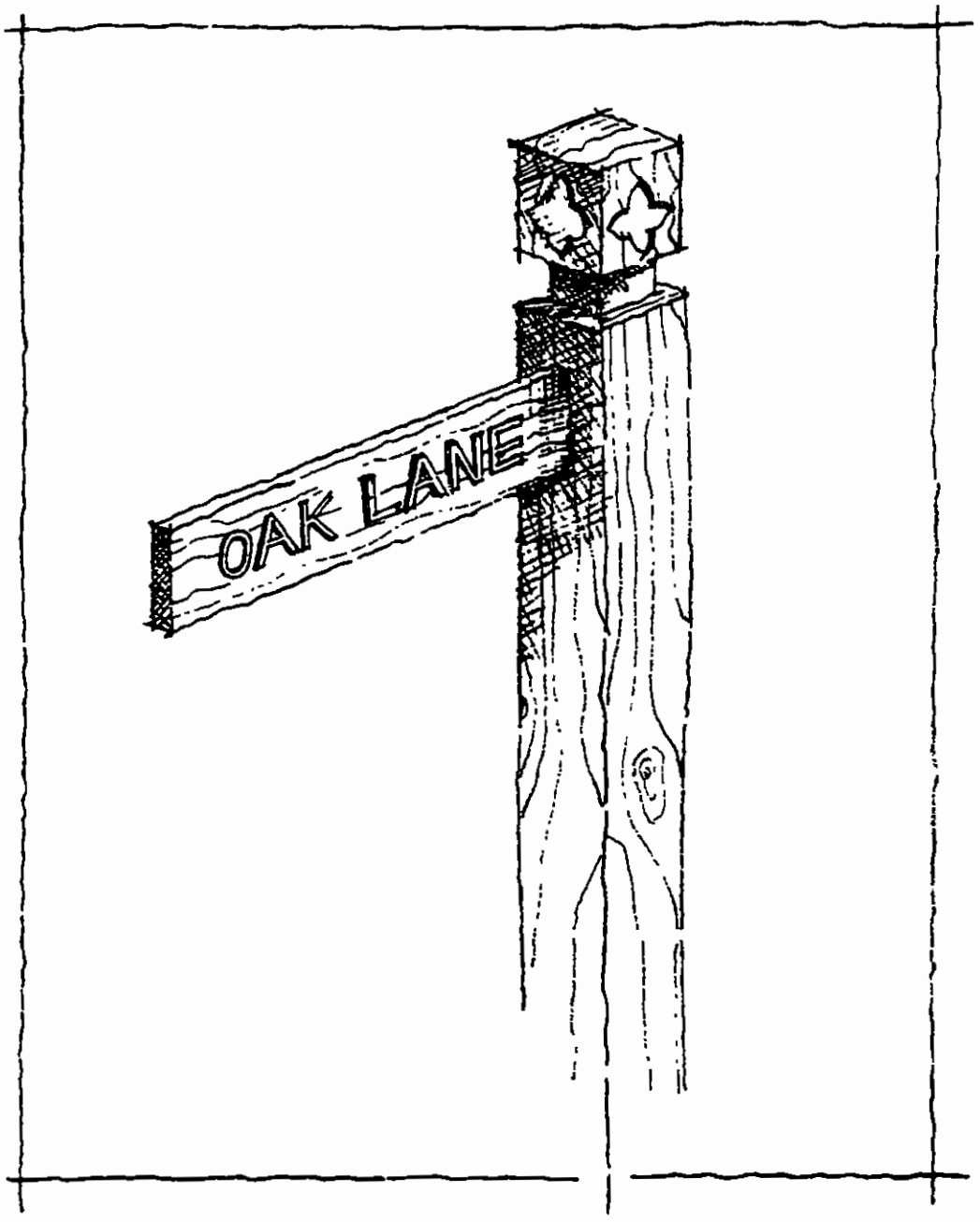
Horse trails and/or bicycle trails can be incorporated as part of the community theme. Landscape setbacks from streets and thematic fencing encourage the rural flavor of the community.



Meandering sidewalks along the community's spine road, enveloped by trees and landscape plantings, provide for an enjoyable walking experience through the community.

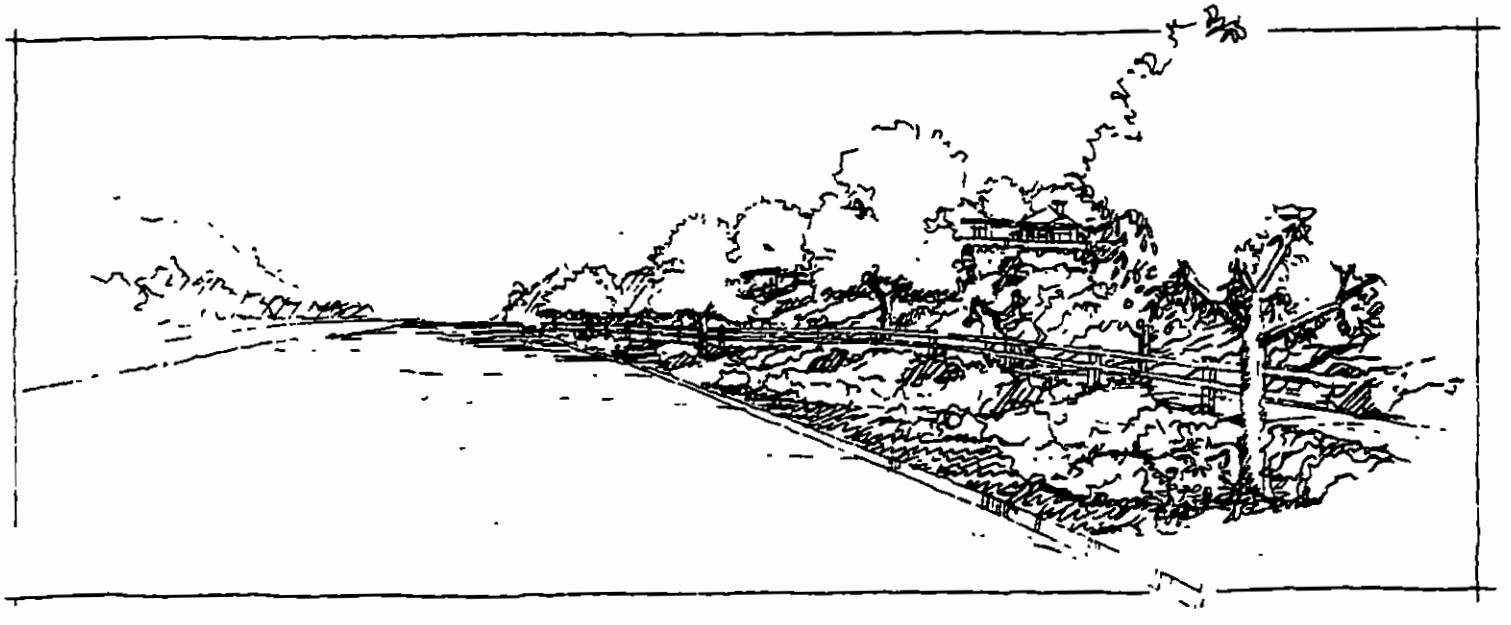


Visual accents of seasonal color in the landscape and natural appearing materials in fences and streetscape elements encourages the rural character within the community.



Simple wood-like sign posts provide information and direction while reflecting the desired character of the community.

Visual detail along public edges (El Toro Road) emphasizes the rural nature of Saddleback Meadows. Wood-like fencing, canopy trees and slope planting reflect the community theme and allow for filtered views into the hills beyond.



APPENDIX B

Alternative 4 – 299 Lots

SADDLEBACK MEADOWS

AREA PLAN 95-7
ALTERNATIVE 4 - 299 LOTS

Prepared for:

PLANNING AND DEVELOPMENT SERVICES OF ORANGE COUNTY

Prepared By:

TPG Management, Inc
On behalf of
California Quartet, Ltd.

February 11, 1998

TABLE OF CONTENTS

SECTION	PAGE
Area Plan 95-7 Description	1
Open Space/Trail Concept Description	3
Contour Grading Concept Description	4
Landscape/Revegetation Concept Description	5

EXHIBITS

Development Plan Concept

Open Space/Trail Concept

Contour Grading Concept

Landscape/Revegetation Concept

ATTACHMENTS

Attachment A: Conditions of Approval

AREA PLAN 95-7
Alternative 4 - 299 Lots
SADDLEBACK MEADOWS

DESCRIPTION

This alternative has 299 single-family detached dwelling units. It is based upon a modified version of Alternative No. 4 contained in Subsequent Environmental Impact Report No. 566. This alternative originated as staff Alternative No. 8 in EIR No. 561 The intent of this alternative Area Plan design is to respond to the design considerations expressed by St. Michael's Abbey, the Ramakrishna Monastery, and Hidden Ridge Community. This Area Plan also begins to incorporate community-wide design elements and features reflective of a rural-like character within the context and constraints of the site and the developer's objectives. These design elements and features were first presented at the July 30, 1996 Planning Commission Hearing, in a document entitled "Saddleback Meadows Rural Character Statement".

The average lot size for this project is approximately 6,541 s.f., with a minimum lot size of 5,000 s.f.. Access to the project would be provided via a gate guarded private street off El Toro Road immediately south of the existing Aliso Creek/Trail undercrossing structure. An emergency only access connects with Valley Vista Way The project site is approximately 222.2 acres in size Total open space is approximately 72% (utilizing PDSD's criteria for calculating open space).

The project acreage (222.2 acres) does not include the adjacent off-site water tank site A water tank with a maximum capacity of 1.4 million gallons, and associated access road, are proposed off-site adjacent to the northeast corner of the project site to provide water service to the proposed project. The proposed water tank site was previously dedicated to the Trabuco Canyon Water District when the existing Final Tract Map was recorded (Tract No. 10692). The water tank will be approximately 30-feet tall, 100 to 110-feet in diameter, and will be bermed, landscaped, and painted a complimentary color to the surrounding setting. A total of approximately 8 acres of off-site area would be affected as a result of project implementation to accommodate slope area, access roads, related remedial grading, the water tank, and County of Orange fuel modification requirements

Onsite circulation is proposed with a system of private streets consisting of a primary spine street (56-foot r.o.w.) and a series of cul-de-sacs (41-,45-, and 52-foot r o w). An encroachment easement is required from the County of Orange to accommodate the project access road where it traverses County owned property along the western most boundary of the site.

The project has been designed to minimize impact on the existing land form. The homes have been located on the relatively level areas in a broad crescent shape flowing along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off the eastern and northern major ridgelines bordering the property A primary design consideration in establishing the rural-like character of Saddleback Meadows is presenting a landscape enveloped community when viewed from the surrounding areas and from within the development In response to this design intent and the interests of St. Michael's

Abbey, the Ramakrishna Monastery and Hidden Ridge, specific grading techniques, site planning, and landscape elements will be incorporated within the plan. The intent of these features will be to enhance the views of Saddleback Meadows from the surrounding areas. This will be accomplished through.

1 Creative contour grading that emphasizes and expands upon landforms;
2. Berming at select and appropriate locations to blend with natural terrain features while providing screening and buffering views into the project site from St Michael's Abbey, the Ramakrishna Monastery and Hidden Ridge,
3. Creative site planning techniques that minimize rows of backyards along highly visible edges, incorporates slopes, landscape zones and landforms between homes and the surrounding neighbors, and neighborhood streets that climb with the terrain rather than flat roads common to non-terrain sites; and
4. An aesthetic community-wide landscape that provides visual enhancement through significant perimeter and interior plantings, responds to seasonal changes, and provides filtered views of the community from the surrounding areas.

A wildlife movement corridor has been incorporated into the project design to address the importance of regional wildlife movement linkages between regionally important open space areas such as O'Neill Regional Park, Whiting Ranch Wilderness Park and the Cleveland National Forest. Unlike the proposed project which does not incorporate any type of wildlife corridor, this alternative utilizes an east/west corridor alignment similar to that shown in the Foothill/Trabuco Specific Plan This wildlife corridor, which bisects the project (called the central corridor), is a component of a three corridor concept which together is designed primarily to accommodate small and medium size mammals and birds, but would not preclude the occasional potential movement of large mammals as well This corridor is comprised of a minimum 400' wide wildlife corridor with 50' setbacks located on either side. The onsite wildlife corridor is proposed to utilize an at-grade crossing (400') where the wildlife corridor traverses the development's main spine road. Due to the low level of traffic on this end of the project, the at-grade crossing is not anticipated to inhibit wildlife movement Loffel walls are used in select locations to minimize the extent of manufactured slopes. Loffel walls allow for the growth of plant materials on and around the wall, eventually screening the wall behind a blanket of vegetation

Statistical Summary*

ONSITE	ACREAGE	% OF SITE
Residential Lots	44.9	20%
Streets (private)	17 5	8%
Other Dedicated Natural Open Spaces	93 1	42%
Trail Staging Area/Pocket Park	.6	0%
Open Space (dedicated to H.O A.)	66.1	30%
Subtotal	222.2	100%

* Acreages and percentages are approximations subject to refinement at the Tentative Map/Final Map stages.

OPEN SPACE/ TRAIL CONCEPT

The proposed Open Space/Trail Concept for Saddleback Meadows incorporates a variety of refinements which result in minimizing environmental impacts. In response to the Natural Communities Conservation Program (NCCP) goals and objectives, the project provides for a viable Wildlife Movement Corridor incorporated into the design of the project providing access from the Aliso Creek Corridor to O'Neill Regional Park The design proposes the primarily undisturbed open space areas, along with revegetated slope areas of the project, for fee dedication as a potential extension of O'Neill Regional Park Trail connections are provided, linking the project to existing regional riding/hiking trails and bikeways The project proposes a Trail Staging Area/Pocket Park, Ridgetop Park and significant dedicated natural open space. The proposed Trail Staging Area/Pocket Park provides a direct link to the regional trail located on El Toro Road and the other proposed recreation features (Ridgetop Park and the Old Ranch House Site).

1. Trails

a. Regional Riding and Hiking Trail
   - Dedication of 16' wide Recreation Easement along El Toro Road frontage (approx. 1350 l.f.)
   - County Maintenance Responsibility

b. Local Riding and Hiking Trail
   - Dedication of 16' wide Recreation Easement (approx 4800 l.f., of which approximately 1550 l f. traverses Restricted Scenic Preservation Easement, and approximately 3250 l.f. traverses Other Dedicated Natural Open Space)
   - Linkage from proposed Trail Staging Area/Pocket Park to the regional trail on El Toro Road and another trail linking the regional trail to the proposed Ridgetop Park (a.k.a. Bridlewood look-out park) and the Old Ranch House Site
   - County Maintenance Responsibility

2. Other Dedicated Natural Open Space

As designated on the Open Space/Trail Concept Map
- Potential extension of O'Neill Regional Park
- Approximately 93.1 acres (42% of project site)
- Fee Ownership Dedication
- Includes undisturbed open space, some Native Enhancement Transition Areas and some revegetated manufactured slope areas
- Includes Coastal Sage Scrub Restoration/Enhancement Areas
- Includes preserved significant Oak Woodlands and Oak Restoration Areas outside of fuel modification zones
- Includes portion of existing Olive Grove area undisturbed by grading/fuel modification
- Includes preserved existing and re-created Ephemeral Ponds
- Includes Ridge Top Park (Bridlewood look-out park)

- County Maintenance Responsibility

3. Restricted Scenic Preservation Easements

Areas designated as the following on the Open Space/Trail Concept Plan Map·
- El Toro Road Community Edge Area
- Fuel Modification Zones (Wet Zone and Non-Irrigated Zones only)
- HOA/Community Maintenance District Responsibility

4. Community Slope Area

- As designated on the Open Space/Trail Concept Plan Map
- HOA Owned
- HOA/Community Maintenance District Responsibility

CONTOUR GRADING CONCEPT

The grading concept for this alternative reflects a contour grading approach which utilizes techniques emphasizing variations and takes advantage of the curvilinear street and lotting design, rather than repetitive uniformity. Contour grading and the creative use of berms and landforms along the community's spine road provide for screening and buffering of views into the project site from various offsite locations Numerous design features work together to establish the rural-like character. Contour grading with landform enhancement provides for edge treatments responsive to the natural terrain. The community's spine road alignment responds to the terrain and allows for landscape plantings on both sides to create the rural-like experience while driving through the community. Creative site planning responds to the intended rural character with setbacks from the spine road. This allows the project a more natural and organic ambiance in keeping with the rolling hillside setting These contour grading techniques consist of the following.

1. Integrate grading into the context of existing topography using horizontal rounding of contours;
2 Blending of manufactured contours with natural existing contours;
3. Rounding at the top and toe of slopes to avoid harsh transitions, and
4 Design of development enclaves of varying size and irregular spacing to avoid a uniformly "terraced" appearance.

Earthwork Volumes:

Conventional Grading

- Balanced Cut/Fill (approximate)
  Cut Quantity: 2,100,000 c.y.
  Fill Quantity 2,100,000 c y.

- Total Import Quantity· 0
  Total Export Quantity. 0

Remedial Grading

- Total Remedial Grading (Remove & Replace): approximately 6,800,000 c y.

MAXIMUM GRADING STATISTICS

Manufactured Slopes	10-20 ft.	Over 20 ft.	Highest
Building Lots (with Type C slopes)*	N/A	N/A	N/A
Type B Slopes** (between building lots)	0 L.F	5,700 L.F.	50 ft.
Roads	2,500 L.F.	3,100 L.F.	120 ft.

Contour Elevation Changes	10-20 ft.	Over 20 ft.	Highest
Building Sites	92 places	134 places	80 ft
Roads	4,250 L F	7,300 L F	91 ft.

Retaining Walls	0 - 6 ft.	Over 6 ft.	Highest
	3,500 L.F	N/A	6 ft.

Loffel Walls	0 - 6 ft.	Over 6 ft.	Highest
	0 L F.	1,640 L F	40 ft.

* Type "C" slopes are owned and maintained by private owners
** Type "B" slopes are owned and maintained by the H.O A./Community Maintenance District

LANDSCAPE / REVEGETATION CONCEPT

The Landscape / Revegetation Concept for Saddleback Meadows seeks to integrate the landscape of the proposed project with the site's existing setting and that of the surrounding foothill region The use of landscape materials (both native and introduced) and the manner in which the landscape design concept is integrated into the project will reinforce the ability of Saddleback Meadows to respond to the following:

1. Views into the community from surrounding properties;
2. Views from within the Saddleback community;
3 The desire to create a community character which reflects the transitional nature of the property from a suburban to semi-rural setting

Interspersing primarily sycamore tree groupings at strategic locations throughout the project will blend the different landscape zones and integrate this community into the surrounding preserved

natural open space areas A predominant image of nature, open space and natural vegetation will be accomplished via

1. Tall trees and shrub massings planted on slopes between the residential neighborhoods and within natural open spaces, on slopes between homes, and along community streets,
2. A priority given to landscape plantings, i.e. views of the community shall be through the landscape which blankets the architecture of the neighborhoods, thus allowing the landscape (incorporating Sycamores, Oaks, and other appropriate trees) to predominate over the built environment; and
3. Side slope and street tree plantings in the neighborhoods to provide for visible tree canopies above the rooflines.
4 An interlace of the natural and introduced landscape as one fabric.

The Landscape Concept consists of five (5) functional yet integrated areas and zones as shown on the Landscape / Revegetation Concept Plan These areas and zones are as follows.

1) El Toro Road Community Edge Area

The El Toro Road Community Edge area will play a key role in providing a physical and visual buffer for the project from off-site views Predominantly manufactured slopes are planned along El Toro Road In addition, a key component of this edge is the preservation of Aliso Creek and it's existing riparian habitat along El Toro Road, just north of the proposed main project entry point. Therefore, this community edge adjacent to the road will be landscaped with introduced and native compatible plants reflecting and continuing the riparian landscape found along the Aliso Creek/El Toro Road Corridor. The California Sycamore, commonly found in riparian areas, will be the major slope tree along the El Toro Road Community Edge

Further up the manufactured slope, the landscape will transition from riparian plants to ornamental and native compatible plants suitable for erosion control and for buffering and screening Tree plantings at side-yard property lines of the residential lots located at the top of slopes will reduce the visual impact of dwellings when viewed from off-site Meanwhile these tree groupings are intended to maintain views for individual lots Additionally, this edge treatment is designed to provide visual screening of the project from vehicles traveling along El Toro Road.

2) Community Slope Area

Manufactured slopes will be landscaped to visually enhance the project, to control erosion, and to provide buffering/screening where appropriate and feasible. Trees will be located at the top of slopes and clustered near side-yard property lines of residential lots as well as on the slope itself. Trees planted on the slope will take into consideration the maximum tree height at maturity relative to its vertical location to the top of slope, so that views from residential lots will not be impaired when slope landscaping reaches full maturity This will blend the manufactured on-site slopes with off-site natural areas, integrating the community landscape into the surrounding

environs. California Sycamore and some Coastal Live Oak trees will be used in strategic locations throughout the community slopes, continuing the community landscape theme.

Major oak woodland areas and areas of the olive grove which are not impacted by development and/or remedial grading activities are identified on the Landscape/Revegetation Concept Plan as preserved. These areas identify major preserved tree stands and tree groupings only. For identification of individual preserved and impacted oak trees, refer to Sweetwater Environmental Biologists' Oak Tree Inventory, dated December 21, 1995

3) Fire Fuel Modification Zones

The Orange County Fire Authority (OCFA) requires a fuel modification program along all edges of residential development exposed to fire hazard areas. The fuel modification program addresses three zones consisting of a "Setback Zone", "Wet Zone", and a "Non-Irrigated Zone", as shown on the Landscape and Revegetation Concept Plan Map. Maintenance responsibility for the setback zone lies with the private owner. Maintenance responsibility for the other zones will be with the H.O.A./ Community Maintenance District.

Saddleback Meadows' residential edges contain both upslope and downslope conditions with a combination of both manufactured and natural undisturbed slopes. The intent of the fuel modification is to utilize these slopes as a transition area between natural open space (fire hazard areas) and the residential edge and to provide an acceptable level of fire safety. The revegetated portion of these slopes will be landscaped using native compatible plant species which will meet the public safety goals of the OCFA, reinforce the naturalized appearance of the manufactured slopes, satisfy the aesthetic requirements of the project. Fire Fuel Modification Zones are designed to reflect the native enhancement transition zone criteria for plant material selection. The plant palettes for both of the Fire Fuel Modification Zones and the Native Enhancement Transition Zone overlap and contain many of the same species and varieties of plants.

Setback Zone - Is a twenty-foot (20') wide area within the rear yard setback of all residential lots abutting the fuel modification zone. No combustible construction or materials will be allowed in this zone. This zone will be maintained by the individual homeowner. (Not shown on the Landscape / Revegetation Concept Plan, see Preliminary Fuel Modification Plan)

Wet Zone - is a fifty-foot (50') wide landscape area, beginning at the residential rear yard property line This zone includes an automatic irrigation system and low fuel fire resistive, native compatible plants.

Non-Irrigated Zone - Fire fuel modification zones are 100' wide. However, several upslope areas with 50' widths will be permitted with O.C.F.A. approval. In natural undisturbed slopes, existing native planting will be non-irrigated, pruned and thinned Manufactured slopes will be **temporarily** irrigated and landscaped with native and native-compatible plant materials. Landscaping is intended to naturalize over time with irrigation to be abandoned upon establishment and naturalization

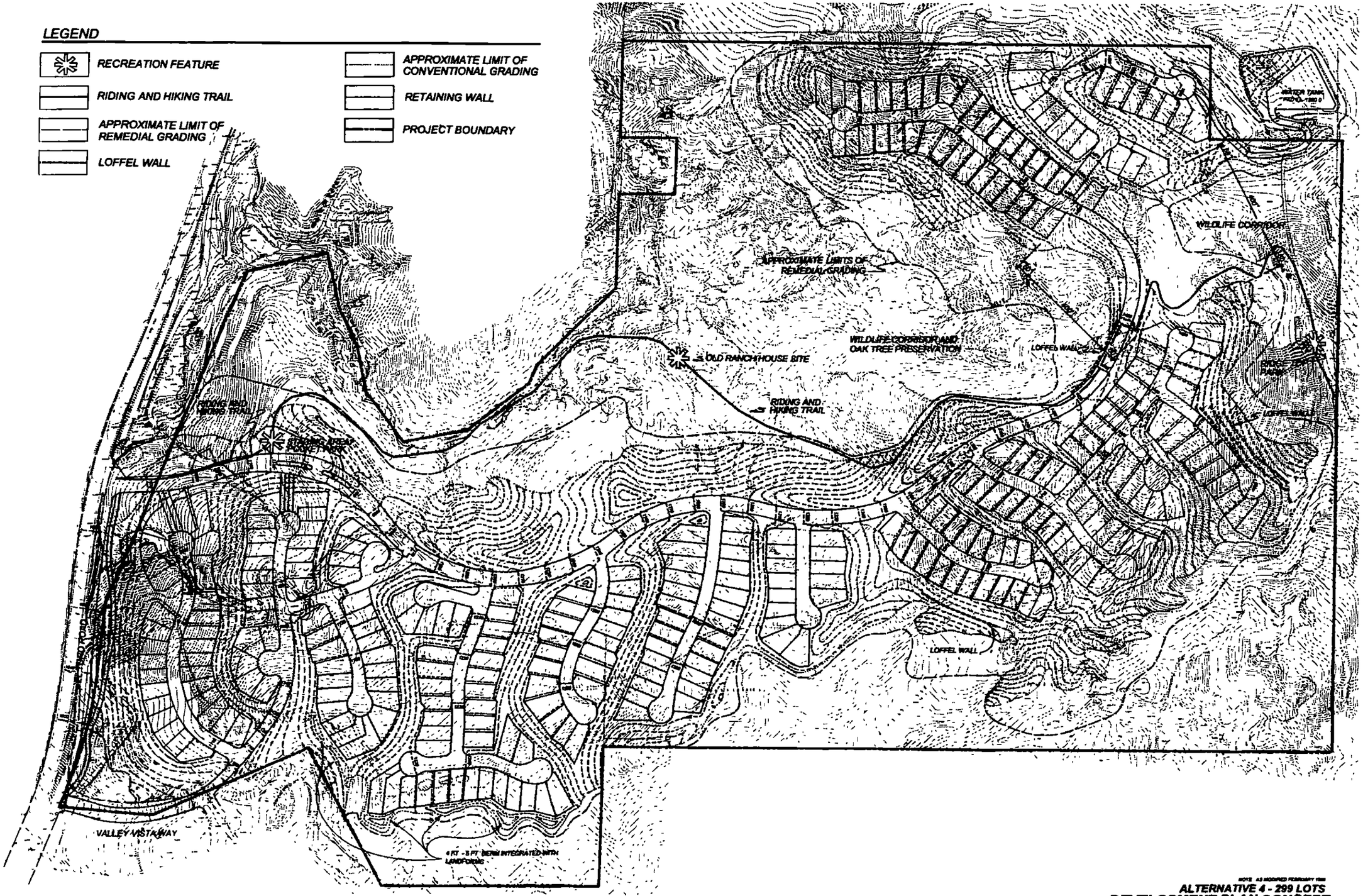
Application of the Orange County Fire Authority's (OCFA) fuel modification criteria to the area located along the upper north-easterly project boundary, dictates that the fuel modification zone traverse off-site onto private property. This will require that an easement be obtained from the adjacent property owner, for the purposes of fuel modification, prior to the issuance of a grading permit. Maintenance responsibility for any off-site fuel modification zones will be the same as for on-site fuel modification zones (i e H.O A / Community Maintenance District).

4) Native Enhancement Transition Area

Natural areas disturbed by remedial grading and located within designated open space areas will require revegetation with native or naturalized plant material to re-establish the previous coastal sage scrub (CSS). A high priority will be placed upon selecting plant material which is indigenous to the undisturbed natural areas and surrounding areas and which will provide a landscape with as much habitat value as is practical.

5) Existing Undisturbed Vegetation Area.

Open space areas undisturbed by remedial grading activities will be preserved and incorporated into the overall landscape concept. Only minimal clean-up of abandoned agricultural uses , if necessary is planned. The elimination of livestock grazing on the property will allow the natural transition and succession of grasses to CSS and Chaparral plant communities over time. The majority of Oak Woodland mitigation will occur in this area within stands of existing non-native vegetation.



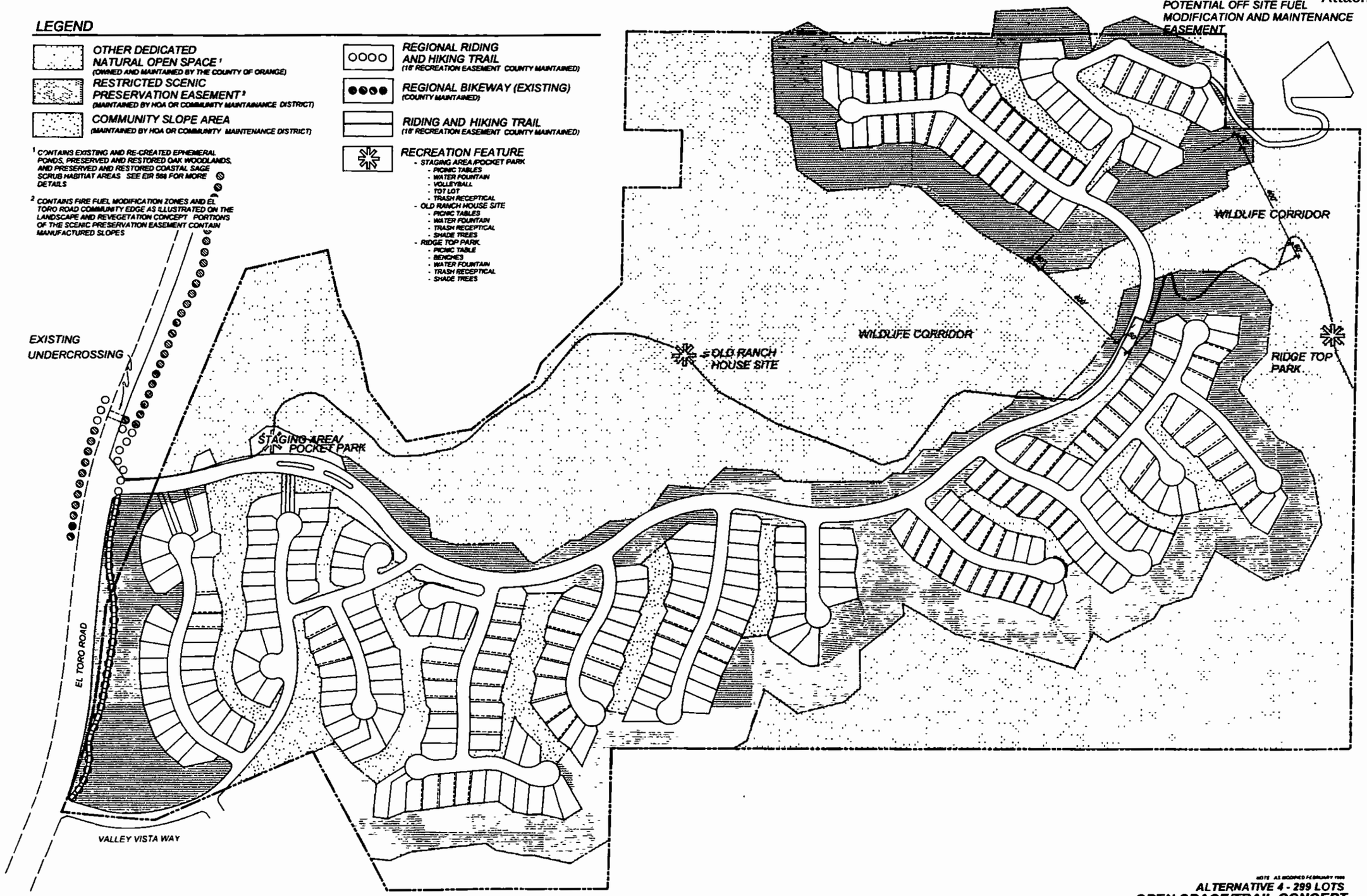
SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

NOTE: AS MODIFIED FEBRUARY 1988

ALTERNATIVE 4 - 299 LOTS
DEVELOPMENT PLAN CONCEPT
AREA PLAN 95-7

MICHAEL MADDEN ASSOCIATES — FEBRUARY 10, 1988 — 0 50 100 200 400



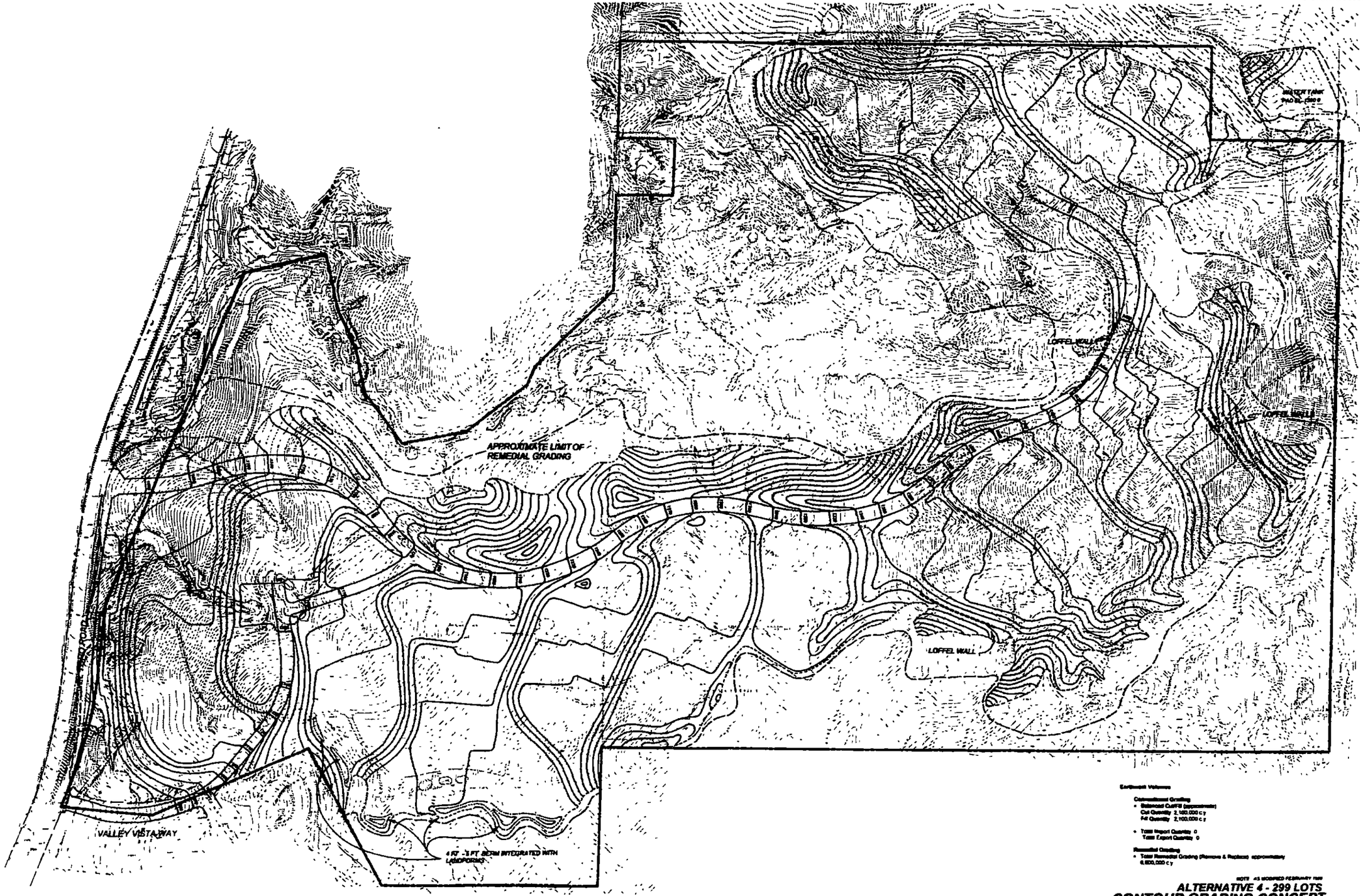
SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

NOTE AS MODIFIED FEBRUARY 1996

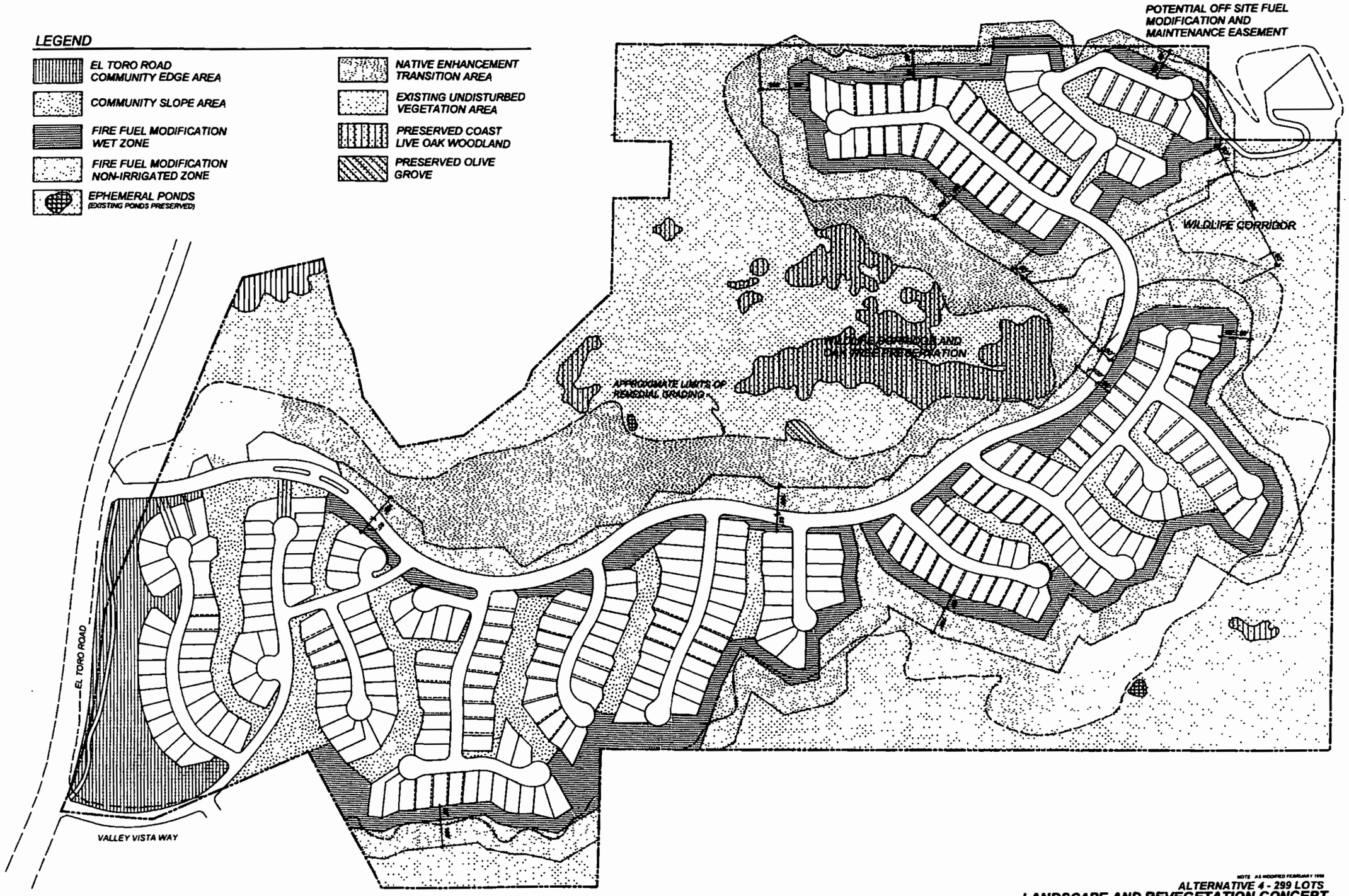
ALTERNATIVE 4 - 299 LOTS
OPEN SPACE/TRAIL CONCEPT
AREA PLAN 95-7

MICHAEL MADDEN ASSOCIATES FEBRUARY 16, 1996 0 50 100 200 400



SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.



SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

NOTE AS MODIFIED FEBRUARY 1998

ALTERNATIVE 4 - 299 LOTS

LANDSCAPE AND REVEGETATION CONCEPT

AREA PLAN 95-7

MICHAEL RADDEN ASSOCIATES FEBRUARY 10, 1998 0 50 100 200 400

APPENDIX C

Alternative 8 – 299 Lots

SADDLEBACK MEADOWS

AREA PLAN 95-7
ALTERNATIVE 8 - 299 LOTS

PREPARED FOR:

ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY

PREPARED BY:

TPG Management, Inc.
On behalf of
California Quartet, Ltd.

July 23, 1996

TABLE OF CONTENTS

SECTION	PAGE
Area Plan 95-7 Description	1
Open Space/Trail Concept Description	2
Contour Grading Concept Description	3
Landscape/Revegetation Concept Description	4

EXHIBITS

Development Plan Concept

Open Space/Trail Concept

Contour Grading Concept

Landscape/Revegetation Concept

ATTACHMENTS

Attachment A: Conditions of Approval

AREA PLAN 95-7
Alternative 8 - 299 Lots
SADDLEBACK MEADOWS

DESCRIPTION

This alternative has 299 single-family detached dwelling units. It is based upon EMA staff's version of Alternative No 8. The average lot size for this project is approximately 6,400 s.f., with a minimum lot size of 5,000 s.f. Access to the project would be provided via a gate guarded private street off El Toro Road immediately south of the existing Aliso Creek/Trail undercrossing. An emergency only access connects with Valley Vista Way. The project site is 222.2 acres in size. Total open space is approximately 72% (utilizing EMA's criteria for calculating open space).

The project acreage (222.2 acres) does not include the adjacent off-site water tank site. A 1.4 million gallon water tank and associated access road is proposed off-site adjacent to the northeast corner of the project site to provide water service to the proposed project. The proposed water tank site was dedicated to the Trabuco Canyon Water District when the existing Final Tract Map was recorded (Tract No. 10692) The water tank will be approximately 30-feet tall, 100 to 110-feet in diameter, bermed, landscape, and painted a complimentary color to the surrounding setting. A total of approximately 8 acres of off-site area would be affected as a result of project implementation to accommodate slope area, access roads, related remedial grading, the water tank, and County of Orange fuel modification requirements.

Onsite circulation is proposed with a system of private streets consisting of a primary spine street (56-foot r.o.w.) and a series of cul-de-sacs (41-,45-, and 52-foot r.o.w.). An encroachment easement is required from the County of Orange to accommodate the project access road where it traverses County owned property along the western most boundary of the site.

The project has been designed to minimize impact on the existing land form. The homes have been located on the relatively level areas in a broad crescent shape flowing along the southern and eastern sides of the site, while the steep terrain of the central canyon area has been left as open space. Development is kept off the eastern and northern major ridgelines bordering the property.

A wildlife movement corridor has been incorporated into the project design to address the importance of regional wildlife movement linkages between regionally important open space areas such as O'Neill Regional Park, Whiting Ranch Wilderness Park and the Cleveland National Forest Unlike the proposed project, this alternative utilizes an east/west corridor alignment similar to that shown in the Foothill/Trabuco Specific Plan The wildlife corridor which bisects the project (called the central corridor) is a component of a three corridor concept which together is designed primarily to accommodate small and medium size mammals and birds, but would not

preclude the occasional potential movement of large mammals as well. This corridor is comprised of a minimum 400' wide wildlife corridor with 50' setbacks located on either side. The onsite wildlife corridor is proposed to utilize an at-grade crossing (400') where the wildlife corridor traverses the main spine road Due to the low level of traffic on this end of the project, the at-grade crossing is not anticipated to inhibit wildlife movement. Loffel walls with a maximum height of 12' are used in strategic locations to minimize the extent of slopes and to save one of the existing stock ponds, located near the southeast corner of the site. Loffel walls allow for the integration of plant materials onto the wall, eventually screening the wall behind a blanket of vegetation.

Statistical Summary*

ONSITE	ACREAGE	% OF SITE
Residential Lots	44 7	20%
Streets (private)	18 0	8%
Other Dedicated Natural Open Spaces	91.9	41%
Trail Staging Area	.6	0%
Open Space (dedicated to H.O.A.)	67.0	31%
Subtotal	222.2	100%

* Acreages and percentages are approximations subject to refinement at the Tentative Map stage.

OPEN SPACE/ TRAIL CONCEPT

The proposed Open Space/Trail Concept for Saddleback Meadows incorporates a variety of refinements which result in minimizing environmental impacts. In response to Natural Communities Conservation Program (NCCP) goals and objectives, the project provides for a viable Wildlife Movement Corridor incorporated into the design of the project providing access from the Aliso Creek Corridor to O'Neill Regional Park. The design proposes the primarily undisturbed open space areas along with some revegetated disturbed slope areas of the project for fee dedication as a potential extension of O'Neill Regional Park. Trail connections are provided, linking the project to existing regional riding/hiking trails and bikeways The project proposes a trail staging area, ridgetop park and significant dedicated natural open space. The proposed Trail Staging Area provides a direct link to the regional trail located on El Toro Road and the other proposed recreation features (ridgetop park and old ranch house site)

1. Trails

a Regional Riding and Hiking Trail
-Dedication of 16' wide Recreation Easement along El Toro Road frontage (approx. 1350 l.f.)
-County Maintenance Responsibility

b. Local Riding and Hiking Trail

-Dedication of 16' wide Recreation Easement (approx. 4800 l f., of which approximately 1550 l.f traverses Restricted Scenic Preservation Easement, and approximately 3250 l.f. traverses Other Dedicated Natural Open Space)
-Linkage from proposed Trail Staging Area to the regional trail on El Toro Road and another trail linking the regional trail to the proposed ridgetop park (a.k.a Bridlewood look-out park) and old ranch house site.
-County Maintenance Responsibility

2. Other Dedicated Natural Open Space

As designated on the Open Space/Trail Concept Map:
- Potential extension of O'Neill Regional Park
- Approximately 91.9 acres (41% of project site)
- Fee Ownership Dedication
- Includes undisturbed open space, Native Enhancement Transition Areas, and some revegetated manufactured slope areas
- Includes Coastal Sage Scrub Restoration/Enhancement Areas
- Includes preserved significant Oak Woodlands and Oak Restoration Areas outside of fuel modification zones
- Includes portion of existing Olive Grove area undisturbed by grading/fuel modification
- Includes preserved existing and re-created Ephemeral Ponds
- Includes Ridge Top Park (Bridlewood Lookout Park)
- County Maintenance Responsibility

3. Restricted Scenic Preservation Easements

Areas designated as the following on the Open Space/Trail Concept Plan Map:
- El Toro Road Community Edge Area
- Fuel Modification Zones (Wet Zone and Non-Irrigated Zones only)
- HOA/Community Maintenance District Responsibility

4. Community Slope Area

- As designated on the Open Space/Trail Concept Plan Map
- HOA Owned
- HOA/Community Maintenance District Responsibility

CONTOUR GRADING CONCEPT

The grading concept for this alternative reflects a contour grading approach which utilizes techniques emphasizing variations and takes advantage of the curvilinear street and lotting design, rather than repetitive uniformity. This allows the project a more natural and organic ambiance in keeping with the rolling hillside setting. These contour grading techniques consist of the following.

- Integrate grading into the context of existing topography using horizontal rounding of contours;

- Blending of manufactured contours with natural existing contours;
- Rounding at the top and toe of slopes to avoid harsh transitions; and
- Design of development enclaves of varying size and irregular spacing to avoid a uniformly "terraced" appearance.

Earthwork Volumes:

Conventional Grading

- Balanced Cut/Fill (approximate)
  Cut Quantity. 2,100,000 **c.y.**
  Fill Quantity. 2,100,000 **c.y.**

- Total Import Quantity: **0**
  Total Export Quantity: **0**

Remedial Grading

- Total Remedial Grading (Remove & Replace): approximately **6,300,000 c.y.**

MAXIMUM GRADING STATISTICS

Manufactured Slopes	10-20 ft.	Over 20 ft.	Highest
Building Lots (with Type C slopes)*	N/A	N/A	N/A
Type B Slopes** (between building lots)	1,700 L.F.	3,850 L.F.	85 ft
Roads	1,425 L.F.	2,860 L.F	120 ft.

Contour Elevation Changes	10-20 ft.	Over 20 ft.	Highest
Building Sites	85 places	182 places	78 ft.
Roads	4,950 L.F.	7,250 L F.	92 ft.

Retaining Walls	0 - 6 ft.	Over 6 ft.	Highest
	860 L.F.	N/A	6 ft

Loffel Walls	0 - 6 ft.	Over 6 ft.	Highest
	2,050 L.F.	550 L.F.	12 ft

* Type "C" slopes are owned and maintained by private owners
** Type "B" slopes are owned and maintained by the H.O.A /Community Maintenance District

LANDSCAPE / REVEGETATION CONCEPT

The Landscape / Revegetation Concept for Saddleback Meadows seeks to integrate the landscape of the proposed project with the site's existing setting and that of the surrounding foothill region

Interspersing sycamore and oak tree groupings at strategic locations throughout the project will blend the different landscape zones and integrate this community into the surrounding preserved natural open space areas. The Landscape Concept consists of five (5) functional yet integrated areas and zones as shown on the Landscape / Revegetation Concept Plan. These areas and zones are as follows:

1) El Toro Road Community Edge Area

The El Toro Road Community Edge area will play a key role in providing a physical and visual buffer for the project from off-site views. Predominantly manufactured slopes are planned along El Toro Road. In addition, a key component of this edge is the preservation of Aliso Creek and it's existing riparian habitat along El Toro Road, just north of the proposed main project entry point Therefore, this community edge adjacent to the road will be landscaped with introduced and native compatible plants reflecting and continuing the riparian landscape found along the Aliso Creek/El Toro Road Corridor. The California Sycamore, commonly found in riparian areas, will be the major slope tree along the El Toro Road Community Edge.

Further up the manufactured slope, the landscape will transition from riparian plants to ornamental and native compatible plants suitable for erosion control and for buffering and screening. Tree plantings at side-yard property lines of the residential lots located at the top of slopes will reduce the visual impact of dwellings when viewed from off-site. Meanwhile these tree groupings are intended to maintain views for individual lots Additionally, this edge treatment is designed to provide excellent visual screening of the project from vehicles traveling along El Toro Road.

2) Community Slope Area

Manufactured slopes will be landscaped to visually enhance the project, to control erosion, and to provide buffering/screening where necessary. Trees will be located at the top of slopes and clustered near side-yard property lines of residential lots as well as on the slope itself. Trees planted on the slope will take into consideration the maximum tree height at maturity relative to its vertical location to the top of slope, so that views from residential lots will not be impaired when slope landscaping reaches full maturity This will blend the manufactured on-site slopes with off-site natural areas, integrating the community landscape into the surrounding environs California Sycamore and some Coastal Live Oak trees will be used in strategic locations throughout the community slopes, continuing the community landscape theme

Major oak woodland areas and areas of the olive grove which are not impacted by development and/or remedial grading activities are identified on the Landscape/Revegetation Concept Plan as preserved. These areas identify major preserved tree stands and tree groupings only. For identification of individual preserved and impacted oak trees, refer to Sweetwater Environmental Biologists' Oak Tree Inventory, dated December 21, 1995.

3) Fire Fuel Modification Zones

The Orange County Fire Authority (OCFA) requires a fuel modification program along all edges of residential development exposed to fire hazard areas. The fuel modification program addresses three zones consisting of a "Setback Zone", "Wet Zone", and a "Non-Irrigated Zone", as shown on the Landscape and Revegetation Concept Plan Map. Maintenance responsibility for the setback zone lies with the private owner. Maintenance responsibility for the other zones will be with the H.O.A./ Community Maintenance District.

Saddleback Meadows' residential edges contain both upslope and downslope conditions with a combination of both manufactured and natural undisturbed slopes. The intent of the fuel modification is to utilize these slopes as a transition area between natural open space (fire hazard areas) and the residential edge and to provide an acceptable level of fire safety The revegetated portion of these slopes will be landscaped using native compatible plant species which will meet the public safety goals of the OCFA, reinforce the naturalized appearance of the manufactured slopes, satisfy the aesthetic requirements of the project. Fire Fuel Modification Zones are designed to reflect the native enhancement transition zone criteria for plant material selection. The plant palettes for both of the Fire Fuel Modification Zones and the Native Enhancement Transition Zone overlap and contain many of the same species and varieties of plants.

Setback Zone - Is a twenty-foot (20') wide area within the rear yard setback of all residential lots abutting the fuel modification zone. No combustible construction or materials will be allowed in this zone. This zone will be maintained by the individual homeowner. (Not shown on the Landscape / Revegetation Concept Plan, see Preliminary Fuel Modification Plan).

Wet Zone - is a fifty-foot (50') wide landscape area, beginning at the residential rear yard property line This zone includes an automatic irrigation system and low fuel fire resistive, native compatible plants.

Non-Irrigated Zone - Fire fuel modification zones are 100' wide. However, several upslope areas with 50' widths will be permitted with O.C.F.A. approval. In natural undisturbed slopes, existing native planting will be non-irrigated, pruned and thinned. Manufactured slopes will be **temporarily** irrigated and landscaped with native and native-compatible plant materials. Landscaping is intended to naturalize over time with irrigation to be abandoned upon establishment and naturalization.

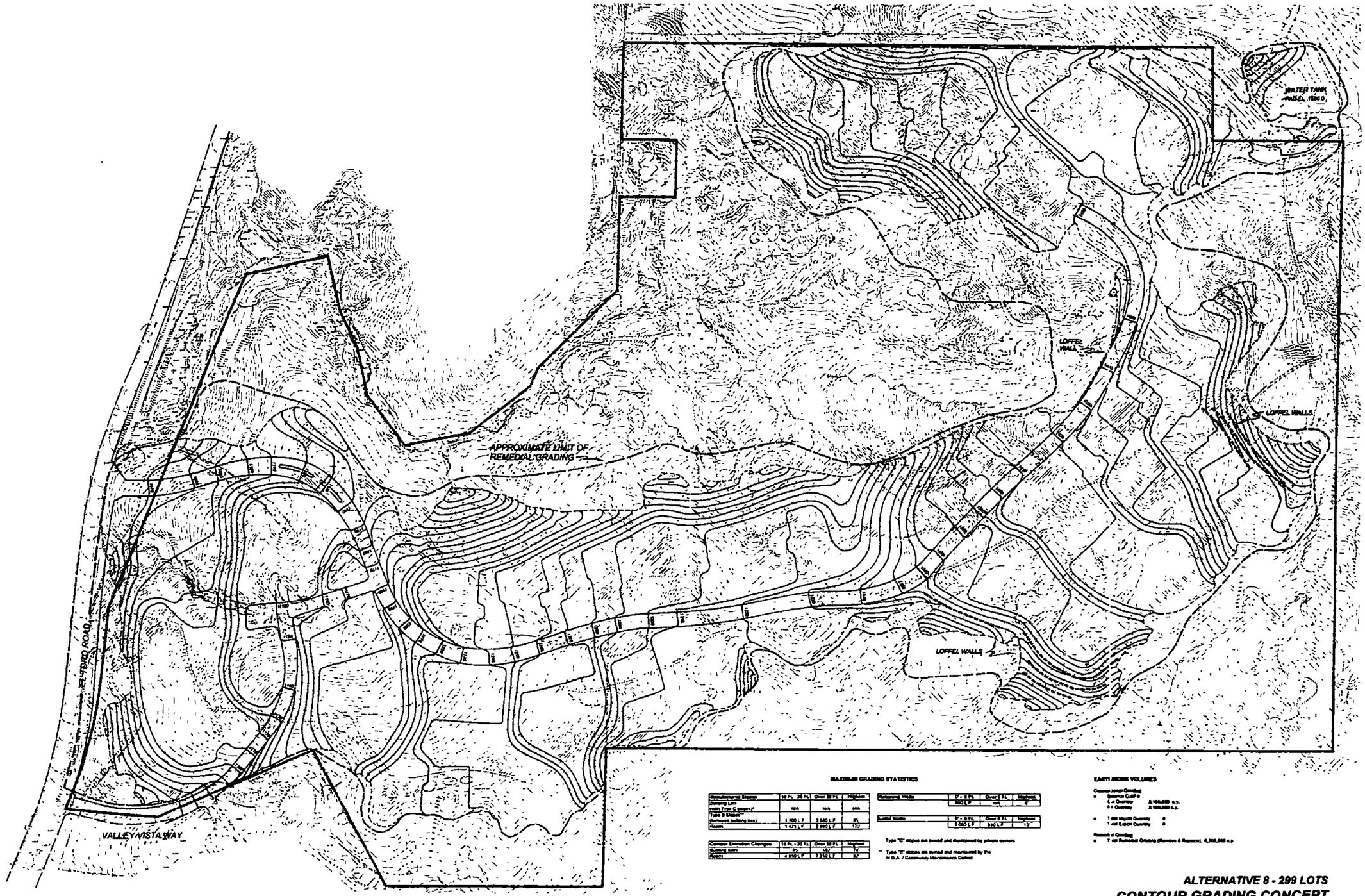
Application of the Orange County Fire Authority's (OCFA) fuel modification criteria to the area located along the upper north-easterly project boundary, dictates that the fuel modification zone traverse off-site onto private property. This will require that an easement be obtained from the adjacent property owner, for the purposes of fuel modification, prior to the issuance of a grading permit. Maintenance responsibility for any off-site fuel modification zones will be the same as for on-site fuel modification zones (i.e H O A. / Community Maintenance District).

4) Native Enhancement Transition Area

Natural areas disturbed by remedial grading and located within designated open space areas will require revegetation with native or naturalized plant material to re-establish the previous coastal sage scrub (CSS) A high priority will be placed upon selecting plant material which is indigenous to the undisturbed natural areas and surrounding areas and which will provide a landscape with as much habitat value as is practical.

5) Existing Undisturbed Vegetation Area.

Open space areas undisturbed by remedial grading activities will be preserved and incorporated into the overall landscape concept Only minimal clean-up of abandoned agricultural uses , if necessary is planned. The elimination of livestock grazing on the property will allow the natural transition and succession of grasses to CSS and Chaparral plant communities over time. The majority of Oak Woodland mitigation will occur in this area within stands of existing non-native vegetation.



MAXIMUM GRADING STATISTICS

Maximum Lateral Slopes	10 Ft. - 20 Ft.	Over 20 Ft.	Heights
Building Lots			
Public Type C slopes*	N/A	N/A	N/A
Type B Slopes*			
(Between building lots)	1,700 L.F.	2,540 L.F.	9'
Roads	1,475 L.F.	2,960 L.F.	12'

Contour Elevation Changes	10 Ft. - 20 Ft.	Over 20 Ft.	Heights
Building Sites	3's	1's	12'
Roads	4,900 L.F.	7,350 L.F.	24'

Retaining Walls	0' - 6 Ft.	Over 6 Ft.	Heights
	5400 L.F.	N/A	6'

Lateral Walls	0' - 6 Ft.	Over 6 Ft.	Heights
	2,600 L.F.	510 L.F.	12'

Type "C" slopes are owned and maintained by private owners

Type "B" slopes are owned and maintained by the H.O.A. / Community Maintenance District

EARTH WORK VOLUMES

Common Aerial Grading
- Excavation Cut* = 3,100,000 c.y.
  - C + Overlot = 3,100,000 c.y.
  - F + Overlot =
- 1 mile Import Quarry: 0
- 1 mile Export Quarry: 0

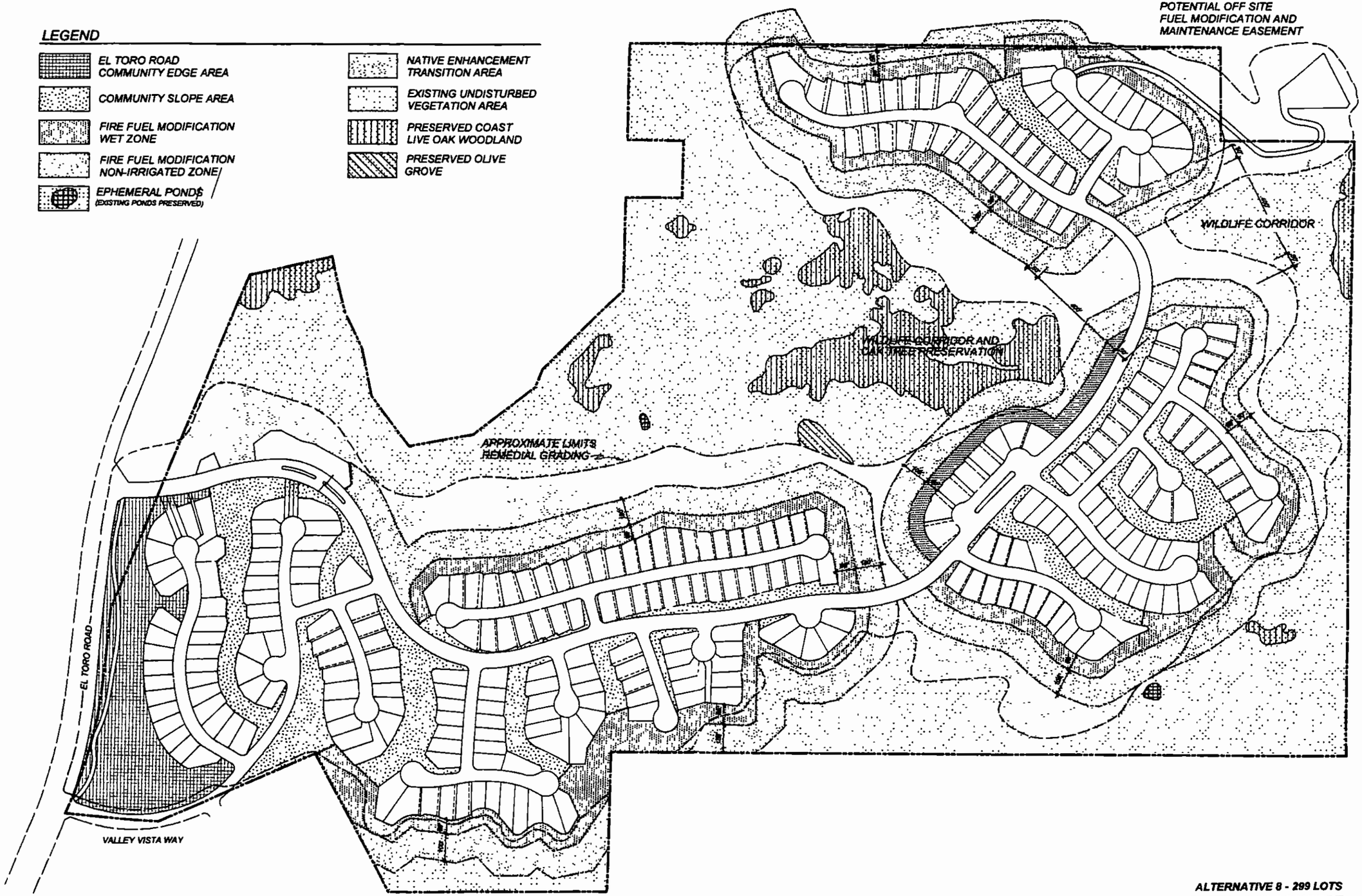
Remedial Grading
- 1 mile Remedial Grading (Removal & Recompact) 4,200,000 c.y.

ALTERNATIVE 8 - 299 LOTS
CONTOUR GRADING CONCEPT
AREA PLAN 95-7

JULY 23,1996 0 50 100 200 400

SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

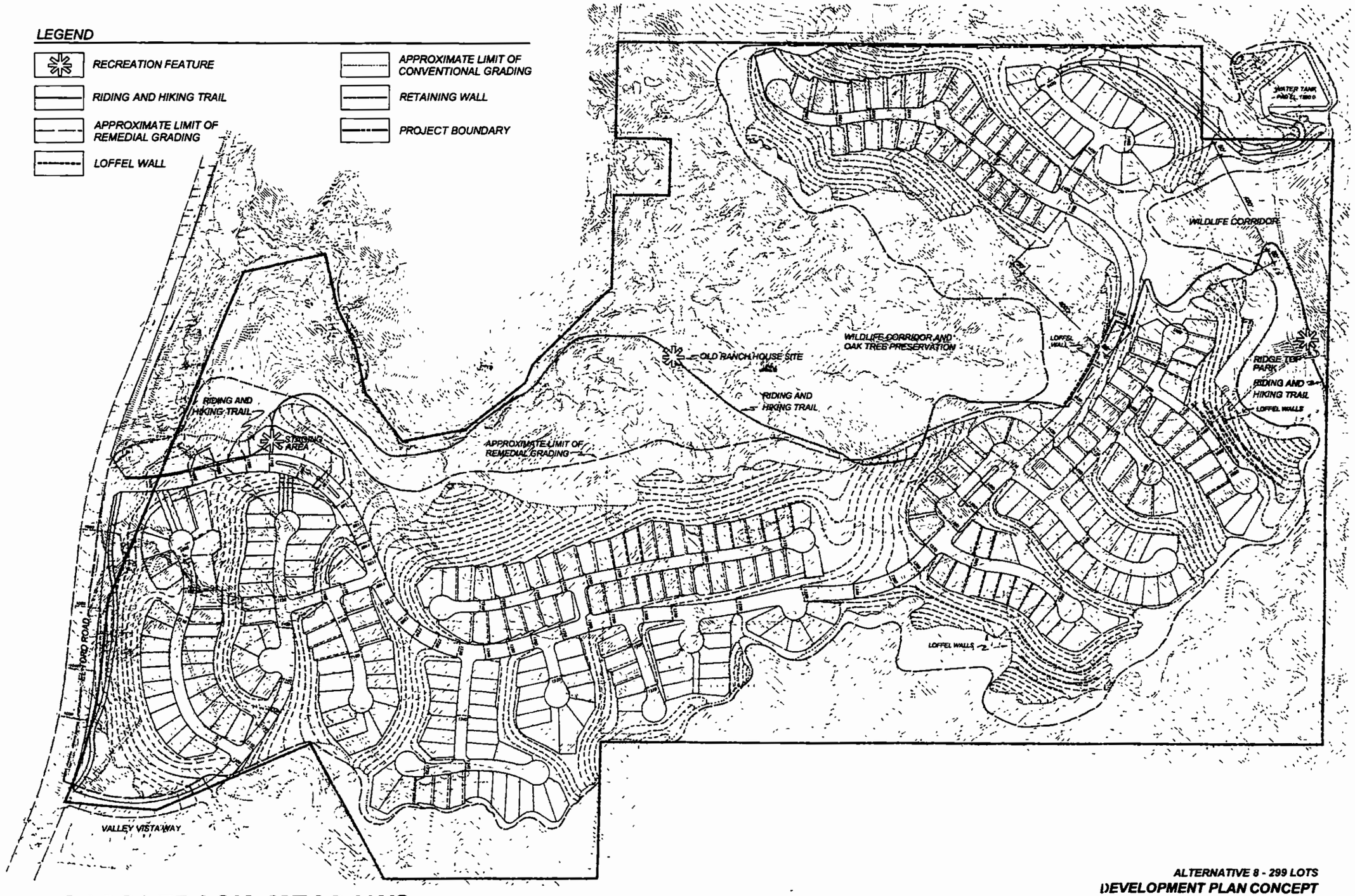


SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

ALTERNATIVE 8 - 299 LOTS
LANDSCAPE AND REVEGETATION CONCEPT
AREA PLAN 95-7

JULY 23,1996 0 50 100 200 400

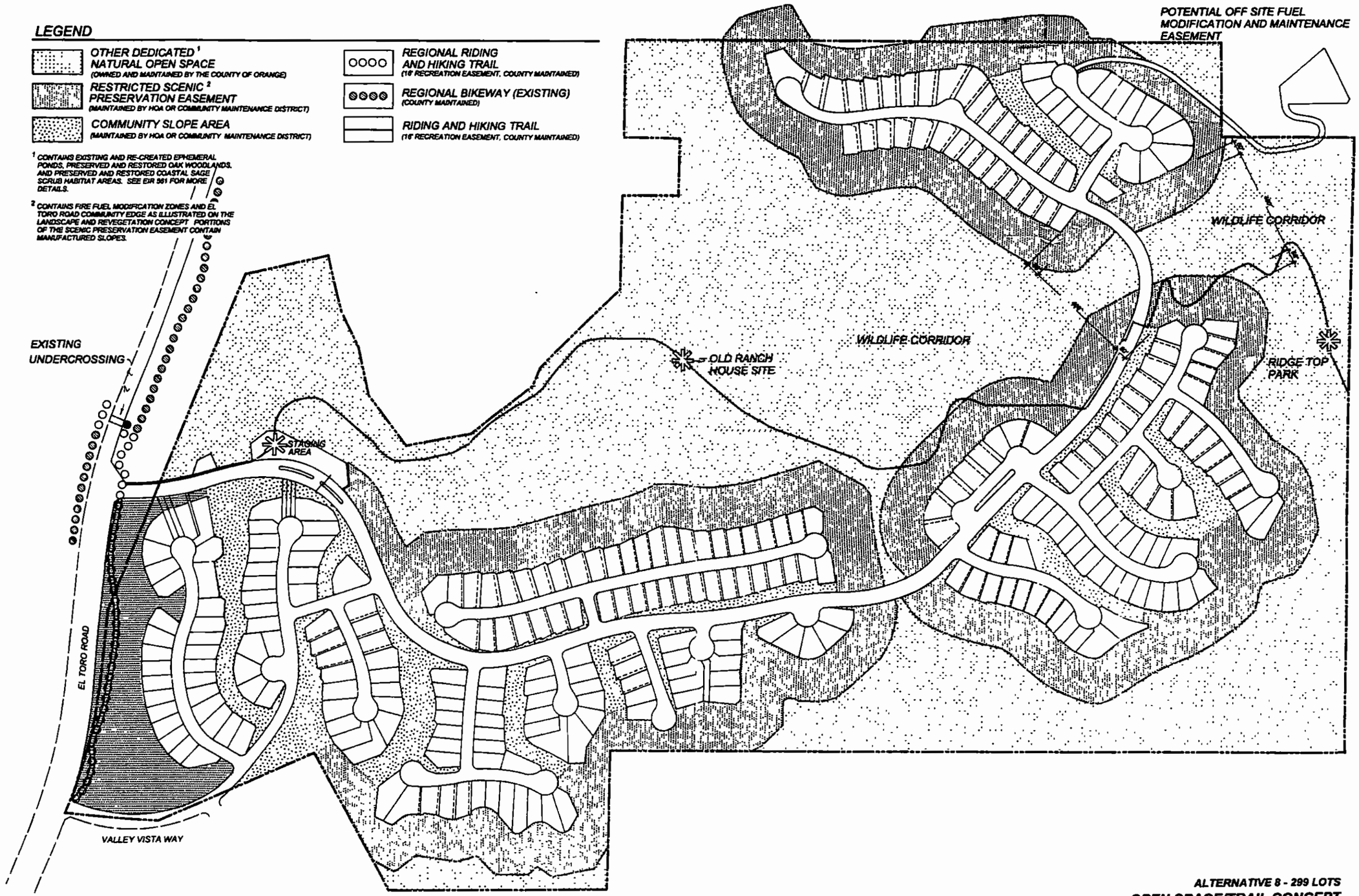


SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

ALTERNATIVE 8 - 299 LOTS
DEVELOPMENT PLAN CONCEPT
AREA PLAN 95-7

JULY 23,1996 0 50 100 200 400



SADDLEBACK MEADOWS

CALIFORNIA QUARTET, LTD.

ALTERNATIVE 8 - 299 LOTS
OPEN SPACE/TRAIL CONCEPT
AREA PLAN 95-7

JULY 23,1996 0 60 100 200 400

APPENDIX D

Alternative 9 – 318 Lots

Alternative 9
Environmental Impact Assessment

Saddleback Meadows

Vesting Tentative Tract Map No 15230
Area Plan 95-7
Zone Change 95-5
PA No. 950151

EIR No. 561
State Clearinghouse No. 95081033

Lead Agency:

COUNTY OF ORANGE
Environmental Management Agency
Environmental & Project Planning Division

300 North Flower Street
P.O. Box 4048
Santa Ana, California, 92702-4048

Prepared By:

URBAN VISION
1601 Dove Street, Suite 250
Newport Beach, California 92660

September 19, 1996

ALTERNATIVE 9
LANDFORM GRADING/VIEWSHED PROTECTION ALTERNATIVE

Overview

In response to actions taken at the July 30, 1996 Orange County Planning Commission Public Hearing and comments received on the Draft EIR during the public review period, an additional alternative (Alternative 9) has been developed by the applicant to incorporate identified comments Alternative 9 is based on the Staff Alternative 8 design, which was previously evaluated in the Response to Comments document dated July. 1996, with the addition of strategically designed landform grading and landscaping to screen views of the proposed onsite development area from surrounding land uses. In addition, the majority of the development area is now located south of the primary onsite spine road, creating a single loaded street through the majority of the project site

The following features have been incorporated into Alternative 9:

- Contour grading that emphasizes and expands on existing landforms,
- Berming at selected locations to blend with natural terrain features while providing screening and buffering views into the project site from St. Michael's Abbey and the Hidden Ridge community,
- Site planning techniques that minimize rows of backyards along highly visible edges, incorporates slopes, landscape zones, and landforms between homes and surrounding land uses.
- Community wide landscaping that provides visual enhancement through perimeter and interior plantings, providing filtered views of the proposed development area from the surrounding areas

Section 15088 of the CEQA Guidelines encourages the development of additional alternatives to the proposed project, as a means of mitigating impacts in response to comments received on the Draft EIR. A revised Area Plan package was submitted to the Orange County Environmental Management Agency on September 10, 1996 to reflect the Alternative 9 land plan features and contains the Area Plan description, Open Space/Trail Concept, Contour Grading Concept and the Landscape/Revegetation Concept. Unless otherwise noted, the impacts assessment contained within this document compares Alternative 9 to the proposed project evaluated in the Draft EIR.

Alternative 9, as with all of the other eight (8) alternatives, has been evaluated in terms of meeting the following development objectives of the proposed project:

- Develop a residential community which preserves onsite sensitive biological , cultural and aesthetic resources and conforms to existing landform conditions in response to County and community concerns.
- Minimize visual effects on surrounding properties through the application of sensitive grading design, habitat restoration and landscape screening.
- Remediate and provide geotechnical stabilization for onsite and slide areas affecting the proposed development area.

- Implement the policies contained in the General Plan, Foothill/Trabuco Specific Plan, Aliso Creek Corridor Concept Plan and the Air Quality Management Plan.
- Minimize adverse affects to surrounding properties, O'Neill Regional Park and Aliso Creek through buffer/setback zones, design features and landform grading.
- Implement design guidelines and development standards to ensure compliance with current planning and zoning law requirement through the Area Plan process.
- Develop a resource management plan to enhance onsite biological features including a wildlife movement corridor, sensitive species, pond re-creation, habitat restoration and oak tree preservation, in compliance with Natural Communities Conservation Planning Program goals.
- Create a fire safe community through incorporation of an area-wide fuel modification program.
- Provide trail connections to the regional riding and hiking trail system
- Dedicate right-of-way and site stabilization for the widening and improvement of El Toro Road.

Project Description

Alternative 9 proposes the construction of 318 single family detached dwelling units on minimum 5,000 square foot lots (average 6,452 sq ft lots), with a series of landform grading, resource enhancement and recreation components, summarized as follows:

- Landform grading along the northern side of the primary spine road, and selected portions of the southern development edge, designed to screen offsite views of the development area.
- A wildlife corridor system designed to accommodate primary wildlife movement through a 500 foot wide east-west corridor and secondary movement through a 150 foot wide informal north-south corridor, with at-grade crossings.
- Preservation of the southerly ephemeral pond
- 0.4 acre passive park/trail head staging area
- 0.2 acre passive ridge top lookout park
- A 10 foot wide hiking trail connecting the Aliso Creek Riding/Hiking Trail and the Live Oak Hiking Trail to the trail staging area and O'Neill Regional Park.
- Relocation of residential lots adjacent to the wildlife corridor and St Michael's Abbey.
- Preservation of additional oak woodland associated with the east-west wildlife movement corridor.
- Revegetation of the wildlife movement corridors with native plant materials

Implementation of Alternative 9 would require a total grading quantity of 8.9 million cubic yards. The above outlined features of Alternative 9 would contribute to an incremental reduction in impacts to aesthetics and recreation, as compared to the proposed project, and similar or incrementally increased impacts to all other environmental factors evaluated in the Draft EIR. In addition, Alternative 9 incorporates the most recent position of the resource agencies (U.S. Fish and Wildlife Service, California Department of Fish and Game, and the Army Corps of Engineers) pertaining to the location and width of the onsite wildlife movement corridors.

The Alternative 9 site plan is shown in Exhibit 1, with the contour grading concept shown in Exhibit 2 and the landscape and revegetation plan shown in Exhibit 3. Alternative 9 land uses are summarized in Table 1.

Table 1
Alternative 9 Land Use Summary

Land Use	Area	% of Site
· SF Residential Lots	47.1 Acres	21.2 %
· Streets	18.0 Acres	8.1 %
· Manufactured Slope (Including Park Areas)	54.0 Acres	24 3 %
· Remedial Grading (outside of lot slopes)	35.2 Acres	15 8 %
· Fuel Modification (outside of grading limits)	5 7 Acres	2 6 %
· Undisturbed Open Space	62 2 Acres	28.0 %
TOTAL ONSITE	222.2 Acres	100%
Offsite (EL Toro)	2 9 Acres	-
Water Tank Site	2.9 Acres	-
Offsite Fuel Mod.	2 4 Acres	-
TOTAL OFFSITE	8.2 Acres	-
TOTAL PROJECT	230 4 Acres	-

Alternative 9 proposes a total onsite impact area of 160.0 acres, 3.4 acres more than the proposed project, and 11.4 acres more than Staff Alternative 8 Total onsite undisturbed open space would be 62.2 acres or 28 % of the project site. Total onsite open space (including undisturbed and disturbed) would be 157 1 acres or 71% of the project site.

Land Use

The project site is located within the Bridlewood Residential District of the Foothill/Trabuco Specific Plan, and alternative 9 proposes 318 single family residential dwelling units on minimum 5,000 square foot lots (average 6,542 sf lots). This alternative would impact an incrementally larger portion of the project site (160.0 acres as opposed to the 156 5 acres for the proposed project) with project development, and would provide incrementally less undisturbed open space (62.2 acres vs 65.6 for the proposed project). Alternative 9 would provide for additional recreational amenities, as compared to the proposed project, including a passive park and trailhead staging area.

A major design feature of Alternative 9 is the single loaded primary spine road (residential development south of the spine road and landform grading to the north), which is intended to screen offsite views of the onsite development area. Landform grading and limited use of loffel walls are proposed to minimize the views of the development area from offsite locations. In addition, Alternative 9 would provide for a wildlife movement corridor system, including an at-grade spine road crossing, similar to Staff Alternative 8, which would effectively apportion the development into three residential areas Additional single family residential dwellings

are proposed within the north central portion of the project site, as compared to the proposed project, which proposes undisturbed open space in the same area.
Much of the discussion on pages 4-1 through 4-17 of DEIR 561 remains appropriate for this alternative The DEIR indicates that Zone Change 95-5, which would amend the Foothill/Trabuco Specific Plan and Area plan 95-7 are required approvals to implement the proposed project. The zone change would substitute the Residential Estates (Planned Development) District regulations of the Orange County Zoning Code for the existing Bridlewood Residential District land use regulations. The proposed project would be in conformance with the Housing Element of the Orange County General Plan through the implementation of appropriate mitigation measures.

No significant unavoidable adverse impacts to land use would occur with implementation of Staff Alternative 9.

Soils and Geology

Implementation of Alternative 9 would require 2.1 million cubic yards of cut and fill conventional grading and 6.8 million cubic yards of remedial grading (remove and replace) for a total grading quantity of 8.9 million cubic yards The required grading for Alternative 9 would require 0.2 million cubic yards more than that required (8 7 million cy) for implementation of the proposed project. Grading quantities incrementally increased under this alternative as a result of the additional earthwork required to create the landform grading along the visually prominent project edges. As indicated in Table 1, Alternative 9 would result in 3.4 acres more disturbance area than the proposed project. A series of crib/retaining/loffel walls has been incorporated into this alternative to reduce remedial grading requirements, manufactured slope heights and minimize sensitive resource impacts. A supplemental geotechnical evaluation of Alternative 9 is included in Appendix A of this document.

Much of the general discussion on pages 4-18 through 4-37 of the DEIR and in Appendix D (Geotechnical Evaluation) of the Draft EIR remain appropriate for Alternative 9. Prior to implementation of mitigation measures, grading would result in significant impact related to slope stability, landslides, mudslides, subsidence and erosion. Review by County geotechnical experts, implementation of the proposed remedial grading features, including removals/cleaners, buttress construction, subsurface systems, and temporary stockpiling, would not result in any impact to the stability of adjacent properties An average daily grading quantity of 30,000 cubic yards/day (total grading 8.9 million cubic yards) would require approximately 300 days (10 months) to complete grading operations

No significant unavoidable adverse impacts to soils and geology would occur with implementation of Alternative 9.

Water / Hydrology

Alternative 9 would generate similar storm water runoff volumes and similar domestic water supply requirements, as the proposed project. Due to the enhanced habitat restoration and landform/contour grading provided with this alternative, temporary irrigation related water supply impacts are expected to be greater than the proposed project. In addition, this alternative would require less alteration of onsite natural drainages than the proposed project, incrementally reducing the potential for increased urban runoff impacts

Much of the discussion on pages 4-38 through 4-49 of the DEIR and Appendix E (Hydrology Study) in the Technical Appendices of the Draft EIR remain appropriate for this alternative. Twelve (12) standard conditions/mitigation measures requiring compliance with the Master Plan of Drainage, NPDES, erosion control

strategies, construction of site drainage systems and compliance with county and state water quality management standards will result in no significant effects to water/hydrology under this alternative.

.Transportation and Circulation

Estimated traffic generation volumes associated with this alternative would be approximately 3.820 trips per day, identical to the proposed project. The resulting impacts to existing level of service values would be the same as identified in the Draft EIR for the proposed project.

The discussion on pages 4-50 through 4-78 of DEIR 561 and Appendix F (Traffic Report) of the Draft EIR of the Technical Appendices remain appropriate for this alternative Because of its reduction from the recorded tract map and imposition of (41) PDFs, SCs and AMs, Alternative 9 will not result in any additional negative impacts. Implementation of Alternative 9 would result in the same improvements to El Toro Road through the existing Road Fee programs, similar to the proposed project.

No significant unavoidable adverse traffic and circulation impacts would occur with Alternative 9, following implementation of outlined mitigation measures

Air Quality

Implementation of Alternative 9 would result in similar vehicular generated emissions as compared to the proposed project, and similar impacts to regional air quality. Temporary short term emissions associated with grading and construction operations would increase slightly over those associated with the proposed project, as a result of the additional grading requirements associated with the landform grading

All of the discussion on pages 4-79 - 4-97 and Appendix G (Air Quality Assessment) of the Draft EIR remain adequate for this alternative.

As with any large project located within the South Coast Air Basin, a non-attainment area, not projected to reach attainment until 2010 or later, Alternative 9 would result in unavoidable cumulative air quality impacts. If the alternative is approved, it will require the decision-makers to adopt a Statement of Overriding Considerations regarding air quality. This statement must indicate that the specific overriding economic, legal, social, technological or other benefits of the project outweigh the significant cumulative effect on the environment.

As with the proposed project, impacts to cumulative air quality would remain unavoidable and adverse.

Noise

A number of noise sensitive land uses are located in the vicinity of the project site including, St. Michael's Abbey, Ramakrishna Monastery, O'Neill Regional Park and residential land uses. Since the site currently contains no noise generating uses, development of 318 single family residential dwelling units would result in an increase in noise levels emanating from the project site. This change in noise levels, would be similar to noise generated by the proposed project and could be perceived to be intrusive to surrounding land uses. Noise impacts to St Michael's Abbey would be incrementally reduced under this alternative, as compared to the proposed project, as a result of relocation of the lots in close proximity to the Abbey on the north side of the spine road and the intervening topography that would be created by the landform grading However, the Alternative 9 land plan moves the primary spine road closer to St. Michael's Abbey, as compared to the proposed project, incrementally increasing spine road related noise impacts. Alternative 9 extends the limits of the upper portion spine road further to the west than the proposed project, resulting in residential lots being located within 600 feet of the

eastern Abbey property boundary. These noise impacts would be partially offset by the buffering effects of the landform grading proposed to screen views of the site from surrounding land uses. Impacts to the Ramakrishna Monastery, adjacent residential land uses and O'Neill Regional Park would be similar to those created by the proposed project.

All of the discussion on pages 4-98 - 4-115 of the DEIR and Appendix H (Acoustical Analysis) remain appropriate for this alternative. The 14 mitigation measures in the DEIR remain adequate to effectively attenuate noise impacts.

No significant unavoidable adverse impacts to noise would occur with implementation of Alternative 9.

Biological Resources

Alternative 9 has been designed in direct response to comments received on the Draft EIR from state and federal resource agencies and the public pertaining to the location and dimension of the propose onsite wildlife movement corridor. To address the concerns of the resource agencies, Alternative 9 was designed based on the biological features incorporated into Staff Alternative 8, which proposes a wildlife corridor system designed to adequately accommodate all wildlife movement through and around the site. Staff Alternative 8 designates the primary wildlife movement corridor as an east-west corridor, 500 feet wide, with an at-grade crossing. This east-west corridor is designed to accommodate larger mammal movement through and around the site A secondary 150 foot wide north-south wildlife movement corridor is proposed in the same general location as the corridor incorporated into the proposed project, and would function as a corridor for small mammals and birds. The resource agencies support this type of hierarchal corridor system, and have indicated that it would help to meet the goals of the NCCP program to a greater extent than the proposed project A supplemental biological evaluation of Alternative 9 is included in Appendix B of this document.

A comparison of the biological impacts of Alternative 9, Staff Alternative 8 and the proposed project is shown in Table 2.

Implementation of Alternative 9 would directly impact 160.0 acres of habitat onsite and 8.2 acres of habitat offsite to accommodate the construction of 318 single family residential dwelling units onsite Site alteration under this alternative would impact incrementally less habitat than the proposed project (43.3 acres of Venturan-Diegan transitional coastal sage scrub, 5.7 acres of Coast Live Oak Woodland, 3 3 acres of Southern Mixed Chaparral, 0.2 acres of Southern Sycamore Riparian Woodland, 2.0 acres of Mule Fat Scrub, 0.6 acres of Ephemeral Pond, 101.8 acres of annual grassland, and 3.1 acres of agriculture. Impacts to coastal sage scrub would be 2.1 acres less than impacts associated with the proposed project Of the 298 oak trees onsite, 175 or 59% would be impacted under Alternative 9, 8 trees more than the proposed project. The 0.6 acres of impacted ephemeral ponds would directly impact the Riverside Fairy Shrimp.

The proposed biological resource enhancement features of Alternative 9 are identical to Staff Alternative 8 and would more specifically meet the goals of the ongoing NCCP program, summarized as follows.

- Wildlife movement corridor system, including revegetation with native plant materials.
- Preservation of the highest quality onsite ephemeral pond would substantially reduce impacts to Riverside Fairy Shrimp.
- Implementation of all habitat restoration onsite

Table 2
Onsite Vegetation Impact Comparison
(Acres)

Habitat	Alternative 9			Staff Alternative 8			Proposed Project		
	Ex	Impact	%	Ex	Impact	%	Ex	Impact	%
Verturan Diegan Costal Sage Scrub	67.1	43.3	65	67.1	43.9	65	67.1	45.4	68
Coast Live Oak Woodland	14.5	5.7	39	14.5	5.7	39	14.5	7.4	51
Southern Mixed Chaparral	5 4	3.3	61	5.4	4.7	87	5.4	4.2	78
Southern Sycamore Riparian Woodland	0.5	0.2	40	0.5	0.4	80	0.5	0.3	60
Mule Fat Scrub	2.9	2.0	69	2.9	1.9	66	2.9	2.0	69
Ephemeral Pond	0.8	0 6	75	0.8	0.6	75	0.8	0.7	88
Annual Grassland	126.4	101.8	81	126.4	103.2	82	126 4	96 1	76
Agriculture	4 6	3.1	67	4.6	4 6	100	4.6	0.5	11
Total	222.2	160.0	72	222.2	148.6	67	222.2	156.6	71

Much of the discussion on pages 4-116 through 4-166 of DEIR 561 and Appendices I, J an K (Biological Assessment, Oak Tree Report and Pond Mitigation Plan) remain appropriate for the proposed alternative. Imposition of the 14 mitigation measures in the DEIR will mitigate most biological impacts. However, incremental increases in impacts to coastal sage scrub, oak woodland, ephemeral ponds and the Riverside fairy shrimp would remain significant under this alternative following mitigation.

If the alternative is approved, the decision-makers must adopt a Statement of Overriding Considerations regarding impacts to biological resources This statement must indicate that the specific overriding economic, legal, social, technical or other benefits of the project outweigh the significant cumulative effect on the environment

Impacts to biological resources under Alternative 9 would be reduced as compared to the proposed project Significant unavoidable adverse impacts to the Riverside Fairy Shrimp and coastal sage scrub would remain, as with the proposed project, until such time as a biological opinion and an interim loss habitat mitigation plan are approved by the applicable resource agencies.

Aesthetics

This alternative, as with the proposed project, would substantially alter the existing topography and visual character of the project site. Slightly less of the project site would be left in undisturbed natural open space as compared to the proposed project. The wildlife corridor system included in Alternative 9 would help to break up the long linear massing of housing which would result with implementation of the proposed project and create areas of housing separated 150 to 500 foot stretches of open space. In addition, overall aesthetic impacts to surrounding land uses would be reduced under this alternative, as compared to the propose project, do to the extensive use of landform grading along the visually prominent portions of the development edge.

Visual impacts to St. Michael's Abbey would be reduced under this alternative as compared to the proposed project due to the relocation of residential lots north of the onsite spine road , extensive landform grading and implementation of a trail head/staging area. View impacts of the project site from the Ramakrishna Monastery would be reduced as compared with the proposed project by implementation of the wildlife corridor system and associated open space areas, and through the use of loffel walls which would reduce the height and intensity of adjacent manufactured slopes. The wildlife corridors would replace manufactured slope, housing and associated lighting with natural and revegetated open space. In addition, specialized grading proposed under this alternative to preserve the highest quality onsite ephemeral pond would create substantially less manufactured slope adjacent to the Monastery.

Most of the discussions on pages 4-167 thru 4-192 of the DEIR remain appropriate for this alternative. The 19 mitigation measures in the DEIR will reduce most impacts to below a level of significance. However, significant viewshed impacts to the Ramakrishna Monastery and O'Neill Regional Park would remain under this alternative.

If the alternative is approved, it will require the decision-makers to adopt a Statement of Overriding Considerations regarding aesthetic impacts This statement must indicate that the specific overriding economic, legal, social, technological or other benefits of the project outweigh the significant cumulative effect on the environment.

Implementation of Alternative 9 would greatly reduce the significant unavoidable adverse aesthetic impacts to the Abbey Significant unavoidable adverse aesthetic impacts would remain for the Ramakrishna Monastery and O'Neill Regional Park.

Cultural / Scientific Resources

Alternative 9 would result in incrementally more disturbance to the project site, as compared to the proposed project, and would have similar impacts to potential onsite cultural and scientific resources CA-ORA-710 has been recorded in the vicinity of the knoll adjacent to the Abbey property, and would be preserved under this alternative.

All of the discussion on pages 4-193 thru 4-209 of DEIR 561 and Appendix L (Cultural Resources Assessment) remain adequate for this alternative. Imposition of the 21 mitigation measures in the DEIR, including PDFs, SCs and AMs will ensure that all project impact are reduced to below a level of significance.

No significant unavoidable adverse impacts to cultural scientific resources would occur with implementation of Staff Alternative 8.

Recreation

Alternative 9 would provide for enhanced recreational amenities as compared to the proposed project including access to existing and proposed trails, an interpretive trail head park / staging area, and an passive ridge top lookout park. Alternative 9 would achieve the goals outlined in the Recreation Element of the Foothill/Trabuco Specific Plan.

Much of the discussion on pages 4-210 through 4-218 of the DEIR remain appropriate for this alternative. The DEIR includes 15 mitigation measures relating to recreation, which require the applicant to provide trail connections and develop the view/lookout park

No significant unavoidable adverse impacts to recreation would occur with implementation of Alternative 9.

Hazards

The project site is located in a high fire hazard area, and as a result, all future development would be subject to risk during wildfires The circulation system proposed with this alternative provides for similar emergency access as the proposed project, with 241 units served off of a single means of access It should be noted that Alternative 9 proposes a single loaded primary spine road onsite, which would reduce fire hazards to proposed residents by allowing for direct access to major onsite wildland areas and allowing for additional non combustible areas adjacent to residential areas. The location of the Alternative 9 hiking trail is proposed to travel through the primary east-west wildlife movement corridor, which could result in an increase in human/wildlife interaction hazards.

All of the discussion on pages 4-219 through 4-228 of the DEIR remain appropriate for Alternative 9. Because of the inclusion of nine (9) PDFs and (21) SCs, as well as the design features of the alternative, potential hazard impacts are reduced to below a level of significance.

No significant unavoidable adverse impacts to hazards would occur with Alternative 9

Public Services

Demand for public services and utilities under Alternative 9 would be identical to the proposed project, due to the same number of proposed residential lots and associated residents. No unavoidable adverse impacts to public services and utilities would result under this alternative.

All of the discussion on pages 4-229 thru 4-241 of the DEIR remain appropriate for the provision of public services, including sheriff, fire, schools, library and solid waste. Because of the ten (10) PDFs and eighteen (18) SCs, no unavoidable impacts will be generated with the proposed alternative

No significant unavoidable adverse impacts to public services would occur with Alternative 9.

Utilities & Service Systems

Demand for utilities and service systems would be identical under this alternative, as compared to the proposed project, since the same number and type of residential units are proposed. All of the discussion on pages 4-242 thru 4-252 of the DEIR remain appropriate for the alternative regarding utilities and service systems , and the provision of water, wastewater, electricity, natural gas, cable and communications Because of the ten (10) PDFs and eight (8) SCs, no unavoidable impacts would occur under this alternative, in these service areas.

Conclusion

The impacts associated with implementation of Alternative 9 would be less than those associated with implementation of the proposed project for aesthetics and recreation, with all of the other environmental factors expected to experience similar or increased impacts. Impacts considered significant, unavoidable and adverse for the proposed project, as identified in the Draft EIR, would remain as such, with the exception of aesthetic impacts to St. Michael's Abbey , which would be greatly through the use of landform grading and the elimination of residential lots north of the onsite spine road. No additional significant adverse effects would occur as a result of implementation of Alternative 9 beyond those identified for the proposed project in the Draft EIR.

APPENDIX E

Staff Report, Board of Supervisors, October 22, 1996

AGENDA ITEM TRANSMITTAL

Attachment F

CONSENT ☐
DISCUSSION ☐
PUBLIC HEARING ☒

AGENCY/DEPT. USE
CEO REVIEW
☐ Concur
☐ Do Not Concur
☒ Exempt

CLERK USE ONLY

TO: BOARD OF SUPERVISORS COUNTY OF ORANGE

FROM: EMA FILE:

CONTACT FOR INFORMATION	PHONE
George Britton	834-5312
John Buzas	834-5906

MEETING DATE	SUBJECT	SUPV. DIST.
October 22, 1996	Saddleback Meadows Zone Change 95-5, Area Plan 95-7 and EIR 561 for California Quartet, Ltd.	3

SUMMARY OF REQUEST (Description for agenda)

Consideration of Saddleback Meadows development proposal for California Quartet, Ltd., consisting of Draft EIR 561, Zone Change 95-5, and appeal of Area Plan 95-7.

ADDITIONAL DATA:

The following discussion summarizes the key issues related to the Saddleback Meadows project. The attachments and exhibits contained within this transmittal package present detailed information on the issues related to this project, analysis of those issues, and copies of all documents associated with the processing of Draft EIR 561, Zone Change 95-5, and Area Plan 95-7. The following section on procedural matters is a clarification of the processing complexities for the Saddleback Meadows development proposal.

(continued)

PREVIOUS RELEVANT BOARD ACTIONS ON THIS SPECIFIC ITEM:

None

FUNDING SOURCE(S)	CURRENT YEAR COST	ANNUAL COST	BUDGETED? ☐ YES ☒ NO
N/A	N/A	N/A	N/A

WILL PROPOSAL REQUIRE ADDITIONAL PERSONNEL?	CONSISTENT WITH BOARD POLICY?
☒ NO IF YES, STATE NUMBER PERMANENT LIMITED TERM	☒ YES ☐ NEW ITEM OR EXCEPTION

RECOMMENDED ACTION

1. Conduct public hearing.
2. Adopt draft Resolution certifying EIR 561 (Attachment 8).
3. Adopt draft Ordinance for staff alternative Zone Change 95-5 (Attachment 7) which provides for a maximum of 299 dwelling units and a minimum of 70% open space on 222 acres.
4. Adopt draft Resolution which serves to approve Alternative 8 Area Plan 95-7 to include thirty-three conditions of approval (Attachment 9).

CONCURRENCES (If applicable)	ATTACHMENTS
County Counsel	See page 7

10/10/96
DATE

Thomas B. Mathews
Director of Planning, EMA
FM:sah(6082716562647)

John W. Sibley, Acting Director, EMA

Attachment F

ADDITIONAL DATA (continued):

PROCEDURAL MATTERS:

Although this project has been subject to "concurrent processing" per standard County procedures, the Planning Commission actually considered three separate aspects of this project, including draft Environmental Impact Report (EIR) 561, Zone Change 95-5 and Area Plan 95-7.

Regarding the status of EIR 561, by a unanimous vote, the Commission determined that the EIR adequately describes the environmental impacts of the proposed project and the alternatives, including Staff Alternative 8, and has recommended that your Board certify this document.

The second item relates to the zone change (which is a proposed amendment to the Foothill/Trabuco Specific Plan). The subject property is part of the "Bridlewood Residential District." These district regulations exempt Saddleback Meadows from other provisions of the Specific Plan. As discussed in more detail below, the applicant's proposal is for 318 detached single-family houses. As with the CEQA issue, the Planning Commission's action on a zone change is advisory to your Board. As described below, a majority of the Commission did not vote to recommend any change to the current zoning. Section 65855 of the Government Code requires that your Board can act on a zone change only after consideration by, and a recommendation from, the Planning Commission. Therefore, what is now before your Board is the applicant's request for a zone change accompanied by a negative recommendation from the Planning Commission. As a legislative action, your Board has full discretion in taking action on the zone change itself.

The third item relates to the area plan. Pursuant to the County Zoning Code, the Planning Commission is the decision-making body for area plans. After considering this aspect of the project, the Commission voted to deny the area plan consistent with their action on the zone change. Subsequent to the Planning Commission action, the applicant, California Quartet, Ltd., appealed this decision to your Board and reiterated their desire that the zone change case be forwarded to your Board, pursuant to Government Code Section 65856 (see Attachments 5 and 10).

As far as the area plan is concerned, Zoning Code Section 7-9-150.4(d) outlines the options which are at your Board's disposal for this appeal:

1) Approve or disapprove the application;
2) Add, modify or delete conditions;
3) Approve a modified application; or
4) Refer the application back to the approving authority with directions for action by the approving authority or for recommendations or reports to the Board of Appeals.

BACKGROUND

The Saddleback Meadows property consists of 222 undeveloped acres currently used for cattle grazing. It is located on the easterly side of El Toro Road near Valley Vista Way and is in the western edge of the Foothill/Trabuco Specific Plan area. North of the project site is St. Michael's Abbey, which operates a boarding school for boys. South of the project site is Hidden Hills/Hidden Ridge residential development, O'Neill Regional Park, and the Ramakrishna Monastery. West of the project site is the Portola Hills residential development. Attachment 1 contains a discussion of site conditions, current land use regulations, and surrounding uses.

Saddleback Meadows has a current entitlement to develop 705 manufactured homes and 1.7 acres of commercial use in compliance with Recorded Tract Map 10692. The applicant began its efforts to develop this property in April, 1994, with the submittal of a grading permit application to develop Recorded Tract Map 10692 consistent with the Saddleback Meadows Planned Community Regulations. In January, 1995 the Planning Commission, while considering appeal of the requirements to prepare an EIR as the appropriate CEQA documentation for the grading permit, requested the applicant consider a redesign of his 705 manufactured housing project. The applicant withdrew its appeal and proceeded with a redesign of the project site. Attachment 2 contains a chronology of key events for processing of this project.

APPLICANT'S PROJECT PROPOSAL AS PRESENTED TO THE PLANNING COMMISSION

In response to the January, 1995 Planning Commission request for a redesign, the applicant developed a proposal requesting that: 1) the Bridlewood Residential District of the Foothill/Trabuco Specific Plan be amended (Zone Change 95-5) to permit 318 dwelling units and a continuation of the exemption from other provisions of the Foothill/Trabuco Specific Plan; and, 2) a conceptual plan of development be approved (Area Plan 95-7) to allow for the eventual development of 318 detached single-family homes with approximately 68% dedicated open space areas.

The applicant's proposed project is presented in Attachment 6 and Exhibit D and is discussed in detail in Attachment 3.

The proposed project was reviewed by the Foothill/Trabuco Specific Plan Review Board. In summary, they recommended that the project be limited to 110 dwelling units, have a design similar to EIR 561 Alternative 4, and be consistent with all provisions of the Foothill/Trabuco Specific Plan. The Minutes of the Review Board are contained in Exhibit A.

Although staff acknowledged at the Planning Commission hearings that the applicant's 318 detached single-family homes proposal is superior to the existing Recorded Tract Map 10692 entitlement for 705 manufactured homes, staff determined that it was unacceptable because it did not provide the following:

1) An east-west wildlife corridor viable enough for NCCP purposes.
2) A useable recreational trail alignment.
3) A satisfactory level of "rural character."
4) A lower density of development.
5) 70% dedicated open space requirement.

STAFF ALTERNATIVE 8 PRESENTED TO THE PLANNING COMMISSION

As a result of the analysis for the applicant's project proposal, EMA staff recommended to the Planning Commission approval of Alternative 8, a modified Zone Change and Area Plan that provide for the following:

Zone Change

- A maximum of 299 dwelling units.
- A minimum of 70 percent dedicated open space.
- Substantial overall compliance with the Foothill/Trabuco Specific Plan.

Area Plan

- A maximum of 299 dwelling units.
- A minimum of 400' wide east-west wildlife corridor.
- An east-west recreational trail system.
- Substantial overall compliance with the Foothill/Trabuco Specific Plan.
- Thirty-three conditions of approval.
- Development of a rural character.

The density cap of 299 dwelling units was selected, based primarily on the fact that (1) the adjacent existing development in Portola Hills and Hidden Hills/Hidden Ridge is at twice the staff recommended density and (2) the General Plan allows up to 444 units for this property. The 70 percent dedicated "natural open space" (see below) will contribute to a rural character. In addition, several conditions of approval regarding future development and design further this goal. The area plan, as conditioned, will be in substantial overall compliance with the Foothill/Trabuco Specific Plan.

EMA recommends that the Zone Change include a definition of natural open space as follows:

> "The open space area remaining after approved development is completed that has a natural appearance and will remain undisturbed thereafter except for possible approved fuel modification. Such areas may include, depending on design and landscaping, passive parks, manufactured slopes, and recreation trails, but shall not include athletic fields or golf courses."

This recommendation is consistent with earlier actions of the Board of Supervisors regarding two other developments in Foothill/Trabuco. For each project, the Planning Commission and the Board of Supervisors took action regarding open space which allowed approved grading in the areas to be dedicated as "natural open space." Staff is recommending the same standard for Saddleback Meadows.

The staff-proposed project is presented in Attachment 7 and Exhibit E and is discussed in detail in Attachment 3.

PLANNING COMMISSION ACTION

The Planning Commission conducted five public hearings on this project. Key issues raised during the hearing process and written comments on Draft EIR 561 are discussed in Exhibit G and are summarized in Attachments 3 and 4.

At their final hearing (on July 30, 1996), the Planning Commission recommended certification of EIR 561 by the Board of Supervisors. The Planning Commission was unable to agree on a recommendation to change zoning and, therefore, denied the Zone Change. In addition, and based largely on this fact, they denied the Area Plan.

Individual members of the Commission stated that they were not opposed to the project, per se, but that they could not agree on the appropriate density (number of dwelling units) for the project. One member advocated a maximum of 100 units, two members advocated a maximum of 260 units, and two members advocated the applicant's proposed 318 units but would be willing to compromise with the staff alternative of 299 units. Four members expressed support for the design footprint of Alternative 8, one member supported the design footprint of Alternative 4. The Planning Commission did not express objection to other elements of staff Alternative 8 Zone Change or any of the Area Plan's thirty-three conditions of approval (see the Minutes of the Planning Commission contained in Exhibit B).

COMPLIANCE WITH CEQA

Draft EIR 561 has been prepared in compliance with the requirements of the CEQA Statutes and Guidelines as well as County of Orange procedures to address the environmental impacts related to the proposed Saddleback Meadows project. It was circulated for public review on February 5, 1996. The comment period on Draft EIR 561 closed on March 25, 1996. Written comments were received from 60 parties; oral testimony before the Planning Commission was received from approximately 50 parties. The Response to Comments (RTC) document was prepared and circulated to commentors on June 28, 1996.

Based on the DEIR and the Response to Comments documents, staff has concluded that EIR 561 provides adequate CEQA documentation for Staff Alternative 8 (as described more fully above and in Attachment 7 and Exhibit E and Attachments 3 and 4). On July 30, 1996, the Planning Commission concurred with staff's conclusion and voted to recommend that your Board certify EIR 561.

Proposed Final EIR 561 consists of the following:

- Draft Board of Supervisors Resolution Certifying Final EIR 561, including Exhibit 1: Statement of Findings and Facts in Support of Saddleback Meadows Project and Exhibit 2: Statements of Overriding Considerations.
- Draft EIR 561, Volume 1
- Technical Appendices, Volumes 2 and 3
- Response to Comments Documents
- EMA Reports, including Attachments, and Planning Commission Minutes dated March 19, 1996, April 2, 1996, June 5, 1996, July 10, 1996 and July 30, 1996.

Further steps were taken by staff to provide information on an additional alternative which was developed by the applicant as a result of public testimony received at the Planning Commission hearings. To this end, an Alternative 9 document, consisting of the applicant's conceptual area plan (Alternative 9) and an assessment of its environmental impacts was distributed on September 20, 1996.

The complete CEQA documentation is found in Attachments 4 and 8 and Exhibit G.

Your Board, using independent judgement, must certify Final EIR 561 prior to taking any action to approve the project which is now before you. Exhibit G consists of a Draft Resolution which will serve to certify EIR 561.

APPLICANT'S NEWLY PROPOSED ALTERNATIVE 9 FOR BOARD OF SUPERVISORS CONSIDERATION

As noted in the letter transmitting this alternative area plan, the applicant has modified the original project as detailed in Exhibit F. In the interest of ensuring widespread understanding of this alternative, EMA distributed it and an assessment of its environmental impacts, Response to Comments Document #2, to interested parties on September 20, 1996.

This alternative reflects several concepts which were presented by various speakers in public hearings before the Planning Commission, but they have been presented as a coherent package within the parameters of an area plan for the first time in the document contained in Exhibit F.

In sum, staff has concluded that Alternative 9, if modified to have a ceiling of 299 units, has merit in that it responds to concerns raised in public testimony and correspondence related to aesthetics and land use compatibility. Environmental impacts are essentially the same as those for Staff Alternative 8. No new unavoidable adverse impacts have been identified.

SUMMARY

Your Board is being asked to consider three specific recommendations for action on the Saddleback Meadows Project. Those staff recommended actions are as follows:

1) Adopt the draft Resolution certifying EIR 561 prior to taking any actions to approve the project (see Attachment 8)

2) Adopt the draft Ordinance for Staff Alternative Zone Change 95-5 (see Exhibit B) which provides for a maximum of 299 dwelling units and a minimum of 70% dedicated open space. However, if the Board through consideration of public testimony and deliberation at the public hearing selects a different maximum number of dwelling units for Zone Change 95-5, staff would recommend that a minimum of 70% dedicated open space still be required for the project.

3) Adopt the draft Resolution which serves to approve Alternative 8 Area Plan 95-7 to include thirty-three conditions of approval (Attachment 9).

Should your Board act on a variation of Staff Alternative, as documented in Attachment 7 and Exhibit E, staff recommends that these exhibits be revised and returned to you on the Consent Calendar Agenda for November 19, 1996.

ATTACHMENTS

1. Existing Conditions (site conditions, current land use regulations, surrounding uses)
2. Chronology of Events
3. Principal Land Use Issues
   A. Density/transition area
   B. Grading/geotechnical safety/performance bond
   C. Natural open space
   D. Rural character
   E. Wildlife corridors
   F. Recreational trails
   G. Major ridgelines
   H. Viewshed
   I. Specific Plan compliance
4. Discussion of Principal CEQA Issues
   A. Grading
   B. Land Use Compatibility/Aesthetics
   C. Biological: NCCP Program
   D. Biological: Endangered Species
   E. Biological: Wildlife Corridor
   F. Biological: Oak Woodlands
   G. Rejection of Alternatives
   H. Air Quality
   I. Recreation
   J. Consultant Selection/Hiring
5. Appeal Letter, August 2, 1996
6. Applicant's Zone Change for 318 units
7. Staff Alternative Zone Change for 299 units
8. Draft Resolution to certify EIR 561
9. Draft Resolution to approve Staff Alternative 8 Area Plan with 33 Conditions of Approval
10. County Counsel Opinion on the Appeal Procedures

EXHIBITS

A. F/T Review Board Minutes
B. PC Minutes & Staff Reports
C. Project Consistency Checklist
D. Applicant's Area Plan (original)
E. Staff Alternative 8 Area Plan
F. Applicant's newly submitted Alternative 9 Area Plan
G. Proposed Final EIR 561

APPENDIX F

Letter to Board of Supervisors, December 17, 1997

County of Orange
Planning & Development Services Department

THOMAS B. MATHEWS
300 N. FLOWER ST
THIRD FLOOR
SANTA ANA, CALIFORNIA

MAILING ADDRESS
P.O. BOX 4044
SANTA ANA, CA 92702-4044

TELEPHONE
(714) 834-4643
FAX # 834-2771

December 17, 1997

Members, Board of Supervisors
County of Orange
10 Civic Center Plaza
Santa Ana, CA 92702

Dear Board Members:

During hearings on October 22 and December 3, 1997, this Commission has considered the environmental documentation required for implementation of the project known as Saddleback Meadows (Subsequent Environment Impact Report (SEIR) No. 566). As you know, this project involves the implementation of a previously-approved subdivision allowing 705 units of manufactured housing as well as a small commercial site.

The property in question is one of the most difficult sites with which this Commission has ever dealt. The site's geology is complex; biology sensitive; and compatibility with the adjoining land uses (St. Michaels Abbey and the Ramakrishna Monastery) is extremely problematic.

After exhaustive (and exhausting) testimony and deliberations on the topic, our Commission certified SEIR No. 566. We concluded that the document has merit and that it conforms with the California Environmental Quality Act. We did not conclude that the project addressed in the SEIR has merit, however.

As a result of out efforts to review land use issues associated with this project, we as a Commission would like to recommend in the strongest possible terms that your Board revisit an alternative zoning designation for Saddleback Meadows. Specifically, a majority of this Planning Commission feels that Alternative 4, as portrayed in SEIR No. 566, has far fewer negative enviornmental impacts.* Commissioner Moody, while not supportive of that particular alternative, does agree that the 705-unit development is an inappropriate land use for this location.

Our understanding, based on advice from County Counsel and planning staff, is that our options to deviate from the project as described in SEIR No. 566 were limited to modifications solely within the CEQA frame work. Further, we believe that your Board has the authority to reconsider the previously-denied zone change. We urge you to do so.

Very truly yours,

Shirley Commons Long

Shirley Commons Long, Chair
Orange County Planning Commission

cc: Members, Planning Commission
Tom Mathews, Director P&DSD

* Please note that this is the alternative which was recommended to your Board on October 22, 1996, by the Planning & Development Services Department and was more fully addressed in Proposed Final EIR No. 561. The zoning associated with that alternative was denied at that point and that EIR was not certified.

APPENDIX G

Revised Biological Assessment
Helix Environmental Planning, Inc.

HELIX environmental planning, inc.

MEMORANDUM

date: 2-20-98

to: Carlene Baskovitch, Urban Vision

from: Scott Taylor

cc: Mike McKnight, TPG
Eric Ruby, Westec

subject: Saddleback Meadows, Modified Alternative 4

This memo provides an analysis of biological issues for the Modified Alternative 4 of the Saddleback Meadows project. The results of our analysis are presented under four issues corridor analysis, vegetation impacts, oak tree impacts, and sensitive species impacts. This analysis is based on the Alternative 4 - 299 Lots Development Plan Concept map (February 10, 1998).

Corridor Analysis

The corridor analysis is based on the results of a study in San Diego County for Otay Ranch (Ogden 1992) According to this study, an "ideal" corridor provides at least 500 feet of vegetative cover with 250 foot native vegetation buffers For corridors where development is not visible from the corridor, a narrower buffer would be acceptable In instances where corridors are relatively short (that is, less than 500 feet long), the corridor should be no less than 400 feet in total width At interfaces with developed areas, vegetative or opaque fencing was recommended to reduce visibility of developed areas from the corridor

The wildlife corridor through Saddleback Meadows under Modified Alternative 4 would traverse the southern and eastern site boundary next to O'Neill Regional Park, then cross through the site in the northern half. It is planned on a west-facing slope

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that is on the west side of an existing saddle that is approximately 1,540 feet in elevation above sea level The narrowest point of the corridor is where it crosses through a 'pinch point' between residential development blocks.

The corridor pinch point for Modified Alternative 4 is 400 feet wide with 50-foot setbacks on each side and approximately 800-feet long. Most of this pinch point falls within the remedial grading zone, except for a patch approximately 300-feet long and 200-feet wide at the eastern end of the corridor that would remain undisturbed A 50-foot wide spine road for the development would cross the corridor at grade. The middle strip of the graded portion of the corridor, approximately 200-feet wide, would be restored to native vegetation. The next 200 feet out (100 feet on each side) would be within the non-irrigated fuel modification zone The outer 100 feet (50 feet on each side) would be landscaped as an irrigated fuel modification zone.

Overall, positive and negative aspects of the corridor's design and revegetation plans for this project's mitigation will increase the viability of the wildlife connectivity through Saddleback Meadows The corridor, as planned in this alternative, is expected to be wide enough for wildlife movement. Topography on either side of the corridor is conducive to wildlife movement because it coincides with an area of natural canyon topography. The revegetation within the corridor is expected to provide the necessary cover for wildlife to add to the corridor's viability. The 50-foot wide spine road crossing the corridor is not expected to inhibit wildlife due to the low traffic levels anticipated for this road. This wildlife corridor is expected to function adequately

Vegetation Impacts

Impacts due to this alternative would be similar to those for the project Modified Alternative 4 would impact approximately 160 0 acres of the site, leaving 62.2 acres in undisturbed open space (Table 1)

Approximately 45.8 acres of Venturan-Diegan transitional coastal sage scrub (including 2 5 acres off site), 5 7 acres of coast live oak woodland (175 individual oaks), 0 21 acre of southern sycamore riparian woodland, and 2.01 acres of mule fat scrub will be impacted by the proposed project In addition, all but two of the manmade stock ponds (0 6 acre) supporting the Riverside fairy shrimp will be directly impacted. One of the preserved ponds is just west of the former ranch while the other is in the southeast corner of the site near O'Neill Canyon. All of the above impacts are significant according to the California Environmental Quality Act. A federal Clean Water Act permit issued by the U.S. Army Corps of Engineers will be necessary for direct impacts to 3.1 acres of wetlands (2 01 acre of mule fat scrub and 0 21 acre of southern sycamore riparian woodland and 0.88 acre of Waters of the U S (intermittent streams [0 28 acre] and manmade stock ponds [0.6 acre]) A streambed

alteration agreement with the California Department of Fish and Game will also be required for the 2.62 acres of impacts to wetland vegetation.

Oak Tree Impacts

Based on the recent oak inventory (SEB 1995), total of 175 oak trees (approximately 59 percent) occur within the remedial grading zone and are considered impacted A total of 123 oak trees (approximately 41 percent) occur outside the remedial grading zone and are considered preserved.

Sensitive Species Impacts

Eight stands of Catalina mariposa lily and three stands of intermediate mariposa lily fall completely or partially within the impact area of Modified Alternative 4. Two stands of Catalina mariposa lily and one stand of intermediate mariposa lily will likely remain to some degree despite the impact. An estimated 259 of the 435 individuals of Catalina mariposa lily will likely be lost, leaving an estimated 176 individuals in two stands in open space or within the non-irrigated fuel modification zones These impacts are not significant because of the low level of sensitivity of the plant, its generally wide distribution in southern California, and the relatively small population size on site. Two stands of intermediate mariposa lily (9 individuals) will be graded, while one stands (9 individuals) are within the non-irrigated fuel modification zone and are assumed to remain. This impact is not significant because of the small size of the on-site population.

The orangethroat whiptail, coastal whiptail, at least five cactus wren territories, and at least 10 southern California rufous-crowned sparrow territories would be affected by the loss of 45.8 acres of Venturan-Diegan transitional coastal sage scrub The western spadefoot occurs on the property in at least two ponds, one of which would be impacted by the proposed project. These impacts are significant but mitigable considering the low level of sensitivity of these species Cooper's hawks were found foraging on site, but no nests were observed. Impacts to Cooper's hawks will, therefore, be limited to foraging habitat and are not significant The 0.6 acre of impacts to manmade stock ponds will impact the Riverside fairy shrimp, and this impact is considered significant

In accordance with the NCCP, the loss of 45 8 acres of Venturan-Diegan transitional coastal sage scrub due to the project is less than the allowable 5 percent of the total coastal sage scrub in the subregion According to the NCCP Evaluation Logic Flow Chart, the coastal sage scrub on the project site has intermediate value for long-term conservation because although it is not the most dense coastal sage scrub in the region, it is located next to a higher value district (O'Neill Regional Park).

Table 1

SADDLEBACK MEADOWS MODIFIED ALTERNATIVE 4
EXISTING VEGETATION AND PROJECT IMPACTS

Habitat	Existing Acreage	On-Site Impacts	Percent	Preserved On-Site	Percent	Off-Site Impacts
Venturan-Diegan transitional coastal sage scrub (disturbed and undisturbed)	67.1	43 3	65%	23.8	35%	2 5
Coast Live Oak Woodland (acreage/individuals)	14 5/298	5.7/175	39%/ 59%	8.8/123	61%/ 41%	0.0
Southern Mixed Chaparral	5 4	3 3	61%	2.1	39%	1.25
Southern Sycamore Riparian Woodland	0.5	0.2	40%	0.3	60%	0.01
Mule fat Scrub	2 9	2.0	69%	0 9	31%	0.0
Ephemeral Pond	0 8	0.6	75%	0 2	25%	0.0
Annual Grassland	126.4	101.8	81%	24.6	19%	3 0
Agriculture	4.6	3 1	67%	1.5	33%	0.0
Total	222.2	160.0	72%	62.2	28%	6.76

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APPENDIX H

Geology Report, Volume I
G.A. Nicoll and Associates, Inc.

G. A. Nicoll
and Associates, Inc.

June 25, 1998
Project 4816–04.3

TPG Management, Inc.
1601 Dove Street, Suite 105
Newport Beach, California 92660–2441

Attention: Messrs. Pike Oliver and Michael McKnight

Subject: Supplemental Geotechnical Assessment for
Contingency Plan – 299 Lots
Saddleback Meadows Development
Orange County, California

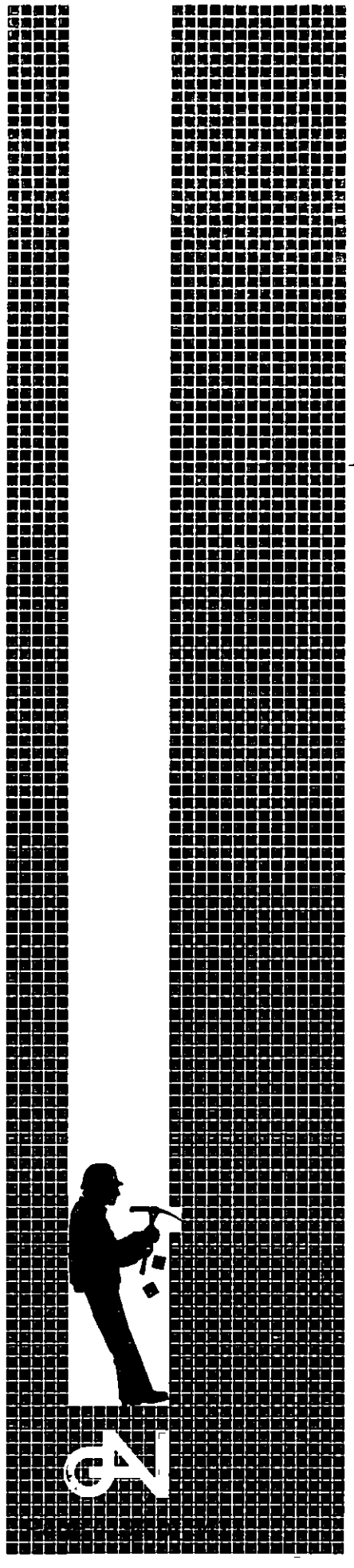
Gentlemen:

1. INTRODUCTION

a) This report presents the results of our supplemental investigation for the Saddleback Meadows Contingency Plan – 299 Lots, prepared by Michael Madden Associates, dated February 10, 1998.

b) The Contingency Plan is the product resulting from the revision and compilation of earlier development concept plans. The Contingency Plan contains 299 residential lots.

c) The Contingency Plan, which was prepared by Hunsaker and Associates, and used as the base plan for our Geotechnical EIR contained 318 lots. This 299–lot Contingency Plan by Michael Madden Associates is geotechnically very similar, with only minor changes, mostly involving the proposed loffel walls.



d) References cited during the most current investigation and for previous work on the site are presented in *References, Appendix A.* The Geotechnical EIR for Tentative Tract 15230 is dated November 27, 1995 *(presented as Reference No. 9).* Our previous Geotechnical Investigation report for Tentative Tract 10692, the Entitled Plan, is dated January 6, 1994 *(Reference No. 8).*

e) The current Saddleback Meadows Contingency Plan contains minor earthwork revisions, including graded berms for use as view shed barriers.

f) Geotechnical Cross Sections A–A', B–B' and C–C' from the 318 Lot Plan have been revised showing the new grades. The site geology and the locations of exploratory excavations are shown on the *Geologic Map, Plate 1.* The Geologic Key is shown on *Plate 2.* The Logs of Borings for the most recent site exploration are included in this report (Borings BC–1 through BC–17) Logs of Borings and Test Pits for previous exploration by GANA and other consultants are found in the GANA report dated January 1, 1994 (Ref. 8).

2. PURPOSE

a) The purpose of this investigation was to evaluate the Saddleback Meadows Contingency Plan and its impact on the site conditions, to revise the previous geotechnical cross sections to reflect the new grades, to conduct stability analyses and to provide other additional geotechnical data to supplement our previous Geotechnical EIR of November, 1995.

b) A secondary purpose was to evaluate the extent of the removal areas, the grading envelope and the estimated removal volumes.

3. SCOPE

The scope of services we have provided for this assessment is outlined as follows

a) Evaluation of the Contingency Plan grades and their impact on the site;

b) Revision of the Geotechnical Cross Sections A–A', B–B' and C–C' to evaluate stability influence of new grades;

c) Conducted static and pseudostatic stability analyses along portions of the revised cross sections;

d) Review and evaluation of major landslide structures and re-evaluation of the materials shear strengths to provide clarification of changes from previous reports;

e) Preparation of graphic illustrations;

f) Evaluation of the extent of removal areas, the grading envelope and the estimated removal volumes;

g) Preparation of this report presenting our findings, conclusions and recommendations.

4. QUALIFICATIONS

a) A more detailed evaluation of the slope stability, including analyses of buttress backcuts and forecuts, individual cut slope buttresses, etc. will be conducted during the 40-scale grading plan review which accompanies the grading permit application.

b) Although no major changes are anticipated in the final grading plan from the current plan, any revisions will be reviewed and re-analyzed, if required.

c) Shear strength parameters utilized in our Slope Stability analyses are presented in Section 9,d. They reflect the lower values, or the more conservative results of tests obtained from samples taken from the site. The shear test results are presented in *Direct Shear Diagrams, Figures 2 and 3.*

5. FIELD EXPLORATION

a) The first generated Logs of Borings, test pits and dozer pits, excavated prior to our latest site exploration are presented in the January 6, 1994 report.

b) Logs of Borings excavated during the most recent subsurface exploration on the site are presented in the *Field Exploration, Appendix B.* Boring, Test Pit and Dozer Pit locations are shown on the *Geologic Map, Plate 1.*

6. STABILITY ANALYSES

The results of our stability analyses for the major landslides on-site are presented in the *Stability Analyses, Appendix C, Volume 1 (cross sections with results) and Volume 2 (Computer Output).* All procedures and results conform to the County of Orange Grading Code regulations. Stability analyses were conducted utilizing the Alternate 4 plan grades.

7. SITE CONDITIONS

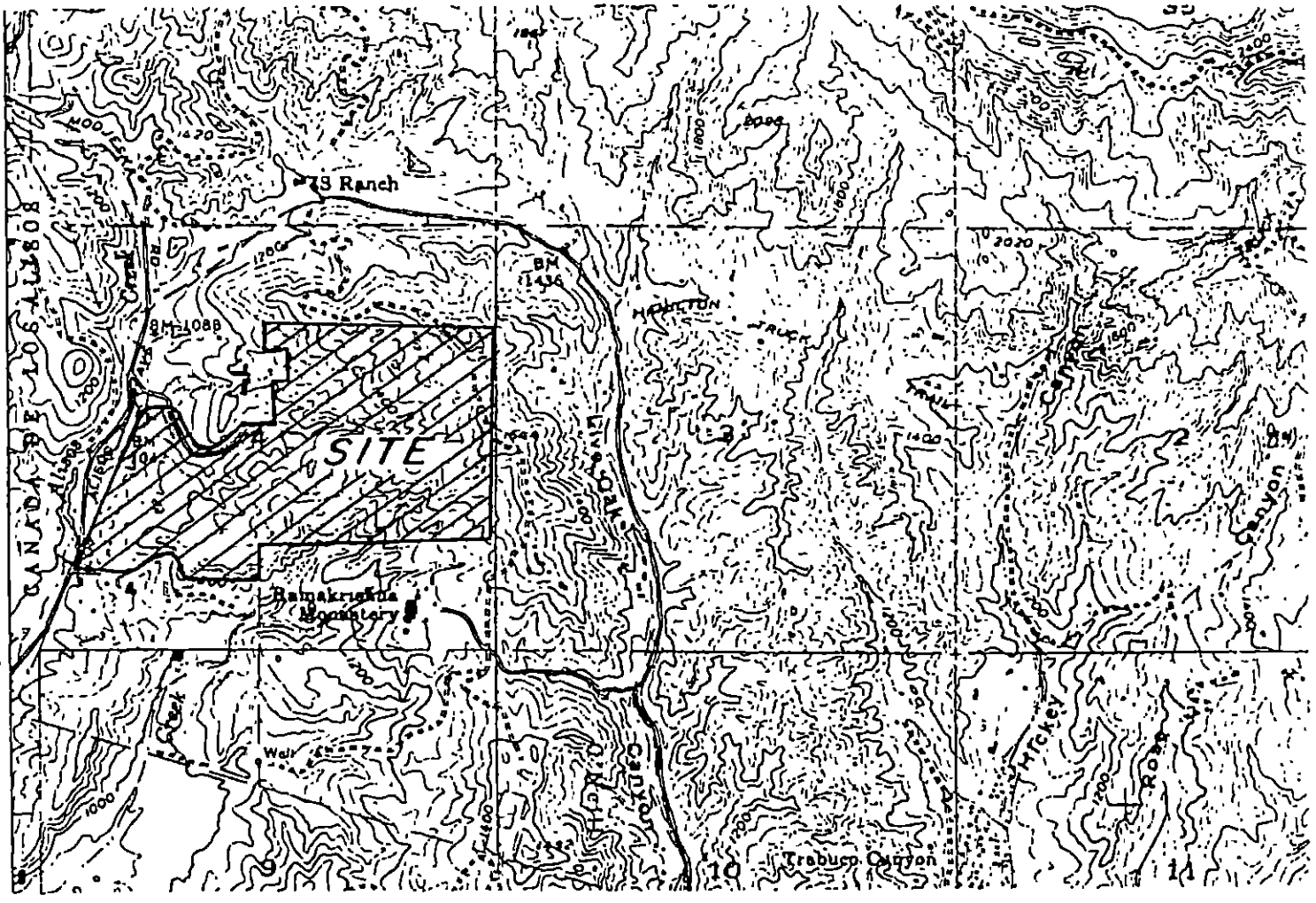
7.1 Location

The location of the site is shown on the *Location Map, Figure 1.*

7.2 Surface Conditions

A description of the surface conditions at the site is presented in the November, 1995 report. Based on several site visits since our most recent subsurface exploration, the site conditions are essentially unchanged, with the exception of some additional erosion within the canyon along the north boundary with the Abbey property and within the gullies on site.

LOCATION MAP



Base Map: USGS Santiago Peak Quadrangle
7.5 Minute Series , 1982

NORTH

2000 0 2000 4000
scale feet

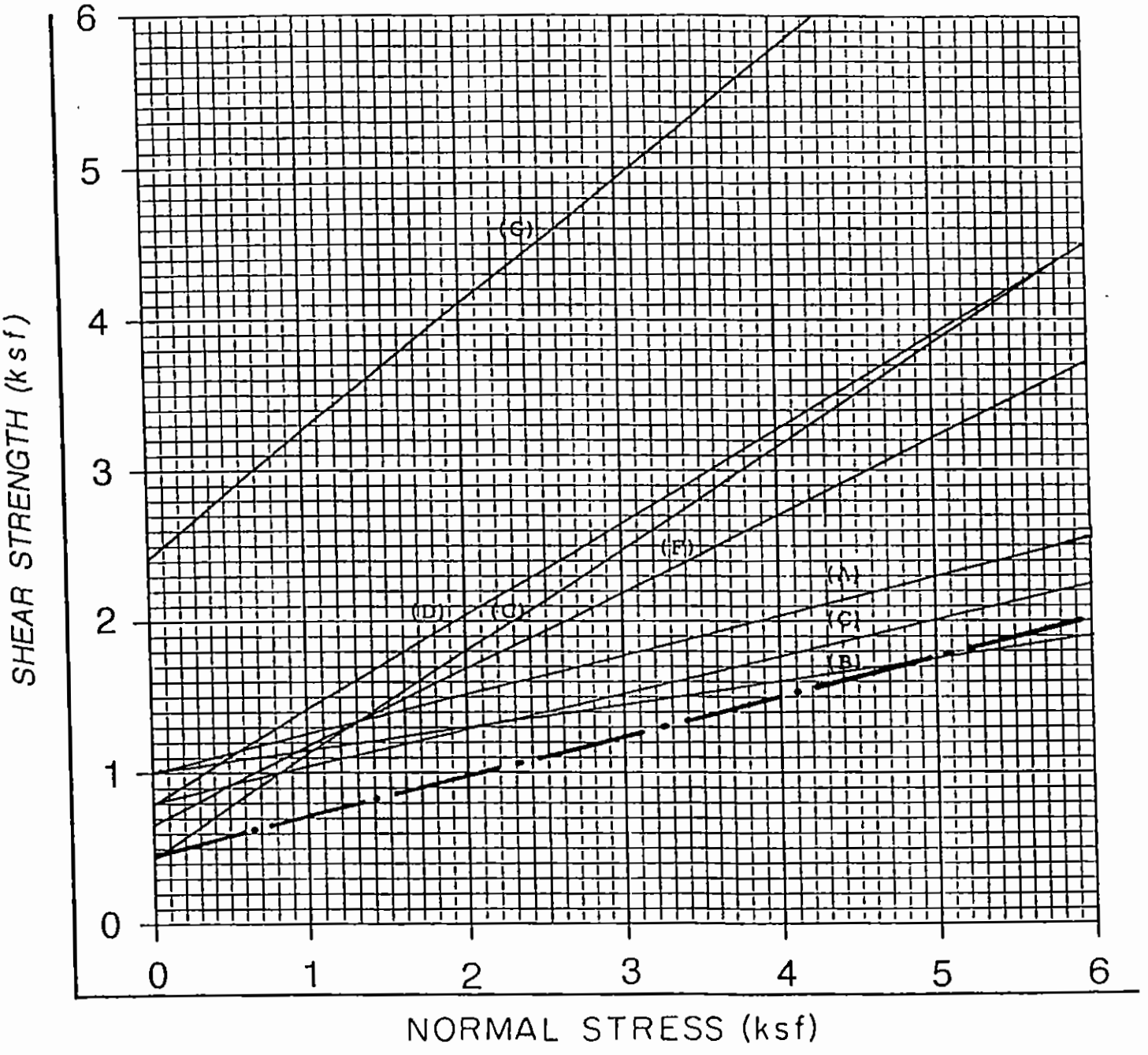
G A NICOLL & ASSOCIATES
EARTH SCIENCE CONSULTANTS

Saddleback Meadows	
Date June, 1998	
Project No 4816-04.3	Figure No 1

BISHOP GRAPHICS/ACCUPRESS
REORDER NO A29040

DIRECT SHEAR TEST DIAGRAM

(PEAK RESULTS)



Boring No	Sample Depth	Undisturbed/ Remolded	Boring No.	Sample Depth	Undisturbed/ Remolded
(A) BA-2	85-86	Remolded	(E) BA-13	138	Undisturbed
(B) BA-2	85-86	Undisturbed	(F) BC-4	46.5	Undisturbed
(C) BA-3	131	Undisturbed	(G) BC-2	44	Undisturbed
(D) BA-6	69-69.5	Undisturbed			

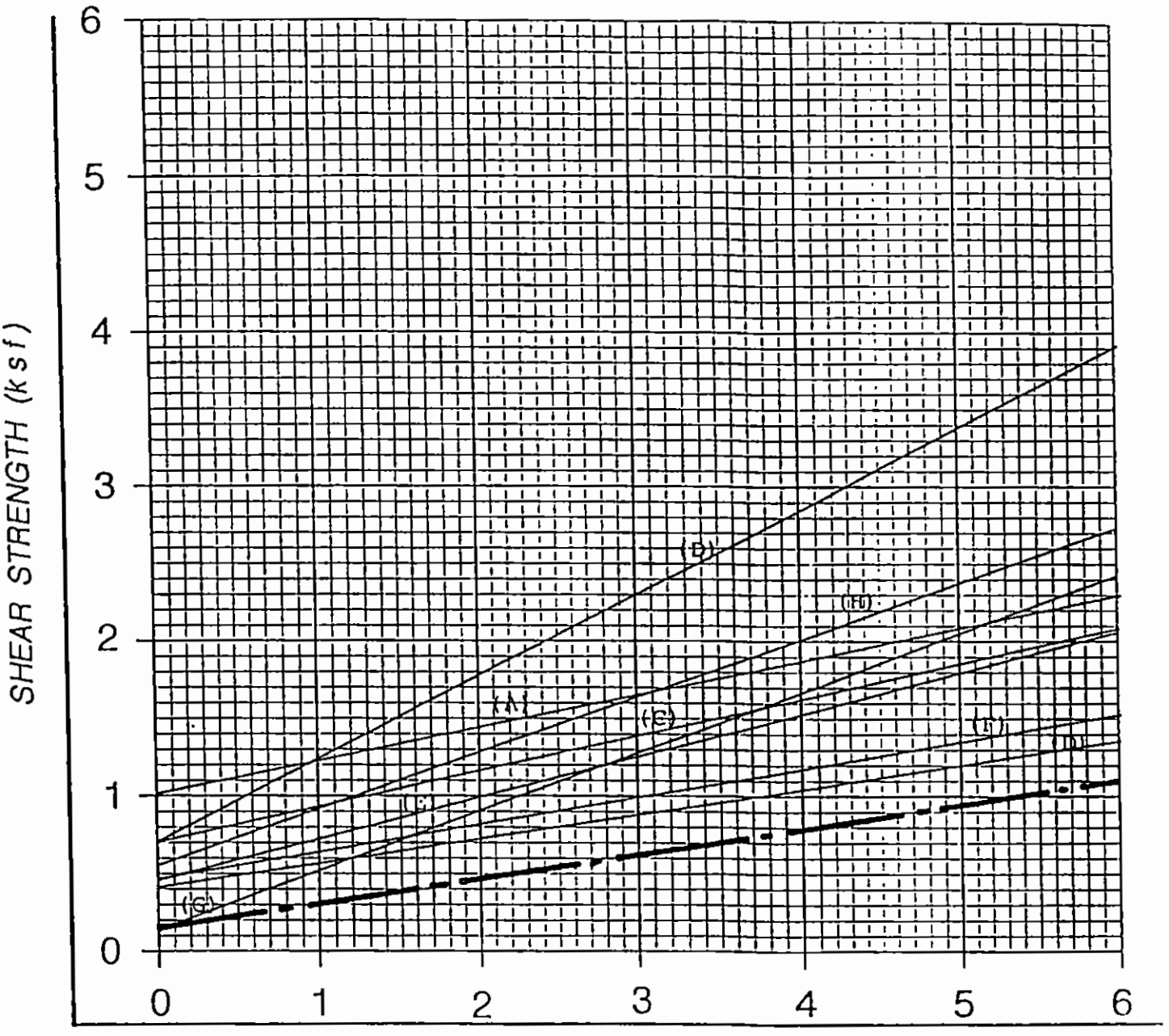
—•— Plot of values used for pseudo-static

G.A. Nicoll And Associates, Inc.
Earth Science Consultants
Tustin, California

Project Name.	Saddleback Meadows
Date	June 1998
Project No	4816 04.3
Figure No.	2

DIRECT SHEAR TEST DIAGRAM

(RESIDUAL/RESHEAR RESULTS)



	Boring No.	Sample Depth	Residual Reshear	Undisturbed/ Remolded	Boring No.	Sample Depth	Residual Reshear	Undisturbed/ Remolded
(A)	BA-2	85-86	Reshear	Remolded	(E) BA-13	138	Residual	Undisturbed
(B)	BA-2	85-86	Residual	Undisturbed	(F) BA-13	138	Reshear	Undisturbed
(C)	BA-3	131	Reshear	Undisturbed	(G) BC-4	465	Residual	Undisturbed
(D)	BA-6	69-69.5	Residual	Undisturbed	(H) BC-12	44	Residual	Undisturbed

—•— Plot of values used for static stability analyses

G.A. Nicoll And Associates, Inc. Earth Science Consultants Tustin, California	Project Name	Saddleback Meadows
	Date	June 1998
	Project No.	4816 04.3
	Figure No.	3

7.3 Geologic Conditions

a) The geologic conditions at the site are essentially the same as those presented in the November, 1995 report, maps and cross sections

b) Some minor adjustments have been made to the cross section where changes were warranted by additional review and analysis of the subsurface data.

c) Explanations for the changes made to the geologic conditions shown in the January 6, 1994 report are presented in this report.

8. REVISED GEOLOGIC CONDITIONS

a) A number of changes have been made to the geologic map and cross sections for the January 6, 1994 report. These changes were included in the Geologic Map and Geologic Cross Sections in the November 27, 1995 report. As a result of new subsurface data found in our recent Borings BC-1 through BC-17 and from additional field mapping, a number of changes have been made on the geologic map and cross sections for our January 6, 1994 report.

b) These revisions are shown in the cross sections for this report and in the November 27, 1995 report, and they are summarized and described as follows:

8.1 Central Ridge Area

a) The ridge area above and to the east of the old ranch house was originally shown as a landslide with a possible lower slide surface; Cross Section 7-7', Plate 9 illustrates this in the January, 1994 report

b) Section B-B' of the November, 1995 report and in this report, depicts the revised geologic structure in this area.

c) The landslide interpretation was eliminated for the following reasons:

i) The Petra boring data, in Boring PB-9 does not show any shears or landslide materials.

ii) The bedrock materials observed in our recent deep Borings BC-5, BC-12 and BC-14 were observed to be essentially undisturbed and only minor shear surfaces were observed in the borings. A slide surface deeper than the BC-5 and BC-12 borings is very unlikely.

iii) The rupture surface logged in Boring BB-13, located just south of the east end of Section B-B', was originally interpreted as a basal landslide surface. We have, however, determined that since the surface was not encountered in PB-9, it must pass beneath the boring, which would cause the extrapolation of any potential slide surface to occur well below the deepest slide surface shown in Section B-B'. Therefore, the shear surfaces encountered in Boring BB-13 are interpreted as being of a tectonic derivation since it is unreasonable to assume that basal landslide surfaces would be present at the projected depth. The structural projection of the "basal surface" in the BB-13 boring is shown on the upper east end of Section B-B' of this report.

iv) Based on our geologic mapping in the canyon north of the ridge, we regard the exposed bedrock on the south side of the canyon is undisturbed and the materials on the north side are disturbed.

v) Regardless of whether there is a slide or no slide condition present, the only consequence would be a negligible variation in remedial grading quantities. If a slide is present, an estimated 4 percent increase in the remedial grading quantities would be required to construct an upper shear key in the area of Boring BC-14. However, there would be no change in the present grading envelope.

8.2 Reconstruction of Landslide Structure

8.2.1 Main Slide Area (Sections A-A' and B-B')

a) Our subsurface exploration that was conducted within the past year was initiated to provide more detail to the structure of the deeper slide surfaces and refine remedial grading quantities.

b) Boring BC-1 was drilled to encounter and confirm the location of the basal slide surface shown in Sections 2-2' and 3-3' of the January 6, 1994 report. Section A-A' of this report was constructed essentially along the same line as section 2-2'.

c) At a depth of 120 feet, BC-1 did not encounter this projected slide plane which had been expected from the information obtained in BA-9 and BC-1 (in Section 2-2'). However, an ash bed and a thick, fat, sheared clay zone was encountered at 152 to 154 feet, which was interpreted as the slide material encountered in BA-9.

d) Based on the projection of the rupture zones in BA-9 and BC-1, the structure was extrapolated upslope and downslope along Section A-A' and generally parallel to the known structures; becoming flat and then warping upward along the fault zone to the west and becoming steeper, upslope to the east

e) Another deeper slide surface was constructed based on the subsurface date from Borings BA-4 and B-22. Structurally, it generally parallels the BA-9 surface.

f) A hypothetical slide surface was constructed connecting the lower and intermediate surfaces in the area of the A-A'/B-B' intersection (refer to the queried, dashed contact).

g) A shallower slide surface was constructed based on boring data found in Borings BA-3 and BA-11. The upper and lower splays to the west represent two hypothetical options. They represent the toe geometry typical of generic landslides common to the south County.

8.2.2 Southerly Slide Area (Section C-C')

a) Cross Section C-C' of the November 27, 1995 report and C-C' in this report were constructed generally along the same trend as Section 4-4' of the January 6, 1994 report.

b) Based on the subsurface data from our recent Boring BC-15 and a re-evaluation of boring data from B-7, B-36, BA-13 and PB-10, we have eliminated the deep slide interpretation in the east half of Section C-C'. The shallow landslides remain.

c) Along Section C-C', the first deep slide surface from the east that passes through B-37 and beneath PB-29 is a hypothetical surface. The intermediate surface above is based on data from B-37 and PB-29.

9. SLOPE STABILITY ANALYSES

a) Slope stability analyses were performed using the UTEXAS2 Slope Stability computer program on what has been determined to be typically critical cross sections. The output documents for the slope stability analyses are presented in the *Stability Analyses, Appendix C, Volume 2.*

b) The strength parameters utilized in the analyses were selected based on the combined results of the field exploration, data from prior consultants and our laboratory test data. The laboratory shear tests include those which were conducted on specimens from hand-driven samples collected by a geologist during the down-hole logging process. They were obtained from the borings drilled specifically to explore the actual rupture surfaces. Lastly, the shear strength values used reflects those values used for similar previous investigations completed over the years in the same and adjacent site areas. The test results were reported in our previous report *(Reference January 6, 1994 report).*

c) The strength parameters used in the static analyses are based on the residual shear strengths, whereas those used in the seismic analyses are based on the peak strengths. Graphic plots of the laboratory results of the shear tests are shown in *Figures 2 and 3.* They also depict the shear strength values used in our slope stability analyses. It is notable that the values used in the analyses are more conservative than the actual strengths obtained.

d) The shear strengths used in the analyses are as follows:

Geologic Conditions	Angle of Friction (degrees)		Cohesion (lb/ft^2)	
	Static	Seismic	Static	Seismic
Rupture Surface	9	15	150	450
Fill	25	28	250	450
Bedrock/Across Bedding	30	30	350	350
Along Bedding	21	21	138	138

e) Remedial measures have been proposed where the factors of safety failed to reach the required 1.5 for the static condition and 1.1 for the seismic condition. The remedial grading is shown on the enclosed cross sections in Appendix C. Although the horizontal acceleration of 0.15g is required by County Code, the application of it to this site and to the computer programs for slope stability currently in vogue are in doubt; the values have been increased to meet the County standard.

10. CONCLUSIONS AND RECOMMENDATIONS

a) The remedial grading required for the Saddleback Meadows Contingency Plan – 299 Lots (dated June 22, 1998) is significantly reduced from the 705-unit grading concept for the original Entitled Plan. The total Remedial Grading quantity is approximately 6.8 million cubic yards.

b) We conclude that the site is developable.

The opportunity to be of continued service is sincerely appreciated. If you have any questions, please call.

Very truly yours,

G. A. NICOLL AND ASSOCIATES, INC

Gerald A. Nicoll
President
CEG 34
(Exp. December 31, 1999)

Mohan B. Upasani
Vice President, Engineering
RGE 2301
(Exp. March 31, 1999)

GAN/MBU/GDH:cn/ck

Enclosures:

Location Map	-Figure 1, Text
Direct Shear Test Diagrams	-Figures 2 and 3, Text
References	-Appendix A
Field Exploration	-Appendix B
Unified Soils Classification System	-Figure B-1
Logs of Borings	-Figures B-2 through B-18
Stability Analyses	-Appendix C
Geologic Map, Plate 1 (from November 1995 report)	-In pocket
Geologic Key, Plate 2	-In pocket
Cross Sections	- Plates 3 to 5 (in pockets)
Computer Output Documents	-Volume 2

APPENDIX A

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APPENDIX B

Field Exploration

a) The site was explored utilizing a truck–mounted bucket auger drill rig to excavate 17 borings to depths of 77 to 173 feet below the existing ground surface. All borings were subsequently backfilled. Approximate locations of the borings are shown on the *Geologic Map, Plate 1*, of the November 1995 report.

b) The soils and bedrock encountered in the borings were logged and sampled by our Geologist. The soils were visually classified in accordance with the Unified Soil Classification System described in *Figure B-1*. The Logs of the Borings are presented in *Figures B-2 to B-18*. (The logs, as presented, are based on the field logs, modified as required from the results of the laboratory tests.) Driven ring and bulk samples were obtained from the excavations for laboratory inspection and testing. The depths at which the samples were obtained are indicated on the logs.

c) The number of blows during sampling was recorded, together with the depth of penetration, the driven weight and the height of fall. The energy required per foot of penetration for given samples was then calculated, and is indicated on the logs. These drive energies provide a measure of the density or consistency of the soil.

d) Ground water and seepage was encountered as noted on the Logs of Borings

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	DESCRIPTIONS
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size.)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size.)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No 4 sieve size.)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size.)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, loan clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT or CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

No.200 No.40 No.10 No.4 3/4 in. 3 in. 12 in.

U. S. STANDARD SIEVE SIZE

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EARTH SCIENCE CONSULTANTS

Saddleback Meadows
County of Orange, CA

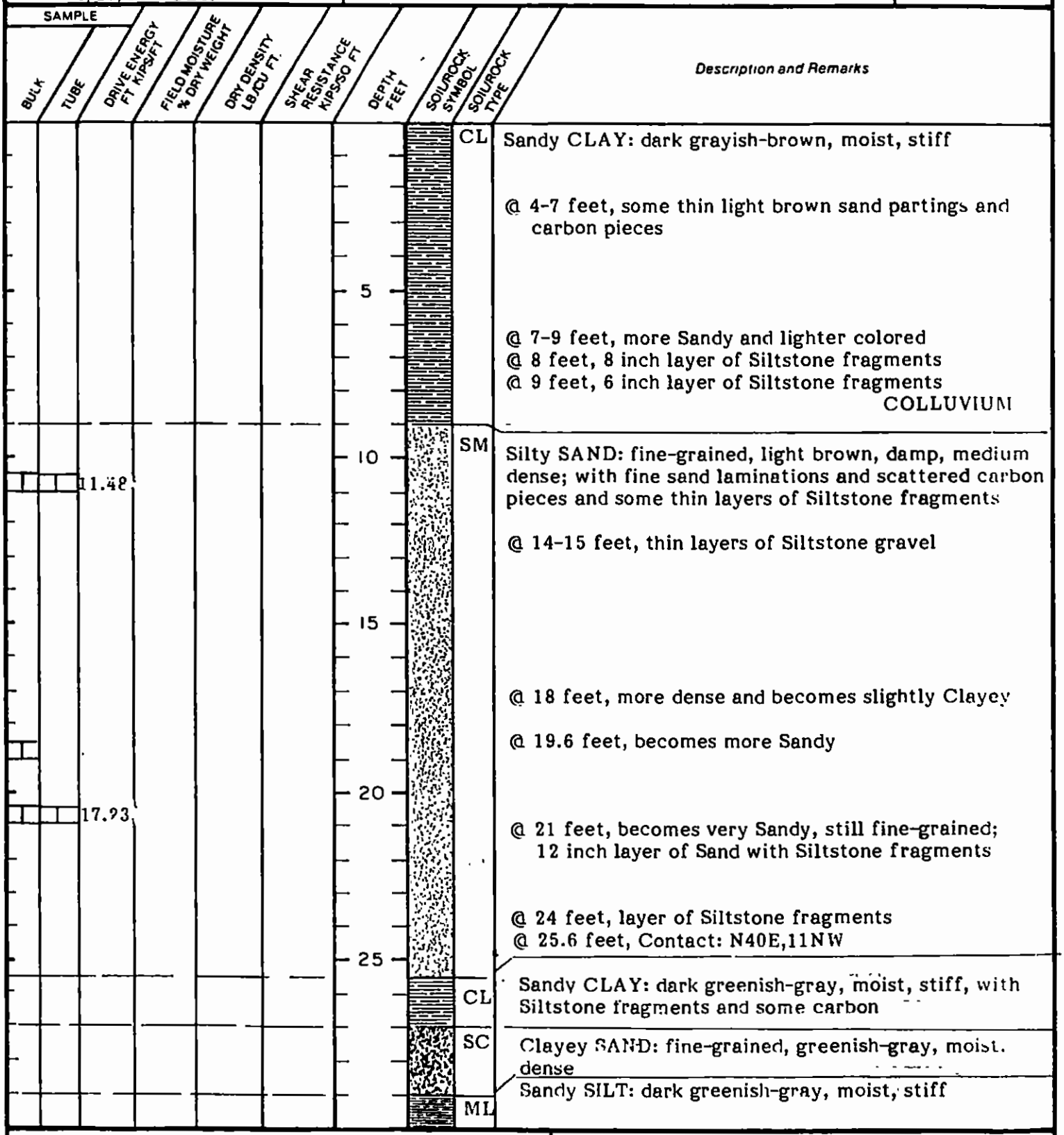
Date: June 1998

Project No: 4816 04.3

Figure No.: B 1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	24 inches	1146 feet	BC-1
Date Drilled: 5/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		



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Tustin, California

Saddleback Meadows
County of Orange, California

Project No 4816-04

Figure No. B-2.1

LOG OF BORING

Drill Rig.	Boring Diameter.	Boring Elevation.	Boring Number
Bucket Auger	30 inches	1146 feet	BC-1
Date Drilled: 5/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	■	12.91							Sandy, Clayey SILTSTONE: greenish-gray, moist, weathered, blocky fracture to 32 feet @ 32-33 feet, Sandy SILTSTONE: greenish-gray
						35		LANDSLIDE MATERIAL	Silty SANDSTONE: fine- to medium-grained, medium greenish-gray, very dense @ 35.5 feet, becomes fine-grained @ 36 feet, medium- to coarser-grained @ 36.6 feet, becomes fine-grained and yellowish-greenish-gray; very Silty @ 37.5 feet, Bedding: N-S,11W; on laminations @ 38 feet, Siltstone ripups @ 39.6-41 feet, Contact: N10E,36NW (scour surface)
	■	43.02				40			Clayey SILTSTONE: dark greenish-gray and reddish-brown, very stiff
						45			Sandy SILTSTONE: dark greenish-gray, stiff, with thin red-brown Siltstone beds @ 42 feet, becomes more Sandy @ 43.5 feet, less Sandy, very stiff @ 44 feet, 12 inch dark greenish-gray Siltstone bed @ 45 feet, 12 inch red-brown Sandy SILTSTONE bed with green-gray mottling @ 46-48 feet, Sandy Clayey SILTSTONE with cemented nodules (carbonate) @ 48 feet, becomes Sandy SILTSTONE again with some red-brown mottling to 49 feet @ 49 feet, becomes more Sandy @ 49.6 feet, very fine Silty SANDSTONE bed, green-gray @ 51 feet, thin disc. cem. layer @ 51-52.5 feet, very fine Silty SANDSTONE: green-gray @ 51.6 feet, thin white cemented layer: N10W,11SW @ 52.7 feet, slight seepage at base of cemented layer @ 52.7-53.3 feet, very Sandy, medium green-gray Sandy SILTSTONE; grades to Silty SANDSTONE
	■	60.23				50			Silty SANDSTONE: very fine- to fine-grained, greenish-gray, very dense, saturated @ 54.5 feet, water weeping from sidewall (wet, grades to Sandy SILTSTONE
						55			Sandy SILTSTONE: medium to dark greenish-gray, very stiff, wet (sidewall weeping) @ 59 feet, still wet

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County of Orange, California

Project No 4816-04

Figure No. B-2.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation:	Boring Number
Bucket Auger	24 inches	1146± feet	BC-1
Date Drilled: 5/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

43.43

@ 61 feet, light brown inclusions

@ 64 feet, tubular structures, still wet
@ 65 feet, tubular structures, still wet

65

Silty SANDSTONE: very fine- to fine-grained, medium to dark greenish-gray, very dense, saturated
@ 67 feet, less moist, no sidewall weeping
@ 68 feet, becomes dark green-gray

70

LANDSLIDE MATERIAL

75

Sandy SILTSTONE: interbedded greenish-gray and reddish-brown, with some 6-12 inch red-brown Clayey SILTSTONE beds and some 18-24 inch Silty SANDSTONE Beds
@ 74-75 feet, dark greenish-gray
@ 75-76 feet, red-brown
@ 76-78 feet, very fine to fine-grained Silty SANDSTONE
@ 77.5 feet, white carbonate nodules
@ 78-79 feet, red-brown Clayey SILTSTONE
@ 79-80.5 feet, dark greenish-gray
@ 80.5-81.5 feet, red-brown Clayey SILTSTONE
@ 81.5-82.5 feet, dark greenish-gray
@ 82.5-84 feet, green-gray Silty SANDSTONE
@ 84 feet, 2 inch irregular, light gray cemented bed: N40W,10SW
@ 84.2-84.6 feet, very Sandy, green-gray
@ 84.6-85.6 feet, red-brown
@ 85.6-86.5 feet, dark green-gray
@ 86.5-88 feet, red-brown
@ 88-89 feet, dark green-gray
@ 89-90 feet, red-brown

80

43.43

85

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1146± feet	BC-1
Date Drilled 5/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						95			@ 90-92 feet, dark greenish-gray @ 92-94 feet, very fine, dark greenish-gray Silty SANDSTONE @ 93.6 feet, white cemented nodules (carbonate) @ 94-95 feet, red-brown @ 95-98 feet, dark greenish-gray, grades to Silty SANDSTONE @ 98-103 feet, very fine- to fine-grained Silty SANDSTONE: greenish-gray
						100		LANDSLIDE MATERIAL	@ 101 feet, white carbonate nodules @ 103-104 feet, reddish-brown Sandy SILTSTONE @ 104-105 feet, dark greenish-gray, more Sandy @ 105 feet, white carbonate layer @ 105-107.5 feet, red-brown Clayey SILTSTONE with white carbonate nodules @ 107.5-108.5 feet, dark greenish-gray Sandy SILTSTONE @ 108.5-110 feet, red-brown Clayey SILTSTONE (no cemented nodules) @ 110-111 feet, dark greenish-gray Sandy SILTSTONE @ 111-111.5 feet, red-brown Clayey SILTSTONE @ 111.5-112.5 feet, dark greenish-gray, Sandy SILTSTONE @ 112.5-113.5 feet, reddish-brown @ 113.5 feet, becomes greenish-gray @ 114 feet, becomes green @ 115-118 feet, fine-grained, dark green-gray Silty SS
						105			
						110			
						115			@ 118-119 feet, cemented @ 119-120 feet, red-brown Clayey SILTSTONE with cemented nodules

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SADDLEBACK MEADOWS
COUNTY OF ORANGE, CALIFORNIA

Project No.: 4816-04

Figure No.: B-2.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1144± feet	BC-1
Date Drilled: 5/24/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						125		LANDSLIDE MATERIAL	@ 120-121 feet, dark green-gray slightly Clayey Sandy SILTSTONE with cemented nodules @ 121-122.5 feet, red Clayey SILTSTONE @ 122.5-123.5 feet, dark greenish-gray Sandy SILTSTONE @ 123.5-124.7 feet, cemented @ 124.7-126 feet, cemented @ 126-128.5 feet, dark greenish-gray Sandy SILTSTONE with cemented nodules, more cemented from 127-127.5 feet @ 128.5-129 feet, red-brown @ 129-133 feet, medium greenish-brown Sandy SILTSTONE
						130			@ 130.5-132.5 feet, lots of cemented nodules
									@ 133-134.5 feet, very fine, medium greenish-gray, very dense Silty SANDSTONE @ 134.5 feet, becomes Sandy SILTSTONE again, medium brownish-gray, very stiff
	136.6					135			@ 136 feet, becomes medium greenish-brown @ 137 feet, greenish-gray @ 138 feet, becomes darker and more Sandy @ 139.5-142 feet, red-brown Clayey SILTSTONE
						140			@ 142 feet, becomes greenish-gray Sandy SILTSTONE @ 143.5 feet, water level on 5/25/95 (boring bailed)
						145			@ 147-148 feet, yellowish-brown ash bed @ 148-149 feet, yellowish-brown to red-brown Sandy SILTSTONE @ 149-150 feet, greenish-gray Silty SANDSTONE with yellow-brown and red-brown SILTSTONE Beds (less stiff)

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Saddleback Meadows
County of Orange, California

Project No 4816-04

Figure No B-2.5

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1144 feet	BC-1
Date Drilled: 5/25/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

155
160
165
170
175

LSM

@ 150-152 feet, fine- to medium-grained Silty SANDSTONE: medium greenish-gray
@ 152-153 feet, greenish-gray ASH Bed (bentonitic?)
@ 153-154± feet, thick, reddish-brown (5YR4/3) CLAY Bed, very plastic, with red-brown and greenish-gray ASH (or bentonite) fragments and a thin, cemented, light gray ASH Bed

LANDSLIDE MATERIAL

Bottom of Boring at 154 feet.

Notes:
1) Water level at 143.5 feet. (elev. 100.5') on 5/25/95 from seepage accumulation.
2) Seepage at 53-65 feet.
3) Boring bailed and then down-hole logged.
4) Boring backfilled.
5) County EMA issued temporary stop work order and boring could not be deepened.

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Project No.. 4816-04

Figure No. B-2.6

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1319 feet	BC-2
Date Drilled: 6/22/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0			Silty SANDSTONE: very fine- to fine-grained, medium greenish-gray, dense
									@ 1-2 feet, broken ash bed, pink and pinkish-gray and greenish-gray: N5W,16SW, thin shear at base and greenish-gray Silty SS below
						5			@ 5 feet, becomes light to medium greenish-gray
									@ 7.6-8.6 feet, cemented, oxidized SS bed
									@ 8.6 feet, 5 inch broken Sandstone bed
									@ 9 feet, 3 inch dark greenish-gray SS bed: N20W,15SW; fractured
						10			@ 9.3 feet, 8 inch Sandy Siltstone bed
									@ 10 feet, fine-grained, greenish-gray
	68.9	11.9	123.7					MATERIAL	@ 12.6 feet, grades to Sandy Siltstone
									Sandy SILTSTONE: dark greenish-gray, stiff
						15			@ 15 feet, more sandy
									@ 15.6 feet, more sandy and darker
									@ 17.6 feet, less silty
									@ 19.6 feet, more silty and dark greenish-gray
						20			@ 21.3-22 feet, Clayey SILTSTONE: dark greenish-gray, disturbed, sheared, some remolded clay at 21.5 feet
									@ 21.7 feet, Rupture Surface: N3E,12NW, well developed, no striations
									@ 21.7-22 feet, thinly laminated
								LANDSLIDE	@ 22 feet, Bedding: N3E,12NW
						25			@ 25 feet, grades to very fine Silty SS
								BEDROCK	Silty SANDSTONE: very fine-grained, greenish-gray
									@ 28 feet, 12 inch Sandy Siltstone bed, greenish-gray
									@ 29 feet, becomes medium greenish-gray
									@ 30 feet, more Silty

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Project No 4816-04

Figure No.: B-3.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1319 feet	BC-2
Date Drilled 6/22/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
		94.64				35			@ 31 feet, more Sandy @ 33 feet, more Silty @ 34 feet, more Sandy, greenish-gray @ 35.6 feet, more Silty; grades to Sandy SILTSTONE
									Sandy SILTSTONE: greenish-gray, grades to Silty SANDSTONE
						40		BEDROCK	Silty SANDSTONE: fine-grained, greenish-gray @ 40 feet, slight seepage from hairline fracture: N60E,75SE @ 42 feet, less Silty and coarser and salt and pepper appearance
						45			Clayey SILTSTONE: pinkish-brown, very stiff, possible bentonite or Ash Bed
						50			Sandy SILTSTONE: medium greenish-gray @ 49 feet, more Sandy @ 50 feet, Silty SANDSTONE bed @ 52.6 feet, more Silty @ 54 feet, less Silty @ 54.6-55.5 feet, fine, cemented Silty SANDSTONE bed
						55			Silty SANDSTONE: fine-grained, cark greenish-gray
		68.24	19.2	108.8					Volcanic ASH: pinkish-brown, undisturbed

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Project No 4816-04

Figure No. B-3.2

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1319 feet	BC-2
Date Drilled: 6/22/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						60			Sandy SILTSTONE: greenish-gray @ 60 feet, becomes olive-brown
						62			Silty SANDSTONE: fine-grained, dark greenish-gray @ 62 feet, becomes coarser
						65			Sandy SILTSTONE: medium greenish-gray @ 65.6 feet, becomes lighter colored @ 69 feet, becomes darker colored
						70			Silty SANDSTONE: fine-grained, dark greenish-gray with thin, wavy laminations of light sand, some minor cross bedding
									Sandy SILTSTONE: greenish-gray
						75			Clayey SILTSTONE: brown to olive-brown, very stiff @ 75 feet, becomes disturbed with some internal shearing @ 75.3 feet, sheared, bentonitic clay, pinkish-brown and brown, remolded, plastic @ 75.6-76 feet, irregular rupture surface: N10W,15SW; 1-2 inch very plastic clay above surface, some lineation down dip
	31.02	19.2	108.8						
						80		BEDROCK	Sandy SILTSTONE: greenish-gray @ 77 feet, more Sandy
									Silty SANDSTONE: fine-grained, greenish-gray @ 82.6 feet, becomes fine- to medium-grained and olive brown
						85			@ 85 feet, dark greenish-brown, very moist @ 89 feet, becomes dark greenish-gray VAQUEROS-SESPE FORMATION

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Project No.: 4816-04

Figure No.: B-3.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1319 feet	BC-2
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
6/22/95 GDH			

SAMPLE: Bulk	SAMPLE: Tube	Drive Energy Ft Kips/Ft	Field Moisture % Dry Weight	Dry Density Lb/Cu Ft	Shear Resistance Kips/Sq Ft	Depth Feet	Soil/Rock Symbol	Soil/Rock Type	Description and Remarks
						95			Bottom of Boring at 90 feet. Notes: 1) Seepage at 40 feet. 2) No caving. 3) Boring down-hole logged and backfilled.
						100			
						105			
						110			
						115			

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Project No. 4816-04

Figure No. B-3.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1365 feet	BC-3
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
6/23/95 GDH			

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0		CL	Sandy CLAY: grayish-brown, moist, firm
									@ 4 feet, lighter colored and sandstone chunks, less clayey
						5		SC	Clayey SAND
									@ 7-8 feet, irregular contact dips west
									GRABEN SOIL
	**								Silty SANDSTONE: fine-grained, medium green-gray, very closely fractured and disturbed, loose blocky zones
	**	28.71				10			@ 12 feet, Fractures: N45E,80NW; N40E,70NW
									@ 12-16 feet, open fractures, sheared, general structure: N80W,60SW
									@ 14.6-17 feet, large inclusion of Sandy CLAY
	**	<5.74				15			
									@ 17-24 feet, very fine-grained, generally
						20		LANDSLIDE	@ 20-28 feet, some caving, mostly on SW side
		<5.74							
									@ 24 feet, more coarse
						25			
									@ 27 feet, offset bed pink ash: N65W,20NE
									@ 27-29 feet, open fractures
									** No Recovery

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Project No: 4816-04

Figure No.: B-5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1365 feet	BC-3
Date Drilled 6/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: Bulk	SAMPLE: Tube	Drive Energy Ft Kips/Ft	Field Moisture % Dry Weight	Dry Density Lb/Cu Ft	Shear Resistance Kips/Sq Ft	Depth Feet	Soil/Rock Symbol	Soil/Rock Type	Description and Remarks
									Silty SANDSTONE: fine-grained, green-gray with some red-brown oxide staining (specks)
									@ 88 feet, more Sandy
									VAQUEROS-SESPE FORMATION
						95		BEDROCK	Bottom of Boring at 92 feet.
									Notes:
									1) Seepage at 61 feet.
									2) Caving at 20-28 feet.
									3) Water at 90 feet after logging.
									4) Boring backfilled.
						100			
						105			
						110			
						115			

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Project No 4816-04

Figure No. B-4.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1365 feet	BC-3

Date Drilled: 6/23/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	☐	12.91	14.2	110.6				LANDSLIDE	@ 34 feet, becomes dark greenish-gray, Sandy SILTSTONE, very broken @ 36.5 feet, Slide Plane: N-S,14W; striations dip S 60W; W/1-2" remolded, pinkish-gray and green-gray bentonitic Clay LANDSLIDE MATERIAL
	☐	21.51	23.6	87.6		35			Volcanic ASH: medium gray, soapy texture VAQUEROS-SESPE FORMATION
						40		BEDROCK	Silty SANDSTONE: very fine-grained, medium green-gray, very dense @ 40-41 feet, slightly cemented VAQUEROS-SESPE FORMATION Sandy SILTSTONE: green-gray, very stiff @ 41.5 feet, becomes olive-brown
						45			@ 48 feet, becomes less Sandy and medium to dark greenish-gray @ 48.5-49 feet, SILTSTONE BED: N5W,14SW; dark green-gray @ 49.5 feet, 6 inch cement bed @ 51-52.5 feet, cemented
						50			Silty SANDSTONE: very fine-grained, dark green-gray @ 53.5 feet, becomes brown @ 54.5 feet, becomes coarser and lighter colored and salt and pepper appearance VAQUEROS-SESPE FORMATION
						55			Sandy SILTSTONE: olive-brown, very stiff @ 58.5-59 feet, cement nodules, minor shearing @ 59 feet, green-gray

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Project No: 4816-04

Figure No: B-1

LOG OF BORING

Drill Rig: Bucket Auger	Boring Diameter: 30 inches	Boring Elevation: 1365 feet	Boring Number: BC-3
Date Drilled: 6/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling with the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						65			@ 61 feet, seepage from 2 fractures: N50E,80NW @ 62 feet, becomes more Sandy @ 63 feet, olive-brown and less Sandy @ 65 feet, dark reddish-gray @ 67-68 feet, hard @ 68 feet, becomes green-gray
						70			@ 70 feet, darker and less Sandy @ 71.2-72 feet, pinkish-gray ASH Bed: N20W,12SW; irregular @ 72 feet, dark greenish-gray @ 73 feet, becomes olive-brown
		15.51	31.7	84.0		75			VAQUEROS-SESPE FORMATION
						80	BEDROCK		Silty SANDSTONE: very fine to fine-grained, olive-brown, very dense @ 76 feet, Sandy SILTSTONE bed @ 77 feet, darker and more Sandy @ 79 feet, less Sandy @ 80 feet, more Sandy @ 81 feet, Bedding: N5W,15SW @ 81.5-83 feet, medium green-gray with wavy laminations and cross bedding VAQUEROS-SESPE FORMATION
						85			Clayey SILTSTONE: brown to olive-brown, stiff @ 85.5-86 feet, Sheared CLAY: brown and pinkish-brown @ 86 feet, Rupture Surface: N10W,15SW; moderately polished, lineations N85W, moderately polished and somewhat irregular surface @ 86.3-87 feet, Sandy SILTSTONE VAQUEROS-SESPE FORMATION

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Project No.: 4816-04

Figure No.: B-4.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1517 feet	BC-4

Date Drilled: 6/27/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						5		LANDSLIDE MATERIAL	Silty SANDSTONE: fine-grained, light gray and light gray-brown, closely fractured, very disturbed and generally blocky to 14 feet; some caving 0-14 feet @ 4 feet, parallel fracturing: N20W,74NE @ 6 feet, becomes medium greenish-gray, very fractured
						10			@ 11 feet, Fractures: N40W,70NE @ 13-14 feet, broken cemented bed dips NE 30°
						15			LANDSLIDE MATERIAL
						20			Sandy SILTSTONE: greenish-gray, closely fractured and disturbed @ 16-17 feet, dark greenish-gray Clayey SILTSTONE bed, broken @ 17-18 feet, broken displaced 3 inch pink ash bed @ 18 feet, becomes dark greenish-gray, still very disturbed
		17.23	31.0	88.7					@ 21.6 feet, becomes very micaceous and dark gray @ 23 feet, Shear: N40W,80SW; bedrock below shear stiffer and less mica and some 1/2 open fractures: N50E,85SE @ 24 feet, medium to dark greenish-gray, still disturbed
						25			@ 27 feet, becomes brown @ 28-29 feet, block of green-gray ash on NE side of boring

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Project No.: 4816-04

Figure No.: 6

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1517 feet	BC-4

Date Drilled: 6/27/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35		LANDSLIDE	@29-33 feet, Shear Zone N-S,55W @ 33-34 feet, broken blocks of SANDSTONE and SILTSTONE @ 34.5 feet, becomes brown Clayey SILTSTONE, sheared @ 34.8-35 feet, brown CLAY gouge @ 35 feet, Slide Plane: N30W,20SW; even, moderately polished surface with well developed striations dip S80W LANDSLIDE MATERIAL
		55.93	12.8	120.0		40		BEDROCK	Clayey SILTSTONE: brown, very stiff, some minor shears VAQUEROS-SESPE FORMATION Sandy SILTSTONE: greenish-gray, very stiff, undisturbed @ 37-38 feet, fine-grained, olive-brown to dark green-gray Silty SANDSTONE @ 38 feet, becomes darker @ 39.6 feet, becomes less Sandy @ 41 feet, becomes olive-brown @ 41.6-42.6 feet, somewhat Clayey with minor shears
		55.93	34.1	88.0		45			@ 41.6 feet, becomes more Sandy, olive-brown @ 44 feet, becomes more Sandy and micaceous @ 45.6 feet, becomes less Sandy @ 46-46.5 feet, Clayey, olive-brown @ 46.5-47.5 feet, pink to pinkish-gray ash bed: N40W,20SW; lower contact irregular with minor shearing @ 47.5 feet, becomes olive-brown to 48 feet, then dark green-gray and more Sandy @ 49.6 feet, becomes olive-brown VAQUEROS-SESPE FORMATION Silty SANDSTONE: fine-grained, dark green-gray @ 52.5 feet, becomes more Sandy with red-brown specks @ 53 feet, seepage from side wall (weeping) and becomes coarser @ 54 feet, irregular bed of very Silty SS with red-brown specks, lighter colored
						50			
						55			

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Project No 4816-04

Figure No. B-C-4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1517 feet	BC-4

Date Drilled: 6/27/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOILMOCK SYMBOL	SOILMOCK TYPE	Description and Remarks
	■	58.94	17.0	112.1					@ 54.5 feet, becomes olive-brown with red-brown specks, saturated @ 57-58 feet, light gray cemented SS: N20W,20SW with cross bedding and red-brown spots @ 58-59 feet, red-brown stained @ 59 feet, becomes medium gray @ 60 feet, becomes finer VAQUEROS-SESPE FORMATION
						65		BEDROCK	Sandy SILTSTONE: medium green-gray, very stiff @ 61.5-62 feet, Clayey @ 62 feet, more Sandy @ 63 feet, pinkish-brown and greenish-gray and laminated @ 64-66.5 feet, olive-brown to brown SILTSTONE @ 66.5-66.7 feet, CLAY Bed: N27W,22SW Shear at Base: N12W,21SW @ 66.7 feet, becomes olive-brown Sandy SILTSTONE @ 67 feet, becomes less Sandy and red-brown @ 69-70 feet, red-brown specks VAQUEROS-SESPE FORMATION
						70			
						75			Silty SANDSTONE: fine-grained, green-gray, very dense @ 72-73 feet, Sandy SILTSTONE: green-gray and red-brown @ 73-76 feet, zones of green-gray and red-brown @ 76-69 feet, red-brown Sandy SILTSTONE bed @ 79 feet, more Sandy @ 81.5 feet, becomes fine- to medium-grained and red-brown to yellow-brown and mica, saturated, weeping VAQUEROS-SESPE FORMATION
						80			
						85			Bottom of Boring at 90 feet. Notes: 1) Seepage at 53 feet and below 81 feet. 2) Moderate caving at 0-14 feet. 3) Boring backfilled.

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Project No.: 4816-04

Figure No.: B-3.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						5		CL	Silty CLAY: dark gray-brown, moist, firm @ 4 feet, lighter colored @ 6-7 feet, graduates to weathered SILTSTONE COLLUVIUM
	17.23	12.4	109.6			10		BEDROCK	Clayey SILTSTONE: light greenish-gray and pinkish-gray zones, very closely fractured and blocky to 10 feet, some dark red stringers along bedding @ 8.5 feet, Shear: N-S,16W; small sandstone blocks above; becomes dark olive-brown below @ 10 feet, becomes less fractured and blocky @ 11 feet, grades to Sandy SILTSTONE VAQUEROS-SESPE FORMATION
						15			Sandy SILTSTONE: dark green-gray to olive-brown with red oxide specks, very stiff and finely micaceous @ 16 feet, 6 inch pink-gray Siltstone Bed:N10W,17SW @ 16.5 feet, 6 inch dark green-gray, fine Silty SANDSTONE Bed @ 17 feet, becomes red-brown Sandy SILTSTONE @ 18-19 feet, red-brown SILTSTONE Bed @ 19 feet, becomes dark green-gray and deep red-brown @ 20 feet, grades to Silty SANDSTONE VAQUEROS-SESPE FORMATION
	40.19	14.9	117.9			20			
						25			Silty SANDSTONE: fine-grained, red-brown to reddish-gray, micaceous @ 22-23 feet, deep red-brown, micaceous SILTSTONE Bed @ 23 feet, becomes fine- to medium-grained, mostly red-gray, salt and pepper appearance @ 26 feet, becomes light yellowish-gray and coarser, appears arkosic @ 27 feet, some red-brown SILTSTONE rip-ups along bedding @ 28-28.5 feet, light orange-gray, medium to coarse-grained

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Saddleback Meadows
County of Orange, California

Project No 4816-04

Figure No. B-5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU. FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

35

@ 28.5-33 feet, cemented SANDSTONE: light green-gray and pink-gray zones
@ 33 feet, becomes fine- to medium-grained and yellow-brown and slightly cemented
@ 34 feet, becomes light red-brown
@ 35 feet, pinkish-gray with filled worm? tubes

@ 37.5 feet, thin cemented bed, below is medium pinkish-brown
@ 38-39 feet, some cemented nodules in pinkish-brown, fine- to medium-grained SANDSTONE

40

@ 41-42 feet, light greenish-gray with load struct. and worm? tubes
@ 42 feet, becomes pinkish-brown with some cement nodules
@ 43-44 feet, deep red-brown, very micaceous SILTSTONE bed with some very thin laminations
@ 44 feet, Bedding: N10W,13SW
@ 44 feet, fine- to medium-grained, dark red with medium gray, wavy laminations and slight seepage
@ 46 feet, some SILTSTONE rip-ups along bedding, some cross bedding, seepage more intense
@ 47.5 feet, 6 inch brownish-red Clayey SILTSTONE Bed
@ 48 feet, 4 inch greenish-gray Silty SS Bed, heavier seepage.

45

VAQUEROS-SESPE FORMATION

50

Sandy SILTSTONE: deep reddish-brown with some green mottling
@ 49 feet, becomes olive-brown, still mottled
@ 50 feet, more Sandy
@ 51 feet, darker and micaceous
@ 52.5 feet, thin SILTSTONE Bed: N20W,15SW; medium greenish-gray
@ 53 feet, red-brown to reddish-gray with green mottling, micaceous
@ 55 feet, grades to SANDSTONE

55

VAQUEROS-SESPE FORMATION

BEDROCK

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Project No. 4816-04

Figure No. B-12

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

65

70

75

80

85

BEDROCK

Silty SANDSTONE: deep reddish-brown with green mottling, micaceous
@ 55.5 feet, becomes coarser and red-brown
@ 58 feet, green-gray SS bed
@ 58.2 feet, olive SILTSTONE, Sandy
@ 59-60 feet, olive-brown and cemented nodules
Sandy SILTSTONE: light greenish-gray
@ 61 feet, thin, light pinkish-gray SILTSTONE Bed
@ 65-66 feet, pinkish-brown SILTSTONE with red-brown laminations
@ 66-66.5 feet, dark red-brown Sandy SILTSTONE
@ 66.5 feet, becomes olive-brown and red-brown
@ 68-69 feet, some cemented nodules

@ 71-72.5 feet, fine Silty SANDSTONE: medium greenish-gray and brownish-red zones

VAQUEROS-SESPE FORMATION

Clayey SILTSTONE: olive-brown to red-brown, with some light colored cemented nodules
@ 74 feet, thin shear dips SW approximately 12°
@ 75.5 feet, less Clayey and olive-brown

VAQUEROS-SESPE FORMATION

Sandy SILTSTONE: olive-brown, very stiff
@ 77 feet, becomes more Sandy and greenish-gray
@ 78 feet, becomes mottled
@ 78.5-80.5 feet, cemented fine Silty SS bed
@ 80.5 feet, becomes olive-brown to green-gray Sandy SILTSTONE
@ 82-85 feet, very fine-grained Silty SS bed, medium greenish-gray
@ 85 feet, dark red-brown micaceous Sandy SILTSTONE
@ 87.5-88.5 feet, green mottling

VAQUEROS-SESPE FORMATION

Silty SANDSTONE: fine- to medium-grained, olive to red-brown, very dense

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Figure No.: 3 of 5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

@ 92-93.5 feet, very fine and some light cemented nodules
@ 93 feet, becomes coarser

@ 96-97 feet, olive-brown SILTSTONE
VAQUEROS-SESPE FORMATION

Sandy SILTSTONE: olive-brown, slightly cemented
@ 97-101.5 feet, light gray cemented nodules

100

@ 101.5-102.5 feet, medium red-brown

VAQUEROS-SESPE FORMATION

Silty SANDSTONE: very fine-grained, greenish-gray to olive-brown

105

@ 106 feet, lighter colored
@ 107.5 feet, 6 inch Sandy SILTSTONE Bed: greenish-gray to olive-brown
@ 108-110 feet, very fine Silty SANDSTONE
@ 110 feet, thin, light gray cemented Bed: N20W,17SW
VAQUEROS-SESPE FORMATION

110

BEDROCK

Sandy SILTSTONE: light to medium greenish-gray to olive-brown
VAQUEROS-SESPE FORMATION

115

SILTSTONE: light to medium greenish-gray to olive-brown; possibly some volcanic ash

@ 118-120 feet, olive-brown

@ 120 feet, becomes saturated Silty SANDSTONE

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Project No 4816-04

Figure No B-6.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

125
130
135
140
145

BEDROCK

Silty SANDSTONE: fine- to medium-grained, medium greenish-gray
@ 122 feet, becomes lighter colored

@ 124 feet, becomes coarser

@ 125-126 feet, medium to coarse pebbly SANDSTONE
@ 126 feet, very fine Silty SANDSTONE: medium greenish-gray to olive
@ 128.5 feet, standing water
@ 128-145 feet, mostly fine- to medium-grained, greenish-gray, Silty SANDSTONE: with some olive-brown Sandy SILTSTONE beds and cemented beds

VAQUEROS-SESPE FORMATION

Bottom of Boring at 145 feet.
Notes:
1) Standing water at 128 feet.
2) Seepage at 44 and 48 feet.
3) No caving.
4) Boring down-hole logged and backfilled.

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Figure No. B-6.5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT.KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						0		CL	Silty CLAY: dark brown, damp stiff COLLUVIUM
									Silty SANDSTONE: fine-grained, light greenish-gray, closely fractured
						5			Sandy SILTSTONE: medium greenish-gray, closely fractured with some open structure @ 8 feet, 3/4 inch open fractures: E-W, 80S and N-S, 80E
						10			Silty SANDSTONE: very fine-grained, light to medium greenish-gray, very closely fractured and blocky, disturbed
									Sandy SILTSTONE: medium greenish-gray, very disturbed, blocky @ 14 feet, Shear: N10E,55NW and Fracture: N-S,75W @ 15-17 feet, some blocks of Sandstone and minor to moderate caving @ 17 feet, firmer but still closely fractured and becomes olive-brown and less Sandy
						15			
	17.23	12.2	118.7			20			@ 21 feet, becomes more Sandy and darker @ 23-24 feet, Sandstone block on east wall
						25			@ 25 feet, Shear: N-S,85W, very closely fractured @ 28 feet, Shear: N50W,60NE; fine Silty SS below shear, light to medium greenish-gray @ 29 feet, becomes medium greenish-gray Sandy SILTSTONE again

LANDSLIDE MATERIAL

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Figure No. 4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Silty SANDSTONE: very fine-grained, light to medium greenish-gray, closely fractured
									@ 33 feet, red oxide-stained clasts
						35			Sandy SILTSTONE: medium greenish-gray, very closely fractured, blocky
	■	68.83	12.7	116.1		40			
									@ 42 feet, less Sandy
									@ 44 feet, more Sandy and dark greenish-gray
						45			@ 45-46 feet, light brown SILTSTONE and ash bed on NE side of boring
									@ 46 feet, less Sandy
									@ 47 feet, Shear: N40E,75SE; very fine Silty SANDSTONE below
									Silty SANDSTONE: very fine-grained, medium gray to olive-brown, dry, closely fractured
						50			@ 50 feet, very slight seepage from hairline fracture
									Sandy SILTSTONE: medium greenish-gray, closely fractured
									@ 52 feet, dark olive-brown, micaceous
									@ 53.5 feet, slight seepage from fracture:N40W,70SW
									@ 56-57 feet, greenish-gray, very fine-grained Silty SS bed
						55			@ 57 feet, Sandy SILTSTONE: dark olive-brown
									Clayey SILTSTONE: medium brown
									@ 58.5 feet, Sheared CLAY: yellow-brown to medium greenish-brown
									@ 59 feet, Rupture Surface, Cross Hole:N10E,12NW, faint striations west: pockets of sheared clay gouge to 59.5 feet

LANDSLIDE MATERIAL

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Figure No.: B-17.2

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling with the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						65		LANDSLIDE MATL	Sandy SILTSTONE: medium greenish-gray to olive-brown @ 60.5 feet, becomes firmer and dark olive-brown and less fractured SILTSTONE: medium to dark olive-brown @ 62 feet, becomes finely micaceous; Polished Shear: N35E,35NW, faint to moderate striations N80W; Sandy at 62.5 feet
						70		BEDROCK	Clayey SILTSTONE: dark olive-brown, random shearing @ 64.5 feet, 2-6 inch bentonite layer: N35E,45NW; offset by irregular shear zone: N-S to N15E, 50-60W @ 66 feet, darker and more Clayey @ 66.7 feet, Slide Plane: N10W,13SW; well developed striations and dark lineations: S55W; 12 inch intense shearing above SP and light pinkish-gray bentonite along SP LANDSLIDE MATERIAL Silty SANDSTONE: very fine-grained, dark green to olive-gray, cemented Sandy SILTSTONE: dark olive-brown, stiff @ 71.5 feet, 6 inch dark olive-brown SILTSTONE Bed: N10W,12SW @ 72.1 feet, becomes Sandy SILTSTONE again, dark olive-brown, cemented
						75			
						80			@ 74 feet, medium olive-brown @ 76.5 feet, less Sandy SILTSTONE: medium olive-brown @ 81 feet, becomes dark olive-brown
						85			Sandy SILTSTONE: medium to dark olive-brown @ 85-87 feet, cemented @ 87 feet, lighter colored @ 88.5 feet, darker and more Sandy
	74.45	20.8	101.4						

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Project No.: 4816-04

Figure No.: B-7.3

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

SILTSTONE: medium brown
@ 91 feet, Rupture Surface: N40E,29NW
@ 91-92.5 feet, wedge of broken Sandy SILTSTONE and cemented bed (6-18 inches)
@ 92.5 feet, Shear: N30W,42NE

Sandy SILTSTONE: medium to dark olive-brown, very Sandy
@ 93-94.5 feet, cemented
@ 95 feet, becomes more Sandy and dark olive-brown to greenish-gray
@ 97 feet, medium olive-brown, less Sandy

100

@ 99 feet, 1 inch CLAY Bed: N-S,14W, medium brown, possibly remolded
@ 99.1 feet, more Sandy and darker

Silty SANDSTONE: very fine-grained dark olive-brown
@ 102 feet, seepage from sidewall, little coarser
@ 103-105.5 feet, finer and light gray cemented nodules

105

BEDROCK

SILTSTONE: medium brown

110

Sandy SILTSTONE: greenish-gray

VAQUEROS-SESPE FORMATION

115

Bottom of Boring at 120 feet.
Notes:
1) Seepages at 50, 53.5, and 102 feet.
2) Some caving at 64-66 feet.
3) Boring down-hole logged and backfilled.

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Figure No.: 4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1232 feet	BC-7

Date Drilled: 6/30/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
								CL	Silty CLAY: dark grayish-brown, damp to moist, stiff @ 3 feet, lighter colored @ 4-5 feet, Clayey SAND: fine- to coarse-grained, brown COLLUVIUM
						5		SC SM	Silty SAND: fine- to coarse-grained, yellowish-brown with light gray mottling, loose to medium dense, dry to damp @ 7-9 feet, Shear Zone: N70E,65SE; some rock fragments COLLUVIUM
	11.48	6.0	109.9			10		LANDSLIDE MATERIAL	Silty SANDSTONE: fine- to medium-grained, yellowish-brown with some light gray mottling @ 12 feet, predominantly light yellowish-gray @ 12 feet, medium to coarse SANDSTONE Bed: N75E,30NW @ 13 feet, some inclusions of light brown Silty SAND and becomes fine-grained and reddish-brown oxidized @ 18 feet, firmer @ 19 feet, more yellow @ 20-21 feet, orange-brown with some cemented Sandstone fragments @ 21 feet, Shear Zone: N20W,45NE
						15			
						20			
									Sandy SILTSTONE: medium to dark olive-brown, micaceous, medium gray Sandy stringers dip NW; stiff @ 24 feet, becomes firmer
	11.48	17.7	106.2			25			Clayey SILTSTONE: olive-brown with gray mottling, soft, disturbed @ 26-27.3 feet, soft, sheared ash bed, light greenish-gray with orange mottling, dips 35°SE @ 27.3-28 feet, becomes dark gray Clayey SILTSTONE, soft, disturbed @ 26.5 feet, fine Silty SANDSTONE inclusions @ 29 feet, broken angular clasts and cement nodules

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Project No.: 4816-04

Figure No.:

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1232 feet	BC-7
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35		LANDSLIDE MATERIAL	@ 30.5 feet, Shear dips 45°NE with 6 inch block medium gray SAND SILTSTONE on NE side and red-brown, sheared Clay gouge on SW side with small fragments of pink ash @ 31-32 feet, irregular Rupture Surface: N27W,30NE, well developed striations S80E Sandy SILTSTONE: medium greenish-gray to olive-brown, stiff @ 35 feet, darker SILTSTONE: olive-brown
						40			Clayey SILTSTONE: medium brown @ 39 feet, polished shears @ 39.5 feet, Shear: N60W,30SW @ 40 feet, less sheared, less clayey @ 40.5 feet, olive-brown, Sandy SILTSTONE @ 41 feet, finely micaceous and red-brown ox.
	30.11	17.3	112.4						Silty SANDSTONE: very fine to fine, red-brown with medium greenish-gray patches @ 43.5 feet, 6 inch red-brown Clayey SILTSTONE BED: N10W,15SW @ 43.5-44 feet, some thin Clayey laminations in Sandy SILTSTONE bed @ 44.5-45 feet, olive-brown Sandy SILTSTONE with red-oxidized specks @ 45 feet, light gray Clayey SILTSTONE @ 45.5 feet, light greenish-gray Silty SANDSTONE
						45			
						50		BEDROCK	Sandy SILTSTONE: red-brown @ 48 feet, becomes more Sandy with green patches Silty SANDSTONE: fine-grained, mdedium greenish-gray, salt and pepper appearance @ 52.9 feet, 1-3 inch Clayey Gouge Zone: N50W,12SW dark red-brown, very plastic @ 53 feet, Rupture Surface: N50W,12SW; no striations, dull, even surface LANDSLIDE MATL. @ 53-54 feet, Ash Bed: light greenish-gray, soft, punky, some internal shearing @ 54 feet, Contact: N50W,12SW; becomes fine-grained and gray to light yellowish-green @ 56.5-57.5 feet, cemented, seepage at 57 feet @ 58-59 feet, very fine-grained and dark greenish-gray
						55			

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Project No.: 4816-04

Figure No.: B-8.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1232 feet	BC-7

Date Drilled: 6/30/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
	■	46.53	17.8	109.4		65			Sandy SILTSTONE: pinkish-brown with some green-gray mottling @ 61 feet, becomes olive-brown @ 64-65.2 feet, red-brown and gray-green laminations @ 65.2 feet, Ash bed, medium green-gray, 5-12 inches thick: N25W,15SW
						70		BEDROCK	Silty SANDSTONE: very fine-grained, light yellowish-gray, very slightly cemented @ 68 feet, becomes bluish-gray, still very fine-grained @ 70 feet, grades to fine-grained Silty SS @ 70.5 feet, becomes pinkish-gray with greenish-gray mottling and some dark red-brown laminations; more Silty
						75			Sandy SILTSTONE: medium olive-brown with some pink and pinkish-gray specks @ 75 feet, some thin pinkish-gray ash laminations VAQUEROS-SESPE FORMATIONS
						80			Bottom of Boring at 77 feet. Notes: 1) Seepage at 57 feet. 2) No caving. 3) Boring down-hole logged and backfilled.
						85			

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Project No.: 4816-04

Figure No.: B-8.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ Bore 120	24 inches	1451 feet	BC-8
Date Drilled: 7/5/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0			Silty CLAY: light gray-brown, dry, loose COLLUVIUM
									@ 3 feet, Clayey SILTSTONE: dark gray-green, thinly laminated, moderately hard and moderately well cemented; Bedding: N45W,31NW
									@ 3.2 feet, Bentonite: pinkish-gray, soft, moist,
						5			@ 5.2 feet, Joint, open, infilled with blocky SILTSTONE Attitude: N32E,76SE
									@ 6 feet, SILTSTONE becomes olive-brown to dark green; increasingly fractured at 9 feet
									@ 9.7 feet, Fracture Attitudes: N53W,57NW,N26E, 71SE
	■		10.3	118.7		10			
									@ 13 feet, Silty SANDSTONE: fine-grained, dark reddish-brown, moderately hard, slightly cemented, micaceous
						15			@ 14.5 feet (1/2 foot thick) thinly laminated, interbedded dark green Sandy SILTSTONE
									@ 15 feet, SANDSTONE becoems pinkish-brown, highly micaceous, poorly cemented
									@ 15.9-17.4 feet, becomes uncemented and loose
									@ 18 feet, becomes very light greenish-gray, increasingly cemented
	■		23.6	96		20			@ 18.5 feet, Bedding: N70W,13NE
									@ 20 feet, SILTSTONE: dark grayish-green, hard and well cemented
									@ 20.4 feet, becomes dark reddish-brown, broken
									@ 20.6 feet, Silty CLAY: olive-brown, very moist, soft to medium stiff, polished, somewhat sheared but unstriated, irregularly bedded
						25			@ 21.4 feet, Rupture Surface: sheared, polished, soft CLAY, 1/2 inch thick: N50W,32SW; striations, N31E (S31W)
									Sandy SILTSTONE: olive-brown, moderately hard, well cemented, non-micaceous, N10W,13NE
									@ 25 feet, Silty SANDSTONE: fine-grained, dark reddish-brown, cemented, hard, micaceous

LANDSLIDE MATERIAL

LANDSLIDE?

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Figure No.: B-9.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1451 feet	BC-8
Date Drilled 7/5/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						35		LANDSLIDE?	@ 31.8 feet, seepage @ 34.3 feet, Sandy SILTSTONE: dark reddish-brown to grayish-green, moderately hard, micaceous, cemented in part @ 34.8 feet, becomes olive-brown, less cemented @ 35.6 feet, standing ground water @ 38 feet, heavy ground water encountered
						40			@ 39 feet, Silty SANDSTONE: fine-grained, yellow brown, poorly cemented with somewhat weathered, very moist to saturated, possible caving in boring LANDSLIDE? @ 43 feet, becomes somewhat cemented @ 44 feet, becomes well cemented, hard @ 45 feet, grades to Sandy SILTSTONE: dark reddish-brown to dark grayish-green, soft to moderately hard, appears weathered and micaceous
						45		BEDROCK	
						50			Sandy SILTSTONE: olive-brown, moderately hard, somewhat cemented @ 48 feet, becomes very hard
	81.74	13.2	119.4						
						55			@ 55 feet, becomes dark grayish-green, brittle, less cemented, hard where intact, highly micaceous @ 57 feet, SILTSTONE: olive-brown, very hard, cemented

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Figure No. 5

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation	Boring Number
EZ Bore 120	24 inches	1451 feet	BC-8
Date Drilled: 7/5/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						65			@ 64 feet, becomes grayish-green, with minor amounts of pinkish-gray, moist ASH @ 66 feet, greenish-gray to grayish-green, very hard
	18.6					70			Silty SANDSTONE: fine-grained, light greenish-gray, hard, highly micaceous
						75		BEDROCK	Sandy SILTSTONE: dark grayish-green, hard, well cemented, dark reddish brown CLAY inclusions present in matrix (<5%) @ 74 feet, inclusions increasing to 8-10% @ 76 feet, becomes very hard, interbedded alternating SILTSTONE and SANDSTONE
						80			Silty SANDSTONE: fine-grained, light greenish-gray very hard, well cemented
						85			Sandy SILTSTONE: pinkish-brown, thinly laminated, very hard, intermixed with dark grayish-green SILTSTONE @ 81.5 feet, becomes dark grayish-green @ 82.5 feet, becomes light yellow-brown, very hard moderately well cemented bed, non-micaceous @ 85 feet, thinly layered reddish fine-grained SAND lenses present

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Project No.: 4816-04

Figure No.: B-9.3

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
EZ Bore 120	24 inches	1451 feet	BC-8
Date Drilled: 7/5/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									@ 91 feet, heavy caliche-banding present; SILTSTONE still hard but somewhat broken
									@ 92 feet, SILTSTONE (siliceous), very hard but broken and fractured (according to driller)
									@ 93 feet, Silty CLAY: dark grayish-green, very moist, medium stiff to stiff, (2-4 inches thick) Est. by spoil pile observ. appears somewhat sheared
		55.24	20.0	104.1		95			
									@ 94 feet, SILTSTONE: olive-brown to yellow-brown, hard, interlayered with moist bentonitic ASH
									@ 96 feet, Silty SANDSTONE: fine-grained, reddish, uncemented to slightly cemented, moderately hard, intermixed with moist bentonitic ASH
						100		BEDROCK	@ 98 feet, Sandy SILTSTONE: dark grayish-green, poorly to moderately well cemented, moderately hard, micaceous
									@ 100 feet, becomes SILTSTONE: olive-brown, moderately well cemented, very hard
									@ 105 feet, becomes micaceous, hard
						105			VAQUEROS/SESPE FORMATION
									Bottom of Boring at 105 feet.
									Notes:
									1) Heavy ground water at 38 feet.
									2) Ca ving at 38 feet.
									3) Boring downhole logged to 32 feet, then backfilled.
						110			
						115			

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County of Orange, California

Project No. 4816-04

Figure No.: B-9.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9

Date Drilled: 7/6/95 AK

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						5	ML		Clayey SILT: light gray-green, poorly cemented, possibly weathered bedrock COLLUVIUM @ 5.8 feet, Silty CLAY: dark grayish-green to olive-brown, very moist, soft to medium stiff; fragments of broken hard Siltstone intermixed @ 6 feet, becomes stiff
							CL		@ 7.8 feet, becomes very moist to saturated, softer, highly micaceous @ 9 feet, becomes dark blue-gray
						10			@ 10.2 feet, Clayey SILTSTONE: olive-brown, highly weathered, but stiff @ 11.1 feet, becomes less weathered, harder @ 12 feet, becomes dark gray-green, well cemented, poorly bedded @ 13.2 feet, becomes olive-brown, more pure SILTSTONE @ 13.5 feet, Bedding: N75E,36NW @ 15.6 feet, becomes highly weathered, almost soil form, pockets of soft wet areas within remaining stiffer mass; irregularly bedded, nearly cahotic @ 17.2 feet, light seepage @ 20.3 feet, Bedding: N25E,31NW @ 20.5 feet, becomes dark grayish-green, well cemented, hard @ 22 feet, becomes olive-brown @ 22.5 feet, Bedding: N75W,27NE @ 23.6 feet, becomes highly weathered, very moist, medium stiff to stiff @ 24.6 feet, Bedding: N65W,44NE @ 25.3-31.8 feet, Shear Zone with intersecting fractures, generally restricted to east side of boring @ 26 feet, Seepage @ 27 feet, open fracture or caved area (massive) intersecting bedding in fracture N17E,31NW, N29E,19NW, caved/fracture zone = 3' wide, x 4.5' long by 3' deep, heavy seepage present; fractured infilled with melange of (continued)
						15			
						20		LANDSLIDE	
						25			
	<5.74	20.0	101.1						

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Figure No: 3 of 5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9

Date Drilled: 7/6/95 AK

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU.FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35			SANDSTONE, SILTSTONE, CLAY, highly chaotic vertical joint or fault = N87W, 76NE
	☐☐	<4.30	23.9	98.3		40			
						45		LANDSLIDE	
						50			
						55			@ 58 feet, Sandy SILTSTONE: olive-brown, moderately well cemented, moderately hard, non-micaceous

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Figure No.: B-10.2

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9
Date Drilled: 7/6/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	24.82		9 23.7	101.8					@ 61 feet, slight seepage present @ 62.5 feet, less cementation, crumbly @ 63 feet, Bentonitic CLAY Zone: 6 inches thick est., very moist, pinkish-gray, intermixed with polished faintly striated SILTSTONE @ 63.5 feet, Sheared Silty CLAY intermixed with broken Siltstone fragment, polished, very moist, dark grayish-green, abundant bentonitic ASH, Shear Attitude: N43E,31NW
						65			@ 65 feet, Sandy SILTSTONE: dark greenish-gray, hard, well cemented but broken and fractured @ 66.5 feet (1" est), thick polished CLAY Seam, interbedded with Siltstone (cemented) matrix @ 68 feet, 2-3 inch thick hard/stiff bentonitic layer, moist
						70		LANDSLIDE	@ 69 feet, Silty SANDSTONE: fine-grained, light grayish-green, poorly cemented, damp, moderately hard, highly micaceous @ 70 feet, becomes well cemented, hard @ 71 feet, becomes dark grayish-green @ 73 feet, olive-brown, Silty CLAY layer present, very moist, soft to medium stiff, unpolished @ 74 feet, Clayey SILTSTONE: dark grayish-green, well cemented, hard, polished on fresh surfaces @ 75 feet, Clay seam 1/2 inch thick, unpolished, unstriated @ 76.4 feet, Bentonitic Clay 3 inches thick, very moist, soft, sheared, N31W,21NE, brittle, polished LANDSLIDE DEBRIS
						75			
	77.55	-	-			80		BEDROCK	@ 77 feet, Sandy SILTSTONE: olive-brown, moderately hard, cemented, hard, highly micaceous @ 81 feet, becomes pinkish-brown, fine- to medium-grained @ 86 feet, Clayey SILTSTONE: olive-brown, moderately well cemented, hard, micaceous @ 87 feet, less hard, non-micaceous
						85			

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Project No: 4816-04 Figure No: B-11

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9
Date Drilled: 7/6/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95
100
105
110
115

BEDROCK

@ 94 feet, Silty SANDSTONE: dark gray-brown, fine-grained, well cemented, very hard, highly micaceous
@ 95.5 feet, becomes pinkish-brown
@ 96 feet, becomes dark greenish-gray with dark blue-gray, cemented, very hard
@ 97 feet, Clayey SILTSTONE: olive-brown to yellow-brown, moderately well cemented, moderately hard non-micaceous

@ 106 feet, becomes very hard

@ 107 feet, Silty SANDSTONE: fine-grained, dark grayish-green, hard, slightly cemented, non-micaceous
@ 109 feet, Clayey SILTSTONE: olive-brown, moderately hard, moderately well cemented, micaceous
@ 112 feet, Siliceous Siltstone Bed (possible marker with BC-8) 6" to 1' thick, olive-brown, broken
@ 113 feet, Sandy SILTSTONE: olive-brown, hard, moderately well cemented
@ 117 feet, Clayey SILTSTONE: dark grayish-green to light pinkish-gray, well cemented, hard, thinly laminated
VAQUEROS/SESPE FORMATION

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Project No: 4816-04
Figure No: B-10.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9

Date Drilled	
7/6/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

BEDROCK

125
130
135
140
145

Bottom of Boring at 125 feet.

Notes:

1) Boring drilled to 65 feet on 7/6/95; on 7/7/95 it had caved to 31".
2) Seepage at
3) Caving at
4) Boring left open on 7/7/95; on 7/10/95 boring depth was 28'. Hole left open and covered.
5) Boring backfill on 7/11/95.

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Project No. 4816-04

Figure No. B-10.5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1072 feet	BC-10
Date Drilled: 7/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
								CL	Sandy CLAY: gray-brown, moist, stiff
									@ 2 feet, lighter colored, more Sandy
									OLDER ALLUVIUM
						5		ML	Clayey Sandy SILT: brown to yellowish-brown, moist, stiff, some red-brown and yellow mottling
									@ 4.5 feet, scattered Siltstone fragments
									@ 9 feet, more Clayey, more moist, some thin SAND laminations
						10			@ 12 feet, becomes grayish-brown and soft with 1/4 inch lenses of reddish Silty CLAY
									@ 14 feet, becomes very moist to saturated
									@ 15 feet, stiffer
						15			@ 18 feet, becomes light yellowish- to greenish-brown, very moist and soft
									OLDER ALLUVIUM
	T	<5.74	24.4	98.3		20		SM	Clayey Silty SAND: fine- to medium-grained, yellowish-brown, saturated to wet, seepage
									OLDER ALLUVIUM
								CL	Silty CLAY: dark brown, very moist, stiff, some Siltstone fragments
						25			@ 25 feet, scattered inclusions of dark reddish-brown Silty SAND
									@ 27 feet, seepage
									@ 27.5 feet, stiffer
									@ 28.5 feet, becomes soft, loose
									OLDER ALLUVIUM

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Project No.: 4816-04

Figure No.: B-11.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1072 feet	BC-10
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
7/11/95 GDH			

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
							CL		Silty SANDSTONE: fine- to medium-grained, light greenish-gray, very weathered. slightly Clayey, very moist, medium dense
									@ 32 feet, becomes light gray
						35			@ 35 feet, becomes light yellow-brown with lenses of CLAY and less moisture
									@ 35.5 feet, stiffer, altelrnate beds of yellow-brown and greenish-gray CLAY
									Clayey SILTSTONE: bluish- to greenish-gray, weathered, moist, medium stiff to stiff
									@ 37.5 feet, becomes darker
	I	17.21	19.2	110.8		40			@ 40 feet, heavy seepage
								LANDSLIDE MATERIAL	Silty SANDSTONE: fine-grained, dark greenish-gray, hard, moist, micaceous
						45			Sandy SILTSTONE: dark greenish-gray, micaceous, stiff
						50			
						55			Silty SANDSTONE: fine-grained, dark greenish-gray, micaceous

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Project No.: 4816-04

Figure No.: B-11.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1072 feet	BC-10

Date Drilled: 7/11/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
	■	24.82	21.6	104.9					Sandy SILTSTONE: dark greenish-gray
									@ 61 feet, reddish-brown Clayey SILTSTONE Bed
						65			@ 64 feet, light greenish-gray Silty SANDSTONE Bed
						70			@ 68 feet, light greenish-brown SILTSTONE Bed, moist, very stiff @ 69 feet, medium olive brown with some cemented nodules, less Sandy @ 70 feet, dark greenish-gray with red oxide spots and more Sandy, very moist, and a greenish-gray CLAY Bed @ 72 feet, red-brown SILTSTONE Bed @ 73 feet, moderately thick greenish-gray, plastic CLAY @ 74 feet, becomes more Sandy with some red-brown SILTSTONE Beds
						75			Silty SANDSTONE: fine- to medium-grained, light to medium greenish-gray, arkosic, very dense @ 79 feet, finer and mostly light greenish-gray with slight pink tinge
						80			@ 82 feet, some color as at 79 but no pink @ 84 feet, slightly darker
						85			Bottom of Boring at 85 feet. Notes: 1) Seepage at 20, 27 and 40 feet. 2) Intense caving from 20-32 feet. 3) Down-hole logged to 20 feet.

LANDSLIDE MATERIAL

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Project No. 4816-04

Figure No. B-11.3

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11
Date Drilled: September 25, 1995 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

Siltstone: light grayish-brown, weathered, brittle, moderately well cemented, poorly bedded

@ 1 foot, becomes pinkish-gray

@ 3 feet, becomes light grayish-green to grayish-brown, increasingly brittle

@ 4.1 feet, Bedding: N49W,21NE

@ 5 feet, Silty SANDSTONE: very fine-grained, dark blue-gray, moderately hard, highly micaceous

@ 6 feet, SILTSTONE: dark grayish-green, moderately hard, micaceous, somewhat fractured

@ 8.7 feet, Fracture: N85E,76SE, well cemented and hard

@ 10.4-10.9 feet, Sheared SILTSTONE: moderately hard, polished, faint striations, strongly defined on fresh surfaces; base comprised of soft/loose, brittle moist SILTSTONE; Rupture Surface: N71W,27NE; Striations: N51E

@ 10.9 feet, SILTSTONE: dark grayish-green, well cemented, moderately hard, micaceous, somewhat broken

@ 12.6-13.0 feet, Siliceous SILTSTONE Bed: light reddish-brown to dark grayish-green, fracture and broken; Bedding: N21W,27NE

@ 15.1-16.4 feet, Fault: N41E,52NW, infilled with dry pinkish-gray ASH, loose intermixed with broken Siltstone fragments

@ 16.4 feet, Silty SANDSTONE: fine-grained, light gray, moderately well cemented, poorly bedded, massive, moist

@ 17.9 feet, becomes light grayish-green to light yellow-brown, dry, poorly cemented and somewhat weathered and crumbly

@ 23.9 feet, grades to dark grayish-green yellow banding; better cemented, poorly bedded

LANDSLIDE

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Project No: 4816-04

Figure No: B-5.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11
Date Drilled: September 25, 1995 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH FEET | SOIUROCK SYMBOL | SOIUROCK TYPE | Description and Remarks

35

@ 30 feet, becomes well cemented, hard
@ 31.8 feet, light yellow-brown to very light yellow-gray
@ 34.5 feet, Bedding 1/8 inch SILTSTONE Seam: N41E,31NW
@ 38 feet, Sandy SILTSTONE: dark grayish-green, very well cemented, hard, highly micaceous, massive, poorly bedded
@ 39.5 feet, grades to dark reddish-brown to reddish-gray, increasingly micaceous, very hard

40

@ 41 feet, Silty SANDSTONE: fine-grained, dark grayish-green, well cemented, very hard, highly micaceous, poorly bedded

@ 42.6 feet, Sandy SILTSTONE: dark reddish-brown, very well cemented, hard, poorly bedded, somewhat micaceous

45

@ 51.5 feet, open intersecting fracture zone: 2-3 inches: Fracture: N70E,85SE,N45W,61SW
@ 51.8 feet, Bedding: N60W,32NE; faint polishing and possible striations along bedding ranging from N28E to N2W
@ 52.5 feet, Shear Zone: with broken sheared polished strongly defined, striated, moderately hard SILTSTONE
@ 55.1-55.3 feet, becomes light orange-brown to pinkish-brown; Rupture Surface: N49W,24SW; Striations S40W toS70W

50

@ 56-56.3 feet, becomes increasingly Clayey
@ 58.5-59.3 feet, Basal Rupture Surface: sheared CLAY Gouge: pinkish-brown to dark gray, very moist, soft to medium stiff, polished, internally sheared, striated, very plastic N45W,19 to 23SW; Striations S45W

LANDSLIDE

55

LANDSLIDE DEBRIS

@ 59.3 feet, Silty SANDSTONE: very fine-grained, dark bluish-gray, well cemented, hard

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County of Orange, California

Project No 4816-04

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11
Date Drilled: September 25, 1995 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

65
70
75
80
85

BEDROCK

@ 62 feet, becomes medium gray, non-micaceous
@ 66.9 feet, Sandy SILTSTONE: dark reddish-brown, very well cemented, very hard, massive and poorly bedded, micaceous
@ 68.2-68.6 feet, Silty SANDSTONE: very fine-grained, light gray, well cemented, hard

@ 70.8 feet, light seepage present, south side
@ 71.9-72.6 feet, SILTSTONE: dark reddish-brown, very well cemented, very hard, poorly bedded and massive
@ 72.6 feet, Silty SANDSTONE: dark bluish-gray, very hard, well cemented, somewhat micaceous
@ 75.3 feet, becomes light grayish-green

@ 82.6 feet, moderate seepage
@ 82.6-83.7 feet, Siliceous SILTSTONE Bed: N45E,19NW

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Project No 4816-04 Figure No B-12.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		
September 25, 1995 AK			

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

100

105

110

115

BEDROCK

@ 92 feet, SILTSTONE: dark reddish-brown, well cemented, very hard, micaceous

@ 102.5 feet, becomes Siliceous, broken and somewhat fractured, pinkish-gray

@ 107 feet, becomes light gray-brown to light gray, very hard and cemented

@ 109 feet, abundant heavy seepage; standing water at 116 feet

VAQUEROS-SESPE FORMATION
(Undifferentiated)

Bottom of Boring at 120 feet.
Notes:
1) No caving.
2) Seepage at 70.8 and 82.6 feet.
3) Standing water at 116 feet.
4) Boring downhole logged to 111 feet.
5) Boring backfilled and tamped.

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Project No 4816-04

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
10/2/95 GDH			

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Silty CLAY: dark gray-brown, moist, stiff COLLUVIUM
									Clayey SILTSTONE: light greenish-brown, very broken @ 3-5 feet, medium greenish-brown Silty CLAY with carbonate specks, moist, stiff; probably soft, sheared bedrock @ 5-6 feet, Clayey SILTSTONE: medium greenish-brown, very closely fractured, blocky
						5			Sandy SILTSTONE: olive-brown, closely fractured @ 9 feet, dark gray with red specks and more Sandy
						10			
		40.19	9.8	126.7					Silty SANDSTONE: fine-grained, medium greenish-gray with some red mottling @ 11-12 feet, red mottling, more intense and darker @ 13-15 feet, reddish-gray with green mottling; still fine-grained
						15			Sandy SILTSTONE: reddish-brown, soft at 15.5-16 feet @ 16 feet, 1/8" CLAY seam: N60W,18SW @ 16.5-17.5 feet, darker red-brown
						20			Silty SANDSTONE: fine- to medium-grained, deep reddish-brown with green mottling @ 19 feet, 6 inch olive-brown Sandy SILTSTONE Bed: N20W,14SW @ 20 feet, becomes medium greenish-gray and slightly cemented @ 20.5 feet, thin white cemented bed @ 20.7 feet, becomes light greenish-gray @ 21-22 feet, slight seepage (walls weeping) @ 22-23 feet, cemented, greenish-gray with red-brown mottling, still fine- to medium-grained @ 28 feet, becomes light greenish-gray and slightly cemented @ 30 feet, more reddish-brown staining
		40.19	8.4	127.8		25			

BEDROCK

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Project No.: 4816-04

Figure No.: 3

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35			@ 30.5 feet, load structure @ 30.5-31.5 feet, worm tubes @ 31.5 feet, becomes light pinkish, greenish-brown @ 32-35 feet, cemented; same color as above @ 32 feet, becomes more red-brown @ 34 feet, becomes olive-brown @ 35 feet, less cemented and red-brown with green mottling @ 36-39.5 feet, cemented and greenish-gray with red-brown mottling @ 39.5 feet, dark red-brown and finer-grained
						40			@ 41-42 feet, medium green-gray with dark green laminations
	⊢	34.42	12.0	103.8		45		BEDROCK	Sandy SILTSTONE: reddish-brown, very stiff, some thin green SANDSTONE beds @ 43 feet, thin SS bed: N20W,12SW @ 43.3 feet, thin apple green SS bed @ 44-45.8 feet, Ash bed, green-gray with red strings @ 44.5 feet, Ash bed becomes olive-brown @ 45.8 feet, lower contact: N20W,16SW; thin green SS bed at base and red-brown Sandy SILTSTONE with green mottling below @ 50 feet, becomes olive-brown with red mottling @ 52-53.5 feet, some cemented nodules in red-brown with green mottling @ 53.5 feet, becomes light greenish-gray and less Sandy
						50			
						55			@ 57 feet, becomes olive-brown @ 58 feet, thin cemented bed @ 58.1 feet, becomes light greenish-gray @ 58.5-60.5 feet, well laminated and some wavy bed @ 59 feet, Bedding: N25W,17SW

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Project No: 4816-04

Figure No: B-12.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

@ 60.5 feet, red-brown with green-gray mottling
@ 62 feet, becomes less Sandy
@ 63-64 feet, olive-brown
@ 64-65 feet, red-brown and more Sandy

65

Silty SANDSTONE: fine- to medium-grained, reddish-brown with green mottling

@ 68 feet, thin green SANDSTONE Bed: N22W,14SW
@ 68.8-69.2 feet, olive-brown with red streaks
ASH Bed: N20W,13SW
@ 68.8-69.2 feet, Sheared, olive-brown CLAY Bed with dull to moderately polished, somewhat irregular shear surface at base: N20E,16NW; no striations
@ 69.2 feet, becomes greenish-gray, fine Silty SS
@ 70 feet, becomes fine- to medium-grained

70

Sandy SILTSTONE: greenish-gray to olive-brown with green mottling
@ 74 feet, becomes lighter colored

75

Silty SANDSTONE: fine- to medium-grained, light greenish-gray, with white carbone cementation
@ 75.5-78 feet, cemented
@ 78 feet, becomes very fine and light to medium greenish-gray
@ 80 feet, grades to Sandy SILTSTONE

BEDROCK

80

Sandy SILTSTONE: light greenish-gray, very stiff
@ 81-82 feet, less Sandy with red-brown oxide staining
@ 82 feet, becomes more Sandy with less red-brown oxidization
@ 84 feet, some white carbonate nodules and mostly red oxide-stained with green-gray mottling

85

Silty SANDSTONE: fine-grained, red-brown with green mottling
Sandy SILTSTONE: olive-brown with red-oxide staining
@ 88.5-89 feet, some cemented nodules

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Project No. 4816-04

Figure No.: B-13.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

Silty SANDSTONE: olive-brown
Sandy SILTSTONE: red-brown, very stiff
@ 91 feet, 8 inch gray SILTSTONE Bed with cemented nodules
@ 91.7 feet, olive-brown
@ 92.5 feet, thin cemented bed: N15W,13SW
@ 93.5 feet, becomes medium greenish-brown, very stiff
@ 95 feet, dark greenish-gray
@ 96.5 feet, olive-brown
@ 97.5 feet, becomes less Sandy
@ 98 feet, becomes dark greenish-gray and more Sandy

100

Silty SANDSTONE: fine-grained, dark greenish-gray, very dense
@ 100.5-104.2 feet, very slight seepage from SANDSTONE

105

Sandy SILTSTONE: dark greenish-gray

@ 107 feet, 2 inch cemented bed
@ 107.5-108.5 feet, cemented SANDSTONE Bed
@ 108-108.5 feet, cemented bed, laminations: N20W,14SW

110

@ 112 feet, less Sandy

@ 117 feet, thin cemented bed
@ 117-118 feet, some light gray and dark green laminations
@ 118 feet, 2 inch green SANDSTONE bed
@ 118.2-118.8 feet, Clayey SILTSTONE Bed or ASH Bed: greenish-gray to olive-brown

115

Silty SANDSTONE: fine- to medium-grained, medium greenish-gray

BEDROCK

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Project No.: 4816-04

Figure No.: B-13.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

Depth, Feet	Description and Remarks
	@ 121 feet, lighter colored
	Sandy SILTSTONE: medium to dark greenish-gray, slightly cemented
	@ 123.7 feet, cemented nodules and more Sandy
125	@ 126.5-127.5 feet, cemented SANDSTONE Beds
	@ 128.5-129.5 feet, thin cemented beds
130	@ 130 feet, 4 inch cemented bed
	@ 133-133.5 feet, cemented nodules, becomes more Sandy and darker green-gray
135	Silty SANDSTONE: fine-grained, medium- to dark greenish-gray, very dense, slightly cemented
	@ 138.5 feet, 3 inch pinkish-gray, irregular cemented bed
140	Sandy SILTSTONE: dark greenish-gray, very stiff
	@ 141.5-142.5 feet, laminated, less Sandy
	Silty SANDSTONE: fine-grained, dark greenish-gray
145	@ 148 feet, becomes finer and slightly cemented, slow drilling

BEDROCK

County

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Project No 4816-04

Figure No. B-12.5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

155
160
165
170
175

BEDROCK

VAQUEROS-SESPE FORMATION

Bottom of Boring at 155 feet.

Notes:

1) Slight seepage at 21, 101 and 121 feet.
2) No caving.
3) Boring down-hole logged and backfilled.

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Project No.: 4816-04

Figure No.: B-12.6

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled: 10/4/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU.FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOILROCK SYMBOL | SOILROCK TYPE | Description and Remarks

Depth, feet	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
	CL		Silty CLAY: dark gray, damp to moist, stiff COLLUVIUM
5			Clayey SILTSTONE: olive-brown, well bedded, very closely fractured, lots of white carbonate @ 5 feet, Bedding: N-S,16W @ 7 feet, Contact: N20W,15SW VAQUEROS-SESPE FORMATION
10			Silty SANDSTONE: dark to medium green-gray, micaceous, fine-grained @ 8.5 feet, thin white SAND Bed: N20W,17SW @ 9 feet, becomes fine- to coarse-grained, light green-gray and less micaceous
			Sandy SILTSTONE: medium to dark green-gray, very stiff
15		BEDROCK	Silty SANDSTONE: very fine-grained, light green-gray, thinly laminated and some wavy bedding Sandy SILTSTONE: greenish-gray, thinly laminated Silty SANDSTONE: very fine-grained, medium greenish gray
			Sandy SILTSTONE: medium greenish-gray, very stiff
20			Silty SANDSTONE: fine-grained, light to medium green-gray, thinly laminated to 20.5 feet @ 22.5 feet, becomes dark gerenish-gray @ 23-29 feet, Irregular Fracture: N80W,80SW; vertical; N80W,80NE, some open portions to 3/8 inch @ 28-29 feet, Sandy SILTSTONE @ 29 feet, Ash Bed: N-S,11W; 2 inches thick, light brown, fine-grained and green-gray to olive-brown below @ 30 feet, lighter colored and micaceous @ 32 feet, becomes finer
25			

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Project No 4816-04

Figure No : 3 of 5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		
10/4/95 GDH			

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | *Description and Remarks*

35
40
45
50
55

BEDROCK

Sandy SILTSTONE to very fine Silty SANDSTONE: light greenish-gray
@ 34 feet, tight fracture: N75W,85SW

@ 48 feet, white cemented nodules and worm tubes
@ 48-49 feet, less Sandy

@ 51 feet, white cementation and small Siltstone ripups

Sandy SILTSTONE: dark greenish-gray to olive-brown very stiff
@ 53 feet, more Sandy
@ 54 feet, grades to SS
Silty SANDSTONE: very fine-grained, pale greenish-gray, very dense
@ 57-57.5 feet, cemented nodules
@ 57.5-59.5 feet, Arkosic SANDSTONE: fine-grained, very light gray to white with pinkish-brown blotches, friable, some thin laminations and cross bedding

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Project No: 4816-04
Figure No: B-11

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled. 10/4/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ.FT. | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | *Description and Remarks*

65

70

75

80

85

BEDROCK

Sandy SILTSTONE: dark greenish-gray, very Sandy
@ 62-64 feet, lighter colored, more Sandy
@ 64 feet, less Sandy
@ 66 feet, cemented zone , olive-brown
@ 68 feet, darker, less Sandy
@ 71 feet, more Sandy
@ 72 feet, less Sandy, cemented at 72.8 feet
@ 73 feet, 4-6 inch ASH Bed, olive brown: N15W,11SW
@ 73.5 feet, 3 inch light gray SANDSTONE Bed

Volcanic ASH: olive brown to pinkish-brown with pink mottling at base, very stiff

Sandy SILTSTONE: olive-brown, very stiff
@ 78 feet, Less Sandy

Silty SANDSTONE: fine-grained, gray to olive brown
@ 82-83.5 feet, coarser and very slight seepage

Sandy SILTSTONE: olive brown

SILTSTONE: olive brown, very stiff
@ 88 feet, becomes dark greenish-gray
@ 89.5 feet, cemented nodules
@ 89.5-90 feet, olive brown
@ 90-91 feet, dark greenish-gray

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Project No 4816-04

Figure No: B-14.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13

Date Drilled: 10/4/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

Sandy SILTSTONE: dark green-gray, very slight seepage (spot)

Silty SANDSTONE: very fine- to fine-grained, dark greenish-gray, some cementation
@ 92 feet, very slight seepage (spot)
@ 93 feet, becomes medium brown

Sandy SILTSTONE: dark greenish-gray

SILTSTONE: brown to olive-brown, very stiff
@ 97.5 feet, 2 inch cemented bed N-S,10W

100

Sandy SILTSTONE: dark olive-brown
@ 99.5 feet, becomes dark green-gray and more Sandy

@ 102 feet, dark olive-brown and less Sandy
@ 104 feet, more Sandy

105

BEDROCK

@ 108 feet, becomes dark greenish-gray
@ 109 feet, less Sandy

110

Volcanic ASH: pinkish-gray to pinkish-greenish-gray, very dense

Sandy SILTSTONE: dark greenish-gray, very stiff
@ 111-112 feet, brown and less Sandy
@ 112-113 feet, olive brown then dark green-gray and more Sandy
@ 113.3-114 feet, dark green-gray Silty SANDSTONE bed
@ 114.5 feet, becomes olive brown
@ 118.5 feet, becomes more Sandy and lighter colored

VAQUEROS-SESPE FORMATION

115

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Project No. 4816-04

Figure No. B-14.4

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		
10/5/95 GDH			

SAMPLE

BULK	TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						125			Bottom of Boring at 120 feet.
						130			Notes:
						135			1) Very slight seepage at 83.5 and 92 feet.
						140			2) No caving.
						145			3) Boring down-hole logged and backfilled.

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Project No. 4816-04

Figure No.

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
10/5/95 GDH			

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0	CL		Silty CLAY: gray-brown, stiff, roots TOPSOIL
									Clayey SILTSTONE: greenish-gray, well bedded, closely fractured @ 2-4 feet, Sandy SILTSTONE: reddish-gray, some thin gray-green SANDSTONE Beds VAQUEROS-SESPE FORMATION
						5			Silty SANDSTONE: fine- to medium-grained, light greenish-gray, arkosic @ 6 feet, thin red-gray SILTSTONE Bed: N10W,14SW @ 7-8.5 feet, reddish-gray SILTSTONE Bed with green SANDSTONE laminations at base @ 8.5 feet, becomes pale greenish-white @ 9 feet, becomes light pinkish-brown @ 9-9.5 feet, reddish-gray SILTSTONE rip-ups @ 10-11 feet, worm tubes or filled burrows @ 11 feet, becomes pale greenish-brown with pink mottling @ 13-14.5 feet, irregular pinkish-gray, thin layers of Silty SANDSTONE @ 16 feet, becomes slightly cemented @ 17 feet, becomes predominantly pinkish-gray with plae greenish-brown mottling and still slightly cemented @ 19 feet, worm tubes @ 20 feet, becomes finer-grained with some light gray and reddish-gray, micaceous laminations and some wavy bedding, less cemented @ 22.5 feet, becomes coarser @ 23 feet, Bedding: N20W,15SW @ 24 feet, SILTSTONE rip-ups in pinkish SAND-STONE @ 24.5 feet, 1 inch dark red-brown SILTSTONE Bed: N20W,12S @ 25-27 feet, SILTSTONE rip-ups in pinkish SANDSTONE: fine to medium, pale green-gray and light pink-gray ark. SANDSTONE with cross bedding
						10			
						15			
						20			
						25			Sandy SILTSTONE: medium to dark reddish-gray with light green=gray mottling SILTSTONE: dark olive-brown with red mottling and specks, very stiff
	22.97	7.6	119.6						
	63.16	7.2	120.9						

BEDROCK

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County of Orange, California

Project No: 4816-04

Figure No: B-15

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
10/5/95 GDH			

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
		40.19	13.4	121.5					Sandy SILTSTONE: medium to dark reddish-gray with light green-gray mottling
									SILTSTONE: dark olive-brown with red mottling and specks, very stiff
									Sandy SILTSTONE: red-gray with green-gray mottling
						35			@ 33 feet, becomes more Sandy
									@ 33.5 feet, 6 inch very fine Silty SANDSTONE Bed, dark red-brown
									@ 34-35 feet, very Sandy SILTSTONE: dark red-brown
									SILTSTONE: reddish- to olive-brown, very stiff
						40			Sandy SILTSTONE: red-brown, very stiff
									@ 37 feet, olive-brown
									@ 38.4 feet, light greenish-gray with some red-brown mottling
									@ 39 feet, 6 inch cemented bed: N18W,14SW
									@ 39.5 feet, red-brown mottling
									@ 42 feet, thin cemented bed and becomes olive-brown
						45			@ 43-43.5 feet, thin cemented beds
		52.93	15.2	119.5					@ 44-45 feet, very thin laminations of fine, light gray SAND
									@ 45.5 feet, becomes darker and less Sandy
									@ 46 feet, some cemented nodules
									@ 46-46.5 feet, mostly reddish-gray, then becomes dark olive-brown
									@ 47.5 feet, grades to Sandy SILTSTONE
						50			Silty SANDSTONE: fine-grained, olive-brown and reddish-gray, micaceous
									@ 49.5-51 feet, mostly red-gray
									@ 51 feet, becomes coarser and lighter colored
									@ 51.5 feet, becomes olive-brown, still micaceous
									@ 52.5 feet, 2 inch green-gray SANDSTONE Bed
						55			SILTSTONE: dark olive-brown, with cemented nodules in upper half and red-brown at base
									Silty SANDSTONE: fine-grained, medium green-gray with 3 inch SANDSTONE Bed
									@ 55.7 -56.2 feet, SILTSTONE Bed
									@ 56.2 feet, 1/2-1 inch pinkish-gray and greenish-gray ASH Bed: N22W,12SW; party remolded, no basal shear

BEDROCK

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Saddleback Meadows
County of Orange, California

Project No: 4816-04

Figure No: B-15.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
10/5/95 GDH			

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

65
70
75
80
85

BEDROCK

@ 56.3 feet, becomes fine- to medium-grained, pale green-gray, thinly laminated with low angle cross bedding to 57.8 feet
@ 57.8 feet, 2 inch olive-brown ASH Bed

Sandy SILTSTONE: dark red-brown with green-gray mottling
@ 59 feet, predominantly medium olive-brown
@ 58.5-60 feet, some cemented nodules

Silty SANDSTONE: fine-grained, some cemented nodules
@ 60-60.7 feet, cemented bed, red-brown
@ 61.7 feet, 4 inch cemented bed, very micaceous and dark reddish-gray and very fine-grained, medium gray below
@ 63 feet, more Silty
@ 63.5 feet, less Silty

Sandy SILTSTONE: greenish-gray
@ 65.8 feet, becomes red-brown with green-gray mottling and more Sandy

Silty SANDTSTONE: very fine-grained, red-brown, micaceous

Sandy SILTSTONE: dark olive-brown, very stiff
@ 69 feet, lighter colored and more Sandy
@ 69.7 feet, infilled burrows and light pink

Silty SANDSTONE: medium olive-brown
@ 72 feet, 6 inch SILTSTONE Bed: olive-brown with cemented nodules
@ 74.5-75 feet, coarser
@ 75 feet, becomes very fine-grained

Sandy SILTSTONE: olive-brown with cemented nodules, very stiff
@ 82 feet, more Sandy and dark olive-brown
@ 84 feet, grades to Silty SANDSTONE

Silty SANDSTONE: very fine-grained, very dense
@ 85 feet, becomes fine-grained

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Saddleback Meadows
County of Orange, California

Project No	Figure No.:
4816-04	B-15.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14
Date Drilled: 10/5/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95
100
105
110
115

BEDROCK

Sandy SILTSTONE: olive-brown, very stiff

Silty SANDSTONE: very fine-grained, olive-brown, micaceous
@ 91.2-91.8 feet, white and gray SAND laminations
@ 92.7-93 feet, dark olive Sandy SILTSTONE with thin SAND laminations

Volcanic ASH? olive brown with very thin white SAND laminations

Sandy SILTSTONE: olive-brown, thin SAND laminations

Volcanic ASH: dark greenish-gray to dark olive brown, very stiff, soapy texture
@ 98.3 feet, thin, pink bentonite seam: N22W15S 1/8-1/4 inch thick, appears sheared but no well developed shear surface at the base
@ 98.4-99.3 feet, some random shears

Silty SANDSTONE: fine-grained, dark olive-brown
@ 99.6 feet, becomes lighter colored

VAQUEROS-SESPE FORMATION

Bottom of Boring at 105 feet.
Notes:
1) No seepage encountered.
2) No caving.
3) Boring down-hole logged and backfilled.

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Saddleback Meadows
County of Orange, California

Project No: 4816-04

Figure No.: B-15.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1249 feet	BC-15
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0		LANDSLIDE MATERIAL	Sandy CLAY: brown, moist, stiff
									@ 4 feet, lighter colored
						5			
									@ 7-9.2 feet, becomes light greenish-gray Silty SANDSTONE with red-brown and orange mottling with soil and broken SILTSTONE and COBBLE
									@ 8-9.2 feet, gravel and cobbles in clayey matrix with Sandstone and Siltstone fragments; irregular zone
						10			@ 9.2-10 feet, orange-brown Sandy SILT
	45.94	11.9	122.3						@ 10 feet, sharp contact: N28W,15SW
									COLLUVIUM LANDSLIDE MATERIAL
									Clayey SILTSTONE: medium gray, moderately well bedded; some yellow jarosite, stiff
						15			@ 10.7 feet, becomes Sandy and lighter colored
									@ 12 feet, grades to Silty SANDSTONE
									Silty SANDSTONE: fine- to medium-grained with few coarse, angular grains, arkosic, light yellow-gray with some yellow jarosite staining
									@ 16 feet, 18 inch oval, soft weathered concretion, orange and red-brown; east side of hole
									@ 17.5-18.5 feet, cemented concretion with red-brown and orange oxide around outside; east side boring
						20		BEDROCK	@ 18.5-20 feet, orange-brown and fine- to coarse-grained with rounded gravel and 1 large cobble
	45.94	7.7	133.6						@ 20 feet, becomes light yellow to greenish-brown, fine- to medium, still arkosic
									@ 22 feet, becomes fine- to coarse-grained
									@ 24 feet, slight seepage above Clayey SS bed
						25			@ 24.5 feet, irregular, medium gray Clayey SANDSTONE
									@ 24.8 feet, becomes fine- to medium-grained and medium olive-brown, cemented to 25.2 feet, sl. below
									@ 26.5-27.5 fee,t dark green to blue-gray Sandy SILTSTONE Bed grades to Clayey SANDSTONE

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Figure No: B-16-1

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1249 feet	BC-15
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35			Clayey SANDSTONE: dark greenish-gray, fine- to medium-grained @ 31 feet, becomes lighter colored and fine- to coarse-grained @ 27-32 feet, some spalling from sidewalls @ 32 feet, becomes yellow-brown, irregular contact: approxiamtely N25W,12-15SW @ 33.5 feet, becomes coarser-grained and arkosic, damp @ 34.5 feet, becomes dark blue-gray and fine- to medium-grained and slightly Clayey @ 37 feet, becomes lighter colored and coarser @ 39-39.6 feet, slightly cemented @ 40 feet, becomes predominantly light yellow-brown with light green mottling @ 41 feet, slight seepage @ 44 feet, becomes fine- to medium-grained Silty SANDSTONE @ 43-45 feet, slight seepage
						40			
						45		BEDROCK	Silty SANDSTONE: fine- to medium-grained, medium blue-gray @ 45 feet, some rounded gravel @ 45-52 feet, some spalling @ 48 feet, 6 inch cemented bed @ 48.5 feet, becomes fine- to coarse-grained, damp @ 50 feet, lighter colored: light gray to green-gray, arkosic
I	55.93	8.7	131.0			50			
						55			@ 57 feet, becomes harder, some sub-angular and rounded gravel clasts, becomes lighter colored and coarser @ 60 feet, some rounded gravel clasts

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County of Orange, California

Project No: 4816-04

Figure No: B-16.2

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1249 feet	BC-15
Date Drilled: 10/10/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	■	68.24	10.2	122.3		65		BEDROCK	@ 63-64 feet, cemented @ 64 feet, becomes medium greenish-gray, still fine- to coarse-grained @ 65-66 feet, some dark Siltstone ripups @ 68 feet, 6 inch cement bed
						70			@ 70 feet, 6 inch cement bed @ 71-72 feet, slightly cemented @ 72 feet, erosional contact dips WSW at about 20° Sandy SILTSTONE: dark greenish-gray, very stiff @ 73.5 feet, thin CLAY Bed: N35W,11SW Silty SANDSTONE: fine- to medium-grained, light green-gray, slightly cemented SILTSTONE: dark greenish-gray, very stiff @ 75 feet, grades to Sandy SILTSTONE
						75			Sandy SILTSTONE: medium greenish-gray, cemented nodules, damp @ 77-78 feet, lighter colored and more Sandy; grad. contact
						80			Silty SANDSTONE: fine- to medium-grained, dark green-gray, very Silty @ 79 feet, becomes lighter and coarser @ 80 feet, becomes light gray to light green-gray @ 82 feet, some rounded pebbles and gravel clasts @ 83 feet, becomes coarser @ 84 feet, fine to medium SANDSTONE Bed 2 inches thick: N20W,11SW @ 84.5 feet, less coarse @ 87 feet, 6 inch cement bed
						85			Clayey SILTSTONE: dark green-gray, very stiff @ 89 feet, less Clayey, grades to Sandy SILTSTONE

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Project No 4816-04

Figure No. B-16.3

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1249 feet	BC-15
Date Drilled: 10/10/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	37.42	15.4	112.6			95		BEDROCK	Sandy SILTSTONE: dark to medium greenish-gray, micaceous, grades to Silty SS Silty SANDSTONE: fine-grained, dark greenish-gray, very dense, micaceous Silty SANDSTONE: fine-grained, dark greenish-gray, very dense, micaceous @ 99 feet, becomes fine- to medium-grained @ 100-101 feet, slight seepage
						100		BEDROCK	Sandy SILTSTONE: dark greenish-gray, very stiff, damp to moist, some cemented nodules
						105		BEDROCK	Volcanic ASH: dark greenish-gray, very stiff, sopay texture @ 106.7-108 feet, some random slicks @ 108 feet, 1/8 inch CLAY seam: N25W,11SW; somewhat irregular, some remolded, no well developed shear surface LANDSLIDE MATERIAL Sandy SILTSTONE: dark greenish-gray, very stiff, damp to moist; some Silty SANDSTONE interbeds
						110		BEDROCK	Bottom of Boring at 130 feet. Notes: 1) Slight seepage at 24, 41, 45 and 100 feet. 2) Minor spalling from SANDSTONE from 27-32 feet and 45-52 feet. 3) Boring down-hole logged and backfilled.
						115		BEDROCK	

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Project No.	Figure No.
4816-04	B-16A

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1245 feet	BC-15
Date Drilled: 10/15/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

125

BEDROCK

Sandy SILTSTONE: dark greenish gray very stiff damp to moist; some Silty SANDSTONE interbeds

130

VAQUEROS-SESPE FORMATION

Bottom of Boring at 130 feet.

Notes:

1) Slight seepage at 24, 41, 45 and 100 feet.
2) Minor spalling from SANDSTONE from 27-32 feet and 45-52 feet.
3) Boring down-hole logged and backfilled.

135

140

145

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County of Orange, California

Project No 4816-04

Figure No B-16.5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16
Date Drilled: 10/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0	CL		Silty CLAY: gray-brown, damp, stiff
									COLLUVIUM
									Sandy SILTSTONE: dark gray-brown, very weathered very closely fractured
									@ 4 feet, closely fractured, less blocky and dark gray to greenish-gray
						5			@ 6-7 feet, SILTSTONE: dark olive-brown to dark gray
									@ 6.5 feet, Fracture Zone: N25E,50SE, soft and broken
									@ 7 feet, dark green-gray Sandy SILTSTONE
									@ 8 feet, Shear with Carb.: N20W,42NE
						10			
	X	23.00	13.2	117.4					@ 11 feet, becomes less Sandy, olive-brown, moderately fractured
									@ 13-14 feet, SILTSTONE Bed: dips approximately 20°NW, olive-brown
									@ 14 feet, becomes olive-brown Sandy SILTSTONE
									@ 14.5 feet, Fracture: N45E,60NW
						15			Silty SANDSTONE: fine-grained, green-gray, Bedding: N63E,17NW
									Clayey SILTSTONE: olive-brown, some cemented nodules, moderately fractured; sandy at base
									Silty SANDSTONE: fine-grained, green-gray, irregular contact, cross-hole attitude: N20E,15NW
						20			Sandy SILTSTONE: green-gray to olive-brown, cemented nodules
									@ 20 feet, more Sandy
									Silty SANDSTONE: fine-grained, medium green-gray, cemented
									Sandy SILTSTONE: dark greenish-gray, very stiff
						25			@ 25 feet, becomes dark olive-brown and more fractured
									@ 25.5 feet, Shear Zone: N80E,16NW and N50W,78NE
	X	34.45	12.7	122.1					Silty SANDSTONE: very fine-grained, greenish-gray
									Sandy SILTSTONE: dark olive-brown, cemented nodules
									@ 29 feet, fewer cemented nodules

LANDSLIDE MATERIAL

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Project No 4816-04

Figure No.: B-1 of 5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16
Date Drilled: 10/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						35			SILTSTONE: brown, stiff, no cemented nodules @ 32 feet, very slight seepage from fracture: N-S,85W @ 32 feet, Shear: N75W,28NE; cuts fracture above @ 33 feet, becomes olive-brown and less fractured Sandy SILTSTONE: dark greenish-gray, some light pinkish-gray cemented nodules @ 35 feet, very slight seepage @ 35-36 feet, cemented, light gray @ 36-37 feet, dark green-gray again with some cemented nodules and pebbles @ 37 feet, becomes predominantly olive-brown to brown @ 39.5-40 feet, chocolate brown Clayey SILTSTONE with some rounded pebbles and gravel, sheared @ 40 feet, 1-2 inch Sheared CLAY: N80W,18NE with some polished pebbles @ 42 feet, some pinkish-gray staining
						40			
						45			Silty SANDSTONE: very fine-grained, medium olive-brown with orange oxidization, fossil fragment and some small white, round cemented nodules @ 46 feet, becomes light greenish-gray to yellow-brown @ 49-53 feet, round, cemented nodules @ 54.5-59 feet, Bioturbaceous, numerous filled burrows, elongate to 10 inches long and 1/2-1 inch diameter, broken and wavy dark gray SILT laminations, predominantly yellow-brown color with light orange staining @ 59 feet, less bioturbaceous @ 61 feet, fossil fragment @ 62 feet, more filled burrows @ 62.4-63 feet, cemented @ 63 feet, becomes more Silty @ 64-65 feet, intense burrowing @ 66 feet, irregular contact
						50			
						55			
	I	21.51	9.8	110.0					

LANDSLIDE MATERIAL

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County of Orange, California

Project No 4816-04

Figure No B-17.2

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16

Date Drilled: 10/11/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU.FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						65		LANDSLIDE MATERIAL	Sandy SILTSTONE: dark olive-brown, burrowing into SILTSTONE from SANDSTONE above @ 67.5 feet, becomes less Sandy and red-brown @ 68.5 feet, becomes more Sandy and greenish-gray
						70			Silty SANDSTONE: fine-grained, greenish-gray Sandy SILTSTONE: dark olive-brown, very stiff Silty SANDSTONE: fine-grained, yellow-brown, saturated, seepage at 71-75 feet; irregular scour surface at base
	X	77.55	15.9	114.4		75			Sandy SILTSTONE: dark gray to green-gray Silty SANDSTONE: fine- to medium-grained, yellow-brown
						80			Sandy SILTSTONE: dark green-gray, lots of cemented nodules, very stiff Clayey SILTSTONE: pinkish-brown with green mottling, no cemented nodules @ 79 feet, Shears: N70W,48NE and N70W,43NE @ 83 feet, tight fracture
						85		BEDROCK	@ 84.5 feet, Shear Surface: N70W,35NE: moderately polished, faint striations N20W @ 85.5 feet, 1-2 inch remolded CLAY seam, very plastic, dark green-gray with pink tinge: N70E,17NW @ 85.6 feet, Rupture Surface: N70E,15-17NW polished, slightly irregular surface LANDSLIDE MATERIAL

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County of Orange, California

Project No. 4816-04

Figure No.: B-17.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		
10/11/95 GDH			

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH FEET | SOILROCK SYMBOL | SOILROCK TYPE | *Description and Remarks*

95
100
105
110
115

BEDROCK

Clayey SILTSTONE: pinkish-brown, very stiff, some tight random shears to 86.2 feet
VAQUEROS-SESPE FORMATION

Sandy SILTSTONE: brown
@ 87.2 feet, becomes greenish-gray and more Sandy
@ 88 feet, Bedding: N70E,22NW
@ 88 feet, some pink-brown mottling
@ 90 feet, Fracture: N30E,55NW: dark green-gray on NW side and pinkish-brown on SE side
@ 93 feet, becomes harder, grades to Silty SS

Silty SANDSTONE: very fine- to fine-grained, greenish-gray, very dense
VAQUEROS-SESPE FORMATION

Bottom of Boring at 100 feet.
Notes:
1) Seepage at 35, 71 and 75 feet.
2) No caving.
3) Boring down-hole logged and backfilled.

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Project No. 4816-04

Figure No. B-17

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0	CL		Sandy CLAY: grayish-brown, damp, stiff @ 1.5 feet, becomes lighter with SILT AND SAND INCLUSIONS @ 2-4 feet, very mottled brown and yellow-brown, SANDSTONE/soil mix COLLUIVUM
						5		LANDSLIDE MATERIAL	Silty SANDSTONE: very fine- to fine-grained, light yellow to orange-brown with gray Siltstone fragments, soft, moist @ 9-18 feet, shear zone with lots of Siltstone fragments in light orange-brown matrix of very fine to fine Silty SAND: some ribbony structure; zone dips to the north
		17.23	16.4	104.4		10			
						15			@ 18-20 feet, Shear Zone: N20E,48SE; lots of Siltstone fragments and soft Clayey pockets and concretion fragments
						20			
		11.48	20.2	104.3		25			@ 26 feet, fewer Siltstone fragments, still soft, a well rounded SANDSTONE cobble

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Project No: 4816-04

Figure No: B-18.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	☐	8.60	21.7	101.2					@ 32.5 feet, very slight seepage @ 32.5-34 feet, cemented concretion on south 1/2 of boring @ 34.5-35.5 feet, concretion on north wall
						35			
								LANDSLIDE MATERIAL	@ 36.5-37.5 feet, 6 inch concretion on south wall, 14 inch concretion on north wall and very slight seepage @ 37-39.5 feet, light gray with orange and yellow mottling, very fine @ 39.5 feet, Shear Zone: N60W,42SW, striations downdip
						40			
	☐	12.91	26.0	97.1					@ 41 feet, Shear in CLAY: N-S, 12-15E; irregular, well developed striations S47E @ 41.5 feet, base of Sheared CLAY, irregular; approx. N10W,18NE; becomes orange-brown again below, very moist; SANDSTONE below @ 43 feet, 12 inch concretion, very slight seepage @ 44-45 feet, Siltstone fragments in brown Silty SAND Matrix on east wall
						45			
									@ 45-46.5 feet, light gray, very fine-grained Silty SS, dips NE at about 25° @ 46-47 feet, fossil hash, medium orange-brown
						50			
	☐	12.91	22.2	104.4					@ 51 feet, light gray, very fine Silty SANDSTONE along shear @ 51.7 feet, light seepage @ 52-53.5 feet, Shear Zone: N20W,75NE; dark brown SILTSTONE on SE side
						55			
									@ 56 feet, large dark gray Siltstone fragment @ 57 feet, large gray Sandstone fragments @ 57-57.5 feet, zone of dark gray, very plastic Silty CLAY @ 57.6 feet, Rupture Surface, somewhat irregular: N65W,18NE; striations N60W, well developed @ 57.6-59 feet, fine,soft, medium to dark gray Silty SANDSTONE, micaceous

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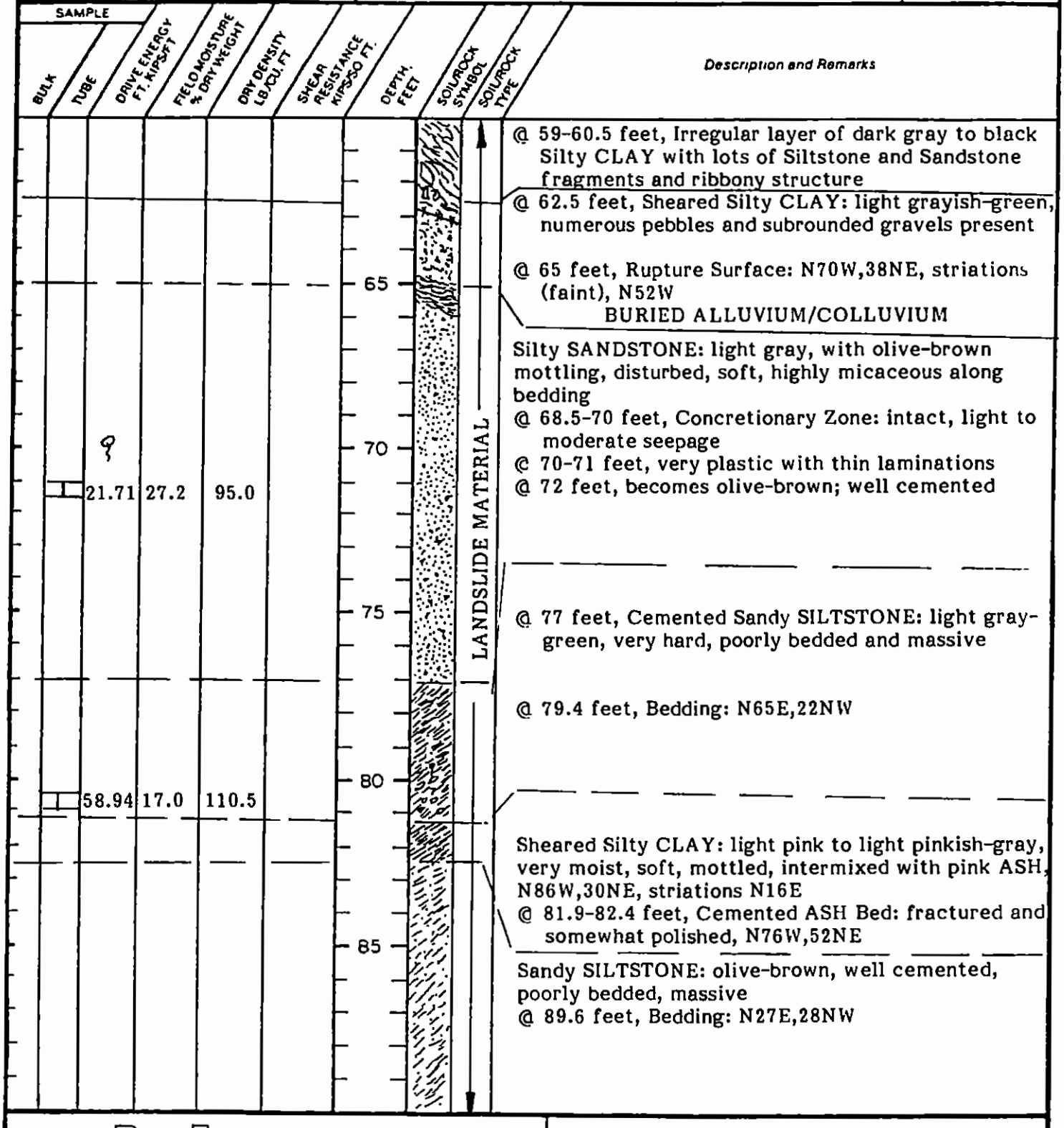
Project No 4816-04

Figure No 2 of 2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation	Boring Number:
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		



@ 59-60.5 feet, Irregular layer of dark gray to black Silty CLAY with lots of Siltstone and Sandstone fragments and ribbony structure

@ 62.5 feet, Sheared Silty CLAY: light grayish-green, numerous pebbles and subrounded gravels present

@ 65 feet, Rupture Surface: N70W,38NE, striations (faint), N52W

BURIED ALLUVIUM/COLLUVIUM

Silty SANDSTONE: light gray, with olive-brown mottling, disturbed, soft, highly micaceous along bedding

@ 68.5-70 feet, Concretionary Zone: intact, light to moderate seepage

@ 70-71 feet, very plastic with thin laminations

@ 72 feet, becomes olive-brown; well cemented

@ 77 feet, Cemented Sandy SILTSTONE: light gray-green, very hard, poorly bedded and massive

@ 79.4 feet, Bedding: N65E,22NW

Sheared Silty CLAY: light pink to light pinkish-gray, very moist, soft, mottled, intermixed with pink ASH, N86W,30NE, striations N16E

@ 81.9-82.4 feet, Cemented ASH Bed: fractured and somewhat polished, N76W,52NE

Sandy SILTSTONE: olive-brown, well cemented, poorly bedded, massive

@ 89.6 feet, Bedding: N27E,28NW

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-18.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95
100
105
110
115

MATERIAL

@ 91.6 feet, Silty SANDSTONE: fine-grained, light gray, well cemented, micaceous, N75W,33NE

@ 95.5 feet, N25W,36NE

@ 100.7-101.2 feet, Sheared Silty CLAY: pinkish-gray, very soft, moist, polished, mottled, unstriated, N75W,21NE

@ 101.2-102.2 feet, Cemented ASH Bed: irregular, broken, polished and striated, N70W,12NE, Striation N23E

LANDSLIDE

Sandy SILTSTONE: greyish-green, very well cemented, massive, hard

@ 105.8 feet, Silty SANDSTONE: fine-grained, olive-brown, poorly bedded, moderately hard

@ 109 feet, becomes light grayish-green, highly micaceous, less cemented, somewhat weathered

@ 111.4 feet, 8 inch thick irregular Silty CLAY Bed: polished, stiff

Sandy SILTSTONE: olive-brown, well cemented, poorly bedded

Sheared Silty CLAY: olive-brown to light gray-green, very moist, internally sheared, highly polished, mottled, well defined rupture surface at 120.5 feet: N41W,26NE

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County of Orange, California

Project No: 4816-04

Figure No: B-18.4

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

125
130
135
140
145

LANDSLIDE MATERIAL

@ 120.5-121 feet, Bentonitic ASH, pinkish-gray, somewhat cemented and stiff, appears intact

Sandy SILTSTONE: olive-brown, well cemented, hard
Silty SANDSTONE: fine-grained, light gray, micaceous, hard, poorly bedded

@ 126.9 feet, Sandy SILTSTONE: olive-brown, very well cemented, well indurated, poorly bedded and massive

Silty SANDSTONE: fine-grained, light gray, well cemented, hard, poorly bedded

@ 137.2-137.4 feet, Sheared Silty CLAY: olive-brown, polished, irregular faint striations, moist, stiff, N73W,24NE

Silty SANDSTONE: light gray, well cemented, hard, massive, poorly bedded

@ 141.8 feet, Silty CLAY : intermixed with broken scattered cherty fragments
@ 142.4 feet, Sheared Silty CLAY: remolded, mottled, chaotic mixture with pockets of pink ASH
@ 143.2 feet, Rupture Surface (?) N20W,41NE, striations (highly irregular) N18E to N70E

Sandy SILTSTONE: olive-brown, well cemented, poorly bedded
@ 146 feet, becomes dark pinkish-brown, highly polished on fresh surfaces, unsheared, well cemented, intact
@ 147.5 feet, Bedding: N40W,44NE

G.A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS
Tustin, California

Saddleback Meadows
County of Orange, California

Project No. 4816-04

Figure No : B-15

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17

Date Drilled: 10/12/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOILROCK SYMBOL | SOILROCK TYPE | Description and Remarks

155

Silty SANDSTONE: light pinkish-brown, fine-grained, somewhat cemented, poorly bedded

@ 150.5 feet, Sheared Silty CLAY: grayish-green, very moist, soft to stiff, polished, unstriated, somewhat remolded

@ 152 feet, becomes highly chaotic with grayish-green Silty CLAY intermixed with pink ASH and broken Siltstone fragments

@ 153.9 feet, Contact: N5W,26NE

LANDSLIDE MATERIAL

160

Sandy SILTSTONE: olive-brown, well cemented, firm, faintly polsihed on fresh surfaces

@ 156.9 feet, 2 inch thick Sheared Silty CLAY Seam: polished, unstriated dark green medium stiff

N25W,30NE VASQUEROS SESPE FM

Silty SANDSTONE: fine-grained, light gray, well cemented, well indurated, poorly bedded, massive

@ 169 feet, becomes less cemented

165

LANDSLIDE-MATERIAL

FAULTED BEDROCK

170

VAQUEROS SESPE FM

175

Bottom of Boring at 173 feet.

Notes:

1) Minor caving at 100-150 feet.
2) Seepage at 51.7 and 70 feet.
3) Boring downhole logged and backfilled.

G.A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS
Tustin, California

Saddleback Meadows
County of Orange, California

Project No. 4816-04

Figure No. B-18.6

APPENDIX C

Slope Stability Analyses
Cross Sections

COUNTY OF ORANGE
PLANNING AND DEVELOPMENT SERVICES DEPARTMENT
ENVIRONMENTAL & PROJECT PLANNING SERVICES DIVISION

SADDLEBACK MEADOWS

MITIGATION MONITORING REPORT

FEIR 566

Prepared by:

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Suite 190
Newport Beach, CA 92660

October 1997

MITIGATION MONITORING PROGRAM OVERVIEW

INTRODUCTION

This Mitigation Monitoring Program has been developed to ensure that mitigation measures outlined in the Draft EIR 566 for Saddleback Meadows and related permits are implemented as required. The Mitigation Monitoring Program has been prepared in conformance with Section 21081.6 of the Public Resources Code and the County of Orange Mitigation Monitoring requirements. Section 21081.6 of the State Public Resources Code states:

Section 1: Section 21081.6 is added to the Public Resources Code, to read:

(a) When making the findings required by Paragraph (1) of subdivision (a) of Section 21081 or when adopting a mitigated negative declaration pursuant to paragraph (2) of subdivision (c) of Section 21080, the following requirements shall apply:

(1) The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead agency or a responsible agency, prepare and submit a proposed reporting or monitoring program.

(2) The lead agency shall specify the location and custodian of the documents or other material which constitute the record of proceedings upon which it's decision is based.

(b) A public agency shall provide that measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures. Conditions of project approval may be set forth in referenced documents which address required mitigation measures or, in the case of the adoption of a plan, policy, regulation, or other public project, by incorporating the mitigation measures into the plan, policy, regulation, or project design

(c) Prior to the close of the public review period for a draft environment impact report or mitigated negative declaration, a responsible agency, or a public agency having jurisdiction over natural resources affected by the project, shall either submit to the lead agency complete and detailed performance objectives for mitigation measures which would address the significant effect on the environment identified by the responsible agency or agency having jurisdiction over natural resources affected by the project, or refer the lead agency to appropriate, readily available guidelines or reference documents. Any mitigation measures submitted to a lead agency by a

> responsible agency or an agency having jurisdiction over natural resources affected by the project shall be limited to measures which mitigate impacts to resources which are subject to the statutory authority of, and definitions applicable to, that agency. Compliance or noncompliance by a responsible agency or agency having jurisdiction over natural resources affected by a project with that requirement shall not limit the authority of the responsible agency or agency having jurisdiction over natural resources, affected by a project, or the authority of the lead agency, to approve, conditions, or deny projects as provided by this division or any other provision of law.

The project design features, standard conditions of approval, and additional mitigation measures contained in this document are categorized according to the primary environmental impact designations listed in the DEIR 566. These include: land use, soils & geology, water & hydrology, transportation/circulation, air quality, noise, biological resources, aesthetics, cultural/scientific resources, recreation, hazards, public services, and public utilities and service systems. In all, 213 mitigation measures are contained in this document.

Mitigation Measures are apportioned into three (3) separate categories in the Draft EIR, outlined as follows:

- (PDF) – Project Design Features: provide mitigation through avoidance, reduction or offset of impacts. Because these features are part of the project design, they do not constitute additional mitigation measures, but are in effect mitigation through project design. These mitigation measures and other conditions of approval imposed in connection with prior approvals have been incorporated into the design of the proposed project as PDF's. The Orange County P&DS will ensure compliance with all PDF's through the standard procedures for the approval of permits and applications.

- (SC) – Standard County Conditions: Standard Conditions (SC) include project requirements mandated by the County of Orange and State and federal agencies with authorization for environmental regulations. Standard Conditions typically include project compliance with the County of Orange Standard Conditions of Approval, the Uniform Building Code, South Coast Air Quality Management District, school fees, Alquist-Priolo Act, requirements and other standard measures for hillside residential development projects, various development fees including fire, sheriff, schools, parks and transportation.

- (AM) – Additional Mitigation Measures: Project specific mitigation measures are prescribed as necessary to further mitigate project impacts beyond the mitigation provided by the PDF's and applicable Standard Conditions. For those impacts with no County Standard Conditions, project specific mitigation measures, will be imposed to reduce project impacts to the maximum extent possible.

In addition, to the mitigation measures contained in the Draft EIR, project specific conditions of approval (COP) have been developed for the Saddleback Meadows project and are also included in

the mitigation monitoring program. In all, 213 mitigation measures are contained in this document.

Mitigation Matrix

In order to effectively track and document the status of mitigation measures, a mitigation matrix has been prepared and includes the following components:

- Mitigation Measures
- Timing of Verification
- Implementation Actions, conditions or Mechanism
- Method of Verification
- Responsible Party

Mitigation measure timing of verification has been apportioned into several specific timing increments. Of these, the most common are:

1. Prior to Map Recordation
2. Prior to Tentative Tract Map (TTM) approval
3. Prior to issuance of grading permit
4. During grading operations
5. Prior to completion of grading operations
6. Prior to issuance of building permit(s)
7. During construction
8. Prior to issuance of certificate of use and occupancy

Unless otherwise stated in the DEIR, preparation of all plans, exhibits, reports, or studies described herein and payment of any plan check fees are the responsibility of the Applicant. Plan checking and verification of mitigation compliance shall be the responsibility of the County of Orange.

Information pertaining to compliance with mitigation measures or any necessary modifications or refinements will be documented in the comments portion of the matrix.

Mitigation Monitoring Procedures

The Orange County Planning & Development Services is the designated lead agency for the Mitigation Monitoring Program The County is responsible for review of all monitoring report, enforcement actions, and document disposition. The County will rely on information provided by the monitor as accurate and up to date and will field check mitigation measure status as required.

A. In-Field Monitoring

Project monitors shall exercise caution and professional practices at all times when monitoring

construction. Protective wear (hard hats, glasses, etc.) shall be worn at all times in construction areas. Injuries shall be reported immediately to the mitigation monitor.

B. Coordination with Contractors

The construction manager/superintendent is responsible for coordination of contractors, and is also responsible for contractor completion of required measures in accordance with the provisions of this program.

C. Recognized Experts

The use of recognized experts as a component of the monitoring team is required to ensure compliance with scientific and engineering based mitigation measures While the mitigation monitoring team recognized experts assess compliance with required mitigation measures, consultation with the County of Orange planning staff shall take place in the event of a dispute.

D. Arbitration/Dispute Resolution

If the mitigation monitor has identified an action which, in the opinion of the monitor, has not been implemented or has not been implemented correctly, the problem will be brought to the attention of the County of Orange for resolution. If the problem cannot be satisfactorily resolved by County staff, it will be brought before the Planning Director or designee for resolution. The County will have the authority to issue stop work orders until the dispute is resolved.

E. Enforcement

Agencies may enforce conditions of approval through their existing police power, using stop work orders, fines, infraction citations, loss of entitlements, refusal to issue building permits or certificates of use and occupancy or, in some cases, notice of violation for tax purposes. Criminal misdemeanor sanctions could be available where the agency has adopted an ordinance requiring compliance with the monitoring program, similar to the provision in many zoning ordinances which affirm the enforcement power to bring suit against violators of the ordinances provisions.

Matrix Acronym Key

ACOE	-	Army Corps of Engineers
AVR	-	Average Vehicle Ridership
BMP	-	Best Management Practices
CDFG	-	California Department of Fish & Game
CEQA	-	California Environmental Quality Act
CUO	-	Certificate of Use/Occupancy
DAMP	-	Drainage Area Management Plan
DEIR	-	Draft Environmental Impact Report

EPPD	-	Environmental Project Planning Division
FTSP	-	Foothill/Trabuco Specific Plan
IPM	-	Integrated Pest Management
HBP	-	Harbor, Beaches and Parks Division
LOMR	-	Letter of Map Revision
MEP	-	Maximum Extent Practicable
NOI	-	Notice of Intent
NPDES	-	National Pollutant discharge Elimination System
OCEMA	-	Orange County Environmental Management Agency
OCFA	-	Orange County Fire Authority
SCAQMD	-	South Coast Air Quality Management District
SVUSD	-	Saddleback Valley Unified School District
TCWD	-	Trabuco Canyon Water District
TDM	-	Transportation Demand Management
USGS	-	United States Geological Survey
VTTM	-	Vesting Tentative Tract Map
WQMP	-	Water Quality Management Plan

MITIGATION MONITORING AND REPORTING PROGRAM
SADDLEBACK MEADOWS – FEIR 566

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
LAND USE				
Project Design Features				
No PDF's have been proposed				
Standard Conditions of Approval				
SC 1-1 Prior to the issuance of any building permits for residential construction, the developer shall comply with Board of Supervisors Resolution 82-1368 (Buyer Notification Program) which requires the developer to prepare a map denoting the existing and proposed land uses, arterial highways, and public facilities within the surrounding area for the approval of the Manager, Current Planning Services The map content, display, and distribution shall be in accordance with the Buyer Notification Program guidelines approved by the Board of Supervisors and available at the Development Processing Center.	Building Permit	Document Review	Prior to Issuance of Building Permit	Mgr. Current Planning
SC 1-2 Prior to the issuance of any certificates of use and occupancy, the developer shall provide evidence to the Manager, PDS/Building Inspection Services Division, that the Department of Real Estate has been notified that the project area is within the boundaries of a Community Facilities District (CFD), and will be subject to special taxes for public facilities and/or services.	Certificate of Occupancy	Document Review	Prior to Issuance of Certificate of Occupancy	Mgr P&DS Building Inspection

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Additional Mitigation Measures No additional mitigation measures have been proposed				
SOILS AND GEOLOGY **Project Design Features**				
PDF 2-1 A comprehensive remedial grading mitigation plan has been designed to stabilize the project site, in accordance with OCPDS requirements The plan is depicted in Exhibit 22, included in Appendix D and proposes measures including shear keys, buttresses, removals/recompaction to reduce hazards associated with landslides, erosion and subsidence.	Completed	Grading Plan	Prior to G P I. Approval	Mgr. PDS Subdivision & Grading Service
Standard Conditions of Approval				
SC 2-2 Prior to the issuance of a grading permit, the applicant shall submit a geotechnical report to the Manager, PDS/Subdivision and Grading Services Division, for approval. The report shall include the information and be in a form as required by the Grading Manual	Submit Report	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service
SC 2-3 Prior to the issuance of any grading permits, the Manager, PDS/Subdivision and Grading Services Division, shall determine if the Proposed grading complies with the grading illustrated in the plans approved by the decision-maker with regard to grading concepts, slope heights, slope ratios, and pad elevations and configuration. Significant deviations shall be reviewed by the decision-maker for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised application per Orange County Zoning Code Section 7-9-139 and 7-9-150.	Grading Plan Review	Document Review	Prior to Issuance of Grading Permit	Mgr. Subdivision & Grading

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 2-4 Prior to the issuance of the first grading permit, for projects located immediately adjacent to or including portions of regional parks, significant open space corridors, or other environmentally sensitive areas, the project proponent shall provide evidence acceptable to the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, that graded areas will be compatible with natural land characteristics of the adjacent open space areas including techniques to enhance a smooth and gradual transition, urban edge treatment plans and incorporating view enhancement through architectural and design techniques.	Grading Permit	Grading Plan Review	Prior to Issuance of Grading Permit	Mgr PDS Subdivision & Grading Service
SC 2-5 Prior to the issuance of any grading permit, offsite grading and/or drainage shall be conducted in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division	Grading Plan	Grading Plan Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service
SC 2-6 Prior to the issuance of a grading permit, substantial compliance with the following shall be certified by a registered engineer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division: • Fill soils shall be placed in layers that are less than 8 inches thick and moisture-conditioned generally 1- to 2-percent above optimum moisture content. The existing diatomaceous soils should be moisture-conditioned to 125-percent of optimum moisture content. • For preliminary earthwork computations, the following shrinkage/bulking factors are recommended for the onsite material (these do not include handling losses): Bedrock - 5% bulking; slopewash - 5% shrinkage; and Other Soils - 15% shrinkage. Grading plans shall include an area where finish grades can be raised or lowered to accommodate changes in actual material quantities.	Grading	Field Check	During Grading	Mgr. PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
• Dewatering shall be achieved using sumps and pumps located strategically within the excavated area. However, the excavation shall be carefully observed; if the conditions warrant, supplementary dewatering provisions shall be made. It is the responsibility of the contractor to provide an adequate dewatering system during construction.				
Seismic				
SC 2-7 Conformance with the Uniform Building Code and Orange County codes will insure that seismic considerations are incorporated into the structural designs. All recommendations of the geotechnical report shall be incorporated and utilized in the final construction plans for the parcels in a manner meeting the approval of the Manager, PDS/Building Permit Services Division. Larger buildings, structures with extraordinary architectural configurations, or those of tilt-up construction may require seismic analysis.	Building Plan Review	Review Building Plans	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
SC 2-8 The seismic exposure of the site shall be considered in the design of the proposed structures in a manner meeting the approval of the Manager, PDS/Building Permit Services Division.	Building Plan Review	Building Plans Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
SC 2-9 Geologic inspections shall be required during site grading for each parcel to confirm the absence of major faults in the local area in a manner meeting the approval of the Manager, Subdivision Grading	Grading	Site Inspection	During Grading	Mgr PDS Subdivision & Grading Service
SC 2-10 Prior to the issuance of any grading permits, if review of the grading plan for this property by the Manager, PDS/Subdivision and Grading Services Division, indicates significant deviation from the proposed grading illustrated on the approved tentative tract map, specifically with regard to slope heights, slope ratios, and pad elevations and configuration, the plan shall be reviewed	Grading Plan Conformance	Review Grading Plans	Prior to Grading Plan Approval	Mgr. PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
by the Subdivision Committee for a finding of substantial conformance. Failure to achieve such a finding will require processing a revised tentative tract map; or, if a final tract/parcel map has been recorded, a new tentative tract/parcel map or a site development permit application per Orange County Zoning Code Section 7-9-139 and 7-9-150 Additionally, a new environmental assessment and determination is required.				
SC 2-11 Prior to the issuance of any grading permit, and if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the affected property owners for offsite grading and/or drainage The owner/applicant shall record said letters of consent for offsite drainage and/or cross-lot drainage prior to recordation of the tract/parcel map or prior to the issuance of any grading permit, whichever comes first	Obtain Letter	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service
SC 2-12 Prior to the issuance of any preliminary grading permits, the subdivider shall request that the Vector Control District initiate the survey process of the tract/parcel map site to determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.	Conduct Survey	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service
SC 2-13 Prior to the issuance of any grading permits, a Water Quality Management Plan (WQMP) shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division. The WQMP shall identify, at a minimum, the application and incorporation of those routine structural and non-structural BMPs outlined in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G detailing implementation of BMPs not dependent on specific land uses, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.	Submit WQMP	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 2-14 Prior to the issuance of any grading or building permits, the applicant shall provide, in accordance with criteria supply by EMA, a "Hazardous Materials Assessment" and a "Disclosure Statement" covering the property (both fee and easement) which will be offered for dedication to the County of Orange, for review and approval by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Monitoring Programs Division.	Submit Statements	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service
Additional Mitigation Measures				
The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
Grading				
AM 2-15 Multiple cuts and fills (2.6 million cubic yards) to achieve planned elevations and profiles, and associated access roadways shall be required.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-16 Remedial grading (8.9 million cubic yards) to stabilize the proposed slopes by means of buttresses, shear keys, and stabilization fills shall be required Back cut failure guidelines shall be provided to the Grading Services Division prior to issuance of grading permits.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-17 Removal (clean out) of all or major portions of the graben materials and softer alluvium and colluvium under most of the variable thickness fills shall be required	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-18 Installation of appropriate subdrain systems within natural drainage courses and within stability fills prior to fill placement shall be required.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
AM 2-19 Adequate foundation and slab subgrade conditioning for the proposed development, including over excavation, capping and measures related to expansive soils shall be required.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-20 Achieving suitable surface gradients to preclude ponding anywhere onsite and to control water run-off via paved/closed drainage devices shall be required.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
Compaction				
AM 2-21 Wherever structural fills are to be placed, the upper 6 to 8 inches of the exposed subgrade (after stripping and/or over excavation/clean-out) shall first be scarified and reworked. In general, the dry density of the in-situ (native) material shall be at least 85 percent of maximum. In the event that lower densities are determined by field testing to exist, the depth of over excavation will be determined onsite, given due consideration to the geology of the exposed material, as well as its relative location. It is at present expected that typical depths of over excavation will be on the order of 4 to 5 feet.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
AM 2-22 Fill shall be placed in lifts of 6 to 8 inches (loose) in thickness Rocks exceeding 4 inches in maximum dimension are best not incorporated within the upper fill zone (say 3 feet) where foundations and most utility systems are expected to be housed.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-23 In all fill areas where active gradients are steeper than 5:1 (horizontal:vertical), those surfaces shall be prepared to receive fill by excavating standard keyways and benches in a stair-step configuration.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-24 Any loosening of reworked or in-place (native material, consequent to	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision &

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
weathering and/or passage of construction traffic, shall be made competent.				Grading Service
AM 2-25 Temporary fills, typically associated with access ramps built to accommodate grading equipment shall be subject to removal when their use is discontinued.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-26 The depths of excavation shall be subject to onsite monitoring by the Soil Engineer, normally during the actual removal operations. Any surface or subsurface obstructions, or questionable material encountered during grading, shall be brought immediately to the attention of the Soil Engineer, for his determination as to proper exposure, removal and/or processing as directed	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
Material Selection				
AM 2-27 After the site has been stripped of any debris, vegetation and organic soils, such exposed onsite shall be considered satisfactory for reuse in the construction of onsite fills, provided the organic content does not exceed 3% by volume. It is recommended that highly expansive soils not be placed within the upper 4 to 5 feet thick zone underlying final pad and street grades. More importantly, no such soil is to be placed (as backfill)within a horizontal distance equal to the wall height immediately behind retaining walls.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-28 Any objectionable material, as determined by the Soil Engineer, shall be subject to relocation in deeper fill areas or removal offsite.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-29 All borrow sites shall be approved by the Soil Engineer/Geologist prior to onsite delivery This will permit the timely allocation of such available materials for use on the project site.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Compaction Requirements				
AM 2-30 Reworking/compaction shall include water addition or drying-out as needed, to bring the soils close to their optimum moisture content. All such reworked soils, placed as structural fills, shall be densified to achieve at least 90 percent relative compaction with reference to the laboratory compaction standard The optimum moisture content and maximum dry density, for each identified soil type, will be determined in the laboratory in accordance with ASTM Test Designation D1557	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
Shrinkage/Subsidence				
AM 2-31 For preliminary earthwork computations, an approximate (overall) shrinkage factor of 12 percent shall be required, for the existing site soils. The above value does not include allowance for stripping nor handling losses.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-32 Subsidence shall be assumed as 3/4 to 1-1/2 inches for grading design purposes	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
Excavating Conditions				
AM 2-33 Excavation of onsite soils shall be accomplished with standard heavy duty earthmoving or trenching equipment. Some hard cemented sandstone beds were encountered during the field exploration on portions of the site and some minor, isolated blasting may be required to remove these hard materials	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-34 Heavy seepage was encountered, as indicated on the Boring Logs, at multiple elevations. Consequently, considerable water can be expected within planned excavations, typically reaching maximum discharge within 2 to 5	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
days after exposure Additional nuisance water (seepage) is foreseen in nearly all major cuts decreasing in volume with time, and being less at higher site elevations as well as in cuts made late in the year. All nuisance water shall be accommodated in accordance with County requirements.				
Expansion Potential				
AM 2-35 Onsite materials are considered to be moderately expansive, generally. Soils of high and low expansivity are expected to comprise less than 25% of the overall pad areas. The expansivity of the actual soils placed within structural areas shall be verified during grading, prior to construction.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
Utility Trenching				
AM 2-36 The typical walls of temporary construction trenches shall stand nearly vertical, with only minor sloughing, provided the total depth does not exceed 4 to 5 feet. Shoring of excavation walls and/of flattening of side slopes may be required, if greater depths are necessary.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
AM 2-37 Trenches shall be located so as not to impair the bearing capacity nor settlement under planned foundations. As a guide, trenches shall be aligned perpendicular to foundations, and the Structural Engineer so informed to modify the foundation at the crossing, as needed. All other trenches shall observe a lateral off-set equal to their total depth.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-38 Existing soils shall be utilized for trench backfill, provided they are essentially free of organic materials and oversized materials (rock, gravel, etc. in excess of 1-inch maximum size, unless within an approved soil matrix) Alternately, select granular materials (sand equivalent of 30 or greater) may be imported as backfill. Compaction should be accomplished	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
entirely by mechanical means, subject to onsite assessment during pipeline installation.				
Surface Drainage				
AM 2-39 Positive surface gradients shall be provided away from slope tops per approved grading plans and adjacent to the future buildings, so as to direct surface water run-off away from structural areas and toward suitable discharge facilities.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
Sulphate Content				
AM 2-40 The soils sulphate content shall be ascertained during the concluding stages of rough grading, and the type of cement to be used determined at that time.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
Grading Control				
AM 2-41 All grading and earthwork shall be subject to on-going testing and observation by the applicants geotechnical consultant, including engineers, engineering geologists and/or technicians.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
Slabs-on-Grade				
AM 2-42 Concrete slabs shall be founded on approved (reworked) in-place soils and/or on properly compacted fill. The subgrade shall be proof-rolled just prior to construction to provide a firm, unyielding surface, especially if the surface has been disturbed by the passage of time and/or exposure to construction traffic.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-43 Floor slabs shall be at least 4 inches thick. The Finished Floor Level should	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision &

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
be at least 6 inches above highest adjacent exterior grade Joints shall be provided.				Grading Service
AM 2-44 If flooring that would be affected by moisture is to be used, the slab shall be underlain by 2 inches of sand, with a 10-mil plastic sheet between the sand and the subgrade.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-45 Precautions in respect of expansive soils shall be taken.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
Foundations				
AM 2-46 The proposed structures shall be supported on conventional spread footings, supported into approved compacted fill and/or reworked native material	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
Long Term Settlements				
AM 2-47 The grading concept, as presently proposed, includes several areas where deep fill will result, exceeding 50 feet in depth. These soil masses may experience significant settlements, with time, of 4 to 6 inches or more Such downward movements can be tolerated by most improvements, provided these occur at a reasonably uniform rate and rather evenly over a well distributed area However, the degrees and rates of settlement shall be analyzed during the final design phase.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service
Phasing of Earthwork				
AM 2-48 Unstable Ground Initial stability evaluations have determined that several natural slopes subject to grading are inherently unstable Removals, therefore, shall be	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
planned and carried out with care in order to minimize deep-seated, in-construction failures Statistically, about 10 percent of back cuts for buttresses will fail during grading Allowances for schedule and budget contingencies should be made.				
AM 2-49 Required Clean-Out Work Prior to improving the gross stability of hillsides, clean-out work will be necessary along their lowest (toe) elevations. Whereas such selective removals are essential prior to placement of additional fill, this process can trigger undesired slippage Therefore, selective unloading of the slide mass shall be required before stabilization can effectively begin.	Grading Permit	Site Inspection Field Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Service
AM 2-50 Slide Unloading Where existing slope faces are marginally safe in their present condition, the higher portions of each such slide shall require removals toward the top, prior to clean-out, and subsequent loading at the toe	Completed	VTTM Review	Prior to Approval of Tentative Tract Map	Mgr. PDS Subdivision & Grading Service
WATER/HYDROLOGY				
Project Design Features				
PDF 3-1 A master drainage concept has been incorporated into the project design to mitigate hydrology impacts to existing OCP&DS requirements and standards. The master drainage concept, shown in Exhibit 22 and contained in its entirety in Appendix L of this EIR, proposes a series of storm drains, catch basins, inlet/outlet structures, energy dissipators and slope drains to control project drainage	Grading Permit	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Standard Conditions of Approval				
SC 3-2 Prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division: a A drainage study determining the effect the proposed development and associated drainage patterns will have on existing drainage facilities. b Mitigate either by on-site retardation or by providing improvements appropriately to impacted existing drainage facilities	Grading Permit	Review G.P.	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service
SC 3-3 Prior to the issuance of any grading permits, the applicant shall in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division· a Design and convey construction funds for surface drainage improvements; and b. Design all necessary storm drain facilites extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and c Dedicate the associated easements to the County of Orange, if determined necessary	Drainage Plan	Review Drainage Plan	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Service
SC 3-4 Prior to the issuance of any certificates of use and occupancy, said	Drainage Improvements	Drainage Plan	Prior to Issuance of Certificate of	Mgr. PDS Subdivision &

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
	improvements shall be constructed in a manner meeting the approval of the Manager, PF&R/Construction Division			Occupancy	Grading Services
SC 3-5	Prior to the issuance of any grading permit, and if determined necessary by the Manager, PDS/Subdivision and Grading Services Division, a letter of consent, in a form approved by the Manager, PDS/Subdivision and Grading Services Division, suitable for recording, shall be obtained from the upstream and/or downstream property owners permitting drainage diversions and/or unnatural concentrations.	Obtain Letter	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Services
SC 3-6	Prior to issuance of any building permits, the applicant shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division, including payment of fees and the construction of the necessary facilities	Drainage Plan	Document Review	Prior to Issuance of Grading Permits	Mgr. PDS Subdivision & Grading Services
SC 3-7	Potential for the proposed project to impact the site's hydrology shall be reduced to a level of insignificance through engineering design and construction techniques incorporated into the project in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division	Drainage Plan	Document Review	Prior to Grading Plan Approval	Mgr PDS Subdivision & Grading Services
Water Quality					
SC 3-8	Prior to issuance of building permits, or grading permits, whichever come first, permit applicant shall submit for approval of the Manager, PDS/Subdivision and Grading Services Division, a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used onsite to control predictable pollutant runoff. This WQMP shall identify at a minimum the routine structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of the	Submit WQMP	Document Review	Prior to Issuance of Grading Permits	Mgr. PDS Subdivision & Grading Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association, lessee, etc); and, shall reference the location(s) of structural BMPs.				
SC 3-9 Prior to the issuance of precise grading permits or building permits, whichever comes first, the applicant shall submit and obtain approval from the Manager, PDS/Subdivision and Grading Services Division, of a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on-site to control predictable pollutant runoff. This WQMP shall identify, at a minimum, the routine, structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix which details implementation of BMPs whenever they are applicable to a project, the assignment of long-term maintenance responsibilities (specifying the developer, parcel owner, maintenance association shall reference the location(s) of structural BMPs.	Submit WQMP	Document Review	Prior to Issuance of Grading Permits	Mgr. PDS Subdivision & Grading Services
Flood Plain Elevation				
SC 3-10 Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, PDS/Subdivision and Grading Services Division, that the applicant has obtained coverage under the NPDES statewide General Stormwater Permit from the State Water Resources Control Board.	NPDES Clearance	Document Review	Prior to Issuance of Grading Permits	Mgr. PDS Subdivision & Grading Services
Easements				
SC 3-11 Prior to the issuance of any certificates of use and occupancy, the applicant shall not grant any easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate	Easement Dedication	Document Review	Prior to Issuance of Grading Permits	Mgr. PDS Subdivision & Grading Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, PDS/Subdivision and Grading Services Division, for review and approval. Further, a copy of the approved easement shall be furnished to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificate of use and occupancy.				
Additional Mitigation Measures No additional mitigation measures have been proposed				
TRANSPORTATION/CIRCULATION **Project Design Features**				
PDF 4-1 The onsite circulation system is proposed as to accommodate project related traffic generation, including design of the entry street as a Collector roadway with a curb-to-curb width of 58 feet at its intersection with El Toro Road. This provides for two 12-foot exiting lanes and two 12-foot entering lanes with a 10-foot median The entry's cross-section shall be maintained for approximately 160 feet where it could then be transitioned to a standard 40-foot wide curb-to-curb width Collector roadway. Secondary emergency only access will be provided via a gated connection to existing Valley Vista Way Minimum fire access roadway width of 28 feet shall be required	Circulation System Design	Grading Plan Review	Prior to Issuance of Grading Permit	Mgr PDS Subdivision & Grading Services
PDF 4-2 The entry street will be designed with a traffic signal and a southbound left-turn pocket and northbound right-turn lane The applicant shall provide a cash deposit for the design and construction of the traffic signal	Cash Deposit Traffic Signal	Deposit	Prior to Issuance of Certificate of Occupancy	Mgr. PDS Subdivision & Grading Services Mgr. PDS

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
PDF 4-3 All weather access to the proposed water tank shall be provided by the applicant. This access shall be designed with a minimum 28 foot width and a maximum grade of 10%.	Access	Grading Plan Review	Prior to Issuance of Grading Permits	Mgr. PDS Subdivision & Grading Services
Standard Conditions of Approval				
SC 4-4 Prior to the issuance of any building permits, the applicant shall participate in design, construction, and/or financing of the cost of a traffic signal in the project vicinity in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division	Traffic Signal Construction	Plan Review	Prior to Issuance of Building Permits	Mgr. PDS Subdivision & Grading Services
SC 4-5 Prior to the issuance of building permits, the applicant shall pay fees for the Major Thoroughfare and Bridge Fee Program listed below, in a manner meeting the approval of the Manager, PF&RD/Program Division a. Foothill Circulation Phasing Program b Prior to recordation of a final tract map, the subdivider shall enter into an agreement with the County of Orange for participation in a fee program (if adopted by the Board of Supervisors) for implementation of the Foothill/Eastern Transportation Corridor Said agreement shall provide that 1. The fee shall be $158 00 per trip end times the County standard trip end generation rate for the type of development proposed, times the number of units (footage) proposed, or the fee payable under the program, whichever is less 2. Subdivider's obligation to pay fees would arise only after	Deposit Fees	Deposit	Prior to Issuance of Building Permits	Mgr. PF&RD Program Division

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
the County establishes the fee program, prior to issuance of building permits. 3 Subdivider's obligation to pay the fee would be extinguished if the fee program were not established within three (3) years of the date of issuance of the first building permit for subject development. 4 Subdivider shall furnish surety bond, letter of credit, money or such other security approved by the Director, PF&RD, to assure payment of the fees related to subject development. 5 This condition shall be void if a trial court of competent jurisdiction, in a final judgement, or an appellate court, if the matter is appealed, sets aside a condition imposed by the County which was substantially the same as said condition c El Toro Road d Santiago Canyon Road				
SC 4-6 Building permit issuance shall be phased in accordance with the Foothill Circulation Phasing Plan (FCPP) Development Phasing Plan, and shall also be subject to any other Board of Supervisors approved growth management phasing plan pertaining to the timely provision of public services and facilities.	Permit Phasing	Plan Review	During Building Permit Issuance	Mgr. PDS Subdivision & Grading Services
SC 4-7 Building permit issuance shall be phased in accordance with any Board of	Permit Phasing	Plan Review	During Building Permit Issuance	Mgr. PDS Subdivision &

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Supervisors approved Growth Management Phasing Plan pertaining to the timely provision of public services and facilities.				Grading Services
SC 4-8 Prior to the issuance of any grading permits, adequate sight distance shall be provided at all street intersections per Standard Plan 1117, in a manner meeting the approval of the Manager, PF&R/Program Division. This includes any necessary revisions to the plan such as removing slopes or other encroachments from the limited use area.	Circulation System Improvements	Plan Review	During Building Permit Issuance	Mgr. PDS Subdivision & Grading Services
SC 4-9 Prior to the issuance of any certificates of use and occupancy, the developer shall construct the approved internal circulation improvements in a manner meeting the approval of the Manager, PF&R/Construction Division Further, a copy of the approved plans shall be furnished to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy	Construct Circulation Improvements	Field Check	Prior to Issuance of Certificate of Occupancy	Mgr PDS Subdivision & Grading Services
SC 4-10 When monuments exist which control the location of subdivisions, streets or highways, or provide survey control, the monuments shall be located and referenced prior to any street construction or relocation, and shall be reset after construction as required by Section 8771 of the Business and Professions Code, in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division	Monument Location	Field Check	Prior to Grading Operations	Mgr PDS Subdivision & Grading Services
SC 4-11 Prior to issuance of a building permit, the applicant shall pay a cash fair share contribution for the design and construction of improving Santiago Canyon Road from Live Oak Canyon Road to Jamboree Road, in a manner meeting the approval of the Manager, PF&RD/Program Division. In addition, the applicant shall participate in the Santiago Canyon Road Safety Improvement Program.	Fee Payment	Document Review	Prior to Building Permit	Mgr. PF&RD Program Division

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 4-12 Prior to issuance of a building permit, the applicant shall design and construct roadway improvements to El Toro Road including a deceleration lane and a left turn pocket into the project entrance based on a 60 mph minimum design speed in a manner meeting the approval of the Manager, PF&RD/Program Division	Construct Roadway Improvement	Field Check	Prior to Issuance of Building Permit	Mgr. PF&RD Program Division
SC 4-13 Prior to issuance of a building permit, the applicant shall provide a cash deposit for the difference in cost of designing and constructing the roadway improvements proposed with the project as compared to the costs associated with the ultimate configuration of El Toro Road, as determined by PDS/Environmental & Project Planning Services Division, all in a manner meeting the approval of the Manager, PF&R/Programs Division.	Building Permit	Document Review	Prior to Issuance of Building Permit	Mgr. Traffic Engineering
Additional Mitigation Measures The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner meeting the approval of the Manager, Transportation Planning				
AM 4-14 The El Toro Road turn lane improvements needed at the Project Entrance to serve Year 2020 conditions shall be completed in conjunction with development.	Construct Improvements	Field Check	Prior to Issuance of Building Permit	Mgr. Transportation Planning
AM 4-15 Traffic signing/striping should be implemented in conjunction with detailed construction plans for the project. Verification of adequate parking should be analyzed for the project site in conjunction with approval of the site plan.	Construct Improvements	Field Check	Prior to Issuance of Building Permit	Mgr. Transportation Planning
AM 4-16 The project shall participate in existing road fee programs, including the Foothill/Eastern Transportation Corridor Fee Programs, Foothill Circulation Phasing Program (FCPP), El Toro Road Fee Program and the Santiago Road Fee Program.	Roadway Fees	Document Review	Prior to Issuance of Building Permits	Mgr. Transportation Planning

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Both existing traffic patterns and SCTM traffic projections for Years 2000 and 2020 indicate the attraction of Glenn Ranch Road, Portola Parkway, and the Foothill Transportation Corridor (SR-241) for increased traffic volumes in the project study area. North of the Foothill Transportation Corridor, El Toro Road can accommodate projected traffic volumes with the proposed project on four travel lanes divided by a raised or striped median Implementation of a full Major Arterial cross-section is not needed to serve future traffic volumes. This alternative section represents a modification of the typical cross-section for a Primary Arterial Appropriate transitions would be required between this cross-section and other modified cross-sections along El Toro Road south of Glenn Ranch Road.				
AIR QUALITY				
Project Design Features				
No PDF's have been proposed				
Standard Conditions of Approval				
SC 5-1 Grading and excavation shall be halted during periods of high winds meeting the approval of the Manager, EA, Subdivision and Grading Services Division. According to AQP Measure F-4, high winds are defined as 25 mph or greater. This level occurs only under unusually extreme conditions, such as Santa Ana wind conditions. Notations in the above format, included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.	Grading Operation Control	Field Check	During Grading	Mgr. PDS Subdivision & Grading Services
SC 5-2 Prior to issuance of grading permits, the project applicant shall demonstrate	Prepare Report	Document Review	Prior to Issuance of Grading Permit	Applicant

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
measures to ensure compliance with SCAQMD Rule 403, and shall identify the dust suppression measures, such as regular watering, which shall be implemented to reduce emissions during construction and grading in a manner meeting the approval of the Manager, PDS/Subdivision and Grading Services Division. This will help reduce the short-term impacts from particles which could result in nuisances that are prohibited by Rule 403.				
Additional Mitigation Measures				
AM 5-3 As previously noted, no credit was taken for mobile source emissions reductions either from technology improvements (reformulated gasoline, alternative fuels and/or electric cars), nor from transportation behavior modification in response to programs such as South Coast AQMD Reg. XV or by the trip reduction programs These programs will mitigate the identified significant growth-related cumulative air quality impact to some extent. Because the projected effectiveness of such programs and because the time frame for technology development is uncertain, the degree of possible mitigation can not be quantified with certainty. Similarly, the buildout date for Saddleback Meadows will depend on economic forces that can not be predicted The following discussion structures the recommended mitigation as comprehensively as possible, but quantification of mitigation effectiveness is speculative at currently known levels of detail.	Air Quality Compliance	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Services
AM 5-4 Contractors will comply with SCAQMD Rule 403	Prepare Report	Document Review	Prior to Issuance of Grading Permit	Applicant
AM 5-5 Contractors will utilize measures to prevent dirt from being tracked, washed, blown or otherwise conveyed onto paved roadways, and will wash or sweep the construction access points at El Toro Road on a routine basis on a frequency specified by the County of Orange as well as whenever dirt is visible more than 50 feet from the access point independent of the routine clean-up schedule	Grading Control	Field Check	During Grading	Applicant

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
AM 5-6 Trucks hauling dirt on public roads to and from the site will be covered or will maintain a six inch differential between the maximum height of any hauled material and the top of the haul trailer Haul truck drivers will water the load prior to leaving the site to prevent soil loss during transport.	Haul Truck Monitoring	Field Check	During Grading	Applicant
AM 5-7 Construction management procedures required by the County of Orange and other jurisdictions shall be implemented. Contractor personnel responsible for supervision and the appropriate actions to be taken for the following measures shall be identified: • Cessation of activities during a Stage-2 smog episode. Call 1-800-242-4022 for the daily forecast. • Truck routes and schedules for receipt of materials shall be coordinated with County of Orange staff. • Where feasible, on-road vehicles and off-road equipment shall be turned off and subsequently restarted if the anticipated duration of idling is expected to exceed five (5) minutes.	Construction Management	Field Check	During Grading	Applicant
AM 5-8 Graded surfaces used for off-road parking, materials lay-down or awaiting future construction shall be stabilized for dust control as needed. Frequently accessed unpaved areas shall be paved as early as possible to minimize dirt trackout to public rights of way.	Dust Suppression	Field Check	During Grading	Applicant
AM 5-9 Equipment will be maintained in proper tune to prevent visible soot from reducing light transmission through the exhaust stack exit by more than 20 percent for more than three (3) minutes per hour and use low-sulfur fuel as required by SCAQMD regulation	Air Quality Compliance	Field Check	During Grading	Applicant

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
AM5-10 Flag persons and appropriate traffic control devices will be used as needed to minimize construction activity interference with off-site traffic	Traffic Control	Field Check	During Construction	Mgr. Transportation Planning
AM5-11 Implementation of the above measures is expected to maintain construction activity air quality impacts at less than significant levels. <u>Operational Activities</u> • Traffic flow at the project access will be maintained at acceptable levels of service through mitigation measures identified in the project traffic study. • 220v electric power for future use to charge electric-powered vehicles will be made available in homeowner garages.	Air Quality Compliance	Field Check	During Grading	Applicant
AM 5-12 Emissions calculations and the corresponding ambient air quality impact assessment for project-related construction and Saddleback Meadows operations presumed compliance with SCAQMD rules regarding dust control. The potential for additional emissions reduction beyond the mandatory requirements of existing rules and regulations was evaluated based on Appendix 11 of the SCAQMD Air Quality Handbook which quantifies reduction potential of a variety of project construction and operation emissions control measures. Dust emissions can be controlled from their 50 percent control assumed for Rule 403 compliance by an additional 50-80 percent of the uncontrolled fraction. The net effective dust control level is therefore 75-90 percent Unless the entire project site is under simultaneous massive grading, attaining the optimum level of dust control will maintain dust impacts at less than significant levels.	Emissions Control	Field Check	During Grading	Applicant

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Operational emissions reduction from mobile sources of 5 percent of their non-TCM implementation level can not reduce the substantial emission level to less than the SCAQMD advisory level significance thresholds. A number of secondary considerations were identified, however, that would either allow for a finding of an individually less than significant air quality impact.				
NOISE				
Project Design Features				
No PDF's have been proposed				
Standard Conditions of Approval				
SC 6-1 All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dBA CNEL all habitable rooms and a source specific exterior standard of 65 DBA CNEL in outdoor living areas. Evidence prepared by a County-certified acoustical consultant, that these standards will be satisfied in a manner consistent with Zoning Code Section 7-9-137 5, shall be submitted as follows:				
a. Prior to the issuance of grading permits, as determined by the Manager, PDS/Building Permits Services Division, the applicant shall submit an acoustical analysis report to the Manager, PDS/Building Permits Services Division, for approval The report shall describe in detail the exterior noise environment and preliminary mitigation measures Acoustical design features to achieve interior noise standards may be included in the report, in which case it may also satisfy "B" below.	Submit Acoustical Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PDS, Building Permits Services Division

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
b.	Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards to the Manager, PDS/Building Permits Services Division, for approval along with satisfactory evidenced which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project	Submit Acoustical Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PDS Building Permits Services Division
c.	Prior to the issuance of any building permits, the applicant shall show all freestanding acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division	Grading Plan	Review Grading Plan	Prior to Issuance of Building Permit	Mgr PDS Building Permits Services Division
SC 6-2	Prior to the issuance of grading permits, as determined by the Manager, PDS/Building Permits Services Division, an acoustical analysis report shall be submitted to the Manager, PDS/Building Permits Services Division, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures Acoustical design features to achieve interior noise standards may be included in the report in which case it may also satisfy SC 6-3 below	Acoustical Report	Report Review	Prior to Issuance of Grading Permit	Mgr PDS Building Permits Services Division
SC 6-3	Prior to the issuance of any building permits for residential construction, an acoustical analysis report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards shall be submitted for review and approval to the Manager, PDS/Building Permits Services Division, along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.	Acoustical Analysis	Document Review	Prior to Issuance of Building Permit	Mgr. PDS Building Permits Services Division

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 6-4 Prior to the issuance of any building permits, all freestanding acoustical barriers must be shown on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	Grading Plan	Plan Review	Prior to Issuance of Building Permit	Mgr. PDS Building Permits Services Division
SC 6-5 Prior to the issuance of any certificates of use and occupancy, the developer shall produce evidence acceptable to the Manager, PDS/Building Inspection Services Division, that information stating this property is subject to the overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station) has been provided to the Department of Real Estate of the State of California for inclusion into the Final Subdivision Public Report.	Acoustical Report	Document Review	Prior to Issuance of Certificate of Occupancy	Mgr. PDS Building Inspection Services
SC 6-6 Prior to the issuance of any certificates of use and occupancy, the applicant shall post aircraft noise impact notification signs in all sales offices associated with new residential development located within an aircraft 63 dB CNEL contour The number and location of said signs shall be as approved by the Manager, PDS/Building Permits Services Division	Acoustical Notice	Document Review	Prior to Issuance of Certificate of Occupancy	Mgr. PDS Building Permits Services Division
SC 6-7 Prior to the issuance of any building permit, an aviation easement over this property shall be offered for dedication to the County of Orange in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	Aviation Easement Dedication	Grading Plan	Prior to Issuance of Building Permit	Mgr. PDS Building Permits Services
SC 6-8 Prior to the sale, lease or rental of any structure or portion thereof, the applicant/owner shall provide to each prospective purchaser, lessee, or tenant a notice and statement of acknowledgment that the property is subject to overflight, sight, and sound of aircraft operating from (El Toro Marine Corps Air Station). The form and method of distribution of said notice and statement of acknowledgment shall be as approved by the Manager, PDS/Building Permits Services Division.	Acoustical Report	Report Review	Prior to the Sale of Units	Mgr. PDS Building Permits Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
A. Prior to the issuance of any grading permits, the proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division, that: (1) all construction vehicles or equipment, fixed or mobile, operated within 1000 feet of a dwelling shall be equipped with properly operating and maintained mufflers (2) All operations shall comply with Orange County "Codified Ordinance Division 6 (Noise Control); and (3) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings. B. Notations in the above format, appropriately numbered and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this requirement				
SC 6-9 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that excavation, grading and other construction-related activities shall be restricted to daytime hours as promulgated in the County's Codifide of Ordinance Division 6 (Noise Control).	Grading Operations	Document Review	Prior to Issuance of any Grading Permit	Mgr PDS Building Permits Services
SC 6-10 Prior to issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division that all construction equipment, stationary or mobile, shall be equipped with properly operating and maintained mufflers.	Grading Operations	Document Review	Prior to Issuance of any Grading Permit	Mgr. PDS Building Permits Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 6-11 Prior to the issuance of any grading permits, the project proponent shall produce evidence acceptable to the Manager, PDS/Building Permits Services Division, that: a) All construction vehicles or equipment, fixed or mobile, operated within 1,000-feet of a dwelling shall be equipped with properly operating and maintained mufflers b) All operations shall comply with Orange county Codified Ordinance Division 6 (Noise Control). c) Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings Notations in the above format, appropriately identified and included with other notations on the front sheet of grading plans, will be considered as adequate evidence of compliance with this condition.	Grading Operations	Document Review	Prior to Issuance of any Grading Permit	Mgr. PDS Building Permits Services
Additional Mitigation Measures The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations, in manner meeting approval of the Manger, Building Permits.				
AM 6-12 Prior to the issuance of Building Permits, all operative windows exceeding 6 sq ft. of glazing shall be rated SR=25 or greater	Construction Specification	Building Plan Review	Prior to Issuance of Building Permit	Mgr. PDS Building Permits Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
BIOLOGICAL RESOURCES				
Project Design Features				
No PDF have been proposed.				
Standard Conditions of Approval				
SC 7-1 Pursuant to Section 711.4 of the Fish and Game Code, the applicant shall comply with the requirements of AB 3158, prior to the filing of the Notice of Determination for the project, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services.	Payment of Fees	Document Review	Prior to Issuance of Grading Permit	Mgr PDS Environmental & Project Planning
SC 7-2 Prior to the issuance of any grading permits, the applicant shall obtain a Streambed Alteration Agreement covering the affected water courses and wetland areas within the proposed project area from the California Department of Fish and Game A 1603 Streambed Application has been submitted to CDFG. All streambed alteration activities shall be carried out in accord with the requirements of an approved Streambed Alteration Agreement	CDFG 1603 Agreement Grading Permit	Document Review	Prior to Issuance of Grading Permit	Mgr PDS Environmental & Project Planning
SC 7-3 Prior to the issuance of any grading permits, the applicant shall obtain the necessary individual or nationwide permit (pursuant to Section 404 of the Federal Clean Water Act) covering all affected wetland areas from the U.S Army Corps of Engineers, Los Angeles District All wetland areas shall be subject to the specifications of the 404 permit as determined by the Corps of Engineers. A copy of the 404 permit shall be submitted with the first grading permit application for the proposed project to the Manager, PDS/Subdivision and Grading Services Division.	ACOE 404 Permit Grading Permit	Document Review	Prior to Issuance of Grading Permit	Mgr PDS Environmental & Project Planning

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 7-4	Prior to the issuance of any grading permits, as required by participation in the Natural Community Conservation Planning/Coastal Sage Scrub (NCCP) agreement signed by the County on May 1, 1992, the project applicant shall provide an accounting summary, in acres or portions thereof, of coastal sage scrub scheduled to be impacted by removal through grading in a manner meeting the approval of the Administrator Planning & Zoning. (See Section 4.7.3.)	NCCP Compliance	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Environmental & Project Planning
SC 7-5	Prior to the issuance of a grading permit, the applicant shall provide proof that the appropriate Federal approvals required for impacts to Coastal Sage Scrub have been obtained from the U.S. Fish and Wildlife Service, in a manner meeting the approval of the Administrator, Planning & Zoning and Manager, PDS/Grading Services Division, in consultation with the Administrator, Planning & Zoning.	Coastal Sage Scrub	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Grading Services Division
SC 7-6	Notwithstanding the tentative map, no grading shall occur within the Natural Community Conservation Plan (NCCP) enrolled area except as in a manner meeting the approval of the Administrator, Planning and Zoning.	NCCP Compliance	Document Review	Prior to Issuance of Grading Permit	Administration Planning & Zoning
SC 7-7	Prior to the issuance of any grading permit, approval of any activity that involves removal of any native vegetation from subject site including clearing, grubbing, mowing, discing, trenching, grading, fuel modification, or other related construction-related activities, the applicant shall obtain written proof from the U.S. Fish and Wildlife Service that said activity complies with the Federal Endangered Species Act. This evidence shall be submitted to the Manager, PDS/Subdivision and Grading Services Division, for review and approval, in consultation with the Administrator, Planning and Zoning.	ESA Compliance	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Services
SC 7-8	Prior to the issuance of grading permits the applicant shall submit a landscape	Landscape Plan	Plan Review	Prior to Issuance of Grading Permit	Mgr. PF&R Harbors, Beaches

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
and tree preservation plan to the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval in accordance with the following guidelines: A. To the maximum extent feasible, all existing native and exotic trees and other significant vegetation shall be preserved in conjunction with any development activity. B. A tree preservation plan shall be prepared by a landscape architect for all development projects which identifies the location, size and species of all trees having a trunk diameter of 5 inches or greater (measured at four and one-half feet above ground level) and shrubs having a trunk or branch diameter of 3 inches or greater. The plan shall show which plants are proposed for removal and where transplanted and/or replacement plants will be located. Tree preservation plans shall be approved prior to issuance of grading permits, or where grading permits are not required, prior to issuance of building permits. C. Trees removed in accordance with an approved tree preservation plan shall be replaced by a combination of transplanting to another location on the subject property and/or replacement by a combination of 1 and 15-gallon plants at a minimum ratio of 5:1. The following sliding scale shall also be used for trees to determine if more than the minimum number of replacement trees are required. Tree Replacement Scale Trunk Diameter (inches) of Tree Removed				& Parks Division

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
At 4½ Feet Above Ground Level 5 to 11 5 (1-15 gal / 4-1 gal) 12 to 17 18 to 23 10 (2-15 gal / 8-1 gal) 24 to 35 12 (2-15 gal / 10-1 gal) Any oak exceeding 35 inches in diameter should be preserved, transplanted or replaced in accordance with the provisions outlined in Section E of the mitigation measure. In the event that all required replacement trees will not fit on the property, increase in container size will be considered in conjunction with reductions in replacement quality D. Significant shrubs removed in accordance with an approved tree preservation plan should be replaced by a combination of transplanting to another location on the subject property and/or replacement by 5-gallon plants at a minimum ration of 3.1. E. All other plants not specified in Guidelines C and D above that are removed in accordance with an approved tree preservation plan should be either transplanted to another location on the subject property or replaced by 15-gallon plants for trees and 5-gallon plants for shrubs at a minimum ration of 1 1 The two 35" + oak trees impacted by project implementation, will be mitigated by an				

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
	enhanced replacement ratio (5-15 gal/10-1 gal) to the satisfaction of the Manager, PF&R/Harbors Beaches and Parks Division.				
F	All transplanting of trees shall be performed by an experienced nursery or other landscape contractor, who shall care for the trees for at least six months after transplanting				
G.	Prior to issuance of final certificates of use and occupancy, all transplanted or replacement trees and shrubs shall be installed in accordance with the tree preservation plan.				
H.	Oak trees shall not be subjected to increased runoff from irrigation systems, impermeable surfaces, storm drain discharge, etc				
I.	Natural drainage courses and natural grades in proximity of, and providing seasonal irrigation to oak trees shall not be altered.				
J.	Grading, placement of fill, storage of building materials and heavy equipment, structural development, and hardscape (e.g., roads, sidewalks, patio slabs and pool decks) shall be prohibited within the drip line (outer edge of branches) of any tree. During grading and construction operations, all trees shall be temporarily fenced off with chain link fencing to protect such areas.				
K.	Use of pre-emergent weed killers shall be prohibited within 10 feet of the drip line of any individual tree and within any natural drainage course which seasonally irrigates trees.				
L.	Use of soil sterilizers shall be prohibited because they kill everything in the soil.				

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 7-9 Specify areas/lots to be dedicated or irrevocably offered to the County in fee or easement for landscape maintenance purposes, scenic or resource preservation purposes or resource replacement shall be landscaped, equipped for irrigation, and improved in accordance with an approved plan as stated below:	Open Space Dedication	Plan Review	Prior to Issuance of Grading Permit	Mgr PF&R Harbors, Beaches & Parks Division
a) Preliminary Plan -An agreement shall be entered into and financial security posed guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, with a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches and Parks Division. Said plan shall take into account the previously approved landscape plan for AP 95-7, the EMA Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and Specific Plan requirements, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures), and Board Resolution 90-1341 (Water Conservation Implementation Plan).				
b) Detailed Plan - Prior to the issuance of any building permit(s), a detailed landscape plan shall be submitted to and approved by the Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches and Parks Division. Detailed plans shall show the detailed irrigation and landscaping design.	Open Space Dedication	Plan Review	Prior to Issuance of Grading Permit	Mgr. PF&R Harbors, Beaches & Parks Division
c) Installation Certification - Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, said improvements shall	Open Space Dedication	Plan Review	Prior to Issuance of Grading Permit	Mgr PF&R Harbors, Beaches & Parks Division

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
be installed and shall be certified by a licensed landscape architect or licensed landscape contractor, as required, as having been installed in accordance with the approved detailed plans. Said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable, shall be furnished in writing to the Manager, PF&R/Construction Division, and the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy.				
SC 7-10 Prior to the issuance of precise grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan. The plan shall be certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan (if any), EMA Standard Plans, area plan 95-7, scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolution 90-487 (Water Conservation Measures) and Board Resolution 90-1341 (Water Conservation Implementation Plan). Said plan shall be reviewed by the future homeowners association and be reviewed and approved by the Manager, PDS/Subdivision and Grading Services Division.	Landscape Plan	Plan Review	Prior to Issuance of Grading Permit	Mgr PDS Subdivision & Grading Services
SC 7-11 Prior to the issuance of grading permits, the applicant shall provide additional evidence that the onsite coastal sage scrub habitat is not occupied by California gnatcatchers, in accordance with current USFWS protocol (7 in season/9 out of season pass surveys) to the satisfaction of the USFWS and the Administrator, Planning and Zoning. Should occupied coastal sage scrub habitat be identified onsite by the surveys consultation shall be initiated with the USFWS, and a coastal sage scrub/gnatcatcher mitigation plan shall be	Gnatcatcher Clearance	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
developed to the satisfaction of the USFWS and the Administrator, Planning and Zoning prior to the issuance of grading permits				
SC 7-12 Prior to the issuance of grading permits, the applicant shall provide appropriate measures to mitigate the project related impacts to onsite wildlife movement, to the satisfaction of the USFWS, CDFG and the Administrator, Planning and Zoning Mitigation shall consider onsite as well as offsite mitigation options, and established fee programs	Wildlife Corridors	Document Review	Prior to Issuance of Grading Permit	Mgr. PDS Subdivision & Grading Services
SC 7-13 Prior to the issuance of grading permits, the applicant shall provide assurances to the satisfaction of the County NCCP coordinator and the Administrator, Planning and Zoning, that the proposed project will participate in the NCCP planning process and not preclude the finalization of the Southern Subregional reserve component of the NCCP.	NCCP Compliance	Document Review	Prior to Issuance of Grading Permit	NCCP Coordination
SC 7-14 Prior to the issuance of grading permits, the applicant shall prepare a relocation and establishment mitigation plan, designed to mitigate impacts to Riverside fairy shrimp/pond habitat, wetlands, and southern sycamore woodland, to the satisfaction of the Administrator, Planning and Zoning, in consultation with USFWS and CDFG. Mitigation shall consider onsite as well as offsite mitigation options, as well as, established fee programs.	Habitat Mitigation Plan	Plan Review	Prior to Issuance of Grading Permit	Administration, Planning & Zoning
Additional Mitigation Measures				
AM 7-15 The following recommendations are proposed to further minimize some of the proposed impacts				
• Where possible, bulbs of individual Catalina Mariposa Lily and Intermediate Mariposa Lily that are to be impacted shall be dug up and transplanted to a suitable habitat with similar soil, slope exposure, etc.	Plant Relocation	Document Review	Prior to Issuance of Grading Permit	Applicant

Project Design Features Standard Conditions of Approval Additional Mitigation Measures		Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
•	Lighting within development projects adjacent to conserved habitat should be selectively placed, shielded, and directed away from that habitat. In addition, lighting from homes abutting conserved habitat should be screened with vegetation, and large spotlight-type lighting that may affect conserved habitat should be prohibited. These lighting restrictions should be incorporated into the project's CC&Rs	Lighting Plan	Document Review	Prior to Issuance of Grading Permit	Applicant
AESTHETICS					
Project Design Features					
PDF 8-1	All public utilities shall be situated underground	Visual	Plan Review	Prior to Issuance of Grading Permit	Applicant
PDF 8-2	Where feasible, drainage devices (terrace drains, benches, and intervening terraces) shall be bermed and placed in swales.	Visual	Plan Review	Prior to Issuance of Grading Permit	Applicant
PDF 8-3	Concrete drainage swales and other similar drainage infrastructure shall be tinted with an appropriate earth tone to effectively conceal them from surrounding view.	Visual	Plan Review	Prior to Issuance of Grading Permit	Applicant
PDF 8-4	The water tank shall be bermed, landscaped and painted to blend with the surrounding environment	Visual	Plan Review	Prior to Issuance of Grading Permit	Applicant
Standard Conditions of Approval					
SC 8-5	Prior to the issuance of any building permits, an agreement shall be entered into and financial security posted guaranteeing landscape improvements and the maintenance thereof based upon a detailed landscape plan showing	Landscape Agreement	Document Review	Prior to Issuance of Building Permit	Mgr. PDS Subdivision & Grading Services

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
	landscape design and irrigation with a cost estimate for the landscape improvements approved by tPhe Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division. Said plan shall take into account previously approved landscape plan(s), PF&RD Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, water conservation measures contained in Board Resolutions 90-487 (Water Conservation Measures), and 90-1341 (Water Conservation Implementation Plan).				
SC 8-6	Prior to the issuance of preliminary grading permits, landscaping for privately maintained areas shall be designed in accordance with a plan certified by a licensed landscape architect or a licensed landscape contractor, as required, as taking into account approved preliminary landscape plan(s), PF&RD Standard Plans, area plan 95-7 scenic corridor and Specific Plan requirements, Grading and Excavation Code erosion control requirements, Subdivision Code, Zoning Code, and conditions of approval, Water Conservation Measures contained in Board Resolutions 90-487 (Water Conservation Measures) and 90-1341 (Water Conservation Implementation Plan) Said plan shall be reviewed and approved by Manager, PDS/Building Permits Services Division, Manager, PDS/Subdivision and Grading Services Division, in consultation with the Manager, PF&R/Harbors Beaches & Parks Division, Environmental and Projects Planning Division.	Landscape Plan	Plan Review	Prior to Issuance of Grading Permit	Mgr. PF&RD
SC 8-7	Prior to the issuance of certificates of use and occupancy and release of financial security, applicant shall install the approved landscaping and irrigation system and shall have a licensed landscape architect or licensed landscape contractor, as applicable, certify that it was installed in accordance with the certified plan. Said certification, including an irrigation management report for each landscape irrigation system, and any other implementation	Landscape Installation	Field Check	Prior to Issuance of Certificate of Occupancy	Mgr. PDS Building Inspection Services Division

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
report determined applicable, shall be furnished in writing to the Manager, PDS/Building Inspection Services Division, prior to the issuance of any certificates of use and occupancy.				
SC 8-8 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	Lighting	Plan Review	Prior to Issuance of Building Permit	Mgr PDS Building Permit Services
Additional Mitigation Measures The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations:				
AM 8-9 Prior to issuance of any grading permit, the project proponent shall provide evidence to the Manager, PDS/Subdivision and Grading Services Division that indicates that graded areas will be compatible with natural landform characteristics. Criteria to achieve the desired effect shall include a) Recontouring the existing landforms to provide a smooth and gradual transition between graded slopes and existing grade while preserving the basic topographic character of the site. b) Variation and combination of slopes 2:1, 3:1 and 4:1 to create a more natural character wherever possible within the graded areas c) Attempting to balance between cut and fill within the overall area to eliminate an offsite and import/export situation. d) Obscuring slope drainage structures with a variety of plant materials.	Grading Compatibility	Grading Plan Review	Prior to Issuance of Grading Permit	Mgr PDS Subdivision & Grading Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
e) Incorporation of architectural and design techniques into the project in order to minimize grading and enhance offsite views (e.g., split levels, clustering)				
f) Preservation of visual opportunities from hillsides by providing for panoramic views from selected locations (e g , view corridors, sensitive landscape placement)				
AM 8-10 Manufactured slopes shall be replanted with vegetation native to the site to blend the new topography with existing natural on site vegetation, immediately following precise grading operations.	Landscaping	Plan Review	Immediately Following Grading	Applicant
AM 8-11 Fuel modification areas shall be planted with fire resistant vegetation.	Landscaping	Plan Review	Immediately Following Grading	Applicant
AM 8-12 Use of the California Sycamore or other species similar to trees currently existing onsite shall be used in appropriate common area and street landscape locations where feasible.	Landscaping	Plan Review	Immediately Following Grading	Applicant
AM 8-13 Common area landscaping and habitat transition zones shall utilize the FTSP recommended plant palette (appendix E) when selecting plant material	Landscaping	Plan Review	Immediately Following Grading	Applicant
AM 8-14 Slope landscaping shall occur as soon as feasible after grading and be maintained by the applicant until a homeowners association has been organized and assumes long term maintenance responsibility.	Landscaping	Plan Review	Immediately Following Grading	Applicant
Light and Glare				
AM 8-15 Prior to issuance of any certificate of use and/or occupancy, the potentially adverse impact of night lighting on surrounding land use shall be mitigated to the satisfaction of the Manager, PDS/Subdivision and Grading Services Division by the following measures:	Night Lighting	Plan Review	Prior to Issuance of Certificate of Occupancy	Mgr. PDS Subdivision & Grading Services

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
a) Street lights shall only be installed at intersections and as required to insure public safety. b) Low intensity halogen street lamps shall be used. c) Street lights shall be shielded to direct the light beam downward and to avoid direct glare into open space areas and adjacent property **CULTURAL/SCIENTIFIC RESOURCES** **Project Design Features** No project design features were included in this project. **Standard Conditions of Approval** **Archaeology** SC 9-1 Prior to the issuance of any grading permit, a County-certified archaeologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified archaeologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records search and the field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division Mitigation measures may be required depending upon the recommendations of this report This mitigation measure has been completed as part of the Draft EIR.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 9-2 Prior to issuance of any grading permit, a county-certified archaeologist shall be retained by the applicant to perform a subsurface test level investigation and surface collection as appropriate. The test level report evaluating the site shall include discussion of significance (depth, nature, conditions and extent of the resources), final mitigation recommendations and cost estimates and shall be approved by the Manager, PF&R/Harbors Beaches and Parks Division. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
SC 9-3 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained to conduct pre-grade salvage excavation of the archaeological resources in the permit area. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. A final report of the salvage operation shall submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, prior to any grading.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
SC 9-4 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified archaeologist has been retained, shall be present at the pre-grading conference, shall establish procedures for archaeological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit the sampling, identification, and evaluation of the artifacts as appropriate If the archaeological resources are found to be significant, the archaeological observer shall determine appropriate actions, in cooperation with the project developer, for exploration and/or salvage. The archaeologist shall submit a follow-up report to the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, an analysis of	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
any artifacts found and the present repository of the artifacts Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis These actions, as well as final mitigation and disposition of the resources, shall be subject to the approval of the Manager, PF&R/Harbors Beaches and Parks Division.				
Additional Mitigation Measures				
The following additional mitigation measures (AM) shall be implemented and enforced through the provision of existing codes and regulations in a manner acceptable to the Manager, PF&R/Harbors Beaches and Parks Division Facilities				
AM 9-5 Prior to site grading the project site shall be examined by a qualified archeologist, all potential archeological sites identified, and surface collection and documentation of artifacts be conducted	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
AM 9-6 As indicated by the project archeologist, sites warranting further study shall be disced to ascertain the extent and significance of the deposit. If the project archeologist determines that a site is potentially of cultural worth, then additional excavation in a manner determined by the project archeologist shall occur prior to further grading or construction activities at these locations.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr PF&R, Harbors, Beaches & Parks
AM 9-7 During initial grading, the project site shall be monitored by a qualified archeologist who shall have the authority to order a temporary cessation of grading activities and take appropriate action to preserve any culturally significant materials if uncovered.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
AM 9-8 If human remains of Native American origin are encountered during the project the County Coroner's Office and the Native American Heritage Commission shall be contacted for preservation and protection of the remains.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr PF&R, Harbors, Beaches & Parks

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Paleontology				
SC 9-9 Prior to the issuance of any grading permit, a County-certified paleontologist shall be retained by the applicant to complete a literature and records search for recorded sites and previous surveys. In addition, a field survey shall be conducted by a County-certified paleontologist unless the entire proposed project site has been documented as previously surveyed in a manner which meets the approval of the Manager, PF&R/Harbors Beaches and Parks Division. A report of the literature and records search and field survey shall be submitted to and approved by the Manager, PF&R/Harbors Beaches and Parks Division, Future mitigation shall depend upon the recommendations of the report This mitigation measure has been completed	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
SC 9-10 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained by the applicant to conduct pre-grade salvage and prepare a catalogue of the exposed resources. Excavated finds shall be offered to the County of Orange, or designee, on a first refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, for review and approval, which shall include methodology, an analysis of artifacts found, a catalog of artifacts, and their present repository This mitigation measure has been completed.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
SC 9-11 Prior to the issuance of any grading permit, the project applicant shall provide written evidence to the Manager, PDS/Subdivision and Grading Services Division, that a County-certified paleontologist has been retained to observe grading activities and salvage and catalogue fossils as necessary. The paleontologist shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, the paleontologist shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage. Excavated finds shall be offered to the County of Orange, or its designee, on a first-refusal basis. The paleontologist shall submit a follow-up report for approval by the Manager, PF&R/Harbors Beaches and Parks Division, which shall include the period of inspection, a catalogue and analysis of the fossils found, and present repository of the fossils. These actions, as well as final mitigation and disposition of the resources, shall be subject to approval by the Manager, PF&R/Harbors Beaches and Parks Division				
Additional Mitigation Measures The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations in a manner acceptable to the Manager, a Coastal and Historical Facilities				
AM 9-12 A qualified paleontologist shall be retained to perform periodic inspections of excavations and, if necessary, salvage exposed fossils. The frequency of inspections will depend on the rate of excavation, the materials being excavated, and the abundance of fossils. Initially, monitoring shall be on a full time basis in all excavations because of the high potential for the discovery of fossils in all the rock units present in the study area.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
AM 9-13 The paleontologist shall be allowed to divert or direct grading in the area of an exposed fossil to facilitate evaluation and if necessary, salvage.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
AM 9-14 To recover small fossils, it will be necessary to collect sediment samples	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
	from promising horizons discovered during grading monitoring for processing through fine mesh screens Once the samples have been screened, they will be examined microscopically for small fossils				& Parks
AM 9-15	Fossils shall be prepared to the point of identification and catalogued before they are donated to their final repository	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr PF&R, Harbors, Beaches & Parks
AM 9-16	All fossils collected should be donated the County of Orange's designated repository.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
AM 9-17	A report detailing the results of these efforts, listing the fossils collected, and naming the repository shall be submitted to the lead agency at the completion of the project.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
Historical Resources					
SC 9-18	Prior to issuance of a grading permit, project applicant shall provide written evidence to Manager, PF&R/Harbors Beaches and Parks Division that an historian has been retained by the applicant to implement final mitigation measures. A final report shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr. PF&R, Harbors, Beaches & Parks
SC 9-19	Development adjacent to a place, structure, or object of historic significance shall be designed so that permitted uses and architectural design will protect the visual setting of the historic site. Such design shall be submitted to and approved by the Manager, PF&R/Harbors Beaches & Parks Division prior to any alteration of the historical site area.	Cultural Resources Report	Report Review	Prior to Issuance of Grading Permit	Mgr PF&R, Harbors, Beaches & Parks

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
RECREATION				
Project Design Features				
PDF 10-1 The Live Oak and Aliso Creek riding and hiking trail shall be located on the Project Site as shown in Exhibit 7 and Exhibit 63 Site Plan.	Trails	Plan Review	Following Grading Operations	Mgr. PF&R Harbors, Beaches & Parks
PDF 10-2 Live Oak Canyon Trail shall be constructed onsite, connecting O'Neill Regional Park to the Aliso Creek riding and hiking trail, as shown in Exhibit No. 7, Site Plan.	Trails	Plan Review	Following Grading Operations	Mgr. PF&R Harbors, Beaches & Parks
PDF 10-3 Eight onsite private parks shall be constructed as shown on Exhibit 7 Site Plan, to offset project demand.	Park Construction	Field Check	Following Grading Operations	Mgr. PF&R Harbors, Beaches & Parks
Standard Conditions of Approval				
SC 10-4 The developer or his assigns and successors in interest shall maintain offered park site(s) until such time as the County or its designer accepts the offer of dedication, all in a manner of meeting the approval of the Manager, PF&R/Harbors Beaches & Parks Division.	Park Maintenance	Field Check	Following Construction	Mgr. PF&R Harbors, Beaches & Parks
Additional Mitigation Measures				
The following additional mitigation measures (AM) shall be implemented and enforced through the provisions of existing codes and regulations:				
AM 10-5 Prior to the first building occupancy, the applicant shall pay all park mitigation as required by the Department Manager, PF&R/Harbors Beaches & Parks Division.	Park Fee	Document Review	Prior to Issuance of Certificate of Occupancy	Mgr. PF&R Harbors, Beaches & Parks

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
AM 10-6 Prior to final building occupancy the applicant shall dedicate and construct all required regional trail connections and improvements as approved and required by the Department Manager, PF&R/Harbors Beaches & Parks Division.	Park Dedication	Document Review	Prior to Issuance of Certificate of Occupancy	Mgr. PF&R Harbors, Beaches & Parks
HAZARDS				
Project Design Features				
PDF 11-1 Implement a comprehensive fuel modification program in accordance with Section 27 of Appendix II-A of the 1994 Uniform Fire Code as adopted by County Ordinance 3954 (the Wildland Urban Interface Task Force report was not adopted and is not enforced by the OCFA). Exhibits 9 and 64 illustrate the fuel modification zones and, although adequately described, it should be noted that the distances are horizontal measurements rather than vertical and, therefore, may actually be larger zones as measured vertically up or down a slope (based on topography).	Future Modification	Document Review	Following Grading	Mgr. PF&R Harbors, Beaches & Parks
PDF 11-2 Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.	Future Modification	Document Review	Following Grading	Mgr. PF&R Harbors, Beaches & Parks
PDF 11-3 Provide for the construction of a water tank off site to ensure adequate on site water supply and OCFA fire flow requirements. The minimum fireflow requirements for this project of 1500 gpm for a minimum of 2 hours at 20 psi residual pressure. This flow must be available 24 hours per day .	Water Tank Construction	Field Check	Following Grading	Mgr. PF&R Harbors, Beaches & Parks
PDF 11-4 Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.	Utility Construction	Plan Review	Following Grading	Mgr. PF&R Harbors, Beaches & Parks

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
PDF 11-5 Residential structures shall be constructed of fire-resistant material, including but not limited to "Class A roof assemblies", closed eaves and offsets, double paned or dual glazed windows, and the exterior walls of structures will be constructed of " 1-hour fire resistant materials", and all structures will have fire sprinklers.	Unit Construction	Plan Review	Following Grading	Mgr. PDS Building Permit Services
PDF 11-6 All residential structures shall be required to have automatic interior fire sprinkler systems.	Fire Sprinkler	Plan Review	Prior to Issuance of Building Permit	Mgr PDS Building Permit Services
PDF 11-7 The interface area between residential lots and open space areas within the project boundary shall be wrought iron fenced to minimize intrusion of wildlife into the built portions of the project site	Fencing	Plan Review	Prior to Issuance of Building Permit	Mgr. PDS Building Permit Services
Standard Conditions of Approval				
SC 11-8 Prior to the issuance of any preliminary grading permits, applicant shall request that the Manager, HCA/Environmental Health, determine if vector control measures are necessary. If warranted, such measures shall be conducted by the developer in a manner meeting the approval of the Manager, HCA/Environmental Health.	Vector Control	Plan Review	Prior to Issuance of Grading Permits	Mgr. HCA Environmental
SC 11-9 Prior to the issuance of any building permits for combustible construction, a letter and plan from the developer shall be submitted stating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site. Said letter shall be approved by the Fire Chief prior to the issuance of any building permits.	Water Supply	Plan Review	Prior to Issuance of Building Permit	Fire chief
SC 11-10 Prior to the issuance of any building permits on those lots determined applicable by the Fire Chief, plans for an automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation.	Fire Sprinkler	Plan Review	Prior to Issuance of Building Permit	Fire chief

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
	This system shall be operational prior to the issuance of a certificate of use and occupancy				
SC 11-11	Prior to the issuance of any building permits, the applicant shall submit a detailed letter of intended use for each building to the Fire Chief for review and approval	Building Summary	Plan Review	Prior to Issuance of Building Permit	Fire chief
SC 11-12	Prior to the issuance of any grading permits, preliminary plans for all street and courts, public or private, shall be submitted to and approved by the Fire Chief. The plans shall include the plan view, sectional view, and indicate the width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be clearly marked.	Street Plans	Plan Review	Prior to Issuance of Grading Permits	Fire chief
SC 11-13	Prior to the issuance of any certificates of use and occupancy, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief. The plans shall indicate the locations of red curbing and signage, and provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color	Street Plans	Plan Review	Prior to Issuance of Certificate of Occupancy	Fire chief
SC 11-14	Prior to the issuance of any grading permits, construction details for any emergency access gate shall be submitted to and approved by the Fire Chief. Contact the Orange County Fire Department at (714)744-6623 for a copy of the "Guidelines for Fire Department Emergency Access".	Street Plans	Plan Review	Prior to Issuance of Grading Permits	Fire chief
SC 11-15	Prior to the issuance of any grading permits, a fuel modification plan and program shall be submitted and approved by the Fire Chief in consultation with the Manger, Environmental and Project Planning. The Planning and Development Section shall be contacted at 744-0403 for requirements to be met and clearance of this condition. The plan shall indicate the	Fuel Modification	Plan Review	Prior to Issuance of Grading Permits	Fire chief

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
	proposed means of achieving an acceptable level of risk to structures by vegetation, include the method (mechanical or hand labor) for removal of flammable vegetation and provide for the planting of drought tolerant fire resistant plants				
SC 11-16	Prior to the issuance of any building permits, the developer shall have completed, under the supervision of the Fire Chief, that portion of the approved fuel modification plan determined to be necessary by the Fire Chief before the introduction of any combustible construction material into the project area.	Fuel Modification	Plan Review	Prior to Issuance of Building Permit	Fire chief
SC 11-17	Prior to the issuance of any certificates of use and occupancy, the remaining fuel modification shall be installed and completed under the supervision of the Fire Chief. Further, the installed fuel modification shall be established to a degree meeting the approval of the Fire Chief.	Fuel Modification	Plan Review	Prior to Issuance of Certificate of Occupancy	Fire chief
Additional Mitigation Measures					
No additional mitigation measures have been proposed.					
PUBLIC SERVICES					
Project Design Features					
Sheriff					
PDF 12-1	The Orange County Sheriff's Department shall be consulted during final project design to minimize security related impacts.	Consultation	Plan Review	Prior to Issuance of Certificate of Occupancy	OC Sheriff

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Fire				
PDF 12-2 Implement a comprehensive fuel modification program in accordance with the guidelines established by the Wildland Urban Interface Task Force, July 1994, as approved by the Orange County Fire Authority (OCFA)	Fuel Modification	Plan Review	Prior to Issuance of Certificate of Occupancy	OCFA
PDF 12-3 Incorporate the use of native, low fuel plant species into the landscape plan for both manufactured slope areas and remedial grading areas where appropriate as approved by the OCFA.	Fuel Modification	Plan Review	Prior to Issuance of Certificate of Occupancy	OCFA
PDF 12-4 Provide for the construction of a 1.4 million gallon water tank offsite to ensure adequate onsite water supply for water supply and fire flow use.	Water Tank Construction	Plan Review	Prior to Issuance of Certificate of Occupancy	OCFA
PDF 12-5 Wet and dry utilities shall be constructed on opposite sides of the project streets to minimize land closure during maintenance periods.	Utility Construction	Plan Review	Prior to Issuance of Certificate of Occupancy	OCFA
PDF 12-6 Residential structures shall be constructed of fire resistant material as approved by the OCFA. In addition, no ventilation openings shall be allowed on the side of residential structures facing natural areas	Unit Construction	Plan Review	Prior to Issuance of Building Permits	OCFA
PDF 12-7 OCFA shall have the ability to enter the property through the secondary access road located off of Valley Vista Way	Emergency Access	Plan Review	Prior to Issuance of Building Permits	OCFA
Education				
No PDF's have been proposed.				
Library				
PDF 12-8 The developer shall pay any development fees required by the County of Orange Development Fee Program for libraries	Library Fee	Document Review	Prior to Issuance of Certificate of	County Librarian

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
			Occupancy	
Solid Waste				
No PDF's proposed.				
Standard Conditions of Approval				
SC 12-9 Prior to issuance of building permits, the applicant shall pay development fees for general County facilities if an applicable fee program has been adopted by the Board of Supervisors pursuant to Section 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange, and such fee program is in effect at the time of issuance of building permits, all, in a manner meeting the approval of the Manager, PDS/Environmental and Project Planning Services.	Development Fee	Document Review	Prior to Issuance of Building Permits	Mgr. PDS Environmental & Project Planning Division
Sheriff				
SC 12-10 Prior to the issuance of the first building permit, the project proponent shall enter into an agreement to (a) participate in funding the provision of the Saddleback Sheriff's Station; and (b) fund the provision of patrol and investigator cars needed to serve the project	Sheriff Agreement	Document Review	Prior to Issuance of Building Permits	OC Sheriff
Fire				
SC 12-11 Prior to the issuance of any certificates of use and occupancy, all onsite fire protection devices, including fire sprinklers, fire hydrants, alarm systems and fire suppression facilities, shall be installed and maintained in good condition by the property owner in a manner meeting the approval of the Fire Chief.	Fire Suppression Equipment	Field Check	Prior to Issuance of Certificate of Occupancy	Fire Chief
SC 12-12 Prior to issuance of any building permits for combustible construction, a	Water Supply	Plan Review	Prior to Issuance of Building	Fire Chief

	Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
	plan from the developer shall be submitted to and approved by the Fire Chief indicating that water for fire fighting purposes and an all weather fire access road shall be in place before any combustible materials are placed on the site			Permits	
SC 12-13	Prior to issuance of certificates of use and occupancy, emergency access shall be constructed in a manner meeting the approval of the Fire Chief.	Emergency Access	Plan Review	Prior to Issuance of Certificate of Occupancy	Fire Chief
SC 12-14	The approved fuel modification plan shall be installed prior to the issuance of building permits, under the supervision of the Fire Chief, and completed prior to the issuance of any use and occupancy permits. The CC&R's shall contain provision for maintaining the fuel modification zones including the removal of all dead and dying vegetation and the inspection and correction of any deficiencies in the irrigation system three times a year.	Fuel Modification	Plan Review	Prior to Issuance of Building Permits	Fire Chief
SC 12-15	Prior to the issuance of any grading permits, as part of the area plan, a fuel modification plan and program shall be submitted and approved by the Fire Chief Contact the Wildland Fire Defense Planning Section at 744-0498 for requirements and clearance of this condition The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Include the method (mechanical or hand labor) for removal of flammable vegetation and the planting of drought tolerant fire resistant plants	Fuel Modification	Plan Review	Prior to Issuance of Grading Permits	Fire Chief
SC 12-16	Prior to the issuance of any grading permits, the applicant shall submit a list of the quantities of all hazardous, flammable and combustible materials, liquids or gases. These materials shall be classified according to the "Orange county Fire Department Chemical Classification Handout", including a summary sheet listing each hazard class, the total quantity of chemicals stored per class and the total quantity of chemicals used in that class, all in a manner meeting the approval of the Fire Chief	Hazardous Materials	Document Review	Prior to Issuance of Grading Permits	Fire Chief

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
SC 12-17 Prior to the issuance of any certificate of use or occupancy, all fire hydrants shall have a "Blue Reflective Pavement Marker" indicating its location on the street or drive per the Orange County Fire Authority Standard. On private property these markers are to be maintained in good condition by the homeowners association.	Fire Hydrants	Document Review	Prior to Issuance of Certificate of Occupancy	Fire Chief
SC 12-18 Prior to the issuance of any building permits, plans for the automatic fire sprinkler system shall be submitted to and approved by the Fire Chief prior to installation. The system shall be operational prior to the issuance of the certificate of use and occupancy	Fire Sprinklers	Document Review	Prior to Issuance of Building Permits	Fire Chief
SC 12-19 Prior to the issuance of any grading permit, street improvement plans with fire lanes shown shall be submitted to and approved by the Fire Chief indicating the locations of red curbing and signage Provide a drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color The CC&R's shall contain a fire lane map, provisions which prohibit parking in the fire lanes, and a method of enforcing fire lane requirements by the homeowners association.	Fire Lanes	Document Review	Prior to Issuance of Grading Permits	Fire Chief
Education				
SC 12-20 Prior to the issuance of building permits, the applicant shall pay all applicable school fees required in accordance with State law Current school impact fees are $1 72 per square-foot of residential	School Fees	Document Review	Prior to Issuance of Building Permits	SVUSD
Library				
No Standard Conditions of Approval Mitigation Measures have been proposed.				

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Solid Waste				
SC 12-21 The potential for the proposed project to impact solid waste collection and disposal has been reduced to a level of insignificance through engineering design and construction techniques. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	Solid Waste Plan	Document Review	Prior to Issuance of Building Permits	Mgr PDS Building Permits Services
SC 12-22 Prior to the issuance of any building permits, a plot plan delineating the capacity, number, and location of all proposed solid waste collection areas shall be submitted to the Manager, HCA/Environmental Health, for review and acceptance. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	Solid Waste Plan	Plan Review	Prior to Issuance of Building Permits	Mgr. HCA Environmental Health
SC 12-23 Prior to the approval of a building permit the applicant shall submit a Recycling/Source Reduction Plan to the Manager, PDS/Environmental and Project Planning Services Division, for review and approval. Said plan shall provide a strategy to facilitate compliance with waste diversion levels as mandated by AB 939, and may include elements which demonstrate commitment to a project specific operation, coordination with existing local or regional programs, and the use of recycled materials during and following construction of the project. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	Recycling Plan	Plan Review	Prior to Issuance of Building Permits	Mgr. PDS Environmental & Project Planning
SC 12-24 Prior to the issuance of any certificates of use and occupancy, the	Solid Waste Plan	Plan Review	Prior to Issuance of Certificate of	Mgr. HCA Environmental

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
applicant shall provide verification that the solid waste plan delineating the capacity, number, and location of all proposed solid waste collection areas, previously reviewed and accepted by the Manager, HCA/Environmental Health, has been implemented/incorporated into the project, in a manner meeting the approval of the Manager, PDS/Building Inspection Services			Occupancy	Health
SC 12-25 Prior to the approval of a Site Development Permit the applicant shall submit a Recycling/Source Reduction Plan to the Manager, ENV /Project Planning Services Division, for review and approval. Said plan shall provide a strategy to facilitate compliance with waste diversion levels as mandated by AB 939, and may include elements which demonstrate commitment to a project specific operation, coordination with existing local or regional programs, and the use of recycled materials during and following construction of the project.	Recycling Plan	Plan Review	Prior to Issuance of Site Development Permit	Mgr. PDS Environmental & Project Planning
SC 12-26 Prior to the issuance of any certificates of use and occupancy, the applicant shall provide verification that the solid waste plan delineating the capacity, number, and location of all proposed solid waste collection areas, previously reviewed and accepted by the Manager, HCA/Environmental Health, has been implemented/incorporated into the project, in a manner meeting the approval of the Manager, PDS/Building Inspection Services Division	Solid Waste Plan	Plan Review	Prior to Issuance of Certificate of Occupancy	Mgr HCA Environmental Health
Additional Mitigation Measures No additional mitigation measures have been proposed.				

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
PUBLIC UTILITIES AND SERVICE SYSTEMS				
Project Design Features				
Water				
PDF 13-1 The new booster pump station shall be paid for by the applicant and designed and function according to TCWD's guidelines and standards.	Pump Stations	Plan Review	Prior to Issuance of Certificate of Occupancy	TCWD
PDF 13-2 Operational capacities and pressure parameters for design of the booster pump station (approved by OCFA) shall be determined at design stage and should incorporate but not be limited to the following requirements:	Pump Station	Plan Review	Prior to Issuance of Certificate of Occupancy	OCFA
• It shall meet the maximum day demand for the "stand alone" zones of Saddleback Meadows with an operating time of 24 hours and without its largest unit in service				
• It shall be designed with a back-up generator for the booster pump, as well as fuel and maintenance provisions.				
• It shall incorporate the typical 3 or 4 pump system with an alternating state sequence.				
• It shall pump from TCWD's El Toro Road zone (1,165 feet HWL) to the storage facility (reservoir) proposed				
• It shall have the ability to refill the proposed reservoir, if it were empty, within 72 hours while also providing for maximum day demands on the water system during that time.				

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
PDF 13-3 Water conservation measures to be implemented consist of water-conserving features in the design and construction of residential homes and uses, plus use of drought-tolerant plant materials in the slope and streetscape plantings. Proposed water conservation measures also include • Supply line pressure: Water pressure greater than 50 pounds per square inch (psi) reduced to 50 psi or less by means of pressure-reducing valves • Ultra-low-flush toilets: 1 5 gallon-per-flush toilets installed in all new construction. • Landscape with low-water-using plants wherever feasible • Grouping of plants of similar water use to reduce over-irrigation of low-water-using plants. • Extensive use of mulch as top cover to improve water-holding capacity of the soil. • Installation of efficient irrigation systems that minimize runoff and evaporation, and maximize the amount of water reaching plant roots. Drip irrigation, soil moisture sensors, and automatic irrigation systems are proposed methods of increasing irrigation efficiency.	Water Conservation	Plan Review	Prior to Issuance of Certificate of Occupancy	TCWD
PDF 13-4 All design and landscape features shall comply with TCWD's guidelines and standards.	Landscape Design	Plan Review	Following Grading	TCWD

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Wastewater				
PDF 13-5 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.	Wastewater Utilities	Plan Review	Following Grading	TCWD
Electricity				
PDF 13-6 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.	Electrical Facilities	Plan Review	Following Grading	SCE
Natural Gas				
PDF 13-7 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map	Natural Gas Facilities	Plan Review	Following Grading	SCG
Cable				
PDF 13-8 All utilities shall be installed by Cox Cable in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.	Cable Facilities	Plan Review	Prior to Issuance of Certificate of Occupancy	Cox Cable
Communications				
PDF 13-9 All utilities shall be installed by the applicant in accordance with Department/County requirements, per the requirements outlined on the Final Tract Map.	Telephone Facilities	Plan Review	Prior to Issuance of Certificate of Occupancy	Pacific Bell

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Standard Conditions and Mitigation Measures				
Water				
SC 13-10 Prior to the issuance of any building permit(s), the applicant shall provide a report to the Manager, PDS/Building Permits Services Division, indicating that plans showing the location of all proposed reclaimed water lines used to irrigate open spaces, parks, and other landscaped areas, have been submitted to and approved by the Trabuco Canyon Water District	Reclaimed Water Report	Report Review	Prior to Issuance of Building Permits	Mgr. PDS Building Permits Services
SC 13-11 Prior to the issuance of building permits, water conservation measures shall be incorporated into the development design plans and which shall be submitted for approval to the Trabuco Canyon Water District.	Water Conservation	Report Review	Prior to Issuance of Building Permits	Mgr. PDS Building Permits
Wastewater				
SC 13-12 Prior to the issuance of a certificate of use and occupancy, sewer lines, connections, and structures shall be installed in a manner meeting the approval of the Manager, HCA/Environmental Health. A All waste water facilities and line shall be constructed and maintained to meet TCWD standards and requirements. B. All sewer lines shall be underground facilities. C. The project shall comply with all State of California Health and Safety Codes	Wastewater Line Connection	Field Check	Prior to Issuance of Certificate of Occupancy	Mgr. HCA Environmental Health

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Electricity				
SC 13-13 Prior to the issuance of a building permit, project proponent shall consult with the local gas and electric companies regarding feasible energy conservation features that should be included in the design of the proposed project. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division.	Energy Conservation	Plan Review	Prior to Issuance of Building Permits	Mgr PDS Building Permits Services
SC 13-14 Prior to the issuance of a building permit, the project proponent shall incorporate passive or natural heating and cooling opportunities in the design of the proposed project including but not limited to the following: solar energy use; thermal insulation, tinted or solar reflective glass; orientation to sunlight, use of deciduous trees in landscaping; installation of roof fans, utilize fluorescent lighting, switches and thermostat, utilize time-controlled lighting, and, utilize AC units with 100% outdoor air economize. A note on the building plans and certified by a licensed engineer shall substantiate that the features have been incorporated into the building plans in a manner meeting the approval of the Manager, PDS/Building Permits Services Division	Energy Conservation	Plan Review	Prior to Issuance of Building Permits	Mgr PDS Building Permits Services
Natural Gas				
SC 13-15 The applicant shall provide for all lines and mains necessary to provide natural gas to the project	Natural Gas Lines	Plan Review	Prior to Issuance of Building Permits	Mgr. PDS Building Permits Services
SC 13-16 The applicant shall obtain all required permits and follow all SCG, State and County regulations and requirements regarding natural gas service	SCG Permits	Plan Review	Prior to Issuance of Building Permits	SCG

Project Design Features Standard Conditions of Approval Additional Mitigation Measures	Implementation Actions, Conditions or Mechanism	Method of Verification	Timing of Verification	Responsible Person
Cable				
No standard condition of approval have been proposed				
Communications				
SC 13-17 Applicant shall comply with the requirements of the California Public Utilities Commission and Pacific Bell Telephone Company for the provision of telephone service	Telephone Facilities	Plan Review	Prior to Issuance of Building Permits	Pac Bell

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

NO. 566

STATE CLEARINGHOUSE NO. 96121072

SADDLEBACK MEADOWS

RECORDED TRACT MAP 10692

GRADING APPLICATION GA960048

VOL. 2

Orange County
Planning & Development Services Department

June 1997

URBAN VISION

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT NO. 566
State Clearinghouse No. 96121072

SADDLEBACK MEADOWS
Recorded Tract Map No. 10692
GA 960048

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June 1997

TABLE OF CONTENTS
Volume 2

APPENDIX A - ORGANIZATIONS

APPENDIX B - REFERENCES

APPENDIX C - NOTICE OF PREPARATION (NOP)

APPENDIX A
ORGANIZATIONS AND PERSONS CONSULTED

APPENDIX A - ORGANIZATIONS AND PERSONS CONSULTED

Orange County Planning and Development Services

- Raymond Brantley, Chief, Environmental Planning, Private and Capital Projects
- Frank McGill, Chief, LPD, Consistency Review Section
- Bill Grieman, Planner, Private/Capital Projects
- Mike Welborn, Planner, APD
- Bob Aldrich, Chief, APD, Element Planning
- J. Golding, Manager, Advance Planning Division
- T. Neely, Zoning Administrator
- G. Medeiros, Chief, EPD-Resources/Flood Projects
- P Stanton, Manager, Subdivision & Grading Division
- J. Earnest, Chief, Grading Section
- C. Crompton, Manager, Environmental Resources Division
- P. Wang, Chief, Acoustics Section
- I. Ochoa, Manager, Traffic Engineering Division
- R. Peterson, Manager, Transportation Planning
- H Persaud, Chief, Transportation Planning

Orange County Fire Authority

- Page Dougherty, Senior Fire Safety Specialist

Trabuco Canyon Water District

- Steve Andrews, Consulting Engineer

Saddleback Valley Unified School District

- Mary Lou Smith

Waste Management of Orange County

- Christine Upton

Integrated Waste Management Department of Orange County

- Samantha Atkinson

Cox Commuications

- Peter Agnew, New Development Department

Southern California Edison

- Gary Bollard, Customer Service Planner

The Gas Company

- Bob Warth

Orange County Public Library System

- Dave Samkey, Financial Manager, Orange County Public Library

Orange County Sheriff - Coroner's Department

- Lt. Hector Rivera

Santa Margarita Water District

- Dorianne Capparelli, Senior Plant Operator, SMWD Chiquita Water Reclamation Plant

ENVIRONMENTAL CONSULTANT

Urban Vision

- Carlene Baskevitch, Principal
- Duane Morita, Senior Planner
- Greg Flisram, Project Planner
- Grace Neary, Graphic Designer
- Kim Jensen, Word Precessing Manager
- Eric Ruby, Planning Advisor

Hunsaker & Associates - Infrastructure Engineering

Forma - Land Planning (Visual Simulations)

Sweetwater Environmental Biologists, Inc - Biologist

G.A Nicoll & Associates - Geotechnical Engineering

RMW Paleo Associates - Cultural Resources

Robert Kahn, John Kain Associates - Traffic Engineering

Rivertech, Inc. - Hydrology

Giroux & Associates - Noise/Air

McCollum & Associates - Regulatory Compliance

Ross & Scott - Legal

Michael E. Madden - Land Planner (Alternatives)

APPENDIX B
REFERENCES

APPENDIX B - REFERENCES

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Soil Conservation Service, December 12, 1952. Flight AXK-3K, Exposures 113 and 114, scale: 1 inch = 2000 feet.

APPENDIX C
NOTICE OF PREPARATION (NOP)

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072 NOP Commentators Public Agencies	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset / Human Health	Population/Housing	Right of Way / Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics / View / Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/NON CEQA	No Comments
Jan 27, 1997 1. City of Mission Viejo Clint Sherrod, Community Development Director et. al													X	X														X			X	
Jan 28, 1997 2 County of Orange Johnnie Earnest, Chief Geotechnical/ Grading Plan Check			X		X					X																					
Jan 14, 1997 3 County of Orange Kevin H Kondru, Manager IWMD/ Engineering Support Services																						X									
Jan. 9, 1997 4 County of Orange Joan S Golding, Manager P&DS/APD							X					X				X	X													X	

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072 NOP Commentators Public Agencies	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset / Human Health	Population/Housing	Right of Way / Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics / View / Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/NON CEQA	No Comments
Jan. 8, 1997 5 County of Orange Ignacio Ochoa Traffic Engineering	X													X																		
Jan. 17, 1997 6. County of Orange Fire Authority Laura Blaul, Deputy Fire Marshall													X		X	X																
Jan. 10, 1997 7. So. Calif. Association of Governments Viviane Docre-Boulos, Manager Intergovernmental Review						X	X	X		X		X		X						X						X	X		X			
Jan. 10, 1997 8 So. Calif Gas Company Robert S. Warth, Technical Supervisor																			X													

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072 NOP Commentators Public Agencies	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset / Human Health	Population/Housing	Right of Way / Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics / View / Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/NON CEQA	No Comments
Jan 30, 1997 9. U.S Fish & Wildlife Service Gail Kobetich, Field Supervisor		X		X	X			X		X			X											X				X		X		
Jan 30, 1997 10. State of California Department of Fish and Game/ Ron Rempel, NCCP Program Manager CDFG		X		X	X			X		X			X											X				X		X		
Jan 21, 1997 11 State of California Department of Transportation Robert Joseph, Chief Advance Planning Branch																																X
Dec 31, 1997 12 State of California Governor's Office of Planning & Research Antero A Rivasplata, Chief, State Clearinghouse																														X		

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072 NOP Commentators Public Agencies	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset / Human Health	Population/Housing	Right of Way / Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics / View / Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/NON CEQA	No Comments
Jan 22, 1997 13. Trabuco Canyon Water District Bruce Boner, General Manager																																X
Jan. 2, 1997 14 Transportation Corridor Agencies Steve Letterly, Director Environmental Services																																X
Jan 7, 1997 15 United States Marine Corps D. P Pender, Colonel Community Plans and Liaison Officer																																X

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072 NOP Commentators Private Citizens	1 St. Michael's Abbey Rutan & Tucker LLP David B Cosgrov Jan. 3, 1997	2 Vedanta Society of So. Calif Ramakrishna Monastery Richard Jennings Jan. 20, 1997	3 Vedanta Society of So Calif. Charles Mitchell & Associates Jan 27, 1997	
Project Description	X		X	
Related Projects				
Grading	X	X		
Hydrology				
Geologic Hazards/Landslides	X	X	X	
Air Quality	X			
Plant/Animal Life				
Noise	X			
Land Use/Compatibility	X	X		
Natural Resources	X	X		
Risk of Upset / Human Health		X		
Population/Housing	X		X	
Right of Way / Access/Trails				
Traffic	X	X		
Fuel Modification				
Fire & Police Protection			X	
Schools & Libraries	X		X	
Parks & Recreation	X		X	
Energy/Utilities			X	
Water Supply/Water Quality				
Storm Water Drainage				
Sewers				
Solid Waste				
Aesthetics / View / Light & Glare	X			
Cultural/Scientific Resources				
Long Term Implication	X	X		
Growth Inducing Impacts				
Alternatives	X			
General Comments		X		
CEQA Procedures	X			
Other/NON CEQA			X	
No Comments				

PLANNING & DEVELOPMENT SERVICES DEPARTMENT
P.O. Box 4048
SANTA ANA, CALIFORNIA 92702-4048

(REVISED)

NOTICE OF PREPARATION

FILED

Date: February 6, 1997

FEB 05 1997

Subject: Revised Notice of Intent to Prepare A Draft Environmental Impact Report # 566

GARY L. GRANVILLE, Clerk-Recorder
By _____ DEPUTY

Project Title: Saddleback Meadows Development

Applicant: California Quartet, Inc.

The Orange County Planning & Development Services Department has conducted an Initial Study for the subject project and has determined that an Environmental Impact Report is necessary. The County of Orange will be the Lead Agency for the subject project and will prepare the EIR. In order for the concerns of your agency to be incorporated into the Draft EIR, we need to know the views of your agency as to the scope and content of the environmental information relevant to your agency's statutory responsibilities in connection with the proposed project. Your agency must consider the EIR prepared by the County of Orange when considering your permit or approval for the project. The project description, location, and an analysis indicating the probable environmental effects of the proposed action are contained in the attached materials.

Pursuant to Section 21080.4 of CEQA, your response must be sent as soon as possible but not later than 30 days after receipt of this notice.

If any significant changes in the proposed project occur, we will advise you. If you have need for additional information contact Raymond H.C. Brantley/William Grieman of the Environmental & Project Planning Division at 834-5550.

Submitted by:

Raymond H.C. Brantley

Attachment: Initial Study

POSTED

FEB 05 1997

GARY L. GRANVILLE, Clerk-Recorder
By _____ DEPUTY

NOTICE OF INTENT TO PREPARE (NOP)
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT EIR (566)
FOR THE SADDLEBACK MEADOWS DEVELOPMENT project
GRADING APPLICATION GA960048
TRACT MAP 10692

I. INTRODUCTION/BACKGROUND

Pursuant to Public Resources Code Section 21165, the County of Orange is the Lead Agency responsible for preparing a Subsequent Environmental Impact Report (EIR) addressing potential impacts associated with the proposed Saddleback Meadows project located approximately ½-mile from the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Specific Plan area of unincorporated Orange Count. Section 15162 of the California Environmental Quality Act (CEQA) Guidelines describes a Subsequent EIR which will be the type of EIR prepared for the proposed project. According to this Section, a Subsequent EIR shall be prepared when subsequent changes are proposed in the project which will require important revisions of the previous EIR due to the involvement of new significant environmental impacts not considered in the previous EIR.

Subsequent EIR 566 will be based upon EIR 059, certified in May, 1978, FEIR 203, certified January 9, 1980, and FEIR 531, certified December 10, 1991. It will also incorporate relevant portions of DEIR 561 proposed for the earlier project. The currently proposed project was also evaluated as Alternative 2 in EIR 561.

II. PROJECT DESCRIPTION

The project proposes the phased development of 705 manufactured single family housing units and a 1.7-acre, neighborhood commercial center and associated infrastructure, on a 222.23-acre site on the easterly side of El Toro Road. The gross residential density is 3.17 du/ac, with minimum lot sizes of 2,630 square feet. Ten (10%) percent of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a private park site, regional riding/hiking trail connections, and construction of a water tank site dedicated to, and accepted by, the Trabuco Canyon Water District. Project implementation requires the approval of a grading plan. The grading permit application (GA960048) is based on tract 10692, which was recorded December 16, 1988.

The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan approximately ½-mile southerly of the El Toro Road/Live Oak Canyon Road intersection. Implementation of the proposed project would directly effect 158 0-acres of the project site, not including remedial grading and fuel modification requirement. Total development footprint area would affect 90% or 200 acres of the project site In addition to onsite grading 2.04-acres of offsite area would be effected for access road construction and remedial grading.

A total of 3.7 million cubic yards of conventional grading and 10 million cubic yards of remedial grading would be required to implement the project.

The following table summarizes major features for the proposed project and current surrounding residential developments

SURROUNDING PROJECT COMPARISON SUMMARY

FEATURE	PROPOSED PROJECT	PORTOLA HILLS	HIDDEN HILLS/ HIDDEN RIDGE
Acreage	222.23	1,399	74
Dwelling Units	705	2,200	230
Minimum Lot Size	2,630 sf	3,000 sf	5,000 sf
% Open Space	10%	39%	31%
Gross Density	3.17 du/ac	2.2 du/ac	3.1 du/ac
Conventional Grading/Lot	4,500 cy	7,450 cy	5,850 cy
Wildlife Corridor	No	No	No
Regional Trail Connections	Yes	Yes	Yes

III. SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS

An Initial Study has been completed analyzing the proposed project pursuant to Section 15063 of the CEQA Guidelines It has been determined that there is substantial evidence that significant effects may occur in the topical areas of: Land Use, Geophysical; Water; Transportation; Air Quality; Noise; Biological Resources; Aesthetics, Cultural/Scientific Resources; Recreation; Hazards and Cumulative Impacts Areas that revealed less than or no significant effects were. Population and Housing; Energy and Minerals, Public Services; and Utilities and Service Systems. For more detail consult the Initial Study analysis

IV. ALTERNATIVES TO BE EVALUATED IN THE DRAFT EIR

The EIR will include a range of Alternatives which fulfill the following California Environmental Quality Act (CEQA) criteria outlined in Section 15126(d) of the CEQA Guidelines:

A. Alternatives Which Achieve the Project's Objectives: Section 15126(d) requires a range of Alternatives which could feasibly achieve the project's objectives.

B. Alternatives Which Eliminate or Reduce Project Impacts CEQA Guidelines Section 15126(d)(3) requires that the Alternatives Section of an EIR shall focus on those alternatives capable of eliminating or reducing any significant adverse impacts on the environment caused by the project.

C. Rule of Reason: Section 15126(d)(5) of the CEQA Guidelines requires that the range of Alternatives in an EIR be governed by the "rule of Reason" which requires the EIR to set forth only those alternatives necessary to permit a reasoned choice by the decision-maker.

Proposed Alternatives

The Lead Agency has determined that the following Alternatives to the proposed project are reasonable alternatives to be discussed in EIR 566 in compliance with Section 15126(d) of the Guidelines·

1 No Project/ No Development Alternative - This alternative would leave the proposed site in its existing condition.

2 FTSP EIR 531 Staff Alternative A - This alternative would allow 150 sf units with a minimum lot size of 20,000 square feet.

3. FTSP EIR 531 Staff Alternative B - This alternative would reduce the number of dwelling units on the project site to no more than 100 on approximately 30 acres.

4 299 Unit Single Family Housing Alternative - This alternative is the proposed project recommended by the OCEMA in preparation of EIR 561

5 Cluster/Reduced Development Footprint - This alternative evaluates a 318 detached and attached unit project within a reduced development footprint.

V. MANDATORY FINDINGS

A. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Yes. The proposed project has the potential of significantly affecting the range of wildlife that may currently use this property as a wildlife movement corridor.

B Does the project have the potential to achieve the short-term environmental goals to the disadvantage of the long-term environmental goals?

Yes. The project has the potential to affect the NCCP related wildlife corridor planning for this area.

C Does the project have possible environmental effects which are individually limited but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Yes. The proposed project could have significant cumulative effects on the air quality, traffic and biological resources of the area.

D. Does the project have environmental effects which will cause substantial adverse effects on human

beings, either directly or indirectly? *Yes. project implementation could have substantial adverse effects on human beings in terms of noise, air quality and geotechnical hazards. These potentially significant impacts shall be analyzed under each topical area of the EIR.*

VI. INITIAL STUDY

The Initial Study analysis is included in this NOP for review.

DETERMINATION

Based on the Initial Study above, the proposed project may have a significant effect on the environment which has not been analyzed in any previous CEQA document. Therefore an Environmental Impact Report (EIR) is required.

CONTACT

Raymond H.C. Brantley, Chief
EMA/Environmental & Project Planning Division
Private/Capital Projects Section
(714) 834-3763

PROJECT BACKGROUND/CHRONOLOGY

The current proposed project is the culmination of planning efforts with the County of Orange over a seventeen (17) year period. The following Chronology identifies key dates in the project's evolution·

SADDLEBACK MEADOWS PROJECT CHRONOLOGY

DATE	PROJECT RELATED EVENT
August 8, 1978	- The Orange County Board of Supervisors adopted GPA 78-1, Item 4, the "Saddleback Meadows Mobile Home Subdivision" which granted a change in the Land Use Element designation for the site from 5.4 Other Open Space to 1 22 Medium Low Density Residential and 2.1 Local Commercial. Maximum number set at 617 dwelling units. Triggering mechanism to revert land use designation to original after 2 years commenced. EIR 059 certified.
February 6, 1979	- Board adopted Site Plan conditions as requirements for implementing the subject amendment. Draft EIR 059, which was the CEQA documentation for the site plan, identified major grading impacts as project related impacts, these impacts were also shown on grading plans for Tentative Tract Map TT10692, prepared for the project.
March 7, 1979	- Zone change application, Tentative Tract Map and Initial Study requests submitted to County for a maximum of 617 mobile home units and a neighborhood convenience commercial center on the project site.
March 29, 1979	- Determination of requirement for an EIR transmitted to applicant by Environmental Services Division (ESD).
June 5, 1979	- Appeal of EIR requirement by Cliff Russell, representing Worthington/McNiff
June 11, 1979	- The Orange County Planning Commission denied the appeal Supplemental EIR required for proposed 617 unit tentative tract map
June 25, 1979	- Zone Change 79-24 submitted to County The project proposed at this time consisted of 617 units
August 7, 1979	- Revised Tentative Tract Map was submitted to the County for Screencheck reflecting some design modifications requested by County staff as well as an increase of 145 dwelling units added to the project by the proponent.
August 17, 1979	- Revised Tentative Tract Map and Supplemental Environmental Information submitted to Environmental Services (ESD). Submittal raised many questions with ESD in that the project had been revised substantially with a 23.5% increase in total number of units and intensity of land use.

Saddleback Meadows Project Chronology (Cont'd)

DATE	PROJECT RELATED EVENT
August 21, 1979	- Revised Zone Change 79-24 received by the County reflecting the revised project proposal of 762 units, with 25% in affordable range.
November 28, 1979	- Revised TT10692 filed with Environmental Management Agency depicting 727 lots, including 714 residential lots, 1 commercial lot and several open space and utility lots.
December 13, 1979	- TT10692 approved by the Planning Commission with recommendation that Zone Change ZC79-24 be approved by Board of Supervisors
January 9, 1980	- Saddleback Meadows properties placed in the PC "Planned Community" District and adopted by Board of Supervisors, Ordinance Number 3177. Final EIR 203 certified.
October 28, 1981	- Two year extension of time to record to expire December 12, 1983 approved by the Subdivision Committee.
December 7, 1981	- Appeal to deny two year extension of time affirmed by Planning Commission. One year extension of time to record to expire December 12, 1982 granted by Planning Commission.
November 17, 1982	- An additional one year extension of time to record to expire December 12, 1983 approved by Subdivision Committee.
July 13, 1983	- Saddleback Meadows Planned Community District Regulations amended by Planning Commission, and adopted by Board of Supervisors, Ordinance Number 3398 (ZC82-63P)
October 26, 1983	- Third one year extension of time to record approved.
June 13, 1984	- Saddleback Meadows Planned Community District Regulations amended by Planning Commission, and adopted by Board of Supervisors, Ordinance 3486 (ZC84-3P).
October 24, 1984	- 589-day stay of time in which to record a final tract map approved by Subdivision Committee. Expiration date extended to July 24, 1986
July 24, 1986	- Water district could not provide sewer service; recordation not allowed until sewer capacity available.
December 16, 1988	- Tract Map 10692 recorded.
December 10, 1991	- Foothill/Trabuco Specific Plan approved and Final EIR 531 certified by Orange County Board of Supervisors The Specific Plan incorporated the Saddleback Meadows Planned Community Regulations as the Bridlewood Residential District.

Saddleback Meadows Project Chronology (Cont'd)

DATE	PROJECT RELATED EVENT
April, 1994	- Grading Permit Application GA940031 submitted for Phase I, Grading (98 3 acres) of the site.
August, 1994	- Initial Study completed and Environmental Impact Report Determination Letter is issued.
August 11, 1994	- Letter of Appeal filed with County
November, 1994	- Appeal Hearing postponed to January 7, 1995, then to January 31, 1995.
January 31, 1995	- Applicant withdraws appeal Planning Commission directs applicant to develop a more compatible project in response to public testimony, staff concerns, and Planning Commission's direction.
July 27, 1996	- Revised 318-unit Site Development Plan, zone change and area plan submitted to County of Orange.
July 30, 1996	- Orange County Planning Commission recommended EIR 561 for certification and recommended applications for Vesting Tentative Tract Map No 15230, area plan 95-7 and zone change 95.5 be denied.
August 11, 1995	- Notice of Preparation circulated for EIR 561.
October 22, 1996	- Board of Supervisors denied project and did not certify EIR 561
December 3, 1996	- Applicant submitted application for Phase I Grading Plan for 705 unit Tract 10692 (GA960048)
December 16, 1996	- EMA determined that a Subsequent EIR is required to evaluate the effects of the grading application

CEQA CHECKLIST DISCUSSION

INITIAL STUDY PROCEDURE

This Initial Study has been conducted pursuant to Section 15060 of the State CEQA Guidelines and the County of Orange CEQA procedures. It includes a detailed review and analysis of the project in light of the following documents, plans, policies and guidelines:

- CEQA Statute and Guidelines;
- Draft EIR 561/Response To Comments
- Final EIR 059, Certified on August 8, 1978;
- Final EIR 203, Certified on January 9, 1980;
- Original Grading Plans;
- Foothill-Trabuco Specific Plan;
- Final EIR 531, Certified on December 10, 1991,
- Tentative Tract Map TT10692/Recorded Final Tract Map 10692;
- TT10692 Hydrology and Hydraulic Design Reports,
- Aliso Creek Corridor Specific Plan;
- Orange County General Plan Elements: Land Use; Noise; Transportation; Resources; Recreation; and Safety;
- Biological Assessment and Oak Tree Inventory;
- Saddleback Meadows Preliminary Landscape Submittal,
- Fourth Supplemental Geotechnical Report;
- Correspondence on the Subject;
- Southern California Coastal Sage Scrub NCCP Process Guidelines, Amended November 1993;
- Initial Study No. PA940068 - July 6, 1994, and
- Supplemental Saddleback Meadows Communication Booklet - June 30, 1995.

The following discussion provides a detailed analysis of the environmental categories on the Orange County Environmental Analysis Checklist as they relate to the proposed project. It also identifies those issues that have been determined not to have potentially significant effects, and those determined to be mitigatable. It also provides the probable scope of evaluation in the Draft Subsequent EIR.

1. LAND USE & PLANNING

Existing Setting

The entire project 222.23-acre Saddleback Meadows project site is currently zoned "S"-Foothill/Trabuco Specific Plan with SR-Sign Restriction overlay district. The Bridlewood/Saddleback Meadows Residential District was established within the Foothill/Trabuco Specific Plan, adopted December, 1991, to recognize the existing zoning and tract map approvals for the Bridlewood/Saddleback Meadows property.

The current Orange County General Plan Land Use Element (LUE) designations for the project site are: 1B-Suburban Residential LUE Designation (0.5 to 18 Dwellings per Acre); and 1.2 Low Density Residential Neighborhoods - Community Profile Designation (0.5 to 2.0 Dwelling Units per Acre).

Surrounding Land Uses

Southerly: Hidden Ridge Residential Development (230 Residential Dwelling Units), Ramakrishna Monastery and O'Neill Park.

Westerly: Portola Hills Planned Community Residential Development (2,200 Residential Dwelling Units)

Northerly: Saint Michael's Abbey and Prep School

Easterly: Ramakrishna Monastery; Rural single-family development.

Potential Impacts

Potential impacts which may result if the project is developed include. the introduction of 705 manufactured housing units, a 1.7-acre, neighborhood commercial center, and related major infrastructure improvements into an area previously used primarily for open space and agricultural uses; potential conflicts with existing surrounding land uses; and the conversion of agricultural land to development.

The circumstances regarding surrounding land uses has changed since the previous EIRs were certified and the original project was approved. When EIRs 059 and 203 were certified, the vicinity of the project, with the exceptions of St. Michael's Abbey and the Ramakrishna Monastery, was characterized by a undeveloped, predominantly natural environment. The project site, although disturbed through farming and cattle grazing purposes, was dominated by coastal sage scrub, oak woodlands and grasslands. The closest urban development was approximately four miles south of the site near the El Toro/Trabuco Road intersection

The project vicinity has become more urban since the original approvals. It is now characterized by major residential development, including the Portola Hills Planned Community, the Hidden Ridge project and Foothill Ranch. With the changes that have taken place since the original project was approved, there is a question of the project's compatibility with surrounding uses

Mitigating Potential Impacts

The changes in circumstances in Land Use and Planning cannot be easily mitigated, if at all. A new Subsequent EIR will provide the best mechanism to properly assess the following:

- The project's potential conflicts with the Foothill-Trabuco Specific Plan, the Aliso Creek Corridor Specific Plan and the Natural Communities Conservation Planning Program (NCCP) Program;
- The project's potential conflicts with surrounding land uses;
- Reassess those major Conditions of Approval listed above which were not satisfied prior to the recordation of Tract 10692, including their appropriateness, relevance and compatibility at this time in light of changed circumstances;
- Identify the potential environmental impacts of the proposed project on the existing agricultural uses;

- Identify mitigation measures necessary to reduce all identified earth resource impacts to a level of insignificance; and
- Identify unavoidable and cumulative earth resource impacts.

Scope of EIR Discussion

The changes in circumstances in Land Use and Planning requires the Subsequent EIR to address the following:

- The project's potential conflicts with the Foothill-Trabuco Specific Plan, the Aliso Creek Corridor Specific Plan and the Natural Communities Conservation Planning Program (NCCP) Program;
- The project's relationship with surrounding land uses;
- Identification of the potential environmental impacts of the proposed project on the existing agricultural uses;
- Identification of mitigation measures necessary to reduce all identified earth resource impacts to a level of insignificance; and
- Identification of unavoidable and cumulative earth resource impacts.

2. POPULATION & HOUSING

The proposed project is not expected to cumulatively exceed adopted regional or local population projections. It will not induce substantial growth in an area directly or indirectly through project in an undeveloped area or extension of major infrastructure The project would not displace existing housing The project will increase affordable housing.

No Mitigation is needed and no discussion of Population and Housing is required in the EIR

3. GEOPHYSICAL

Existing Setting

The project site is primarily in its natural state with a disturbed area of approximately 75 acres used for cattle grazing. Although the majority of the site's surface soils and topographical features have not been physically disturbed, geotechnical reports prepared for the project have identified several major landslides which affect the site's stability.

Potential Impacts

Potential impacts which may result if the project is developed include substantial short term changes of the site's landforms and topographical features particularly during remedial grading activities. In the long term, the project proposes site reconfiguration to reflect the site's natural land form features, and related impacts on the soil stability of the site. During construction, erosion and siltation of soils may also occur.

Grading activities on the project site result in sediment being carried into the Aliso Creek Corridor and downstream ultimately to Aliso Beach. Because of the site's seismic features, people and property could be potentially exposed to earthquake and ground failure hazards.

The Planning Application indicates that remedial grading for the project will include grading a portion of the project site due to extensive landslides. The Saddleback Meadows Geotechnical Reports indicate that extensive remedial grading with large buttresses will be required to stabilize the project site due to these documented landslides. The Engineering Geology of Part of the Western Half of the Santiago Peak Quadrangle, Orange County, California, prepared by the California Department of Conservation Division of Mines and Geology, has mapped and recorded these landslides.

Scope of EIR Discussion

The Subsequent EIR will provide a detailed discussion and clarification of the following:

- Proposed grading in areas previously designated for preserved open space areas;
- Identification of soil and geologic characteristics and limitations of the project site, including soil stability, earthquake potential and known geologic hazards, including landslides, mudslides, ground failures and similar hazards for the entire site;
- Identification of the seismic features of the site, including the potential exposure of people or property to environmental impacts of the proposed project associated with earthquakes, liquefaction or similar hazards;
- The potential environmental impacts of the proposed project on the existing site topography and unique geologic or physical features;
- Mitigation measures necessary to reduce earth resource impacts to a level of insignificance, and
- Identification of unavoidable and cumulative impacts associated with earth and landform

4. WATER

Existing Setting

The onsite project drainage has not been modified and remains in a natural state. However, some improvements have been made to sections of Aliso Creek, adjacent to the site, including a major man-made drainage channel. This channel passes from the proposed site to the westerly side of El Toro Road.

The area of Aliso Creek Corridor is classified as Floodplain FP-2 by the Federal Emergency Management Agency (FEMA). The project site is located within the watershed of Aliso Creek. Four (4) ponds and four (4) intermittent ponds are also present onsite

Potential Impacts

Potential impacts which may result if the project is implemented include changes in absorption rates, alteration of the project site's existing landform, subsequently altering the existing flow of water onto, through, around and off the project site.

During construction the disruption of soils may also affect the content of site run-off into the watershed area of Aliso Creek. Groundwater levels and quality, including absorption rates, may be affected by the proposed project.

National Pollution Discharge Elimination System (NPDES) is a regulatory program required by the Clean Water Act and administered by the OCEMA. Potential impacts include pollutant discharges into Aliso Creek.

Scope of EIR Discussion

The Subsequent EIR will provide a detailed analysis of the proposed project's relationship to water resources, including the following:

- Identification and quantification of the current surface water and groundwater drainage patterns and water flows within, and adjacent to, the project site;
- Identification and quantification of the portion of the project site or off-site area that will be impacted by proposed project currently located within FEMA's FP-2 floodplain designation area;
- Identification and quantification of the current surface water and groundwater quality within, and adjacent to, the project site, including existing on-site discharges into drainage channels;
- Identification of significant changes in the course or direction of water movements;
- Identification of changes in absorption rates, drainage patterns, or the rate and amount of surface water run-off;
- Identification of changes in erosion or changes in siltation which may modify the channel of Aliso Creek;
- Identification of changes in the amount of surface water as a result of any proposed storm drain retarding basins;
- Identification of changes in the quantity or quality of groundwaters;
- Identification of the potential environmental impacts of the proposed project on wind or water erosion of soils, on or off-site;
- Identification of alterations to the course, flow or magnitude of flood waters, and resultant exposure of people or property to flood hazards;
- Identification of mitigation measures necessary to reduce project impacts to a level of insignificance, including the development of Best Management Practices (BMP) for compliance with the Clean Water Act, and
- Identification of unavoidable and cumulative water resource impacts.

5. TRANSPORTATION/CIRCULATION

Existing Setting

The Saddleback Meadows project site is accessed off of El Toro Road. The site's interior is natural and has no road access.

Potential Impacts

Potential impacts which may result if the project is developed include. The master planned (MPAH) arterial highways and roadways transit systems has identified El Toro Road which is adjacent to the project site and conditioned to be improved to primary status is now scheduled to be upgraded to a major artery, additional grading will be required at implementation; generation of a significant amount of project related traffic, creation of demand for new parking; alteration of existing traffic patterns; and potential impacts vehicles, bicyclists and/or pedestrians.

The traffic and circulation information on the proposed project and its relationship to El Toro Road, including its present and ultimate design configuration and improvement require updating. At the time EIRs 059 and 203 were certified and the project was approved, projects in the vicinity generated less than 3000 Average Daily Trips ADT on El Toro Road, which was designated on the County's Master Plan of Arterial Highways (MPAH) as a primary arterial highway El Toro Road was reconstructed in the early 1980's to a two-lane highway adjacent to the project site.

Today, projects in the vicinity generate approximately 16,000 ADT along El Toro Road. Since 1985, El Toro has been reclassed on the MPAH from a primary arterial highway to a major arterial. Impacts from the proposed project's additional grading which is necessary for the required upgraded improvements to EL Toro Road from a Primary to a Major Arterial were not addressed in EIRs 059 and 203

Scope of EIR Discussion

The Subsequent EIR will include a detailed traffic/circulation analysis and a traffic/engineering study. The traffic/circulation study must update projections of the number of trips generated by the project and other projects on the arterial highway system, including El Toro Road, Santiago Canyon Road, Glenn Ranch Road and Portola Parkway. The traffic/engineering study must provide preliminary designs for the ultimate improvement of El Toro Road to major arterial specifications. The following will be included in the Transportation/Circulation section of the EIR·

- Identification of existing and planned public transit systems affected by the proposed project;

- Identification of existing vehicular movement and patterns of circulation within and adjacent to the project site, and the existing vehicular movement in the surrounding vicinity as a result of current land uses through a traffic study;

- Identification and analysis of the existing ingress and egress to the project site, its potential internal circulation and parking problems associated with the proposed development;

- Identification of existing impacts to equestrians, motor vehicles, bicyclists and/or pedestrians,

- Evaluation of the interim and long-term traffic generation of the proposed project and its potential to generate additional vehicular movement beyond current projections of regional traffic;
- Evaluation of the need for El Toro Road to be a primary arterial versus a major arterial.
- Identification of increases in demand for public transit services with special attention to relationship with low income housing for senior citizens and any potential conflicts with planned roadway widenings or extensions;
- Identification of specific potential adverse impacts on the vehicular movement and the movement of people and goods as a result of the proposed project, both within the project site and within adjacent communities;
- Identification of specific potential internal circulation problems and potential traffic hazards to motor vehicles, bicyclists and/or pedestrians which may result from the proposed project;
- Identification of the aspects of the proposed project which will create demand for new parking facilities;
- Identification of mitigation measures necessary to reduce project traffic and circulation impacts to a level of insignificance; and
- Identification of unavoidable and cumulative impacts to transportation and circulation resources.

6. AIR

Existing Setting

The project site is located within the South Coast Air Basin, SCAB, which suffers from some of the most severe cases of air pollution in the nation. The SCAB is currently in violation of several federal air quality standards.

Potential Impacts

Potential impacts which may result if the project is developed include: generation of both short-term and long-term air quality impacts, both individually and cumulatively, including increased air emissions; impacts on sensitive receptors in the project vicinity including St. Michael's Abbey and the Hillside Montessori School; and the exposure of persons to locally elevated levels of air pollution.

Scope of EIR Discussion

Although the South Coast Air Basin is already in violation of air quality standards, the impacts of the project on local air quality must be thoroughly assessed. The Subsequent EIR for the proposed project will:

- Identification of the existing air quality environment of the project site in the local and regional context, including, but not limited to: air pollution; objectionable odors, and air movement, moisture and temperature;
- Identification of air quality impacts associated with construction of the proposed project,
- Assessment of the proposed project's consistency with the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP), Regional Mobility Plan (RMP) and Growth

Management Plan (GMP);

- Identification and quantification of long-term air quality impacts resulting from development of the proposed project, including, but not limited to: air pollution, objectionable odors; and increased air movement, moisture or temperature;
- Identification and analysis of the potential sensitive receptors which may be exposed to substantial pollutant concentrations,
- Identification of mitigation measures necessary to reduce short-term and long-term air quality impacts to a level of insignificance; and
- Identification of unavoidable and cumulative air quality impacts.

7. NOISE

Existing Setting

The project site is primarily in its natural state with noise generated by existing land uses and vehicular trips is minor Portions of the project site are impacted by noise resulting from aircraft operations from MCAS-El Toro and is located within the 60 CNEL noise contour of MCAS-El Toro. The project is adjacent to El Toro Road, a major access road to O'Neill Regional Park.

Potential Impacts

Potential impacts which may result if the project is approved include the generation of short term impacts related to construction, and the potential exposure of future residents to airborne noise sources, including interim impacts from aircraft operations at MCAS-El Toro prior to closure of this military base.

Scope of EIR Discussion

The Subsequent EIR for the proposed project will include a detailed noise assessment including the following

- Analysis of the exposure of the project site to existing and projected noise from vehicular traffic and aircraft overflights, in terms of individual and combined contribution of sources,
- Identification of the potential exposure of future residents of the project site to projected noise from vehicular traffic and aircraft overflights, both on an interim and long-term basis,
- Identification of any noise impacts on existing residents in the vicinity of the project as the result of project implementation,
- Identification of mitigation measures necessary to reduce noise impacts to a level of insignificance; and
- Identification of unavoidable and cumulative noise impacts

8. BIOLOGICAL RESOURCES

Existing Setting

The proposed project site exists in its natural state. Draft EIR 561 provided an evaluation of the site and together with previous surveys from December, 1989 and September 1990 revealed that the site had been partially disturbed by cattle grazing. Coastal sage scrub habitat has been identified by the Orange County Wildlife Geographic Information System project Coastal Sage Scrub Distribution Map dated February 1994 as existing in this region. Approximately 68.7 acres of Coastal Sage Scrub are located on site. The project site is also an existing wildlife corridor link between O'Neill Regional Park and Whiting Ranch/Limestone Regional Park. In addition, the project site is located within the watershed area of Aliso Creek Corridor. The Aliso Creek Corridor which is located adjacent to the project site is identified as a "blue line" stream by the United States Geologic Survey (USGS) Canada Quad topographical map. The U.S. Fish and Wildlife Service (USFWS) has documented the occurrence of the Federally Listed as Endangered Riverside Fairy Shrimp on the project site.

Potential Impacts

The proposed project has several potentially significant environmental impacts to biological resources. Specifically:

- Natural Communities Conservation Planning (NCCP) Program: The proposed project may potentially impact the State of California Natural Communities Conservation Planning (NCCP) Program. This is a habitat-based conservation process adopted by local, state and federal regulatory agencies charged with making or recommending land use decisions in California, by Assembly Bill AB2172 (Chapter 765, Statutes of 1991).

  Impacts from grading the site would result in the removal of coastal sage scrub. One of the findings the County must make to abide by the provisions of the U S. Department of Interior's 4(d) Rule is that the loss of the coastal sage scrub will not jeopardize the subregional NCCP Program plan. The site may be identified as one of the links between the Southern subregion and the Central subregion. If this connective link is lost, the 4(d) Rule finding might be precluded. A wildlife corridor has been proposed o-site to complete this link.

- Riverside Fairy Shrimp The proposed project may impact the Streptocephalus woottoni (scientific name), also known as the Riverside Fairy Shrimp, which is a Federally Listed Endangered Species.

  Section 9 of the Endangered Species Act prohibits the "take" of a federally listed species. Documentation is on file in the office of the U.S. Fish and Wildlife Service, Carlsbad Office, attesting to the known occurrence of this federally listed species on the project site. According to U.S. Fish and Wildlife Service, since the shrimp has been confirmed in one pond, it is highly probable that the species will be found in all eight ponds on the site.

- Sensitive Reptiles and Amphibians: Draft EIR 561 noted that several sensitive or threatened species of reptiles and amphibians can be expected to occur on the subject property These include the following the Arboreal Salamander, the Ensatina, the Western Spadefoot, the Orange-Throated Whiptail, the San Diego Horned Lizard, the Coastal Whiptail, the Coastal Rosy Boa, the Coast Patch-nosed Snake, and the Red Diamond Rattlesnake.

- Wildlife Corridor: The significance of the project site's location as a wildlife corridor has changed. Certified EIRs 059 and 203, and Draft EIR 561 identified the site as a wildlife corridor, along with two off-site corridors

connecting two major wildlife areas, the O'Neill Regional Park/Cleveland National Forest open space area and the Whiting Ranch/Limestone Regional Park open space area, easterly and westerly of the subject site, respectively Consequently, the elimination of the site as a wildlife corridor was not treated as a significant impact. The rationale provided for this conclusion was the presence of other wildlife corridors in the project vicinity

With the construction of residential communities in the project vicinity, the previously identified off-site wildlife corridors have been eliminated. The subject site now provides the only linkage between the two wildlife corridor areas. This document identified several large mammals which live on or frequent the site, including mule deer, mountain lion, gray fox and bobcat, thereby indicating the importance of the site as a wildlife movement corridor.

- Aliso Creek Corridor: Previous approvals for the project site designate the Aliso Creek corridor as natural open space to be preserved. The Aliso Creek corridor contains riparian vegetation and wildlife; Aliso Creek is also designated a blue-line stream, as identified by the U.S. Geological Survey

  The Site Plan and grading plans for the project indicate that the Aliso Creek corridor preservation area may be disturbed. The revised project proposes grading in the vicinity of the stream bed, which is in the FP-2 "Floodplain 2" District and off-site grading in the Aliso Creek area adjacent to the site to create access road fill placement and conduct remedial grading The project proposes restoration of the Aliso Creek riparian habitat area upon completion of grading.

Scope of EIR Discussion

The biological resource section of the Subsequent EIR will provide a detailed discussion of the following:

- A re-inventory of the existing unique, sensitive, aesthetically significant, rare, threatened, or endangered flora and fauna within the project site, including an Environmental Assessment and mitigation measures to avoid or reduce impacts,

- Identification of potential impacts to the Natural Communities Conservation Planning ("NCCP") Program, a habitat-based conservation process adopted by local, state and federal regulatory agencies charged with making or recommending land use decisions in California, by Assembly Bill AB2172 (Chapter 765, Statutes of 1991) The NCCP Program states that to approve an interim take application, the local agency must make certain findings, based on the information obtained pursuant to U S. Fish and Wildlife Service (USFWS) pursuant to the Natural Community Conservation Plan (NCCP) Program and the 4(d) Rule,

- A detailed analysis of the project's impacts to wildlife movement, including mitigation measures to avoid or reduce those impacts The location width, relationship to adjacent wildlife movement corridors must be evaluated;

- Address the proposed grading, including remedial and site preparation grading, in the revised project, which will impact Coastal Sage Scrub, including mitigation measures which avoid or reduce those impacts;

- The project's compliance with the County's general policy as a regulator of the NCCP Program, which is to avoid irreversible commitments that would preclude planning options in designing the coastal sage scrub habitat reserve,

- A detailed discussion of the proposed project's impacts to the Riverside Fairy Shrimp, including a Habitat Conservation Plan, an Environmental Assessment and mitigation measures to avoid or reduce impacts;
- Assessment of the project's impacts on unique, sensitive, aesthetically significant, rare, threatened, or endangered flora and fauna within the project site, including Oak Tree groves and Coastal Sage Scrub;
- Identification of impacts which might result from the removal of existing and intermittent ponds and the associated habitat for sensitive species, including the Riverside Fairy Shrimp, from the project site and off-site areas contiguous to project site;
- Identification of mitigation measures necessary to reduce all identified biological resource impacts to a level of insignificance; and
- Identification of unavoidable and cumulative biological resource impacts.

9. AESTHETICS

Existing Setting

The Saddleback Meadows project site is primarily in a natural state with the site's surface aesthetic features being left undisturbed. Existing light and glare from the project site is minimal, emanating only from the reflection of the eight (8) ponds on the site

Potential Impacts

Potential aesthetic impacts which may result if the project is developed include the construction of slopes and retaining walls, and a significant alteration in the appearance of the site from off-site vantage points, including El Toro Road which is designated a Scenic Highway on the County's Master Plan of Arterial Highways. Aesthetic impacts are especially pronounced from the existing residential developments southerly and westerly of the project site

Potential light and glare impacts which may result if the project is approved include: increased levels of exterior lighting and illumination, having the potential for adverse impacts upon residential neighborhoods and sensitive biotic communities.

Scope of EIR Discussion

The Subsequent EIR to be prepared for the proposed project will:

- Identification of existing scenic vistas and views open to the public across the project site Assess the obstruction of any scenic vista or view open to the public or the creation of any aesthetically offensive site open to public view;
- A line of sight analysis of the project from El Toro Road, Hidden Ridge, Portola Hills, St. Michael's Abbey, and O'Neill Regional Park;
- Assessment of the current aesthetic importance of the project site and the aesthetic impact of the proposed project to other developments in the project vicinity;

- Evaluation and comparison of the potential aesthetic impacts associated with implementing the existing zoning and those associated with the proposed project. The narrative of this topical discussion must be supplemented by detailed simulation models of both the General Plan and the project.
- Identification of mitigation measures necessary to reduce aesthetic impacts to a level of insignificance, and
- Identification of unavoidable and cumulative aesthetic impacts

10. CULTURAL/SCIENTIFIC RESOURCES

Existing Setting

The Saddleback Meadows project site is primarily in a natural state with only minimal disturbance through cattle grazing and farming activities. Therefore, the site's potential cultural/scientific resources and features have not be disturbed.

Potential Impacts

The grading of the property has the potential of resulting in alteration of or damage to significant archaeological, historical and/or paleontological resources.

Scope of EIR Discussion

The Subsequent EIR for the proposed project will include the following.

- Inventory existing significant archaeological and/or historical sites, structures, objects, or buildings located on the project site,
- Inventory potential paleontological sites;
- Evaluation of potential significant impacts to archaeological or historical sites, structures, objects, or buildings,
- Identification of mitigation measures necessary to reduce identified cultural/scientific resources to a level of insignificance, and
- Identification of unavoidable and cumulative cultural/scientific resource impacts

11. RECREATION

Existing Setting

There are no existing recreation or public open space uses located on the project site However, the proposed project site is located between O'Neill and Whiting Ranch/Limestone Regional Parks. A proposed trail is designated within the project site by the Orange County General Plan Recreation Element Master Plan of Regional Riding and Hiking trails.

Potential Impacts

The project represents a potential conflict with adopted recreational plans and policies, including the Aliso Creek Corridor Specific Plan, the General Plan Recreation Element and the Foothill/Trabuco Specific Plan.

Scope of EIR Discussion

The Subsequent EIR for the proposed project will address the following:

- Identification of all currently planned recreational opportunities within the project site and the surrounding vicinity;
- Assessment of the impact of the proposed project on the quality and quantity of existing recreation opportunities;
- Evaluation and comparisons of the potential recreation impacts associated with implementing the existing zoning designations and those associated with the proposed project;
- Identification of mitigation measures necessary to reduce recreation impacts to a level of insignificance; and
- Identification of unavoidable and cumulative recreation impacts.

12. ENERGY & MINERAL RESOURCES

Existing Setting

The Saddleback Meadows project site is primarily in a natural state None of the site's potential mineral resources have been disturbed. Previous EIRs 561, 059 and 203 did not identify energy and/or mineral resources on the site The Orange County General Plan does not designate the site as having a high potential for mineral resources. No Mitigation is required and no discussion is necessary in the Subsequent EIR.

13. HAZARDS

Existing Setting

The Saddleback Meadows project site is located close to the Cleveland National Forest which is a potential fire hazard area. The project site is also located near the flight path of El Toro Marine Corps Air Station which has been approved for re-use.

Potential Impacts

Potential impacts which may result if the project is developed include the possible exposure of future residents to a high fire hazard area (north of Portola Parkway). Until MCAS El Toro is closed, residents may be subjected to potential, though remote, crash hazards

Scope of EIR Discussion

The Subsequent EIR will provide a detailed discussion of hazards, including the following:

- Identification of the current fire hazards, both on-site and within the project site vicinity;
- Identification of any existing emergency response plans for the project site and evaluate the potential of the proposed project to impact emergency response plans or evacuation plans;
- Identification of potential safety impacts of MCAS-El Toro operations on the proposed project;
- Identification of the impact to future users of the site with respect to possible exposure to other hazards;
- Identification of mitigation measures necessary to avoid or reduce hazards to a level of insignificance; and
- Identification of unavoidable and cumulative hazard impacts

14. PUBLIC SERVICES

Existing Setting

The Saddleback Meadows project site is undeveloped open space with limited use for cattle grazing. The project site is served by the following major public services.

Fire Protection	Orange County Fire Department
Police Protection	Orange County Sheriff-Coroner's Department
Schools	Saddleback Valley School District

The closest fire station is Station #42 located on Ridgeline Drive with a response time of approximately 3 minutes to the project site. The sheriff's service ratio of sworn officer to population is approximately 1/2050. All the schools in the project vicinity are at capacity

Potential Impacts

Potential impacts which may result if the project is developed include the need for additional fire personnel and additional police personnel. The project is expected to generate elementary, junior high and high school students to be absorbed into the Saddleback Valley School District.

Scope of EIR Discussion

The Subsequent EIR will provide a detailed assessment of the impacts to Public Services, including:

- Assessment of the adequacy of the supply of public services to be delivered to the future residents of the proposed project site;
- Evaluation and comparison of the potential public services impacts associated with implementing the proposed project;
- Identification of mitigation measures necessary to avoid or reduce public services impacts to a level of insignificance; and
- Identification of unavoidable and cumulative public services impacts.

15. UTILITIES & SERVICE SYSTEMS

Existing Setting

The Saddleback Meadows project site is undeveloped open space with limited use for cattle grazing. The project site is served by the following major public utilities and service systems:

Electrical Power	Southern California Edison
Natural Gas	Southern California Gas Company
Water and Sewer	Trabuco Canyon Water District

Potential Impacts

No potential significant impacts to Utilities and Service Systems are expected to result if the project is developed.

Scope of EIR Discussion

The Subsequent EIR will provide a detailed assessment of the impacts to Public Utilities and Service System, including:

- Assessment of the adequacy of the supply of public utilities and service systems to be delivered to the future residents of the proposed project site;
- Evaluation and comparison of the potential public utility and service system impacts associated with implementing the proposed project;
- Identification of mitigation measures necessary to avoid or reduce all identified public utility and service system impacts to a level of insignificance, and
- Identification of unavoidable and cumulative public services impacts

EXHIBITS

- Regional Location Map
- Vicinity Map
- Aerial Photograph
- Proposed Site Plan

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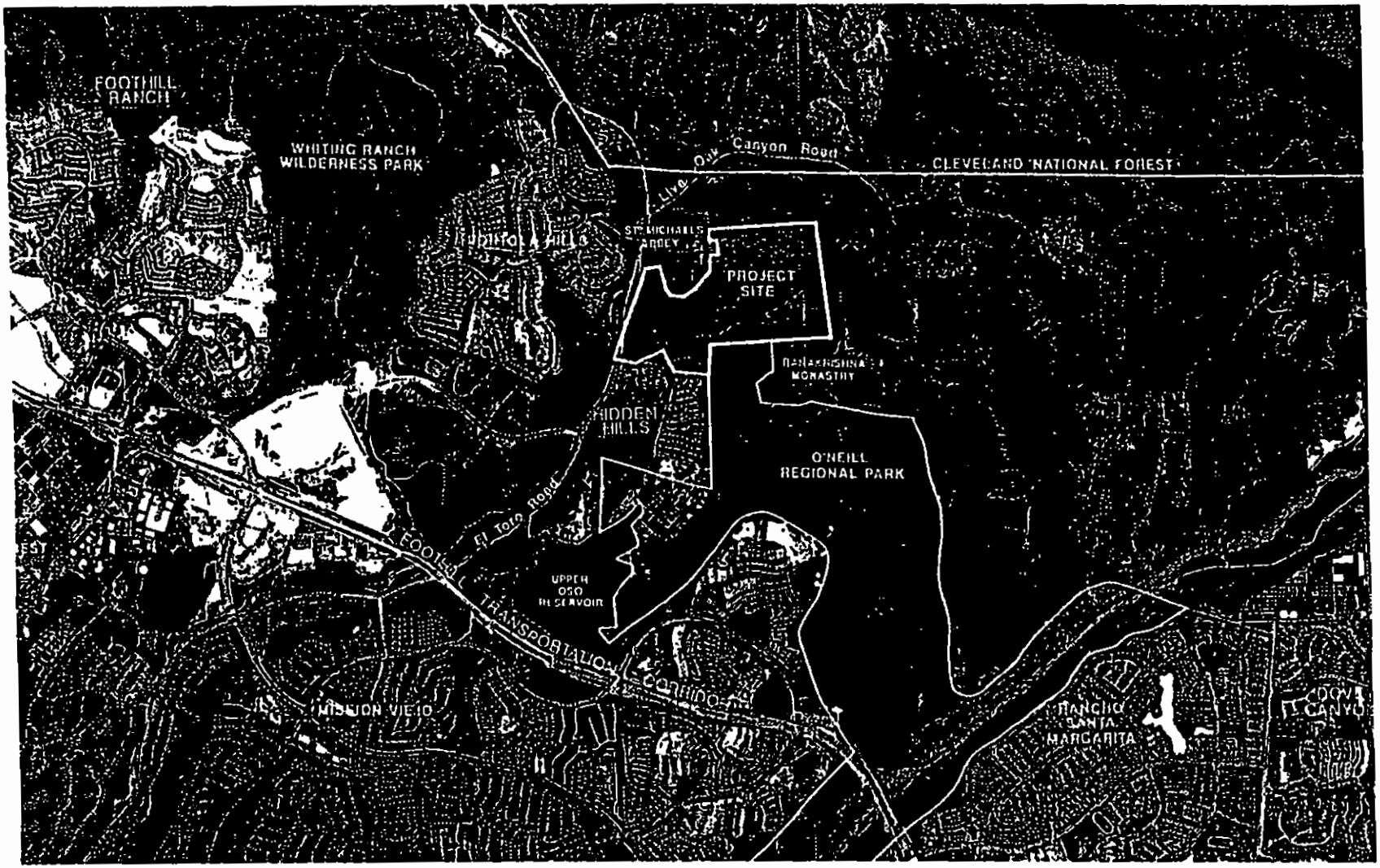

SADDLEBACK MEADOWS INITIAL STUDY

VICINITY AERIAL

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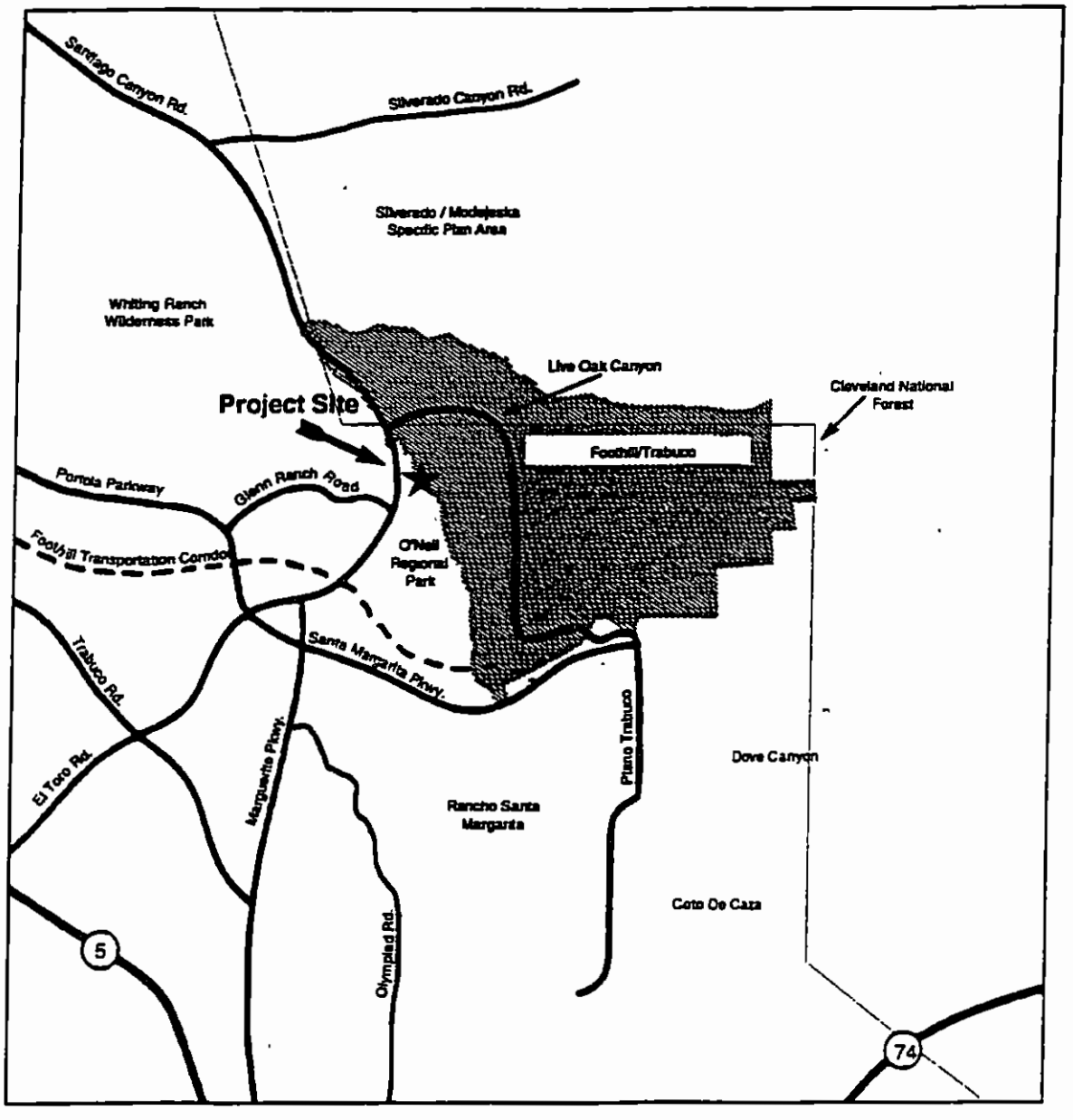
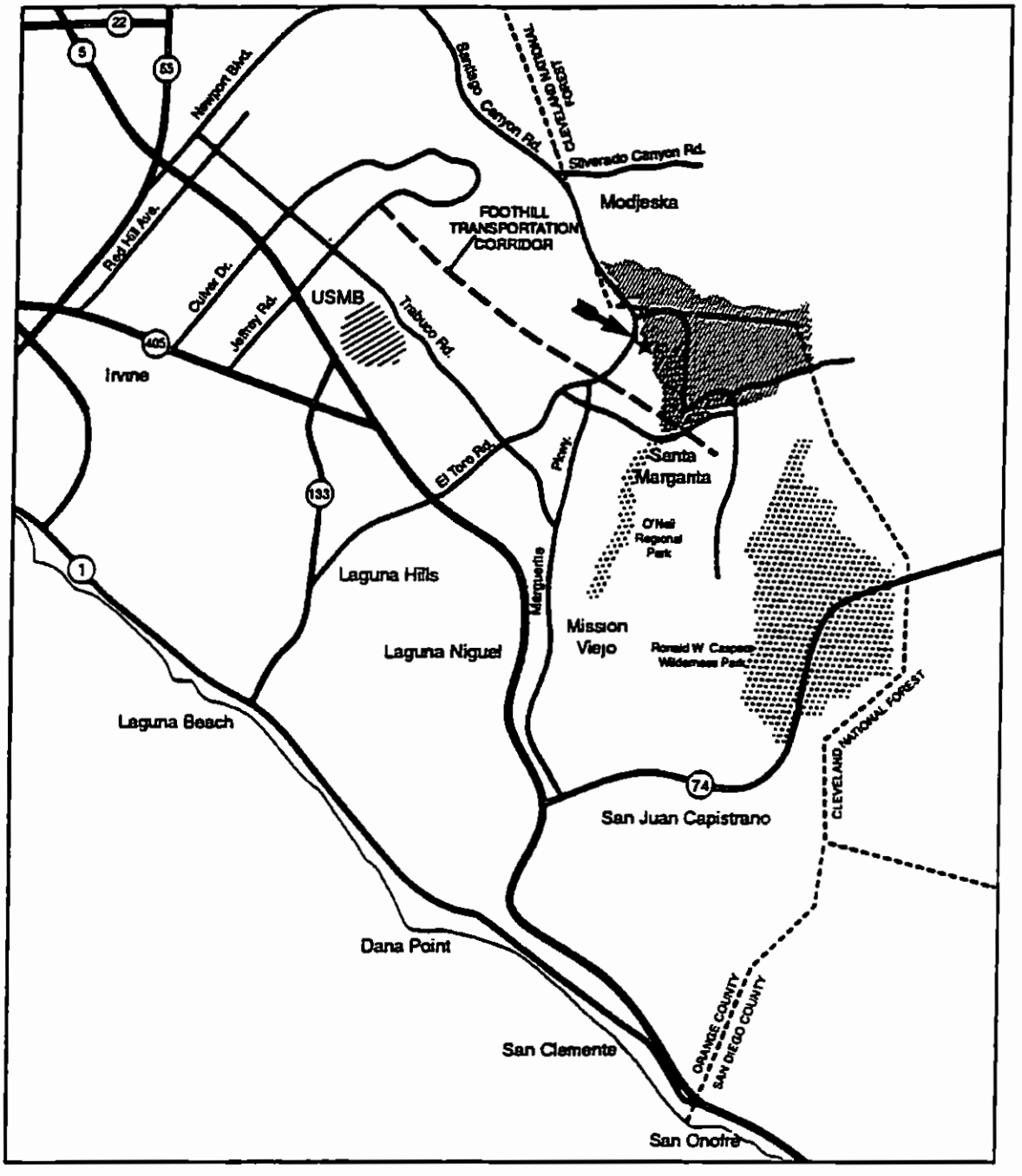
OCEMA



SADDLEBACK MEADOWS INITIAL STUDY

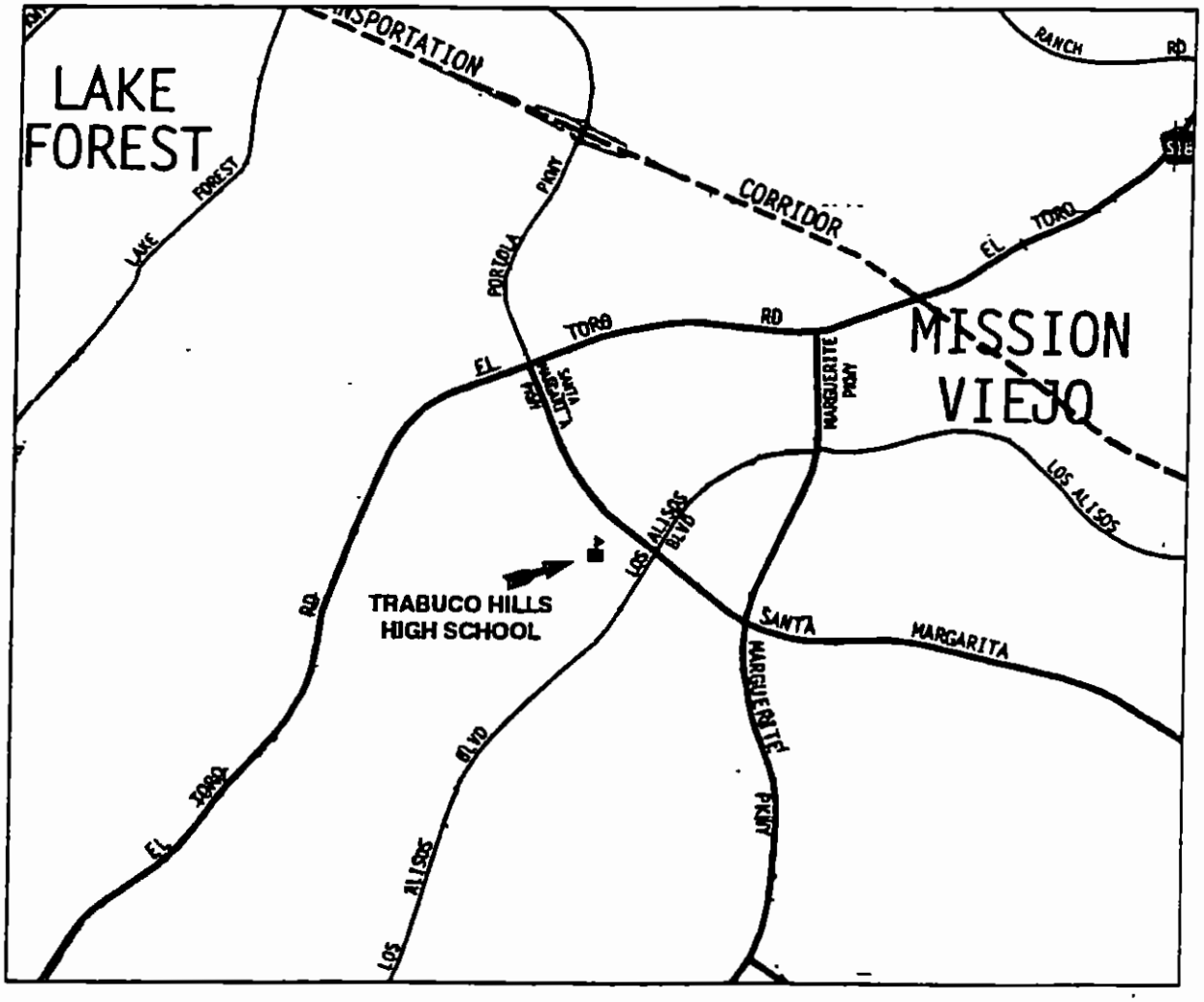
VICINITY MAP

OCEMA



SADDLEBACK MEADOWS INITIAL STUDY **REGIONAL MAP**

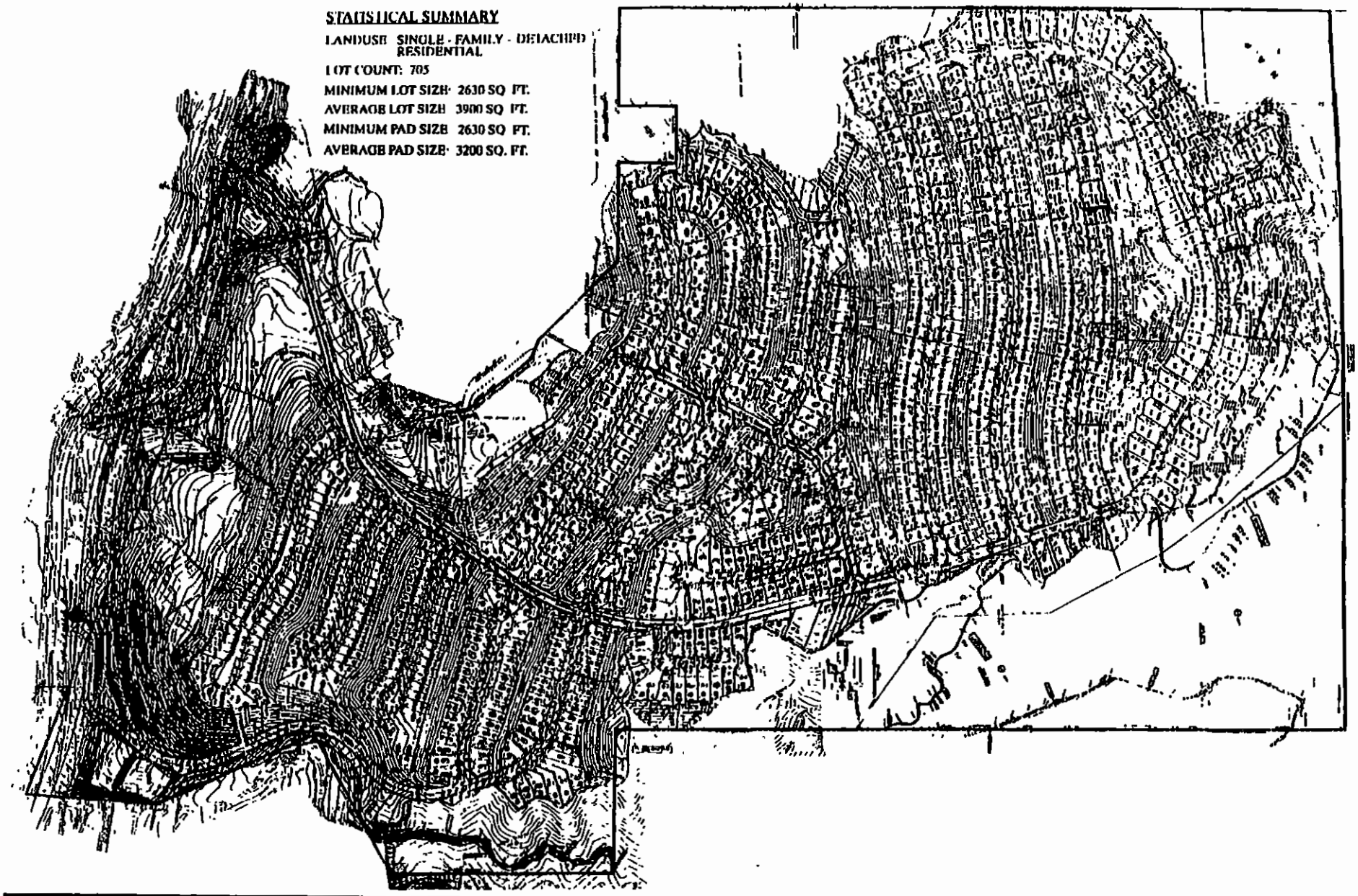
OCEMA



SADDLEBACK MEADOWS INITIAL STUDY

TRABUCO HILLS HIGH SCHOOL LOCATION MAP

OCEMA



SADDLEBACK MEADOWS - VTTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

URBAN VISION ▪ OCEMA

SCALE: 1" = 400'

SOURCE: Forma

N

Site Plan EXHIBIT

JAMES A. LOEPER
&
DAWN E. LOEPER
19352 HIGHRIDGE WAY
TRABUCO CANYON, CA 92679

(714) 589-0834
(714) 589-0144 FAX

DATE: 2/17/97 TO: PLANNING AND DEVELOPMENT SVCS. DEPT.

SADDLEBACK MEADOWS

We have recently received the "Notice of Preparation" in regard to the above mentioned development.

Upon reviewing these documents, we feel prompted to send this transmittal.

The following points are our concerns on this project:

1. Besides affecting the natural beauty and rural atmosphere that the specific plan attempts to preserve, there will be a threat to the wildlife in this area because the plan has too much density of housing and appears to not have a wildlife corridor There are a significant amount of animals that will be in constant danger of being run over because of the road that they will be crossing.

2. The peace and tranquillity of two large religious organizations will be affected. These two being St. Michael's Abbey (which I believe to be the only Catholic Prep School on the west coast) and the Ramakrishna Monastery.

3. Bringing another 705 homes into this area will tax the existing infrastructure of roads, schools, etc. We are not prepared to handle the amount of people this development will bring in.

4. There appears to be only one road into the project, and should there be an emergency such as a fire, I cannot see how that many people will be able to leave the development and still allow emergency vehicles to enter.

5. The people in Portola Hills do not want an amendment to the current zoning not only because of aesthetic value, but for fear that the loss of their current views will affect the value of their homes.

6. We are very concerned that there are two extremely different views of the stability of the hills in Saddleback Meadows. How can two expert geologists (one hired by a previous developer and one hired by St. Michael's Abbey) give such opposing views of the stability of the area? It might be well advised to hire an independent geologist to do studies so that the County of Orange does not become entangled in law suits should a landslide occur.

The issues above are of great concern to us and we hope that you can either resolve them or **STOP** the Saddelback Meadows zoning amendment. Thank you.

James Lopper Dawn Lopper

Attachment E

1 Mulberry Lane

Trabruco Canyon, California 92679

RECEIVED
FEB 27 1997

February 26, 1997

Manager, Planning & Development
Services Dept.
300 No. Flower St., Room 321
Santa Ana, California 92702-4048

Re: Proposal for 705 Mobile Homes - California Quartet, Inc.

Gentlemen:

Late last summer the Board of Supervisors voted down this developer's plan for 318 single family homes on this same property. Now the developer comes back with his original proposal for 705 mobile homes. This proposal is absolutely preposterous and they know it.

The addition of 318 homes would have had a negative impact on the character of this area because of the increased population and traffic. I cannot image how 705 mobile homes could possibly be considered more palatable. This is ludicrous and I appeal to you to keep these carpetbaggers from destroying the Canyon.

Very truly yours,

Donald R Finn

DRF:cf

STATE OF CALIFORNIA - THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
Region 5
330 Golden Shore, Suite 50
Long Beach, California 90802
(562) 590-5113

March 12, 1997

Mr. Raymond H.C. Brantley
Orange County Environmental Management Agency
P.O. Box 4048
Santa Ana, California 92702-4048

Dear Mr. Brantley:

Notice of Preparation of Draft Environmental Impact Report
Saddleback Meadows Residential Development
SCH 96121072, Orange County

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources. To enable Department staff to adequately review and comment on the proposed project, we recommend the following information be included in the Draft Environmental Impact Report:

1. A complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.

   a. A thorough assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities (Attachment 1).

   b. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

   c. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, § 15380).

d. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

a. CEQA Guidelines, § 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.

b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.

c A cumulative effects analysis should be developed as described under CEQA Guidelines, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

d. The document should include an analysis of the effect that the project may have on completion and implementation of regional and/or subregional conservation programs. Under § 2800-2840 of the Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program, is coordinating with local jurisdictions, landowners, and the Federal Government to preserve local and regional biological diversity. Coastal sage scrub is the first natural community to be planned for under the NCCP program. The Department recommends that the lead agency ensure that the development of this and other proposed projects does not preclude long-term preserve planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP should assess specific projects for consistency with the NCCP Conservation Guidelines. Additionally, the jurisdictions should quantify and qualify: 1) the amount of coastal sage scrub within their boundaries; 2) the acreage of coastal sage scrub habitat removed by individual projects; and 3) any acreage set aside for mitigation. This information should be kept in an updated ledger system. These issues must be addressed in an Environmental Impact Report per CEQA Guidelines, § 15065 and § 15380

3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

   a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat elsewhere should be addressed.

   b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).

   c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. If the project has the potential to adversely affect species of plants or animals listed under the California Endangered Species Act (CESA), either during construction or over the life of the project, a CESA-Memorandum of Understanding (CESA-MOU) must be obtained under § 2081 of the Fish and Game Code. CESA-MOU's are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to a project and mitigation measures may be required in order to obtain a CESA-MOU.

   a. Biological mitigation proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA-MOU.

   b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.

5. The Department opposes the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, must be retained and provided with substantial setbacks which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations.

a. The Department has direct authority under Fish and Game Code § 1600 et seq. in regard to any proposed activity which would divert, obstruct, or affect the natural flow or change the bed, channel, or bank of any river, stream, or lake. Early consultation is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

b. A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts must be included.

The Department holds regularly scheduled pre-project planning/early consultation meetings. To make an appointment, please call our regional office at (310) 590-5137.

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Mr. Scott Harris, Wildlife Biologist at (562) 590-5100 or Mr. Ray Ally, Associate Fishery Biologist at (562) 590-5147.

Sincerely,

Lilia I Martinez

for Patricia Wolf
Acting Regional Manager

Attachments

cc: See Attached List

cc: Mr. Scott Harris
Department of Fish and Game
Long Beach, California

Mr. Ray Ally
Department of Fish and Game
Long Beach, California

Mr. Jim Dice
Department of Fish and Game
San Diego, California

Ms. Terri Dickerson
Department of Fish and Game
Laguna Niguel, California

Mr. William Tippets
Department of Fish and Game
San Diego, California

U.S. Fish and Wildlife Service
Carlsbad, California

U.S. Army Corps of Engineers
Los Angeles, California

State Clearinghouse
Sacramento, California

ATTACHMENT 1

State of California
THE RESOURCES AGENCY
Department of Fish and Game
May 4, 1984

GUIDELINES FOR ASSESSING THE EFFECTS OF PROPOSED DEVELOPMENTS ON RARE AND ENDANGERED PLANTS AND PLANT COMMUNITIES

The following recommendations are intended to help those who prepare and review environmental documents determine when a botanical survey is needed, who should be considered qualified to conduct such surveys, how field surveys should be conducted and what information should be contained in the survey report.

1. Botanical surveys that are conducted to determine the environmental effects of a proposed development should be directed to all rare and endangered plants and plant communities. Rare and endangered plants are not necessarily limited to those species which have been "listed" by state and federal agencies but should include any species that, based on all available data, can be shown to be rare and/or endangered under the following definitions.

   A species, subspecies or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy form one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition or disease. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.

   Rare plant communities are those communities that are of highly limited distribution. These communities may or may not contain rare or endangered species. The most current version of the California Natural Diversity Data Base's Outline of Terrestrial Communities in California may be used as a guide to the names of communities.

2. It is appropriate to conduct a botanical field survey to determine if, or the extent that, rare plants will be affected by a proposed project when:

   a. Based on an initial biological assessment, it appears that the project may damage potential rare plant habitat;

   b. Rare plants have historically been identified on the project site, but adequate information of impact assessment is lacking; or

   c. No initial biological assessment has been conducted and it is unknown whether or not rare plants or their habitat exist on the site.

3. Botanical consultants should be selected on the basis of possession of the following qualifications (in order of importance):

   a. Experience as a botanical field investigator with experience in field sampling design and field methods,

   b. Taxonomic experience and a knowledge of plant ecology;

   c. Familiarity with the plants of the area, including rare species; and

   d. Familiarity with the appropriate state and federal statutes related to rare plants and plant collecting.

4. Field surveys should be conducted in a manner that will locate any rare or endangered species that may be present. Specifically, rare or endangered plant surveys should be:

   a. Conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Field surveys should be scheduled (1) to coincide with known flowering periods, and/or (2) during periods of

phenological development that are necessary to identify the plant species of concern.

b. Floristic in nature. "Predictive surveys" (which predict the occurrence of rare species based on the occurrence of habitat or other physical features rather than actual field inspection) should be reserved for ecological studies, not for impact assessment. Every species noted in the field should be identified to the extent necessary to determine whether it is rare or endangered.

c. Conducted in a manner that is consistent with conservation ethics. Collection of rare or suspected rare species (voucher specimens) should be made only when such actions would not jeopardize the continued existence of the population and in accordance with applicable state and federal permit regulations. Voucher specimens should be deposited at recognized public herbaria for future reference. Photography should be used to document plant identification and habitat whenever possible, but especially when the population cannot withstand collection of voucher specimens.

d. Conducted using systematic field techniques in all habitats of the site to ensure a reasonably thorough coverage of potential impact areas.

e. Well documented. When a rare or endangered plant (or rare plant community) is located, a California Native Species (or Community) Field Survey Form or equivalent written form should be completed and submitted to the Natural Diversity Data Base.

5. Reports of botanical field surveys should be included in or with environmental assessments, negative declarations, EIR's and EIS's, should contain the following information:

a. Project description, including a detailed map of the project location and study area.

b. A written description of biological setting referencing the community nomenclature used and a vegetation map.

c. Detailed description of survey methodology.

d. Dates of field surveys.

e. Results of survey (including detailed maps).

f. An assessment of potential impacts.

g. Discussion of the importance of rare plant populations with consideration of nearby populations and total species distribution.

h. Recommended mitigation measures to reduce or avoid impacts.

i. List of all species identified.

j. Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms.

k. Name of field investigator(s).

l. References cited, persons contacted, herbaria visited, and disposition of voucher specimens.

SENSITIVITY OF TOP PRIORITY RARE NATURAL COMMUNITIES IN SOUTHERN CALIFORNIA*

Sensitivity rankings are determined by the Department of Fish and Game, California Natural Diversity Data Base and based on either number of known occurrences (locations) and/or amount of habitat remaining (acreage). The three rankings used for these top priority rare natural communities are as follows:

S1. - Less than 6 known locations and/or on less than 2,000 acres of habitat remaining.

S2. - Occurs in 6-20 known locations and/or 2,000-10,000 acres of habitat remaining.

S3. - Occurs in 21-100 known locations and/or 10,000-50,000 acres of habitat remaining.

The number to the right of the decimal point after the ranking refers to the degree of threat posed to the natural community regardless of the ranking. For example:

S1.1 = very threatened
S2.2 = threatened
S3.3 = no current threats known

Sensitivity Rankings (February 1992)

Rank	Community Name	
S1.1	Mojave Riparian Forest	Southern Dune Scrub
	Sonoran Cottonwood Willow Riparian	Southern Coastal Bluff Scrub
	Mesquite Bosque	Maritime Succulent Scrub
	Elephant Tree Woodland	Riversidean Alluvial Fan Sage Scrub
	Crucifixion Thorn Woodland	Southern Maritime Chaparral
	Allthorn Woodland	Valley Needlegrass Grassland
	Arizonan Woodland	Great Basin Grassland
	Southern California Walnut Forest	Mojave Desert Grassland
	Mainland Cherry Forest	Pebble Plains
	Southern Bishop Pine Forest	Southern Sedge Bog
	Torrey Pine Forest	Cismontane Alkali Marsh
	Desert Mountain White Fir Forest	
S1.2	Southern Foredunes	
	Mono Pumice Flat	
	Southern Interior Basalt Fl. Vernal Pool	
S2.1	Venturan Coastal Sage Scrub	Coastal and Valley Freshwater Marsh
	Diegan Coastal Sage Scrub	S. Arroyo Willow Riparian Forest
	Riversidian Upland Coastal Sage Scrub	Southern Willow Scrub
	Riversidian Desert Sage Scrub	Modoc-G. Bas. Cottonwood Willow Rip.
	Sagebrush Steppe	Modoc-Great Basin Riparian Scrub
	Desert Sink Scrub	Mojave Desert Wash Scrub
	Mafic Southern Mixed Chaparral	Engelmann Oak Woodland
	San Diego Mesa Hardpan Vernal P.	Open Engelmann Oak Woodland
	San Diego Mesa Claypan Vernal P.	Closed Engelmann Oak Woodland
	Alkali Meadow	Island Ironwood Forest
	Southern Coastal Salt Marsh	Island Cherry Forest
	Coastal Brackish Marsh	S. Interior Cypress Forest
	Transmontane Alkali Marsh	Bigcone Spruce-Canyon Oak Forest
S2.2	Active Coastal Dunes	White Mountains Fellfield
	Active Desert Dunes	
	Stab. and Part. Stab. Desert Dunes	
	Stab. and Part. Stab. Desert Sandfield	
	Mojave Mixed Steppe	
	Transmontane Freshwater Marsh	S2.3 Bristlecone Pine Forest
	Coulter Pine Forest	Limber Pine Forest
	S. California Fellfield	

GLOBAL RANKING

The *global rank* (G-rank) is a reflection of the overall condition of an element throughout its global range.

SPECIES OR NATURAL COMMUNITY LEVEL

- G1 = Less than 6 viable EOs OR less than 1000 individuals OR less than 2000 acres.
- G2 = 6-20 EOs OR 1000-3000 individuals OR 2000-10,000 acres.
- G3 = 21-100 EOs OR 3000-10,000 individuals OR 10,000-50,000 acres.
- G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat.
- G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

SUBSPECIES LEVEL

Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety.
For example: *Chorizanthe robusta var. hartwegii.*
This plant is ranked G2T1. The G-rank refers to the whole species range i.e. *Chorizanthe robusta.* The T-rank refers only to the global condition of var. *hartwegii.*

STATE RANKING

The *state rank* is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

- S1 = Less than 6 EOs OR less than 1000 individuals OR less than 2000 acres
  - S1.1 = very threatened
  - S1.2 = threatened
  - S1.3 = no current threats known
- S2 = 6-20 EOs OR 1000-3000 individuals OR 2000-10,000 acres
  - S2.1 = very threatened
  - S2.2 = threatened
  - S2.3 = no current threats known
- S3 = 21-100 EOs or 3000-10,000 individuals OR 10,000-50,000 acres
  - S3.1 = very threatened
  - S3.2 = threatened
  - S3.3 = no current threats known
- S4 - Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.
- S5 - Demonstrably secure to ineradicable in California. NO THREAT RANK.

Notes:

1. Other considerations used when ranking a species or natural community include the pattern of distribution of the element on the landscape, fragmentation of the population/stands, and historical extent as compared to its modern range. It is important to take a bird's eye or aerial view when ranking sensitive elements rather than simply counting EOs.

2. Uncertainty about the rank of an element is expressed in two major ways:

   By expressing the rank as a range of values:
   ex. S2S3 means the rank is somewhere between S2 and S3.

   By adding a ? to the rank:
   ex. S2? This represents more certainty than S2S3, but less than S2.

3. Other symbols

- GH — All sites are historical; the element has not been seen for at least 20 years but suitable habitat still exists (SH = All California sites are historical).
- GX — All sites are extirpated; this element is extinct in the wild (SX = All California sites are extirpated).
- GXC — Extinct in the wild; exists in cultivation.
- G1Q — The element is very rare, but there is a taxonomic question associated with it.

NDDB rare communities R-5 Feb. 1992
Page 1

Top Priority Rare Natural Communities
From Region Five

Code Number	Location	Few Records	Name
S1.1 Rank			
21330	Cis		Southern Dune Scrub
31200	Cis		Southern Coastal Scrub
32400	Cis		Maritime Succulent Scrub
32720	Cis		Riversidean Alluvial Fan Sage Scrub
37030	Cis	Y	Southern Maritime Chaparral
42110	Cis		Valley Needlegrass Grassland
43000	Des	Y	Great Basin Grassland
43777	Des	Y	Mojave Desert Grassland
47000	Cis		Pebble Plains
51177	Cis	Y	Southern Sedge Bog
52310	Cis		Cismontane Alkali Marsh
61700	Des		Mojave Riparian Forest
61810	Des		Sonoran Cottonwood Willow Riparian
61820	Des		Mesquite Bosque
75100	Des	Y	Elephant Tree Woodland
75200	Des	Y	Crucifixion Thorn Woodland
75300	Des	Y	Allthorn Woodland
75400	Des	Y	Arizonan Woodland
81600	Cis		Southern California Walnut Forest
81620	Cis	Y	Mainland Cherry Forest
83122	Cis	Y	Southern Bishop Pine Forest
83140	Cis		Torrey Pine Forest
85330	Des	Y	Desert Mountain White Fir Forest
S1.2 Rank:			
21230	Cis		Southern Foredunes
35410	Des		Mono Pumice Flat
44310	Cis		Southern Interior Basalt FL Vernal Pool
S2.1 Rank:			
32300	Cis	Y	Venturan Coastal Sage Scrub
32500	Cis		Diegan Coastal Sage Scrub
32710	Cis	Y	Riversidian Upland Coastal Sage Scr.
32730	Cis	Y	Riversidian Desert Sage Scrub
35300	Des	Y	Sagebrush Steppe
35120	Des	Y	Desert Sink Scrub
37122	Cis	Y	Mafic Southern Mixed Chaparral
44321	Cis		San Diego Mesa Hardpan Vernal P.
44322	Cis		San Diego Mesa Claypan Vernal P.
45310	Des		Alkali Meadow
52120	Cis		Southern Coastal Salt Marsh
52320	Cis		Coastal Brackish Marsh
52410	Des		Transmontane Alkali Marsh

Coded as either cis (for cismontane) or des (for desert)

NDDB rare communities R-5 Feb. 1992
page 2

Code Number	Location	Few Records	Name
62410	Cis		Coastal and Valley Freshwater Marsh
61320	Cis		S. Arroyo Willow Riparian Forest
63320	Cis		Southern Willow Scrub
61610	Des		Modoc-G Bas Cottonwood Willow Rip.
63800	Des	Y	Modoc-Great Basin Riparian Scrub
63700	Des	Y	Mojave Desert Wash Scrub
71180	Cis	Y	Engelmann Oak Wood
71181	Cis	Y	Open Engelmann Oak Wood
71182	Cis	Y	Closed Engelmann Oak Woodland
71190	Cis	Y	Island Oak Woodland
71210	Cis		California Walnut Woodland
81700	Cis	Y	Island Ironwood Forest
81810	Cis		Island Cherry Forest
83230	Cis		S. Interior Cypress Forest
84150	Cis	Y	Bigcone Spruce-Canyon Oak Forest
S2.2 Rank:			
21100	Cis	Y	Active Coastal Dunes
22100	Des		Active Desert Dunes
22200	Des		Stab. and Part Stab. Desert Dunes
22300	Des	Y	Stab. and Part Stab. Desert Sandfield
34220	Des	Y	Mojave Mixed Steppe
52420	Des	Y	Transmontane Freshwater Marsh
84140	Cis	Y	Coulter Pine Forest
81130	Cis	Y	S. California Fellfield
81140	Des	Y	White Mountains Fellfield
S2.3 Rank:			
86400	Des		Bristlecone Pine Forest
86700	Des	Y	Limber Pine Forest

County of Orange

MEMO

DATE: March 10, 1997

TO: Raymond Brantly, Chief, Environmental & Project Planning

FROM: Johnnie Earnest, Chief, Geotechnical/Grading Plan Check

SUBJECT: Review of Revised Notice of Intent to Prepare a Draft Environmental Impact Report # 566 - Saddleback Meadows Residential Development - Tract 10692 - Grading Application GA960048

Comments prepared in the review of Notice of Intent to Prepare a Draft Environmental Impact Report #566 - Saddleback Meadows residential Development - Tract 10692 - Grading Application GA960048 dated January 28, 1997 remain applicable.

PC0634

Law Offices of
VerLyn N. Jensen

March 5, 1997

MAR 0 5 1997

VIA MESSENGER

Planning and Development Services Department
Environmental and Project Planning
300 N. Flower
Room 321
Santa Ana, CA 92702

Attention: Raymond H.C. Brantley and William Grieman

RE: Saddleback Meadows Project No. GA 960048

Dear Sirs:

In response to Revised Notice of Preparation Draft Environmental Impact Report No. 566, dated February 6, 1997, please be advised that the undersigned is co-counsel for St. Michael's Abbey, an adjacent property owner.

In response to your request for the "views" of St. Michael's Abbey, please find enclosed a copy of a study, dated September 9, 1996, entitled "The Critical Problems with Saddleback Meadows"

This booklet was prepared as an analysis of the 318 unit single family residence project proposed by EIR 561, Zone Change 95-5 and Area Plan Amendment 95-7 (Tentative Tract Map #15230). All of the comments contained in this analysis are equally applicable to Draft EIR #566.

The undersigned as well as all of the consultants whose views are set forth in the enclosed analysis are still available for clarification of their views and expert opinions.

Lakeshore Towers
18101 Von Karman Avenue, Suite 1800
Irvine, California 92715-1007
Phone 714-835-9000 Fax 714-261-8670

If you have any further questions please do not hesitate to contact the undersigned.

Very truly yours,

VerLyn N. Jensen

Enclosures

cc: Father Hugh Barbour
St. Michael's Abey

VNJ/mp

Attachment F

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 12
2501 PULLMAN STREET
SANTA ANA, CA 92705

RECEIVED
MAR - 7 1997

March 5, 1997

Raymond Brantley
Planning & Development Services
P.O. Box 4048
Santa Ana, CA. 92702-4048

File: IGR/CEQA
SCH # none

Subject: Saddleback Meadows Development

Dear Mr. Brantley:

Thank you for the opportunity to review and comment on the Notice of Preparation for the Saddleback Meadows Development. The proposed development is located 1/2 mile south of the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Specific Plan area. The project proposes the phased development of 705 manufactured single-family residential units and a 1.7 acre commercial center. Caltrans District 12 is a reviewing agency and our only comment is to coordinate your planning with the Transportation Corridor Agency.

We appreciate the opportunity to comment on this document. If you have any questions, please contact Aileen Kennedy on (714) 724-2239.

Sincerely,

Robert F. Joseph, Chief
Advance Planning Branch

cc: Tom Loftus, OPR
Ron Helgeson, HDQTRS Planning
Tom Persons, HDQTRS Traffic Operations
Dan Dunn, Right of Way
T.H. Wang, Traffic Operations
Judy Heyer, System Planning & Public Transportation

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Carlsbad Field Office
2730 Loker Avenue West
Carlsbad, California 92008

FACSIMILE TRANSMITTAL FORM

Date Sent: **Time Sent:**

Call to have picked up [ ] **Number of pages including this transmittal sheet [5]**

TO: Raymond Brantley **Fax No.:** ( )

Phone No.: ( )

FROM: Ken Corey **Fax No.:** (619) 431-9618
431-5902

Phone No.: (619) 431-9440

SUBJECT: Salt Heath Meadows

COMMENTS:

California Gnatcatcher

U.S. Fish & Wildlife Service
2730 Loker Avenue West
Carlsbad, CA 92008
(619) 431-9440
FAX: (619) 431-9618

CA Dept. of Fish & Game
1416 Ninth Street
PO Box 944209
Sacramento CA 94244-2090
(916) 653-9767
FAX: (916) 653-2588

March 7, 1997

Mr. Raymond Brantley
EMA/Environmental & Project Planning
300 N. Flower St., Room 321
P.O. Box 4048
Santa Ana, California 92702-4048

Revised Notice of Preparation (Draft Environmental Impact Report No. 566)
Saddleback Meadows Development, Orange County, California

Dear Mr. Brantley:

The Fish and Wildlife Service (Service) and the California Department of Fish and Game (Department) (i.e., "the agencies") have reviewed the above referenced document. The document lists an additional project alternative for a total of five alternatives. This new alternative is stated as a "cluster/reduced development footprint" with 318 housing units. Other impacts on the new Environmental Analysis Checklist contained in the document are identified as "significant unless mitigated." These issues are water, transportation/circulation, and air quality. Our comment letter dated January 30, 1997, responding to the original Notice of Preparation for this Draft Environmental Impact Report, remains in effect.

In an effort to assist you and the project applicant in evaluating the potential for conflicts between Federal and State regulated species and the proposed project, the agencies are providing the following list of species that occur or may occur within the project area. Note that the Quino checkerspot butterfly (*Euphydryas editha quino*) and the San Diego fairy shrimp (*Branchinecta sandiegoensis*) are now federally listed as endangered. We are also including a list of "sensitive species," which are derived from various lists maintained by the agencies. Sensitive species are included to notify applicants and regulatory agencies in advance of possible listing proposals. None of the species listed as sensitive have been petitioned for listing, however. We also suggest that the current list maintained by the California Native Plant Society be consulted regarding sensitive plant species.

The Service recently learned that fairy shrimp habitat within the project area may have been adversely impacted. If you have any information about this matter, please inform the agencies. If you have any questions or comments regarding our letter, please contact Liam H. Davis, Associate Wildlife Biologist (Department) at 619-467-4207 or Robert James, Fish and Wildlife Biologist (Service) at 619-431-9440.

Sincerely,

Gail C. Kobetich
Field Supervisor
U.S. Fish and Wildlife Service

for William E. Tippets
Ron Rempel
NCCP Program Manager
California Department of Fish and Game

cc: California Department of Fish and Game (B. Tippets, P. Wolf, S. Harris, T. Dickerson)
1-6-97-SP-58
Attachment

Attachment F

Endangered, Threatened, Proposed, and Sensitive Species that may occur in the area of Saddleback Meadows, Orange County, California (1-6-97-SP-58)

Common Name	Scientific Name	Status
Listed Species		
PLANTS		
Braunton's milk vetch	*Astragalus brauntonii*	FE
INVERTEBRATES		
Quino checkerspot butterfly	*Euphydryas editha quino*	FE
Riverside fairy shrimp	*Streptocephalus woottoni*	FE
San Diego fairy shrimp	*Branchinecta sandiegoensis*	FE
vernal pool fairy shrimp	*Branchinecta lynchi*	FT
BIRDS		
peregrine falcon	*Falco peregrinus*	FE
coastal California gnatcatcher	*Polioptila californica californica*	FT
Proposed Species		
PLANTS		
Santa Monica Mountains dudleya	*Dudleya cymosa ssp. ovatifolia*	FPT
Candidate Species		
BIRDS		
mountain plover	*Charadrius montanus*	FC, SC
Sensitive Species		
AMPHIBIANS		
western spadefoot toad	*Scaphiopus hammondii*	SC
REPTILES		
Silvery legless lizard	*Anniella pulchra pulchra*	SC
San Diego horned lizard	*Phrynosoma coronatum blainvillei*	SC
orange-throated whiptail	*Cnemidorphorus hyperythrus beldingi*	SC
coast patch-nosed snake	*Salvadora hexalepis virgultea*	SC
San Diego mountain kingsnake	*Lampropeltis zonata pulchra*	SC

BIRDS		
ferruginous hawk	*Buteo regalis*	SC
white-tailed kite	*Elanus caeruleus*	SFP
northern harrier	*Circus cyaneus*	SC
Cooper's hawk	*Accipiter cooperii*	SC
sharp-shinned hawk	*Accipiter striatus*	SC
golden eagle	*Aquila chrysaetos*	SC
prairie falcon	*Falco mexicanus*	SC
merlin	*Falco columbarius*	SC
short-eared owl	*Asio flammeus*	SC
burrowing owl	*Athene cunicularia*	SC
tricolored blackbird	*Agelaius tricolor*	SC
MAMMALS		
pallid bat	*Antrozous pallidus*	SC
California leaf-nosed bat	*Macrotis californicus*	SC
greater western mastiff bat	*Eumops perotis californicus*	SC
Los Angeles little pocket mouse	*Perognathus longimembris brevianus*	SC

LEGEND: FE: Federal Endangered, FT: Federal Threatened, FPT: Federal Proposed Threatened, FC: Federal Candidate SE: State Endangered, SFP:State Fully Protected, SC. State Species of Special Concern

Jerold M. Kacsir
23 Riverview Drive
Trabuco Canyon, CA 92679

RECEIVED
MAR 10 1997

Mgr., Planning & Dev. Serv. Dept.
300 N. Flower, Room 321
Santa Ana, CA 92702-4048

Regarding: Response to Intent to Prepare A Draft Environmental Impact Report #566

Sirs:

The notice of Draft EIR #566 seems somewhat confusing since the same proposal for 705 mobile homes was pulled by the applicant in favor of a less dense proposal (318 homes) in 1995. Then in 1996 the Board of Supervisors rejected the less dense proposal as not appropriate to the area and the communities surrounding the proposed development. Now we have 705 mobile homes plus an added feature of a commercial center. In general, if the lower density was not suitable before, how can an increased density and a commercial center be appropriate to the area or to the surrounding communities.

Response will be in order as seen in the Notice of Preparation.

In the Environmental Analysis Check list:

1. Land Use and Planning.
   a) Does the general plan designation or zoning include commercial as part of its scope and if not, does this constitute a Less Than Significant Impact?
   d) The conflict with adjacent, existing or planned land uses is more than just Significant Unless Mitigated. The surrounding land uses should be compared not to the communities of Portola Hills or Hidden Ridge but to the similar land uses in the Foothill/Trabuco Specific Plan area. There exists severe conflicts for this land use and there is Potential Significant Impact in this regards.

3. Geophysical
   d) The landslide and mudslide issue was an important one in the previously proposed plan and EIR. The same developer down played the potential of landslides once grading started with much public testimony regarding the numbers used to calculate the danger. In the final Board of Supervisors meeting the developer had modified these calculated numbers to agree with many opponents of the development. However, the calculations of the amount of grading did not change to reflect the lower numbers. If this issue poses a Potential for Significant Impact, the impact should even be more severe with the lower numbers agreed upon last year.

3. d) continued:
This issue of landslides is one of the most significant issues facing the surrounding communities and other land owners since the potential for damage and loss of property is very high. The developer could abandon the project if the grading proves undoable. Then the problem of leaving a denuded, undeveloped and problematic land mass as a legacy to County is ever present.

e) The erosion and changes to topography is so great that this alone should preclude the development of this land at the level proposed. A much less dense development would seem more appropriate and a more sane approach.

h) The unique geological or physical features of this land mass will change severely if this project as proposed is completed. In the first go around of the 705 mobile homes, I made comments at both the Planning Commission and the Board of Supervisors regarding the quantity of grading required for this project. At that time I made the comment that the grading proposed is of Biblical proportions since the average change in height of the land would be about 30 feet. **This truly does make the hills laid low and the valleys filled in.** There seems to be no change in the amount of grading and it seems that the amount should have increased in regards to the numbers for the soil being lowered.

5) Transportation/Circulation
In general the traffic circulation was a major concern for the previous 318 home project. Now that 705 mobile homes are proposed, the traffic situation would seem to have more than doubled. If the mitigation is to build wider and larger roads then the effects to other environmental concerns will be exacerbated. One effect is that the scenic highway through the canyons would be threatened. Another is that the noise, pollution and the increased traffic will have a detrimental effect not only on human inhabitants but wildlife as well.

Thus, the vehicle trips and traffic congestion would seem to be more than Less Than Significant Impact. Also, safety concerns of the added traffic lights and speeds associated with El Toro Road and canyon highway are greater than Significant Unless Mitigated. Finally, the addition of a commercial center as part of this development will increase traffic not associated with the mobile homes proposed.

6) Air Quality
a) What mitigation can there be to lower the air pollution of a project other than to lower the extent of the project. What this issue brings up is that the project has more of the right to pollute than the surrounding communities, to the detriment of all.

b) Further more, if sensitive people will be effected by the air pollution form the project, what is the mitigation other than having these people move to avoid the pollution or again, have the extent of the project reduced.

7. Noise
   a) What mitigating actions can be taken to reduce noise. If landscaping is the only option to mitigate the increased noise levels, we are looking at 7-10 years before mitigation takes effect.

8. Biological Resources
   a) Endangered, threaten or rare species do inhabit this area as found in a previous EIR. The area suggested to for development would make it impossible to apply mitigating measures. If most or all the land is developed, graded or otherwise disturbed, how can any of these species be protected or survive
   b), c), d) All these points will be difficult to mitigate with the proposed development and the area it will disturb.
   e) The Wildlife dispersal or migration corridors will be completely eliminated with the proposed development. What seems very curious is that the proposed project does not plan to provide a wildlife corridor as stated in Project Description table on page 2. The CEQA checklist seems to indicate that a wildlife corridor is a Significant Impact and that other corridors no longer exist. How can this project's description not include this vital wildlife corridor

9. Aesthetics
   a) & b) With the significant impact to the scenic view and the scenic highway, what mitigation is possible. No amount if landscaping will provide mitigation.
   c) The proposed project of mobile homes will have an offensive aesthetic effect to the other communities surrounding the development. Again, the surrounding communities are very different in style and usage of the land than the designated area of this development and if the mitigating actions taken to reduce the aesthetic impact. So, again, if landscaping is the only option to potentially mitigate this impact, we are looking at 7-10 years before the aesthetic impacts are mitigated.
   d) The effects of lights from this development will have more than a less than significant impact. The development is above many communities surrounding the site and lights have a great potential of glaring or shining down onto these communities.

11. Recreation
   a) The local area parks are already severely taxed, the proposed development adds significant impact to the current park systems without adding to the park systems.

13. Hazards
    e) The proposed development is next to open space that has little access. The extent of the development of this project is such that a significant fire hazard exists, especially for those lots next O'Neill Park. The fire hazard from the number of new residences will increase the potential danger not only to this project but to the surrounding communities as well. There exists only one access road out of this development and in an emergency, the amount of traffic using the one road could add to the hazards.

14. Public Services
    a) The increased danger of fire hazards should have a very significant impact on fire protection. Who will bear the burden of the need for increased fire protection. Will the increased services be paid for by this development or the county as a whole.
    b) Police protection has the same concern as 14a) above.
    c) Schools are already taxed in the area. There is no mitigation proposed for providing new schools to handle the increased needs. Furthermore, the state is mandating smaller class sizes in higher grades levels and this will only exacerbate the need for new schools and classrooms. This issue seems to have a Potential Significant Impact rather than a Significant Unless Mitigated since other developments in Mission Viejo (600 condos) are impacting the schools as well.

Please review this proposed development carefully since the Potential Significant Impacts are many and greater than indicated. One of the greatest impacts of this project is that it is started and found to be economically or physically not feasible. Then the land could be abandoned in a worse state than it presently exists and would threaten surrounding homes, lives and general well being.

Sincerely yours,

Jerold M. Kacsir

March 7, 1997

MAR 10 1997

Elizabeth Wallace
Representative, Portola Hills
19241 Jasper Hill Rd.
Trabuco Canyon, CA 92679
(714) 858-3014

Mr. Tom Mathews
Director, Orange County Environmental Management Agency
300 North Flower St.
Santa Ana, CA 92702

Dear Mr. Mathews:

I am writing as a representative of Portola Hills regarding the grading permit currently pending for Saddleback Meadows and alternatives recently proposed by TPG Management.

a. The two alternative proposals of 228 units and 183 units are unacceptable because their environmental impact is too great and they threaten to destabilize the entire site.

b. Our community endorses the 100-home Alternative 4 as described in the previous EIR for Saddleback Meadows.

c. We request a Full Faith Performance bond be required of the developer before a project on this landslide-prone site is allowed.

d. If a partial development is allowed, our community would like the see the remainder of the site purchased and preserved as open space. Preserving the entire site as open space is also a desirable alternative.

e. A real value of the property needs to be determined. To help determine its value, the County should act on the question of a grading permit for the 705-unit trailer park. The grading permit should be denied because of the project's significant environmental impacts from massive grading, landslide potential, endangered wildlife eradication, and incompatibility with surrounding neighbors, etc.

On a related issue, Planning Area 11, a site on El Toro Road south of the Saddleback Meadows site, experienced a large landslide this week during grading operations for 600 high-density units on 60 buildable acres.

Please consider our community's concerns for Saddleback Meadows as part of your advanced urban planning for our area.

Sincerely,

Elizabeth Wallace

cc: Mr. Todd Spitzer

Bernard Siegel
12 Sugarpine Drive
Trabuco Canyon, CA 92679
(714) 589-1879

Mgr. Planning & Dev. Serv. Dept.
300 N. Flower, Room 321
Santa Ana, CA 92702-4048

February 28, 1979

Re: Saddleback Meadows Project

We have reviewed the EIR for the Saddleback Meadows project, #566, and respectfully submit the following comments:

Environmental Analysis Checklist - Issue #15. c) - We believe there should be an "X" on the line indicating the level of impact.

Page 2 Table titled "Surrounding Project Comparison Summary - We believe the Proposed Project must include a Wildlife Corridor as indicated Items V.A. and V.B. on Page 3 and Item 8. Biological Resources, Potential Impacts, Wildlife Corridor starting at the bottom of Page 16.

Page 10 Item 2. - We disagree with the statement that no discussion of Population and Housing is required in the EIR. Area schools are already over capacity and the Saddleback Meadows project, along with the apartments under construction on El Toro Road will certainly aggravate the situation.

Page 10 Item 3. - This item describes Potential environmental impacts on Aliso Creek and Aliso Beach as well as to occupants and structures in Hidden Ridge, the Ramakrishna Monastery, O'Neill Park, Portola Hills, Saint Michaels Abbey and Prep School, and Rural homes. We feel that, because of the vastness of potential liability, bonding of the developer should be of a sum consistent with that potential.

Page 15 Item 6 Scope of EIR Discussion - We believe that any discussion of impact on air quality should include not only the project under current conditions but should address the impact combined with other construction in the area including the apartments on El Toro Rd., additional housing in Portola Hills and Foothill Ranch, industrial construction in Foothill Ranch and along Portola Parkway, Lake Forest Drive and Bake Parkway. It should also consider the impact of a commercial airport at El Toro MCAS.

Page 18 Item 9 Aesthetics, Scope of EIR Discussion - A line of sight analysis should also be conducted from the project to the Ramakrishna Monastery.

Sincerely,

Bernard Siegel Cynthia D. Siegel

Bernard Siegel Cynthia D. Siegel

ORANGE COUNTY FIRE AUTHORITY
PO Box 86, Orange, CA 92856-0086 • 180 South Water St., Orange, CA 92866-2175
Larry J. Holms, Director of Fire Services *(714) 744-0400*

March 18, 1997

Raymond Brantley
Environmental and Project Planning
P.O. Box 4048
Santa Ana, Ca 92702-4048

Subject: Revised Notice of Preparation for Draft EIR #566. Saddleback Meadows Development.

Dear Mr. Brantley:

At this time, Orange County Fire Authority (OCFA) staff have no additional comments other than those provided on March 17. However, I would like to point out the significance of those comments as they relate to the proposed development product. The requirements for construction in a Special Fire Protection Area include provisions which would be difficult, if not impossible, to meet with a "manufactured single family housing unit". In addition, based on work with a prior applicant, the requirement for a second point of access at 150 units would not be possible at this site due to geographic and topographic restriction.

Please contact me at (714)744-0485 if you have any questions.

Respectfully,

Laura Blaul,
Deputy Fire Marshal
Planning & Development

DIEGUEÑO/COASTAL GABRIELENO
Band of Mission Indians

RECEIVED
MAR 11 1997

March 7, 1997

Mr. Raymond Brantley
Planning and Development Services Dept.
P. O. Box 4048
Santa Ana, CA 92702-4048

RE: Notice of Preparation/Draft E.I.R. No. 566
Saddleback Meadows Development

Dear Mr. Brantley:

After receipt on February 11, 1997 and upon careful evaluation of the Notice of Preparation and Initial Study GA960048 documents dated February 6, 1997 prepared by the County of Orange, and pursuant to the provisions of the California Environmental Quality Act allowing for public comments from interested parties, I am taking this opportunity to comment and make recommendations on this project.

As Tribal Chairman and Chieftain of this Indian Tribe, I would like to emphasize our desire to the County of Orange that this tribe be included in all further aspects of this project. My comments and recommendations will be directed to the cultural resource section (Section 10, pg 19) of the Notice of Preparation.

The recommendations of this tribe are as follows:

(1) Mitigation measure to be included in the Draft E.I.R. would stipulate that a professional Native American monitor selected by this tribe be present during all archaeological inventory, subsurface excavation/data recovery and during construction grading and trenching.

(2) Mitigation measure to be included in the Draft E.I.R. would stipulate that the professional Native American monitor selected for this position give weekly written reports to this tribal council and to other appropriate, interested agencies as deemed necessary. This monitor will also be required to give oral reports and testimony at those times when called upon to do so.

(3) As to any and all artifacts and cultural items encountered during excavations and/or grading, it would be the responsibility of the County of Orange to provide a safe environment for curation until the Native American monitor and members of this tribal council decide upon a proper disposition.

1226 West 3rd Street
Santa Ana, CA 92703
(714) 547-4237

It is the belief of this tribe that the comments and recommendations that have been made will be a valuable asset to the County of Orange in their commencement of this project. I hope that you and your staff will carefully consider the above recommendations. Please keep me informed of any future public hearings and comment deadlines as this tribe will carefully follow the progress of this project to the end.

Sincerely,

Jim Velasques
Tribal Spokesman and Chief
Diegueño/Coastal Gabrieleno

JV/nec
cc: Samuel H. Dunlap,
P.N.A.C.R.M.

1226 West 3rd Street
Santa Ana, CA 92703
(714) 547-4237

Attachment F

County of Orange

MEMO

DATE: FEB 28 1997

TO: Ray Brantley, Environmental and Coastal Planning

FROM: Ignacio Ochoa, Traffic Engineering

SUBJECT: Saddleback Meadows Notice of Preparation (Revised)

Traffic Engineering has completed its review of the revised N. O. P. and find some inconsistencies still exist with in the document.

1. The project on the public notice page proposes 158 acres or 71% of the site reserved for 705 single family residential units and 64 acres or 29% of the site proposed for open space, whereas page 1 of the initial study GA960048 proposes 10% of the project site for open space.

2. In the Environmental Analysis Checklist, under Transportation/Circulation - The effect of the vehicle trips generated by this proposal should be in the "Significant Unless Mitigated" instead of the "Less Than Significant Impact" column.

Ignacio Ochoa

TS:wb
7022713290171

County of Orange

MEMO

FEB 13 1997

DATE:

TO: George Britton, Manager, Environmental and Project Planning

Attn: Raymond Brantley

FROM: Manager, Environmental Resources

SUBJECT: Review of NOP for Saddleback Meadows Development

In response to your request for input on the subject project, Environmental Resources has reviewed this document and offers the following comments:

The EIR should particularly emphasize the water quality conditions of Aliso Creek as a "Receiving Water" of runoff from the project. Portions of Aliso Creek are already officially recognized as "impaired" in terms of water quality by the San Diego Regional Water Quality Control Board, due to some extent from urban stormwater runoff. As a result, all increases in potential pollutant discharge associated with contaminants in urban runoff are of concern. Intensive replacement of the current pervious cover with impervious surfaces could have impacts on the ability of an impaired water body to recover from current adverse conditions.

Potential project surface water quality impacts would arise from construction activities, long-term runoff impacts of new impervious surfaces, pesticides and fertilizers applied to new landscaping, outdoor uses (either principal or ancillary uses), and spills from accidents and/or improper residential management of chemicals.

In terms of specific mitigations for project impacts, these could include:

a) preparation of a construction Stormwater Pollution Prevention Plan under State NPDES requirements;
b) incorporation of those construction notes recommended in the Countywide Drainage Area Management Plan (DAMP) New Development Appendix;
c) incorporation of Federal EPA/NOAA guidance measures for coastal nonpoint source pollution;
d) incorporation of other measures from the State Municipal BMP Manual;
e) incorporation of other measures from the State Urban Runoff Technical Advisory Committee Report and Recommendations;
f) development of a long-term post-construction water quality management plan, describing committments to installation and maintenance of structural facilities and conduct of non-structural Best Management Practices (BMPs) consistent with the DAMP New Development Appendix;
g) inclusion of flood control improvements sensitive to surface water quality; and/or
h) inclusion of the goals and objectives from the Water Quality Control Plan for the San Diego Region for water quality as engineering design goals for runoff leaving the project area.

Additionally, problems that have been identified with previous environmental documents on this property include:

a) conclusions that implementation of a standard Water Quality Management Plan (WQMP) would assure that "no unavoidable adverse impacts to...water quality" result. Such an assumption is invalid, in that no scientific research was conducted to determine the efficacy of such measures, and no CEQA documentation was prepared for their adoption. The EIR should recognize that there will be unquantifiable and incremental unavoidable adverse water quality impacts associated with the project;

b) failure to include the standard county condition dealing with performance of a hazardous materials assessment prior to offers of dedication for public purposes. This condition should appropriately appear as a mitigation; and

c) recognizing that Aliso Creek is a watershed already formally designated as impaired in terms of water quality by the Statewide Water Quality Assessment, but then creating arbitrary criteria for assessing impact significance. Such criteria need to be based on the Beneficial Uses established for Aliso Creek in the Regional Water Board Region 9 Basin Plan and the impact the project could have on use attainability. The EIR should recognize that run-off arising from the built-out project may have impacts on the ultimate ability of Aliso Creek to recover from its current impairment.

If there are any questions, please contact Jim Swanek at 567-6342.

Bruce Moore for

Chris Crompton

Attachment F

DATE: January 28, 1997

TO: Raymond Brantly, Chief, Environmental & Project Planning

FROM: Johnnie Earnest, Chief, Geotechnical/Grading Plan Check

SUBJECT: Review of Notice of Intent to Prepare a Draft Environmental Impact Report # 566 - Saddleback Meadows Residential Development - Tract 10692 - Grading Application GA960048

This site has been the object of several previous studies. Applicable comments contained in the second screencheck review of the Draft Environmental Impact Report EIR #561 issued on December 29, 1995 should be addressed in the subject EIR #566. A copy of those comments are attached.

According to the subject document approximately 10 % of the site is to remain open space. Based upon previous reviews, mitigation measures will require encroachment into this area. Although the areas will remain open space grading operations will remove a large portion of the natural vegetation.

The impact that grading operations will have upon the stability of adjacent property and vice versa must be addressed and appropriate mitigation/corrective grading measures provided.

If the site is to be graded in phases appropriate grading measures must be provided to demonstrate that each phase will have adequate stability.

As noted above consideration must be given to the impact that grading activity will have upon the biological resources of the area.

PC0606

Add to revised NOP list (see Grace)

The Gas Company®

Orange Coast Region

February 18, 1997

County Of Orange
Planning & Developmenbt Services Dept.
P.O.Box 4048
Sama Ana, Ca. 92702-4048

Attention: Raymond H.C. Brantley

Southern California Gas Company
Mailing Address
Box 3334
Anaheim, CA
92803-3334

SUBJECT: WILL SERVE - Saddleback Meadows Development

This letter is not to be interpreted as a contractual commitment to serve the proposed project, but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served from an existing main as shown on the attached atlas sheet without any significant impact on the environment. The service will be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Residential (System Area Average)	Yearly
Single-family	750 therms/year/dwelling unit
Multi-family units	475 therms/year/dwelling unit

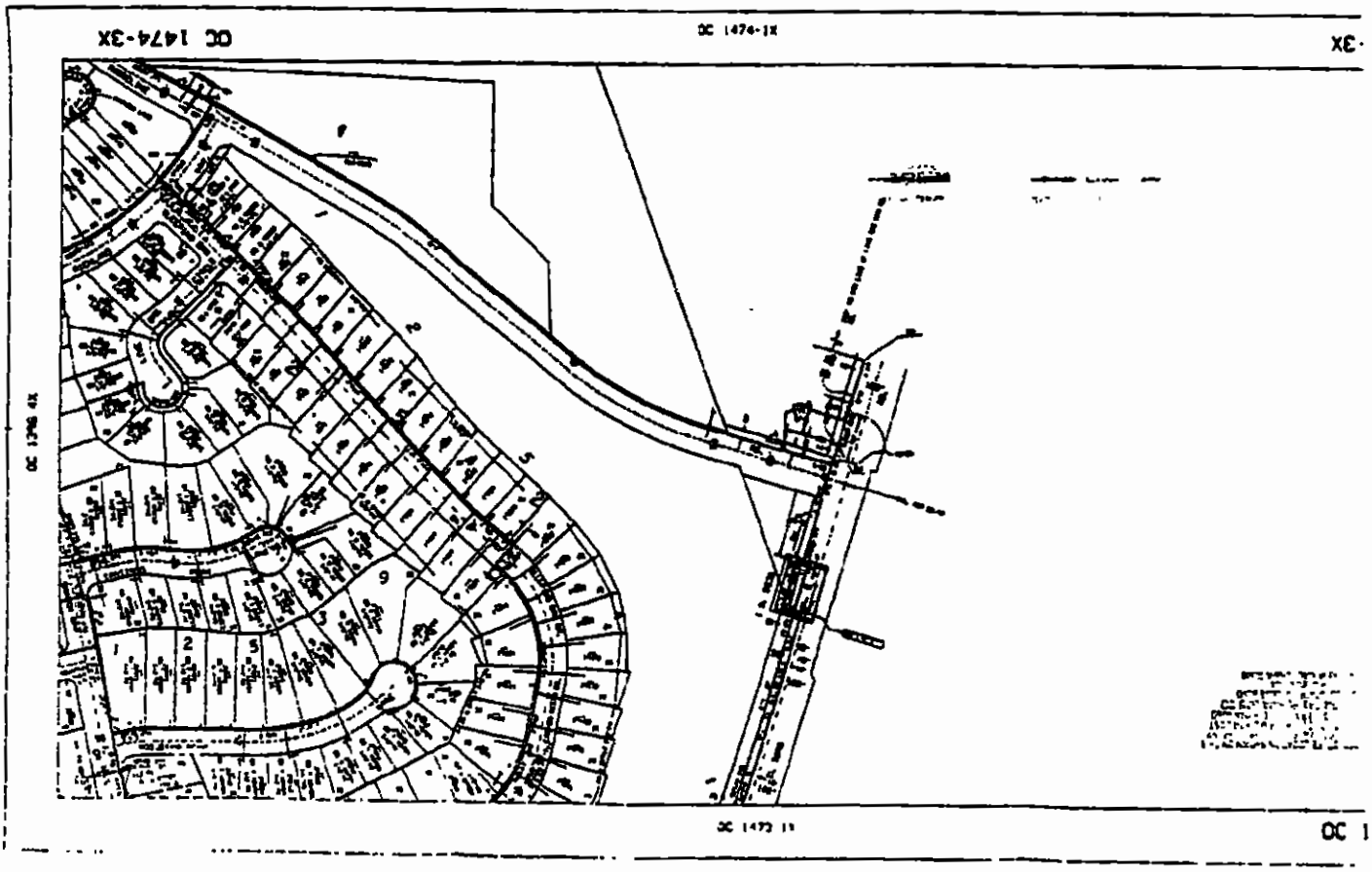
These averages are based on total gas consumption in residential units served by Southern California Gas Company during 1985 and it should not be implied that any particular home, apartment or tract or homes will use these amounts of energy.

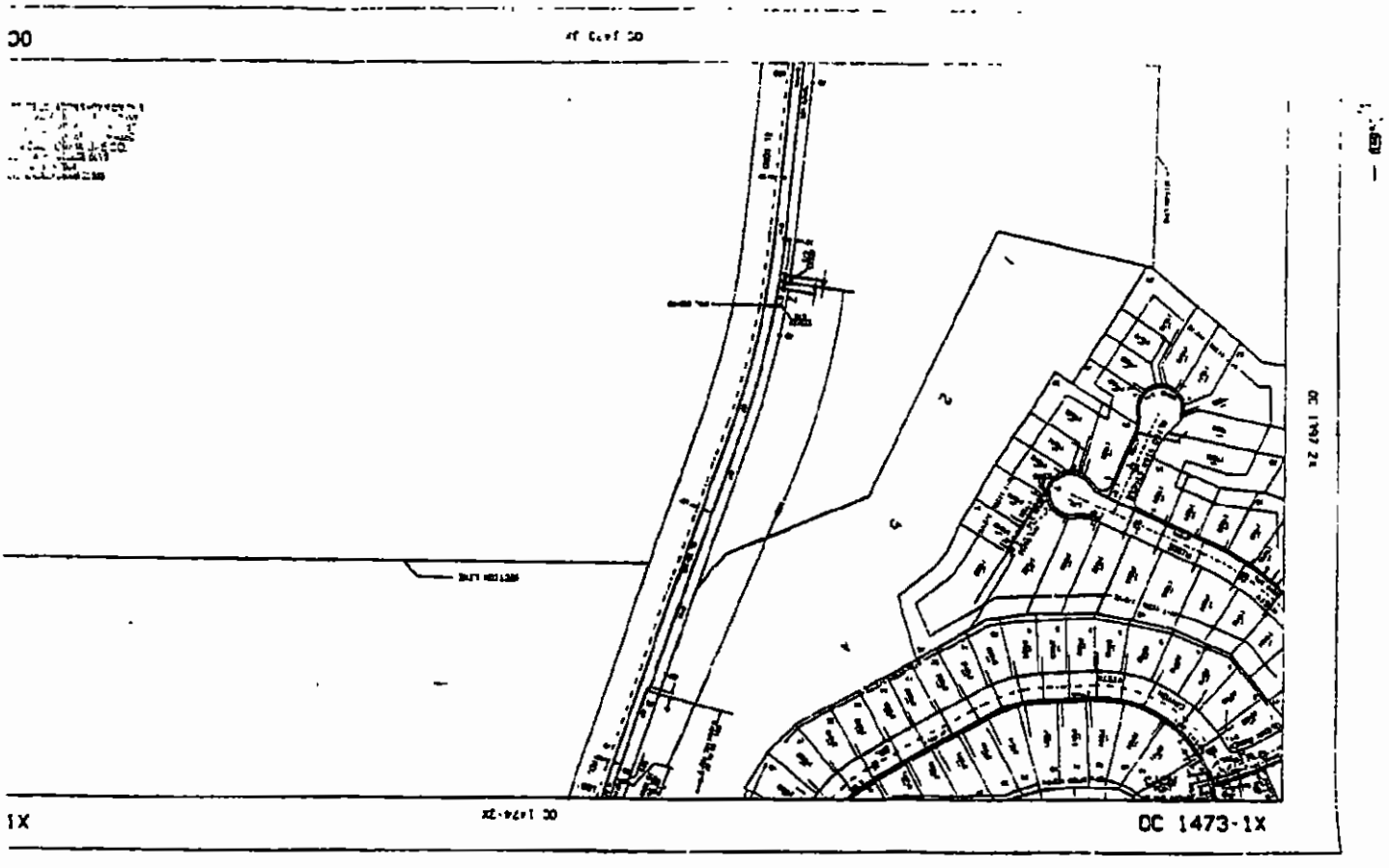
Estimates of gas usage for non-residential projects are developed on an individual basis and are obtained from a Market Services Staff representative by calling (800) 427-2000 Market Services can also provide assistance in selecting the most energy efficient appliances or systems for a particular project.

Sincerely

Robert S. Warth
Technical Supervisor

tap
EIRCORES.DOC




OC 1473-1X

Attachment F

RECEIVED
JAN 29 1997

CHARLES KINGMAN MITCHELL
& ASSOCIATES
LAWYERS
4676 ADMIRALTY WAY
SUITE 300
MARINA DEL REY, CALIFORNIA 90292-6695
TELEPHONE (310) 574-6303

FACSIMILE (310) 574-6323

January 27, 1997

Manager, Environmental and Project Planning
300 N. Flower, Room 321
Santa Ana, California 92702-4048

Att'n: Mr. Raymond H.C. Brantley

Re: Saddleback Meadows:

Dear Mr. Brantley:

As you probably know, we are the attorneys for the Vedanta Society of Southern California ("Vedanta"). Vedanta owns the Ramakrishna Monastery and surrounding land adjacent to O'Neill Regional Park at 19961 Live Oak Canyon Road in Trabuco Canyon.

We are writing now to thank you for the opportunity to comment on the Notice of Preparation ("NOP") Dated December 24, 1997, and to avail ourselves of that opportunity.

As a threshold matter we note that the NOP refers to 705 manufactured homes (i.e., a trailer park) but the Initial Study ("Study") calls for development of 318 single-family detached residential units. We suppose the reason for this is that the Applicant has recycled its documents from its failed attempt to develop the same land last year.

This would also account for certain omissions in the Study. We believe that "potentially significant impact" should be found in the areas of "population and housing," "public services" and "utilities and service systems." These items were erroneously omitted from the previous Environmental Analysis Checklist but should be included in this one. (We note that under "Public Services" in the Environmental Analysis Checklist potential significant impacts *are* noted, as they should be.)

We must respectfully disagree with the "Environmental Findings" which conclude that "Adverse Impacts on Humans" will be "Significant Unless Mitigated." As the previous rounds of hearings revealed, the correct category is "Potentially Significant" because adequate mitigation is not possible.

In the "Environmental Checklist" there are numerous debatable

conclusions, and some that are downright wrong. Please review the following items:

2 a) and b);
3 a), b), d), e), f), g), h);
4 f)
5 a), c);
6 a) and b);
9 c);
10 a), b), c), d) and e);
11 b) and c);
13 b) and e);
14 c), d) and e)
15 a), b), c), d) and e)

Any EIR that follows the Environmental Findings set forth in the NOP will necessarily be flawed as was the previous EIR upon which this most recent NOP seems to be based. In essence the NOP and accompanying documents ignore or gloss over significant problems, some of which will prove to be insurmountable.

We wish to observe, finally, that the previous Board of Supervisors in voting unanimously to disapprove this project's previous incarnation stated that the land was unbuildable due to the ongoing ancient landslides that underlie it. That Board recommended that the land be returned to acreage, and we submit that this is the only wise course of action. The Applicant does not have a vested right to develop this property, contrary to what it has stated publicly.

Again, please accept our thanks for this opportunity to comment.

Yours very truly,

Charles K. Mitchell

CKM/ns

Attachment F

U.S. Fish & Wildlife Service
2730 Loker Avenue West
Carlsbad, CA 92008
(619) 431-9440
FAX: (619) 431-9618

CA Dept. of Fish & Game
1416 Ninth Street
PO Box 944209
Sacramento CA 94244-2090
(916) 653-9767
FAX: (916) 653-2588

January 30, 1997

Mr. Raymond Brantley
EMA/Environmental & Project Planning
300 N. Flower St., Room 321
P.O. Box 4048
Santa Ana, California 92702-4048

Notice of Preparation to Prepare a Draft Environmental Report (DEIR) No. 566 for Saddleback Meadows Residential Development, Orange County, California.

Dear Mr. Brantley:

The U. S. Fish and Wildlife Service (Service) and California Department of Fish and Game (Department) Natural Community Conservation Planning (NCCP) program staff (i.e., "agencies") have reviewed the above referenced document. The project is located within the Southern Subregion Orange County NCCP Planning Area. The preferred project alternative proposes the phased development of 705 manufactured, single-family residential units on a 222.9-acre site near the intersection of El Toro Road and Live Oak Canyon Road. A total of 10% of the project site is proposed to remain as open space. There are two County of Orange (County) staff alternatives presented. Staff Alternative 'A' would allow 150 sf units with a minimum lot size of 20,000 feet^2. Staff Alternative 'B' would reduce the number of dwelling units on the project site to no more than 100 on approximately 30 acres. The proposed project may conflict with the earlier-adopted Foothill-Trabuco and Aliso Creek Corridor Specific Plans.

The NOP outlines the project chronology from 1978. The agencies have formally commented at different stages of the proposed project. We have also met with the project applicant and their consultants, including a meeting at the project site on May 20, 1996. On June 29, 1994, the Service wrote a letter stating that project approval must be deferred until the Southern Subregion NCCP was finalized. In 1996, both agencies commented on DEIR No. 561. The Service letter stated that the location of this development within and adjacent to occupied habitat of rare species could compromise the NCCP reserve and its ability to function as a wildlife corridor through the direct and indirect impacts of habitat destruction, fragmentation, introduction of exotic species, noise, and lighting. Our comments were based upon a project alternative that provided more open space than the proposed preferred alternative.

The agencies offer the following specific information and recommendations to assist the County in planning for the preservation of sensitive wildlife species, habitats, and wildlife corridors within the proposed project area, and as a means to assist you in complying with pertinent

statutes. To facilitate the evaluation of the proposed project from the standpoint of environmental resource planning, we request that the DEIR contain the following specific information:

1) A complete discussion of the purpose and need for the project and each of the project alternatives.

2) A complete description of the proposed project, including all practicable alternatives that have been considered to reduce project impacts to wetland areas, coastal sage scrub, and other rare habitat types and species.

3) Descriptions of the biological resources associated with each habitat type. These descriptions should include both qualitative and quantitative assessments of the resources present on the proposed project site, such as coastal sage scrub, southern maritime chaparral, oak woodland, southern willow scrub, mulefat scrub, and other wetlands. Information from EIR No. 561 and other sources should be updated as necessary. Maps and tables should be used to summarize these data.

4) Specific acreage and descriptions of coastal sage scrub within the project area and impacts due to project alternatives.

5) An assessment of direct, indirect, and cumulative project impacts to wildlife and associated habitats as a result of this project and other reasonably expected projects. All facets of the project (e.g., construction, implementation, operation and maintenance) should be included in this assessment.

6) Cumulative impacts should include an adequate discussion of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency, pursuant to §15130 of the CEQA Guidelines. This discussion should include projects such as the proposed Live Oak Plaza and Foothill Ranch projects.

7) Available data in EIR No. 561 regarding coastal California gnatcatcher (*Polioptila californica californica*) surveys indicated that surveys were done in 1993 and 1994. The agencies accept survey results as valid for only 12 months. Gnatcatchers are known to occur adjacent to the proposed project area. We suggest that updated surveys be done for this species. The updated survey protocol includes a total of seven surveys in the breeding season or nine in the non-breeding season.

8) An assessment of existing wildlife corridors and impacts due to the proposed project and its alternatives. The agencies recommend that the DEIR disclose and analyze any

impacts within this linkage area by utilizing aerial photographs and graphic techniques such as maps and tables. Data from the mountain lion telemetry studies conducted by Paul Beier Ph.D., and other applicable investigations conducted in the area should be included in this assessment. We suggest that this assessment of wildlife corridors include a field survey using applicable techniques to determine wildlife use within the proposed project area. These techniques should include but not be limited to one or more of the following: track pads, scent stations, wildlife sign identification, and automatic photographic techniques.

9) A list of Federal candidate, proposed or listed species, state-listed species, and locally sensitive species that are on or near the project site should be included with a detailed discussion of these species, including information pertaining to their local status and distribution. The Service will provide a list of these species in a separate letter. The real and anticipated impacts of the project on these species should be fully addressed.

10) The status and likely impacts to botanical resources, including rare plants, should be reassessed. A literature search should be conducted, including a review of the Natural Diversity Database maintained by the State of California, for species that are Federal and State listed, proposed, candidate, or are otherwise considered to be endemic or rare by knowledgable authorities such as the California Native Plant Society. These species of interest for this proposed project would include but not necessarily be limited to Catalina mariposa lily (*Calochortus catalinae*) and intermediate mariposa lily (*Calochortus weedii* ssp. *intermedius*).

11) Surveys should be conducted for the Quino checkerspot (*Euphydryas editha quino*), a Federal endangered species. The biologist conducting this survey should contact the Carlsbad Field Office to obtain the most current survey guidelines.

12) The current status of fairy shrimp on the project site should be discussed. This would include the endangered Riverside fairy shrimp (*Streptocephalus woottoni*), the proposed endangered San Diego fairy shrimp (*Branchinecta sandiegoensis*) and the threatened vernal pool fairy shrimp (*Branchinecta lynchi*). Riverside fairy shrimp is known to occur on the proposed project site.

13) Specific mitigation plans to fully offset project-related impacts, including proposals for mitigating the cumulative impacts of direct and indirect habitat loss, degradation, or modification. The project site supports significant biological resources and is part of a regional wildlife corridor. Adverse project-related impacts should be mitigated, to the maximum extent practicable, through on-site conservation or revegetation of impacted habitat types. The objective of each mitigation plan should be to offset the project-induced qualitative and quantitative losses of wildlife habitat values. These mitigation

plans involving restoration and enhancement should be prepared by persons with specific expertise on southern California ecosystems and state-of-the-art native plant revegetation techniques. Each plan should include, at a minimum: a) the location of the mitigation site; b) the species, actual number, and size of the plants to be used (seeds and seedlings should be obtained from an appropriate on-site location or from a site in the immediate vicinity of the project site); c) a schematic layout depicting the arrangement of the plants within the compensation area; d) time of year that planting will occur; e) identification of the irrigation methodology to be employed; f) measures to be taken to control exotic vegetation on site; g) a detailed monitoring program that includes provisions for replanting areas where planted materials have not survived; and h) identification of the agency or party responsible for assuring the successful creation of the mitigation habitat and providing for the perpetual conservation of the restoration site.

14) An analysis of the effects of the project on the hydrology of any riparian or wetland communities within the sphere of influence of the project. Of particular importance is an analysis of the adequacy of proposed means to convey major flood or runoff flows without impacting vegetation off-site or in the restoration area. Also of great interest would be an analysis of the effects on hydrology of the Riverside fairy shrimp occupied habitat due to the proposed project.

15) Identification of methods to be employed to prevent soil erosion and siltation to adjacent areas designated as open space and NCCP reserve lands.

16) Measures to be taken to perpetually protect habitat values that are created during restoration (mitigation). Issues that should be addressed include restrictions on vehicle and people access, proposed land dedications, monitoring and management programs, control of illegal dumping, restrictions on lighting near mitigation areas, etc.

17) A thorough analysis of expected noise impacts on avian species and other wildlife and measures to be taken to mitigate any adverse impacts resulting from noise levels.

The agencies appreciate working with the County on NCCP conservation planning issues. Lands within the proposed project area are important in conservation planning for the Southern Subregion NCCP Reserve in Orange County. The area of the proposed project is also the only linkage to the NCCP Central Subregion in Orange County. An improperly implemented project would permanently destroy the integrity of the linkage between the Subregion reserves.

If you have any questions or comments please contact Liam H. Davis, Associate Wildlife Biologist (Department) at 619-467-4207 or Robert James, Fish and Wildlife Biologist (Service) at 619-431-9440.

Sincerely,

for Gail C. Kobetich
Field Supervisor
U.S. Fish and Wildlife Service

for Ron Rempel
NCCP Program Manager
California Department of Fish and Game

cc: Department of Fish and Game (B. Tippets, P. Wolf, L. Davis, S. Harris, T. Dickerson)
U.S. Fish and Wildlife Service (D. Harlow, B. James)

1-6-97-TA-66

Attachment F

RECEIVED
FEB 27 1997

STAFF MEMBERS

Bruce Boner, General Manager
Bowie, Arneson, Kadl, Wiles
and Giannone, Legal Counsel
Carl R Schoonover, Treasurer

TRABUCO CANYON
WATER DISTRICT

BOARD OF DIRECTORS

Don Chadd, President
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Corinne Loskot, Director
Jim Haselton, Director
Matthew Dunton, Director

February 25, 1997

Raymond H. C. Brantley/William Grieman
County of Orange
Planning & Development Services Department
P. O. Box 4048
Santa Ana, California 92702-4048

Re: Revised Notice of Intent to Prepare a Draft Environmental Impact Report #566
Project Title: Saddleback Meadows Development
Applicant: California Quartet, Inc.

Gentlemen:

Trabuco Canyon Water District ("TCWD") is in receipt of the Notice of Preparation (Revised) dated February 6, 1997 for the above-captioned matter.

TCWD responds that it will provide water to and sewering of the property, subject to receipt of all applicable fees, approval of appropriate agreements, and the construction of water and sewer facilities to meet the needs of the project.

If you require further information, please contact the undersigned at (714) 858-0277.

Very truly yours,

Bruce Boner

Bruce Boner
General Manager

BB:ses

32003 Dove Canyon Drive, Trabuco Canyon, CA 92679 · 714/858-0277 · Fax: 714/858-3025
Mailing Address: P.O. Box 500, Trabuco Canyon, CA 92678

Attachment F

UNITED STATES MARINE CORPS
MARINE CORPS AIR BASES WESTERN AREA EL TORO
PO BOX 95001
SANTA ANA CA 92709-5001

IN REPLY REFER TO:
11103.15
AQ/SaddleBM
26 Feb 1997

RECEIVED
FEB 27 1997

COUNTY OF ORANGE
ATTN MR RAYMOND H C BRANTLEY
ENVIRONMENTAL & PROJECT PLANNING
P O BOX 4048
SANTA ANA CA 92702-4048

REVISED NOTICE OF INTENT TO PREPARE A DRAFT ENVIRONMENTAL REPORT #566 - SADDLEBACK MEADOWS DEVELOPMENT

Dear Mr. Brantley,

The above Revised Notice of Intent has been reviewed and we have no comments at this time.

Thank you for the opportunity to comment on this land use proposal. If you have any further questions, please contact Ms. Desiree Garrison at (714) 726-3702.

Sincerely,

D. P. PENDER
Colonel, U.S. Marine Corps
Community Plans and Liaison Officer
By direction of the Commander

RECEIVED
FEB 18 1997

February 13, 1997

Mr. Raymond H.C. Brantley
Environmental and Project Planning Division
Planning and Development Services Department
County of Orange
300 North Flower, Room 321
Santa Ana, CA 92702-4048

RE: **Comments on the Notice of Preparation for the Draft EIR for the County of Orange, Saddleback Meadows Development - SCAG No. I9700056**

Dear Mr. Brantley:

Thank you for submitting the **Notice of Preparation for the Draft EIR for the County of Orange, Saddleback Meadows Development** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

In addition, The California Environmental Quality Act requires that EIRs discuss any inconsistencies between the proposed project and the applicable general plans and regional plans (Section 15125 [b]). If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Policies of SCAG's Regional Comprehensive Plan and Guide which may be applicable to your project are outlined in the attachment. We suggest that the appropriate policies be addressed in the DEIR.

Please provide a minimum of 45 days for SCAG to review the DEIR when this document is available. If you have any questions regarding the attached comments, please contact Bill Boyd at (213) 236-1960.

Sincerely,

VIVIANE DOCHE-BOULOS
Intergovernmental Review

H:\ORCOSADM.NOP

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017 3435

t (213) 236-1800
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County of Orange: Marilyn Langlois, Orange County • Ron Bates, Los Alamitos • Art Brown, Buena Park • Jon Dehoy, Newport Beach • Richard Dixon, Lake Forest • Sandy Genis, Costa Mesa • Constance Haggard, San Clemente • Wally Linn, La Palma • Bev Perry, Brea

County of Riverside: Bob Buster, Riverside County • Dennis Draeger, Calimesa • Dick Kelly, Palm Desert • Ron Loveridge, Riverside • Ron Roberts, Temecula

County of San Bernardino: Larry Walker, San Bernardino County • Bill Alexander, Rancho Cucamonga • Jon Bagley, Twentynine Palms • Dennis Bamett, Colton • David Eshleman, Fontana • Tom Minser, San Bernardino • Gwenn Norton-Perry, Chino Hills

County of Ventura: Judy Mikels, Ventura County • Andrew Fox, Thousand Oaks • Sam Daily, Camarillo • John Melton, Santa Paula

Printed on Recycled Paper 9/96

**COMMENTS ON THE NOTICE OF PREPARATION
OF A DRAFT ENVIRONMENTAL IMPACT REPORT
FOR COUNTY OF ORANGE, SADDLEBACK MEADOWS DEVELOPMENT**

PROJECT DESCRIPTION

The proposed Project involves the phased development of 705 manufactured single-family units and a 1.7 acre neighborhood commercial center on a 222.23-acre site on the easterly side of El Toro Road. Gross residential density proposed is 3.17 dwellings per acre, with an average lot size of 3,900 square feet. Seventy one percent (158 acres) of the site would be impacted, and 64 acres are proposed as open space. The site is located approximately 1/2 mile south of the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Canyon Specific Plan area of unincorporated Orange County.

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The Growth Management Chapter (GMC) of the Regional Comprehensive Plan and Guide (RCPG) contains the following policy that is particularly applicable and should be addressed in the Draft EIR for the Project[1]:

- *The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.*

The Regional Mobility Element (RME) also has policies pertinent to this proposed project[2]. This chapter links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. Among the relevant policies of this chapter are the following:

- *Promote Transportation Demand Management (TDM) programs along with transit and ridesharing facilities as a viable and desirable part of the overall mobility program while recognizing the particular needs of individual subregions.*

---

[1] See Endnote.

[2] See Endnote.

- *Support the extension of TDM program implementation to non-commute trips for public and private sector activities.*

- *Support the coordination of land use and transportation decisions with land use and transportation capacity, taking into account the potential for demand management strategies to mitigate travel demand if provided for as a part of the entire package.*

- *Urban form, land use and site-design policies should include requirements for safe and convenient non-motorized transportation, including the development of bicycle and pedestrian-friendly environments near transit.*

- *The development of the regional transportation system should include a non-motorized transportation system that provides an effective alternative to auto travel for appropriate trips. The planning and development of transportation projects and systems should incorporate the following, as appropriate:*

    a. *Provision of safe, convenient, and continuous bicycle and pedestrian infrastructure to and throughout areas with existing and potential demand such as activity areas, schools, recreational areas (including those areas served by trails), which will ultimately offer the same or better accessibility provided to the motorized vehicle.*

    b. *Accessibility to and on transit (bus terminals, rail stations, Park-And-Ride lots), where there is demand and where transit boarding time will not be significantly delayed.*

    c. *Maintenance of safe, convenient, and continuous non motorized travel during and after the construction of transportation and general development projects. Existing bikeways and pedestrian walkways should not be removed without mitigation that is as effective as the original facility.*

- *Entities and programs that currently support the auto should be encouraged to provide the same types of services for non-motorized transportation, including education, promotion, and enforcement.*

<u>GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL STANDARD OF LIVING</u>

The Growth Management goals to develop urban forms that enable individuals to spend less income on housing cost, that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy. The evaluation of the proposed project in relation to the following policies would be intended to guide efforts toward achievement of such goals and does not infer regional interference with local land use powers.

- *Encourage local jurisdictions' efforts to achieve a balance between the types of jobs they seek to attract and housing prices.*

- *Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL QUALITY OF LIFE

The Growth Management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. The evaluation of the proposed project in relation to the following policies would be intended to provide direction for plan implementation, and does not allude to regional mandates.

- *Support provisions and incentives created by local jurisdictions to attract housing growth in job rich subregions and job growth in housing rich subregions.*

- *Encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.*

- *Encourage local jurisdictions' plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.*

- *Support and encourage settlement patterns which contain a range of urban densities.*

- *Encourage planned development in locations least likely to cause environmental impact.*

- *National Forests shall remain permanently preserved and used as open space. SCAG*

shall support policies and actions that preserve open space areas identified in local, state, and federal plans.

- *Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.*

- *Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.*

- *Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.*

- *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources,measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.*

GMC POLICIES RELATED TO THE RCPG GOAL TO PROVIDE SOCIAL, POLITICAL, AND CULTURAL EQUITY

The Growth Management Goal to develop urban forms that avoid economic and social polarization promotes the regional strategic goal of minimizing social and geographic disparities and of reaching equity among all segments of society. The evaluation of the proposed project in relation to the policy stated below is intended guide direction for the accomplishment of this goal, and does not infer regional mandates and interference with local land use powers.

- *Encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment.*

- *Support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection.*

AIR QUALITY CHAPTER CORE ACTIONS

The Air Quality Chapter core actions related to the proposed project include:

- *Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle-miles-traveled/emission fees) so that options to command and control regulations can be assessed.*

- *Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.*

WATER QUALITY CHAPTER RECOMMENDATIONS AND POLICY OPTIONS

The Water Quality Chapter core recommendations and policy options relate to the two water quality goals: to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters.

- *Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.*

- *Coordinate watershed management planning at the subregional level by (1) providing consistent regional data; (2) serving as a liaison between affected local, state, and federal watershed management agencies; and (3) ensuring that watershed planning is consistent with other planning objectives (e.g., transportation, air quality, water supply).*

- *Support regional efforts to identify and cooperatively plan for wetlands to facilitate both sustaining the amount and quality of wetlands in the region and expediting the process for obtaining wetlands permits.*

- *Clean up the contamination in the region's major groundwater aquifers since its water supply is critical to the long-term economic and environmental health of the region. The financing of such clean-ups should leverage state and federal resources and minimize significant impacts on the local economy.*

- *Encourage water reclamation throughout the region where it is cost-effective, feasible, and appropriate to reduce reliance on imported water and wastewater discharges. Current administrative impediments to increased use of wastewater should be addressed.*

- *Ensure wastewater treatment agency facility planning and facility development be*

consistent with population projections contained in the RCPG, while taking into account the need to build wastewater treatment facilities in cost-effective increments of capacity, the need to build well enough in advance to reliably meet unanticipated service and storm water demands, and the need to provide standby capacity for public safety and environmental protection objectives.

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the proposed project should be implemented and monitored, as required by CEQA.

ENDNOTE

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

SCAG is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. §134(g)-(h), 49 U.S.C. §1607(f)-(g) et seq., 23 C.F.R. §450, and 49 C.F.R. §613. SCAG is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. §7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining ***Conformity*** of Projects, Plans and Programs to the Air Plan, pursuant to 42 U.S.C. §7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

SCAG is the authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A 95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, ***Environmental Impact Reports*** of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

Pursuant to 33 U.S.C. §1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized ***Areawide Waste Treatment Management Planning Agency***.

SCAG is responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the San Diego Association of Governments and the Santa Barbara County/Cities Area Planning Council) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.

The Gas Company

Orange Coast Region

February 18, 1997

County Of Orange
Planning & Developmenbt Services Dept.
P.O Box 4048
Santa Ana, Ca. 92702-4048

Attention: Raymond H.C. Brantley

Southern California Gas Company
Mailing Address
Box 3334
Anaheim, CA
92803-3334

SUBJECT: WILL SERVE - Saddleback Meadows Development

This letter is not to be interpreted as a contractual commitment to serve the proposed project, but only as an information service. Its intent is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served from an existing main as shown on the attached atlas sheet without any significant impact on the environment. The service will be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Residential (System Area Average)	Yearly
Single-family	750 therms/year/dwelling unit
Multi-family units	475 therms/year/dwelling unit

These averages are based on total gas consumption in residential units served by Southern California Gas Company during 1985 and it should not be implied that any particular home, apartment or tract or homes will use these amounts of energy.

Estimates of gas usage for non-residential projects are developed on an individual basis and are obtained from a Market Services Staff representative by calling (800) 427-2000. Market Services can also provide assistance in selecting the most energy efficient appliances or systems for a particular project.

Sincerely,

Robert Warth

Robert S. Warth
Technical Supervisor

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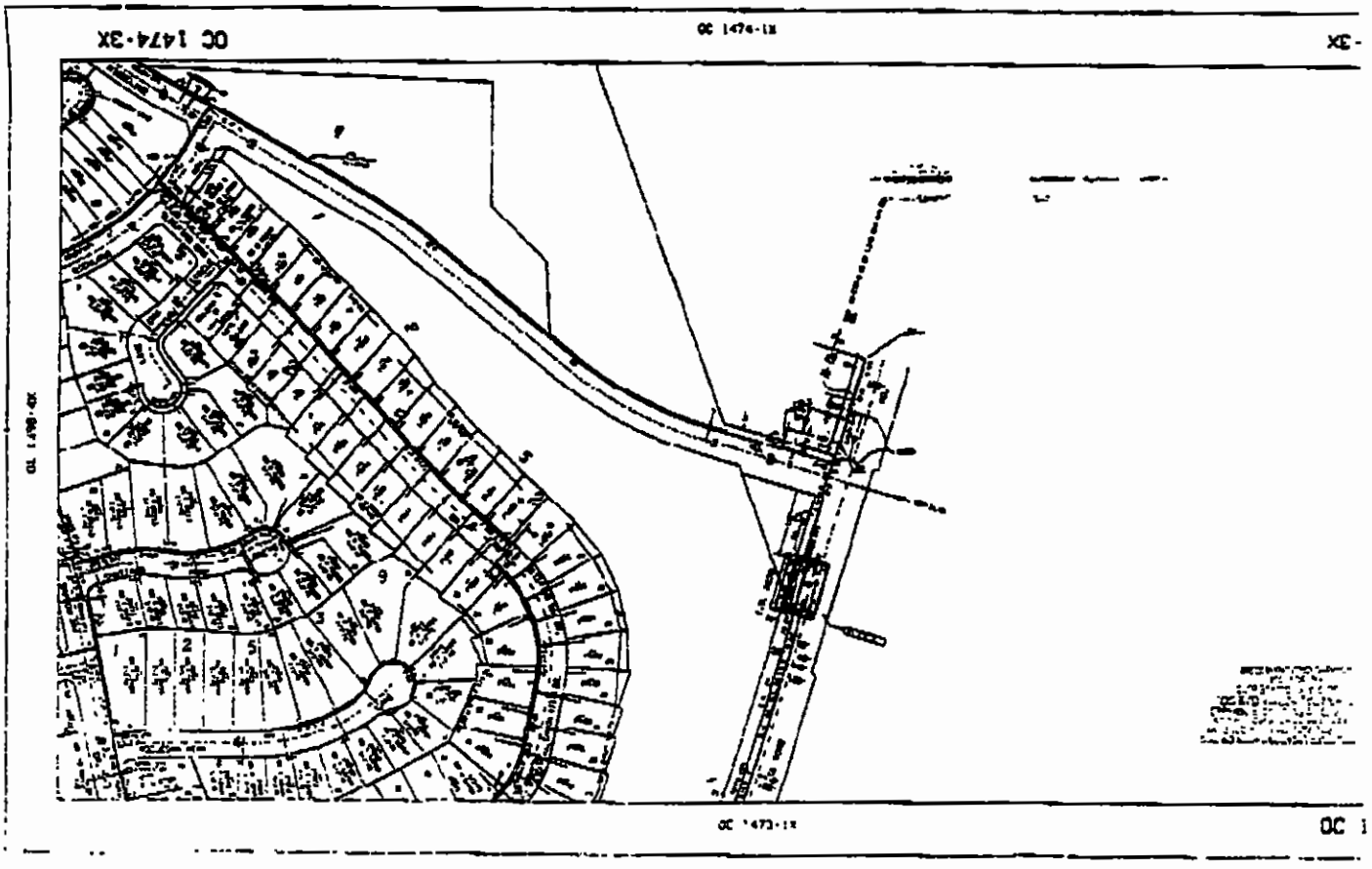
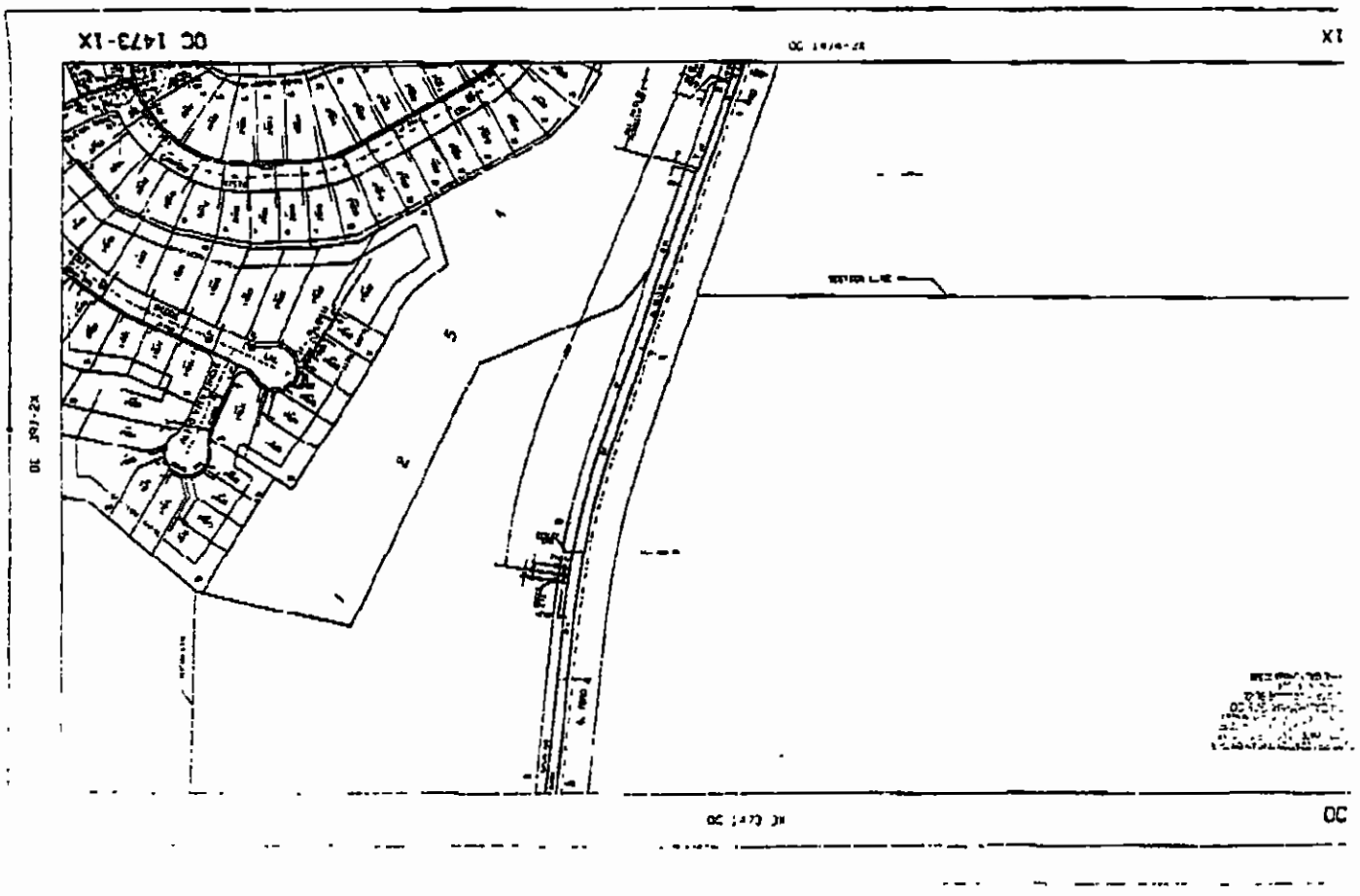




SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072

(Revised NOP)
NOP Comment Period 2

NOP Commentators

Public Agencies

	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset / Human Health	Population/Housing	Right of Way / Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics / View / Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/NON CEQA	No Comments
Feb. 13, 1997 1. County of Orange Environmental Resources Chris Compton, Manager				X																X	X										X	
Mar 10, 1997 2. County of Orange Jerold M. Kacsir, Manager Planning & Development Services Dept.			X		X	X	X	X	X	X				X		X	X	X						X								
Feb 13, 1997 3. So. Calif Association of Governments Viviane Doche-Boulos, Intergovernmental Review						X	X	X		X		X		X						X						X	X		X			
Feb. 18, 1997 4. So Calif. Gas Company Robert S. Warth, Technical Supervisor																			X													

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072 **(Revised NOP)** **NOP Comment Period 2** **NOP Commentators** **Public Agencies**	**Project Description**	**Related Projects**	**Grading**	**Hydrology**	**Geologic Hazards/Landslides**	**Air Quality**	**Plant/Animal Life**	**Noise**	**Land Use/Compatibility**	**Natural Resources**	**Risk of Upset / Human Health**	**Population/Housing**	**Right of Way / Access/Trails**	**Traffic**	**Fuel Modification**	**Fire & Police Protection**	**Schools & Libraries**	**Parks & Recreation**	**Energy/Utilities**	**Water Supply/Water Quality**	**Storm Water Drainage**	**Sewers**	**Solid Waste**	**Aesthetics / View / Light & Glare**	**Cultural/Scientific Resources**	**Long Term Implication**	**Growth Inducing Impacts**	**Alternatives**	**General Comments**	**CEQA Procedures**	**Other/NON CEQA**	**No Comments**
Mar 18, 1997 5. Orange County Fire Authority Laura Blaul, Deputy Fire Marshall Planning & Development													X			X																
Mar 7, 1997 6. State of California Department of Fish & Game Ron Rempel, NCCP Program Manager CDFG							X																									
Mar 12, 1997 7. State of California Department of Fish & Game Patricia Wolf, Acting Regional Manager				X			X		X	X																X		X		X		
Mar. 5, 1997 8. State of California Department of Transportation Robert Joseph, Advance Planning Branch																															X	

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072

(Revised NOP)
NOP Comment Period 2

NOP Commentators

Public Agencies

	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset / Human Health	Population/Housing	Right of Way / Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics / View / Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/NON CEQA	No Comments
Feb 25, 1997 9 Trabuco Canyon Water District Bruce Boner, General Manager																						X										
Mar. 7, 1997 10 United States Fish & Wildlife Service Gail Kobetich, Field Supervisor							X																									
Feb. 27, 1997 11 United States Marine Corps D P Pender, Colonel Community Plans & Liaison Officer																															X	

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072 **(Revised NOP)** **NOP Comment Period 2** **NOP Commentators** **Private Citizens**	**Project Description**	**Related Projects**	**Grading**	**Hydrology**	**Geologic Hazards/Landslides**	**Air Quality**	**Plant/Animal Life**	**Noise**	**Land Use/Compatibility**	**Natural Resources**	**Risk of Upset / Human Health**	**Population/Housing**	**Right of Way / Access/Trails**	**Traffic**	**Fuel Modification**	**Fire & Police Protection**	**Schools & Libraries**	**Parks & Recreation**	**Energy/Utilities**	**Water Supply/Water Quality**	**Storm Water Drainage**	**Sewers**	**Solid Waste**	**Aesthetics / View / Light & Glare**	**Cultural/Scientific Resources**	**Long Term Implication**	**Growth Inducing Impacts**	**Alternatives**	**General Comments**	**CEQA Procedures**	**Other/NON CEQA**	**No Comments**
Mar 7, 1997 1. Diequeno/Coastal Gabrielleno Velasques, Jim Tribal Spokesman																									X							
Feb 26, 1997 2 Finn, Donald R												X		X										X								
Feb. 17, 1997 3 Loeper, James & Loeper, Dawn					X		X			X		X	X	X		X								X								
Feb 28, 1997 4 Ross, William D., Esq. on behalf of California Quartet, Inc																												X		X	X	

SADDLEBACK MEADOWS SUBSEQUENT DRAFT EIR SCH NO. 96121072

(Revised NOP)
NOP Comment Period 2

NOP Commentators

Private Citizens

	Project Description	Related Projects	Grading	Hydrology	Geologic Hazards/Landslides	Air Quality	Plant/Animal Life	Noise	Land Use/Compatibility	Natural Resources	Risk of Upset / Human Health	Population/Housing	Right of Way / Access/Trails	Traffic	Fuel Modification	Fire & Police Protection	Schools & Libraries	Parks & Recreation	Energy/Utilities	Water Supply/Water Quality	Storm Water Drainage	Sewers	Solid Waste	Aesthetics / View / Light & Glare	Cultural/Scientific Resources	Long Term Implication	Growth Inducing Impacts	Alternatives	General Comments	CEQA Procedures	Other/NON CEQA	No Comments
Feb. 28, 1997 5 Siegel, Bernard & Cynthia						X						X					X							X								
Mar 5, 1997 6. Verlyn Jensen, Law Offices of (St Michael's Abbey)			X		X		X		X		X	X												X						X		
Mar 7, 1997 7 Wallace, Elizabeth Representative, Portola Hills			X		X		X		X	X																			X		X	

ENVIRONMENTAL MANAGEMENT AGENCY
P.O. BOX 4048
SANTA ANA, CALIFORNIA 92702-4048

NOTICE OF PREPARATION

Date: December 24, 1996

Subject: Notice Of Intent To Prepare A
Draft Environmental Impact Report # 566

Project Title: Saddleback Meadows Residential Development

Applicant California Quartet, Inc.

The Orange County Environmental Management Agency has conducted an Initial Study for the subject project and has determined that an Environmental Impact Report is necessary. The County of Orange will be the Lead Agency for the subject project and will prepare the EIR. In order for the concerns of your agency to be incorporated into the Draft EIR, we need to know the views of your agency as to the scope and content of the environmental information relevant to your agency's statutory responsibilities in connection with the proposed project Your agency must consider the EIR prepared by the County of Orange when considering your permit or approval for the project. The project description, location, and an analysis indicating the probable environmental effects of the proposed action are contained in the attached materials.

Pursuant to Section 21080.4 of CEQA, your response must be sent as soon as possible but not later than 30 days after receipt of this notice.

If any significant changes in the proposed project occur, we will advise you If you have need for additional information, contact Raymond H.C Brantley of the Environmental & Project Planning Division at 834- 5550

Submitted by:

Raymond H.C Brantley

Attachment: Initial Study

F0250-103 1 88/85

PUBLIC NOTICE

NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL IMPACT REPORT

EIR 566

Pursuant to Public Resources Code Section 21165, the County of Orange is the Lead Agency responsible for preparing an environmental impact report (EIR) addressing potential impacts associated with the proposed Saddleback Meadows project located approximately 1/2 mile of the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Specific Plan area of unincorporated Orange County. The Project proposes the phased development of 705 manufactured, single-family residential units on a 229.2-acre site on the easterly side of El Toro Road. The gross residential density proposed is 3.17 dwelling per acre, with an average lot size of 3,900 square feet and a minimum lot size of 3,200 square feet. Sixty-nine percent (69%), or 158 acres of the project site would be impacted; 71 acres are proposed for open space.

At a minimum, the EIR will examine the potential impacts resulting from the project in the following topical areas: Land Use; Affordable Housing; Geophysical; Grading; Water; Transportation; Air Quality; Noise; Biological Resources; Aesthetics; Cultural/Scientific Resources; Recreation; Hazards; Public Services, including schools; and Cumulative Impacts. A more complete description of EIR requirements are included in the Notice of Preparation.

REVIEWING LOCATIONS

COPIES OF THE NOTICE OF PREPARATION (NOP) ARE AVAILABLE FOR PUBLIC REVIEW FROM DECEMBER 26, 1996 TO JAN. 31, 1997 AT THE FOLLOWING LOCATIONS.

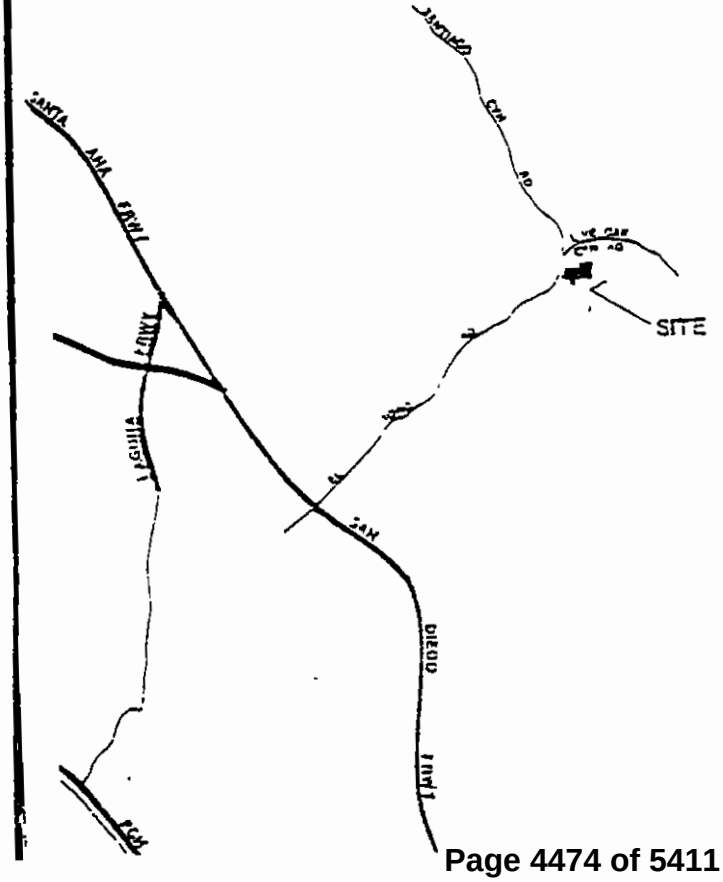
COUNTY: Planning & Development Services Dept.,
Offices of Environmental & Project Planning Div
Contacts: William Grieman - 834-5175
Raymond Brantley - 834-3763
ORANGE COUNTY BRANCH LIBRARIES:
24851 Chrisanta Dr., Mission Viejo
28192 Silverado Canyon Rd., Silverado
24672 Raymond Ave., El Toro
CAL-STATE UNIV., FULLERTON, Library Doc. Sec
UC IRVINE, MAIN LIBRARY, Gov Pub Section

COPIES OF THE NOTICE OF PREPARATION HAVE BEEN PROVIDED TO THE FOLLOWING GROUPS.

Foothill-Trabuco Review Board Members: R. Brusca, R. Chandos, Ms. M E Park, T. Wiberg & D Edgar
Hidden Ridge HOA, c/o Ms Marie Walsh
Portola Hills HOA I, c/o Rinevol Mgement Co
Portola Hills HOA II, c/o Marquis Mgt. Co
Canyon View Homeowners Assoc.
Inter-Canyon League, c/o Bob Hunt
Natural History Foundation of O.C.
Calif. Native Plant Society
National Audubon Society, Inc.
Sierra Club-OC Chapter
Rural Cyns. Cnsrv. Fund, c/o Bruce Conn
O C. Horsemen's Assoc.
ETI Corral 357, c/o D Carter

Address Comments to: Manager, Env & Proj. Planning
300 N Flower, Room 321, Santa Ana, CA 92702-4048

PROJECT LOCATION MAP



ENVIRONMENTAL MANAGEMENT AGENCY
P.O. BOX 4048
SANTA ANA, CA 92702-4048

INITIAL STUDY # GA 960048

PROJECT REF SDLBK MD

INITIAL STUDY

1. **PROJECT TITLE:** Saddleback Meadows **PROJECT NUMBER:** GA 960048

2. **LEAD AGENCY:** Orange County Environmental Management Agency **LEAD DIVISION:** Environmental Planning Div.

3. **CEQA CONTACT PERSON:** Raymond H.C. Brantley **PHONE NUMBER:** (714) 834-3763

4. **PROJECT LOCATION:** Approx. 1/4 mile south of the intersection of El Toro Road and Live Oak Canyon Road, immediately north of the Hidden Ridge community, east of El Toro Road in the Foothill Trabuco Specific Plan area of unincorporated Orange County.

5. **PROJECT SPONSOR'S NAME:** Calif. Quartet, Ltd. **ADDRESS:** 1601 Dove St., Ste. 105 Newport Beach, CA 92660

6. **GENERAL PLAN DESIGNATION:** 1B and 1.2

7. **ZONING:** "S" "BWR" Foothill Trabuco Specific Plan; "SR" Overlay District

8. **DESCRIPTION OF PROJECT: (Describe the whole action involved)**
Development of 318 single-family detached residential units, associated infrastructure, a wildlife movement corridor, hiking/riding trail and biological resource enhancement on the 229.2 acre site.

9. **SOURCES OF INFORMATION: (Numbered)**
(1) Certified FEIRs 059 & 203; (2) Orange County General Plan (OCGP) Land Use Element; (3) Foothill-Trabuco Specific Plan; (4) Tentative Tract Map TT10692; (5) Preliminary Landscape Plan; (6) 4th Supplemental Geotechnical Rpt.; (7) Biological Assessment & Oak Tree Inventory; (8) Aliso Creek Corridor Specific Plan; (9) Phase I Grading Plan; (10) Original Grading Plan; (11) OCGP Noise Element; (12) OCGP Transportation Element; (13) SCAQMD Air Quality Handbook; (14) Letter to Tim Neely from US Fish & Wildlife Service; (15) OCGP Resources Element; (16) OCGP Recreation Element; (17) OCGP Safety Element; (18) OC Natural Community Conservation Planning Program Guidelines (19) Saddleback Meadows Information Booklet

10. **RESPONSIBLE AGENCIES:**
U.S. Fish & Wildlife Service, Calif. Dept. of Fish & Game; U.S. Army Corps of Engineers; Calif. Regional Water Quality Control Board

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated," as indicated on the attached Environmental Analysis Checklist.

X	Land Use & Planning	X	Air Quality	X	Recreation
___	Population & Housing	X	Noise	___	Energy & Mineral Resources
X	Geophysical	X	Biological Resources	X	Hazards
X	Water	X	Aesthetics	___	Public Services
X	Transportation/Circulation	X	Cultural/Scientific Resources	___	Utilities & Service Systems

ENVIRONMENTAL FINDINGS

	POTENTIALLY SIGNIFICANT IMPACT	SIGNIFICANT UNLESS MITIGATED	LESS THAN SIGNIFICANT IMPACT	NO IMPACT
A. **POTENTIAL TO DEGRADE**: Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	X	___	___	___
B. **SHORT-TERM**: Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	X	___	___	___
C **CUMULATIVE IMPACTS**: Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	X	___	___	___
D. **ADVERSE IMPACTS ON HUMANS**: Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	___	X	___	___

DETERMINATION

I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared. ___

I find that although the proposed project **COULD** have a significant effect on the environment, there will not be a significant effect in this case because Mitigation Measures have been added to the project. A **MITIGATED NEGATIVE DECLARATION** will be prepared ___

I find that the proposed project **MAY** have a significant effect on the environment which has not been analyzed previously. Therefore, an **ENVIRONMENTAL IMPACT REPORT** is required. X

I find that although the proposed project could have significant effect(s) on the environment, all project impacts have been adequately analyzed and mitigated in a **PREVIOUS CEQA DOCUMENT** prepared and approved/certified pursuant to State and County CEQA Guidelines ___

I find that although the proposed project has been analyzed and mitigated as part of an earlier document prepared and approved/certified pursuant to State and County CEQA Guidelines, minor additions and/or clarifications are needed to make the previous documentation adequate to cover the project Therefore, an **ADDENDUM** will be prepared for the proposed project ___

Raymond H C Brantley
Signature

December 24, 1996
Date

RB.hdPCPEJ PM4(4178)

ENVIRONMENTAL ANALYSIS CHECKLIST

ISSUES & SUPPORTING DATA SOURCES:	Potential Signifcnt Impact	Signifcnt Unless Mitigtd	Less Than Signifcnt. Impact	No Impact
1. LAND USE & PLANNING. Would the proposal:				
a) Conflict with general plan designation or zoning (source #(s):) (2)	___	___	___	X
b) Conflict with applicable environmental plans or policy of agencies with jurisdiction over the project? ( ) (3, 8, 9, 18)	___	X	___	___
c) Affect agricultural resources or operations (e g., impacts to soil or farmlands, or impacts from incompatible land uses)? (2)	___	___	___	X
d) Disrupt or divide the physical arrangement of an established community (such as a low-income or minority community)? (N/A)	___	___	___	X
e) Conflict with adjacent, existing or planned, land uses? (3)	___	X	___	___
2. POPULATION & HOUSING. Would project:				
a) Cumulatively exceed adopted regional or local population projections? (2)	___	___	X	___
b) Induce substantial growth in an area directly or indirectly through project in an undeveloped area or extension of major infrastructure? (2)	___	___	X	___
c) Displace existing housing? (N/A)	___	___	___	X
3 GEOPHYSICAL. Would project result in or expose people to impacts involving:				
a) Local fault rupture? ( ) (6, 10)	___	___	X	___
b) Seismicity: ground shaking or liquefaction? (1, 6)	___	___	X	___
c) Seismic seiche or tsunami? (1)	___	___	X	___
d) Landslides or mudslides? (1, 6, 9, 10, 19)	___	X	___	___
e) Erosion, changes in topography or unstable soil conditions from excavation, grading or fill? (6, 9)	___	X	___	___
f) Subsidence of the land? (1, 6)	___	X	___	___
g) Expansive soils? (1, 6)	___	X	___	___
h) Unique geologic or physical features? (1, 6)	___	X	___	___
4. WATER. Would the proposal result in:				
a) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff? (9, 10)	___	X	___	___
b) Exposure of people or property to water related hazards such as flooding? (8)	___	___	X	___

ISSUES & SUPPORTING DATA SOURCES:	Potential Signifcnt Impact	Signifcnt. Unless Mitigtd	Less Than Signifcnt. Impact	No Impact
4 WATER (Cont'd)				
c) Discharge into surface waters or other alteration of surface water quality (temperature, dissolved oxygen or turbidity)? (8)	___	___	X	___
d) Changes in the amount of surface water in any water body? (8)	___	___	X	___
e) Changes in currents, or the course or direction of water movements? (8)	___	___	X	___
f) Change in the quantity of ground water, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations? ( ) (8, 9)	___	___	X	___
g) Altered direction or rate of flow of groundwater? (9)	___	___	___	X
h) Impacts to groundwater quality? (9)	___	___	___	X
5 TRANSPORTATION/CIRCULATION. Would the proposal result in:				
a) Increased vehicle trips or traffic congestion beyond adopted policies and/or forecasts? (12)	___	___	X	___
b) Safety hazards from design features (e g sharp curves or dangerous intersections) or incompatible uses (e g farm equipment)? (12)	___	___	X	___
c) Inadequate emergency access or access to nearby uses? ( ) (3, 12)	___	___	X	___
d) Insufficient parking capacity on-site or off site? (N/A)	___	___	___	X
e) Hazards or barriers for pedestrians or bicyclists? (3)	___	___	___	X
f) Conflicts with adopted policies supporting alternative transportation (e g bus turnouts, bicycle racks)? (12)	___	___	___	X
g) Rail, waterborne or air traffic impacts? (N/A)	___	___	___	X
6. AIR QUALITY. Would the proposal:				
a) Violate any SCAQMD standard or contribute to air quality deterioration beyond projections of SCAQMD? (13)	___	___	X	___
b) Expose sensitive population groups to pollutants in excess of acceptable levels? (13)	___	___	X	___
c) Alter air movement, moisture, or temperature, or cause any change in climate? (13)	___	___	X	___
d) Create objectionable odors? (13)	___	___	X	___

ISSUES & SUPPORTING DATA SOURCES	Potential Signfcnt. Impact	Signfcnt Unless Mtigtd	Less Than Signfcnt. Impact	No Impact
7. NOISE. Would the proposal:				
a) Increase existing noise levels? (1 , 11)	___	X	___	___
b) Expose people to noise levels exceeding adopted County standards? (11)	___	___	X	___
8. BIOLOGICAL RESOURCES Would Project impact:				
a) Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects, animals and birds)? (1 , 7 , 14 , 18 , 19)	X	___	___	___
b) Locally designated species (e g heritage trees)? (7)	X	___	___	___
c) Locally designated natural communities (e g. oak forest, coastal habitat, etc)? (7 , 8 , 18)	X	___	___	___
d) Wetland habitat (e.g marsh, riparian and vernal pool)? (1 , 7 , 8 , 9 , 14 , 18 , 19)	X	___	___	___
e) Wildlife dispersal or migration corridors? (1 , 7 , 8)	___	X	___	___
f) Adopted conservation plans and policies (e g. Resource Management Plan)? (3 , 8 , 18)	___	___	X	___
9. AESTHETICS. Would the proposal:				
a) Affect a scenic vista or view open to the public? (3)	X	___	___	___
b) Affect a designated scenic highway? (12 , 19)	X	___	___	___
c) Result in an offensive aesthetic effect? (3)	___	___	X	___
d) Create light or glare beyond the physical limits of the project site? (5)	___	___	X	___
10. CULTURAL/SCIENTIFIC RESOURCES. Would the Project:				
a) Disturb paleo resources? (1)	___	X	___	___
b) Disturb archaeo resources? (1)	___	X	___	___
c) Affect historical resources? (1)	___	X	___	___
d) Have the potential to cause a physical change which would affect unique ethnic cultural values? (1 , 3)	___	___	___	X
e) Restrict existing religious or sacred uses within the potential impact area? (1 , 3)	___	X	___	___
11 RECREATION. Would Proposal:				
a) Increase demand for local or regional parks or other recreational facilities? (1 , 3 , 16)	X	___	___	___
b) Affect existing recreational opportunities? (3 , 8 , 16)	___	___	X	___
c) Conflict with adopted recreational plans and policies? (1 , 3 , 8 , 16)	___	___	X	___

ISSUES & SUPPORTING DATA SOURCES	Potential Signfcnt. Impact	Signfcnt. Unless Mtigtd	Less Than Signfcnt Impact	No Impact
12 ENERGY & MINERAL RESOURCES Would Project:				
a) Conflict with adopted energy conservation plans? (15)	___	___	X	___
b) Use non-renewable resources in a wasteful and inefficient manner? (15)	___	___	X	___
13 HAZARDS. Would the proposal involve:				
a) A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemical, gas or radiation)? (N/A)	___	___	X	___
b) Possible interference with an emergency response plan or emergency evacuation plan? (3)	___	___	X	___
c) The creation of any identified health hazard? (N/A)	___	___	X	___
d) Exposure of people to existing sources of health hazards? (N/A)	___	___	X	___
e) Increased fire hazard in designated high fire hazard areas (e g flammable brush, grass, or trees)? (17)	___	X	___	___
14. PUBLIC SERVICES Would Project result in need(s) for new/altered government services in:				
a) Fire protection? (17)	X	___	___	___
b) Police protection? (17)	X	___	___	___
c) Schools? (17)	___	X	___	___
d) Maintenance of public facilities, including roads? (17)	___	___	X	___
e) Other governmental services? (N/A)	___	___	X	___
15 UTILITIES & SERVICE SYSTEMS. Would Project result in needs for new or substantial alterations:				
a) Power or natural gas? (N/A)	___	___	X	___
b) Communications systems? (N/A)	___	___	X	___
c) Local or regional water treatment or distribution facilities? (1 , 3)	___	___	X	___
d) Sewer or septic tanks? (1 , 3)	___	___	X	___
e) Solid waste disposal? (1 , 3)	___	___	___	___

PERSONS/AGENCIES CONSULTED

CDFG; EMA/Development Services Div.; EMA/Traffic Engineering; EMA/HBP Program Planning; EMA/Road Programs Div.; EMA/Zoning Admin.; EMA/Land Use Planning; St. Michael's Abbey; EMA/Subdivision Section.

NOTICE OF INTENT TO PREPARE (NOP)
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT EIR (566)
FOR THE SADDLEBACK MEADOWS DEVELOPMENT project
GRADING APPLICATION GA960048
TRACT MAP 10692

I. INTRODUCTION/BACKGROUND

Pursuant to Public Resources Code Section 21165, the County of Orange is the Lead Agency responsible for preparing a Subsequent Environmental Impact Report (EIR) addressing potential impacts associated with the proposed Saddleback Meadows project located approximately ½-mile from the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Specific Plan area of unincorporated Orange Count. Section 15162 of the California Environmental Quality Act (CEQA) Guidelines describes a Subsequent EIR which will be the type of EIR prepared for the proposed project. According to this Section, a Subsequent EIR shall be prepared when subsequent changes are proposed in the project which will require important revisions of the previous EIR due to the involvement of new significant environmental impacts not considered in the previous EIR.

Subsequent EIR 566 will be based upon EIR 059, certified in May, 1978, FEIR 203, certified January 9, 1980, and FEIR 531, certified December 10, 1991. It will also incorporate relevant portions of DEIR 561 proposed for the earlier project. The currently proposed project was also evaluated as Alternative 2 in EIR 561

II. PROJECT DESCRIPTION

The project proposes the phased development of 705 manufactured single family housing units on a 229 2-acre site on the easterly side of El Toro Road. The gross residential density is 3 17 du/ac, with minimum lot sizes of 3,200 square feet. Ten (10%) percent of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a private park site, regional riding/hiking trail connections, and associated infrastructure Project implementation requires the approval of a grading plan The grading permit application (GA960048) is based on tract 10692, which was recorded December 16, 1988

The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan approximately ½-mile southerly of the El Toro Road/Live Oak Canyon Road intersection Implementation of the proposed project would directly effect 156.0-acres of the project site, not including remedial grading and fuel modification requirement. Total development footprint area would affect 90% or 206 acres of the project site In addition to onsite grading 2.04-acres of offsite area would be effected for access road construction and remedial grading.

A total of 3 7 million cubic yards of conventional grading and 10 million cubic yards of remedial grading would be required to implement the project.

The following table summarizes major features for the proposed project and current surrounding residential developments

SURROUNDING PROJECT COMPARISON SUMMARY

FEATURE	PROPOSED PROJECT	PORTOLA HILLS	HIDDEN HILLS/ HIDDEN RIDGE
Acreage	229	1,399	74
Dwelling Units	705	2,200	230
Minimum Lot Size	3,200 sf	3,000 sf	5,000 sf
% Open Space	10%	39%	31%
Gross Density	3.17 du/ac	2 2 du/ac	3 1 du/ac
Conventional Grading/Lot	4,500 cy	7,450 cy	5,850 cy
Wildlife Corridor	No	No	No
Regional Trail Connections	Yes	Yes	Yes

III. SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS

An Initial Study has been completed analyzing the proposed project pursuant to Section 15063 of the CEQA Guidelines. It has been determined that there is substantial evidence that significant effects may occur in the topical areas of· Land Use; Geophysical; Water; Transportation, Air Quality; Noise, Biological Resources; Aesthetics; Cultural/Scientific Resources, Recreation; Hazards and Cumulative Impacts Areas that revealed less than or no significant effects were: Population and Housing; Energy and Minerals, Public Services, and Utilities and Service Systems For more detail consult the Initial Study analysis

IV. ALTERNATIVES TO BE EVALUATED IN THE DRAFT EIR

The EIR will include a range of Alternatives which fulfill the following California Environmental Quality Act (CEQA) criteria outlined in Section 15126(d) of the CEQA Guidelines.

A. Alternatives Which Achieve the Project's Objectives· Section 15126(d) requires a range of Alternatives which could feasibly achieve the project's objectives

B. Alternatives Which Eliminate or Reduce Project Impacts CEQA Guidelines Section 15126(d)(3) requires that the Alternatives Section of an EIR shall focus on those alternatives capable of eliminating or reducing any significant adverse impacts on the environment caused by the project

C. Rule of Reason Section 15126(d)(5) of the CEQA Guidelines requires that the range of Alternatives in an EIR be governed by the "rule of Reason" which requires the EIR to set forth only those alternatives necessary to permit a reasoned choice by the decision-maker.

Proposed Alternatives

The Lead Agency has determined that the following Alternatives to the proposed project are reasonable alternatives to be discussed in EIR 566 in compliance with Section 15126(d) of the Guidelines

1 No Project/ No Development Alternative - This alternative would leave the proposed site in its existing condition.

2. FTSP EIR 531 Staff Alternative A - This alternative would allow 150 sf units with a minimum lot size of 20,000 square feet.

3 FTSP EIR 531 Staff Alternative B - This alternative would reduce the number of dwelling units on the project site to no more than 100 on approximately 30 acres.

4 318 Unit Single Family Housing Alternative - This alternative is the proposed project evaluated by EIR 561.

V. MANDATORY FINDINGS

A. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Yes. The proposed project has the potential of significantly affecting the range of wildlife that may currently use this property as a wildlife movement corridor

B Does the project have the potential to achieve the short-term environmental goals to the disadvantage of the long-term environmental goals?

Yes. The project has the potential to affect the NCCP related wildlife corridor planning for this area.

C. Does the project have possible environmental effects which are individually limited but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)

Yes The proposed project could have significant cumulative effects on the air quality, traffic and biological resources of the area

D Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? *Yes. project implementation could have substantial adverse effects on human beings in terms of noise, air quality and geotechnical hazards These potentially significant impacts shall be analyzed under each topical area of the EIR*

VI. INITIAL STUDY

The Initial Study analysis is included in this NOP for review

DETERMINATION

Based on the Initial Study above, the proposed project may have a significant effect on the environment which has not been analyzed in any previous CEQA document. Therefore an Environmental Impact Report (EIR) is required.

CONTACT

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PROJECT BACKGROUND/CHRONOLOGY

The current proposed project is the culmination of planning efforts with the County of Orange over a seventeen (17) year period. The following Chronology identifies key dates in the project's evolution.

SADDLEBACK MEADOWS PROJECT CHRONOLOGY

DATE	PROJECT RELATED EVENT
August 8, 1978	- The Orange County Board of Supervisors adopted GPA 78-1, Item 4, the "Saddleback Meadows Mobile Home Subdivision" which granted a change in the Land Use Element designation for the site from 5.4 Other Open Space to 1 22 Medium Low Density Residential and 2.1 Local Commercial. Maximum number set at 617 dwelling units Triggering mechanism to revert land use designation to original after 2 years commenced EIR 059 certified
February 6, 1979	- Board adopted Site Plan conditions as requirements for implementing the subject amendment. Draft EIR 059, which was the CEQA documentation for the site plan, identified major grading impacts as project related impacts, these impacts were also shown on grading plans for Tentative Tract Map TT10692, prepared for the project.
March 7, 1979	- Zone change application, Tentative Tract Map and Initial Study requests submitted to County for a maximum of 617 mobile home units and a neighborhood convenience commercial center on the project site
March 29, 1979	- Determination of requirement for an EIR transmitted to applicant by Environmental Services Division (ESD)
June 5, 1979	- Appeal of EIR requirement by Cliff Russell, representing Worthington/McNiff
June 11, 1979	- The Orange County Planning Commission denied the appeal. Supplemental EIR required for proposed 617 unit tentative tract map
June 25, 1979	- Zone Change 79-24 submitted to County The project proposed at this time consisted of 617 units.
August 7, 1979	- Revised Tentative Tract Map was submitted to the County for Screencheck reflecting some design modifications requested by County staff as well as an increase of 145 dwelling units added to the project by the proponent
August 17, 1979	- Revised Tentative Tract Map and Supplemental Environmental Information submitted to Environmental Services (ESD). Submittal raised many questions with ESD in that the project had been revised substantially with a 23 5% increase in total number of units and intensity of land use.

Saddleback Meadows Project Chronology (Cont'd)

DATE	PROJECT RELATED EVENT
August 21, 1979	- Revised Zone Change 79-24 received by the County reflecting the revised project proposal of 762 units, with 25% in affordable range.
November 28, 1979	- Revised TT10692 filed with Environmental Management Agency depicting 727 lots, including 714 residential lots, 1 commercial lot and several open space and utility lots
December 13, 1979	- TT10692 approved by the Planning Commission with recommendation that Zone Change ZC79-24 be approved by Board of Supervisors
January 9, 1980	- Saddleback Meadows properties placed in the PC "Planned Community" District and adopted by Board of Supervisors, Ordinance Number 3177 Final EIR 203 certified.
October 28, 1981	- Two year extension of time to record to expire December 12, 1983 approved by the Subdivision Committee.
December 7, 1981	- Appeal to deny two year extension of time affirmed by Planning Commission One year extension of time to record to expire December 12, 1982 granted by Planning Commission.
November 17, 1982	- An additional one year extension of time to record to expire December 12, 1983 approved by Subdivision Committee
July 13, 1983	- Saddleback Meadows Planned Community District Regulations amended by Planning Commission, and adopted by Board of Supervisors, Ordinance Number 3398 (ZC82-63P)
October 26, 1983	- Third one year extension of time to record approved
June 13, 1984	- Saddleback Meadows Planned Community District Regulations amended by Planning Commission, and adopted by Board of Supervisors, Ordinance 3486 (ZC84-3P)
October 24, 1984	- 589-day stay of time in which to record a final tract map approved by Subdivision Committee Expiration date extended to July 24, 1986
July 24, 1986	- Water district could not provide sewer service, recordation not allowed until sewer capacity available
December 16, 1988	- Tract Map 10692 recorded.
December 10, 1991	- Foothill/Trabuco Specific Plan approved and Final EIR 531 certified by Orange County Board of Supervisors. The Specific Plan incorporated the Saddleback Meadows Planned Community Regulations as the Bridlewood Residential District.

Saddleback Meadows Project Chronology (Cont'd)

DATE	PROJECT RELATED EVENT
April, 1994	- Grading Permit Application GA940031 submitted for Phase I, Grading (98 3 acres) of the site
August, 1994	- Initial Study completed and Environmental Impact Report Determination Letter is issued.
August 11, 1994	- Letter of Appeal filed with County.
November, 1994	- Appeal Hearing postponed to January 7, 1995, then to January 31, 1995
January 31, 1995	- Applicant withdraws appeal. Planning Commission directs applicant to develop a more compatible project in response to public testimony, staff concerns, and Planning Commission's direction.
July 27, 1996	- Revised 318-unit Site Development Plan, zone change and area plan submitted to County of Orange
July 30, 1996	- Orange County Planning Commission recommended EIR 561 for certification and recommended applications for Vesting Tentative Tract Map No 15230, area plan 95-7 and zone change 95.5 be denied.
August 11, 1995	- Notice of Preparation circulated for EIR 561.
October 22, 1996	- Board of Supervisors denied project and did not certify EIR 561
December 3, 1996	- Applicant submitted application for Phase I Grading Plan for 705 unit Tract 10692 (GA960048)
December 16, 1996	- EMA determined that a Subsequent EIR is required to evaluate the effects of the grading application

CEQA CHECKLIST DISCUSSION

INITIAL STUDY PROCEDURE

This Initial Study has been conducted pursuant to Section 15060 of the State CEQA Guidelines and the County of Orange CEQA procedures. It includes a detailed review and analysis of the project in light of the following documents, plans, policies and guidelines

- CEQA Statute and Guidelines,
- Draft EIR 561/Response To Comments
- Final EIR 059, Certified on August 8, 1978;
- Final EIR 203, Certified on January 9, 1980;
- Original Grading Plans;
- Foothill-Trabuco Specific Plan;
- Final EIR 531, Certified on December 10, 1991;
- Tentative Tract Map TT10692/Recorded Final Tract Map 10692,
- TT10692 Hydrology and Hydraulic Design Reports,
- Aliso Creek Corridor Specific Plan,
- Orange County General Plan Elements. Land Use; Noise; Transportation, Resources, Recreation, and Safety;
- Biological Assessment and Oak Tree Inventory;
- Saddleback Meadows Preliminary Landscape Submittal,
- Fourth Supplemental Geotechnical Report;
- Correspondence on the Subject;
- Southern California Coastal Sage Scrub NCCP Process Guidelines, Amended November 1993,
- Initial Study No. PA940068 - July 6, 1994, and
- Supplemental Saddleback Meadows Communication Booklet - June 30, 1995

The following discussion provides a detailed analysis of the environmental categories on the Orange County Environmental Analysis Checklist as they relate to the proposed project. It also identifies those issues that have been determined not to have potentially significant effects, and those determined to be mitigatable It also provides the probable scope of evaluation in the Draft Subsequent EIR.

1. LAND USE & PLANNING

Existing Setting

The entire project 229 2-acre Saddleback Meadows project site is currently zoned "S"-Foothill/Trabuco Specific Plan with SR-Sign Restriction overlay district. The Bridlewood/Saddleback Meadows Residential District was established within the Foothill/Trabuco Specific Plan, adopted December, 1991, to recognize the existing zoning and tract map approvals for the Bridlewood/Saddleback Meadows property

The current Orange County General Plan Land Use Element (LUE) designations for the project site are: 1B-Suburban Residential LUE Designation (0.5 to 18 Dwellings per Acre), and 1.2 Low Density Residential Neighborhoods - Community Profile Designation (0.5 to 2 0 Dwelling Units per Acre)

Surrounding Land Uses

Southerly	Hidden Ridge Residential Development (230 Residential Dwelling Units), Ramakrishna Monastery and O'Neill Park.
Westerly	Portola Hills Planned Community Residential Development (2,200 Residential Dwelling Units)
Northerly	Saint Michael's Abbey and Prep School
Easterly	Ramakrishna Monastery; Rural single-family development.

Potential Impacts

Potential impacts which may result if the project is developed include the introduction of 705 manufactured housing units and related major infrastructure improvements into an area previously used primarily for open space and agricultural uses; potential conflicts with existing surrounding land uses, and the conversion of agricultural land to development.

The circumstances regarding surrounding land uses has changed since the previous EIRs were certified and the original project was approved. When EIRs 059 and 203 were certified, the vicinity of the project, with the exceptions of St. Michael's Abbey and the Ramakrishna Monastery, was characterized by a undeveloped, predominantly natural environment. The project site, although disturbed through farming and cattle grazing purposes, was dominated by coastal sage scrub, oak woodlands and grasslands. The closest urban development was approximately four miles south of the site near the El Toro/Trabuco Road intersection.

The project vicinity has become more urban since the original approvals It is now characterized by major residential development, including the Portola Hills Planned Community, the Hidden Ridge project and Foothill Ranch With the changes that have taken place since the original project was approved, there is a question of the project's compatibility with surrounding uses

Mitigating Potential Impacts

The changes in circumstances in Land Use and Planning cannot be easily mitigated, if at all A new Subsequent EIR will provide the best mechanism to properly assess the following

- The project's potential conflicts with the Foothill-Trabuco Specific Plan, the Aliso Creek Corridor Specific Plan and the Natural Communities Conservation Planning Program (NCCP) Program,
- The project's potential conflicts with surrounding land uses,
- Reassess those major Conditions of Approval listed above which were not satisfied prior to the recordation of Tract 10692, including their appropriateness, relevance and compatibility at this time in light of changed circumstances,
- Identify the potential environmental impacts of the proposed project on the existing agricultural uses;

- Identify mitigation measures necessary to reduce all identified earth resource impacts to a level of insignificance, and
- Identify unavoidable and cumulative earth resource impacts

Scope of EIR Discussion

The changes in circumstances in Land Use and Planning requires the Subsequent EIR to address the following

- The project's potential conflicts with the Foothill-Trabuco Specific Plan, the Aliso Creek Corridor Specific Plan and the Natural Communities Conservation Planning Program (NCCP) Program;
- The project's relationship with surrounding land uses;
- Identification of the potential environmental impacts of the proposed project on the existing agricultural uses,
- Identification of mitigation measures necessary to reduce all identified earth resource impacts to a level of insignificance, and
- Identification of unavoidable and cumulative earth resource impacts.

2. POPULATION & HOUSING

The proposed project is not expected to cumulatively exceed adopted regional or local population projections It will not induce substantial growth in an area directly or indirectly through project in an undeveloped area or extension of major infrastructure The project would not displace existing housing. The project will increase affordable housing.

No Mitigation is needed and no discussion of Population and Housing is required in the EIR.

3. GEOPHYSICAL

Existing Setting

The project site is primarily in its natural state with a disturbed area of approximately 75 acres used for cattle grazing Although the majority of the site's surface soils and topographical features have not been physically disturbed, geotechnical reports prepared for the project have identified several major landslides which affect the site's stability

Potential Impacts

Potential impacts which may result if the project is developed include substantial short term changes of the site's landforms and topographical features particularly during remedial grading activities. In the long term, the project proposes site reconfiguration to reflect the site's natural land form features, and related impacts on the soil stability of the site. During construction, erosion and siltation of soils may also occur

Grading activities on the project site result in sediment being carried into the Aliso Creek Corridor and downstream ultimately to Aliso Beach. Because of the site's seismic features, people and property could be potentially exposed to earthquake and ground failure hazards.

The Planning Application indicates that remedial grading for the project will include grading a portion of the project site due to extensive landslides The Saddleback Meadows Geotechnical Reports indicate that extensive remedial grading with large buttresses will be required to stabilize the project site due to these documented landslides The Engineering Geology of Part of the Western Half of the Santiago Peak Quadrangle, Orange County, California, prepared by the California Department of Conservation Division of Mines and Geology, has mapped and recorded these landslides

Scope of EIR Discussion

The Subsequent EIR will provide a detailed discussion and clarification of the following

- Proposed grading in areas previously designated for preserved open space areas,
- Identification of soil and geologic characteristics and limitations of the project site, including soil stability, earthquake potential and known geologic hazards, including landslides, mudslides, ground failures and similar hazards for the entire site;
- Identification of the seismic features of the site, including the potential exposure of people or property to environmental impacts of the proposed project associated with earthquakes, liquefaction or similar hazards,
- The potential environmental impacts of the proposed project on the existing site topography and unique geologic or physical features;
- Mitigation measures necessary to reduce earth resource impacts to a level of insignificance, and
- Identification of unavoidable and cumulative impacts associated with earth and landform.

4. WATER

Existing Setting

The onsite project drainage has not been modified and remains in a natural state However, some improvements have been made to sections of Aliso Creek, adjacent to the site, including a major man-made drainage channel This channel passes from the proposed site to the westerly side of El Toro Road.

The area of Aliso Creek Corridor is classified as Floodplain FP-2 by the Federal Emergency Management Agency (FEMA) The project site is located within the watershed of Aliso Creek Four (4) ponds and four (4) intermittent ponds are also present onsite

Potential Impacts

Potential impacts which may result if the project is implemented include changes in absorption rates, alteration of the project site's existing landform, subsequently altering the existing flow of water onto, through, around and off the project site

During construction the disruption of soils may also affect the content of site run-off into the watershed area of Aliso Creek. Groundwater levels and quality, including absorption rates, may be affected by the proposed project

National Pollution Discharge Elimination System (NPDES) is a regulatory program required by the Clean Water Act and administered by the OCEMA. Potential impacts include pollutant discharges into Aliso Creek.
Scope of EIR Discussion

The Subsequent EIR will provide a detailed analysis of the proposed project's relationship to water resources, including the following

- Identification and quantification of the current surface water and groundwater drainage patterns and water flows within, and adjacent to, the project site;
- Identification and quantification of the portion of the project site or off-site area that will be impacted by proposed project currently located within FEMA's FP-2 floodplain designation area;
- Identification and quantification of the current surface water and groundwater quality within, and adjacent to, the project site, including existing on-site discharges into drainage channels,
- Identification of significant changes in the course or direction of water movements,
- Identification of changes in absorption rates, drainage patterns, or the rate and amount of surface water run-off;
- Identification of changes in erosion or changes in siltation which may modify the channel of Aliso Creek;
- Identification of changes in the amount of surface water as a result of any proposed storm drain retarding basins;
- Identification of changes in the quantity or quality of groundwaters,
- Identification of the potential environmental impacts of the proposed project on wind or water erosion of soils, on or off-site,
- Identification of alterations to the course, flow or magnitude of flood waters, and resultant exposure of people or property to flood hazards;
- Identification of mitigation measures necessary to reduce project impacts to a level of insignificance, including the development of Best Management Practices (BMP) for compliance with the Clean Water Act; and
- Identification of unavoidable and cumulative water resource impacts.

5. TRANSPORTATION/CIRCULATION

Existing Setting

The Saddleback Meadows project site is accessed off of El Toro Road. The site's interior is natural and has no road access

Potential Impacts

Potential impacts which may result if the project is developed include. The master planned (MPAH) arterial highways and roadways transit systems has identified El Toro Road which is adjacent to the project site and conditioned to be improved to primary status is now scheduled to be upgraded to a major artery, additional grading will be required at implementation, generation of a significant amount of project related traffic, creation of demand for new parking; alteration of existing traffic patterns; and potential impacts vehicles, bicyclists and/or pedestrians

The traffic and circulation information on the proposed project and its relationship to El Toro Road, including its present and ultimate design configuration and improvement require updating. At the time EIRs 059 and 203 were certified and the project was approved, projects in the vicinity generated less than 3000 Average Daily Trips ADT on El Toro Road, which was designated on the County's Master Plan of Arterial Highways (MPAH) as a primary arterial highway El Toro Road was reconstructed in the early 1980's to a two-lane highway adjacent to the project site.

Today, projects in the vicinity generate approximately 16,000 ADT along El Toro Road. Since 1985, El Toro has been reclassed on the MPAH from a primary arterial highway to a major arterial Impacts from the proposed project's additional grading which is necessary for the required upgraded improvements to EL Toro Road from a Primary to a Major Arterial were not addressed in EIRs 059 and 203.

Scope of EIR Discussion

The Subsequent EIR will include a detailed traffic/circulation analysis and a traffic/engineering study The traffic/circulation study must update projections of the number of trips generated by the project and other projects on the arterial highway system, including El Toro Road, Santiago Canyon Road, Glenn Ranch Road and Portola Parkway. The traffic/engineering study must provide preliminary designs for the ultimate improvement of El Toro Road to major arterial specifications The following will be included in the Transportation/Circulation section of the EIR

- Identification of existing and planned public transit systems affected by the proposed project;
- Identification of existing vehicular movement and patterns of circulation within and adjacent to the project site, and the existing vehicular movement in the surrounding vicinity as a result of current land uses through a traffic study;
- Identification and analysis of the existing ingress and egress to the project site, its potential internal circulation and parking problems associated with the proposed development;
- Identification of existing impacts to equestrians, motor vehicles, bicyclists and/or pedestrians,

- Evaluation of the interim and long-term traffic generation of the proposed project and its potential to generate additional vehicular movement beyond current projections of regional traffic,
- Evaluation of the need for El Toro Road to be a primary arterial versus a major arterial
- Identification of increases in demand for public transit services with special attention to relationship with low income housing for senior citizens and any potential conflicts with planned roadway widenings or extensions;
- Identification of specific potential adverse impacts on the vehicular movement and the movement of people and goods as a result of the proposed project, both within the project site and within adjacent communities,
- Identification of specific potential internal circulation problems and potential traffic hazards to motor vehicles, bicyclists and/or pedestrians which may result from the proposed project,
- Identification of the aspects of the proposed project which will create demand for new parking facilities;
- Identification of mitigation measures necessary to reduce project traffic and circulation impacts to a level of insignificance, and
- Identification of unavoidable and cumulative impacts to transportation and circulation resources.

6. AIR

Existing Setting

The project site is located within the South Coast Air Basin, SCAB, which suffers from some of the most severe cases of air pollution in the nation. The SCAB is currently in violation of several federal air quality standards

Potential Impacts

Potential impacts which may result if the project is developed include. generation of both short-term and long-term air quality impacts, both individually and cumulatively, including increased air emissions; impacts on sensitive receptors in the project vicinity including St. Michael's Abbey and the Hillside Montessori School, and the exposure of persons to locally elevated levels of air pollution.

Scope of EIR Discussion

Although the South Coast Air Basin is already in violation of air quality standards, the impacts of the project on local air quality must be thoroughly assessed. The Subsequent EIR for the proposed project will

- Identification of the existing air quality environment of the project site in the local and regional context, including, but not limited to. air pollution; objectionable odors, and air movement, moisture and temperature,
- Identification of air quality impacts associated with construction of the proposed project,
- Assessment of the proposed project's consistency with the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP), Regional Mobility Plan (RMP) and Growth

Management Plan (GMP);

- Identification and quantification of long-term air quality impacts resulting from development of the proposed project, including, but not limited to. air pollution, objectionable odors, and increased air movement, moisture or temperature,
- Identification and analysis of the potential sensitive receptors which may be exposed to substantial pollutant concentrations,
- Identification of mitigation measures necessary to reduce short-term and long-term air quality impacts to a level of insignificance; and
- Identification of unavoidable and cumulative air quality impacts

7. NOISE

Existing Setting

The project site is primarily in its natural state with noise generated by existing land uses and vehicular trips is minor Portions of the project site are impacted by noise resulting from aircraft operations from MCAS-El Toro and is located within the 60 CNEL noise contour of MCAS-El Toro. The project is adjacent to El Toro Road, a major access road to O'Neill Regional Park.

Potential Impacts

Potential impacts which may result if the project is approved include· the generation of short term impacts related to construction; and the potential exposure of future residents to airborne noise sources, including interim impacts from aircraft operations at MCAS-El Toro prior to closure of this military base

Scope of EIR Discussion

The Subsequent EIR for the proposed project will include a detailed noise assessment including the following

- Analysis of the exposure of the project site to existing and projected noise from vehicular traffic and aircraft overflights, in terms of individual and combined contribution of sources;
- Identification of the potential exposure of future residents of the project site to projected noise from vehicular traffic and aircraft overflights, both on an interim and long-term basis;
- Identification of any noise impacts on existing residents in the vicinity of the project as the result of project implementation,
- Identification of mitigation measures necessary to reduce noise impacts to a level of insignificance, and
- Identification of unavoidable and cumulative noise impacts

8. BIOLOGICAL RESOURCES

Existing Setting

The proposed project site exists in its natural state Draft EIR 561 provided an evaluation of the site and together with previous surveys from December, 1989 and September 1990 revealed that the site had been partially disturbed by cattle grazing. Coastal sage scrub habitat has been identified by the Orange County Wildlife Geographic Information System project Coastal Sage Scrub Distribution Map dated February 1994 as existing in this region. Approximately 68.7 acres of Coastal Sage Scrub are located on site The project site is also an existing wildlife corridor link between O'Neill Regional Park and Whiting Ranch/Limestone Regional Park. In addition, the project site is located within the watershed area of Aliso Creek Corridor The Aliso Creek Corridor which is located adjacent to the project site is identified as a "blue line" stream by the United States Geologic Survey (USGS) Canada Quad topographical map The U.S. Fish and Wildlife Service (USFWS) has documented the occurrence of the Federally Listed as Endangered Riverside Fairy Shrimp on the project site

Potential Impacts

The proposed project has several potentially significant environmental impacts to biological resources. Specifically:

- Natural Communities Conservation Planning (NCCP) Program: The proposed project may potentially impact the State of California Natural Communities Conservation Planning (NCCP) Program. This is a habitat-based conservation process adopted by local, state and federal regulatory agencies charged with making or recommending land use decisions in California, by Assembly Bill AB2172 (Chapter 765, Statutes of 1991)

  Impacts from grading the site would result in the removal of coastal sage scrub One of the findings the County must make to abide by the provisions of the U.S. Department of Interior's 4(d) Rule is that the loss of the coastal sage scrub will not jeopardize the subregional NCCP Program plan. The site may be identified as one of the links between the Southern subregion and the Central subregion. If this connective link is lost, the 4(d) Rule finding might be precluded A wildlife corridor has been proposed o-site to complete this link.

- Riverside Fairy Shrimp. The proposed project may impact the Streptocephalus woottoni (scientific name), also known as the Riverside Fairy Shrimp, which is a Federally Listed Endangered Species.

  Section 9 of the Endangered Species Act prohibits the "take" of a federally listed species. Documentation is on file in the office of the U.S. Fish and Wildlife Service, Carlsbad Office, attesting to the known occurrence of this federally listed species on the project site According to U S. Fish and Wildlife Service, since the shrimp has been confirmed in one pond, it is highly probable that the species will be found in all eight ponds on the site

- Sensitive Reptiles and Amphibians Draft EIR 561 noted that several sensitive or threatened species of reptiles and amphibians can be expected to occur on the subject property These include the following: the Arboreal Salamander, the Ensatina, the Western Spadefoot, the Orange-Throated Whiptail, the San Diego Horned Lizard, the Coastal Whiptail, the Coastal Rosy Boa, the Coast Patch-nosed Snake, and the Red Diamond Rattlesnake

- Wildlife Corridor The significance of the project site's location as a wildlife corridor has changed Certified EIRs 059 and 203, and Draft EIR 561 identified the site as a wildlife corridor, along with two off-site corridors

connecting two major wildlife areas, the O'Neill Regional Park/Cleveland National Forest open space area and the Whiting Ranch/Limestone Regional Park open space area, easterly and westerly of the subject site, respectively. Consequently, the elimination of the site as a wildlife corridor was not treated as a significant impact. The rationale provided for this conclusion was the presence of other wildlife corridors in the project vicinity

With the construction of residential communities in the project vicinity, the previously identified off-site wildlife corridors have been eliminated. The subject site now provides the only linkage between the two wildlife corridor areas. This document identified several large mammals which live on or frequent the site, including mule deer, mountain lion, gray fox and bobcat, thereby indicating the importance of the site as a wildlife movement corridor.

- Aliso Creek Corridor Previous approvals for the project site designate the Aliso Creek corridor as natural open space to be preserved. The Aliso Creek corridor contains riparian vegetation and wildlife. Aliso Creek is also designated a blue-line stream, as identified by the U S Geological Survey

  The Site Plan and grading plans for the project indicate that the Aliso Creek corridor preservation area may be disturbed. The revised project proposes grading in the vicinity of the stream bed, which is in the FP-2 "Floodplain 2" District and off-site grading in the Aliso Creek area adjacent to the site to create access road fill placement and conduct remedial grading. The project proposes restoration of the Aliso Creek riparian habitat area upon completion of grading.

Scope of EIR Discussion

The biological resource section of the Subsequent EIR will provide a detailed discussion of the following

- A re-inventory of the existing unique, sensitive, aesthetically significant, rare, threatened, or endangered flora and fauna within the project site, including an Environmental Assessment and mitigation measures to avoid or reduce impacts;

- Identification of potential impacts to the Natural Communities Conservation Planning ("NCCP") Program, a habitat-based conservation process adopted by local, state and federal regulatory agencies charged with making or recommending land use decisions in California, by Assembly Bill AB2172 (Chapter 765, Statutes of 1991) The NCCP Program states that to approve an interim take application, the local agency must make certain findings, based on the information obtained pursuant to U S Fish and Wildlife Service (USFWS) pursuant to the Natural Community Conservation Plan (NCCP) Program and the 4(d) Rule,

- A detailed analysis of the project's impacts to wildlife movement, including mitigation measures to avoid or reduce those impacts The location width, relationship to adjacent wildlife movement corridors must be evaluated,

- Address the proposed grading, including remedial and site preparation grading, in the revised project, which will impact Coastal Sage Scrub, including mitigation measures which avoid or reduce those impacts;

- The project's compliance with the County's general policy as a regulator of the NCCP Program, which is to avoid irreversible commitments that would preclude planning options in designing the coastal sage scrub habitat reserve,

- A detailed discussion of the proposed project's impacts to the Riverside Fairy Shrimp, including a Habitat Conservation Plan, an Environmental Assessment and mitigation measures to avoid or reduce impacts,
- Assessment of the project's impacts on unique, sensitive, aesthetically significant, rare, threatened, or endangered flora and fauna within the project site, including Oak Tree groves and Coastal Sage Scrub;
- Identification of impacts which might result from the removal of existing and intermittent ponds and the associated habitat for sensitive species, including the Riverside Fairy Shrimp, from the project site and off-site areas contiguous to project site;
- Identification of mitigation measures necessary to reduce all identified biological resource impacts to a level of insignificance, and
- Identification of unavoidable and cumulative biological resource impacts.

9. AESTHETICS

Existing Setting

The Saddleback Meadows project site is primarily in a natural state with the site's surface aesthetic features being left undisturbed. Existing light and glare from the project site is minimal, emanating only from the reflection of the eight (8) ponds on the site

Potential Impacts

Potential aesthetic impacts which may result if the project is developed include the construction of slopes and retaining walls, and a significant alteration in the appearance of the site from off-site vantage points, including El Toro Road which is designated a Scenic Highway on the County's Master Plan of Arterial Highways Aesthetic impacts are especially pronounced from the existing residential developments southerly and westerly of the project site

Potential light and glare impacts which may result if the project is approved include. increased levels of exterior lighting and illumination, having the potential for adverse impacts upon residential neighborhoods and sensitive biotic communities.

Scope of EIR Discussion

The Subsequent EIR to be prepared for the proposed project will:

- Identification of existing scenic vistas and views open to the public across the project site. Assess the obstruction of any scenic vista or view open to the public or the creation of any aesthetically offensive site open to public view,
- A line of sight analysis of the project from El Toro Road, Hidden Ridge, Portola Hills, St. Michaels Abbey, and O'Neill Regional Park;
- Assessment of the current aesthetic importance of the project site and the aesthetic impact of the proposed project to other developments in the project vicinity,

- Evaluation and comparison of the potential aesthetic impacts associated with implementing the existing zoning and those associated with the proposed project. The narrative of this topical discussion must be supplemented by detailed simulation models of both the General Plan and the project.
- Identification of mitigation measures necessary to reduce aesthetic impacts to a level of insignificance; and
- Identification of unavoidable and cumulative aesthetic impacts.

10. CULTURAL/SCIENTIFIC RESOURCES

Existing Setting

The Saddleback Meadows project site is primarily in a natural state with only minimal disturbance through cattle grazing and farming activities. Therefore, the site's potential cultural/scientific resources and features have not be disturbed.

Potential Impacts

The grading of the property has the potential of resulting in alteration of or damage to significant archaeological, historical and/or paleontological resources.

Scope of EIR Discussion

The Subsequent EIR for the proposed project will include the following:

- Inventory existing significant archaeological and/or historical sites, structures, objects, or buildings located on the project site,
- Inventory potential paleontological sites,
- Evaluation of potential significant impacts to archaeological or historical sites, structures, objects, or buildings,
- Identification of mitigation measures necessary to reduce identified cultural/scientific resources to a level of insignificance, and
- Identification of unavoidable and cumulative cultural/scientific resource impacts.

11. RECREATION

Existing Setting

There are no existing recreation or public open space uses located on the project site. However, the proposed project site is located between O'Neill and Whiting Ranch/Limestone Regional Parks A proposed trail is designated within the project site by the Orange County General Plan Recreation Element Master Plan of Regional Riding and Hiking trails.

Potential Impacts

The project represents a potential conflict with adopted recreational plans and policies, including the Aliso Creek Corridor Specific Plan, the General Plan Recreation Element and the Foothill/Trabuco Specific Plan

Scope of EIR Discussion

The Subsequent EIR for the proposed project will address the following

- Identification of all currently planned recreational opportunities within the project site and the surrounding vicinity;
- Assessment of the impact of the proposed project on the quality and quantity of existing recreation opportunities;
- Evaluation and comparisons of the potential recreation impacts associated with implementing the existing zoning designations and those associated with the proposed project;
- Identification of mitigation measures necessary to reduce recreation impacts to a level of insignificance, and
- Identification of unavoidable and cumulative recreation impacts

12. ENERGY & MINERAL RESOURCES

Existing Setting

The Saddleback Meadows project site is primarily in a natural state. None of the site's potential mineral resources have been disturbed. Previous EIRs 561, 059 and 203 did not identify energy and/or mineral resources on the site. The Orange County General Plan does not designate the site as having a high potential for mineral resources. No Mitigation is required and no discussion is necessary in the Subsequent EIR.

13. HAZARDS

Existing Setting

The Saddleback Meadows project site is located close to the Cleveland National Forest which is a potential fire hazard area. The project site is also located near the flight path of El Toro Marine Corps Air Station which has been approved for re-use.

Potential Impacts

Potential impacts which may result if the project is developed include the possible exposure of future residents to a high fire hazard area (north of Portola Parkway) Until MCAS El Toro is closed, residents may be subjected to potential, though remote, crash hazards

Scope of EIR Discussion

The Subsequent EIR will provide a detailed discussion of hazards, including the following:

- Identification of the current fire hazards, both on-site and within the project site vicinity;
- Identification of any existing emergency response plans for the project site and evaluate the potential of the proposed project to impact emergency response plans or evacuation plans;
- Identification of potential safety impacts of MCAS-El Toro operations on the proposed project;
- Identification of the impact to future users of the site with respect to possible exposure to other hazards,
- Identification of mitigation measures necessary to avoid or reduce hazards to a level of insignificance; and
- Identification of unavoidable and cumulative hazard impacts

14. PUBLIC SERVICES

Existing Setting

The Saddleback Meadows project site is undeveloped open space with limited use for cattle grazing The project site is served by the following major public services:

Fire Protection	Orange County Fire Department
Police Protection	Orange County Sheriff-Coroner's Department
Schools	Saddleback Valley School District

The closest fire station is Station #42 located on Ridgeline Drive with a response time of approximately 3 minutes to the project site. The sheriff's service ratio of sworn officer to population is approximately 1/2050 All the schools in the project vicinity are at capacity

Potential Impacts

Potential impacts which may result if the project is developed include the need for additional fire personnel and additional police personnel. The project is expected to generate elementary, junior high and high school students to be absorbed into the Saddleback Valley School District.

Scope of EIR Discussion

The Subsequent EIR will provide a detailed assessment of the impacts to Public Services, including

- Assessment of the adequacy of the supply of public services to be delivered to the future residents of the proposed project site,
- Evaluation and comparison of the potential public services impacts associated with implementing the proposed project;
- Identification of mitigation measures necessary to avoid or reduce public services impacts to a level of insignificance; and
- Identification of unavoidable and cumulative public services impacts

15. UTILITIES & SERVICE SYSTEMS

Existing Setting

The Saddleback Meadows project site is undeveloped open space with limited use for cattle grazing The project site is served by the following major public utilities and service systems:

Electrical Power	Southern California Edison
Natural Gas	Southern California Gas Company
Water and Sewer	Trabuco Canyon Water District

Potential Impacts

No potential significant impacts to Utilities and Service Systems are expected to result if the project is developed.

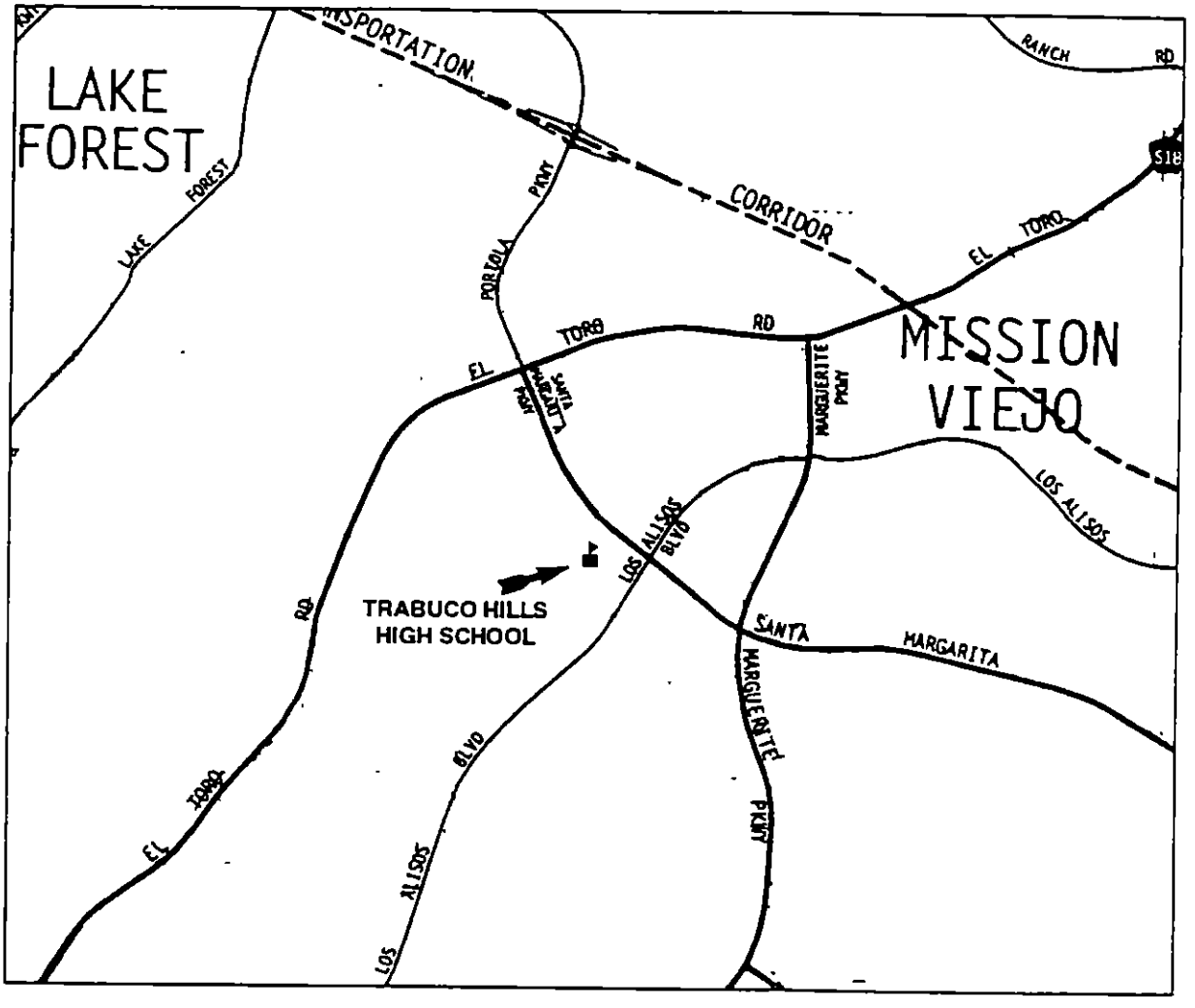
Scope of EIR Discussion

The Subsequent EIR will provide a detailed assessment of the impacts to Public Utilities and Service System, including

- Assessment of the adequacy of the supply of public utilities and service systems to be delivered to the future residents of the proposed project site,
- Evaluation and comparison of the potential public utility and service system impacts associated with implementing the proposed project,
- Identification of mitigation measures necessary to avoid or reduce all identified public utility and service system impacts to a level of insignificance, and
- Identification of unavoidable and cumulative public services impacts

EXHIBITS

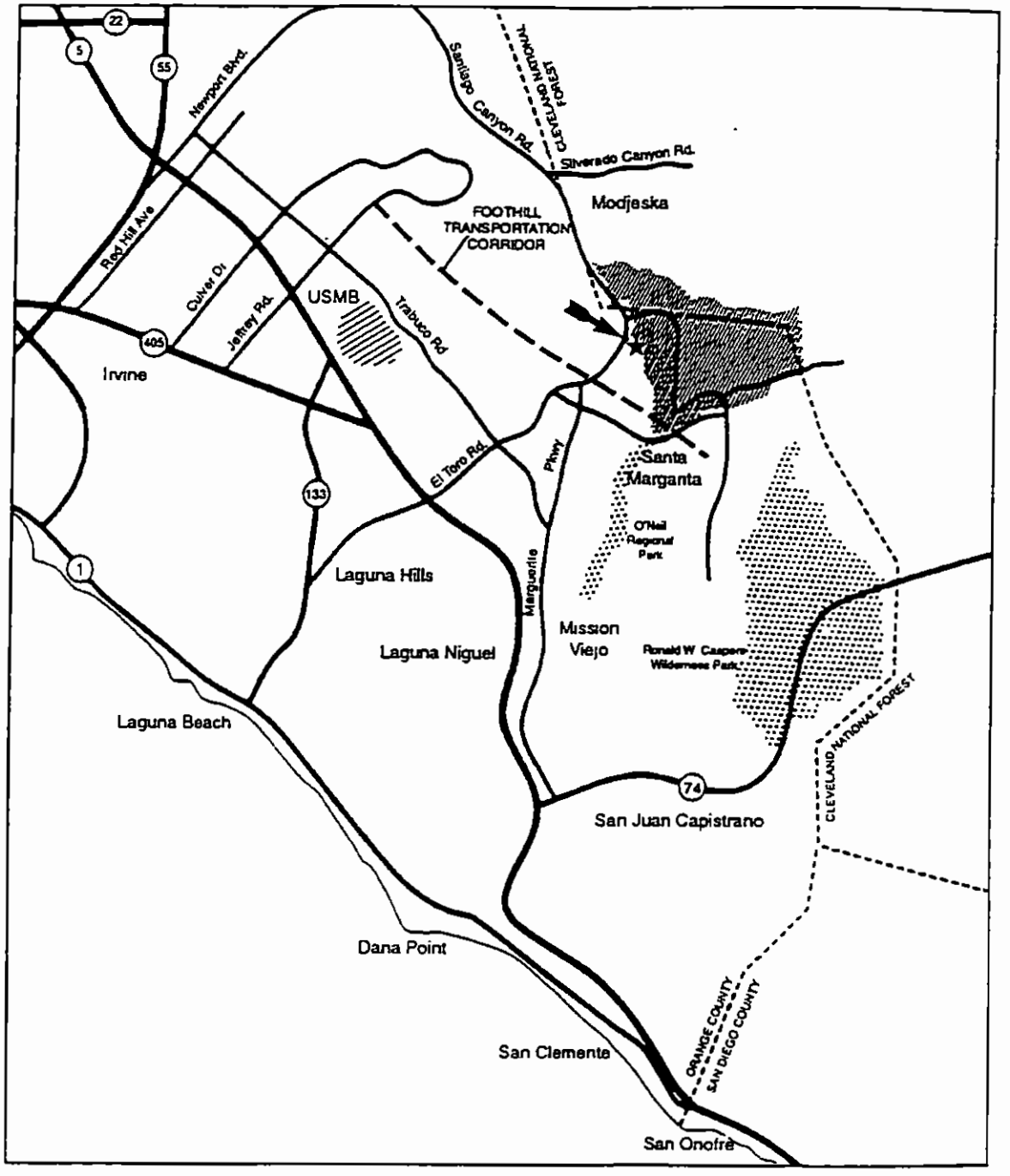
- Regional Location Map
- Vicinity Map
- Aerial Photograph
- Proposed Site Plan



SADDLEBACK MEADOWS INITIAL STUDY

TRABUCO HILLS HIGH SCHOOL LOCATION MAP

OCEMA



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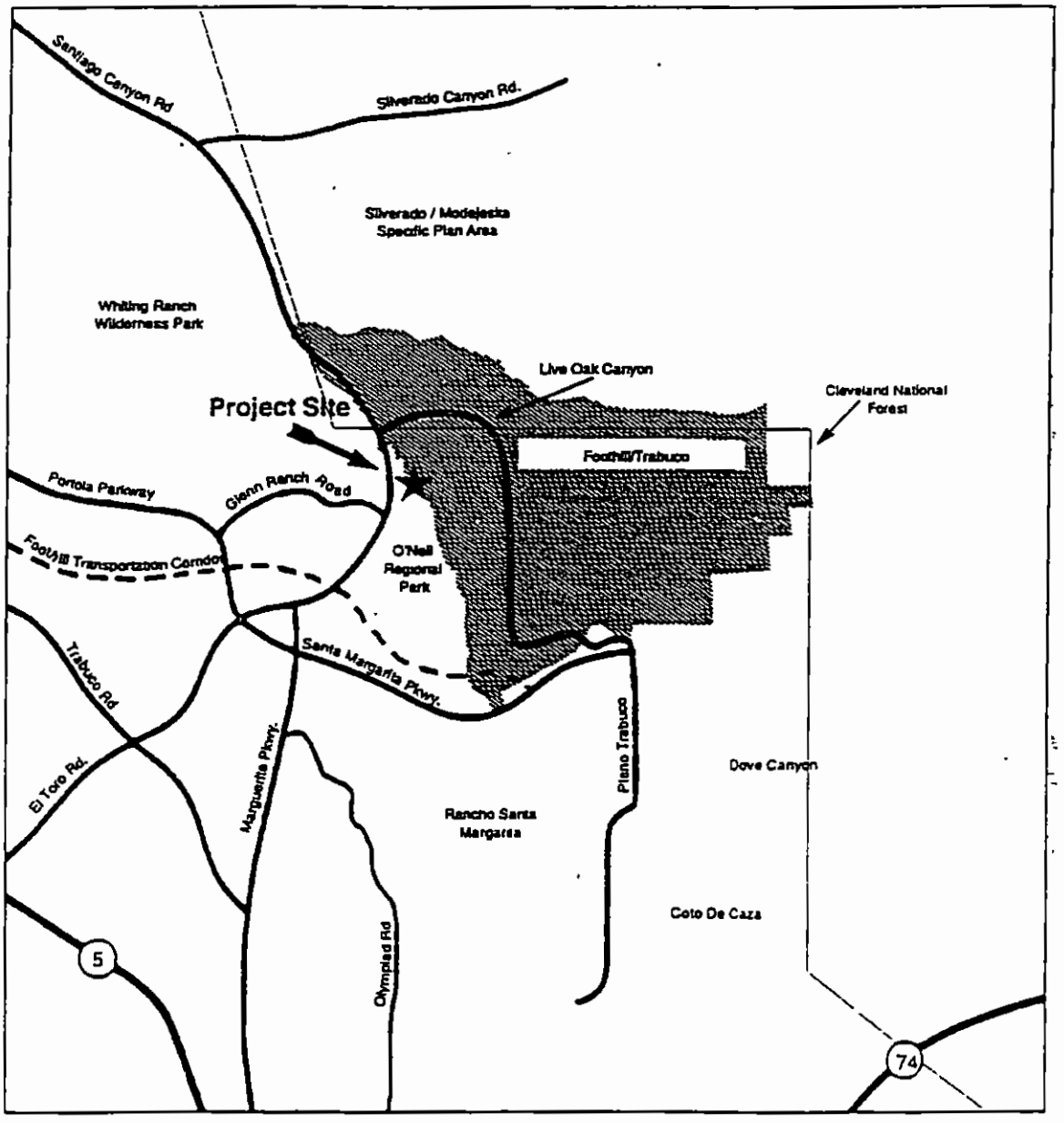
NOT TO SCALE

SADDLEBACK MEADOWS INITIAL STUDY

REGIONAL MAP

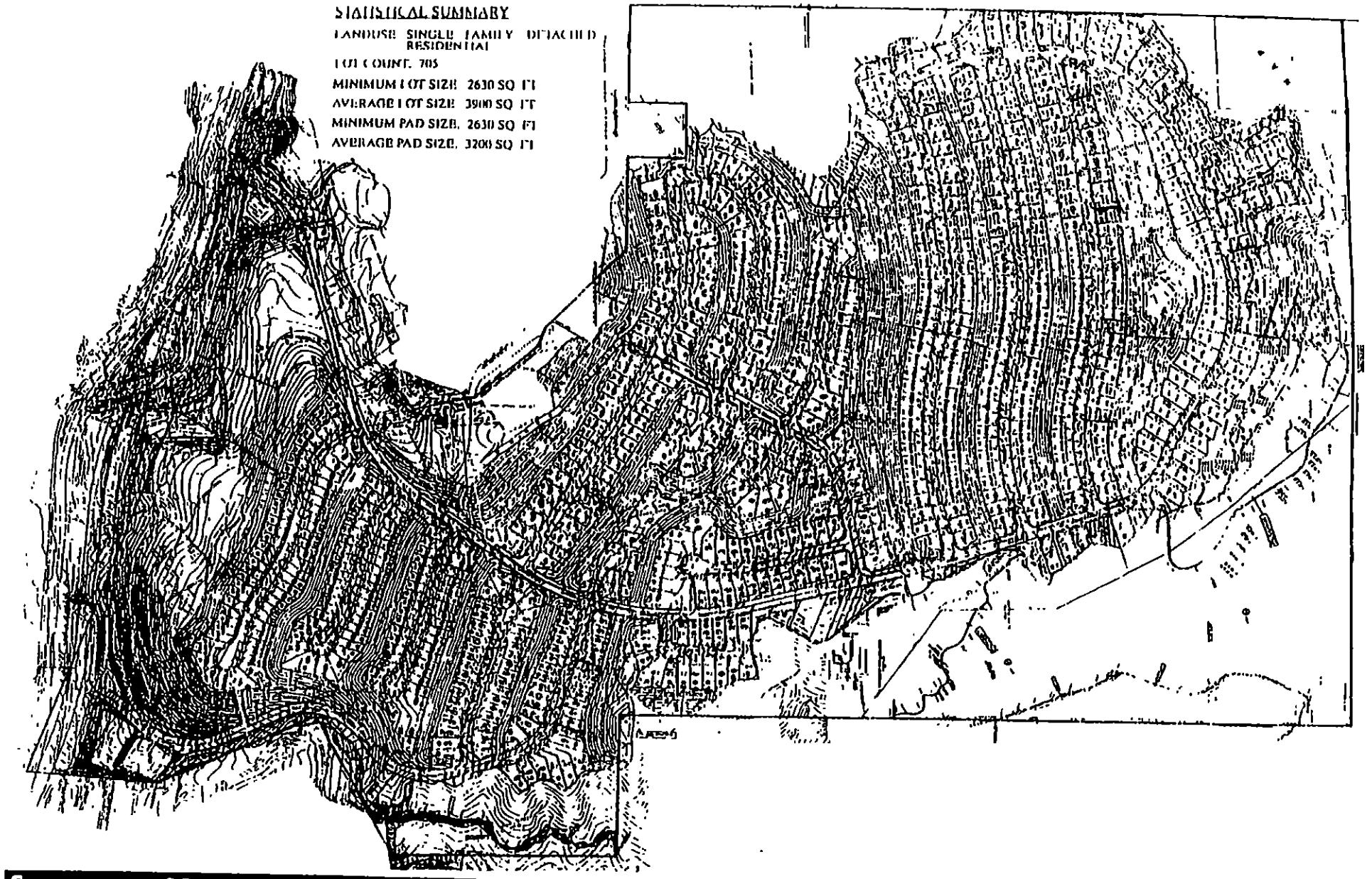
OCEMA



SADDLEBACK MEADOWS INITIAL STUDY

VICINITY MAP

OCEMA



SADDLEBACK MEADOWS - VTTM 15230
DRAFT ENVIRONMENTAL IMPACT REPORT

OCEMA

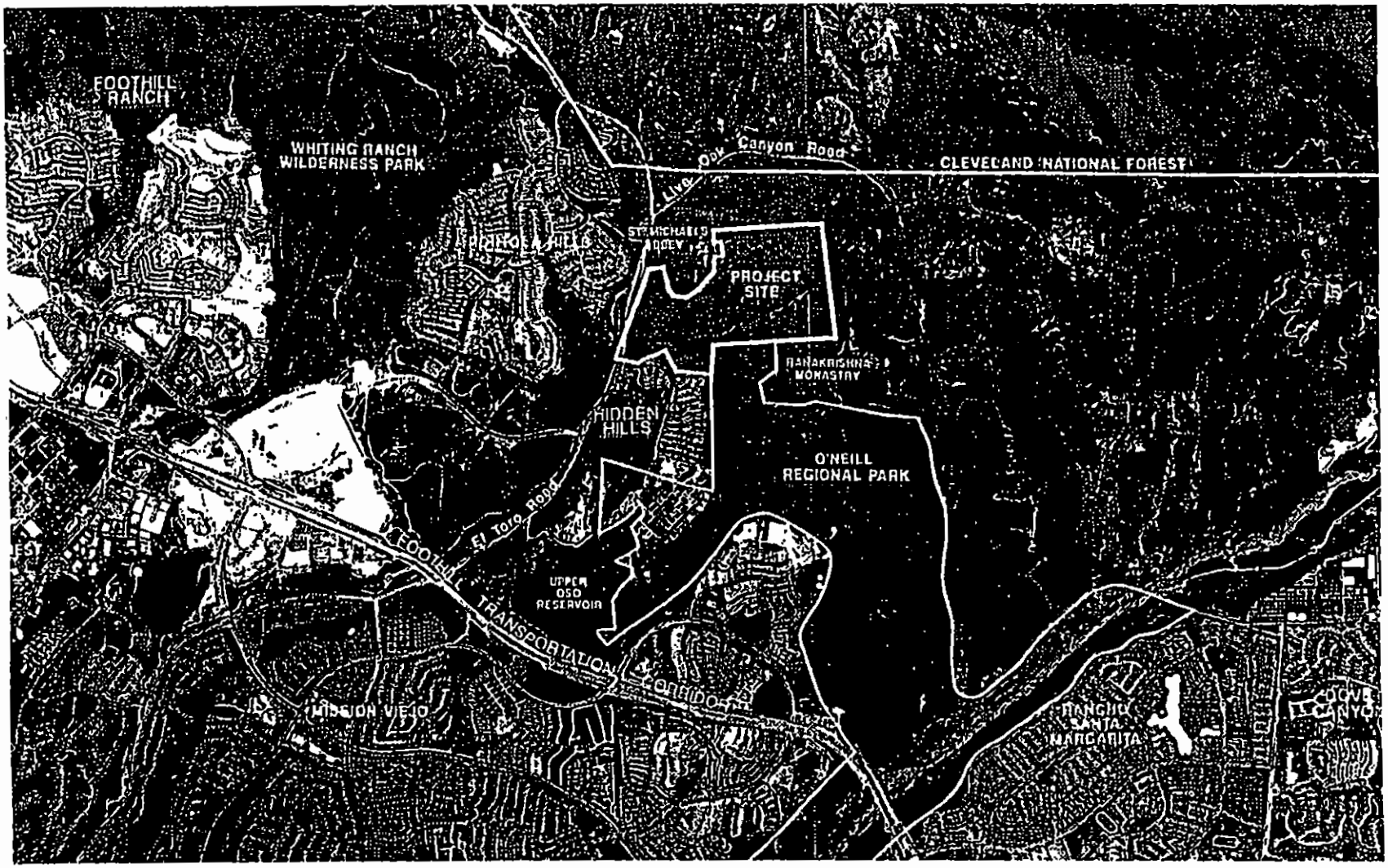
URBAN VISION

SCALE: 1" = 400'

SOURCE: Forma

N

Site Plan EXHIBIT



SADDLEBACK MEADOWS INITIAL STUDY

VICINITY AERIAL

OCEMA

Attachment F

STATE OF CALIFORNIA—BUSINESS AND TRANSPORTATION AGENCY PETE WILSON, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 12
2501 PULLMAN STREET
SANTA ANA, CA 92705

RECEIVED
JAN 27 1997

January 21, 1997

Raymond Brantley
Environmental Management Agency
P.O. Box 4048
Santa Ana, CA. 92702-4048

File: IGR/CEQA
SCH # none

Subject: Saddleback Meadows Residential Development

Dear Mr. Brantley:

Thank you for the opportunity to review and comment on the Notice of Preparation for the Saddleback Meadows Residential Development. The proposed project is for phased development of 705 manufactured, single-family residential units on a 229.2 acre site. Caltrans District 12 is a reviewing agency and has no comment at this time.

Please continue to keep us informed of future developments which could potentially impact our State Transportation Facilities. If you have any questions or need to contact us, please call Aileen Kennedy on (714) 724-2239.

Sincerely,

Robert F. Joseph, Chief
Advance Planning Branch

cc: Tom Loftus, OPR
Ron Helgeson, HDQTRS Planning
Tom Persons, HDQTRS Traffic Operations
Dan Butler, Toll Roads

EXISTING TITLE	NEW TITLE
Environmental Management Agency	Planning & Development Services Department Public Facilities & Resources Department
Environmental & Project Planning Division	Environmental & Project Planning Services Division
Current Planning Division	Current Planning Services Division
Building Inspection Division	Building Inspection Services Division
Subdivision & Grading Division	Subdivision & Grading Services Division
Building Permits Division	Building Permit Services Division

CARLENE,

THESE ARE THE only changes WERE SURE of at this point.

Bill.

County of Orange

MEMO

DATE: January 9, 1997

TO: George Britton, Manager, P&DS/E&PPD

FROM: Joan S. Golding, Manager, P&DS/APD Planning & Dvlpt Svcs

SUBJECT: Saddleback Meadows NOP/DEIR 566

Advance Planning staff have reviewed the Notice of Preparation (NOP) for the Saddleback Meadows Residential Development project and have the following comments and proposed mitigation measures:

COMMENTS:

AFFORDABLE HOUSING:

Saddleback Meadows retains a requirement that 66 2/3 percent of all residential units built be affordable under the Orange County Housing Element affordable guidelines. The EIR should include a discussion of Housing Element affordable requirements and how they will be implemented as part of this project.

PROPOSED MITIGATION MEASURES:

BIOLOGICAL AND WATERSHED RESOURCES:

Fund the removal of arundo donax in the Aliso Creek Corridor in partial compensation for the proposed project's biological impacts to the Aliso Creek Corridor. The arundo removal shall be adjacent to and in the vicinity of the proposed project at an acreage ratio of 3 to 1 (for arundo removal to the creek area impacted).

EXISTING FEE PROGRAMS:

- Library: Tract and parcel maps within the proposed project shall be subject to the following condition.

  Prior to the recordation of any final tract/parcel map (except for financing purposes), the project proponent shall enter into a secured agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution No. 87-1684. This agreement shall contain:

  a) provision for payment or financial security for participation by the project proponent in the construction, equipment and collection of the library facility, subject to adjustment for inflation;

b) provision for payment of these funds is to be generally phased with development and in accordance with an established payment schedule.

- Fire: Tract and parcel maps within the proposed project shall be subject to requirements for subsequent agreements and fees as determined by the Orange County Fire Authority.

- Sheriff: Tract and parcel maps within the proposed project shall be subject to requirements for subsequent agreements and fees as determined by the Orange County Sheriff-Coroner.

Thank you for the opportunity to comment on this project. Should you have any questions or desire further information, please feel free to contact me (834-6007) or Ruby Maldonado, of my staff, directly. Ruby can be reached at 834-2520.

Sincerely,

per Joan S. Golding

RM 7010910202360
EP53300

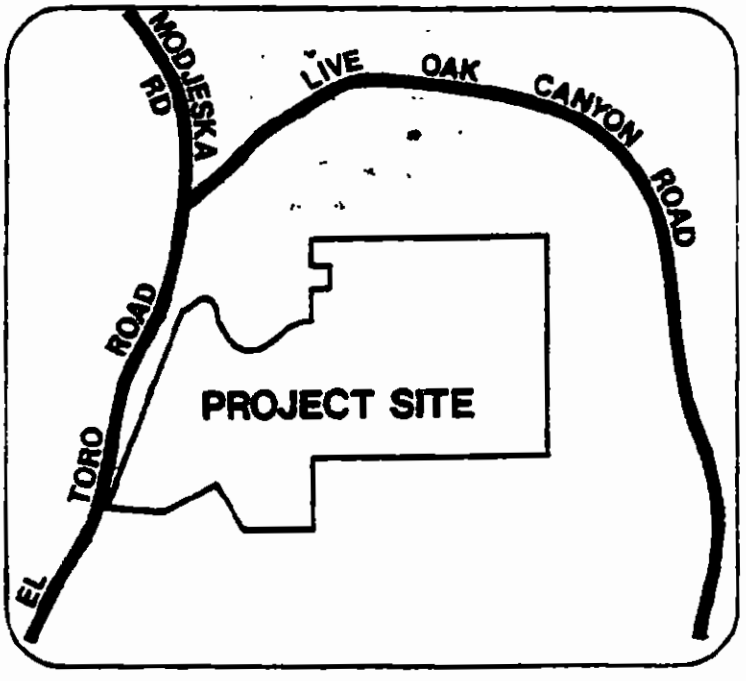
21

County Of Orange
Supplemental
Environmental Impact Report

Addressing

Zone Change 79-24
Tentative Tract 10692

Saddleback Meadows



Prepared By

David J. Tanner & Associates

RECEIVED
NOV 5 1979

EIR #203

~~SERVICE CHECK SUBMITTAL~~
DRAFT ACCEPTANCE
PROPOSED FINAL EIR
FINAL EIR

Supplement to EIR #059)
(Submitted 8-17-1979)
(Submitted 11-5-1979)
(Submitted)
(Submitted)
(Certified Complete on)
1/9/80

SUPPLEMENTAL
ENVIRONMENTAL IMPACT REPORT
ADDRESSING
ZONE CHANGE #79-24
TENTATIVE TRACT #10962

PREPARED BY: DAVID J. TANNER & ASSOCIATES
420 Prospect Street
Newport Beach, California

Contact Person: DAVID J. TANNER

PREPARED FOR: SADDLEBACK MEADOWS
2239 E. Imperial Highway
Suite 120
Fullerton, California

Contact Person: GRAFTON WORTHINGTON

ENVIRONMENTAL INFORMATION FOR USE BY THE COUNTY OF ORNAGE, CALIFORNIA

LEAD DIVSION: EMA - ENVIRONMENTAL SERVICE DIVISION

I. INTRODUCTION

The project proposes development of a 714 unit mobile home subdivision and a 1.7 acre accessory neighborhood commercial center. The project site has a gross area of 232.5 acres, located within unincorporated territory, County of Orange.

This report is being written to address the potential impacts associated with the submittal of Tentative Tract Map #10962, which is being processed concurrently with this EIR by the County of Orange.

This environmental document supplements Final Environmental Impact Report #059, which addressed the subject property's General Plan Amendment to the Land Use Element. This amendment (GPA 78-1) removed the project site from reserve status and designated the site for future residential land use.

Proposed Planned Community District Zoning regulations are being processed concurrently with the Tentative Tract Map. The proposed zoning was determined to have been adequately addressed in EIR #059. However, included within the scope of this report is a discussion of the Planned Community zoning[1] impacts to further clarify the ramifications of the proposed project.

The purpose of the EIR is to present the results of a comprehensive analysis of the proposed project, the environmental impacts, which this project will cause, and mitigation measures, which will eliminate or lessen the anticipated impacts.

This supplemental environmental impact report is intended to be used as an informational document (as required by law) and is subject to public review, agency review and consideration by the County of Orange. During the review process, this report is subject to amendment to reflect the concerns and positions of reviewing agencies and the public concerning the impact of the project. When all interested persons have had the opportunity to comment on the adequacy of the report, the County will then make a determination of the report's adequacy.

[1] A reproduction of the Planned Community Zoning Text follows:

SECTION V — COMMERCIAL DEVELOPMENT REGULATIONS

1. Intent

   These regulations provide for convenience facilities and goods to serve the needs of the immediate neighborhood. Permitted uses include limited professional, retail, service and commercial uses.

2. Uses Permitted and Site Development Standards

   - Neighborhood Commercial Developments shall be developed wherever shown on the Development Plan in conformance with provisions of SECTION CN, "Commercial Neighborhood" District Section 7-9-89 of the Orange County Zoning Code.

The Gas Company

Orange Coast Region

January 10, 1997

County of Orange / E M A
P O Box 4048
Santa Ana, Ca 92702-4048

Attention Raymond H C Brantley

Southern California Gas Company
Mailing Address
Box 3334
Anaheim, CA
92803-3334

Subject. Saddleback Meadows Residential Development.

This letter is not to be interpreted as a contractual commitment to serve the proposed project but only as an information service. Its purpose is to notify you that the Southern California Gas Company has facilities in the area where the above named project is proposed. Gas service to the project could be served from an existing main as shown on the attached alloc sheet without any significant impact on the environment. The service will be in accordance with the company's policies and extension rules on file with the California Public Utilities Commission at the time contractual arrangements are made.

The availability of natural gas service, as set forth in this letter, is based upon present conditions of gas supply and regulatory policies. As a public utility, the Southern California Gas Company is under the jurisdiction of the Federal regulatory agencies. Should these agencies take any action which affects gas supply or the condition under which service is available, gas service will be provided in accordance with revised conditions.

Residential (System Area Average)	Yearly
Single-family	750 therms/year/dwelling unit
Multi-family units	475 therms/year/dwelling unit

These averages are based on total gas consumption in residential units served by Southern California Gas Company during 1985 and it should not be implied that any particular home, apartment or most of homes will use these amounts of energy.

We have developed several programs which are available, upon request, to provide assistance in selecting the most energy efficient appliances or systems for a particular project. If you desire further information on any of our energy programs, please contact the office at (800)427-2000 for assistance.

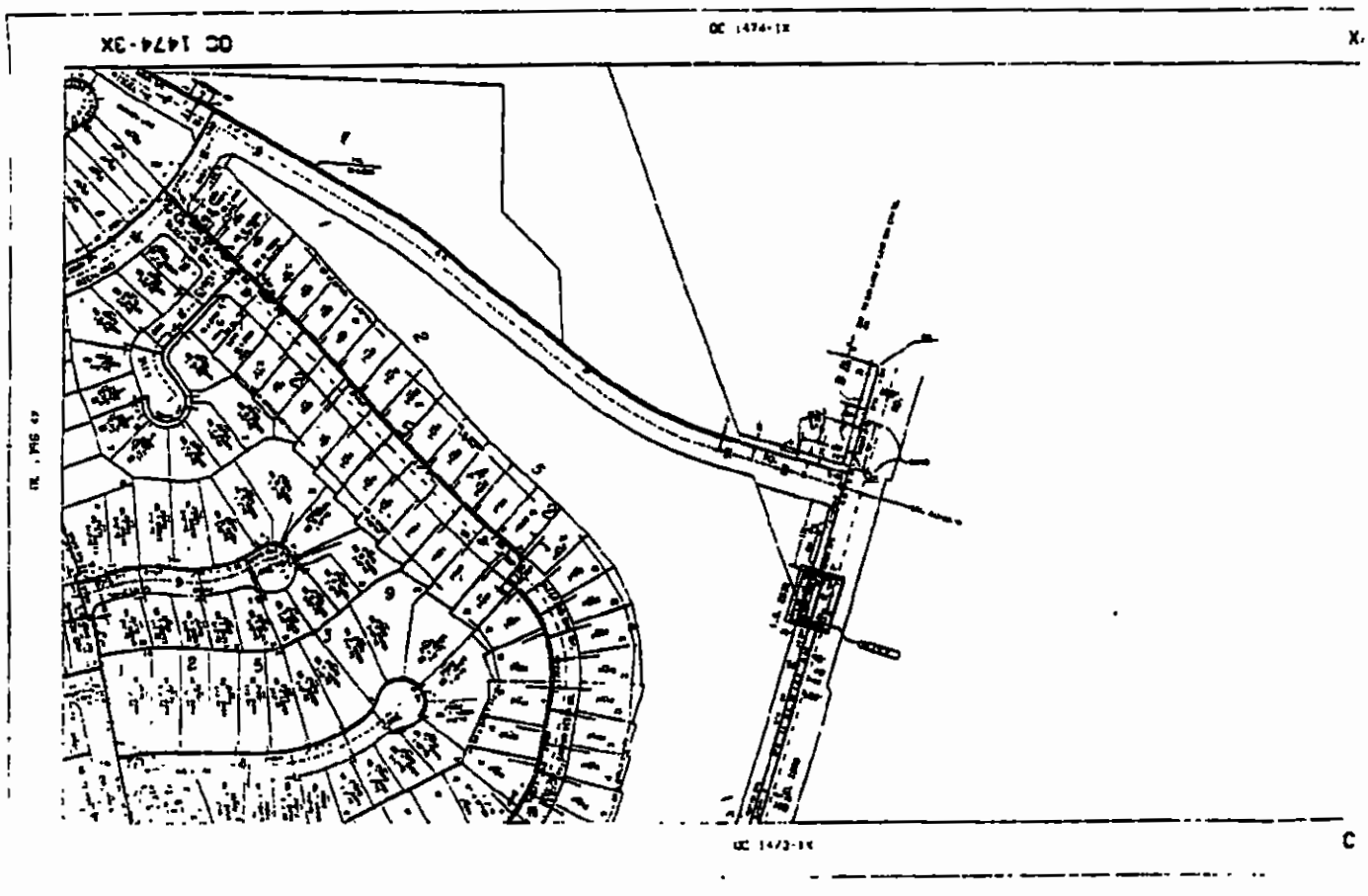
Sincerely,

Robert S Worth

Robert S Worth
Technical Supervisor

jpc
attachment

ERRES.DOC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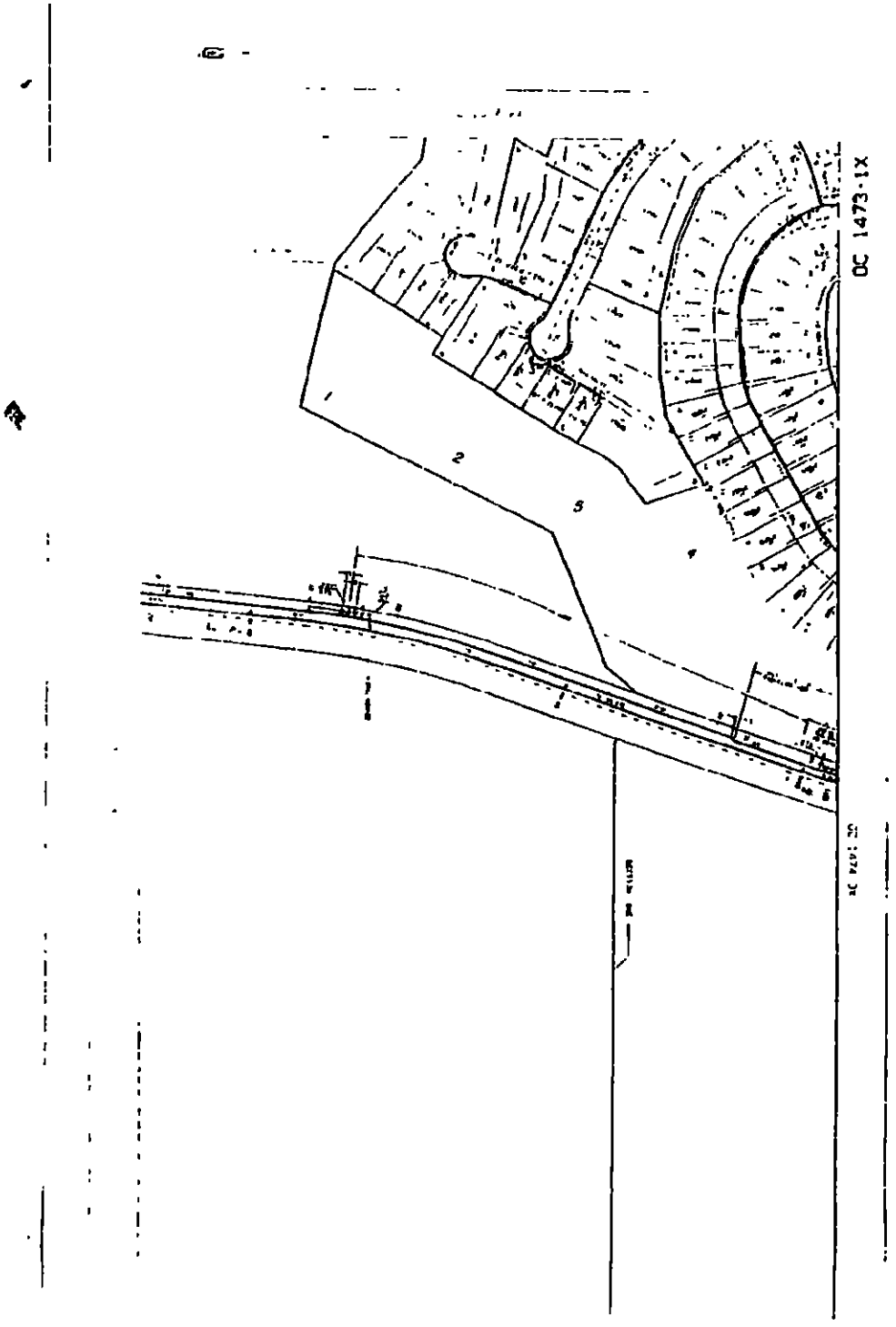
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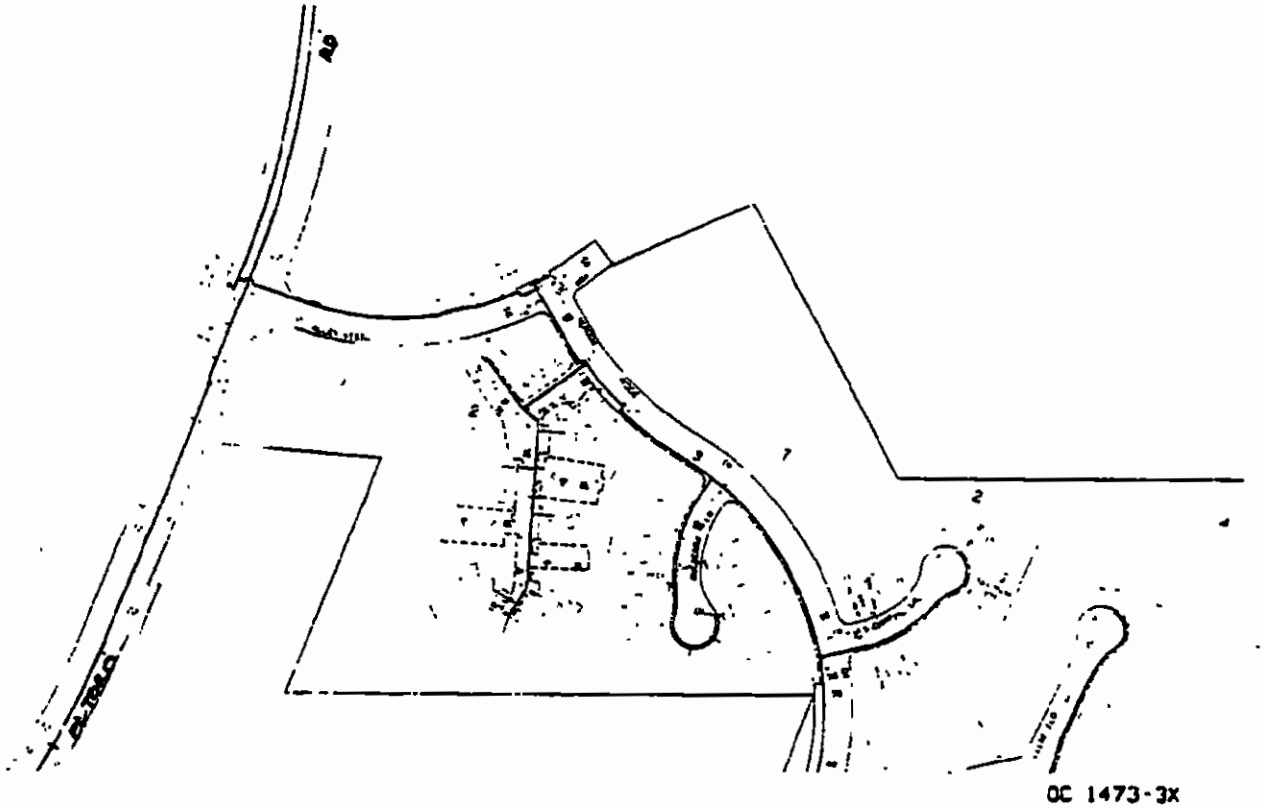
OC 1473-3X
OC 1473-3X

Attachment F

RECEIVED
JAN 22 1997

VEDANTA SOCIETY OF SOUTHERN CALIFORNIA
RAMAKRISHNA MONASTERY

P O BOX 408 TRABUCO CANYON, CA 92678 PHONE & FAX (714) 858-0342

Mr. Ray Brantley
Environmental Management Agency
P.O. Box 4048
Santa Ana, California 92702-4048

January 20, 1997

Re. Saddleback Meadows Residential Development and DEIR 566

Dear Mr. Brantley,

In response to the Notice of Preparation of Environmental Impact Report 566, we wish to call your attention to the following.

1 On October 22, 1996 the Board of Supervisors not only voted down the previous plan of the developer but also recommended that the property be returned to acreage
2. The proposed alternatives to the project which will be evaluated in EIR 566 were also voted down by the Board of Supervisors on October 22, 1996.
3. In the preparation of EIR 561 for the previous plan, the developer knowingly and willfully used inadequate geophysical data in an attempt to show that their plan was viable.
4 It was proven during the process of reviewing the previous plan that it violated the Trabuco Specific Plan as well as the General Plan. The fact that the TSP was adopted by the Board of Supervisors after the Trailer Park had been in approved in 1979 clearly indicates that the applicant's rights are not vested.
5. The geophysical conditions of the property are insurmountable, and the grading required to attempt to correct them poses a severe threat to the geophysical stability of surrounding properties, including the Ramakrishna Monastery. This was clearly substantiated by the testimony of several geophysical and civil engineers during the review process of the previous plan.
6. The grading required for the proposed project threatens the deed restrictions of the 240 acres of property given by the Vedanta Society to Orange County in 1974. If these restrictions were violated, the Vedanta Society would take legal action to reclaim ownership of the deeded property
7 The proposed plan is wholly incompatible with the rural nature of the Trabuco Canyon area and surrounding properties.

8 It is an environmentally destructive plan that provides no mitigation measures for preserving wildlife habitat and corridors, natural vegetation, etc.
9. It would result in severe traffic conditions in an area that has a very inadequate roadway system.
10. The residents of the proposed project, as well as their properties, would be placed at great risk because of limited road access, the certainty of land movement, and potential severe weather and environmental conditions such as very strong winds and brush fires.
11. The proposed project would constitute a major leap backwards in the efforts of the County, the residents of Trabuco Canyon, and the neighboring property owners to preserve the unique rural nature of the area

Sincerely yours,

Richard Jennings

Richard Jennings

RUTAN & TUCKER, LLP
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
611 ANTON BOULEVARD, SUITE 1400
COSTA MESA, CALIFORNIA 92626-1998
DIRECT ALL MAIL TO: P. O. BOX 1950
COSTA MESA, CALIFORNIA 92628-1950
TELEPHONE (714) 641-5100
FAX (714) 546-9035

January 3, 1997

Raymond H. C. Brantley
Orange County Environmental Management Agency
P. O. Box 4048
Santa Ana, California 92702-4048

Re: Project No. GA960048 - Saddleback Meadows; Notice of Preparation

Dear Mr. Brantley:

I am in receipt of a "Notice of Preparation" dated December 24, 1996, for the above-referenced project. As you may know from former correspondence, our office represents St. Michael's Abbey, which is adjacent to the project site.

As an initial matter, please be advised that the "Public Notice" makes reference to a 705-unit project, while the "Initial Study," under "Description of Project," recites a 318 single-family project. Obviously, there is some confusion regarding the project that is being proposed, which must be resolved.

Second, in connection with the Environmental Analysis Checklist, under the category "Land Use and Planning," the project's compliance with General Plan and Foothill/Trabuco Specific Plan must be thoroughly analyzed. It is this office's understanding that a 705-unit project may not proceed, because this project failed to receive even staff level approval when previously proposed. Since the Foothill/Trabuco Specific Plan for the Bridlewood area requires CEQA analysis with respect to the grading impacts of the 705-unit plan, and since this analysis has already been provided and rejected by staff, it would appear the current viability of the 705-unit plan is nonexistent. This must be analyzed in detail.

In addition, the potential impacts to St. Michael's Abbey of the project must be analyzed in depth, including potential soils stability impacts from the massive 10 million cubic yards of

HUTAN & TUCKER, LLP
ATTORNEYS AT LAW

grading proposed. Significant analysis has already been done on a less-intense proposal, which failed to reduce all identified earth resource impacts to a level of insignificance.

In addition, we believe the EIR must discuss population and housing, since the addition of 705 units may have a significant effect on local population, and may induce substantial growth in the area. Traffic impacts, particularly those on public transportation, must also be described at length.

The EIR will have to give full discussion to biologic resources, including the Riverside Fairy Shrimp. In addition, discussion should be made of other threatened species which may or do appear on the property, including the Western Spadefoot Toad.

Air quality impacts must be thoroughly addressed, particularly given the intensive traffic, parking, and average daily trip projections set forth in the Notice of Preparation. St. Michael's Abbey is identified as a sensitive receptor in the project vicinity, and expected impacts on this site should be specifically tested and discussed.

St. Michael's Abbey can also be expected to be impacted in terms of noise and glare. The potential impacts to the Abbey from noise and glare, in addition to current view impacts and impacts on the rural surroundings which currently exist, should be thoroughly treated and discussed.

Regarding recreation resources, the EIR should discuss how the impacts from a heavy concentration of 705 units of housing will be addressed in the immediate area. Specifically, some set aside or dedication of on-site park land should be required, in order to provide recreational resources within a reasonable distance to the persons who will use them, as generated by the project. This becomes all the more acute, since our understanding is that 75% of the units must be affordable, and may be marketed to persons with limited or no means to travel to distant, regional areas.

In areas of public services, there should be a full explanation of how impacts on the Saddleback Valley Unified School District will be mitigated, since all schools in the project vicinity are at capacity.

Finally, the range of alternatives should be expanded beyond that currently discussed. For each environmentally superior alternative that is rejected, the EIR must state findings, supported by facts in the record, regarding the infeasability of the rejected alternative.

RUTAN & TUCKER, LLP
ATTORNEYS AT LAW
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

Thank you for the opportunity to comment to the Notice of Preparation. Please keep my name on the list of all of those parties who will be receiving notices in connection with any or all proceedings on the proposed project.

Very truly yours,

RUTAN & TUCKER, LLP

David B. Cosgrove

DBC/tr

cc: Fr. Hugh Barbour

State of California

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET
SACRAMENTO 95814

PETE WILSON
GOVERNOR

LEE GRISSOM
DIRECTOR

DATE: December 31, 1996

TO: Reviewing Agencies

RE: SADDLEBACK MEADOWS RESIDENTIAL DEVELOPMENT
SCH# 96121072

Attached for your comment is the Notice of Preparation for the SADDLEBACK MEADOWS RESIDENTIAL DEVELOPMENT draft Environmental Impact Report (EIR).

Responsible agencies must transmit their concerns and comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

RAYMOND H.C. BRANTLEY
ORANGE COUNTY ENVIRONMENTAL MANAGEMENT AGENCY
P.O. BOX 4048
SANTA ANA, CA 92702-4048

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call at (916) 445-0613.

Sincerely,

Antero A. Rivasplata

ANTERO A. RIVASPLATA
Chief, State Clearinghouse

Attachments

cc: Lead Agency

S = sent by lead agency
X = sent by SCH

Resources Agency

- [X] **Nadell Gayou**, *Resources Agency*, 1020 Ninth Street, Third Floor, Sacramento, CA 95814, 916/327-1722 Fax 916/327-1648
- [ ] **Nicole Lefria**, *Dept. of Boating & Waterways*, 1629 S Street, Sacramento, CA 95814, 916/445-6281 916/327-7250
- [X] **Elizabeth A. Fuchs**, *California Coastal Commission*, 45 Fremont Street, Suite 1970, San Francisco, CA 94105-2219, 415/904-5200 Fax 415/904-5400
- [ ] **Reed Holderman**, *State Coastal Conservancy*, 1330 Broadway, Suite 800, Oakland, CA 94612, 510/286-1015 Fax 510/286-0470
- [X] **Keren Yourdi**, *Dept. of Conservation*, 801 K Street, MS-24-02, Sacramento, CA 95814, 916/445-8733 Fax 916/324-0948
- [ ] **Dale Wiseman**, *Dept. of Forestry*, 1416 Ninth Street, Room 1516-2, Sacramento, CA 95814, 916/653-9451 Fax 916/653-0989
- [ ] **Hans Kreutzberg**, *Office of Historic Preservation*, P.O. Box 942896, Sacramento, CA 94296-0001, 916/653-9107 Fax 916/653-9824
- [X] **Environmental Review**, *Dept. of Parks and Recreation*, P.O. Box 942896, Sacramento, CA 94296-0001, 916/653-0538
- [ ] **Environmental Review**, *Reclamation Board*, 1416 Ninth Street, Room 1615, Sacramento, CA 95814, 916/327-1531 Fax 916/327-1600
- [ ] **Steve McAdam**, *S.F. Bay Conservation & Dev't. Comm.*, 30 Van Ness Avenue, Room 2011, San Francisco, CA 94102, 415/557-3686 Fax 415/557-3767
- [ ] **Nadell Gayou**, *Department of Water Resources*, 1020 Ninth Street, Third Floor, Sacramento, CA 95814, 916/327-1722 Fax 916/327-1648

Health & Welfare

- [ ] **Kim Dinh**, *Dept. of Health*, 601 N 7th Street, PO Box 942732, Sacramento, CA 94234-7320, 916/323-6111 Fax 916/327-6092

Fish and Game - Regional Offices

- [ ] **Richard L. Elliott, Regional Manager**, Department of Fish and Game, 601 Locust, Redding, CA 96001, 916/225-2361 Fax 916/225-2381
- [ ] **Ryan Broddrick, Regional Manager**, Department of Fish & Game, 1701 Nimbus Road, Suite A, Rancho Cordova, CA 95670, 916/358-2900 Fax 916/358-2912
- [ ] **Brian Hunter, Regional Manager**, Department of Fish and Game, P.O. Box 47, Yountville, CA 94599, 707/944-5518 Fax 707/944-5563
- [ ] **George Nokes, Regional Manager**, Department of Fish and Game, 1234 East Shaw Avenue, Fresno, CA 93710, 209/445-6132 Fax 209/445-6607
- [X] **Department of Fish and Game**, *Environmental Services*, 330 Golden Shore, Suite 50, Long Beach, CA 90802, 310/590-5132 Fax 310/590-5192

Independent Commissions/Agencies

- [ ] **California Energy Commission**, 1516 Ninth Street, MS-15, Sacramento, CA 95814, 916/654-3944
- [ ] **Native American Heritage Comm.**, 915 Capitol Mall, Room 364, Sacramento, CA 95814, 916/653-4082 Fax 916/657-5390
- [ ] **Douglas Long**, *Public Utilities Commission*, 505 Van Ness Avenue, San Francisco, CA 94102, 415/703-2011 Fax 415/703-1965
- [X] **Betty Silva**, *State Lands Commission*, 100 Howe Avenue, Suite 100-S, Sacramento, CA 95826, 916/574-1872 Fax 916/574-1885
- [ ] **Gerald R. Zimmerman**, *Colorado River Board*, 770 Fairmont Avenue, Suite 100, Glendale, CA 91203-1035, 818/543-4676 Fax 818/543-543-4685
- [ ] **Tahoe Regional Planning**, *Environmental Review*, P.O. Box 1038, Zephyr Cove, NV 89448, 702/588-4547 Fax 702/588-4527
- [ ] **Thomas Ottoman**, *Office of Emergency Services*, P.O. Box 29998, San Francisco CA 94129, 415/666-9300
- [ ] **Debby Eddy**, *Delta Protection Commission*, P.O. Box 530, Walnut Grove, CA 95690, 916/776-2290 FAX 776-2293

Department of Transportation
District Contacts

- [ ] **Martin Urkofsky**, *Caltrans, District 1*, 1656 Union Street, Eureka, CA 95501, 707/445-5812 Fax 707/445-5869
- [ ] **Gary Otremba**, *Caltrans, District 2*, P.O. Box 494040, Redding, CA 96049-4040, 916/225-3133 Fax 916/225-3146
- [ ] **Jeff Pulverman**, *Caltrans, District 3*, 703 B Street, Marysville, CA 95901, 916/327-3859 Fax 916/323-7669
- [ ] **Phillip Badal**, *Caltrans, District 4*, P.O. Box 23660, Oakland, CA 94623-0660, 510/286-5578 Fax 510/286-5513
- [ ] **Lawrence Newland**, *Caltrans, District 5*, P.O. Box 8114, San Luis Obispo, CA 93403-8114, 805/549-3683 Fax 805/549-3077
- [ ] **Marc Birnbaum**, *Caltrans, District 6*, P.O. Box 12616, Fresno, CA 93778-2616, 209/448-4088 Fax 209/488-4101
- [ ] **Stephen J. Burwell**, *Caltrans, District 7*, 120 South Spring Street, Los Angeles, CA 90012, 213/897-4429 Fax 213/897-4358
- [ ] **Harvey Sawyer**, *Caltrans, District 8*, P.O. Box 231, San Bernardino, CA 92402, 909/383-4808 Fax 909/383-7934
- [ ] **Robert Rukuke**, *Caltrans, District 9*, 500 South Main Street, Bishop, CA 93514, 619/872-0689 Fax 619/872-0678
- [ ] **Dana Cowell**, *Caltrans, District 10*, P.O. Box 2048, Stockton, CA 95201, 209/948-7906 Fax 209/948-7906
- [ ] **Lou Salazar**, *Caltrans, District 11*, P.O. Box 85406, MS S-5, 2829 Juan Street, San Diego, CA 92186-5406, 619/688-6002 Fax 619/688-2511
- [X] **Aileen Kennedy**, *Caltrans, District 12*, 2501 Pullman St., Santa Ana, CA 92705, 714/724-2239 Fax 714/724-2592

Business, Transportation, & Housing

- [ ] **Sandy Hesnard**, *Caltrans - Division of Aeronautics*, P.O. Box 942874, Sacramento, CA 94274-0001, 916/324-1833 Fax 916/327-9093
- [ ] **Alice Huffaker**, *California Highway Patrol*, Office of Special Projects, Planning and Analysis Division, 2555 1st Ave., Sacramento, CA 95818, 916/657-7222 Fax 916/452-3151
- [ ] **Ron Helgeson**, *Caltrans - Planning*, P.O. Box 942874, Sacramento, CA 94274-0001, 916/653-9966 Fax 916/653-0001

State and Consumer Services

- [ ] **Robert Sleppy**, *Dept. of General Services*, 400 R Street, Suite 5100, Sacramento, CA 95814, 916/324-0214 Fax 916/322-3987
- [ ] **Office of Local Assistance**, 501 J Street, Suite 400, Sacramento, CA 95814, 916/445-3160

California Environmental Protection Agency

- [X] **Mike Tollstrup**, *Air Resources Board*, 2020 L Street, Sacramento, CA 95815, 916/322-8267 Fax 916/322-5982
- [X] **Mark deBie**, *Calif. Waste Management Board*, 8800 Cal Center Drive, Sacramento, CA 95826, 916/255-4164 Fax 916/255-4071
- [ ] **Wayne Hubbard**, *State Water Resources Control Board, Division of Clean Water Programs*, P.O. Box 944212, Sacramento, CA 94244-2120, 916/227-4408 Fax 916/227-4549
- [ ] **Phil Zentner**, *State Water Resources Control Board, Division of Water Quality*, P.O. Box 944213, Sacramento, CA 94244-2130, 916/657-0912 Fax 916/657-2388
- [ ] **Mike Falkenstein**, *State Water Resources Control Board, Division of Water Rights*, 901 P Street, 3rd Floor, Sacramento, CA 95814, 916/657-1377 Fax 916/657-1485
- [ ] **Dept. of Toxic Substances Control**, *CEQA Tracking Center*, 400 P Street, Fourth Floor, P.O. Box 806, Sacramento, CA 95812-0806, 916/324-3119 Fax 916/324-1788

Regional Water Quality Control Board

- [ ] **NORTH COAST REGION (1)**, 5550 Skylane Blvd., Suite A, Santa Rosa, CA 95403, 707/576 2220 Fax 707/523-0135
- [ ] **SAN FRANCISCO BAY REGION (2)**, 2101 Webster Suite 500, Oakland, CA 94612, 510/286-1255 Fax 510/286-1380
- [ ] **CENTRAL COAST REGION (3)**, 81 Higuera Street, Suite 200, San Luis Obispo, CA 93401-5427, 805/549-3147 Fax 805/543-0397
- [ ] **LOS ANGELES REGION (4)**, 101 Centre Plaza Drive, Monterey Park, CA 91754-2156, 213/266-7556 Fax 213/266-7600
- [ ] **CENTRAL VALLEY REGION (5)**, 3443 Routier Road, Suite A, Sacramento, CA 95827-3098, 916/255-3000 Fax 916/255 3015
  - ○ **Fresno Branch Office**, 3614 East Ashlan Avenue, Fresno, CA 93726, 209/445-5116 Fax 209/445-5910
  - ○ **Redding Branch Office**, 415 Knollcrest Drive, Redding, CA 96002, 916/224-4845 Fax 916/224-4857
- [ ] **LAHONTAN REGION (6)**, 2501 Lake Tahoe Boulevard, South Lake Tahoe, CA 96150, 916/542-5400 Fax 916/544-2271
  - ○ **Victorville Branch Office**, 15428 Civic Drive, Suite 100, Victorville, CA 92392-2359, 619/241-6583 Fax 619/241-7308
- [ ] **COLORADO RIVER BASIN REGION (7)**, 73720 Fred Waring Drive, #100, Palm Desert, CA 92260-2564, 619/346-7491 Fax 619/341-6820
- [X] **SANTA ANA REGION (8)**, 3737 Main Street, Suite 500, Riverside, CA 92501-3339, 714/782-4130 Fax 909/781-6288
- [ ] **SAN DIEGO REGION (9)**, 9771 Clairemont Mesa Blvd., Suite B, San Diego, CA 92124-1331, 619/467-2952 Fax 619/571-6972

- [ ] OTHER: _____
- [ ] OTHER: _____

SCH 10/8/98

UNITED STATES MARINE CORPS
MARINE CORPS AIR BASES WESTERN AREA EL TORO
PO BOX 51001
SANTA ANA CA 92709-5001

IN REPLY REFER TO:

11103.15
AQ/SaddleM
7 Jan 97

ENVIRONMENTAL MANAGEMENT AGENCY
ATTN MR RAYMOND BRANTLEY
P O BOX 4048
SANTA ANA CA 92702-4048

NOTICE OF INTENT TO PREPARE A DRAFT EIR (#566) FOR SADDLEBACK MEADOWS RESIDENTIAL DEVELOPMENT

Dear Mr. Brantley,

The above Notice of Intent has been reviewed and we have no comments at this time.

Thank you for the opportunity to comment on this land use proposal. If you have any further questions, please contact Ms. Desiree Garrison at (714) 726-3702.

Sincerely,

D. P. PENDER
Colonel, U.S. Marine Corps
Community Plans and Liaison Officer
By direction of the Commander

County of Orange

MEMO

January 14, 1997

TO: Raymond Brantley
EMA/Planning/Environmental & Project Planning

FROM: Kevin H. Kondru, Manager
IWMD/Engineering Support Services

SUBJECT: Notice of Intent to Prepare a Draft Environmental Impact Report (No. 566)

The County of Orange Integrated Waste Management Department (IWMD) staff has reviewed the Notice of Intent for the above-referenced project. IWMD has no comment regarding the existing information included in the Notice of Intent and Negative Declaration (ND). However, the ND should elaborate on the proposed project's use of technology for minimizing or recycling waste products. In addition, special landscape treatments to reduce the amount of yard trimmings and waste should be presented.

If you need any additional information, please contact Karen DiCarlo at (714) 834-4107.

cc: Karen DiCarlo, IWMD
Central Files

S:\ESS\NCL1-11.DOC:KD:mrb January 14, 1997

STAFF MEMBERS

Bruce Boner, General Manager
Bowie, Arneson, Kadi, Wiles and Giannone, Legal Counsel
Carl R. Schoonover, Treasurer

TRABUCO CANYON WATER DISTRICT

BOARD OF DIRECTORS

Don Chadd, President
Mike Safranski, Vice President
Corinne Loskot, Director
Jim Haselton, Director
Matthew Disston, Director

RECEIVED
JAN 22 1997

January 21, 1997

Raymond H. C. Brantley
Environmental & Project Planning
Environmental Management Agency
P. O. Box 4048
Santa Ana, CA 92702-4048

RE: Project Title: Saddleback Meadows Residential Development
Subject: Notice of Intent to Prepare a Draft Environmental Impact Report #566

Dear Mr. Brantley:

Trabuco Canyon Water District has reviewed to above-captioned matter and finds no unexpected potential significant impacts with regard to the water and sewer systems.

Very truly yours,

Bruce Boner

Bruce Boner
General Manager

BB:ses

32003 Dove Canyon Drive, Trabuco Canyon, CA 92679 · 714/858-0277 · Fax: 714/858-3025
Mailing Address: P.O. Box 500, Trabuco Canyon, CA 92678

JAN-17 97 15:45 FROM:OCFA FIRE PREV. 7147715832 TO:7148346132 PAGE:01/01

ORANGE COUNTY FIRE AUTHORITY
PO Box 86, Orange, CA 92856-0086 • 180 South Water St., Orange, CA 92866-2175
Larry J. Holms, Director of Fire Services *(714) 744-0400*

January 17, 1997

Raymond Brantley
EMA/Environmental and Project Planning
P.O. Box 4048
Santa Ana, Ca 92702-4048

Subject: Notice of Intent to Prepare a Draft Environmental Impact Report #566

Dear Mr. Brantley:

Orange County Fire Authority (OCFA) staff have reviewed the initial study for the draft EIR for the proposed Saddleback Meadows residential development. In reviewing the NOP, we have the following comments/concerns:

1. The proposed development is within a Special Fire Protection Area and must meet all adopted fuel modification, street width and construction requirements (including Class A roofs, 1 hour fire resistive ratings on the exterior of all structures, multi-glazed windows, etc.) for development in the designated Area.

2. All developments over 150 units must provide a minimum of two points of access into the development. Both access drives or must meet OCFA standards.

Please contact me at (714)744-0485 if you have any questions.

Respectfully,

Laura Braul,
Deputy Fire Marshal

County of Orange

MEMO

DATE: January 9, 1997

TO: George Britton, Manager, P&DS/Z&PPD

FROM: Joan S. Golding Manager, P&DS/APD

SUBJECT: Saddleback Meadows NOP/DEIR 566

Advance Planning staff have reviewed the Notice of Preparation (NOP) for the Saddleback Meadows Residential Development project and have the following comments and proposed mitigation measures:

COMMENTS:

AFFORDABLE HOUSING.

Saddleback Meadows retains a requirement that 66 2/3 percent of all residential units built be affordable under the Orange County Housing Element affordable guidelines. The EIR should include a discussion of Housing Element affordable requirements and how they will be implemented as part of this project.

PROPOSED MITIGATION MEASURES:

BIOLOGICAL AND WATERSHED RESOURCES:

Fund the removal of arundo donax in the Aliso Creek Corridor in partial compensation for the proposed project's biological impacts to the Aliso Creek Corridor. The arundo removal shall be adjacent to and in the vicinity of the proposed project at an acreage ratio of 3 to 1 (for arundo removal to the creek area impacted).

EXISTING FEE PROGRAMS:

- Library: Tract and parcel maps within the proposed project shall be subject to the following condition:

  Prior to the recordation of any final tract/parcel map (except for financing purposes), the project proponent shall enter into a secured agreement with the County of Orange to pay development fees for the South County Canyons Library as provided in Sections 7-9-700 through 7-9-713 of the Codified Ordinances of the County of Orange and Board Resolution No. 87-1684. This agreement shall contain:

  a) provision for payment or financial security for participation by the project proponent in the construction, equipment and collection of the library facility, subject to adjustment for inflation;

b) provision for payment of these funds is to be generally phased with development and in accordance with an established payment schedule.

- Fire: Tract and parcel maps within the proposed project shall be subject to requirements for subsequent agreements and fees as determined by the Orange County Fire Authority.

- Sheriff: Tract and parcel maps within the proposed project shall be subject to requirements for subsequent agreements and fees as determined by the Orange County Sheriff-Coroner.

Thank you for the opportunity to comment on this project. Should you have any questions or desire further information, please feel free to contact me (834-6007) or Ruby Maldonado, of my staff, directly. Ruby can be reached at 834-2520.

Sincerely,

Melinda Stewart
for Joan S Golding

RM 7010910202360
EP53300

County of Orange

MEMO

DATE: JAN 0 8 1996

TO: Ray Brantley, Environmental & Coastal Planning

FROM: Ignacio Ochoa, Traffic Engineering

SUBJECT: Saddleback Meadows Notice of Preparation

Traffic Engineering has completed its review of the subject document and has found some inconsistencies between the Public Notice page, the Initial Study page, the Environmental Analysis Checklist pages and the subsequent pages. These inconsistencies are as follows:

1. The project on the Public Notice page is identified as 705 manufactured, single-family residential units, whereas the the Initial Study page describes the project as a 318 single-family detached residential development.

2. The Public Notice page states that 69%, or 158 acres of the project site would be impacted with 71 acres being reserved for open space. On page 1 under Project Description, however, 90% of site is identified as being impacted with 10% remaining as open space.

3. In the Environmental Analysis Checklist pages under Transportation/Circulation, the project is identified as having a less than significant impact or no impact in all of the traffic-related categories. On page 2 under Summary of Potentially Significant Impacts, however, the report states that it has been determined that there is substantial evidence that significant effects may occur in various areas including Transportation.

Ignacio Ochoa

DJC:wps

Attachment F

RECEIVED
JAN 1997

San Joaquin Hills Corridor Agency
Chairman, Patricia Bates, Laguna Niguel

Foothill/Eastern Corridor Agency
Chairman, Scott Dieh, San Clemente

TRANSPORTATION CORRIDOR AGENCIES

William Woodruff, Jr.
Chief Executive Officer

Walter D. Kreutzen
Executive Vice President
Finance & Administration

Gregory G. Henz
Executive Vice President
Design & Construction

January 2, 1997

Mr. Raymond H.C. Brantley
Manager
Environmental & Project Planning
300 N. Flower, Rm 321
Santa Ana, CA 92702-4048

Subject: EIR #566; Saddleback Meadows Residential Development

Dear Mr. Brantley:

Thank you for providing the Transportation Corridor Agencies with the opportunity to review and comment on the Notice of Preparation for subject EIR. Staff has reviewed the NOP and has no comments at this time.

Should you have any questions regarding this response, please contact Laura Coley Eisenberg of my staff at (714) 513-3482.

Sincerely,

Steve Letterly, Director
Environmental Services

201 E. SANDPOINTE AVE., SUITE 200 P.O. BOX 28870, SANTA ANA, CA 92799-8870 714/436-9800 FAX 714/436-9848

Members: Anaheim • Costa Mesa • County of Orange • Dana Point • Irvine • Lake Forest • Laguna Hills • Laguna Niguel • Mission Viejo • Orange • Newport Beach • Santa Ana • San Clemente • San Juan Capistrano • Tustin • Yorba Linda

Recycled Paper

County of Orange

MEMO

DATE: January 28, 1997

TO: Raymond Brantly, Chief, Environmental & Project Planning

FROM: Johnnie Barnett, Chief, Geotechnical/Grading Plan Check

SUBJECT: Review of Notice of Intent to Prepare a Draft Environmental Impact Report # 566 - Saddleback Meadows Residential Development - Tract 10692 - Grading Application GA960048

This site has been the object of several previous studies. Applicable comments contained in the second screencheck review of the Draft Environmental Impact Report EIR #561 issued on December 29, 1995 should be addressed in the subject EIR #566. A copy of those comments are attached.

According to the subject document approximately 10 % of the site is to remain open space. Based upon previous reviews, mitigation measures will require encroachment into this area. Although the areas will remain open space grading operations will remove a large portion of the natural vegetation.

The impact that grading operations will have upon the stability of adjacent property and vice versa must be addressed and appropriate mitigation/corrective grading measures provided.

If the site is to be graded in phases appropriate grading measures must be provided to demonstrate that each phase will have adequate stability.

As noted above consideration must be given to the impact that grading activity will have upon the biological resources of the area.

PC0606

County of Orange

MEMO

DATE: December 29, 1995

TO: Mr. Ray Brantley, Chief, Environmental and Coastal Planning

FROM: Johnnie K. Earnest, Chief, Geotechnical/Grading Plan Check

Subject: Second Screencheck review of Section 4.2 Soils and Geology, Draft Environmental Impact Report dated December 1995 issued for Saddleback Meadows EIR 561

Geotechnical Environmental Impact Report Saddleback Meadows Development, Tentative Tract 15230, El Toro Road, Orange County, California issued by G.A.Nicoll and Associates, Inc. dated November 27, 1995, Project 4816-07

The following comments are made relative to the review of the above referenced section of the EIR prepared for the Saddleback Meadows by Urban Vision and the above referenced report by G.A.Nicoll and Associates, Inc.

Comments 1) through 6) were made upon my completion of the first screencheck dated November 6, 1995 and with the exception of item number 4 remain for the most part applicable.

1) The geotechnical report submitted with the EIR 561 (appendix D) was originally submitted for the evaluation of the proposed development of Tract 10692. Although this report was not approved it did identify some of the problematic areas associated with future development (existing landslides and other zones of weakness). One of the most critical items being the stability of the site upon completion of the proposed remedial/corrective grading and the impact that the proposed grading (both interim and final) will have upon the adjacent property. According to the information provided under Section 4.2 a supplemental geotechnical investigation has been performed for Tract 10692. However this report apparently has not been included in the subject EIR. This report should be included as it may contain information that would clarify and/or resolve some of the concerns previously expressed regarding geometry of the landslides (deepest rupture surface or zone of weakness), justification of parameters used in the stability analyses, impact of groundwater upon stability, total and differential settlement, location of buttress/stabilization keyways, stability of backcuts especially those impacting off-site property.

2) Based upon the information contained in the geotechnical report it appears that the depth of removal (4 to 5 feet) stated in the EIR is somewhat misleading.

3) There is a discrepancy between the landslides designated on the plan submitted with the original geotechnical investigation report dated January 6, 1994 and that shown by Exhibit 17 contained in the subject EIR 561.

4) The geotechnical report should address the development now being proposed (Tract 15230).

5) Although some of the data being requested at this time normally is not submitted until a grading permit application is requested, it is deemed appropriate due to the potential problems that exist relative to the adjacent off-site property.

6) A grading permit will be required for all specific site developments.

The following observations were made during the review of the G.A.Nicoll report dated November 27,1995.

7) Soil parameters reported in Table II for use in stability calculations appear to be somewhat higher than those used by most consultants, especially when analyzing basal rupture surface. These values also appear to be higher than those utilized in your previous stability calculations.

8) Cross sections provided should extended to include all areas having an impact upon the stability of the proposed development e.g. Section B-B terminates some 700 to 750 feet short of the crest of the hillside and some 450 to 500 feet short of test boring BB-9 which identified landslide debris to a depth of 61+ feet.

9) Discuss the impact that the excavation of the keyway proposed adjacent to the Fathers of Norbertine property will have upon the stability of the site.

10) Seismic analyses although not included with the subject report appear to have been conducted utilizing an acceleration value of 0.13 g. inlieu of the value of 0.15 g. which is a minimum value allowed by County Code for seismic analyses. This inconsistency has been noted in previous review sheets.

11) It appears that additional subsurface exploration and evaluation work has been performed relative to the proposed development. All of this information should be included in the subject report.

William S. Craycraft
Mayor
Susan Withrow
Mayor Pro Tem
Sherri M. Butterfield
Council Member
Thomas R. Potocki
Council Member
Larry Smith
Council Member

City of Mission Viejo

SENT VIA FACSIMILE
(ORIGINAL TO FOLLOW BY MAIL)

January 27, 1997

Mr. Raymond H. C Brantley
County of Orange
Environmental and Project Planning Division
300 North Flower Street, Room 321
Santa Ana, California 92702-4048

Dear Mr. Brantley:

RE: City of Mission Viejo Comments to the Notice of Preparation for the Saddleback Meadows Residential Development: Draft Environmental Impact Report #566

The City of Mission Viejo has concluded its review of the Notice of Preparation for the Saddleback Meadows Residential Development Draft Environmental Impact Report (Draft EIR) No. 566. The City has identified a series environmental issues which warrant detailed analysis in the Draft EIR. These comments are included as Attachment 1 to this transmittal.

A major emphasis of the City's comments relate to El Toro Road. As you are well aware, El Toro Road is a vital transportation link to both the Saddleback Meadows project and residential/commercial development in the City of Mission Viejo The attached comments reflect the City of Mission Viejo's desire that the Draft EIR fully address the capacity and timing of El Toro Road improvements for both the proposed project as well as each of the project alternatives. As a component of the Orange County Master Plan of Arterial Highways (MPAH) and the Congestion Management Program Highway System, El Toro Road must be thoroughly analyzed, and mitigation measures must be considered, to insure that development intensity and infrastructure capacity are appropriately balanced.

We look forward to working with your staff and your environmental consultant to ensure that areawide transportation infrastructure needs are effectively planned and implemented.

Sincerely,

Clint Sherrod
Community Development Director

Attachment: City of Mission Viejo Comments: Saddleback Meadows Notice of Preparation; Draft EIR #566

cc: Dennis R. Wilberg, Assistant City Manager/Director of Public Works
Shirley Land, City Transportation Engineer, Public Works Department
Karen Verlaan, Senior Planner, Community Development Department
Gail Shiomoto-Lohr, GSL Associates

Attachment One
City of Mission Viejo Comments
Saddleback Meadows Residential Development Notice of Preparation
Draft Environmental Impact Report No. 566

1. Proposed Project and Project Alternatives:

The Notice of Preparation identifies a proposed project of 705 manufactured, single family residential units and three alternate development scenarios for the Saddleback Meadows site. The three, alternate development scenarios consist of two staff alternatives, in addition to the original residential development proposal analyzed in Draft EIR 561. In summary, the development intensities of the four development alternatives are as follows:

a.	Proposed project:	705 manufactured, single family residential units
b.	Staff Alternative A:	150 single family units
c.	Staff Alternative B:	100 single family units
d.	DEIR 561 Alternative:	318 single family units

Page 1 of the Initial Study (#GA 960048) identifies the proposed project as 318 single-family detached residential units, which conflicts with the project description identified in the public notice and the narrative appendix to the Initial Study (705 manufactured, single family units).

Recommended Action:

Revise the Initial Study to define a consistent project description of the proposed project and its alternatives.

2 Traffic Analysis of Proposed Project and Project Alternatives

The Saddleback Meadows Draft EIR includes a proposed project and three alternate development scenarios for the project site.

Recommended Action:

The City of Mission Viejo requests that the traffic study in Draft EIR 566 analyze and quantify the circulation impacts of not only the proposed project, but also each of the development alternatives, upon impacted roadways and intersections in the study area.

3. El Toro Road: MPAH Designation

In Draft EIR 561, El Toro Road was assumed as a Primary Arterial highway, a designation that was inconsistent with the Major Arterial highway designation defined by the Orange County Master Plan of Arterial Highways. The current Initial Study states that Draft EIR 566, analyzing the revised project, will address El Toro Road's arterial designation to be a primary arterial versus a major arterial.

Recommended Actions:

a. Should the Draft EIR recommend pursuit of a Primary Arterial designation for a specified segment of El Toro Road, the reclassification of El Toro Road from a six-lane Major Arterial to a four-lane Primary Arterial requires the County of Orange to process a Master Plan of Arterial Highway (MPAH) amendment, with the amendment ultimately being approved by the Orange County Transportation Authority (OCTA) board of directors.

Since Draft EIR 566 will serve as an environmental assessment for the Saddleback Meadows Grading Application GA 960048, and Subdivision Tract Map 10692, the City of Mission Viejo recommends that the vesting tentative tract map include a rights-of-way requirement for El Toro Road that allows El Toro Road to be improved as a six-lane Major Arterial roadway. This provision is requested to insure that adequate rights-of-way for ultimate El Toro Road improvements are not relinquished through the subdivision map process.

b. Recognizing that compliance with levels of service performance standards are essential through the Orange County Congestion Management Program and the Measure M Growth Management program, Draft EIR 566 should fully disclose and analyze how the down-sizing of El Toro Road from a six-lane facility to a four-lane facility will adequately serve proposed and future transportation needs of existing and future development that are serviced by the arterial roadway.

c. The OCTA MPAH guidance manual identifies that a multi-jurisdictional, cooperative process must be undertaken with any MPAH amendment that affects more than one jurisdiction. In conjunction with that process, technical data will be prepared and reviewed by Growth Management Area (GMA) forums to determine whether there is consensus on the proposed amendment. Also, in conjunction with that process, an environmental assessment of the MPAH amendment must be completed.

This multi-jurisdictional, cooperative process should be undertaken concurrently with the environmental process for Draft EIR 566, to enable representatives of affected jurisdictions to review the technical analysis for a four-lane versus a six-lane El Toro Road facility, and to review and comment upon the design and engineering plans for the study's recommended facility requirements.

d. The City of Mission Viejo continues to retain El Toro Road, within its jurisdictional boundaries, as a six-lane Major Arterial facility. The jurisdictional boundary between the City of Mission Viejo and the County of Orange generally lies immediately east of the Glenn Ranch Road intersection at El Toro Road.

In previewing the Initial Study's scope to address the appropriate MPAH designation for El Toro Road, the City of Mission Viejo cautions that the Glenn Ranch Road/El Toro Road intersection could function as a circulation bottleneck,

as one transitions—north to south--from a potential four-lane facility to a six-lane facility.

The Draft EIR must analyze, at project buildout and at General Plan buildout, the maximum feasible improvements to the Glenn Ranch Road/El Toro Road intersection, to insure that a Level of Service "D" performance standard is maintained, in compliance with Measure M Growth Management Program requirements.

The County of Orange will need to be an active participant in the maximum feasible improvement to the Glenn Ranch Road intersection, since Draft EIR 561 previously identified that seventy-five percent (75%) of project trips will use this intersection, and the intersection will experience Levels of Service F performance unless roadway improvements are appropriately phased with development.

4. El Toro Road Preliminary Design

The Initial Study states that preliminary designs for the ultimate improvement of El Toro Road to major arterial specifications will be conducted, in conjunction with a traffic/engineering study. It is unclear if this study is a component of the Draft EIR analysis, or a separate and concurrent process to be undertaken by the County of Orange.

Recommended Actions:

a. If pursued as a separate and concurrent process, the City of Mission Viejo requests that the County of Orange's El Toro Road design plans be reviewed by the City of Mission Viejo, for interface and integration with a six-lane, El Toro Road design and engineering plan that will be implemented southerly of Glenn Ranch Road by the City of Mission Viejo.

b. The traffic/engineering study should also include:

1) an analysis of how and when roadway improvements to El Toro Road will be phased and constructed to achieve a roadway cross-section that effectively transitions from the existing cross-section to the interim cross section;

2) an analysis of how and when ultimate roadway improvements to El Toro Road will be transitioned from the interim cross-section to the ultimate cross section;

3) an analysis of how El Toro Road can transition from a six-lane facility in the City of Mission Viejo to a four-lane facility in county unincorporated area, while achieving a Level of Service "D" performance standard at the Glenn Ranch Road/El Toro Road intersection through Year 2020;

4) an identification of proposed intersection improvements to the intersection

of Glenn Ranch Road/El Toro Road to achieve a Level of Service "D" performance standard through Year 2020; and,

5) an identification of applicant and/or County of Orange participation in the funding of identified transportation improvements within the City of Mission Viejo.

5. Land Use Assumptions in the City of Mission Viejo:
The Saddleback Meadows residential project is located north of Planning Area 11 in the City of Mission Viejo. The City of Mission Viejo City Council, in 1995, adopted a general plan amendment which changed the land use designation of Planning Area 11 from commercial to residential.

Recommended Actions:

a. The adopted land use designation of residential development for Planning Area 11 shall be incorporated into the Year 2000 and Year 2020 land use assumptions for the DEIR traffic study.

b. The traffic analysis should also include appendices which identify the traffic analysis zones, the land use designation(s), and the land use intensities for the Planning Area 11 land uses. This will enable the City of Mission Viejo to verify if the land use assumptions in the Saddleback Meadows DEIR accurately represent the current general plan intensities.

6. Inventory of Assumed Circulation Improvements:
The Orange County Congestion Management Program (CMP) requires local jurisdictions to analyze development projects and identify the project's impacts upon the CMP Highway System. In the project study area, El Toro Road is a component of the CMP Highway System.

Recommended Actions:

a. The Draft EIR traffic study needs to provide narrative discussion that describes, in detail:

1) The degree to which the trips from the proposed project will impact CMP and Measure M arterials (i.e., the percent contribution of project impact to each intersection's Intersection Capacity Utilization value);

2) The description of the assumed, committed transportation improvements that are proposed for each intersection to improve levels of service;

3) The funding source(s) of the proposed improvements, including whether or not these exact improvements are integrated in a jurisdiction's approved capital improvement program for implementation; and the year when such improvement is programmed for completion;

4) If not incorporated into an approved capital improvement program, the funding and construction mechanism for the identified improvement;

5) Whether or not phasing of the development project is required to insure that the improvement is operational before the project occupancy is allowed;

6) Concurrence from the City of Mission Viejo on the feasibility of the proposed improvements for intersections located in the City of Mission Viejo.

7) The degree to which the project applicant is required to participate in the funding of the identified improvements.

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

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Printed on Recycled Paper 9/94

December 31, 1996

Mr. Raymond H.C. Brantley
Environmental and Project Planning Division
County of Orange
Environmental Management Agency
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: Comments on the Notice of Preparation for the Draft EIR for the County of Orange - Saddleback Meadows Residential Development - SCAG No. I 9600451

Dear Mr. Brantley:

Thank you for submitting the Notice of Preparation for the Draft EIR for the County of Orange - Saddleback Meadows Residential Development to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

In addition, The California Environmental Quality Act requires that EIRs discuss any inconsistencies between the proposed project and the applicable general plans and regional plans (Section 15125 [b]). If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Please provide a minimum of 45 days for SCAG to review the DEIR when this document is available. If you have any questions regarding the attached comments, please contact Bill Boyd at (213) 236-1960.

Sincerely,

VIVIANE DOCHE-BOULOS
Manager, Intergovernmental Review

H:\ORCOSADR.NOP

COMMENTS ON THE NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE COUNTY OF ORANGE - SADDLEBACK MEADOW RESIDENTIAL DEVELOPMENT

PROJECT DESCRIPTION

This project proposes the phased development of 705 manufactured, single-family residential units on a 229.2 acre site on the easterly side of El Toro Road. The gross residential density proposed is 3.17 dwellings per acre. Sixty-nine percent of the site would be impacted and 71 acres are proposed for open space use. The project is located approximately 1/2 mile south of the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Specific Plan area of unincorporated Orange County.

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The Growth Management Chapter (GMC) of the Regional Comprehensive Plan and Guide (RCPG)[1] contains the following policy that is particularly applicable and should be addressed in the Draft EIR for the proposed project:

- *The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.*

The Regional Mobility Element (RME) also has policies pertinent to this proposed project. This chapter links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. Among the relevant policies of this chapter are the following:

- *Promote Transportation Demand Management (TDM) programs along with transit and ridesharing facilities as a viable and desirable part of the overall mobility program while recognizing the particular needs of individual subregions.*

- *Support the extension of TDM program implementation to non-commute trips for public and private sector activities.*

[1] See Endnote.

- *Support the coordination of land use and transportation decisions with land use and transportation capacity, taking into account the potential for demand management strategies to mitigate travel demand if provided for as a part of the entire package.*

- *Urban form, land use and site-design policies should include requirements for safe and convenient non-motorized transportation, including the development of bicycle and pedestrian-friendly environments near transit.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL STANDARD OF LIVING

The Growth Management goals to develop urban forms that enable individuals to spend less income on housing cost, that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy. The evaluation of the proposed project in relation to the following policies would be intended to guide efforts toward achievement of such goals and does not infer regional interference with local land use powers.

- *Encourage local jurisdictions' efforts to achieve a balance between the types of jobs they seek to attract and housing prices.*

- *Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.*

- *Encourage subregions to define an economic strategy to maintain the economic vitality of the subregion, including the development and use of marketing programs, and other economic incentives, which support attainment of subregional goals and policies.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL QUALITY OF LIFE

The Growth Management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. The evaluation of the project in relation to the following policies would be intended to provide direction for plan implementation, and does not allude to regional mandates.

- *Support provisions and incentives created by local jurisdictions to attract housing growth in job rich subregions and job growth in housing rich subregions.*

7

- *Encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.*

- *Encourage local jurisdictions' plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.*

- *Support and encourage settlement patterns which contain a range of urban densities.*

- *Encourage planned development in locations least likely to cause environmental impact.*

- *Support policies and actions that preserve open space areas identified in local, state and federal plans.*

- *Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.*

- *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources,measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.*

GMC POLICIES RELATED TO THE RCPG GOAL TO PROVIDE SOCIAL, POLITICAL, AND CULTURAL EQUITY

The Growth Management Goal to develop urban forms that avoid economic and social polarization promotes the regional strategic goal of minimizing social and geographic disparities and of reaching equity among all segments of society. The evaluation of the proposed project in relation to the policy stated below is intended guide direction for the accomplishment of this goal, and does not infer regional mandates and interference with local land use powers.

- *Encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment.*

- *Support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection.*

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the proposed residential development should be implemented and monitored, as required by CEQA.

- ENDNOTE -

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

SCAG is a *Joint Powers Agency* established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's *Metropolitan Planning Organization* and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. §134(g)-(h), 49 U.S.C. §1607(f)-(g) et seq., 23 C.F.R. §450, and 49 C.F.R. §613. SCAG is also the designated *Regional Transportation Planning Agency*, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the *South Coast Air Quality Management Plan*, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. §7504(a) as a *Co-Lead Agency* for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining *Conformity* of Projects, Plans and Programs to the Air Plan, pursuant to 42 U.S.C. §7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for *reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans* required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

SCAG is the authorized regional agency for *Inter-Governmental Review* of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, *Environmental Impact Reports* of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

Pursuant to 33 U.S.C. §1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized *Areawide Waste Treatment Management Planning Agency*.

SCAG is responsible for preparation of the *Regional Housing Needs Assessment*, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the San Diego Association of Governments and the Santa Barbara County/Cities Area Planning Council) for preparing the *Southern California Hazardous Waste Management Plan* pursuant to California Health and Safety Code.

Grierman Attachment E

DRAFT REVISED SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
EIR 566
State Clearinghouse No. 1996121072

Volume 2 of 3

Saddleback Meadows

Planning Application 980103
Zone Change (ZC) 98-3
Area Plan (AP) 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

Prepared For :
County of Orange
Planning and Development Services Department

Prepared By :

HDR
707 Wilshire Boulevard, Suite 5320
Los Angeles, California 90017

April 2002

TABLE OF CONTENTS

VOLUME I

LIST OF TABLES
LIST OF FIGURES

1.0 INTRODUCTION AND SUMMARY 1-1
1.1 INTRODUCTION/HISTORY 1-1
1.2 PROJECT SETTING 1-2
1.3 PROJECT SUMMARY 1-3
1.4 ENVIRONMENTAL PROCEDURES 1-3
1.5 ENVIRONMENTAL IMPACTS 1-7
1.6 MITIGATION MEASURE STRUCTURE 1-7
1.7 ALTERNATIVES 1-9

2.0 PROJECT DESCRIPTION 2-1
2 1 PROJECT LOCATION AND SETTING 2-1
2.2 STATEMENT OF OBJECTIVES 2-9
2.3 PROJECT CHARACTERISTICS 2-9
2.4 DISCRESTIONARY APPROVALS 2-19

3.0 GENERAL ENVIRONMENTAL SETTING 3-1
3 1 BACKGROUND 3-1
3.2 GENERAL PLAN AND ZONING 3-1
3.3 FOOTHILL/TRABUCO SPECIFIC PLAN 3-2
3 4 ALISO CREEK CORRIDOR SPECIFIC PLAN 3-2
3.5 ENVIRONMENTAL RESOURCES 3-3
3.6 EXISTING INFRASTRUCTURE AND SERVICES 3-3
3.7 RELATED PROJECTS 3-4

4.0 ENVIRONMENTAL IMPACT ANALYSIS 4.1-1
4.1 LAND USE 4.1-1
4.2 GEOPHYSICAL RESOURCES 4 2-1
4.3 HYDROLOGY 4.3-1
4.4 WATER QUALITY 4.4-1
4.5 TRANSPORTATION/TRAFFIC 4.5-1
4.6 AIR QUALITY 4.6-1
4 7 NOISE 4.7-1
4.8 BIOLOGICAL RESOURCES 4.8-1
4.9 AESTHETICS/VISUAL 4.9-1
4.10 CULTURAL/PALEONTOLOGICAL RESOURCES 4.10-1
4.11 RECREATION 4.11-1
4 12 PUBLIC SERVICES - FIRE PROTECTION 4.12-1
4.13 PUBLIC SERVICES - POLICE PROTECTION 4.13-1
4.14 PUBLIC SERVICES - SCHOOLS 4.14-1
4.15 PUBLIC SERVICES - LIBRARIES 4.15-1
4.16 UTILITIES AND SERVICE SYSTEMS - WATER SUPPLY 4.16-1
4.17 UTILITIES AND SERVICE SYSTEMS -WASTEWATER 4.17-1
4.18 UTILITIES AND SERVICE SYSTEMS - SOLID WASTE 4.18-1
4.19 UTILITIES AND SERVICE SYSTEMS - ELECTRICITY 4 19-1
4.20 UTILITIES AND SERVICE SYSTEMS - NATURAL GAS 4.20-1

5.0 ALTERNATIVES 5-1
5.1 INTRODUCTION 5-1
5.2 CRITERIA FOR ALTERNATIVE ANALYSIS 5-2
5.3 ALTERNATIVES ELIMINATED FROM CONSIDERATION 5-2
5.4 EVALUATION OF ALTERNATIVES 5-3
5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE 5-47

6.0 LONG-TERM IMPLICATIONS OF THE PROPOSED PROJECT 6-1
6.1 SIGNIFICANT IRREVERAIBLE ENVIRONMENTAL CHANGES 6-1
6.2 GROWTH INDUCING IMPACTS 6-1

7.0 INVENTORY OF MITIGATION MEASURES 7-1

8.0 MITIGATION MONITORING PROGRAM 8-1

9.0 INVENTORY OF UNAVOIDABLE ADVERSE IMPACTS 9-1

10.0 PERSONS & ORGANIZATIONS CONSULTED/ REFERENCES 10-1

10.1 PERSONS AND ORGANIZATIONS CONSULTED 10-1

10.2 REFERENCES 10-5

VOLUME II

APPENDIX A: NOP/COMMENTS

Appendix A.1 – Notice of Preparation/Initial Study
Appendix A.2 – Comments on NOP/Initial Study
Appendix A.3 – Comments from County of Orange Departments

APPENDIX B: PROJECT CHRONOLOGY
APPENDIX C: GEOTECHNICAL REPORT
APPENDIX D. HYDROLOGY TECHNICAL REPORT

VOLUME III

APPENDIX E. WATER QUALITY TECHNICAL REPORT
APPENDIX F: TRAFFIC STUDY
APPENDIX G: AIR QUALITY TECHNICAL REPORT
APPENDIX H: NOISE TECHNICAL REPORT
APPENDIX I: BIOLOGICAL REPORTS

Appendix I.1 – Biological Technical Report
Appendix I.2 – Conceptual Mitigation and Monitoring Plan for CDFG
Appendix I.3 – Coastal Sage Scrub Restoration Plan
Appendix I.4 – U.S. Fish and Wildlife Service Biological Opinion

APPENDIX J: PHASE I/PHASE II ARCHAEOLOGICAL SURVEY
APPENDIX K: SCHOOL IMPACT MITIGATION AGREEMENT
APPENDIX L: SERVICE PROVIDERS REFERENCE DOCUMENTS

APPENDIX A

NOP/COMMENTS

APPENDIX A.1

NOTICE OF PREPARATION/INITIAL STUDY

PLANNING & DEVELOPMENT SERVICES DEPARTMENT
300 N. FLOWER STREET
P. O. BOX 4048
SANTA ANA, CALIFORNIA 92702-4048

NOTICE OF PREPARATION

DATE: August 2, 2001

SUBJECT: Notice Of Intent To Prepare
Draft Environmental Impact Report # 566

Project Title: Saddleback Meadows

Applicant: California Quartet/TPG

The Orange County Planning & Development Services Department has conducted an Initial Study for the subject project and has determined that an Environmental Impact Report is necessary. The County of Orange will be the Lead Agency for the subject project and will prepare the EIR. In order for the concerns of your agency to be incorporated into the Draft EIR, we need to know the views of your agency as to the scope and content of the environmental information relevant to your agency's statutory responsibilities in connection with the proposed project. Your agency must consider the EIR prepared by the County of Orange when considering your permit or approval for the project. The project description, location, and an analysis indicating the probable enviornmental effects of the proposed action are contained in the attached materials. Interested individuals and groups are also invited to comment on the scope of the anticipated EIR.

Pursuant to Section 21080.4 of CEQA, your response must be sent as soon as possible but *not later than 30 days after receipt of this notice.*

All parties that have submitted their names and mailing addresses will be notified if any significant changes in the proposed project occur. If you wish to be placed on the mailing list, please submit your name and mailing address to the contact person at the address below. If you have need of additional information, contact Bill Grieman of the Environmental Planning Services Division at 834-5550. The mailing address is Planning & Development Services Department, P.O. Box 4048, Santa Ana, CA 92702-4048.

Submitted by:

RHCB/RA FORMS OCT 1997

PUBLIC NOTICE

NOTICE OF INTENT TO PREPARE ENVIRONMENTAL IMPACT REPORT NO. 566

Pursuant to Public Resources Code Section 21165, the County of Orange is the Lead Agency responsible for preparing an environmental impact report (EIR) addressing potential impacts associated with the proposed Saddleback Meadows project, located approximately 1/2 mile southerly of the El Toro Road/Live Oak Canyon Road intersection in the Foothill Trabuco Specific Plan area of unincorporated Orange County. The project proposes the phased development of 299 single-family residential units on a 229.2-acre site. The gross density proposed is 1.4 dwelling units per acre, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6-acres) of the project site is proposed to remain in open space. In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding & hiking trail connections, and biological resource enhancement. The proposed project will also comply with the urban stormwater runoff requirements of the California Regional Water Quality Control Board, and water quality infiltration basins have been incorporated into the project design. Project implementation requires the approval of a Zone Change (Foothill/Trabuco Specific Plan Amendment), Area Plan and Vesting Tentative Tract Map.

At a minimum, EIR 566 will examine the potential impacts generated by the proposed Project in relation to the following CEQA Checklist categories: Land Use & Planning; Geophysical, Hydrology & Drainage; Water Quality; Transportation/Circulation; Air Quality; Noise; Biological Resources; Aesthetics; Cultural/Scientific Resources; Recreation; Hazards; Public Services; and, Utilities and Service Systems. A more complete description of EIR requirements is included in the Notice of Preparation.

REVIEWING LOCATIONS

COPIES OF THE NOP ARE AVAILABLE FOR PUBLIC REVIEW FROM August 2, 2001 TO September 1, 2001 AT THE FOLLOWING LOCATIONS:

County of Orange/Planning & Development Services Department/
Environmental Planning Services Division
Contact: Bill Grieman 834-5550

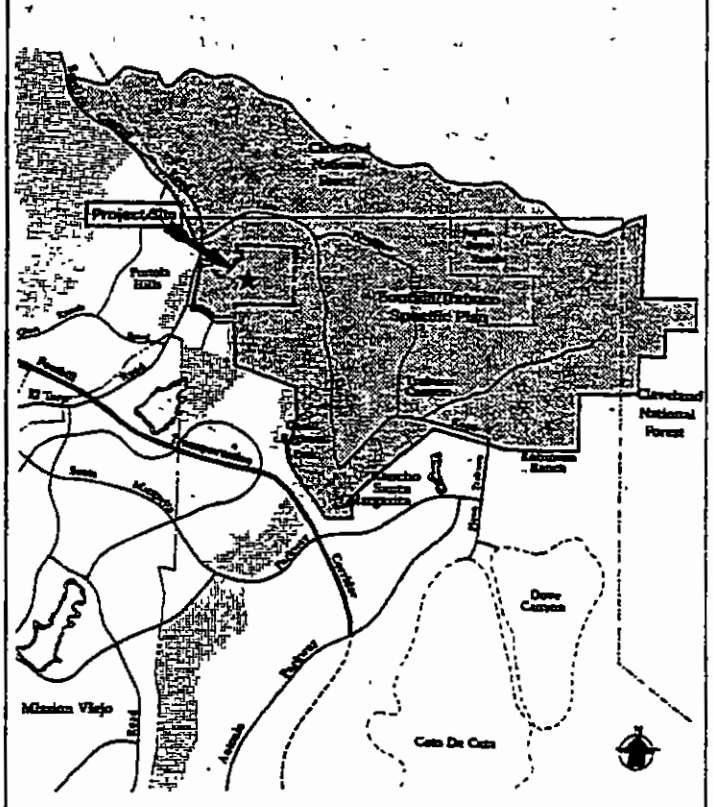
ORANGE COUNTY BRANCH LIBRARIES:
25209 Marguerite Parkway, Mission Viejo
28192 Silverado Canyon Road, Silverado
24672 Raymond Avenue, El Toro
30902 La Promesa Drive, Rancho Santa Margarita
California State University, Fullerton, Library Documents Section
UC Irvine Main Library/Government Publications/Microforms Department

COPIES OF THE NOP HAVE BEEN PROVIDED TO THE FOLLOWING GROUPS:

FOOTHILL/TRABUCO REVIEW BOARD MEMBERS: Adam Smith, Jeanne Porter, Robert Wilks, Raymond Mills, & Bruce Conn
Hidden Ridge HOA, c/o Ms. Marie Walsh
Portola Hills HOA I, c/o Rinevol & Co.
Portola Hills HOA II, c/o Ms. Elizabeth Wallace
Canyon View Homeowners Association
Santiago Estates H
Inter-Canyon League, c/o Bob Hunt
California Native Plant Society
National Audubon Society, Inc.
Sierra Club - Orange County Chapter
Rural Canyons Conservation Fund, c/o Bruce Conn

Address Comments to: Manager, Environmental Planning Services Division — 300 No. Flower, Room 321, Santa Ana, CA 92702-4048

PROJECT LOCATION MAP



INITIAL STUDY
SADDLEBACK MEADOWS PROJECT

State Clearinghouse No. 96121072

August, 2001

LEAD AGENCY: COUNTY OF ORANGE
Planning & Development Services Department

APPLICANT: CALIFORNIA QUARTET/TPG

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT (SEIR) 566
Planning Application PA 980103
Zone Change 98-3
Area Plan 98-2
Tentative Tract Map 15784
Vesting Tentative Tract Map 15230

I. INTRODUCTION/BACKGROUND

Pursuant to Public Resources Code Section 21165, the County of Orange is the Lead Agency responsible for preparing an Environmental Impact Report (EIR) addressing potential impacts associated with the proposed Saddleback Meadows project, located approximately 1/2-mile from the El Toro Road/Live Oak Canyon Road intersection in the Foothill/Trabuco Specific Plan area of unincorporated Orange County. In accordance with the California Environmental Quality Act (CEQA) and its Guidelines, an Initial Study has been prepared for the proposed project. Based on the analysis conducted for the Initial Study (see Section VII of this document), it has been determined that the proposed project could result in significant environmental impacts and the preparation of a Subsequent EIR will be required. According to Section 15162 of the *CEQA Guidelines*, a Subsequent EIR is required when subsequent changes are proposed in the project which will require important revisions to the previous EIR due to the involvement of new significant environmental impacts not considered in the previous EIR.

CEQA documentation prepared for the project to date is summarized as follows:

- **EIR 059:** In August 1978, the Board of Supervisors of Orange County adopted General Plan Amendment 78-1 for the Saddleback Meadows property. Final EIR 059 was prepared and certified in conjunction with the general plan amendment.
- **EIR 203:** In January 1980, the Board of Supervisors adopted Ordinance Number 3177, which placed the property in the PC "Planned Community" District. Final EIR 203 was prepared and certified in conjunction with the Ordinance.
- **EIR 561:** EIR 561 was prepared and circulated in February 1996 for 318 detached single family dwelling units on a 222.2 acre site. On July 30, 1996, the Orange County (County) Planning Commission recommended that the Board of Supervisors certify the EIR, which, on October 22, 1996, the Board failed to do.
- **Subsequent EIR 566:** Subsequent EIR 566 for the Saddleback Meadows project was prepared and circulated in May 1997 and was certified by the County Planning Commission on December 3, 1997. The County Board of Supervisors failed to grant an appeal of this action on February 24, 1998.
- **Subsequent EIR 566 Addendum No. 1:** Addendum No. 1 was prepared in July 1998. The project evaluated by Addendum No. 1 included 299 detached single family dwelling units on 222.2 acres. The Addendum was approved by the Planning Commission on October 7, 1998 and by the Board of Supervisors on December 8, 1998.
- **Subsequent EIR 566 Addendum No. 2:** Addendum No. 2 was prepared in March 2001 to evaluate and document any potential changes in the environmental effects or

baseline conditions since the preparation of Addendum No. 1. The project evaluated by Addendum No. 2 was identical to Addendum No. 1 (299 detached single-family dwelling units) and included updated traffic and biological resources impact studies. On May 9, 2001, the Planning Commission failed to approve Addendum No. 2 and recommended preparation of a new EIR for the 299-lot project. This recommendation was upheld by the Board of Supervisors on May 22, 2001.

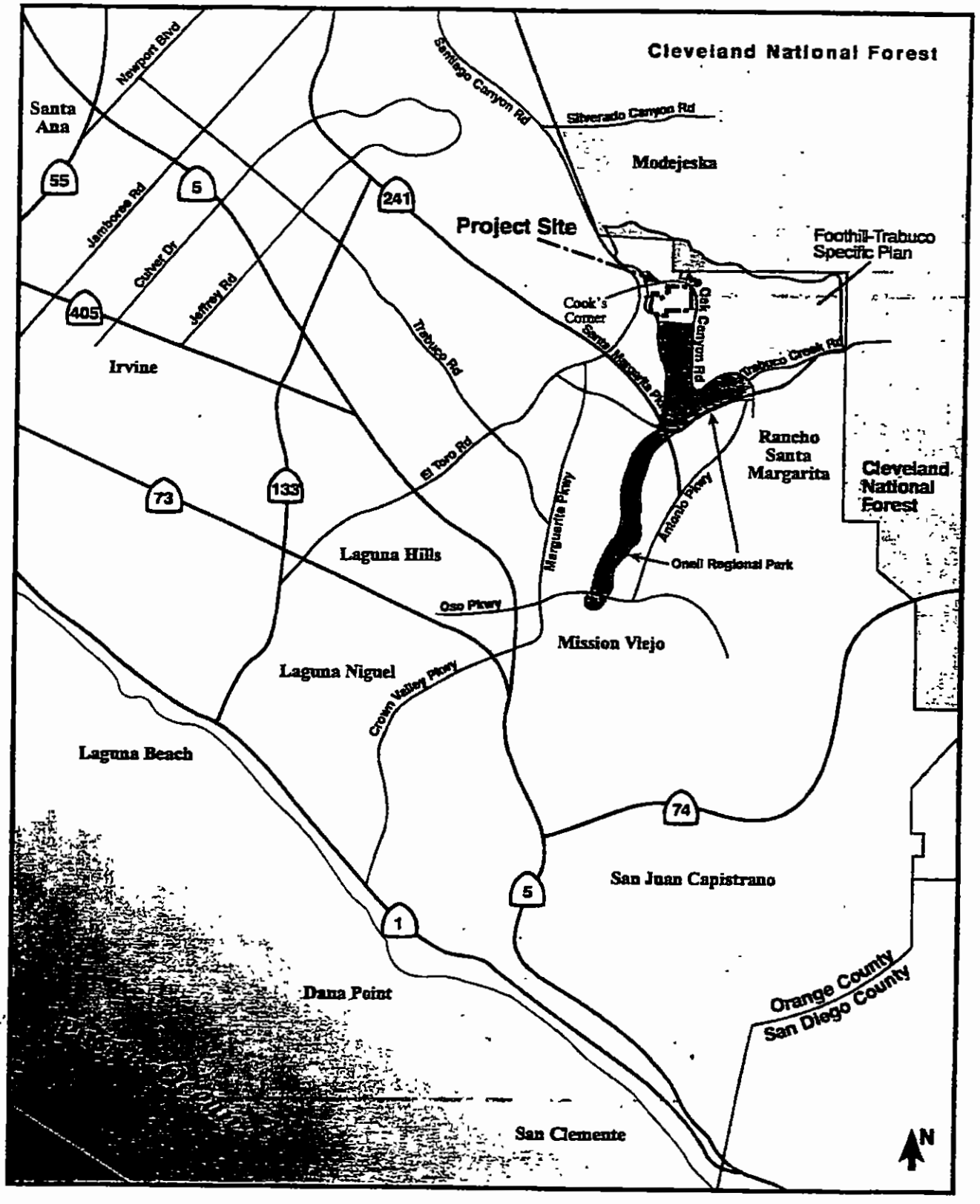
II. PROJECT DESCRIPTION

The project proposes the phased development of 299-detached single-family residential units on a 222.2-acre site, located on the easterly side of El Toro Road (see Exhibits 1, 2,and 3). The gross residential density is 1.4 du/ac, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6 acres) of the project site is proposed to remain in open space.

In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding/hiking trail connections, and biological resource enhancement. The proposed project will also comply with the urban stormwater runoff requirements of the California Regional Water Quality Control Board, and water quality infiltration basins have been added to the project features. Project implementation requires the approval of a Zone Change (Foothill/Trabuco Special Plan Amendment), Area Plan and Vesting Tentative Tract Map.

The proposed project represents a complete revision and redesign of previously approved and recorded Tract 10692. As a result of a directive from the Orange County Planning Commission in January 1995, the original project was revised in consideration of changed circumstances and new information of environmental significance not previously considered in EIR 078. The current project design is a result of numerous meetings with interested citizens, resource agencies and adjacent property owners from 1995 to the present.

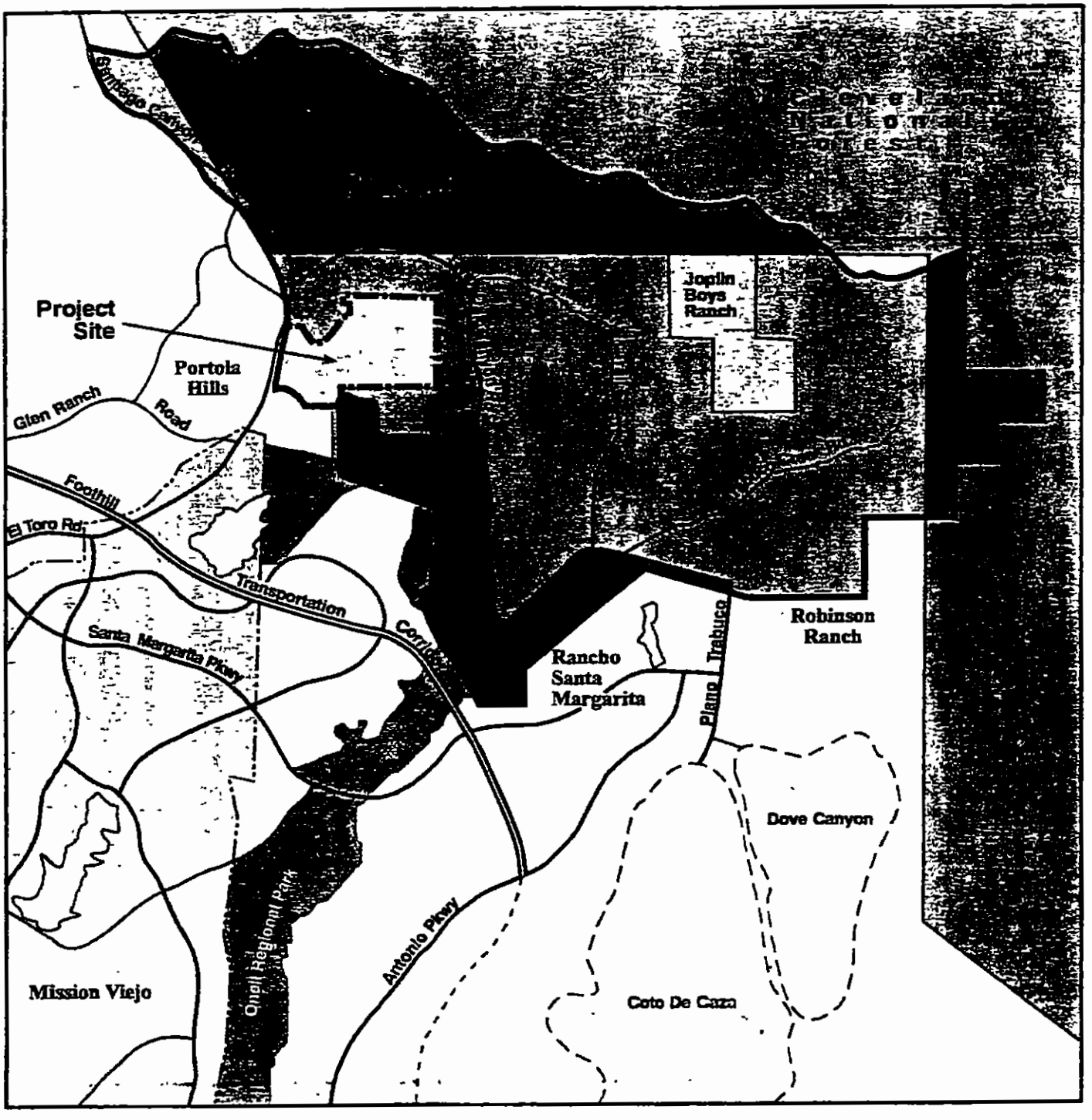
The project site is located within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan, approximately 1/2-mile southerly of the El Toro Road/Live Oak Canyon Road intersection. Implementation of the proposed project would directly effect 149.0-acres of the project site, or 65 percent, including remedial grading. In addition to on-site grading, 2.04-acres of offsite area would be effected for access road construction and remedial grading.



Map Not to Scale
Source . DRC, 1998

HDR

Exhibit 1
Regional Location Map
Saddleback Meadows



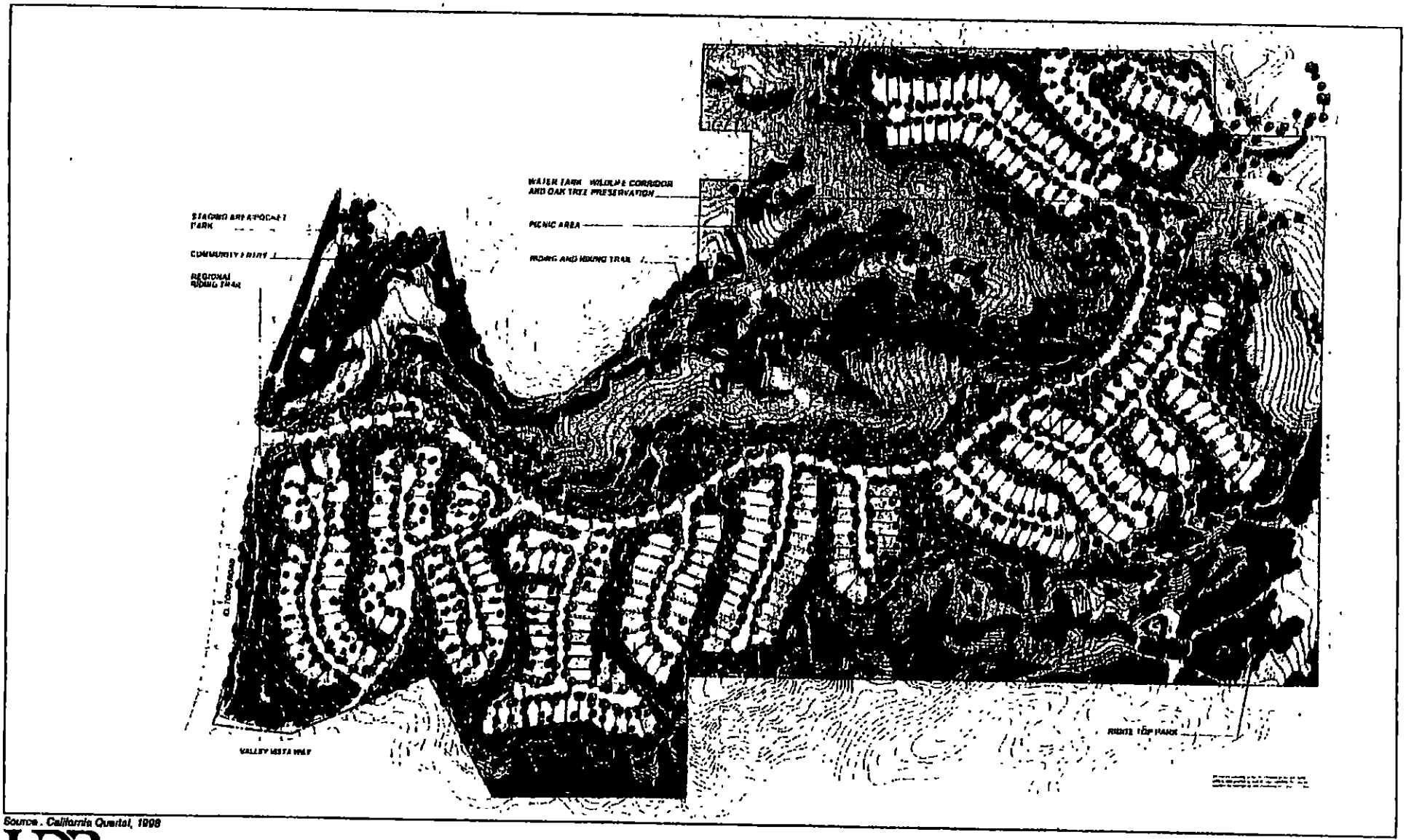
Map Not to Scale

HDR

Exhibit 2

Project Vicinity Map

Saddleback Meadows



Source: California Quartal, 1998

HDR

Exhibit 3
Illustrative Site Plan
Saddleback Meadows

A total of 8.6 million cubic yards of grading would be required to implement the project. The following table outlines a comparison between the current and previously submitted project:

Recorded/Proposed Project Comparison

Features	Proposed Project	Previously Approved Recorded Tract 10692
Dwelling Units	299	705
Minimum Lot Size	5,000 sf	3,200 sf
Gross Density	1.4 du/ac	3.03 du/ac
% Open Space	71%	31%
Wildlife Corridor	Yes	No

III. SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS

Based on the Initial Study prepared for the proposed project (see Section VIII), project implementation could result in significant impacts to one or more of the following:

- Air quality
- Biological resources
- Aesthetics
- Cultural/scientific resources
- Recreation
- Hazards

It is anticipated that with the implementation of appropriate mitigation measures, impact for the following environmental resources will be less than significant: land use and planning, geophysical, hydrology and drainage, water quality, noise, public services and utilities. The Initial Study concludes that less than significant or no impact will result to: agricultural resources, population and housing, transportation, and mineral resources.

IV. ALTERNATIVES TO BE EVALUATED IN THE DRAFT EIR

In accordance with Section 15126.6 of the *CEQA Guidelines*, the EIR will define and evaluate project alternatives that have the potential to meet the primary objectives of the proposed project and reduce any significant environmental impacts of the project. The lead agency has determined that the following alternatives to the proposed project are reasonable alternatives

to be discussed in the EIR:

- **No Development Alternative:** This alternative would leave the proposed site in its existing condition.
- **No Project Alternative:** This alternative would not allow any change from existing entitlements on the project site for 705 manufactured units.
- **F/TSP EIR 531 Staff Alternative A:** This alternative would allow 150 units with a minimum lot size of 20,000 square feet.
- **F/TSP EIR 531 Staff Alternative B:** This alternative would reduce the number of dwelling units on the project site to no more than 100 on approximately 30 acres.
- **Cluster/Single Family/Multi Family Residential Alternative:** This alternative would feature 318 detached and attached dwelling units, within a reduced development impact area (110.5 acres).
- **44/178 Alternative:** This alternative would allow 127 single-family units on a 44-acre "Development Parcel." The alternative would also feature a 178-acre "Conservation Area" parcel.
- **Acquisition Alternative:** This alternative would involve the County and adjacent landowners purchasing the property from the developer. Subsequent to acquisition, the property would be placed in a permanent open space reserve.
- **Golf Course Alternative:** This alternative would feature an 18 hole target style golf course on 150-acres, avoiding sensitive habitat areas wherever possible. Alternative may also include a small lodge/hotel and conference retreat center and resort casitas linked to the conference center.

V. MANDATORY FINDINGS

As required by CEQA, mandatory findings are determined to be made by the lead agency to determine not only whether an EIR must be prepared, but also to identify the effects to be analyzed in the document.

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

Potential significant effect. Based on previously prepared studies, several sensitive species exist within the proposed project site. The proposed project has the potential of significantly affecting the range of wildlife that may currently use this property as a wildlife movement corridor.

b) Does the project have the potential to achieve the short-term environmental goals to the disadvantage of the long-term environmental goals?

Potential significant effect. The project has the potential to permanently impact existing biological, aesthetic and cultural resources that are unique to this area.

c) Does the project have possible environmental effects which are individually limited but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Potential significant effect. The proposed project could have significant cumulative effects on the air quality, and biological resources of the area.

d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than significant with mitigation. Project implementation could have substantial adverse effects on human beings in terms air quality and geotechnical hazards.

VI. DETERMINATION

Based on the Initial Study, the proposed project may have a significant effect on the environment that has not been analyzed in a previous CEQA document. Preparation of an EIR is therefore required. The following environmental topics will be addressed in the EIR:

- Land Use & Planning
- Geophysical
- Hydrology and Drainage
- Water Quality/Water Quality
- Transportation/Circulation
- Biological Resources
- Aesthetics
- Cultural/Scientific Resources
- Recreation
- Hazards

- Air Quality
- Noise
- Public Services
- Utilities & Service Systems

VII. CONTACT PERSON

Bill Grieman, Planner
Environmental & Project Planning Division
Planning and Development Services Department
County of Orange
300 N. Flower Street, Third Floor
Phone: (714) 834-5550
FAX: (714)834-6132

INITIAL STUDY

PROJECT TITLE: Saddleback Meadows

PROJECT NUMBER: PA 980103 **LEAD DIVISION: Current Planning**

INITIAL STUDY NUMBER: PA 980103

PROJECT PLANNER: Frank McGill **PHONE: (714) 834-2099**

CEQA PLANNER: Bill Grieman **PHONE: (714) 834-5175**

PROJECT LOCATION: Easterly side of El Toro Road, south of the "Y" intersection of Santiago Canyon Road and Live Oak Canyon Road.

PROJECT APPLICANT: California Quartet/TPG

ADDRESS: **777 Campus Commons Road, Suite 200**
Sacramento, CA 95825

PHONE: **(916) 482-7200**

PROJECT DESCRIPTION: Development of 299 single-family homes

DECISION MAKER: Board of Supervisors

SOURCES OF INFORMATION (as numbered on checklist): See Section VIII of the Initial Study.

RESPONSIBLE/TRUSTEE AGENCIES INVOLVED: U.S. Fish and Wildlife Service; U.S. Army Corps of Engineers; Calif. Department of Fish & Game

LAND USE ENTITLEMENT SUMMARY:

General Plan Land Use Designation: 1B

Zoning: S "Specific Plan" (F/TSP)

PREVIOUS ENVIRONMENTAL DOCUMENTATION (If Applicable): See Section I of the Initial Study.

INITIAL STUDY DATE: August 2, 2001

ENVIRONMENTAL ANALYSIS CHECKLIST

Project Number: PA 980103

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
1. LAND USE & PLANNING. Would the project:				
a) Conflict with general plan designation or zoning?	☐	☒	☐	☐
b) Conflict with applicable environmental plans or policies of agencies with jurisdiction over the project?	☐	☒	☐	☐
c) Disrupt or divide the physical arrangement of an established community (e.g. low income, minority)?	☐	☐	☐	☒
d) Conflict with adjacent, existing or planned land uses?	☐	☒	☐	☐
2. AGRICULTURE. Would project:				
a) Convert Farmlands listed as "Prime", "Unique" or of "Statewide Importance," as shown on the State Farmland Mapping and Monitoring Program, to non-agricultural use?	☐	☐	☐	☒
b) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☒
3. POPULATION & HOUSING. Would project:				
a) Cumulatively exceed adopted regional or local population projections?	☐	☐	☐	☒
b) Induce substantial growth in an area directly or indirectly through project in an undeveloped area or extension of major infrastructure?	☐	☐	☐	☒
c) Displace existing housing affecting a substantial number of people?	☐	☐	☐	☒
4. GEOPHYSICAL. Would project result in or expose people to impacts involving:				
a) Local fault rupture?	☐	☐	☒	☐
b) Seismicity ground shaking or liquefaction?	☐	☒	☐	☐
c) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
d) Landslides or mudslides?	☐	☒	☐	☐
e) Erosion, changes in topography or unstable soil conditions from excavation, grading or fill?	☐	☒	☐	☐
f) Subsidence of the land?	☐	☒	☐	☐
g) Expansive soils?	☐	☒	☐	☐
h) Unique geologic or physical features?	☐	☒	☐	☐
5. HYDROLOGY&DRAINAGE. Would the project:				
a) Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in manner which would result in:				
i) substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
ii) a substantial increase in the rate or amount of surface runoff in manner which would result in flooding on- or off-site?	☐	☒	☐	☐
b) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
c) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
d) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
6. WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of a local groundwater table level?	☐	☐	☒	☐
c) Otherwise substantially degrade water quality?	☐	☒	☐	☐
7. TRANSPORTATION/CIRCULATION. Would the project result in:				
a) Increased vehicle trips or traffic congestion beyond adopted policies and/or forecasts?	☐	☐	☒	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Safety hazards from design features (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☒	☐
d) Inadequate emergency access or access to nearby uses?	☐	☐	☒	☐
e) Insufficient parking capacity on-site or off-site?	☐	☐	☒	☐
f) Hazards or barriers for pedestrians or bicyclists?	☐	☐	☒	☐
g) Conflicts with adopted policies supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	☐	☐	☒	☐
h) Rail, waterborne or air traffic impacts?	☐	☐	☐	☒
i) Change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
8. AIR QUALITY. Would the project:				
a) Exceed any SCAQMD standard or contribute to air quality deterioration beyond projections of SCAQMD?	☒	☐	☐	☐
b) Expose sensitive population groups to pollutants in excess of acceptable levels?	☐	☒	☐	☐
c) Alter air movement, moisture, or temperature, or cause any change in climate?	☐	☐	☐	☒
d) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
9. NOISE. Would the project:				
a) Increase existing noise levels?	☐	☒	☐	☐
b) Expose people to noise levels exceeding adopted County standards?	☐	☒	☐	☐
c) If located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
10. BIOLOGICAL RESOURCES. Would the project impact:				
a) Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects, animals and birds)?	☒	☐	☐	☐
b) Locally designated species (e.g. heritage trees)?	☒	☐	☐	☐
c) Locally designated natural communities (e.g. oak forest, coastal habitat, etc.)?	☒	☐	☐	☐
d) Wetland habitat (e.g. marsh, riparian and vernal pool)?	☐	☒	☐	☐
e) Wildlife dispersal or migration corridors?	☐	☒	☐	☐
f) Adopted or proposed conservation plans and policies (e.g. Natural Community Conservation Plan or Resource Management Plan)?	☒	☐	☐	☐
11. AESTHETICS. Would the project:				
a) Affect a scenic vista or view open to the public?	☒	☐	☐	☐
b) Affect a designated scenic highway?	☒	☐	☐	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d) Create light or glare beyond the physical limits of the project site?	☐	☒	☐	☐

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
12. CULTURAL/SCIENTIFIC RESOURCES, Would the project:				
a) Disturb archaeo or paleo resources?	☒	☐	☐	☐
b) Affect historical resources?	☒	☐	☐	☐
c) Have the potential to cause a physical change which would affect unique ethnic cultural values?	☒	☐	☐	☐
13. RECREATION. Would project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☒	☐	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☒	☐	☐
c) Conflict with adopted recreational plans or policies?	☒	☐	☐	☐
14. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
15. HAZARDS. Would the project:				
a) Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Exposure of people to existing sources of health hazards?	☐	☐	☐	☒
d) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
e) For a project within the vicinity of private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures to a significant risk or loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☒	☐	☐	☐
16. PUBLIC SERVICES. Would project result in need(s) for new/altered government facilities/services in:				
a) Fire protection?	☐	☒	☐	☐
b) Police protection?	☐	☒	☐	☐
c) Schools?	☐	☒	☐	☐
d) Maintenance of public facilities, including roads?	☐	☒	☐	☐
e) Other government services?	☐	☒	☐	☐
17. UTILITIES & SERVICE SYSTEMS. Would project result in needs for new or substantial alterations in:				
a) Power or natural gas?	☐	☒	☐	☐
b) Communications systems?	☐	☒	☐	☐
c) Local or regional water treatment or distribution facilities?	☐	☒	☐	☐
d) Sewer or septic tanks?	☐	☒	☐	☐
e) Solid waste disposal?	☐	☒	☐	☐

ISSUES & SUPPORTING DATA SOURCES:	Potential Significant Effect	Less than Significant w/ Mitigation	Less than Significant Impact	No Impact
MANDATORY FINDINGS :				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have the potential to achieve the short-term environmental goals to the disadvantage of the long-term environmental goals?	☒	☐	☐	☐
c) Does the project have possible environmental effects which are individually limited but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
d) Does project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly	☐	☒	☐	☐

DETERMINATION:

Based upon the evidence in light of the whole record documented in the attached environmental checklist explanation, cited incorporations and attachments, I find that the proposed project:

COULD NOT have a significant effect on the environment, and a negative declaration (ND) will be prepared pursuant to CEQA Guidelines Article 6, 15070 through 15075. ☐

COULD have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures have been added to the project. A negative declaration (ND) will be prepared pursuant to CEQA Guidelines Article 6, 15070 through 15075. ☐

MAY have a significant effect on the environment which has not been analyzed previously. Therefore, an environmental impact report (EIR) is required. ☒

Signature: _____

Planner: Bill Gnemmi
Environmental & Project Planning Division
Telephone: (714) 834-5550

NOTE: All referenced and/or incorporated documents may be reviewed by appointment only, at the County of Orange Planning & Development Services Department, 300 N. Flower Street, Santa Ana, California, unless otherwise specified. An appointment can be made by contacting the CEQA Contact Person identified above.

VIII. ENVIRONMENTAL ANALYSIS AND EXPLANATION OF CHECKLIST REPONSES

This Initial Study has been conducted pursuant to Section 15060 of the *CEQA Guidelines* and the County of Orange CEQA procedures. The following discussion provides information to substantiate the responses in the foregoing Orange County Environmental Analysis Checklist. For each environmental category, the discussion is outlined to address the: (1) existing setting; (2) potential impacts; and (3) scope of the EIR discussion. The scope of the EIR will be refined, as appropriate, upon completion of the public scoping process including input from responsible agencies and the public.

As encouraged by CEQA, source references used to substantiate the checklist are referenced following each topical area. A list of references in included at the end of the checklist summary on this Initial Study in Section IX.

1. LAND USE & PLANNING

Source References (see Section IX): 3, 7, 8

Existing Setting

The project site is situated within the Foothill/Trabuco Specific Plan (F/TSP) planning area. The 6,500 acres of the F/TSP area are situated within the foothills of the Santa Ana Mountains and are characterized by abundant natural and scenic resources, and primarily low-density residential and open space land uses. The project site is currently undeveloped; however, it has been used for agriculture and cattle grazing since the 1940's.

The entire 222.2-acre Saddleback Meadows project site is currently zoned S "Specific Plan" (Foothill/Trabuco Specific Plan) with an SR "Sign Restriction" overlay district. The Specific Plan designation for the site is BWR "Bridlewood Residential" District. The BWR District was established within the F/TSP, adopted December 1991, to recognize the existing zoning and tract map approvals for the Bridlewood/Saddleback Meadows property. The General Plan Land Use Element (LUE) designation for the project site is 1B "Suburban Residential" (0.5 to 18 dwelling units per acre).

Surrounding land uses include: (1) St. Michael's Abbey, Cooks Corner, natural open space, Cleveland National Forest, Live Oak Plaza, Santiago Canyon Estates, and low density residential to the north; (2) Hidden Hills/Hidden Ridge developments, Painted Trails development, O'Neill Regional Park, and the Ramakrishna Monastery to the south; (3) low density residential, a church, and natural open space to the east; and (4) Portola Hills and Foothill Ranch communities, and Aliso

Creek to the west.

Potential Impacts

Potential impacts which may result if the project is developed include: the introduction of 299 detached single-family residential units and related major infrastructure improvements into an area previously used primarily for open space and agricultural uses, and potential conflicts with existing surrounding land uses. Implementation of the proposed project would result in construction of only 45 percent of the units allowed by the current zoning and General Plan land use designations.

The circumstances regarding surrounding land uses have changed since the previous EIRs were certified and the original project was approved. When EIRs 059 and 078 were certified, the vicinity of the project, with the exceptions of St. Michael's Abbey and the Ramakrishna Monastery, was characterized by an undeveloped, predominantly natural environment. The project site, although disturbed by farming and cattle grazing activities, was dominated by grasslands, coastal sage scrub, and oak woodlands. The closest urban development was approximately four miles south of the site near the El Toro/Trabuco Road intersection. The project vicinity has become more urban since the original approvals with residential developments to the north, west, and south. It is now characterized by major residential development, including the Portola Hills Planned Community, the Hidden Ridge project and Foothill Ranch. With the changes that have taken place since the original project was approved, there is a question of the project's compatibility with surrounding uses.

Scope of EIR Discussion

The land use section of the EIR will include a detailed discussion of the following:

- The project's consistency with the General Plan and F/TSP.
- Project consistency with applicable regional plans.
- Potential land use compatibility conflicts with surrounding land uses.
- Recommendation of mitigation measures to reduce or avoid significant land-use related impacts.
- Identification of unavoidable and cumulative land use impacts.

2. AGRICULTURE

Source References (see Section IX): 1, 7, 8

Existing Setting

Orange County has historically been a rural community supported by an agricultural economy. During the 1960's and 1970's, the County experienced a sharp decline in agriculture production as the urban development grew. Growth projections through 2000 indicate the continued urbanization of Orange County. In 1965, the Williamson Act was adopted in response to the increasing pressures on agricultural land. Under the Williamson Act, agricultural land can be held within agricultural preserves in order to protect these lands from urban development.

The project site is largely undeveloped. Portions of the site have historically been used for cattle grazing. The project site is not located in an area identified as important farmland as classified by the Department of Conservation, Farmland Mapping and Monitoring Program. The project site is designated as "other lands," which is defined as "land which does not meet the criteria of any other category including low-density rural developments, wetlands, dense brush and timberlands...."

Potential Impacts

Development of the proposed project will not convert farmlands listed as Prime Unique, or of Statewide Importance to non-agricultural uses. Moreover, none of the property is bound by a Williamson Act Contract as an agricultural preserve. Implementation of the proposed project will eliminate the existing use of portions of the site for cattle grazing. On a County-wide basis, the number of acres lost to this use is considered minimal and incremental, and less than significant.

Scope of EIR Discussion

The potential impact of the proposed project on agricultural resources is determined to be less than significant. This topical area will not be addressed in the EIR.

3. POPULATION & HOUSING

Source References (see Section IX): 2, 6, 7, 8

Existing Setting

The County of Orange General Plan Housing Element, adopted September 14, 1993, outlines specific goals, policies and programs to facilitate development of housing in unincorporated

areas. For analytical purposes, the region has been broken into units called Regional Statistical Areas (RSAs). The project site is located in RSA C-43. As of 1999, RSA C-43 had a population of 190,000 with a 2000 projection of 212,700. The total population for Orange County is 2,846,289 (2000). Projected population for the County in 2010 is 3,105,300. The eastern and southern areas of the County, including RSA C-43, are expected to realize the largest populations gains. Subsequently, new development reflects this trend and approximately 57 percent of residential construction will be in south County. The average household size in unincorporated Orange County in 1999 was 2.58.

Potential Impacts

Approximately 299 single-family housing units will be constructed under the proposed project, which would result in an increase of approximately 771 new residents for the County. This compares to the approved 705 manufactured homes, which would result in approximately 1,819 new residents. The proposed project is not expected to cumulatively exceed adopted regional or local population projections, in fact, a reduction in the number of planned residential units would occur.

Infrastructure to serve the proposed project will only be extended to meet the needs of the development. Capacities will not be upgraded beyond what is needed to meet the development of the area in accordance with the adopted F/TSP. The project, therefore, will not be growth inducing.

Project implementation will not displace existing, occupied housing.

Scope of EIR Discussion

The potential impact of the proposed project on population and housing is determined to be less than significant. This topical area will not be addressed in the EIR.

4. GEOPHYSICAL

Source references (see Section IX): 4, 7, 8

Existing Setting

The proposed project site is located within the Canada De Los Alisos in the low coastal foothills of the Santa Ana Mountains These hills are part of the Peninsular Ranges Geomorphic Province and are generally underlain by sedimentary bedrock of Tertiary age. Ridges, ravines, and gullies form the dominant physiographic features, provide moderate to high topographic relief. Elevations above mean sea level range from approximately 1,000 to 1,550 feet. Natural slope gradients range from nearly level along some ridge crests and valley bottoms to 1:1 (horizontal:vertical) within deeply incised gullies. The site drains generally toward the west and southwest into Aliso Creek and Oso Creek tributaries of San Juan Creek.

Approximately 43 percent of the project site is in the 0 to 25 percent slope category, 43 percent is in the 26 to 50 percent slope category and 14 percent of the project site has slopes exceeding 50 percent.

On-site bedrock consists of a thick sequence of interbedded, fine- to course-grained sandstone and siltstone. Ancient to active landslides underlie much of the project area. Recent and older alluvial deposits are confined to the major gullies and Aliso Creek drainage. Topsoil and colluvium mantel the bedrock and landslides throughout most of the site. Fill soils underlie areas where man-made features, such as roads and berms associated with livestock ponds, were constructed.

The closest, major active fault is the Whittier-Elsinore Fault Zone, located approximately eight miles to the northeast of the F/TSP area. The Aliso Fault, located along the F/TSP southwest boundary is classified as potentially active, but considered to have a low potential for activity within the F/TSP area. The likelihood of surface faulting within the F/TSP area is considered minimal. The primary seismic hazard potentially affecting the project site, as well as most other sites in southern California, is ground shaking due to an earthquake on a major regional fault.

Potential Impacts

Potential impacts which may result if the project is developed include substantial short-term changes of the site's landforms and topographical features particularly during grading activities. In the long-term, the project proposes site reconfiguration to reflect the site's natural land form features, and related impacts on the soil stability of the site. During

construction, erosion and siltation of soils may also occur. The proposed project will also introduce new structures and residents into the seismically active, southern California area.

Grading activities on the project site could result in sediment being carried into the Aliso Creek Corridor and downstream ultimately to Aliso Beach.

Scope of EIR Discussion

Various geotechnical studies have been prepared for the proposed project. The geophysical section of the EIR will document the findings and recommendation of the technical reports, which will be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Proposed grading in areas previously designated for preserved open space areas.
- Identification of soil and geologic characteristics and limitations of the project site, including soil stability, earthquake potential and known geologic hazards, including landslides, mudslides, ground failures and similar hazards for the entire site.
- Identification of the seismic features of the site, including the potential exposure of people or property to environmental impacts of the proposed project associated with earthquakes, liquefaction or similar hazards.
- The potential environmental impacts of the proposed project on the existing site topography and unique geologic or physical features.
- Mitigation measures necessary to reduce geophysical impacts to a level of insignificance.
- Identification of unavoidable and cumulative geophysical impacts.

5. HYDROLOGY & DRAINAGE

Source references (see Section IX): 4, 7, 8

Existing Setting

There are three major drainage areas within the F/TSP area: Aliso Creek Drainage, Oso Creek Drainage, and Trabuco Creek Drainage. The proposed project site is within the Aliso Creek and Oso Creek Drainage areas. Approximately 75 percent of the project site drains into Aliso Creek, with the remaining 25 percent draining into Oso Creek. The on-site project drainage has not been modified and remains in a natural state; however, embankments were

constructed across several minor tributaries in order to impound water, presumably to provide watering holes for the cattle. As many as eight ponds have been identified on-site; however, one of the ponds has breached and another pond has been completely filled with silt. In addition, some improvements have been made to sections of Aliso Creek, adjacent to the site, including a major man-made drainage channel. This channel passes from the proposed site to the westerly side of El Toro Road.

The area of Aliso Creek Corridor is classified as Floodplain FP-2 by the Federal Emergency Management Agency (FEMA).

Potential Impacts

Potential impacts which may result if the project is implemented include changes in absorption rates, alteration of the project site's existing landform, subsequently altering the existing flow of water onto, through, around and off the project site. During construction the disruption of soils may also affect the content of site run-off into the watershed area of Aliso Creek. Groundwater levels and quality, including absorption rates, may be affected by the proposed project. Potential impacts include pollutant discharges into Aliso Creek. The National Pollution Discharge Elimination System (NPDES) is a regulatory program required by the Clean Water Act and administered by OCEMA, which addresses water quality issues.

Scope of EIR Discussion

Various hydrology studies have been prepared for the proposed project. The hydrology and drainage section of the EIR will document the findings and recommendations of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Identification and quantification of the current surface water and groundwater drainage patterns and water flows within, and adjacent to, the project site.
- Identification and quantification of the portion of the project site or off-site area that will be impacted by proposed project currently located within FEMA's FP-2 floodplain designation.
- Identification and quantification of the current surface water and groundwater quality within, and adjacent to, the project site, including existing on-site discharges into drainage channels.
- Identification of significant changes in the course or direction of water movements.
- Identification of changes in absorption rates, drainage patterns, or the rate and amount of surface water run-off.

- Identification of changes in erosion or changes in siltation which may modify the channel of Aliso Creek.
- Identification of changes in the amount of surface water as a result of any proposed storm drain retarding basins.
- Identification of changes in the quantity or quality of groundwater.
- Identification of the potential environmental impacts of the proposed project on wind or water erosion of soils, on-site or off-site.
- Identification of alterations to the course, flow or magnitude of flood waters, and resultant exposure of people or property to flood hazards.
- Recommendation of mitigation measures necessary to reduce project impacts to a level of insignificance, including the development of Best Management Practices (BMP) for compliance with the Clean Water Act.
- Identification of unavoidable and cumulative water resource impacts.

6. WATER QUALITY

Source references (see Section IX): 4, 7, 8

Existing Setting

Water pollution control is regulated in California by the State Water Resources Control Board (SWRCB) and nine California Regional Water Quality Control Boards (RWQCBs). Each of the nine regional boards is required to adopt a Water Quality Control Plan or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the Region's ground and surface waters, and local water quality conditions and problems. The project site is located within the San Diego Basin and subject to the policies in the Water Quality Control Plan for that basin.

Based on information included in the EIR for the F/TSP, groundwater quality within each of the three drainage basins (Aliso Creek, Oso Creek, and Trabuco Creek) is of poor quality.

The discharge of pollutants into water is regulated by the state through the NPDES program. The County of Orange has adopted the Drainage Area Master Plan (DAMP) to satisfy the requirements of the NPDES program. Structural and non-structural Best Management Practices are required to control possible pollutant discharges to surface water.

Potential Impacts

Grading and construction activities will potentially result in short-term water quality impacts including increased erosion and sediment contribution to surface water. Improper handling of construction materials and/or equipment could result in accidental spills that could adversely affect water quality. Potential long-term water quality impacts include the addition of pollutants typical of urban runoff (such as pesticides, fertilizers, vehicle hydrocarbons, greases, oil, plastics, and litter) and the increase of on-site activities.

Scope of EIR Discussion

Various water quality studies have been prepared for the proposed project. The water quality section of the EIR will document the findings and recommendations of the technical reports, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Overview of existing groundwater quality, beneficial uses and regulatory environment.
- Identification of potential project impacts and pollutant sources that could affect surface or groundwater quality.
- Recommendation of mitigation measures to reduce or avoid significant water quality impacts, including the identification of structural and non-structural Best Management Practices.
- Identification of unavoidable and cumulative water quality impacts.

7. TRANSPORTATION/CIRCULATION

Source references (see Section IX): 4, 7

Existing Setting

The existing roadways that will serve the proposed project is El Toro Road and Valley Vista Way, located within the Hidden Ridge/Hidden Hills Community. The site's interior is natural and has no road access.

El Toro Road is classified as a Major Arterial Highway south of Live Oak Canyon Road in Orange County's Master Plan of Arterial Highways (MPAH).

Potential Impacts

The proposed project will generate additional vehicle trips that will contribute to local traffic particularly on El Toro Road. Traffic will also contribute to peak hour intersection traffic.

Scope of EIR Discussion

A transportation and circulation study is being prepared for the proposed project. The transportation and circulation section of the EIR will document the findings and recommendations of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- An inventory of existing area-wide conditions including current traffic volumes, roadway capacities and levels of service.
- Assessment of project related and cumulative impacts on area roadways and intersection operation and levels of service.
- Identification and analysis of the existing ingress and egress to the project site, its potential internal circulation and parking problems associated with the proposed development.
- Identification of existing impacts to equestrians, motor vehicles, bicyclists and/or pedestrians.
- Evaluation of the need for El Toro Road to be a primary arterial versus a major arterial.
- Identification of increases in demand for public transit services with special attention to relationship with low income housing for senior citizens and any potential conflicts

with planned roadway widenings or extensions.

- Identification of specific potential internal circulation problems and potential traffic hazards to motor vehicles, bicyclists and/or pedestrians which may result from the proposed project.
- Recommendation of mitigation measures necessary to reduce project traffic and circulation impacts to a level of insignificance.
- Identification of unavoidable and cumulative impacts to transportation and circulation resources.

8. AIR QUALITY

Source references (see Section IX): 7, 8

Existing Setting

The project site is located within the South Coast Air Basin (SCAB), which is generally characterized by poor air quality. SCAB falls under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). In conjunction with the Southern California Association of Governments (SCAG), SCAQMD is responsible for formulating and implementing air pollution controls. In 1997, SCAQMD's Air Quality Management Plan was adopted establishing a comprehensive air pollution control program leading to attainment of state and federal air quality standards. State and federal air quality standards are often exceeded within SCAB.

Potential Impacts

Potential impacts which may result if the project is developed include: generation of both short-term and long-term air quality impacts, both individually and cumulatively. Construction related emissions will be associated with the vehicle emissions of heavy construction equipment and fugitive dust from grading and other soil disturbance. The primary contribution to long-term emissions will result from vehicle emissions and increased trips generated by the project. Increased air emissions may also result in impacts on sensitive receptors in the project vicinity including St. Michael's Abbey and the Hillside Montessori School, and the exposure of persons to locally elevated levels of air pollution. Implementation of the project will not alter air movement, moisture, temperature, or cause a change in the climate. Moreover, there are no proposed land uses that will have the potential to create objectionable odors.

Scope of EIR Discussion

A project specific air quality study is being prepared for the proposed project. The air quality section of the EIR will document the findings and recommendations of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Identification of the existing air quality environment of the project site in the local and regional context.
- Identification of air quality impacts associated with construction of the proposed project.
- Assessment of the proposed project's consistency with the SCAQMD's Air Quality Management Plan (AQMP).
- Identification and quantification of long-term air quality impacts resulting from development of the proposed project.
- Identification and analysis of the potential sensitive receptors which may be exposed to pollutants in excess of acceptable levels.
- Recommendation of mitigation measures to reduce or avoid air quality impacts.
- Identification of unavoidable and cumulative air quality impacts.

9. NOISE

Source references (see Section IX): 4, 7, 8

Existing Setting

The project area is located in a relatively remote portion of eastern Orange County and partially developed with low-density single-family residences. The project site is primarily in its natural state with noise generated by existing land uses and vehicular trips is minor. Existing noise levels are primarily associated with traffic noise generated along primary roadways. The F/TSP stipulates a noise standard for the area that is more stringent than the more urban areas of the County. Mitigation measures for the F/TSP require that residential lots and dwellings be attenuated so as not to exceed an exterior standard of 60 dB CNEL (compared to the 65 dB County standard) and interior standard of 45 dB CNEL. The project is adjacent to El Toro Road, a major access road to O'Neill Regional Park.

Potential Impacts

Construction activities will involve heavy equipment and generate noise levels in excess of ambient levels in the project area. Long-term noise impacts will primarily be associated with an increase in vehicle trips and an incremental increase in traffic noise within the area.

Scope of EIR Discussion

A project-specific noise analysis is being prepared for the proposed project. The noise section of the EIR will document the findings of the technical report, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Analysis of short-term construction related noise impacts.
- Identification of nearby sensitive receptors, both human and nosier sensitive biotic communities.
- Analysis of stationary noise impacts and mobile source noise impacts on project vicinity residents and identified sensitive receptors. Evaluation of noise impacts in terms of ambient traffic or aircraft noise impacts on adjacent noise sensitive uses.
- Conformance requirements of project development with the Orange County General Plan Noise Element, and local and state regulations.
- Recommendation of mitigation measures necessary to reduce noise impacts to a level of insignificance.
- Identification of unavoidable and cumulative noise impacts.

10. BIOLOGICAL RESOURCES

Source References (see Section IX): 4, 7, 8

Existing Setting

The proposed project site is largely undeveloped, and annual grasslands cover over 50 percent of the site. Five types of native vegetation occur on the project site: Venturan-Diegan costal sage scrub, coast live oak woodland, southern mixed chaparral, southern sycamore riparian woodland, and mulefat scrub. Portions of the Venturan-Diegan costal sage scrub are disturbed. Agricultural land and ephemeral ponds also occur on the site.

Within these habitats, the following two sensitive plants were determined to potentially occur on the project site: Catalina mariposa lily (*Calochortus catalinae*) and intermediate mariposa lily (*Calochortus weedii* var. *intermedius*). There are known wildlife corridors within the project site. In addition, the following endangered, threatened, or rare animal species could occur within the project vicinity: Riverside fairy shrimp (*Streptocephalus woottoni*), western spadefoot toad (*Spea hammondi*), coastal whiptail (*Cnemidophorus tigris multiscutatus*), orange throat whiptail (*Cnemidophorus hyperythrus beldingi*), Cooper's hawk (*Accipter cooperii*), coastal cactus wren (*Campylorhynchus brunneicapillus*), loggerhead shrike (*Lanius ludovicianus*), southern California rufous-crowned sparrow (*Aimophila rucieps canescens*), and coastal California gnatcatcher (*Poplioptila californica*).

In addition, the project site is located within the watershed area of Aliso Creek Corridor. The Aliso Creek Corridor, which is located adjacent to the project site, is identified as a "blue line" stream by the United States Geologic Survey (USGS).

Potential Impacts

Grading and construction of the developed area will impact existing vegetation and potentially result in direct and indirect impacts to some of the sensitive plant and animal species identified that may occur in the area (as listed above). The project will also impact some coast live oaks. The proposed project also will potentially impact wildlife corridors and wetlands and related habitat resources.

Scope of EIR Discussion

Various project-specific biological assessments have been prepared for the proposed project. The biological resources section of the EIR will document the findings of the technical reports, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- General biological survey for wildlife and plant species with emphasis on potential habitat for sensitive species.
- Discussion of wildlife corridors.
- A detailed discussion of the proposed project's impacts to the Riverside fairy shrimp, including mitigation measures to avoid or reduce impacts.
- Assessment of the project's impacts on unique, sensitive, aesthetically significant, rare, threatened, or endangered flora and fauna within the project site, including oak tree groves and coastal sage scrub.
- Identification of impacts which might result from the removal of existing and intermittent ponds and the associated habitat for sensitive species, including the Riverside fairy shrimp, from the project site and off-site areas contiguous to project site.
- Recommendation of mitigation measures necessary to reduce all identified biological resource impacts to a level of insignificance.
- Identification of unavoidable and cumulative biological resource impacts.

11. AESTHETICS

Source references (see Section IX): 3

Existing Setting

The F/TSP area is recognized as an area characterized by visual resources unique to the County. Features that significantly contribute to the visual character of the area are identified in the F/TSP as: topography, natural vegetation, natural watercourses, and vistas and viewscape corridors. The F/TSP identifies public viewpoints based on relative visibility, significance or view corridors and/or important vistas. Additionally, per the County's Master Plan of Arterial Highways, El Toro Road is designated as a Scenic Highway.
The proposed project site is primarily in a natural state.

Potential Impacts

Potential aesthetic impacts which may result if the project is developed include the construction of slopes and retaining walls, and a significant alteration in the appearance of the site from offsite vantage points, including El Toro Road, which is designated a Scenic Highway. Aesthetic impacts are especially pronounced from the existing uses southerly and westerly of the project site.

Potential light and glare impacts which may result if the project is approved include: increased levels of exterior lighting and illumination, having the potential for adverse impacts upon residential neighborhoods and sensitive biotic communities.

Scope of EIR Discussion

The aesthetics section of the EIR will include viewshed impact simulations and also include the following analysis:

- Identify existing scenic vistas and views open to the public across the project site. Assess the obstruction of any scenic vista or view open to the public or the creation of any aesthetically offensive site open to public view.
- Complete a line of sight analysis of the project from El Toro Road, Hidden Ridge, Portola Hills, St. Michaels Abbey, Ramakrishna Monastery, and O'Neill Regional Park.
- Assess the current aesthetic importance of the project site and the aesthetic impact of the proposed project to other developments in the project vicinity.
- Evaluate and compare the potential aesthetic impacts associated with implementing the existing zoning and those associated with the proposed project. The narrative of this topical discussion must be supplemented by detailed simulation models of both the General Plan and the project.
- Recommendation of mitigation measures necessary to reduce aesthetic impacts to a level of insignificance.
- Identify of unavoidable and cumulative aesthetic impacts.

12. CULTURAL/SCIENTIFIC RESOURCES

Source references (see Section IX): 3, 7

Existing Setting

The project site is located within an area that is sensitive for cultural resources. Previously conducted cultural resources reports were prepared which indicated that there are prehistoric and historic sites recorded within the project boundaries. In addition, the project site is also located within an area with high potential to produce significant paleontological resources.

Potential Impacts

Grading could potentially result in alteration of or damage to significant archaeological, historical and/or paleontological resources on the project site.

Scope of EIR Discussion

Site-specific cultural resources reports have been conducted for the project site. The cultural resources section of the EIR will document the findings and recommendations of the technical reports, which will also be included as an appendix to the Draft EIR. The EIR discussion will include the following:

- Inventory existing significant archaeological and/or historical sites, structures, objects, or buildings located on the project site.
- Inventory potential paleontological sites.
- Evaluation of potential significant impacts to archaeological or historical sites, structures, objects, or buildings.
- Recommendation of mitigation measures necessary to reduce identified cultural/scientific resources to a level of insignificance.
- Identification of unavoidable and cumulative cultural/scientific resource impacts.

13. RECREATION

Source references (see Section IX): 7

Existing Setting

There are no existing recreation or public open space uses located on the project site. However, the proposed project site is located between O'Neill and Whiting Ranch/Limestone Regional Parks. A proposed trail is designated within the project site by the Orange County General Plan Recreation Element Master Plan of Regional Riding and Hiking trails.

Potential Impacts

The project represents a potential conflict with adopted recreational plans and policies, including the Aliso Creek Corridor Specific Plan, the General Plan Recreation Element and the Foothill/Trabuco Specific Plan.

Scope of EIR Discussion

The recreation section of the EIR will include a detailed discussion of the following:

- Identification of all currently planned recreational opportunities within the project site and the surrounding vicinity.
- Assessment of the impact of the proposed project on the quality and quantity of existing recreation opportunities.
- Evaluation and comparisons of the potential recreation impacts associated with implementing the existing zoning designations and those associated with the proposed project.
- Identification of mitigation measures necessary to reduce recreation impacts to a level of insignificance.
- Identification of unavoidable and cumulative recreation impacts.

14. MINERAL RESOURCES

Source references (see Section IX): 4, 7

Existing Setting

No known mineral resource exist on the project site. The project site is not designated as a know or potential mineral deposit by the state (mineral resource mapping as required under the Surface Mining and Reclamation Act) or the County of Orange.

Potential Impacts

The proposed project site is not located in an area identified as a mineral resource area, including mineral resources and energy resources. Implementation of the proposed project, therefore, will not result in the loss of availability of a known mineral resource that would be of future value to the region or the residents of the state. No locally important mineral resources are known to be present on or beneath the project site and implementation of the proposed project will not result in the loss of these minerals.

Scope of EIR Discussion

The proposed project will not result in a significant impact to mineral resources. This topical area will not be addressed in the EIR.

15. HAZARDS

Source references (see Section IX): 7, 8

Existing Setting

The project site is located close to the Cleveland National Forest, an area that is subject to high wild land fire hazards. When in operation, the site may also have been subject to hazards related to the flight operations at the El Toro Marine Corp Air Station (MCAS). The MCAS has been closed, and the facilities are currently being proposed for development of an international airport. No other sources of health hazards are known to exist within the project area.

Potential Impacts

Development of the project will introduce residents to a high fire hazard area. Development

and operation of a regional airport at MCAS could also expose residents to safety and accident hazards related to future flights from that airport. The project will not involve the use, storage or handling of hazardous materials.

Scope of EIR Discussion

The hazards section of the EIR will include a detailed discussion of the following:

- Identification of the current fire hazards, both on-site and within the project site vicinity.
- Identification of any existing emergency response plans for the project site and potential impacts of the project on such plans.
- Disclosure of the status and environmental findings related to potential hazards of the proposed international airport as the former MCAS site.
- Recommendation of mitigation measures necessary to avoid or reduce hazards to a level of insignificance.
- Identification of unavoidable and cumulative hazard impacts.

16. PUBLIC SERVICES

Source references (see Section IX): 7, 8

Existing Setting

The project site is undeveloped open space with limited use for cattle grazing. The project site is served by the following major public services:

- Fire and emergency services are provided by the Orange County Fire Authority. Station No. 42 located at 19150 Ridgeline Road, is approximately ½ mile from the project site, and provides primary response.
- Police protection is provided by the Orange County Sheriff-Coroner's Department. The Department's headquarters located at 550 N. Flower Street in Santa Ana. Patrol cars are in the vicinity of the project site on a regular basis patrolling the area, rather than being dispatched from a particular substation.
- Saddleback Unified School District, serving grades K-12 provides school services for the project area.

- Orange County Public Library serves the project site and vicinity. The closest library to the site is the Rancho Santa Margarita Branch Library located at 30902 La Promesa in Ranch Santa Margarita.

Potential Impacts

Implementation of the proposed project will introduce approximately 299 single-family dwelling units to the area. This increase may result in the need for additional fire and emergency medical and police personnel and equipment in order to service the project site and vicinity. Therefore, the proposed project may have a potential significant impact related to the ability of fire and police to provide adequate level of service. The proposed project will generate additional elementary, intermediate, and high school students. As stated above, the project site is located within the Saddleback Valley Unified School District, which is at maximum capacity. The introduction of new students into the already crowded district may result in a significant impact. Implementation of the project will also incrementally increase the demand for library services.

Scope of EIR Discussion

The services section of the EIR will provide a detailed discussion of the following:

- Evaluation of existing fire and police service levels and capacities and the adequacy of these providers to serve the proposed project including: personnel and equipment, availability, and response times.
- Assessment of project impacts related to Saddleback Valley Unified School District.
- Identification and assessment of impacts in the local library system.
- Recommendation of mitigation measures necessary to avoid or reduce public services impacts to a level of insignificance.
- Identification of unavoidable and cumulative public services impacts.

17. UTILITIES & SERVICE SYSTEMS

Source references (see Section IX): 7, 8

Existing Setting

The project site is undeveloped open space with limited use for cattle grazing. The project site is served by the following major public utilities and service systems:

- Southern California Edison (SCE) – electrical service
- Southern California Gas (SCG) Company – natural gas
- Trabuco Canyon Water District – sewer and water service
- Waste Management of Orange County – solid waste

Potential Impacts

The proposed development of approximately 299 single-family dwelling units will incrementally increase service requirements for electricity, gas, sewer, water, and solid waste.

Scope of EIR Discussion

The utilities and services sections of the EIR will include a detailed discussion of the following:

- Assessment of the adequacy and capacity of public utilities and service systems to serve the proposed project site.
- Demonstration of compliance with County requirements to reduce impacts to landfills.
- Recommendation of mitigation measures necessary to avoid or reduce all identified public utility and service system impacts to a level of insignificance.
- Identification of unavoidable and cumulative public services impacts.

IX. SOURCE REFERENCES

The following information sources have been referenced in preparation of the Initial Study. The source numbers correspond to the numbers within the respective environmental topics of

Section VIII.

(1) California Department of Conservation, *Farmland Mapping and Monitoring Program*, Orange County Important Farmland 1998, 1999.

(2) California Department of Finance, Demographic Research Unit, *City/County Population and Housing Estimates*, 2001. (http://www.dof.ca.gov)

(3) County of Orange, Environmental Management Agency, *Foothill/Trabuco Specific Plan*, adopted December 1991.

(4) County of Orange, Environmental Management Agency, Foothill/Trabuco Specific Plan Draft Environmental Impact Report, July 1991.

(5) County of Orange, Environmental Management Agency, *County of Orange General Plan Resources Element*, April 18, 1984.

(6) County of Orange, Environmental Management Agency, *County of Orange General Plan Housing Element*, adopted September 14, 1993.

(7) County of Orange, Planning and Development Services Department, *Draft Subsequent Environmental Impact Report No. 566 Saddleback Meadows*, June 1997.

(8) County of Orange, Planning and Development Services, Draft Environmental Impact Report Saddle Creek & Saddle Crest Projects, December 2000.

(9) Southern California Association of Governments (SCAG), *County Population and Household Projections*, September 16, 1999.

APPENDIX A.2

COMMENTS ON NOP/INITIAL STUDY

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Steve Nissen
DIRECTOR

Notice of Preparation

RECEIVED

AUG 10 2001

Environmental & Project Planning Services Division

August 6, 2001

To: Reviewing Agencies

Re: Saddleback Meadows
SCH# 1996121072

Attached for your review and comment is the Notice of Preparation (NOP) for the Saddleback Meadows draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Bill Grieman
Orange County Planning and Development Services Department
300 North Flower Street 3rd Floor
P.O. Box 4048
Santa Ana, CA 92702

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH#	1996121072
Project Title	Saddleback Meadows
Lead Agency	Orange County

Type	NOP Notice of Preparation
Description	The project proposes the phased development of 299-detached single-family residential units on a 222.2-acre site, located on the easterly side of El Toro Road (see Exhibits 1, 2 and 3). The gross residential density is 1.4 du/ac, with average lot sizes of 6,672 square feet and a minimum lot size of 5,000 square feet. Approximately 71 percent (158.6 acres) of the project site is proposed to reamin in open space. In addition to the residential component, the project also proposes a wildlife movement corridor, regional riding/hiking trail connections, and biological resource enhancement. The proposed project will also comply with the urban stormwater runoff requirements of the California Regional Water Quality Control Board, and water quality infiltration basins have been added to the project features. Project implementation requires the approval of a Zone Change Foothill/Trabuco Special Plan Amendment), Area Plan and Vesting Tentative Tract Map. The proposed project represents a complete revision and redesign of previously approved and recorded Tract 10692. The original project was revised in consideration of changed circumstances and new information of environmental significance not previously considered in EIR 078. The current project design is a result of numerous meetings with interested citizens, resource agencies and adjacent property owners from 1995 to the present.

Lead Agency Contact

Name	Bill Grieman		
Agency	Orange County Planning and Development Services Department		
Phone	714-834-5550	**Fax**	714-834-6132
email			
Address	300 North Flower Street 3rd Floor P.O. Box 4048		
City	Santa Ana	**State** CA **Zip** 92702	

Project Location

County	Orange		
City			
Region			
Cross Streets	East of El Toro Rd., South of the "Y" intersection of Santiago Canyon Rd. & Live Oak Canyon Rd.		
Parcel No.	856-071-81,91		
Township	**Range**	**Section**	**Base**

Proximity to:

Highways	241
Airports	
Railways	
Waterways	
Schools	
Land Use	General Plan Designation: 1B Zoning: S "Specific Plan" (F/TSP)

Project Issues	Air Quality; Biological Resources; Aesthetic/Visual; Agricultural Land; Recreation/Parks; Toxic/Hazardous; Water Quality; Drainage/Absorption; Traffic/Circulation; Landuse; Noise; Public Services
Reviewing Agencies	Resources Agency; Department of Conservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 5; Native American Heritage Commission; State Lands Commission; Caltrans, District 12; Department of Housing and Community Development; Caltrans, Division of Aeronautics; California Highway Patrol; State Water Resources Control Board;

Note: Blanks in data fields result from insufficient information provided by lead agency.

Document Details Report
State Clearinghouse Data Base

Regional Water Quality Control Board, Region 8

Date Received	08/06/2001	***Start of Review***	08/06/2001	***End of Review***	09/04/2001

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County: Orange

1996121072

SCH#

AUG-29-2001 10:04 FROM:ENVIRONMENTALPLNG 7148346132 TO:91213495175 P.018/025

Resources Agency

- [x] Resources Agency
  Nadell Gayou
- [ ] Dept. of Boating & Waterways
  Bill Curry
- [ ] California Coastal Commission
  Elizabeth A. Fuchs
- [x] Dept. of Conservation
  Ken Trott
- [ ] Dept. of Forestry & Fire Protection
  Allen Robertson
- [ ] Office of Historic Preservation
  Hans Kreutzberg
- [x] Dept of Parks & Recreation
  Resource Mgmt. Division
- [ ] Reclamation Board
  Pam Bruner
- [ ] S.F. Bay Conservation & Dev't. Comm.
  Steve McAdam
- [x] Resources Agency
  Nadell Gayou
  Dept. of Water Resources

Health & Welfare

- [ ] Health & Welfare
  Wayne Hubbard
  Dept. of Health/Drinking Water

Food & Agriculture

- [ ] Food & Agriculture
  Ted Ball
  Dept. of Food and Agriculture

Fish and Game

- [ ] Dept. of Fish & Game
  Scott Flint
  Environmental Services Division
- [ ] Dept. of Fish & Game
  Donald Koch
  Region 1
- [ ] Dept. of Fish & Game
  Banky Curtis
  Region 2
- [ ] Dept. of Fish & Game
  Robert Floerke
  Region 3
- [ ] Dept. of Fish & Game
  William Laudenslik
  Region 4
- [x] Dept. of Fish & Game
  Sandy Peterson
  Region 5, Habitat Conservation Program
- [ ] Dept. of Fish & Game
  Gabrina Gatchel
  Region 6, Habitat Conservation Program
- [ ] Dept. of Fish & Game
  Tammy Allen
  Region 6, Inyo/Mono, Habitat Conservation Program
- [ ] Dept. of Fish & Game
  Tom Napoli
  Marine Region

Independent Commissions

- [ ] California Energy Commission
  Environmental Office
- [x] Native American Heritage Comm.
  Debbie Treadway
- [ ] Public Utilities Commission
  Andrew Barnsdale
- [x] State Lands Commission
  Betty Silva
- [ ] Governor's Office of Planning & Research
  State Clearinghouse Planner
- [ ] Colorado River Board
  Gerald R. Zimmerman
- [ ] Tahoe Regional Planning Agency (TRPA)
  Lyn Barnett
- [ ] Office of Emergency Services
  John Rowden, Manager
- [ ] Delta Protection Commission
  Debby Eddy
- [ ] Santa Monica Mountains Conservancy
  Paul Edelman

Dept. of Transportation

- [ ] Dept. of Transportation
  IGR/Planning
  District 1
- [ ] Dept. of Transportation
  Vicki Rae
  Local, Development Review.
  District 2
- [ ] Dept. of Transportation
  Jeff Pulverman
  District 3
- [ ] Dept. of Transportation
  Jean Finney
  District 4
- [ ] Dept. of Transportation
  Lawrence Newland
  District 5
- [ ] Dept. of Transportation
  Marc Birnbaum
  District 6
- [ ] Dept. of Transportation
  Stephan J. Buswell
  District 7
- [ ] Dept. of Transportation
  Mike Slm
  District 8
- [ ] Dept. of Transportation
  Caroline Yee for Kata Walton
  District 9
- [ ] Dept. of Transportation
  Chris Sayre
  District 10
- [ ] Dept. of Transportation
  Lou Salazar
  District 11
- [x] Dept. of Transportation
  Alison Kennady
  District 12

Business, Trans & Housing

- [x] Housing & Community Development
  Cathy Creswell
  Housing Policy Division
- [x] Caltrans - Division of Aeronautics
  Sandy Hesnard
- [x] California Highway Patrol
  Lt. Dennis Brunette
  Office of Special Projects
- [ ] Dept. of Transportation
  Ron Helgason
  Caltrans - Planning
- [ ] Dept. of General Services
  Robert Sleppy
  Environmental Services Section

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
- [ ] Transportation Projects
  Ann Geraghty
- [ ] Industrial Projects
  Mike Tollstrup

- [ ] California Integrated Waste Management Board
  Sue O'Leary
- [ ] State Water Resources Control Board
  Diane Edwards
  Division of Clean Water Programs
- [x] State Water Resources Contl Board
  Greg Frantz
  Division of Water Quality
- [ ] State Water Resources Contr Board
  Mike Falkenstein
  Division of Water Rights
- [ ] Dept. of Toxic Substances C
  CEQA Tracking Center

Regional Water Quality Cont Board (RWQCB)

- [ ] RWQCB
  Cathleen Hudson
  North Coast Region (1)
- [ ] RWQCB
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] RWQCB
  Central Coast Region (3)
- [ ] RWQCB
  Jonathan Bishop
  Los Angeles Region (4)
- [ ] RWQCB
  Central Valley Region (5)
  - [ ] RWQCB
    Central Valley Region (5
    Fresno Branch Office
  - [ ] RWQCB
    Central Valley Region (5
    Redding Branch Office
- [ ] RWQCB
  Lahontan Region (6)
  - [ ] RWQCB
    Lahontan Region (6)
    Victorville Branch Office
- [ ] RWQCB
  Colorado River Basin Region
- [x] RWQCB
  Santa Ana Region (8)
- [ ] RWQCB
  San Diego Region (9)

Attachment F

DEPARTMENT OF TRANSPORTATION

DISTRICT 12
3337 Michelson Drive Suite CN 380
Irvine, CA 92612-8894

August 30, 2001

Mr. Bill Grieman
County of Orange
Planning and Development Services Department
P.O. Box 4048
Santa Ana, CA 92702

File: IGR/CEQA
SCH#: 1996121072
Log #: 952

Subject: **NOP for Saddleback Meadows DEIR #566**

Dear Mr. Grieman,

Thank you for the opportunity to review on the above project. The project site is located east of El Toro Road, and south of the "Y" intersection of Santiago Canyon Road and Live Oak Canyon Road. The nearest state route is the SR-241 tollroad.

The project consists of a phased development of 299 single-family residences on a 222.2-acre site. The project also includes a proposed wildlife corridor, regional hiking/biking trail connections, and biological resource enhancement. Water quality infiltration basins have been included in the project.

Caltrans District 12 status is a reviewing agency on this project and has reviewed the NOP for DEIR #566 dated August 6, 2001 and has no comments at this time.

Caltrans is always available to provide assistance and information on transportation issues to our communities as they continue to grow and prosper.
Please continue to keep us informed of this project and other future developments, which could potentially impact our transportation facilities. If you have any questions or need to contact us, please do not hesitate to call Maureen El Harake at (949) 724-2086.

Sincerely,

Robert F. Joseph, Chief
IGR/Community Planning

c: Ron Helgeson, HDQRTRS Planning
Grace Pina-Garrett, Design, NPDES Unit

Attachment F

STATE OF CALIFORNIA Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

August 31, 2001

Bill Grieman
Orange County Planning and Development Services Department
P.O. Box 4048
Santa Ana, CA 92702

RE: SCH# 1996121072– Saddleback Meadows

Dear Mr. Grieman:

The Native American Heritage Commission has reviewed the above mentioned NOP To adequately assess the project-related impact on archaeological resources, the Commission recommends the following actions be required:

- ✓ Contact the appropriate Information Center for a record search. The record search will determine:
  - Whether a part or all of the project area has been previously surveyed for cultural resources.
  - Whether any known cultural resources have already been recorded on or adjacent to the project area.
  - Whether the probability is low, moderate, or high that cultural resources are located within the project area.
  - Whether a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The report containing site significance and mitigation measurers should be submitted immediately to the planning department.
  - The site forms and final written report should be submitted within 3 months after work has been completed to the Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check.
  - A list of appropriate Native American Contacts for consultation concerning the project site and assist in the mitigation measures.
- ✓ Provisions for accidental discovery of archeological resources:
  - Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) §15064.5 (f).
- ✓ Provisions for discovery of Native American human remains
  - Health and Safety Code §7050.5, CEQA §15064.5 (e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents.

If you have any questions, please contact me at (916) 653-4040.

Sincerely,

Rob Wood
Associate Governmental Program Analyst

CC. State Clearinghouse

California Regional Water Quality Control Board

San Diego Region

Internet Address: http://www.swrcb.ca.gov/~rwqcb9/
9771 Clairemont Mesa Boulevard, Suite A, San Diego, California 92124-1324
Phone (858) 467-2952 • FAX (858) 571-6972

August 7, 2001

County of Orange
Planning & Development Services Department
300 N. Flower Street
P.O. Box 4048
Santa Ana, CA 92702-4048

ATTN: Bill Grieman

Subject: **Saddleback Meadows**

Dear Mr. Grieman,

We have received the subject documents and offer the following comments. We are also providing some additional information regarding the possible regulatory requirements for the subject project since this information has not been selected to be project-specific. Some of the information might not apply to this project.

We would like to see the following questions/concerns addressed in your Environmental Impact Report regarding the subject project:

a) Would the proposed project create a potentially significant adverse environmental impact to drainage patterns or the rate, or quantity of surface water and runoff?

b) Would the proposed project result in discharges into surface waters during or following construction, or in any way lead to a significant alteration of surface water quality including, but not limited to temperature, dissolved oxygen, turbidity or other typical urban storm water pollutants (e.g., metals, pathogens, synthetics, organics, sediment, nutrients, oxygen demanding substances.)?

c) Would the proposed project have a potentially significant adverse impact to groundwater flow though the alteration of pressure head (water table level) within the aquifer or though the interception of groundwater flow via cuts or excavation?

d) Would the proposed project result in the loss or degradation of any beneficial uses that have been designated for the water bodies that will be directly or indirectly affected by the project?

e) What mitigation measures are being proposed to eliminate or compensate for the adverse effects identified in (a) through (d) above?

Permits

There are six potential permits or approvals that might be needed from the Regional Quality Control Board during the life of a project. Additional information on these permits is provided to assist you in determining the permits that may be required for the proposed project; as well as to encourage project design modifications that may assist in obtaining all needed permits from the RWQCB or SWRCB.

During the construction and development phases of a project, the project could be subject to any one or more of four types of RWQCB permits or approvals. These include: (1) the Statewide National Pollutant Discharge Elimination System (NPDES) General Construction Activity Storm Water Permit, (2) the Clean Water Act 401 water quality Certification, (3) General Dewatering Permit, and (4) Dredging Permit. Upon completion of construction, and throughout the project's operational life, the project may be also subject to one or both of the following two types of RWQCB permits: (1) NPDES permit for any point source discharge of wastes to surface waters; and (2) State Waste Discharge Requirements (WDRs) for any waste discharge to land. Examples of discharges to land requiring WDRs include landfills, reclaimed water discharges from sewage treatment plants for irrigation purposes, sand and gravel operations, and animal confinement facilities.

Water quality degradation is regulated by the Federal National Pollutant Discharge Elimination System (NPDES) Program, established by the Clean Water Act, which controls and reduces pollutants to water bodies from point and non-point discharges. In California, the program is administered by the California Regional Water Quality Control Boards. The Regional Board issues NPDES permits for discharges to water bodies in the San Diego area, including Municipal (area- or county-wide) Storm Water Discharge Permits.

Construction SWPPP

Projects disturbing more than five acres of land during construction must be covered under the State NPDES General Permit for Discharges of Storm Water Associated with Construction Activity. This can be accomplished by filing a Notice of Intent (NOI). The project sponsor must propose and implement control measures that are consistent with this State Construction Storm Water General Permit, and with recommendations and policies of the local agency and the RWQCB.

Industrial SWPPP

Projects that include facilities with discharges of Storm Water Associated with Industrial Activity must be covered under the State NPDES General Permit for Discharges of Storm Water Associated with Industrial Activity. This may be accomplished by filing a Notice of Intent. The project sponsor must propose control measures that are consistent with this, and with recommendations and policies of the local agency and the RWQCB. In a few cases, the project sponsor may apply for (or the RWQCB may require) issuance of an individual (industry- or facility-specific) permit.

Municipal SWPPP

The RWQCB's San Diego Urban Runoff Municipal Permit requires San Diego area municipalities to develop and implement Storm Water Management Plans (SWMPs) The SWMPs must include a program for implementing new development and construction site storm water quality controls. The objective of this component is to ensure that appropriate measures to control pollutants from new development are: considered during the planning phase, before construction begins; implemented during the construction phase; and maintained after construction, throughout the life of the project.

Water Quality Certification

The RWQCB must certify that any permit issued by the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act (covering, dredging, or filling of wetlands) complies with state water quality standards. Section 401 Water Quality Certification, or waiver, is necessary for all 404 Nationwide Permits, reporting and non-reporting, as well as individual permits.

Wetlands enhance water quality through such natural functions as flood and erosion control, stream bank stabilization, and filtration and purification of contaminants. Wetlands also provide critical habitats for hundreds of species of fish, birds, and other wildlife; offer open space; and provide many recreational opportunities. Adverse Water quality impacts can occur in wetlands from construction of structures in waterways, dredging, filling, and, otherwise altering the drainage to wetlands.

All projects must be evaluated for the presence of jurisdictional wetlands. Destruction or impact to wetlands should be avoided. Water quality certification may be denied based on significant adverse impacts to "Waters of the State." The goals of the California Wetlands Conservation Policy, include ensuring "no overall net loss and achieving a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values." In the event wetland loss is unavoidable, mitigation will be preferably in-kind and on-site, with no net destruction of habitat value. Mitigation will preferably be completed prior to, or at least simultaneous to, the filling or other loss of existing wetlands.

Successful mitigation projects are complex tasks and difficult to achieve. This issue will be strongly considered during agency review of any proposed wetland fill. Wetland features or ponds created as mitigation for the loss of existing "jurisdictional wetlands" or "waters of the United States" cannot be used as storm water treatment controls.

CEQA requires monitoring of all mitigation efforts as a condition of project approval. Although monitoring programs are not required to be included in environmental documents, it is helpful to know what sort of mitigation monitoring the applicant intends to implement, and who will be accountable for seeing that any proposed mitigation's are successfully executed.

Project/ Site Planning

Evidence of filing for a NOI and development of a SWPPP should be a condition of development plan approval by all municipalities. Implementation of the SWPPP should be enforced during

construction via appropriate options such as citations, stop work orders, or withholding occupancy permits. Impacts identified should be avoided and minimized by developing and implementing the following.

The project should minimize impacts from project development by incorporating appropriate site planning concepts. This should be accomplished by designing and proposing site planning options as early in the project planning phases as possible. Appropriate site planning concepts to include, but are not limited to the following:

- Phase construction to limit areas and periods of impact.
- Minimize directly connected impervious areas.
- Preserve natural topography, existing drainage courses and existing vegetation.
- Locate construction and structures as far as possible from streams, wetlands, drainage areas, etc.
- Reduce paved area through cluster development, narrower streets, use of porous pavement and/or retaining natural surfaces.
- Minimize the use of gutters and curbs that concentrate and direct runoff to impermeable surfaces.
- Use existing vegetation and create new vegetated areas to promote infiltration.
- Design and lay out communities to reduce reliance on cars.
- Include, green areas for people to, walk their pets, thereby reducing build-up of bacteria, worms, viruses, nutrients, etc. in impermeable areas, or institute ordinances requiring owners to collect pets' excrement.
- Incorporate low-maintenance landscaping.
- Design and lay out streets and storm drain systems to facilitate easy maintenance and cleaning.
- Consider the need for runoff collection and treatment systems.
- Label storm drains to discourage dumping of pollutants into them.

Construction- Phase Management

Erosion Prevention

The project should minimize erosion and control sediment during and after construction. This should be done by developing and implementing an erosion control plan, or equivalent plan. This plan should be included in the SWPPP. The plan should specify all control measures that will be used or which are anticipated to be used, including, but not limited to, the following:

- Limit access routes and stabilize access points.
- Stabilize denuded areas as soon as possible with seeding, mulching, or other effective methods.
- Protect adjacent properties with vegetative buffer strips, sediment barriers, or other effective methods.
- Delineate clearing limits, easements, setbacks, sensitive areas, vegetation and drainage courses by marking them in the field.
- Stabilize and prevent erosion from temporary conveyance channels and outlets.
- Use sediment controls and filtration to remove sediment from water generated by dewatering or collected on-site during construction. For large sites, stormwater settling basins will often be necessary.
- Schedule grading for the dry season (May-Sept.)

Chemical and Waste Management

The project should minimize impacts from chemicals and wastes used or generated during construction. This should be done by developing and implementing a plan or set of control measures. The plan or control measures should be included in the Storm Water Pollution Prevention Plan. The plan should specify all control measures that will be used or which are anticipated to be used, including, but not limited to, the following:

- Designate specific areas of the site, away from streams or storm drain inlets, for storage, preparation, and disposal of building materials, chemical products, and wastes.
- Store stockpiled materials and wastes under a roof or plastic sheeting.
- Store containers of paint, chemicals, solvents, and other hazardous materials stored in containers under cover during rainy periods.
- Berm around storage areas to prevent contact with runoff.
- Cover open Dumpsters securely with plastic sheeting, a tarp, or other cover during rainy periods
- Designate specific areas of the site, away from streams or storm drain inlets, for auto and equipment parking and for routine vehicle and equipment maintenance.
- Routinely maintain all vehicles and heavy equipment to avoid leaks.

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

- Perform major maintenance, repair, and vehicle and equipment washing off-site, or in designated and controlled areas on-site.
- Collect used motor oil, radiator coolant or other fluids with drip pans or drop cloths. Store and label spent fluids carefully prior to recycling or proper disposal.
- Sweep up spilled dry materials (cement, mortar, fertilizers, etc.) immediately—do not use water to wash them away.
- Clean up liquid spills on paved or impermeable surfaces using "dry" cleanup methods (e.g., absorbent materials, cat litter, rags) and dispose of cleanup materials properly.
- Clean up spills on dirt areas by digging up and properly disposing of the soil.
- Keep paint removal wastes, fresh concrete, cement mortars, cleared vegetation, and demolition wastes out of gutters, streams, and storm drains by using proper containment and disposal.

We appreciate the opportunity to comment on the subject environmental document and look forward to your response. If you have any questions regarding our concerns or questions, please do not hesitate to contact me at (858) 467-2705 or at lemop@rb9.swrcb.ca.gov.

Sincerely,

Paul Lemons

Attachment E

South Coast
Air Quality Management District
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 · http://www.aqmd.gov

RECEIVED

AUG 13 2001

Environmental & Project Planning Services Division

August 8, 2001

Mr. Bill Grieman
County of Orange
Planning & Development Services Dept.
P.O. Box 4048
Santa Ana, CA 92702-4048

Dear Mr. Grieman:

Notice of Preparation of a Draft Environmental Impact Report for Saddleback Meadows

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The AQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR).

Air Quality Analysis

The AQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The AQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the AQMD's Subscription Services Department by calling (909) 396-3720.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be considered. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the evaluation. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the AQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources

AQMD rules and relevant air quality reports and data are available by calling the AQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the AQMD's World Wide Web Homepage (http://www.aqmd.gov)

The AQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Dr. Charles Blankson, Transportation Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Steve Smith

Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

ORC010807-01LI
Control Number

San Joaquin Hills
Corridor Agency

Chairman
Joel Lautenschleger
Laguna Hills

TRANSPORTATION CORRIDOR AGENCIES

Foothill/Eastern
Corridor Agency

Chairman
Susan Withrow
Mission Viejo

August 30, 2001

Manager
Environmental Planning Services Division
300 North Flower Street, Room 321
Box 4048
Santa Ana, CA 92702-4048

Subject: Notice of Intent to Prepare Environmental Impact Report No. 566
Saddleback Meadows

Dear Mr. Grieman

The Transportation Corridor Agencies (TCA) received the above Notice of Intent to Prepare Environmental Impact Report No. 566 one day prior to the deadline of September 1, 2001. Given the short amount of time available to the TCA to review this document, the TCA will not be able to provide comment, however, would instead request review of the subject EIR when it becomes available. Please update your records to send all future correspondence to the following address:

Macie Cleary-Milan, Deputy Director
Environmental and Planning
Transportation Corridor Agencies
125 Pacifica, Suite 100
Irvine, CA 92618

Should you have any questions or comments regarding this letter, please contact me at 949/754-3475.

Sincerely,

Valarie McFall
Senior Environmental Analyst

cc: Macie Cleary-Milan

Walter D. Kreutzen, Chief Executive Officer

125 PACIFICA, SUITE 100 IRVINE CA 92618-3304 • PO BOX 53770 IRVINE CA 92619-3770 • 949/754-3400 FAX 949/754-3467
www.thetollroads.com

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SOUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

t (213) 236-1800
f (213) 236-1825

www.scag.ca.gov

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San Bernardino County: Jon Mikels, San Bernardino County • Bill Alexander, Rancho Cucamonga • David Eshleman, Fontana • Lee Ann Garcia, Grand Terrace • Bob Holcomb, Needles • Gwenn Norton-Perry, Chino Hills • Judith Valles, San Bernardino

Ventura County: Judy Mikels, Ventura County • Glen Becerra, Simi Valley • Hank De Haan, Thousand Oaks • Bob Yeager, Port Hueneme

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Bill Davis, Simi Valley

Printed on Recycled Paper SEP 7/1/01

August 30, 2001

Mr. Bill Grieman
County of Orange Planning and Development
Services Department
P. O. Box 4048
Santa Ana, CA 92702-4048

RE: SCAG Clearinghouse I20010480 Saddleback Meadows Project

Dear Mr. Grieman:

We have reviewed the above referenced document and determined that it is not regionally significant per Areawide Clearinghouse criteria. Therefore, the project does not warrant clearinghouse comments at this time Should there be a change in the scope of the project, we would appreciate the opportunity to review and comment at that time.

A description of the project will be published in the **September 1, 2001** Intergovernmental Review Report for public review and comment.

The project title and SCAG Clearinghouse number should be used in all correspondence with SCAG concerning this project. Correspondence should be sent to the attention of the Clearinghouse Coordinator If you have any questions, please contact me at (213) 236-1867.

Sincerely,

JEFFREY M. SMITH, AICP
Senior Planner
Intergovernmental Review

County of Orange

MEMO

DATE: August 2, 2001

TO: Distribution

FROM: Environmental Planning Services Division

SUBJECT: Notice of Preparation – Saddleback Meadows DEIR 566
Project Charge Number: PP53700

Please review the attached Notice of Preparation (NOP) for the proposed Saddleback Meadows Draft Environmental Impact Report (DEIR 566) for issues and concerns related to your area of expertise. The NOP has been circulated for a public review period, which ends September 1, 2001. In order for the DEIR to properly consider your concerns, please have your comments to Bill Grieman of Environmental Planning Section by that date.

If you have any questions related to the NOP, please call Bill Grieman at 834-5175.

Thanks in advance for your participation in the EIR process.

Tim Neely, Manager

By: _____
Chief, Environmental Planning Section

Distribution

PLANNING & DEVELOPMENT SERVICES DEPARTMENT
Environmental Planning Services Division

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[ ] E. Jessen, Chief, Program Management & Coordination
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O.C. Fire Authority

[ ] Laura Blaul, Planning & Development

Integrated Waste Management

[ ] Bob Richmond, Regulatory Compliance

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[ ] J. Miller, Director, Environmental Health
Attn: Patricia Henshaw

Sheriff Department

[ ] Captain Tom Davis
Attn: Lt. Bob Hogbin

Local Agency Formation Commission

[ ] D Smith, Executive Officer

cc: (Cover Memo only, no attachments)

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[ ] B. Speegle, Assistant Director, Planning & Development Services Department
[ ] T. Neely, Manager, Environmental Planning Services Division
[ ] J. Buzas, Manager, Forward Planning Services Division
[ ] G. Britton, Manager, Current Planning Services Division
[ ] K. Thomas, Director, Harbors, Beaches & Parks
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[ ] K. R. Smith, Deputy Director, Public Facilities & Resources Department
[ ] J. Goss (Interim) Director, Integrated Waste Management

8/01

County of Orange **MEMO**

DATE: August 30, 2001

TO: William Grieman, Environmental Planning Services

FROM: Doug Friedman, Acoustics, Building Permit Services

SUBJECT: Screen Check for: Tentative Tract Map No. T10692, Saddleback Meadows
Related to: PA 980103, PP53700, DEIR 566

THE SUBJECT HAS BEEN SCREENED:

- We have comments because this property is located:
  - Proximate to arterial highways
  - Within area of CNEL 60 dB or higher
    - It is during this initial evaluation of a project that the effect of existing development, topographic features, or other such noise attenuation measures are considered, although at a very general level of details. Acoustical analysis reports shall be prepared in any instances where there is the possibility of unacceptable noise impacts. Thus, unless it can be shown with certainty that the project is outside the area that has a CNEL of 60 or more decibels, an acoustical analysis report will be required.

- We recommended the following conditions:

Description (mitigating measure)	*Standard Condition of Approval / Mitigation Measures**	*Required*	*Not Required*
Residential Noise Study	N1	X	
Non-Residential Noise Study	N2		X
Over-Flight Notification	N3	X	
DRE Report Information (airport activity)	N4	X	
Avigation Easement	N5	X	
Aircraft Noise Signs	N6	X	
Prospective Purchaser / Tenant Notification (airport activity)	N7	X	
Noise Generating Equipment	N8	X	
Multi-family Dwelling Units (field testing)	N9		X
Construction Noise	N10	X	
Final Map/ Parcel Map Noise Notification (transportation corridor)	N11		X
DRE Transportation Corridor Notification	N12		X

By: *Doug Friedman, August 30, 2001*

* *Designation is from Land Use / Noise Compatibility Manual*

PDSDform.A.1'99

County of Orange **MEMO**

DATE: August 7, 2001

TO: Bill Grieman, Environmental Planning Services Division

FROM: John Powers, E&PPS Division/Transportation Planning

SUBJECT: Saddleback Meadows DEIR 566 NOP

Transportation Planning staff has reviewed the NOP for Saddleback Meadows DEIR 566 and offers the following comments: The EIR discussion should include an analysis of vehicle trip generation and distribution of traffic generated by the project. An analysis of forecast arterial traffic volumes of existing conditions plus project-generated traffic should be included.

The Level of Service on Santiago Canyon must be maintained at LOS C, and the project is within the boundaries of several fee programs: Eastern/Foothill Transportation Corridors Areas of Benefit Zone A, Foothill Circulation Phasing Plan, Santiago Canyon Road Fee Program, and El Toro Fee Program.

Thank you for the opportunity to review the NOP. Should you have any questions, please contact me at 834-5095.

Cc: Richard Sherry
Cc: Harry Persaud

County of Orange

MEMO

DATE: August 9, 2001

TO: Tim Neely, Manager, Environmental Planning Services

FROM: Manager, Subdivision and Grading Services

SUBJECT: Notice of Preparation (DEIR 566)
Saddleback Meadows

This is a Notice of Preparation (NOP) for a Draft Subsequent Environmental Impact Report for the Saddleback Meadows project. The project proposes the phased development of 299 detached single family dwelling units on a 222.2 acre site.

The site is located on the easterly side of El Toro Road, 0.5 ± miles southerly of the intersection of Santiago Canyon Road / El Toro Road and Live Oak Canyon Road in the Foothill / Trabuco Specific Plan area.

DISCUSSION:

Traffic Review has reviewed the Notice of Preparation and Initial Study for the Saddleback Meadows Project – dated August 2001. Traffic generated by this project has the potential to be a significant impact, especially to Santiago Canyon. Traffic Review requests that the following changes be made to the report as follows:

- Page 6 - Paragraph III "Summary of Potentially Significant Impacts"
  - In the first paragraph add "Transportation" to the bulleted list of items.
  - In the second paragraph, last line, delete "transportation,".
- Page 12 (Page 2 within the "Environmental Analysis Checklist)
  - Item 7 a - Uncheck the box in the column labeled "Less than Significant Impact", and check instead the box in the column labeled "Less than Significant w/Mitigation".
  - Item 7 b - Uncheck the box in the column labeled "Less than Significant Impact", and check instead the box in the column labeled "Potential Significant Effect".

DISCUSSION: continued

- Page 24 – under the second paragraph, "Potential Impacts"
  - At the end of the first sentence, add "and Santiago Canyon Road.".

Patrick J. Stanton

KEH:keh

County of Orange **MEMO**

DATE: August 13, 2001

TO: Bill Grieman, Environmental Planning

FROM: Johnnie Earnest, Chief, Geotechnical/Grading Plan Check

SUBJECT: Notice of Preparation – Saddleback Meadows DEIR 566, Dated August 2, 2001

The following comments are made relative to a review of the Geophysical section of the above noted document.

Please include an updated geotechnical section in the EIR report that addresses the impact that existing geotechnical/geologic conditions have upon the proposed development and vise versa. The section must address the impact that development will have upon adjacent areas and include appropriate mitigation measures. All recommendations and mitigation measures must be supported by geotechnical data and calculations. All work must be in accordance with the County of Orange Grading and Excavation Code, Grading Manual and the applicable sections of the Uniform Building Code.

Vicki L. Wilson, Director
Materials Laboratory
Engineering & Permit Services Division
1152 E. Fruit Street
Santa Ana, CA 92701
Telephone: (714) 567-7800
Fax: (714) 567-7813

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

RECEIVED

AUG 14 2001

Environmental & Project Planning Services Division

DATE: 14 August 2001

TO: T. S. Neely, Manager, P.D.S.D., Environmental planning Services Division

FROM: K. E. Smith, Materials Engineer, E.P.S. , Materials Laboratory

SUBJECT: N.O.P. for D.E.I.R. 566 – Saddleback Meadows

I have had the opportunity to review the N.O.P. and the attached Initial Study and find that while there is reference to the previous environmental records, the Environmental Analysis Checklist does not adequately reflect the geological hazards on this property and the potential impacts on public facilites such as El Toro Road and Aliso Creek.

This property has (based on previously submitted geotechnical reports) a landslide that extends under Aliso Creek and El Toro Road. How this slide is evaluated and reconstructed is a potential significant concern for the future integrity of the road and creek. Previous mitigation virtually required an impervious surface such that no percolation would be permitted that could 'lubricate' the slip zone of the slide.

The ability to safely stabilize the landslides on this property and not endanger or impact adjacent properties or facilities needs to be specifically addressed in the E.I.R.

K. E. Smith, Materials Engineer
CC: J. A. Miller
D. N. Marshall

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Vicki L. Wilson, Director
300 N. Flower Street
Santa Ana, CA
P.O. Box 4048
Santa Ana, CA 92702-4048
Telephone: (714) 834-2300
Fax: (714) 834-5188

DATE: August 14, 2001

TO: Bill Griesman, PDSD, Environmental Planning Services

FROM: Ignacio Ochoa, County Traffic Engineer

SUBJECT: NOP – Saddleback Meadows DEIR 566

The subject project site lies in the following Major Thoroughfare and Bridge Fee (Road Fee Programs) area of benefit and, will be subject to the requirements of those fee programs; either by paying the required fees or by improving adjacent roads:

El Toro Road Fee Program
Foothill Circulation Phasing Plan (FCPP)
Santiago Canyon Road Fee Program
Foothill Eastern Transportation Corridor Fee Program

In addition, the subject property is located on an ancient landslide area, which, according to our information, extends Westerly from the property across existing El Toro Road down into Aliso Creek. Any improvements to the subject property should be conditioned to not preclude future improvements (widening) of El Toro Road to Master Plan of Arterial Highways (MPAH) standards.

Any questions, may be referred to Charles Antos at 834-3614.

County of Orange **MEMO**

DATE: August 20, 2001

TO: Bill Grieman

FROM: Frank McGill (834-2099)

SUBJECT: NOP for Saddleback Meadows

As requested, following are my comments:

1. The discussion of the existing setting regarding Geophysical (see page 19) should include the history of slides in this area and its potential for future sides without any further intervention by man.

2. The discussion of the existing setting regarding Biological Resources (see page 28) should discuss the extent to which non-native plants have invaded the project site.

3. The discussion of the existing setting regarding Aesthetics (see page 29) states, "The proposed project site is primarily in a natural state." The project site has been highly degraded by agricultural activities, erosion, and invasion of non-native plants It is not in a natural state.

4. The discussion of the existing setting regarding Hazards (see page 33) should include the significant potential for slides without any further intervention by man. Such slides could cause major damage to adjourning public and private property and endanger people.

COUNTY OF ORANGE

TRANSMITTAL SLIP

TO: ~~J. Ozbolt~~ Bill Grieman DATE 8/6/01

DEPT: ~~PERD / Traffic~~ Eng. PDSD

FROM: PDSD/EIS B/Bill Grieman

	REMARKS
☐ APPROVAL	
☐ ACTION	
☐ COMPLETE & RETURN	
☐ CONFER	
☐ FILE	Bill, Scope of
☐ FOLLOW-UP	~~Transp~~ Traffic/Circulation
☐ FOR YOUR INFO	
☐ INITIAL & RETURN	
☐ NOTE & FILE	
☐ NOTIFY	
☐ PER CONVERSATION	study looks ok.
☐ PER YOUR REQUEST	
☐ PHONE ME	
☐ PREPARE REPLY	Particular issues
☐ POST	
☐ RECOMMENDATION	should be placed
☑ REPLY	
☐ RETURN W/YOUR COMMENTS	on SCR and
☐ SEE ME	
☐ SIGNATURE	at I/S w/ Live Oak
☐ SIGN & RETURN	
☐ TYPE ____ COPIES	SIGNATURE
(0207) F850-145.2 (R10/84)	PHONE Rd. rocks

ORANGE COUNTY FIRE AUTHORITY
PO Box 86, Orange, CA 92856-9086 • 180 South Water St., Orange, CA 92866-2123
Advanced Planning
Chip Prather, Fire Chief (714) 744-0400 www.ocfa.org

August 29, 2001

Mr. Bill Grieman
Manager, Environmental Planning Services Division
County of Orange
300 N. Flower St., Room 321
Santa Ana, CA 92702-4048

Re: Saddleback Meadows; Notice of Intent, EIR No. 566

Dear Mr. Grieman,

The Orange County Fire Authority is pleased to provide comment regarding the proposed Saddleback Meadows residential project. Issues of concern for the Fire Authority include;

a. The project is proposed for areas designated as Special Fire Protection Area by the County of Orange for its significant wildland fire risk. The area is located in a zone of historical fire spread and severity. The project will need to demonstrate compliance with Special Fire Protection Area requirements to mitigate these risks.

b. Wildfire risks should be fully studied for the project site, including fire behavior and spread potential, and evacuation access and egress for the community planned in accordance with identified risks. Institutional uses such as schools within the proposed project should be developed in such a manner as to allow safe shelter-in-place of occupants during community exposure to wildfire. The existing access to fire truck trails in the project area should be maintained/retained for continuing fire service use.

c. The project will create new fire protection demands that will require mitigation including; increased demand for services, emergency response and fire prevention activity, and related administrative support. As a requirement for development, the Fire Authority will require the project proponent to enter into a Secured Fire Protection Agreement for service to the project, and to contribute funds towards mitigation of these impacts.

d. In addition to the above requirements, the project must comply with all Fire Authority standard conditions for development.

The Orange County Fire Authority looks forward to continuing its participation in the review of this project. Should you have any additional questions, please contact me at (714)744-0484.

Sincerely,

Michael S. Rohde
Battalion Chief/Advance Planning

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Vicki L. Wilson, Director
300 N. Flower Street
Santa Ana, CA

P.O. Box 4048
Santa Ana, CA 92702-4048

Telephone: (714) 834-2300
Fax: (714) 834-5188

DR-NOP
ON-Admin

DATE: August 29, 2001

TO: Tim Neely, Manager, PDSD/Environmental Planning Services

ATTN: Bill Grieman

FROM: Chief, PFRD/HBP Program Management & Coordination-Facilities Development

SUBJECT: Notice of Preparation/Draft Subsequent EIR #566/Saddleback Meadows/Foothill Trabuco Specific Plan

HBP Facilities Development staff has reviewed subject documentation and offers the following comments:

(NOTE: HBP comments are consistent with our earlier comments on Tentative Tract Map No. 15230, approved by the Orange County Subdivision on 10-21-98, for subject proposed 299-unit Saddleback Meadows Project. The DSEIR should incorporate these conditions as mitigation measures)

1. **Master Plan of Regional Recreation Facilities:**

a. **Regional Park Dedication:**

Lots LL and MM, per approved Tentative Tract Map 15230, shall be dedicated to the County as an addition to O'Neill Regional Park, exclusive of manufactured slopes, which should be retained in separate lots. Regional park dedication shall be in done in compliance with the following conditions:

i. Prior to the recordation of the first subdivision map, the subdivider shall make an irrevocable offer of dedication in fee to the County of Orange, or its designee, of Lots LL and MM, exclusive of manufactured slopes, for regional park purposes in a form approved by the Manager, PFRD/HBP Program Management & Coordination suitable for recording. Said offer shall be free and clear of money and all other encumbrances, liens, leases, fees, easements (recorded and unrecorded), assessments and unpaid taxes, except those meeting the approval of the Manager, PFRD/HBP, Program Management and Coordination. Until such time as the offer is accepted by the County or its designee, the subdivider or assigns and successors shall be responsible for maintenance and upkeep of the above-referenced lots.

ii. Prior to the recordation of any subdivision map, the subdivider shall survey and monument all lots dedicated for regional park purposes, and stake the property line of the dedication area(s) with durable, long-lasting, high visibility markers at all angle points and line of sight obstructions to the satisfaction of the Manager, PFRD/HBP Program Management & Coordination.

iii. Prior to recordation of the regional park dedication, the existing old ranch house sited within future regional park land shall be demolished except for the rock work subject to the approval of the Manager, PFRD/ HBP Program Management & Coordination.

2. **Master Plan of Regional Riding and Hiking Trails/County Bikeways:**

a. **Regional Trail Dedication:**

The Live Oak Canyon Regional Riding and Hiking Trail is depicted within the Recreation Element aligned through Lot R of approved Tentative Tract Map No. 15230, adjacent El Toro Road, through the proposed project. A recreation easement for this riding and hiking trail shall be dedicated to the County which includes trail improvements, including trail improvements just offsite along El Toro Road, north to the intersection of El Toro Road and the community spine road, as well as north to the existing under crossing of El Toro Road, in compliance with the following conditions:

i. Prior to the recordation an applicable subdivision map the subdivider shall:

a. Irrevocably offer a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail in a manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination. The subdivider shall not grant any easement(s) over the property subject to the recreation easement unless such easements are first reviewed and approved by the Manager, PFRD/HBP Program Management & Coordination.

b. Design the necessary improvements (both onsite and offsite) for the trail, including, but not limited to grading, erosion control, signage, fencing, a grade-separated crossing (as applicable), and elevated crossing activation buttons for trail users at the signalized intersection at El Toro Road, in manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination, in consultation with the Manager, PDSD/Subdivision & Grading. Further, the subdivider shall enter into an agreement, accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

ii. Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Manager, PFRD/HBP Program Management & Coordination, to ensure that the proposed grading provides for, will not interfere with, or preclude the installation of the riding and hiking trail in a location and in a manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination.

iii. Prior to the issuance of final certificates of use and occupancy and the release of financial

security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination, in consultation with the Manager, Construction.

b. Local Riding and Hiking Trail Dedication:

A local riding and hiking trail is described within Area Plan 98-2 text to be dedicated to the County within a recreation easement aligned east-west through the proposed project. A recreation easement for the local riding and hiking trail shall be dedicated to the County for those areas not included within future dedicated regional park land. Moreover, trail improvements shall be made for this trail, *both* within and outside the future regional park. in addition to a connection from the staging area along the community spine road *offsite* to the regional riding and hiking trail at El Toro Road. Improvements for the staging area shall also be made including the ability to accommodate parking equestrian trailers as well as vehicle only parking. Dedication of the recreation easement and the improvements, including the staging area shall be done in compliance with Condition 2.a.i., 2.a.ii., and 2.a.iii. above.

c. Trail Reroutes/Bikeway and Riding and Hiking Trails:

i. The Aliso Creek Class I, paved Off-Road Bikeway, as well as the Live Oak Canyon Regional Riding and Hiking Trail will require re-routing plans during construction of the proposed project. Therefore, the following condition shall apply:

> Prior to any grading and/or construction activities which precludes the utilization of either the Aliso Creek Class I Off-Road Bikeway or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing plan shall be submitted subject to the approval of the Manager, PFRDHBP Program Management & Coordination.

ii. The same condition shall also be applicable to the Class II On-Road Bikeway aligned along the north bound lane of El Toro Road contiguous the proposed project.

3. Resources Element (Open Space Component):

a. Dedicate Restricted Scenic Preservation Easement:

Fuel modification areas, manufactured slopes and remedial grading areas sited between the regional park dedication area and residential development, the fuel modification and native enhancement transition area contiguous El Toro Road, and northerly most fuel modification and native enhancement transition area, shall be placed within restricted scenic preservation easement areas. These areas include Lots R, CC, DD, EE, FF, GG, HH, II and JJ. *(NOTE: Manufactured slopes now depicted within Lots MM and LL the regional park, should be depicted within separate open space lots and restricted scenic preservation easements placed over them).* Restricted scenic

preservation easements shall be dedicated to the County of Orange in compliance with the following conditions:

i. Prior to the recordation of any applicable final tract map which creates building sites, the subdivider shall make an irrevocable offer to dedicate an easement to the County of Orange or its designee over Lots R, CC, DD, EE, FF, GG, HH, II, and JJ, for restricted scenic preservation purposes in a manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination. Maintenance, upkeep and liability for said easement area shall remain the responsibility of the subdivider or assigns and successors (i.e., homeowner's association)or current underlying owner(s) of said easement area and shall not be included in said dedication offer. The subdivider shall not grant any easement over any property subject to said easement unless such easements are made subordinate to said easement offer in a manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination.

ii. The subdivider shall note limitations and restrictions for said easement by a reference on the final map to a previously recorded document or by the recordation of a separate document concurrent with the recordation of subject map in a manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination.

iii. Prior to recordation of any applicable final tract map or as determined by the Manager, PFRD/HBP Program Management & Coordination, the subdivider shall survey and monument all parcels of the land to be dedicated for restricted scenic preservation easement purposes, and submit plans showing how the development boundaries of the restricted scenic preservation easement parcel(s) is marked to be visible for monitoring purposes by Grantee to the satisfaction of the Manager, PFRD/HBP Program Management & Coordination

b. Public Area Landscaping:

The areas to be irrevocably offered to the County of Orange for restricted scenic preservation purposes shall be landscaped, equipped for irrigation, as applicable, and improved in accordance with an approved landscape plan as stated below:

i. Preliminary Plan- Prior to the recordation of a subdivision map (except maps for financing and conveyance only), the subdivider shall enter into an agreement and post financial security guaranteeing landscape improvements and the maintenance thereof based on a preliminary landscape plan showing major plant material and uses, and a cost estimate for the landscape improvements. The preliminary plan and cost estimates shall be reviewed and approved by the Manager, PDSD/Subdivision and Grading, in consultation with the Manager, PFRD/HBP Program Management & Coordination. Said plan shall take into account the County Standard Plans for landscape areas, adopted plant palette guides, applicable scenic and specific plan requirements, Water Conservation Measures contained in Board Resolution 90-487(Water Conservation Measures), and Board Resolution 90-1341(Water Conservation Implementation Plan).

ii. Detailed Plan- Prior to the issuance of any building permits, the applicant shall submit a detailed landscape plan for approval to the Manager, PDSD/Subdivision & Grading, in consultation with the Manager, PFRD/HBP Program Management & Coordination. Detailed plans shall show the detailed irrigation and landscaping design.

iii. Installation Certification- Prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements, the applicant shall install said improvements and have the installation certified by a licensed landscape architect or licensed landscape contractor, as having been installed in accordance with the approved detailed plans. The applicant shall furnish said certification, including an irrigation management report for each landscape irrigation system, and any other required implementation report determined applicable to the Manager, PFRD/Construction, and the Manager, PDSD/Building Inspection, prior to the issuance of any certificates of use and occupancy.

c. **Urban Edge Treatment Plan/Viewshed Analysis:**

Prior to the issuance of any building permits for residential structures, an urban edge treatment plan/viewshed analysis shall be submitted to the County subject to the approval of the Manager, PFRD/HBP Program Management & Coordination. The Urban edge treatment plan/viewshed analysis shall comply with the following criteria:

i. Establish building height and setback limits (i.e., Building Envelope Formula) and grading treatments to preserve views attained from within existing and proposed parks and open space areas as well as from along designated scenic highways(i.e., El Toro Road) as identified by the Master Plan of Regional Recreational Facilities (Recreation Element), Open Space Component (Resources Element) and Master Plan of Scenic Highways (Transportation Element) respectively. Moreover, views from St, Michaels Abbey, the Ramakrishna Monastery and neighboring Hidden Ridge Community shall also be addressed. Viewshed analysis cross sections should be provided as seen from these areas to proposed residential structures.

ii. Eliminate and/or reduce to the greatest extent possible conflicts which may impact the existing and future recreational utility of a regional recreation recreational facility and open space areas.

iii. Eliminate and/or reduce to the greatest extent possible potential operation and maintenance problems resulting from encroachment, unauthorized entry, private development fuel modification requirements, flood control facilities, and maintenance of privately landscaped manufactured slopes and maintenance roads as they relate to future and existing regional recreational facilities.

iv. Establish appropriate landscape/fuel modification treatments and wall and/or fence treatments including berms to provide appropriate transition from regional recreational

v. Establish smooth and gradual transition between graded slopes and existing slopes within the park and open space areas using variable slopes (2:1-4:1).

vi. Obscure slope drainage structures with a variety of plant materials.

vii. Incorporate architectural and design techniques into the project in order to enhance off-site views attained from within parks and significant open space.

vii. All landscaping of manufactures slopes interfacing significant open space areas should be exclusively native, as applicable, to preserve the biological and scenic integrity of regional corridors, open space and park lands.

Thank you for the opportunity to comment. Should you have any questions, please contact Wayne Johnson at 834-6787.

Eric Jessen

cc: Jeff Dickman, PFRD/HBP Trails Implementation
wj/ep53700

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Vicki L. Wilson, Director
300 N. Flower Street
Santa Ana, CA

P.O. Box 4048
Santa Ana, CA 92702-4048

Telephone: (714) 834-2300
Fax (714) 834-5188

DATE: August 29, 2001

TO: Kevin Thomas, Director Harbors, Beaches, and Parks

FROM: HBP Operations Superintendent

SUBJECT: Saddleback Meadows Project Comments

In accordance with your request, the following are HBP Operations comments/concern relevant to the projects potential impacts on O'Neill Regional Park, Limestone-Whiting Wilderness Park and Aliso Creek. Program Management & Coordination will expand on these comments.

General Comments

A. Wildlife Corridor of significant width to provide for movement of large mammals including mule deer and mountain lions between the Santa Ana Mountains, O'Neill Regional Park, and Limestone-Whiting Wilderness Park is essential. Dr Paul Bier Wildlife Biologist and Orange County Mountain Lion Study leader prepared corridor recommendations in a report to the Orange County Board of Supervisor in early 1990's.

B. Regional Riding and Hiking Trail connecting O'Neill Regional Park, Limestone-Whiting Wilderness Park and the Aliso Creek Trail needs to be developed.

C. Project needs to address and mitigate the significant impacts of drainage into the Aliso Creek water shed Water quality, velocity and volume must be addressed within the project site. Aliso Creek, within Limestone-Whiting Wilderness Park has limited flow capacity, notable bank erosion and heritage Sycamore trees along its bank. Silt from grading operations must be maintained on project site.

D. The viewshed from O'Neill Regional Park trails and project should be protected.

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Vicki L. Wilson, Director
300 N. Flower Street
Santa Ana, CA
P.O. Box 4048
Santa Ana, CA 92702-4048
Telephone: (714) 834-2300
Fax: (714) 834-5188

DATE: September 4, 2001

TO: Tim Neely, Manager, PDSD/Environmental Planning Section

FROM: R. S. Bavan, Chief, PFRD/Program Development Division/Flood Program

SUBJECT: Notice of Preparation (NOP) – Saddleback Meadows DEIR 566

In response to your August 2, 2001 request, we reviewed the subject NOP. The following comments are submitted for your consideration:

1. The DEIR needs to address issues such as the increase in runoff (existing condition versus post-project condition), potential changes in drainage patterns, effect on the capacity of existing drainage facilities, potential flooding of downstream areas, effect on water quality, etc. An evaluation of the runoff increase and its effect on the downstream drainage facilities and properties should be provided. Appropriate mitigation measures should be proposed to ensure that post-project conditions are not worsened both on- and off-site.

2. All hydrologic and hydraulic analyses performed to determine the potential impacts to downstream drainage facilities should utilize OCFCD's criteria and standards contained in the Orange County Flood Control Design Manual, the 1986 Orange County Hydrology Manual (OCHM), and Addendum No. 1 to the OCHM. Such analyses should be submitted to PFRD/Program Development Division for review and approval. Please be aware that, Addendum No. 1 to the OCHM requires expected value discharges be used to calculate incremental increases in peak discharge for implementing development mitigation measures, and high confidence discharges for the design of new drainage facilities.

3. The NOP indicated that the project site is tributary to two OCFCD facilities, Aliso Creek (Facility No. J01) and Oso Creek (Facility No. L03). The U. S. Army Corps of Engineers is currently working on Watershed Management Studies for both the Aliso Creek and San Juan Creek (which includes Oso Creek) watersheds. The DEIR should be consistent with these on-going studies. We suggest that Jim Hutchison of the Corps be contacted at (213) 452-4204 for more information regarding the Corps' Watershed Management Studies.

4. At this time, since we are aware of the bacteria problem (fecal coliform) in the lower reach and mouths of Aliso Creek and San Juan Creek, the DEIR should discuss the water quality concerns with respect to the temperature, toxicity, and bacteria sources. The strategy is to combat bacteria sources at project implementation. The DEIR must identify the potential contaminants resulting from urban runoff associated with the development; and discuss their impacts on the downstream receiving waters. Adequate mitigation measures should be proposed to treat the storm water, and limit development

runoff to predevelopment levels. The need also exists to establish an urban runoff management/monitoring program (post construction) to ensure that no additional project caused subsurface and surface water contamination on the existing drainage system will result.

If there are questions regarding this response, contact Shirley Chan at 834-4398 or Kevin Onuma at 834-2425.

R. S. Bavan

SC: cd/pwfld042/2001706 Saddleback Meadows bg.doc

cc: Bill Grieman, PDSD/Environmental Planning Section

CITY OF LAKE FOREST

Mayor
Kathryn McCullough

Mayor Pro Tem
Helen Wilson

Council Members
Richard T. Dixon
Peter Herzog
Marcia Rudolph

City Manager
Robert C. Dunek

August 7, 2001

Mr. Bill Grieman, Planner
Planning and Development Services Department
County of Orange
P.O. Box 4048
Santa Ana, CA 92702-4048

RE: NOTICE OF PREPARATION FOR DRAFT ENVIRONMENTAL IMPACT REPORT #566, FOR SADDLEBACK MEADOWS DEVELOPMENT

Dear Mr. Grieman,

Thank you for the opportunity to comment on the Notice of Preparation for Draft EIR #566 for the Saddleback Meadows Development. The City of Lake Forest has no comments at this time.

Please add my name to the mailing list to receive a copy of the Draft EIR and other related mailings.

Sincerely,
CITY OF LAKE FOREST

Gayle Ackerman

Gayle Ackerman, AICP
Development Services Manager

23161 Lake Center Drive, Suite 100
Lake Forest, CA 92630
(949) 461-3400
City Hall Fax: (949) 461-3511
Building/Planning/Public Works Fax: (949) 461-3512

CONNOR, BLAKE & GRIFFIN LLP
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MATTHEW J. FLETCHER

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IRVINE, CALIFORNIA 92612
TELEPHONE (949) 622-2600
TELEFACSIMILE (949) 622-2625

DIRECT E-MAIL: dhesseltine@businesslit.com

August 6, 2001

Mr William Grieman
Environmental Planning Services Division
Planning & Development Services Department
P.O. Box 4048
Santa Ana, California 92702-4048

Re: *Saddleback Meadows*
Draft Environmental Impact Report No. 566

Dear Mr. Grieman:

We are in receipt of the "Notice of Preparation" (the "NOP") regarding the County of Orange's intent to prepare Draft Environment Impact Report No. 566 ("DEIR 566") regarding the 299-unit single-family housing project proposed for the Saddleback Meadows property.

Pursuant to the instructions provided in the NOP, we are writing on behalf of our client, the Vedanta Society of Southern California, to ensure that our office is placed on the mailing list for all notices, reports, and other information regarding DEIR 566 and the Saddleback Meadows property in general. Please send all such information to the address listed above.

Should you have any questions regarding the foregoing, please do not hesitate to contact our office.

Very truly yours,

David J. Hesseltine

Vedanta/Aradi/Corresp/GRIEMAN1.DOC

CONNOR, BLAKE & GRIFFIN LLP
ATTORNEYS AT LAW

EDMUND M. CONNOR
LAURA LEE BLAKE
CRAIG L. GRIFFIN
DAVID J. HERSELTINE
MATTHEW J. FLETCHER

2600 MICHELSON DRIVE
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TELEFACSIMILE (949) 622-2626

DIRECT E-MAIL: dherseltine@bmblawllp.com

September 28, 2001

George Britton
Manager
Environmental Planning Services Division
County of Orange
300 N. Flower, Room 321
Santa Ana, California 92702-4048

VIA TELEFACSIMILE AND FIRST CLASS MAIL

Re: *Saddleback Meadows Draft EIR No. 566*

Dear Mr. Britton:

On behalf of the Vedanta Society of Southern California ("Vedanta"), we are writing to bring to your attention an article which appeared in the *Los Angeles Times* this week that is highly relevant to Draft Environmental Impact Report No. 566 ("DEIR 566"), which the County of Orange (the "County") is currently preparing for the Saddleback Meadows Property (the "Property").

Specifically, the article, a copy of which is attached hereto as Exhibit "A," reports that the Santa Monica Mountain Conservancy is acquiring over 1,400 acres in Malibu for preservation as open space. The Santa Monica Mountain Conservancy is purchasing a portion of the property and the remainder is being donated by the landowner in exchange for tax credits under the Natural Heritage Preservation Tax Credit Act (California Public Resources Code § 37000, *et seq.*) [the "Preservation Tax Credit Act"]. As the article explains, the Preservation Tax Credit Act, which was enacted just last year, allows landowners who make approved donations of, *inter alia*, private property to public parks or wildlife agencies to receive substantial tax credits based on the value of the donated property.

Vedanta requests that, in conducting the analysis in DEIR 566 regarding the "Acquisition Alternative" and the "44/178 Alternative"—each of which entail either a portion or all of the Property being purchased or donated for preservation as permanent open space—the County evaluate whether a donation by the developer of all or a portion

of the Property would qualify under the Preservation Tax Credit Act and thereby entitle the developer to significant tax credits. As we explained in the letter we submitted in response to the Notice of Preparation regarding DEIR 566, all possible sources of funds for the partial or outright purchase of the Property in connection with the "Acquisition Alternative" and the "44/178 Alternative" must be explored, and clearly the Preservation Tax Credit Act is another source of funds (in the form of tax credits for the developer).

We hope that you will give the Preservation Tax Credit Act careful consideration in preparing DEIR 566 and, if we can be of any further assistance in this regard, please do not hesitate to contact us.

Very truly yours,

David J. Hesseltine

cc: William E. Tippets (California Department of Fish and Game)
David N. Lawhead (California Department of Fish and Game)
David Zoutendyk (U.S. Fish & Wildlife Service)
Karen Evans (U.S. Fish & Wildlife Service)

Vedanta/Arndt/Corresp/Britton2.Doc

EXHIBIT "A"

The Region

State Will Get Malibu Open Space in Deal

Coast: A property owner will receive tax credits for donating a portion of the 1,408 acres, which will tie into other parkland. The slopes above PCH will go undeveloped.

By KENNETH R. WEISS
TIMES STAFF WRITER

The Santa Monica Mountains Conservancy on Monday agreed to acquire 1,408 acres of prime Malibu real estate in a complex deal that will tie Topanga Canyon State Park into a growing swath of protected mountain wilderness and coastal open space.

The conservancy will pay $7 million for a portion of the property that runs above two miles of coastline from Tuna Canyon to Las Flores Canyon.

The rest of the acreage will be donated by landowner Alfred E. Mann in exchange for tax credits potentially worth tens of millions of dollars under a new state program.

Mann, a biomedical entrepreneur, said the tax credits make the deal "acceptable," given the enormous tax bill he faces for the recent $3.8-billion sale of MiniMed Inc., an insulin pump maker, and one of his affiliated companies.

"I got a big chunk of change and truly need tax credits," Mann said. He said he probably won't break even on the deal, having sunk at least $30 million into property that he estimates won't net more than $25 million.

The property has long been coveted by park officials, who see it as a key link in a chain of purchases to protect the undeveloped coastal slope of the Santa Monica Mountains above Pacific Coast Highway.

The Mountains Restoration Trust, a nonprofit conservation group, expects to take possession of an adjacent 418 acres by the end of the year, said Stephen Harris, the trust's president. "It's a perfect link," he said, between the Mann property and what the state recently purchased in lower Topanga Canyon.

These three undeveloped parcels, covered with coastal scrub and chaparral, offer a broad corridor for wildlife, as well as for hik-

Attachment F

Photo by KEN HOVELT / Los Angeles Times

Paul Edelman of the Santa Monica Mountains Conservancy discusses plans to acquire 1,408 acres in the hills above Malibu.

ers, horseback riders and cyclists.

Park officials hope to connect the parcels with a trail that would be fanned by cool ocean breezes in the summer and offer unrivaled views of the Pacific along the route.

Some promontories on Mann's property provide 360-degree views that extend to Santa Catalina Island to the south, Oat Mountain to the north and Mt. Wilson to the northeast.

Joseph T. Edmiston, the conservancy's director, said his state agency plans to keep the land as open space with the exception of a primitive camp to be built as a destination for busloads of students from low-income neighborhoods to get their first taste of wilderness.

"It's truly spectacular," Edmiston said while touring the property. "This is the ridgeline you see from the Santa Monica Pier and something we need to preserve" from development.

Mann said he once hoped to build a resort hotel and golf course on the relatively flat area at the top of his land above Big Rock. Tuna and Las Flores canyons. He also considered developing 100 sites for large homes, building condominiums next to the hotel and a sewage treatment plant for the homes around Big Rock, a neighborhood where septic tanks may be contributing to unstable ground.

But Mann said he grew weary of tangling with opponents of the development and with trying to overcome regulatory hurdles. "I've had this property for a decade now," he said. "I don't have time to play with it."

If state officials approve the deal, it will be the largest, so far, to take advantage of the new Natural Heritage Preservation Tax Credit Act. Enacted last year, the act is designed to help wealthy landowners turn over private property to public parks and wildlife agencies.

So far, the state's Wildlife Conservation Board has approved about $8 million in tax credits to five landowners who collectively have donated more than 500 acres and water rights.

The law authorizes the state to issue $100 million in tax credits over five years, a method of acquisition that virtually doubles the state's purchasing power.

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August 31, 2001

George Britton
Manager
Environmental Planning Services Division
County of Orange
300 N. Flower, Room 321
Santa Ana, California 92702-4048

VIA TELEFACSIMILE AND FIRST CLASS MAIL

Re: *Saddleback Meadows*
Response to Notice of Intent to Prepare Draft EIR No. 566

Dear Mr. Britton:

On behalf of the Vedanta Society of Southern California ("Vedanta"), we hereby submit the following comments in response to the "Notice of Preparation" (the "NOP") issued by the County of Orange (the "County") on August 2, 2001 to provide public notice of the County's intent to prepare Draft Environmental Impact Report No. 566 ("DEIR 566") for the 299-unit single family housing project (the "299-Unit Project") which is currently being proposed for development at the Saddleback Meadows property (the "Property").

I. Project Alternatives To Be Evaluated In DEIR 566

A. Acquisition Alternative

In contrast to the manner in which the NOP describes the "Acquisition Alternative," we would propose that this alternative not be limited to the acquisition of the Property solely by "the County and adjacent landowners." Instead, we would ask that this alternative be expanded to include acquisition of the Property by any governmental entity, private entity, private person(s), and any combination thereof. As has been reported in recent articles appearing in the *Orange County Register* and *Los Angeles Times*, copies of which are attached as Exhibit "A" hereto, the United States Fish and Wildlife Service and the California Department of Fish and Game (collectively, the

"Wildlife Agencies") are exploring the possible purchase of the Property to serve as a permanent open space reserve and wildlife corridor connecting Whiting Ranch Wilderness Park and O'Neill Regional Park. In fact, an appraisal of the Property on behalf of the Wildlife Agencies is in its final stages of preparation and is expected to be issued shortly.

The purchase of the Property by the Wildlife Agencies is clearly a feasible alternative that should be considered as part of the "Acquisition Alternative." Indeed, there is clear precedent for such an alternative becoming a reality. As was widely publicized in the press, the California Department of Parks and Recreation recently purchased a 32-acre parcel in Coal Canyon in order to preserve it as a wildlife corridor between Chino Hills State Park and the Cleveland National Forest. (*See Orange County Register* and *Los Angeles Times* articles attached hereto collectively as Exhibit "B.") The same thing could happen with respect to the Property and that possibility should be seriously addressed in DEIR 566.

B. 44/178 Alternative

In evaluating the "44/178 Alternative" identified in the NOP, we would request that the "Development Parcel" and the "Conservation Area" parcel which are the principal components of that alternative be defined in the same manner as they were described when Vedanta first proposed the "44/178 Alternative" in October 1998. As originally proposed by Vedanta, all residential units, infrastructure, or other improvements to be developed in connection with the "44/178 Alternative" were to be confined to the 44-acre "Development Parcel" so that few, if any, of the valuable environmental resources on the Property (*e.g.*, endangered species, sensitive habitats, vernal ponds, oak groves, landforms, ridgelines, etc.) would be altered or adversely impacted in any material way. In this regard, the 178-acre "Conservation Area" was to be permanently preserved in its natural condition as undeveloped and undisturbed open space. Attached hereto as Exhibit "C" is a plan showing the 44-acre "Development Parcel" as it was originally proposed by Vedanta with the understanding that no development activities (e.g., remedial grading) would occur outside of the contours of the 44-acre footprint.

In its October 7, 1998 letter to the Planning Commission, Vedanta explained that the "number of units to be developed with the 44-acre parcel could vary depending on the desire of the developer and could include a mix of condominium units, assisted living facilities, single-family detached homes, etc." However, the proviso stipulated by Vedanta was that, regardless of the *number* of units that might be developed within the 44-acre "Development Parcel," none of these units would result in the destruction of any of the ridgelines, landforms, or sensitive environmental resources located within the "Conservation Area" parcel.

Accordingly, in contrast to how the "44/178 Alternative" is described in the NOP, Vedanta does not necessarily agree that 127 units would be the appropriate number of units that could be developed within the "Development Parcel." The better approach would be to identify a range of units from, for example, 65 to 100 units that could safely be accommodated within the 44-acre "Development Parcel." As you know, the County (specifically, Tom Mathew's staff) earlier proposed a 65-unit alternative to fit within the 44-acre development envelope.

In addition to correctly identifying the physical aspects of the "44/178 Alternative," we would also ask that you properly address its financial components. In this regard, we would request that the County evaluate two versions of the "44/178 Alternative." The first version would involve a condition of approval requiring the developer to offer to dedicate the 178-acre "Conservation Area" parcel to the County free of charge in exchange for the right to develop residential uses within the "Development Parcel." As you know, the County has typically imposed such an exaction in approving large-scale residential developments such as the 299-Unit Project. The second version of this alternative would involve the "Conservation Area" parcel being purchased by a governmental entity, a private entity, private person(s), or any combination thereof, as suggested by the "Acquisition Alternative."

C. FTSP Alternative

Finally, we would propose that the County analyze at least one of the reduced-density alternatives to be evaluated in DEIR 566 as if it were required to comply with all development and land use regulations, guidelines, and goals established by the Foothill/Trabuco Specific Plan (the "FTSP"). This is certainly appropriate given that the 299-Unit Project requires an amendment to the FTSP to exempt the Property from all development and land use regulations, guidelines, and goals specified in the FTSP. The environmental benefits that would accrue to the public if the developer (like all other developers in the Trabuco Canyon area) were required to comply with the FTSP standards should be analyzed in DEIR 566.

II. Potentially Significant Environmental Impacts To Be Evaluated In DEIR 566

In connection with the administrative proceedings the County previously conducted regarding (1) the 318-unit single family housing project (the "318-Unit Project") and Draft Environmental Impact Report No. 561 ("DEIR 561"), (2) the 705-unit manufactured housing project (the "705-Unit Project") and Final Subsequent Environmental Impact Report No. 566 ("FSEIR 566"), and (3) the 299-Unit Project, FSEIR 566, and the two Addenda to FSEIR 566, Vedanta submitted numerous written and oral comments and objections regarding the environmental impacts associated with developing those three projects on the Property. However, rather than restate each of

those objections and comments in this letter, Vedanta would respectfully request that the County review those prior objections and comments before proceeding to prepare DEIR 566. For the record, Vedanta hereby incorporates by reference each of or its prior objections and comments as if set forth in full in this letter.

Vedanta also has four additional comments regarding the NOP's determination concerning (a) which potential environmental impacts should be evaluated in DEIR 566 and (b) how those impacts should be evaluated:

A. The Critical Role Of The Property In The NCCP Process

All of the previous environmental documents which have been prepared regarding the proposed projects to be developed at the Property have failed to discuss the Property's critical importance in ensuring the successful completion of the approval process for NCCP Southern Subregion. In their letter of May 7, 2001 to the Board of Supervisors, the Wildlife Agencies reaffirmed their position that it is essential to preserve the Property in its undeveloped state in order to complete that planning process. In particular, the Wildlife Agencies have previously stressed that the Property provides a "critical habitat connection" between the Central and Southern NCCP Subregions which is necessary to preserve as open space in order to complete the planning for the Southern Subregion, and that the 299-Unit Project, as presently proposed, would "preclude[] the opportunity to ensure the linkage between the Central and Southern NCCP reserve lands." Accordingly, a comprehensive discussion of the importance of preserving the Property to serve as NCCP habitat linkage should be included in DEIR 566.

B. Outdated Version Of Housing Element

The NOP concludes that the 299-Unit Project will have a less than significant impact on population and housing and, therefore, those topics need not be addressed in DEIR 566. This conclusion, however, is reached by relying upon an outdated version of the County's General Plan, and without *any* discussion of the impact of the 299-Unit Project on the availability of affordable housing units.

The NOP expressly relies upon the Housing Element of the Orange County General Plan adopted on September 14, 1993. Government Code section 65588, however, required the County to adopt an updated version of the Housing Element to its General Plan no later than December 31, 2000. On May 8, 2001, the Board of Supervisors approved Housing Element Amendment 2001-1, and the Housing Element, as amended, is currently being reviewed by the California Department of Housing and Community Development (the "HCD") for compliance with the Government Code.[1]

[1] A land use approval that is issued in reliance on a General Plan, or any element thereof, which is outdated or otherwise fails to substantially comply with any requirement of the Government Code can be invalidated if the

Nonetheless, the NOP relies upon the 1993 version of the Housing Element and the outdated population and housing statistics and projections contained therein. For example, the NOP relies on a population *projection* for the year 2000 for Regional Statistical Area C-43, despite the fact that *actual* population figures from the 2000 Census are now publicly available.

In support of its conclusion that the 299-Unit Project will not have any significant impact on population and housing, the NOP also touts the fact that the 299-Unit Project will result in a reduction in the number of planned residential units for the Property when compared to the 705-Unit Project which is the subject of the tract map that is currently recorded on the Property. However, the NOP completely ignores the fact that (1) a condition of approval for that tract map was that two-thirds of the housing units permitted for the 705-Unit Project, *i.e.*, 470 units, must be sold as affordable housing and (2) the 299-Unit Project provides for *no* affordable housing units whatsoever. As stated in FSEIR 566, the elimination of these affordable housing units would affect the County's efforts to ensure that an adequate supply of affordable housing exists throughout the County, not simply in the Trabuco Canyon Area. (*See* FSEIR at p.4-11, n.4.)

Accordingly, not only should DEIR 566 determines the impact of the 299-Unit Project on population and housing based on the current version of the County's General Plan—if and when the Housing Element is approved by the HCD—but it should also evaluate the impact the loss of 470 planned affordable housing units would have in the county-wide housing environment.

C. Incompatible Land Uses

Vedanta's second comment regarding the potentially significant environmental impacts which the NOP proposes for evaluation in DEIR 566 relates to land use and planning impacts. Specifically, on page 1 of the Environmental Analysis Checklist, the NOP concludes that the impact of the 299-Unit Project on adjacent, existing or planned land uses would be less than significant with mitigation. (*See also* NOP p.6.) However, both DEIR 561 and FSEIR 566 concluded that, "following implementation of all mitigation measures, the project will have the following unavoidable adverse impacts: • Land use incompatibility with 1) O'Neill Regional Park, 2) the Ramakrishna Monastery, and 3) St. Michael's Abbey." (DEIR 561 at p. 8-1; FSEIR 566 at p. 8-1.) This inconsistency should be explained and reconciled in DEIR 566.

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defect in the General Plan shares a "nexus" with the land use approval. (*See, e.g., Garat v. City of Riverside* (1991) 2 Cal.App.4th 259, 297; *Neighborhood Action Group v. County of Calaveras* (1984) 156 Cal.App.3d 1176, 1188-89.)

D. Need For Current Data

Vedanta cannot stress enough how critical it is for the DEIR's analysis of environmental impacts to be based on the *most current* data and information available. Addendum No. 2 to FSEIR 566 was prepared in March of this year to purportedly update any changes in the circumstances surrounding the development of the 299-Unit Project which may have occurred since Addendum No. 1 to FSEIR 566 was prepared in August 1998. However, with the exception of certain information regarding impacts on traffic and biological resources, Addendum No. 2 for the most part simply incorporates the information contained in Addendum No 1. In turn, Addendum No. 1 simply incorporates the information contained in FSEIR 566, which was prepared in June 1997 and was based on reports which substantially pre-dated that timeframe. As a result, much of the information contained in Addendum Nos. 1 and 2, regarding the impacts associated with the 299-Unit Project is at least four years old, if not older.

The issue of outdated studies is of particular concern with respect to impacts on endangered species. For example, Appendix C to Addendum No. 2, entitled "Updated Biological Mitigation Plan," relies upon surveys for the coastal California gnatcatcher which were conducted between April and June 1998. However, such surveys are generally only recognized as valid by the United States Fish and Wildlife service for a period of one year. Similarly, although Appendix C to Addendum No. 2 purports to provide an updated Biological Mitigation Plan for the 299-Unit Project, that plan fails to even acknowledge that the entire Property was proposed for designation as critical habitat for the federally-listed endangered Riverside fairy shrimp in September 2000. (In May 2001, the U.S. Fish and Wildlife Service issued the Final Rule designating the entire Property as critical habitat for the Riverside Fairy Shrimp.) As such, special care should be taken to ensure that all analysis conducted in DEIR 566 is based upon the most current information and data available.

With respect to conducting new surveys for the coastal California gnatcatcher--especially in the wake of all of the new residential development in the Trabuco Canyon area which may have made the coastal sage scrub habitat at the Property an important refuge for the local gnatcatcher population--Vedanta believes that, to ensure fairness and impartiality, the developer should be required to provide funds to enable the County to hire an independent gnatcatcher surveyor, rather than relying on any of the biological consultants the developer has used in the past. The reason that the County should engage a neutral, third-party consultant to conduct a new gnatcatcher survey is that, throughout the course of the County's administrative proceedings regarding the 318-Unit Project, the 705-Unit Project, and the 299-Unit Project, the developer's consultants have insisted that there are *no* gnatcatchers on the Property.

Attachment F

CONNOR, BLAKE & GRIFFIN LLP

However, in September 1998, a licensed surveyor hired by Vedanta conducted a brief survey of just a portion of the Property visible from Vedanta's adjacent property, and discovered the presence of two gnatcatchers after just a few hours of observation. In light of this striking contrast between the results of the surveys conducted by the developer's consultants and Vedanta's consultant, the fair solution would be to have an independent surveyor conduct the surveys that are required for DEIR 566.

Thank you for the opportunity to participate in the NOP process and we hope that the County will give careful consideration to Vedanta's requests in preparing DEIR 566. If we can be of further assistance in this regard, please do not hesitate to contact our office.

Very truly yours,

Edmond M. Connor

Vedanta/Aradi/Corresp/Britton1.Doc

EXHIBIT "A"

LOCAL
The Orange County Register • Tuesday, April 10, 2001

Effort builds to preserve Saddleback Meadows

Environment • State, federal buyout would prevent home development.

By JIM RADCLIFFE
The Orange County Register

TRABUCO CANYON

State and federal officials are trying to cobble together a multimillion-dollar offer to the owner of Saddleback Meadows so the 222-acre swath of rolling hills and ponds would become a reserve instead of a 299-home development, they said Monday.

The U.S. Fish and Wildlife Service and the California Department of Fish and Game are exploring government programs that would provide funding and possibly seek private money to round out the offer and keep the land as open space.

A similar deal was floated three years ago to landowner California Quartet Ltd. and appeared headed for a successful sale when the $17 million offer from the nearby St. Michael's Abbey broke down.

GRAPHIC
» Local 5

Unlike that effort, state and federal officials are involved this time and are driving the proposal.

Neighbors of Saddleback Meadows, including the abbey and the Ramakrishna Monastery, have fought the development for years. They

MEADOWS • PAGE 5

MEADOWS: Purchase eyed

FROM PAGE 1

fear it would hurt Trabuco's rural lifestyle.

"This is something that was unexpected and is totally fantastic," Ed Connor, the Ramakrishna's lawyer, said of the purchase attempt. "It truly represents manna from heaven for the monastery."

Abbey officials could not be reached for comment.

David Zoutendyk, the Fish and Wildlife Service's branch manager for Orange County, said his agency is "very interested in seeing that that site is purchased and set aside. It's a very dramatic piece of land. The ridgeline that runs through there – it's pretty neat."

Bill Tippets, deputy regional manager of the state Department of Fish and Game, said the land, off El Toro and Live Oak Canyon roads near Cook's Corner, allows coyotes, deer and other wildlife to move freely between Whiting Ranch Wilderness Park and O'Neill Regional Park, also a wildlife sanctuary. And Saddleback Meadows' ponds hold the endangered Riverside fairy shrimp, he added.

Talks regarding the deal are in the preliminary stages. A property appraisal is expected to be completed within two months.

"While we have never been opposed to public acquisition of the property, we are now wary of repeating a similar process," Jason Grange, a spokesman for the property owner, said in a written statement.

"Our current proposed project already includes the preservation of wildlife corridors and the setting aside of more than 157 acres of open space, the majority of which will remain natural and completely undisturbed.

"That amounts to 71 percent of the project dedicated to the public at no expense to taxpayers," Grange stated.

According to California Quartet's proposal, some of that open space would be for slopes to stabilize nearby hills.

Proposals to develop Saddleback Meadows have bounced around since 1978. At one time, 705 mobile homes were planned.

In 1998, negotiations between the abbey and California Quartet went on for months and evolved into a new deal: The abbey would put up $17 million and the county $15 million for 178 acres of open space; 130 homes would be built on the remaining land.

That deal broke down when it became clear that the developer needed to grade 30 of the purchased acres to stabilize hills, both parties said at the time.

Now, California Quartet is poised to go to the Planning Commission and the Board of Supervisors to win approvals for the gated community with 299 homes.

The first of those meetings was to be held Wednesday but was postponed for about two months.

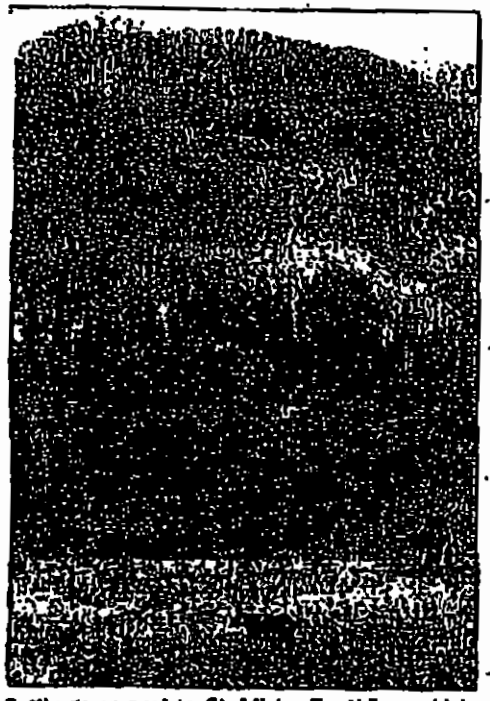
Tom Mathews, director of the county's Planning and Services Department, said an extensive environmental report was not presented in an easy-to-understand fashion, so he wanted to rework it.

•Contact Rad Pla at (949) 454-7358 or rradcliffe@ocregister.com

The Register

ORANGE COUNTY | Monday SECTION
WWW.LATIMES.COM/OC APRIL 16, 2001
Los Angeles Times

Developer's Wild Tale Goes On



Cattle graze next to St. Michael's Abbey, which has been fighting the Saddleback Meadows plan.

■ A revived Saddleback Meadows project for 299 homes will come before the county again. Conservation-minded buyers try to raise funds before a summer hearing.

By H.G. REZA
TIMES STAFF WRITER

The controversial Saddleback Meadows project, thought dead because of a court decision last year, breathed new life last week when county officials agreed to reconsider plans to build 299 homes in the pristine wilderness area.

First appearing on the Board of Supervisors agenda in 1978, the project was approved in 1980 on a 3-2 vote for 705 mobile homes. The Trabuco Canyon development has been mired in controversy ever since.

In 1998, developer Aradi Inc. announced that the company would build 299 homes instead, and in 1998 the board approved an environmental report on a 2-1 vote—but for the original 705 mobile homes. Last year, an appellate court ruled that the tie vote was invalid.

Now, Orange County officials have agreed to review the report again; however, a hearing set for last Wednesday was rescheduled for the summer. The parties involved said the postponement was to give state and federal officials and private landowners time to raise money to purchase the property to maintain it as open space.

Officials said that the California Department of Fish and Game is leading an effort to buy the 222 acres owned by Aradi. The U.S. Fish and Wildlife Service has joined the state agency, as have the Ramakrishna Monastery and St. Michael's Abbey, whose properties border the proposed development.

"We're looking at what sources of funding there may be. A lot of people would like to see that property not developed," said Bill Tippets, deputy regional manager of the Department of Fish and Game.

David Zoutendyk, a Fish and Wildlife Service biologist, said federal officials are having the property appraised.

"This land is important because it's the last linkage" between nature preserves in central and southern Orange County, Zoutendyk said. "It would connect Whiting Ranch Wilderness Park and O'Neill Regional Park, providing a corridor for deer, bobcats, birds and other animals."

Please see SADDLEBACK, B3

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SADDLEBACK: New Impact Report Sought for Plan

Continued from B1

Jason Grange, spokesman for the developer, said the company will consider a purchase offer, but he said two previous attempts by the county and the abbey in 1998 to buy all or part of the property fell apart.

"We had an agreement, but the abbey couldn't come up with the money. We know about the current attempt to buy the property, but we're also going to continue with a contingency plan for the 299-home complex," Grange said.

Attorney Ed Connor, who represents Ramakrishna Monastery, countered that the project cannot continue unless a new environmental report is drafted for 299 homes. It was Connor who persuaded the court to invalidate the board's approval of the report.

"In February 2000, the judge directed the county to set aside approval for the project and suspend all planning activity until a new environmental report is prepared," he said.

Superior Court Judge Robert E. Thomas ruled that the Board of Supervisors and county Planning Commission had "to set aside their . . . respective determinations that the final environmental impact report and addendum were adequate." He also ruled that the board "never validly certified" the report.

But Grange and county Planning and Services Department spokesman Josh McDonnell said that a subsequent appellate court ruling narrowed the issue solely to the tie vote by the supervisors that validated the report.

"The appellate court ruled that a 2-to-2 vote did not certify the environmental report," McDonnell said. "The ruling also directed that all subsequent approvals [by county officials] be set aside."

While the 19-page opinion by the California 4th District Court of Appeal addressed only the validity of the tie vote, the justices also upheld Thomas' ruling that the environmental report adopted by the board on a 2-2 vote did not cover Aradi's proposal to build 299 homes.

The appellate court's findings note that the "county planning commission certified an environmental impact report for a 705-unit touring development in Trabuco Canyon," not for 299 homes.

"The appellate court is saying that there never was an environmental report done for 299 homes. That's been our position all along," Connor said.

Still, Grange said the appellate ruling was a victory for Aradi.

"The court didn't find the environmental report inadequate, only that the supervisors couldn't certify it with a 2-to-2 vote. The court said a tie vote wouldn't do it," Grange said.

He said the project "has been redefined and revised" for the board's and Planning Commission's study.

Grange said the revisions include setting aside 167 of the 322 acres as open space, but Aradi is still committed to building 299 homes on the site.

Supervisor Todd Spitzer, whose district includes Saddleback Meadows, did not respond to repeated inquiries about his position on the project. Instead, staff members offered to explain his position in off-the-record interviews. He voted for it in 1998.

However, a tie vote may be all that the developer and conservationists get as long as Supervisor Jim Silva is on the board. Silva has abstained from voting on the project because Aradi was fined $14,000 in 1996 for laundering contributions to his campaign.

Saddleback Meadows has been a source of controversy as early as 1980, when supervisors gave it preliminary approval despite objections from county planners and the grand jury because of grading problems. Sixteen years later, officials estimated it would take 13 months of grading and the removal of 500,000 truckloads of dirt before construction could begin.

In 1982, then-Supervisor Bruce Nestande took the unusual step of writing letters to a bank to help then-owner G. Gratton Worthington obtain a $2.4-million loan to develop the property. The project, which at the time called for 705 mobile homes, was still being reviewed by county officials when Nestande acted.

The loan was never repaid, and the owner filed for bankruptcy.

Aradi bought the property out of bankruptcy in 1993 and obtained a permit to build the mobile home park but later decided to build homes instead.

Because of potential grading costs and money spent by Aradi on lawyers, lobbyists, hydrologists, soil experts and an environmental study, then-Supervisor William O. Steiner said in 1996 that Aradi needed to build at least 300 homes to turn a profit. The developer planned to construct 318.

The county's planning staff recommended a maximum of 299 homes, but a county planning commissioner said only 260 could be built. The result was that in July 1998, the county Planning Commission handed the project to the Board of Supervisors without a recommendation—uncorking another controversy.

Development Talks

Saddleback Meadows, a proposed housing project that's been around since 1978, got a new lease on life when county officials agreed to restudy the development. Opponents thought that a court ruling had effectively killed it last year.

PAUL DUGDALE / Los Angeles Times

Steiner, a supporter of the project, was accused of a conflict of interest for accepting a $5,000 consultant fee from an Aradi lobbyist. Steiner was cleared of wrongdoing and voted for the development.

Silva was the center of another controversy when it was revealed that VarLyn Jensen, a lobbyist for St. Michael's Abbey in opposition to the project, sent out a fund-raising letter for Silva, encouraging contributors to pressure him to vote against Saddleback Meadows. Jensen was a member of a host committee to raise funds for Silva, after it was revealed that Aradi had made illegal contributions to Silva.

The fund-raising letter appeared a few months after Aradi had been fined for making illegal contributions to Silva. The supervisor decided to abstain from voting on the issue.

Jensen, who some consider the most savvy political insider in the county, said at the time: "I'm raising money for Jim Silva legally. [Aradi] laundered their contribution and got fined."

He also admitted to contributing to Steiner's campaign that year, even though he called Steiner "a cheerleader" for Saddleback Meadows at a Planning Commission hearing.

Those were not the only intrigues. At the same time, Katherine Swiss, a former Miss Texas who profited from property development in that state, was quietly working with the Norbertine priests from St. Michael's Abbey to derail the project.

In 1993, Aradi hired a private detective to investigate Swiss and her finances when she attempted to outbid the developer for the sewer and water rights for the property at the bankruptcy sale.

Aradi, which had offered $35,000 for the rights, was forced to pay $100,000 instead.

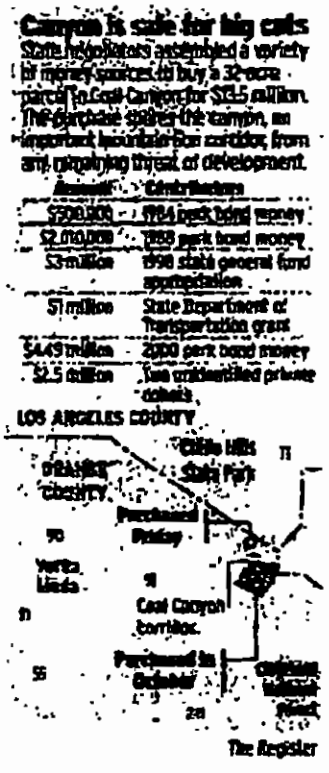
Swiss said back then she would have acquired the rights, but "$30,000 was all the money I had with me at the time."

Swiss, who is still helping the abbey, could not be reached for comment. Jensen, who is still representing the abbey, declined to comment.

But Tippets, Grange and others familiar with the project said Swiss is helping the abbey raise funds to help conservationists purchase the property from Aradi.

EXHIBIT "B"

LOCAL
The Orange County Register • Tuesday, July 3, 2001



State buys key link in lion lair

Environment • A $13.5 million deal extends the Coal Canyon wildlife corridor.

By PAT BRENNAN
The Orange County Register

COAL CANYON

Parks officials have struck a last-minute deal to buy the final link in one of the state's most important wildlife corridors for $13.5 million.

"We were sweating bullets on this one," said Warren Westrup, chief of the office of acquisitions and real property services for state parks. "But we knew it was too important of a deal to lose."

The 32-acre parcel, bought Friday from a group of Phoenix lawyers, will become part of the state parks system, joining a 650-acre piece purchased and spared from development in October.

The Coal Canyon wildlife corridor runs under the Riverside (91) Freeway. For mountain lions and other creatures, it is the last link between the Chino Hills and Cleveland National Forest.

The state plans to return the Coal Canyon corridor to a natural condition – ripping out the on- and off-ramps and asphalt roadway and replacing them with a stream bed and native vegetation. Hiking and horseback riding will probably be permitted.

The deal was touch-and-go until the last moment.

First, the owners in Phoenix had to agree to accept about $3 million less than the lowest appraisal price of more than $16 million.

And the deal had to close Friday, the final day of the fiscal year. If it hadn't, bond money and other contributions totaling about $4.5 million would have vanished. The lawyers also would have had the right to seek another buyer as of today.

At one point Friday, parks officials and activists working on the deal nearly had to reach into their pockets to come up with a $75 processing cost. But the lawyers group agreed to allow the sum to be paid later.

•Contact Brennan at (714) 796-7865 or pbrennan@ocregister.com

$13.5-Million Deal Saves Key Wildlife Area

Parks: Corridor will prevent isolation from nearby wilderness, which would have diminished gene pool.

By DOUGLAS HAGERMAN
TIMES STAFF WRITER

A key wildlife corridor connecting Chino Hills State Park on the north side of the Riverside Freeway with the Cleveland National Forest south of the freeway now belongs to the state, officials said Monday.

The state Department of Parks and Recreation bought the 32-acre parcel for $13.5 million, including about $2.5 million in donations from private conservancies.

Escrow closed late Friday. The state had purchased 649 acres of wilderness in Coal Canyon south of the freeway last year for $40 million.

The transaction barely met a Friday deadline that was crucial to securing $3 million in state funding for the project.

A news conference to announce the milestone is set for 1 p.m. today on the property.

The 32-acre parcel is critical to the health of Chino Hills State Park wildlife, officials said. Had development isolated the park from nearby wilderness areas, its gene pool would have diminished over time because its wildlife wouldn't have been able to breed with wildlife outside the park, officials said.

"This is a huge step" toward preserving the park's well-being, said Claire Schlotterbeck of Brea, the president of Hills for Everyone, a coalition of citizens groups that helped create Chino Hills State Park in the early 1980s.

It's particularly the larger species, such as mountain lions and deer, that need the space to roam and find mates, she said.

If the park's mountain lion population declined from inbreeding, for example, it would lead to a population explosion among their natural prey, including opossums, raccoons and skunks. Those animals prey on birds' eggs, so growth in their population could reduce the park's avian population. That, in turn, would hurt the spread of plant seeds, Schlotterbeck said.

At the time of the Coal Canyon purchase south of the freeway last year, state parks Director Rusty Areias said it was probably the most critical biological corridor in California.

Three conservation biologists, Reed Noss, Paul Beier and William Shaw, said in 1998 that restoration of a natural linkage under the freeway would be a first.

"It's a global precedent, I think, because we've developed this freeway" that blocks the connection between the wilderness areas on either side "and we're returning it [the connection] to the wildlife," Krueper said.

Two long, dark tunnels were the only connection between the two sides of the freeway until the deal closed. While mountain lions used the tunnels, deer would not.

Public and private officials were scrambling to close escrow up until the last minute—5 p.m. Friday, Schlotterbeck said.

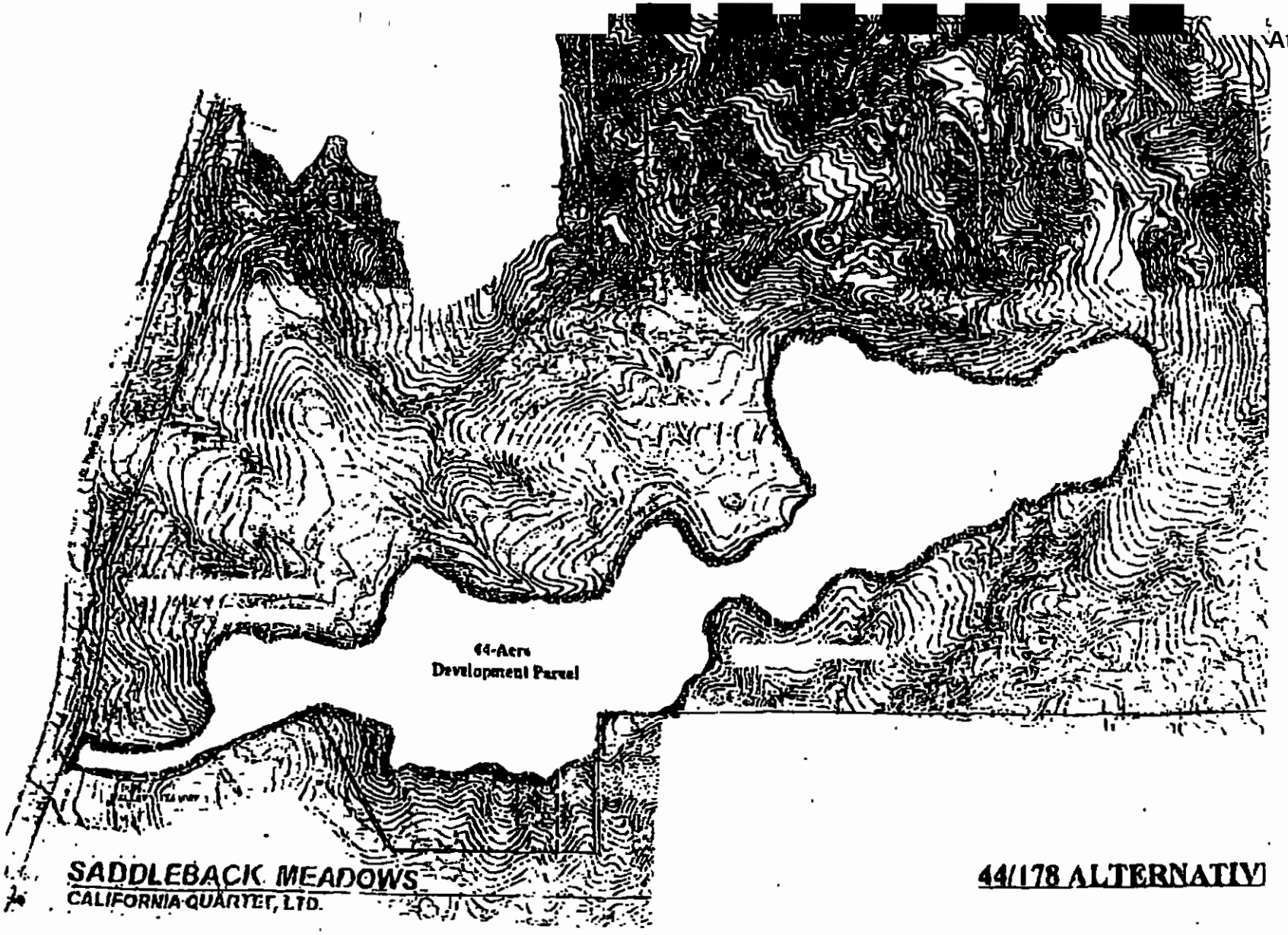
The state had set aside $3 million in a three-year trust that expired Saturday. If the money hadn't been spent by then, it would have been lost for the purchase, Schlotterbeck said. "It's just been really nerve-racking," she said.

Park users may never notice the wildlife corridor's impact, but they would have noticed the impact of failing to secure it, she said.

"In 50 years, they'll be thanking us," she said, "because deer will still be there and golden eagles will still be there."

EXHIBIT "C"

Sep-07-01 12:59P P.27
SEP-06-2001 17:00 FROM:EARTHPOTENTIALPLNG 7148346134 TO:91213489515 P.05/05



APPENDIX A.3

COMMENTS FROM COUNTY OF ORANGE DEPARTMENTS

Attachment F

COUNTY OF ORANGE

TRANSMITTAL SLIP

TO: Ron Tippets BT DATE 12/4

DEPT. PDSD / Advance Planning

FROM Bill Griesman, PDSD / E

	REMARKS
☐ APPROVAL	
☐ ACTION	
☐ COMPLETE & RETURN	
☐ CONFER	Bill only had minor
☐ FILE	
☐ FOLLOW-UP	updates on the
☐ FOR YOUR INFO.	
☐ INITIAL & RETURN	three flagged
☐ NOTE & FILE	
☐ NOTIFY	
☐ PER CONVERSATION	
☐ PER YOUR REQUEST	
☐ PHONE ME	
☐ PREPARE REPLY	
☐ POST	
☐ RECOMMENDATION	
☐ REPLY	
☐ RETURN W/YOUR COMMENTS	
☐ SEE ME	
☐ SIGNATURE	
☐ SIGN & RETURN	
☐ TYPE_____COPIES	SIGNATURE

(0207) F850-146.2 (R10/88) PHONE

Orange County General Plan

Land Use Element

The Orange County General Plan Land Use Element (Adopted June, 1982), designates the project site as 1B (Suburban Residential - 0.5 to 18 du/ac). The Community Profile, which is not a part of the General Plan, designates the site as 1.2 low density residential (0.5 to 2.0 du/ac.) In addition to the Land Use Element, the project site is subject to policies contained in the Circulation Element, Housing Element, Public Services and Facilities Element, Noise Element, Recreation and Safety Element.

Housing Element

The Orange County General Plan Housing Element was adopted ~~September 13, 1993~~ May 8, 2001 and is a comprehensive statement of broad and specific policies to facilitate development of housing in the County. The project site is located in Regional Statistical Area (RSA) 43-C. RSA 43-C had a ~~1995~~ 2000 population of ~~190,766~~ 231,981 with a year 2000 population projection of ~~242,700~~ 274,246 (1.77 annual percent growth). RSA 43-C had ~~1995~~ 2000 jobs per housing ratio of ~~2.00~~ 1.09. ~~the highest in the County~~.

In 1979, the County adopted the Inclusionary Housing Program (IHP), which required developers to provide 25 percent of all new dwellings within the affordable category (i.e., 120 percent or less of median income). In 1983, the IHP was replaced by the Housing Opportunities Program (HOP), which phased out mandatory requirements over a three-year period in favor of voluntary compliance with affordable housing objectives encouraged by County incentives and market forces. Adoption of the HOP did not rescind prior approvals of mandatory affordable housing requirements placed on projects as conditions of approval under the IHP.

A total of 26,907 mandatory affordable units have been required to date as part of General Plan amendments or zone changes. The vast majority of these (24,268) are found within planned communities, with the remainder scattered in conventionally-zoned parcels.

The previously approved and recorded Final Tract Map 10692 was required in the IHP/HOP to provide 66 2/3 percent of total construction as affordable housing (mobile homes). Since it was an original Condition of Approval, this requirement still applies to the project even though the County-mandated affordable housing requirements have since been rescinded.

County of Orange **MEMO**

DATE: December 10, 2001

TO: Chuck Shoemaker

FROM: Frank McGill (x2099)

SUBJECT: Saddleback Meadows SCEIR 566

My comments are as follows:

Page 4.1-5:

Delete discussion of Community Profile here and anywhere else it may appear.

Pages 4.2-8 and 5-3:

Based on conservations with Pat Stanton and John Earnest, it is my understanding that there is a reasonable chance that, with no development or no activity by man, a landslide will occur on this property that can adversely impact El Toro Road and adjoining properties. This should be clearly stated under the discussion of landslides (pg. 4.2-8) and Alternative # 1 No Development (page 5-3).

Attachment F

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Vicki L. Wilson, Director
300 N. Flower Street
Santa Ana, CA

P.O. Box 4048
Santa Ana, CA 92702-4048

Telephone: (714) 834-4741
Fax: (714) 834-2380

DATE: December 12, 2001

TO: Tim Neely, Manager, Environmental Planning

FROM: Rob Selway, Chief, Historical and Cultural Programs

SUBJECT: Draft EIR 566 for Saddleback Meadows

Thank you for the opportunity to comment on the subject project. Historical and Cultural Programs staff have reviewed the DEIR for Saddleback Meadows Development Project and have the following comments:

- The cultural resources mitigation language used in the EIR should be updated to address current standards for artifact curation and long-term collection management. The current conditions have been in place for several years and it is upsetting to find the old conditions still in use. The updated language protects the County at the time collections are donated so that our warehouse facility is not burdened with responsibility to accept unprepared artifacts and assume curation costs.

- The Board of Supervisors requires cultural resource artifacts, which may be discovered during the site development, be donated to a suitable repository that will maintain the collection for future scientific study and exhibition "within Orange County." Prior to donation, the certified cultural resources consultant should prepare the collection "to the point of identification."

- The project proponent should be prepared to pay "potential curation fees" to the County repository for the long-term curation and maintenance of donated collections.

- PDF-1 (4.10-17) states that ORA-710 will be covered and preserved in a biological conservation easement. Earth-disturbing activities, including biological enhancement programs, should not occur unless monitored by a certified archaeologist. Fencing, plantings and water systems for biological areas can threaten the covered cultural resources, especially if the primary purpose of the easement is viewed as biological conservation, then the archaeological resources may be overlooked. Placement of such improvements must be considered by a certified archaeologist to avoid the known significant site.

- SC10-1 Literature search and survey has been completed according to cultural resources analysis, so why require this condition? (4.10-1) Outlines previous literature search. Was this done by UCLA? The South Coast Information Center is now located at CSU Fullerton.

William (Bill) Grieman

From: Chuck Shoemaker
Sent: Tuesday, December 18, 2001 4:53 PM
To: William (Bill) Grieman
Subject: FW: Comments on EIR 566

-----Original Message-----
From: Joshua McDonnell
Sent: Tuesday, December 18, 2001 4:51 PM
To: Chuck Shoemaker
Subject: Comments on EIR 566

HI Chuck,

Thank you for the opportunity to comment on Draft EIR 566. My comments are as follows:

1) Section 4.1- On page 4.1-5, a discussion of the Land Use and Housing Elements to Orange County General Plan is provided. The information contained in this discussion is inacurate as both Elements have recently been amended. This particularly concerns me because the text implies that the County is largely meeting its' affordable housing goals. To the contrary, we are most emphatically not meeting the needs of very low income households.

2) Section 4.1- On page 4.1-12, the statement is made that the proposed project is in substantial conformance with the Housing Element. I would advise a close review of the most current Housing Element prior to making that claim.

3) This may or may not be necessary, but the environmental assessment does not inlude a discussion the socio-economic impacts of the proposed project or the project alternatives. It may also be appropriate to include a new project alternative, or modify alternative 5 to specifically include a discussion of the potential for the development of "affordable housing" units.

4) Section 5.4.6- In Alternative 6, the text describes 44 acres being used for residential development, but Table 5.5 states that 22 acres will be used for lots and 8.3 acres will be used for streets totalling about 30 acres. I would advise having someone double check all the tables in the alternatives section.

Please feel free to contact me at 834-2083 regarding these comments.

12.19.01

The following comments are made based upon a review of the Geotechnical Report prepared by G. A. Nicoll & Associates, Inc. issued under Project 4816-04.3 dated August 30, 2001. The report was submitted as Appendix C of the Draft Revised Subsequent Environmental Impact Report, EIR 566, State Clearinghouse No. 96121072, Volume 2.

1. The geologic map and sections provided in Appendix C (G.A. Nicoll & Associates, Inc. report dated August 30, 2001) have been reproduced at a scale of about 1 inch = 330 feet. This makes it extremely difficult to evaluate the merits of the report. Please provide unreduced drawings.

2. Under Item 1. c) The consultant states that the base plan used contained 318 lots and was very similar to the proposed 299-lot plan with only minor changes. Based upon the last review performed (July 1998) it appears that sufficient time existed to allow the consultant to re-evaluate the site based upon the more recent development plan.

3. While it may be correct that the minor changes would not have a significant impact upon the overall grading conditions given the controversy surrounding the proposed project the most recent plan should be utilized for analyses.

4. Item 1. f) Based upon the information provided the most recent exploration was performed about six years ago. Please explain.

5. As noted under item 4 a more detail evaluation will be conducted (required) during the grading permit application process.

6. Item 4. c) A concern exists relative to the shear strength parameters utilized in the slope stability analyses. The strength parameters used for slope stability analyses under seismic conditions greatly exceeds the 20 percent increase of the static parameters. Please re-evaluate seismic slope stability analyses.

7. It appears that the most recent exploration referred to under Item 5. b) was performed in 1995 and not within the last year of the subject report dated August 2001 (see comment 4).

8. Under Item 6 on page 4 of the subject report the consultants state that stability analyses were conducted utilizing Alternate 4 Plan grades. This plan which is reproduced at a scale of about 1 inch to 330 feet appears to be similar to the proposed Site Plan. However there are differences plans. Given the sensitivity of the area analyses should be performed utilizing the most recent plan. Please refer to the above comments 2 and 6.

9. Item 8.1 c)
There is still concern as to whether the general area represented by Borings BC-12 & 14 should be within the undisturbed bedrock or the landslide area. It is difficult to completely dismiss the interpretation of data by other consults and you own previous conclusions for the inclusion of the subject area within the landslide zone. While the borings you cite according to your most recent interpretation did not disclose the

Attachment F

12.19.0

presence of landslide material they did show out of slope bedding and shear zones that could be problematic to development. However as noted by the last paragraph under this heading the only consequence would be a negligible variation in remedial grading quantities. If the landslide were present you estimate that a four percent increase in the remedial grading quantities would be required to construct an upper shear key in the area of Boring BC-14. It should be noted that a four percent increase in this value represents some 272,00 cubic yards of material.

10. Please provide corrective grading recommendations to demonstrate that the subject area meets Code requirements for stability. The additional yardage should be included in the total remedial grading quantity. Alternately you may provide additional subsurface testing and evaluation to demonstrate conclusively that the subject area has not been subject to land movement and that it meets Code requirements.

11. Please explain comment under Item 8.2.1.a) as no recent subsurface information was presented in the subject report. According to the information noted on the logs for test Boring BC – 1 through BC – 17 the exploration occurred in 1995 (see comment 4).

12. You indicate that landslide material is not present within the area represented by Test Boring BC- 15. Explain the inclusion of the note 'landslide material' at a depth of 108 feet on the log.

13. Under Item 9.c) see previous comments regarding design parameters utilized for seismic analyses (see comment 6).

14. Assuming no development occurs the site and adjacent property could be subject to damage by future movement of the existing landslides and other areas of adverse geologic/geotechnical conditions.

15. Under the proposed development plan as well as the alternate designs the open space areas (no remedial grading) within the site and adjacent property could be damaged by future movement of unstable areas which are located both on-site and off-site.

16. Unable to locate test Boring BC-13.

17. Previous report indicates that an estimated 10 percent of back cuts are expected to fail during the grading process. Please provide guidelines that can be implemented during the grading process to prevent or limit this type of failure. Back cut failures could have an adverse impact upon the proposed development as well as the adjacent property.

Vicki L. Wilson, Director
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Santa Ana, CA 92702-4048
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Fax: (714) 834-5188

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

DATE: December 20, 2001

TO: Tim Neely, Manager, Environmental Planning Services

FROM: R. S. Bavan, Chief, Flood Control Programs

SUBJECT: Saddleback Meadows Screencheck Revised Subsequent EIR 566

We have reviewed the above mentioned EIR and offer the following comments for your consideration:

1. Standard County Condition SC 3-1a should be revised to also include analysis of erosion and sediment transport impacts due to increased flows from the project site. Hydrologic and hydraulic analyses performed to evaluate proposed mitigation measures should utilize OCFCD's criteria and standards where applicable and generally as contained in the Orange County Flood Control Design Manual, the 1986 Orange County Hydrology Manual (OCHM) and its Addendum No. 1.

2. The Screencheck EIR indicates that the project site is tributary to two OCFCD facilities, Aliso Creek (Facility No. J01) and Oso Creek (Facility No. L03). The U. S. Army Corps of Engineers is currently performing Watershed Management Studies on the Aliso Creek and San Juan Creek (which includes Oso Creek) watersheds It is recommended that the EIR be prepared in consultation with Jim Hutchison [(213) 452-4204] of the Corps to ensure consistency with future Corps' plans for these watersheds.

If you have questions regarding this memo, please contact Bryan McKinney at 834-2534.

R. S. Bavan

BWM:cd/S:\McKinney\2001-0067Saddleback Meadows SEIR 566.doc

County of Orange **MEMO**

DATE: DEC 2 0 2001

TO: Tim Neely, Manager, Environmental Planning Services

FROM: Manager, Subdivision and Grading Services

SUBJECT: **Screen Check Revised Subsequent EIR 566-Saddleback Meadows**

Attention: Chuck Shoemaker:

This is the Screen Check Revised Subsequent EIR for the Saddleback Meadows Project proposing the development of 299 Single Family Residential Units on a 222 Acre Site.
The site is located on the Easterly side of El Toro Road 0.5± miles southerly of the intersection of Santiago Canyon Road/El Toro Road and Live Oak Canyon Road within the Foothill/Trabuco Specific Plan and the Aliso Creek Corridor Specific Plan.

DISCUSSION:

The following items are to be addressed prior to Traffic Review's final comments.

1) The traffic study includes a year 2020 analysis. The County of Orange requires the traffic analysis for General Plan Buildout (year 2025) period. The year 2025 is consistent with OCP 2000 projections and will assure consistency with regional forecast. In addition a table showing roadway capacity values (year 2025) with and without project for all links along El Toro Road/Santiago Canyon Road from Glen Ranch Road to the Eastern Transportation Corridor must be included in the traffic study. The study shows a forecast on Santiago Canyon Road of 12.1, 13.6 and 15.4 (1000's). This is much lower than the County's or OCTA's forecast for this facility. This needs to be reconciled prior to the final traffic report.

2) In order to bring the three intersections of El Toro Road at (a) Project Entrance, (b) Valley Vista Way and (c) Glen Ranch Road to acceptable LOS the applicant proposes two additional through lanes on El Toro Road. The applicant is required to demonstrate how the additional right of way will be acquired and how the roadway will be transitioned from four lanes to two lanes northerly of the project entry.

EIR 566

ADDITIONAL COMMENTS:

3) All ICU analysis for El Toro Road/Project Entrance "without project" are to be deleted. The intersection would not exist without project.

4) The Standard conditions of approval (volume 1 pages 4.5-29) includes improvements to Live Oak Canyon across the property frontage. This condition does not apply since the site does not front Live Oak Canyon Road.

5) We support the traffic report recommendation that the project should participate in the additional improvement cost for Santiago Canyon Road. However we request that the report include supporting data.

for Patrick J. Stanton, Manager
Subdivision and Grading Services

TS/cm

CC: Ignacio Ochoa

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Vicki L. Wilson, Director
300 N. Flower Street
Santa Ana, CA

P.O. Box 4048
Santa Ana, CA 92702-4048

Telephone: (714) 834-2300
Fax: (714) 834-5188

File: DR-EIR
ON-Admin

DATE: December 20, 2001

TO: Tim Neely Manager, PDSD/Environmental Services Division

ATTN: Chuck Shoemaker, Senior Planner

FROM: Chief, PFRD/HBP Program Management & Coordination-Facilities Development

SUBJECT: Screencheck Revised Subsequent EIR 566/Sadddleback Meadows

HBP Facilities Development staff has reviewed subject screencheck documentation and offers the following comments:

A. *Pages S-28 and S-31*, "Saddleback Meadows Conceptual Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Areas (Helix, 2001a, 2002b); where is this documentation to be found within submitted documentation? It should be available within the technical appendices.

B. *Page S-35, PDF 11-3*; revise to read as follows:

"The proposed project will pay in-lieu park fees in accordance with the County of Orange *Local Park Code subject to the approval of the Manager, PDSD/Current Planning Services prior to issuance of building permits*"

C. Page S-35, PDF 11-4; change to read as follows:

"The proposed project will dedicate open space in accordance *with County of Orange Standard Conditions of Approval Manual for resource and scenic preservation easement criteria subject to the approval of the Manager, PFRD/HBP Program Management & Coordination, prior to recordation.*"

(NOTE: *Areas shown as Regional Park Dedication Area* on Figure 4.11-2, Recreation Areas and Trails, *shall be dedicated as resource preservation easement areas* (excluding manufactured/graded areas) to the County of Orange. Buffer areas such as manufactured/graded slopes etc, between development and the resource preservation easement area shall be dedicated to the County as scenic preservation easement areas.)

D. *Page 2-7, second paragraph*; the DEIR should clearly delineate the location of Aliso Creek on maps/figures for the proposed project.

E. *Page 2-9, Objective #3*; revise to read as follows:

" Minimize visual effects on surrounding properties through creative grading and site planning/*urban edge* techniques."

F. *Page 2-10, last paragraph*; change to read as follows:

" . . . incorporated into the project *to buffer the project from these adjacent landowners".*

G. *Figure 2.10, Illustrative Site Plan*; delineate a riding and hiking trail south of the project entry aligned parallel El Toro Road south to Valley Vista Way.

H. *Page 2-15, Design Features*;

1. *Add a feature bullet* as follows:

"Dedication of a recreation easement to the County of Orange for the Live Oak Canyon Regional Riding and Hiking Trail south of the community entry paralleling El Toro Road to the southern terminous of the project".

2. *Feature bullet point # 4; add as follows*: "A *riding* and hiking trail connecting the Aliso Creek Riding and Hiking Trail *via the Live Oak Canyon Riding and Hiking Trail* . . ."

3. *Feature bullet #8*; the County of Orange does not utilize "restricted" scenic easement nomenclature. Only the term scenic preservation easement is utilized. Also start subject point with "*Dedication to the County of Orange of approximately* 61.7 acres of Scenic Preservation Easement . . ."

4. *Last bullet point*; change to read as follows:

" *Dedicate* approximately 80.9 acres of *resource preservation easement area* to the County of Orange. This area would preserve and enhance existing biological resources".

5. *Last bullet point*; the text indicates 12.5 acres are to be dedicated as biological open space. Clarify as to what biological open space means. What limitations and or special conditions would be imposed upon the area and who is to accept the dedication? It would seem inclusion within a resource preservation easement area adequate to preserve this open space.

I. *Page 2-17, third paragraph*; replace "polishing" with the term "natural filter".

J. *Page 4.1-3, fourth paragraph*, last sentence; revise to read as follows:

" The portion of the park adjacent to the *southern* project site *boundary* is designated . . "

K. *Page 4.1-11, second paragraph, second sentence*; change to read as follows:

" As part of the proposed project, approximately 80.9 acres of the site would be *dedicated* by the applicant to the County of Orange as *a resource preservation easement area.*"

L. *Page 4.2-14/SC-23*; revise to read as follows;

" . . . Manager, PDRD/Harbors, Beaches & Parks, *Program Management & Coordination* Division."

M. *Pages 4.3-2 & 4.3-4*; Drainage Point numbers are referenced as a Drainage Sub-Areas by letter on Figure 4.3.1(Existing Drainage Features). Change either the text or the exhibit to be internally consistent.

N. *Page 4.4-8/PDF 4-9*; a riverine system should also be added for northern development as it drains into a sensitive future resource preservation easement area and its natural cleansing of urban runoff provides mitigation for urban pollutants.

O. *Page 4.4-10, fourth bullet point*; will the HOA provide for the maintenance costs for the proposed energy dissipaters at the storm drain outlets emptying into the future resource preservation easement area?

P. *Page 4.5-29/SC 5-7*, revise to read as follows :

" . . . the necessary right-of-way along *El Toro Road to* Santiago Canyon Road *per the Foothill Trabuco Specific Plan (Exhibit II-8, Recreation Plan)*, including . . . "

" . . . meeting the approval of the Manager, *PFRD/HBP Program Management & Coordination*".

Q. *Page 4.5-30/M5-2*; inconsistent with Page 4.5-27(Site Access) wherein the text indicates a signal at El Toro Road "may" be necessary. M 5-2 says "shall provide". Resolve in DEIR text.

R. *Page 4.8-25/PDF 8-1*; we cannot find the location of the "Saddleback Meadows Conceptual Mitigation and Monitoring Plan for CDFG Jurisdictional Area (Helix, 2001a)" within the screencheck document. It should be provided within the technical appendices of the circulated DEIR.

S. *Page 4.8-26*; who will maintain pay for the maintenance of the ephemeral shrimp fairy ponds long-term? This should be made clear within the text.

T. *Page 4.8-29/SC 8-7*; change to read " . . . Harbors Beaches and Parks, *Program Management*

and Coordination Division . . ."

U. *Page 4.8-30, #3*; all replacements shall be at least *15-gallon plants* per County Standard Conditions of Approval Manual criteria for Tree Preservation Plans which defer to HBP for approval of said plans.

V. *Page 4.8-30, #3, second paragraph*; revise to read as follows: " . . . or replaced by *an identical species of equal or greater size.*" This is consistent with tree preservation mitigation HBP asks of all applicant's tree preservation plans.

W. *Page 4.8-30, #5*; change to read " . . Division, *Program Management & Coordination* Division".

X. *Page 4.8-31/SC 8-8*; a heading entitled "*Public Area Landscaping*" should precede conditions within SC8-8.

Y. *Page 4.8-31/SC8-8*, Preliminary Plan; revise to read "*Prior to recordation of a subdivision map*, an agreement shall be . . ."

Z. *Page 4.8-31/SC8-8*, Detailed Plan; change to read " . . . and Parks, *Program Management & Coordination* Division."

AA. *Page 4.8-32/SC8-9*; condition should be prefaced by the term "*Private Area Landscaping*". Moreover, revise the first sentence to read " . . .with a plan approved by the Manager, PDSD/ Subdivision & Grading".

BB. *Page 4.8-32/SC87-9*; add two missing additional condition components for Private Area Landscaping per the County Standard Conditions of Approval Manual.

CC. *Page 4.9-1/last paragraph*; project site is located within the western portion of the specific plan area in the "*Bridlewood Residential (BWR) District*", not the Upper Aliso Residential District (UAR). Correct the text reflecting correct zoning within the Foothill Trabuco Specific Plan.

DD. Page *4.9-4, "Land Use Regulations"*; project is sited within the "Bridlewood Residential (BWR) District.

EE. *Page 4.9-19/PDF 9-1*; revise the text as both natural and manufactured scenic corridor setback areas will be placed within scenic preservation easement areas. One variety of scenic preservation easements permits fuel modification and one does not. *Delete* reference to fee dedication as HBP will not be accepting dedication in fee for parkland.

FF. *Page, 4.9-19/PDF 9-4*; change to read as follows:

" In addition, on-site landscape screening is proposed to further reduce visual impacts, *both* subject to *approval of the Manager, PFRD/HBP Program Management & Coordination*".

GG. *Page 4.9-21/SC 9-1*; revise to read as follows;

"... natural open space for dedication *within resource preservation easement areas* to the County ..."

HH. *Page 4.9-21/SC 9-2, (A & B)*; reference to Manager, PFRD/HBP should add "*Program Management & Coordination* Division."

II. *Page 4.9-22/SC 9-4*; *delete* this standard condition as it is *redundant* in relation to other standard conditions within the text in this section of the screencheck DEIR.

JJ. *Page 4.11-1, first paragraph*, last sentence; revise to read as follows;

" In addition, the project will have access to the Orange County Regional Riding and Hiking Trail and *Regional Bikeway* Systems, with on-site connection provided to the Viewpoint Spur Trail and the Aliso Creek Regional Riding and Hiking Trail, *via the Live Oak Canyon Regional Riding and Hiking Trail*, which parallels ..."

In addition to the trails mentioned in this sentence, include references to the following:

1. The *Aliso Creek Bikeway*, a regional Class I (paved off-road) bikeway located parallel to the Aliso Creek Trail.

KK. *Page 4.11-1, second paragraph*; O'Neill Regional Park correct acreage citation is approximately 3,100 acres, not 2,000 acres as now referenced in the text.

LL. *Page 4.11-3, Regional Bikeways/Regional Riding and Hiking Trails*; approval of a re-route during construction shall be subject the following conditions and should be included as a recreation mitigation measure:

1. Prior to any grading and/or construction activities which precludes the utilization of either the Aliso Creek Class I Off-Road Bikeway, or the Live Oak Canyon Regional Riding and Hiking Trail, a re-routing/detour plan shall be submitted to the approval of the Manager, PFRD/HBP Program Management & Coordination in conjunction with a County Property Permit

NOTE: The same condition shall also be applicable to the Class II On-Road Bikeway aligned along the north bound lane of El Toro Road contiguous the proposed project.

MM. *Figure 2.10, Illustrative Site Plan*; identify the point where the existing Aliso Creek Bikeway and proposed Aliso Creek Riding and Hiking Trail undercross El Toro Road north of the project community entry.

NN. *Figure 4.11.1, Foothill Trabuco-Specific Plan Regional Parks and Trails*; update as follows:

In the legend, change #1 to the "El Toro *Road* Bikeway". This is a Class II (on-road, striped lanes) bikeway. *In the legend and on the map, add the Aliso Creek Bikeway.* This is a regional Class I bikeway and is separate and distinct from the Aliso Creek Trail (a regional riding and hiking trail).

OO. *Figure 4.11.2., Recreation Areas and Trails*;

1. Add the Aliso Creek Bikeway to the map and to the legend.

2. Identify the point where the existing Aliso Creek Bikeway and the proposed Aliso Creek Trail undercross El Toro Road and enter the project vicinity.

3. Using two different colors, show the Aliso Creek Bikeway and the parallel Aliso Creek Trail extending northward from the undercrossing of El Toro Road.

4. Show the green trail (the Live Oak Canyon Trail) extending from the southerly property boundary, northward to the Aliso Creek Trail undercrossing of El Toro Road.

5. Apply a different color to the proposed local trail shown running east-west through the project site. (This is an unnamed trail that would not be maintained by the County.

PP. *Page 4.11-3, third paragraph*; the Viewpoint Spur Trail is *not* a regional riding and hiking trail. Please revise the text.

QQ. *Page 4.11-5, first paragraph* (Aliso Creek Trail); revise as follows:

"'. . . to the subject property *aligned beneath El Toro Road at an undercrossing north of the entry intersection to the project.* The trail *then* . . ."

RR. *Page 4.11-5, third paragraph*; the County has *no* O'Neill Regional Park Riding and Hiking Trail by name. Revise text.

SS. *Page 4.11-1, first paragraph*; change to read " . . .Aliso Creek Riding and Hiking Trail *via the Live Oak Canyon Riding and Hiking Trail*, which parallels . . ."

TT. Regional Trail Dedication:

The *Live Oak Canyon Regional Riding and Hiking Trail* is proposed to follow the west side of the project site, from the southerly boundary of the subject property, *northward* to the Aliso Creek Trail undercrossing of El Toro Road. *A recreation easement for this trail, including trail improvements, shall be dedicated to the County, in compliance with the following conditions:*

1. Prior to the recordation of an applicable subdivision map, the subdivider shall:

a. Irrevocably offer a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail in a manner meeting the approval of the Manager, PFRD/ HBP Program

Management & Coordination. The subdivider shall not grant any easement(s) over the property, subject to the recreation easement, unless such easements are first reviewed and approved by the Manager, HBP/Program Management & Coordination.

b. Design the necessary improvements (both on-site and off-site) for the trail, including, but not limited to, grading, erosion control, signage, fencing, and a grade-separated crossing, as applicable, in a manner meeting the approval of the Manager, PFRD/HBPProgram Management & Coordination, in consultation with the Manager, Subdivision & Grading. Furthermore, the subdivider shall enter into an agreement, accompanied by financial security, with the County of Orange, to insure the installation of the necessary improvements.

2. Prior to the issuance of a grading permit, the grading plans shall be reviewed by the Manager, PFRD/HBP Program Management & Coordination, to ensure that the proposed grading provides for, will not interfere with, or preclude the installation of the riding and hiking trail in a location and in a manner meeting the approval of the Manager, HBP/Program Management & Coordination.

3. Prior to the issuance of final certificates of use and occupancy, and the release of financial security guaranteeing the riding and hiking trail improvements, the applicant shall install the riding and hiking trail improvements in a manner meeting the approval of the Manager, PFRD/HBP Program Management & Coordination, in consultation with the Manager, Construction.

UU. *Local Riding and Hiking Trail Dedication*:

According to the Foothill-Trabuco Specific Plan, the *Viewpoint Spur Trail*, a local riding and hiking trail, is to be dedicated to the County within a recreation easement aligned north-south through the proposed project. The easement would generally follow that portion of the truck road that traverses the northeastern area of the project site. Dedication of the recreation easement and improvements shall be done in compliance with the conditions listed above.

VV. *Trail Rest Stop*:

A trail rest stop located at a high point in the vicinity of the Water Tank Site (the northeast corner of the project site) shall be constructed in conjunction with the above requirements for the Viewpoint Spur Trail. Subject rest stop and related amenities (e.g. benches, drinking fountain, water trough, landscaping, etc.) shall be constructed and dedicated to the County. The park shall connect to the Viewpoint Spur Trail.

WW. *Page 4.11-6, project impacts, second paragraph*; revise to read " . . . Aliso Creek Trail *via Live Oak Canyon Trail* ..."

XX. Page *4.11-6, project impacts, second paragraph*; revise to read ". . . payment of local park fees required by the Orange County *PDSD/Current Planning Services Division in compliance with the Local Park Code."*

YY. *Page 4.11-6, third paragraph*; text references a staging area and view park site. Where are these to be sited? Indicate the other recreational facilities proposed to mitigate for non-construction of these improvements per the text.

ZZ. *Page 4.11-7/PDF 11-1*; revise to read as follows:

" The Viewpoint Spur Trail and *Live Oak Canyon Regional Riding and Hiking Trail* shall be constructed on the project site *within recreation easements for riding and hiking trails*

AAA. *Page 4.11-7/PDF 11-2*; change to read as follows:

" Viewpoint Spur Trail shall be constructed on-site, ultimately connecting the existing trail to the Aliso Creek Riding and Hiking Trail *via the Live Oak Canyon Riding and Hiking Trail*".

BBB. *Page 4.11-7/PDF 11-4*; revise to read as follows:

" The *applicant* will *dedicate resource and scenic preservation easement areas consistent with the County Standard Conditions of Approval Manual for resource and scenic preservation easements subject to the approval of the Manager, PFRD/HBP Program Management & Coordination.*"

CCC. *Page 4.11/M 11-1*; change to read " . . . Manager, PDSD/Current Planning Services Division".

DDD. *Page 4.11/M11-2*; revise to read as follows:

" *The applicant shall dedicate a recreation easement for the Live Oak Canyon Regional Riding and Hiking Trail as well as the local Viewpoint Spur Trail, construct the trails and improvements, and required connections. The recreation easements shall be dedicated per the County Standard Conditions of Approval Manual conditions for recreation easements for regional trails*".

EEE. The County of Orange does not anticipate acceptance of dedication of a recreation easement for the east-west internal project trail shown on Figure 4.11.2, Recreation Areas and Trails. This is because subject trail is not a regional trail depicted on the Master Plan of Regional Riding and Hiking Trails, nor a local riding and hiking trail per the Foothill Trabuco Specific Plan-Recreation Plan, Exhibit II-8.

FFF. Page 4.12-6, third paragraph; OCFA Station No.18 is located *adjacent* O'Neill Regional Park, *not* within it. Please revise the text.

Thank you for the opportunity to comment. Should you have any questions, please contact Wayne Johnson at 834-6787.

Wayne D. Johnson for
Eric Jessen

cc: Bill Grieman, PDSD/Environmental Planning Services
Jeff Dickman, PFRD/HBP Trails Implementation
wj/ep53700

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Vicki L. Wilson, Director

Materials Laboratory

Engineering & Permit Services Division

1152 E. Frust Street
Santa Ana, CA 92701

Telephone: (714) 567-7800
Fax: (714) 567-7850

DATE: 26 December 2001

TO: T. Neely, Manager, P.D.S.D., E.P.S.

FROM: K. E. Smith, Materials Engineer, P.F.&R.D., E.&P.S. , Materials Laboratory

SUBJECT: DEIR 566 – Saddleback Meadows (#96121072)
(2nd Administrative Vol. 1)

I have reviewed this DEIR from the geotechnical aspects that may impact public facilites such as El Toro Road and Aliso Creek. While I do not have copies of EIR 059 and EIR 203, I am very familiar with their contents and the contents of the geotechnical reports that accompanied those projects. I have some difficulty in recognizing that the property described in those EIR's is the same as described in the subject EIR.

I do not have any doubt about the surface geology described in 566. What is missing is the geology that was discussed in the previous documents that indicated a slide mass that extended under El Toro Road and Aliso Creek. As stated in this EIR there was over 10 million cubic yards of remedial grading required for that early project. Part of the mitigation for that slide mass stabilization was water proofing the surface of the development area so that no water could ever penetrate to the slip surface. This discussion (and especially the mitigation) is not present in 566.

This EIR mentions ephemeral ponds occurring on the site. Are these ponds or puddles caused by an unstable surface? A size reference and location would be some verification that 'ponds' actually exist for more than a few hours. The concern is moisture traps that may lubricate a slip plane surface of a landslide.

The key to the development of this property is the ability to correctly identify the geotechnical problems and stabilize them. Until now, stabilization of the geotechnical issues on this property has not been demonstrated.

In the discussion of landslides (pg. 4.2-8) there is reference to the block failure they claim is inactive. What is the basis of this claim and what are the static and pseudo-static stability of this mass? There are many that do not believe

that it is stable and believe that it will move when lubricated closing El Toro Rd. and Aliso Creek.

CEQA, as stated on the next page, requires this identification of stability if it may impact the project.

Groundwater is talked about and dismissed in the same paragraph. This does not seem appropriate in a drought. Again the concern is slide stability and keeping all sources of water from the potential slip surface. In fact the grading requirements seem to compound the problem.

The EIR talks about some moderately to highly expansive soils. It then talks about not moving any soils off site. This last statement brings forth major concerns. The surface soils are highly organic and any organic content in excess of 0.5% (by weight) causes compaction problems leading to failure to achieve compaction.

> (There are no published documents that support the compaction of soils with organic materials let alone the 3% (volume) indicated in Condition M 2-13 on page 4.2-18.)

The presence of organics in the deep fills required of this project will lead to time/settlement problems that can crack water and drainage lines thus providing moisture to the slip surface mentioned above. If the project does as suggested and the project does not place the organic soils in places where settlement can cause a problem, where will it be placed? This soil is highly erosive.

The compaction levels of 85% mentioned in condition M 2-7 (pg. 4.2-17) is inadequate and will lead to expansion problems in the expansive soils referenced in the EIR unless they are removed from the site.

The compaction referenced in condition M 2-16 (pg. 4.2-18) for 90% for structural fills is inadequate. It should be 95%.

Condition M2-21 (pg. 4.2-19) calls for verification of expansion potential during grading. This is too late. You have to know how to deal with the soils before grading even begins. Feasibility of the project requires this identification before grading.

The "dumping" of runoff into Aliso Creek after all sediments have been removed by the "trapping" devices, now requires stabilization of the tributary flows all

the way to the creek low flow line to prevent "head cutting" of the outlets and subsequent failure of El Toro Rd.

The EIR should contain the geotechnical cross sections showing the relationships of the 'block' slide and all other geotechnical matters that may affect El Toro Rd. The fact that the stability is not discussed in the EIR is a fault that must be corrected. We have had 23 years to assess this stability and it has not been done yet?

K. E. Smith, Materials Engineer
CC: K. R. Smith
V. P. Rosales
J. A. Miller

County of Orange **MEMO**

DATE: December 26, 2001

TO: Chuck Shoemaker, Chief, Private Projects, Environmental Planning Services

FROM: Johnnie Earnest, Chief, Geotechnical/Grading Plan Check

SUBJECT: Draft Revised Subsequent Environmental Impact Report. EIR No. 566, Saddleback Meadows, PA980103, Tentative Tract Map 15784, Vesting Tentative Tract Map 15230, Orange County, California dated December 2001

The following comments are made relative to the review of Section 4.2 Geophysical Resources and Appendix C Geotechnical Report prepared by G. A. Nicoll and Associates Inc., dated August 30, 2001 and issued under their Project 4816-04.3 contained in the above noted report.

The information provided indicates that the proposed development will contain 299 single family units within a 224+ acres site located on the eastern side of El Toro Road about one-half mile south of the intersection of Santiago Canyon Road and Live Oak Canyon Road. During the past 15 to 20 years this site has been investigated by several geotechnical firms with the most recent studies performed by G. A. Nicoll and Associates, Incorporated. The major problematic areas impacting the proposed development have been identified. Evaluations and mitigation measures have been provided that indicate that the proposed development is feasible. It is noted that the information provided to date is not adequate to obtain a grading permit and will require further refinement.

Some of the items that will require a more detail investigation and evaluations include, slope stability, location and geometry of landslides, orientation of slip surfaces and other planes of weakness, justification of soil parameters especially those used for seismic analyses, settlement of deep fills, impact of groundwater and differential settlement. The above document also notes that about 10 percent of the backcuts for buttresses will fail during grading operations. As previously noted failure of backcuts are undesirable for any portion of a development but are of special concern when they impact adjacent property. Prior to issuance of any grading permit the geotechnical consultant of record must provide guidelines/recommendations to protect off-site property. Another area of concern is the possibility of the need to encroach into designated open space areas to perform remedial grading. This could have a serious impact upon the biological resources of the area.

It appears that the following items need to be revised:

Page 4.2-8 under the heading Landslides, second sentence. One landslide was mapped on the project site...Reference should be to Landslides were mapped on the project site....

Page 4.2-10 under the heading Seismic Hazards, the fifth bullet should be revised as it could lead to miss interpretation. I do not believe the intent of the proposed grading is to stabilize the slopes on the Abbey property.

Page 4.2-14 under PDF2-1 it should be noted that the ultimate design of the Geotechnical Hazard Mitigation Plan 4.2.5 referenced in this section may require some refinement as the seismic analyses performed utilized soil parameters that exceeds the 20 percent increase in static values which most consultants use

As previously noted these conditions do not indicate that the project is not feasible but it could have a significant impact upon the overall cost for development due to the increase in the total yardage required for remedial grading.

More specific comments were previously prepared and submitted relative to the review of the geotechnical report contained in Appendix C. These comments are restated as follows:

The following comments are made based upon a review of the Geotechnical Report prepared by G. A. Nicoll & Associates, Inc. issued under Project 4816-04.3 dated August 30, 2001. The report was submitted as Appendix C of the Draft Revised Subsequent Environmental Impact Report, EIR 566, State Clearinghouse No. 96121072, Volume 2.

1. The geologic map and sections provided in Appendix C (G.A. Nicoll & Associates, Inc. report dated August 30, 2001) have been reproduced at a scale of about 1 inch = 330 feet. This makes it extremely difficult to evaluate the merits of the report. Please provide unreduced drawings.

2. Under Item 1. c) The consultant states that the base plan used contained 318 lots and was very similar to the proposed 299-lot plan with only minor changes. Based upon the last review performed (July 1998) it appears that sufficient time existed to allow the consultant to re-evaluate the site based upon the more recent development plan.

3. While it may be correct that the minor changes would not have a significant impact upon the overall grading conditions given the controversy surrounding the proposed project the most recent plan should be utilized for analyses.

4. Item 1. f) Based upon the information provided the most recent exploration was performed about six years ago. Please explain.

5. As noted under item 4 a more detail evaluation will be conducted (required) during the grading permit application process.

6. Item 4. c) A concern exists relative to the shear strength parameters utilized in the slope stability analyses. The strength parameters used for slope stability analyses

under seismic conditions greatly exceeds the 20 percent increase of the static parameters. Please re-evaluate seismic slope stability analyses.

7. It appears that the most recent exploration referred to under Item 5. b) was performed in 1995 and not within the last year of the subject report dated August 2001 (see comment 4).

8. Under Item 6 on page 4 of the subject report the consultants state that stability analyses were conducted utilizing Alternate 4 Plan grades. This plan, which is reproduced at a scale of about 1 inch to 330 feet, appears to be similar to the proposed Site Plan. However there are differences plans. Given the sensitivity of the area analyses should be performed utilizing the most recent plan. Please refer to the above comments 2 and 6.

9. Item 8.1 c)
There is still concern as to whether the general area represented by Borings BC-12 & 14 should be within the undisturbed bedrock or the landslide area. It is difficult to completely dismiss the interpretation of data by other consults and you own previous conclusions for the inclusion of the subject area within the landslide zone. While the borings you cite according to your most recent interpretation did not disclose the presence of landslide material they did show out of slope bedding and shear zones that could be problematic to development. However as noted by the last paragraph under this heading the only consequence would be a negligible variation in remedial grading quantities. If the landslide were present you estimate that a four percent increase in the remedial grading quantities would be required to construct an upper shear key in the area of Boring BC-14. It should be noted that a four percent increase in this value represents some 272,00 cubic yards of material.

10. Please provide corrective grading recommendations to demonstrate that the subject area meets Code requirements for stability. The additional yardage should be included in the total remedial grading quantity. Alternately you may provide additional subsurface testing and evaluation to demonstrate conclusively that the subject area has not been subject to land movement and that it meets Code requirements.

11. Please explain comment under Item 8.2.1.a) as no recent subsurface information was presented in the subject report. According to the information noted on the logs for test Boring BC – 1 through BC – 17 the exploration occurred in 1995 (see comment 4).

12. You indicate that landslide material is not present within the area represented by Test Boring BC- 15. Explain the inclusion of the note 'landslide material' at a depth of 108 feet on the log.

13. Under Item 9.c) see previous comments regarding design parameters utilized for seismic analyses (see comment 6).

14. Assuming no development occurs the site and adjacent property could be subject to damage by future movement of the existing landslides and other areas of adverse geologic/geotechnical conditions.

15. Under the proposed development plan as well as the alternate designs the open space areas (no remedial grading) within the site and adjacent property could be damaged by future movement of unstable areas, which are located, both on-site and off-site.

16. Unable to locate test Boring BC-13.

17. Previous report indicates that an estimated 10 percent of back cuts are expected to fail during the grading process. Please provide guidelines that can be implemented during the grading process to prevent or limit this type of failure. Back cut failures could have an adverse impact upon the proposed development as well as the adjacent property.

County of Orange **MEMO**

DATE: December 31, 2001

TO: Tim Neeley, Manager, Environmental Planning Services

ATT: Bill Grieman, Planner III

FROM: Matthew Blinstrub, Planner IV, NPDES/Water Quality Management Plan Section, Subdivision & Grading Services Division

SUBJECT: Comments on Draft EIR 566 for PA 98-0103 and Tracts 15784 and 15230.

PROJECT: 299 Single Family Homes on 222.2 acres of land on the NE corner of El Toro Road and Valley Vista Way, at 19658 El Toro Road, in the Foothill/Trabuco Specific plan Area.

The Water Quality Management Plan (WQMP) Section has reviewed the subject Draft Environmental Impact Report (DEIR 566) for Planning Application PA 98-0103 and Tracts 15784 and 15230, and has the following comments:

Recommended Conditions of Approval to be Applied to the Project:

1. Apply WQ4 and HM01.

2. SG SG/PD GR **RUNOFF MANAGEMENT & WATER QUALITY PLAN**
Prior to the recordation of the first final map (either for conveyance or development), or prior to the issuance of any rough or precise grading permit (except for any publicly financed infrastructure), whichever occurs first, the land owner/applicant shall prepare, and receive approval from the Manager, Subdivision and Grading Services Division, in consultation with the Environmental Resources and Flood Program Sections of the PFRD Program Development Division (PDD) of, a Runoff Management Plan (RMP), including a Water Quality Management Plan (WQMP), covering the subject property. The RMP shall include the locations of all permanent large-scale Best Management Practices (BMPs), including filtration devices, such as constructed wetlands, water quality basins, detention basins, debris basins, grass/bioswales, energy dissipaters, catch basin inserts, and other BMPs.

3. SG SG/PD GR **MASTER INFRASTRUCTURE IMPROVEMENTS**
Prior to the recordation of the first final map (either for conveyance or development), or prior to the issuance of any rough or precise grading permit, whichever occurs first, the land owner shall design and construct all applicable master infrastructure improvements identified in the approved RMP, including debris basins, bioswales, energy dissipaters, drainage pipes, and other improvements, and shall provide all necessary dedications, all in a manner meeting the approval of the Manager, Subdivision & Grading Services Division.

4. SG SG R **FINAL MAP NOTE FOR RETENTION BASINS/WETLANDS**
Prior to the recordation of each final map (either for conveyance of development), a note shall be placed on the applicable final map where appropriate, indicating that retention basins and/or constructed wetlands will be required on the property in accordance with the approved RMP, in a manner meeting the satisfaction of the Manager, Subdivision and Grading Services Division.

5. Apply the following custom WQ1/WQ2 Condition, which will apply to discretionary Subdivision Map and/or Planning Applications requesting approval for projects covering the subject property:

SG SG RGB POLLUTANT RUNOFF CUSTOM
Prior to the recordation of a subdivision map, or issuance of precise grading permits or building permits, whichever comes first, the applicant shall submit and obtain approval from the Manager, Subdivision and Grading, of a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMPs) that will be used on site to control predictable pollutant runoff for each site-specific development. This WQMP shall identify, at a minimum, the routine structural and non-structural measures specified in the Countywide NPDES Drainage Area Management Plan (DAMP) Appendix G. The WQMP shall detail implementation of BMPs whenever they are applicable to a project and specify the long term maintenance responsibilities (identifying the developer, parcel owner, maintenance association, lessee, etc.), and shall reference the location(s) of structural BMPs. At a minimum, the WQMP shall include the BMPs specified in the County Drainage Area Management Plan (DAMP) Appendix G, including but not limited to, Filtration (S1), Energy Dissipaters (S12), Inlet Trash Racks (S15), and any "special" BMPs or Project Design Features, included in the approved RMP or related environmental or other planning documents. The above requirements shall be met to the satisfaction of the Manager, Subdivision and Grading. .

6. In addition to the above conditions, the WQMP Section has the following comments:

a) Details must be provided in the EIR and RMP as to where the storm drain outlets will be located and how locating them there will replicate natural flow conditions.

b) The DEIR indicates that the Site Plan has been designed to take advantage of the available space for grassy swales and basins and in-line solutions where space is not available. More clarification is needed in regards to what constitutes "in-line solutions". In addition, all large-scale BMPs identified in and/or anticipated by, the Screencheck EIR and draft RMP/WQMP, including grassy swales, detention ponds, and other large-scale BMPs, need to be clearly shown and labeled on the Site Plan and Tentative Maps, since the configuration and location of the BMPs may impact lot configurations. The proposed water quality-related Project Design Features also need to be shown and labeled on the Site Plan and Tentative Maps.

c) The Site Plan and Tentative Maps should also be revised so that pad elevations are included and contour elevation labels are labeled and readable.

d) The riverine system needs to be discussed and described in more detail, including how the system will function.

e) Pages S-22 through S-23 include a number of spelling errors, wrong words, and incomplete sentences.

f) The Public Facilities & Resources Department (PFRD) is referred to as RFRD on Page 4.4-3.

g) "Prolonged solid stabilization" at the top of Page 4.4-9, is probably meant to read "soil stabilization".

h) Per the County's DAMP, the correct wording in PDF 4-17 on Pages S-23 and 4.4-9, and elsewhere throughout the document is Water Quality Management Plan (WQMP). In

addition, the "trigger point" for compliance with the Water Quality Management Plan Condition (PDF 4-17) is "Prior to the recordation of a subdivision map, or issuance of precise grading permits or building permits".

i) Reword initial paragraph of SC 4-2 on Page 4.4-9 to match the County's Standard Condition.

j) In the second and sixth Bullets on Page 4.4-10, delete references to city equivalent, unless the project is anticipated to be annexed in the near future.

k) It should read "located on" in the first paragraph at the top of Page 4.4-11.

l) In the second Bullet on Page 4.4-11, add "maintenance consistent with the State of California Model Water Efficient landscape Ordinance."

m) In the third Bullet on Page 4.4-11, retention of maintenance records should not be limited to 3 years, since longer retention periods will be required as part of the new NPDES Permit.

n) The conclusion of the Water Quality Section of the DEIR is that, with the identified PDFs, water quality impacts will be reduced to a less than significant level. If this is the case, and the EIR's conclusions are based on the fact that these PDFs (i.e., BMPs) will be used, then how can M 4-1 be proposed on Page 4.4-12, which could result in eliminating some or all of the filtration basins? Consideration should be given to this issue if this option is to remain, and discussions should be included about the additional adverse impacts associated with the elimination of such features, and about what other State or Federal agencies must approve the elimination of the on-site filtration basins (which it appears will also function as fairy shrimp habitat), should regional improvements be determined to be acceptable in lieu of the on-site filtration basins.

o) Eliminate words such as "should" and "would" and use "shall" and "will" (Ex., top of S-21).

p) Include the following in the EIR and RMP: Details of the Low flow diversion devices to be used; details of the landscaped detention areas, including specifications as to the type of plant species to be maintained in them, and the frequency and type of maintenance required; details regarding inspections and maintenance of BMPs in the permanent open space area, including how the permanent endowment funding mechanism will work, and the identification of the responsible party.

Thank you for the opportunity to comment on the subject project.

Matthew Blinstrub

Matthew Blinstrub, AICP, Planner IV/Water Quality Specialist
OCFCD/NPDES Water Quality Section
Subdivision & Grading Services Division

ORANGE COUNTY FIRE AUTHORITY
P. O Box 86, Orange, CA 92856-9086 • 180 South Water St., Orange, CA 92866-2125
Chip Prather, Fire Chief (714) 289-3712
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January 9, 2002

Mr. Bill Grieman
Manager, Environmental Planning Services Division
County of Orange
300 N. Flower St., Room 321
Santa Ana, CA 92702-4048

Re: Saddleback Meadows; Notice of Intent, EIR No. 566

Dear Mr. Grieman,

The Orange County Fire Authority has reviewed the proposed Saddleback Meadows residential project. While significant fire service issues exist regarding this project, they are adequately addressed in mitigation measures listed in the Revised Subsequent Environmental Impact Report. We have no additional comment at this time.

The Orange County Fire Authority looks forward to continuing its participation in the review of this project. Should you have any additional questions, please contact me at (714)744-0484.

Sincerely,

Michael S. Rohde
Battalion Chief/Advance Planning

Vicki L. Wilson, Director

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

Environmental Resources
1750 S Douglass Road
Anaheim, CA 92806

Telephone (714) 567-6363
Fax (714) 567-6220

DATE: March 11, 2002

TO: Manager, Environmental & Project Planning Services Division
Attn. Charles Shoemaker & Bill Grieman

FROM: Manager, Environmental Resources

SUBJECT: **Saddleback Meadows No. 566 – Screencheck Draft**

Environmental Resources has reviewed the subject draft and has the following general and specific comments.

General Comment

The general project design features described in Section 2.3.1 and the specific ones for water quality described in Section 4.4.4 do not adequately assess to the water quality problems in Aliso Creek and respond to the project's impact on these conditions. In particular, the San Diego Regional Water Quality Control Board has taken two significant actions in the last year with respect to water quality in Aliso Creek and its tributaries and storm drains, which are not recognized in the screencheck:

- Issued a 13225 Directive to the County and all the cities in the Aliso Creek watershed to assess and improve water quality with respect to bacterial indicators of recreational health.

- Proposed expanding the listing of water quality impairments in Aliso Creek. Currently, the Creek is listed for elevated bacterial indicator levels in the lower one mile. The proposed listing would make this applicable to the entire Creek and also add new listings for aquatic toxicity and phosphorus

The County and cities in response to the 13225 Directive have monitored 35 large storm drain inputs to Aliso Creek and have compiled extensive data into three quarterly reports to date. The data shows that the almost every storm drain routinely exceeds the levels for water contact recreation (similar data has been found by the Health Care Agency in a study of San Juan Creek). Only storm drains without dry season flow have met the standards.

These actions indicate that the screencheck should be broadly revised as follows:

a) A project design goal should be established to minimize or eliminate dry season flows reaching Aliso and Oso Creeks, since these will almost certainly exceed recreational use standards irrespective of the BMPs applied on the site. This may be achieved by focusing on irrigation practices in the development that may cause water runoff and applying source control practices at a design level identified in references such as the *Start at the Source Manual (1999)* prepared by the Bay Area Stormwater Management Agencies Association.

b) For storm events, the water quality design should be quantified with respect to the size of storm event that will be treated and the effects on the pollutants of concern during storm events. The proposed riverine urban runoff filtration system, for example, has no sizing information with respect to its water retention time and, as described, is unlikely to have a significant impact on dissolved toxic constituents, such as organophosphate pesticides, and bacterial indicators, which are problems in Aliso Creek. The riverine filtration system may even attract wildlife, if not designed otherwise, contributing to the loading of bacterial indicators.

Without this kind of commitment and analysis the finding that the water quality impacts are mitigated to a level less than significant (Section 4.4.7) is not supported.

Specific Comments

1. Section 4.3.1 and 4.4-3 – These sections describe Aliso Creek as variously being 19 and 16.5 miles from the headwaters to the ocean. The latter number is more often cited.

2. Section 4.4.1 (page 4.4-3) – The Public Facilities and Resources Dept should be abbreviated to PFRD not RFRD.

3. Section 4.4.1 (page 4.4-3) – The description of surface water beneficial uses discusses REC-1 and REC-2 uses but does not identify the other beneficial uses of the Creek.

4. Table 4.4.1 – The table does not identify the narrative standards contained in the Basin Plan or the standards contained in the California Toxics Rule.

5. Section 4.4.2 (page 4.4-4) – As described in the general comment above, all storm drain inputs to Aliso Creek exceed water quality standards during low flow and storm flows and therefore meet the significance threshold.

6. Section 4.4.2 (page 4.4-5) – The list of sources of urban runoff pollutants should recognize that many bacterial indicators have unidentified sources. Work by the University of California Davis for example has found that runoff from dirt and turf

grass areas is high in bacterial indicators with no obvious fecal source of contamination.

7. Section 4.4.2 (page 4.4-6) – The urban drainage system can be modified to include water quality design features at an individual house or street basis while still meeting broader flood control objectives (see *Start at the Source).*

8. Section 4.4.4 (page 4.4-6) – The statement that the "water quality filtration system will effectively remove low flow urban runoff pollutant(s) prior to entering Aliso Creek" cannot be supported given the information provided above. Some reduction in bacterial indicators and toxic constituents may be achievable but not removal.

9. Section 4.4.4 (page 4.4-7) – The statement that erosion is "plaguing the property" appears to indicate that all erosion is deletenous. If the erosion is natural then the property may an important source for contributing sand to replenish beaches downstream. If the property has been disturbed by grazing and other activities resulting in excessive erosion then this increased loss of soil may in fact be deleterious. The issue should be clarified.

10. Section 4.4.4 (page 4.4-7) – PDF 4-5 indicates using narrower streets. The proponent should clarify with the Fire Dept. that they will allow a narrower standard.

11. Section 4.4.4 (page 4.4-8) - The Stormceptor technology may trap phosphorus attached to sediment but has no known effect on bacterial indicators or toxic constituents. In addition Stormceptors include bypass features for significant storm events. 20 percent of the project drainage therefore appears to have BMPs proposed that do not focus on the constituents of concern.

12. Section 4.4.4 (page 4.4-9) – Appendix G of the DAMP requires the preparation of a Water Quality Management Plan (WQMP not a Water Quality Control Plan) which includes a standard list of routine structural and non-structural BMPs as well as special BMPs as necessary. All of the BMPs in Appendix G that are applicable to residential areas must be incorporated into the project. The riverine filtration and landscape irrigation BMPs discussed above should be incorporated into the WQMP as BMPs S1, S2 and S3 and the Stormceptors, if included, may be a special BMP.

13. Section 4.4.4 (page 4.4-10) – It should be clarified as to who will be responsible for maintaining the structural BMPs, including the riverine filtration on the project site. Responsibility for the non-structural features is assigned to the Home Owners Association, but no comparable assignment is proposed for the structural elements.

14. Section 4.4.6 (page 4.4-12) – M 4-1 should be revised to reflect that off-site water quality improvements must be consistent with the requirements of the new stormwater NPDES permit for South Orange County (Section F-1 of Order 2002-0001).

If you have any questions please contact me at 567-6360.

Chris Crompton

Cc:EIR/saddlecreek-saddleback meadows SEIR 566

cc: Karen Ashby

Attachment F

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COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

DATE: April 2, 2002

TO: Tim Neely, Manager, Environmental Planning

FROM: Rob Selway, Chief, Historical and Cultural Programs

SUBJECT: Revised Draft EIR 566 for Saddleback Meadows

Thank you for the opportunity to comment. Historical Programs has reviewed the DEIR for Saddleback Meadows Project, and we have the following comments, many of which were made during an earlier review cycle:

- The cultural resources mitigation language used in the EIR should be updated to address current standards for artifact curation and long-term collection management. The current conditions have been in place for several years. The updated language protects the County at the time collections are donated so that our warehouse facility is not burdened with responsibility to accept unprepared artifacts and assume curation costs. The mitigation measures for archaeological resources do not contain the current requirements for donation or curation of cultural resources. The paleontological mitigations do not mention potential curation fees. Therefore the following two comments provide mitigation language that must be included in the EIR:

  The Board of Supervisors requires cultural resource collections, which may be discovered during the site development, be donated to a suitable repository that will maintain the collection for future scientific study and exhibition **"within Orange County."** Prior to donation, the certified cultural resources consultant should prepare the collection **"to the point of identification."**

  The project proponent should be prepared to pay **"potential curation fees"** to the County repository for the long-term curation and maintenance of donated collections.

- PDF-10-1 states that ORA-710 will be covered and preserved in a biological conservation easement. Perhaps the site could be protected within a duel conservation easement, thus preventing any disturbance. Earth-disturbing activities, including biological enhancement programs, should not occur unless monitored by a certified archaeologist. Fencing, plantings and water systems for biological areas can threaten the covered cultural resources, especially if the primary purpose of the easement is viewed as biological conservation, then the archaeological resources may be overlooked. Such improvements must be considered by a n archaeologist to avoid the known site.

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COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

File: DR-EIR
ON-Admin

DATE: April 3, 2002

TO: Tim Neely Manager, PDSD/Environmental Services Division

ATTN: Bill Grieman

FROM: Chief, PFRD/HBP Program Management & Coordination-Facilities Development

SUBJECT: Screencheck "Pre-Draft" Revised Subsequent EIR 566/Sadddleback Meadows

HBP Facilities Development staff, in consultation with HBP Trails Implementation staff, has reviewed subject screencheck documentation and offers the following comments:

A. <u>Summary of Impacts/Mitigation Measures, Table 1.1</u>:

1. *Page 1-12, Land Use Compatibility*; text should be revised to indicate the County requests the acreage offered for regional park expansion be dedicated to the County as Resource Preservation Easement area excluding manufactured slopes per our earlier comments.

2. *Page 1-36, PDF 11-2*; change to read as follows:

"The Live Oak Canyon Regional Riding and Hiking Trail, as *well as an east-west aligned local riding and hiking trail connector to the off-site* Viewpoint Spur Trail, shall be located on-site within recreation easements for riding and hiking trails.

3. *Page 1-38, M 11-4, Local Riding and Hiking Dedication*; revise to read as follows:

"A local riding and hiking trail is to be dedicated to the County within a recreation easement aligned *east-west* through the project *connecting to the off-site Viewpoint Spur Trail.* Dedication of the recreation easement and improvements shall be done in compliance with the conditions listed above *for regional trail dedications. Maintenance of the local trail shall be the responsibility of the applicant or its assigns".*

B. <u>Section 2.0, Project Description</u>:

1. *Page 2-7, second paragraph* ; the DEIR should clearly delineate the location of Aliso Creek on a map, preferably within Section 4.3, Hydrology.

2. *Page 2-15, 5th bullet point*; change to read as follows:

"*Construction and* dedication of *an east-west local riding and hiking trail connector to the offsite* Viewpoint Spur Trail to the County within a recreation easement through the proposed project".

3. *Page 2-15, 9th bullet point*; revise to read as follows:

" . . . of approximately 53.65 acres of Scenic Preservation *Easement* Area is . . ."

4. *Page 2-15, 10th bullet point*; change to read as follows:

"An offer of dedication of approximately 83.25 acres to the County of Orange as a Natural Resource Protection Area *within a Resource Preservation Easement*".

5. Page 2-16, 1st bullet point; revise to read as follows"

" An offer of dedication of approximately 11.65 acres of Biological Mitigation Area *within Scenic Preservation Easement areas*".

A scenic preservation easement is requested by HBP as mitigation areas are largely within manufactured slope areas.

C. Section 4.1, Land Use:

1. *Page 4.1-11, 1st paragraph, 2nd sentence*; change to read as follows:

"As part of the proposed project, approximately 83.25 acres of the site would be dedicated by the applicant to the County of Orange *within a Resource Preservation Easement*".

D. Section 4.8, Biological Resources:

1. *Page 4.8-29, SC 8-6(3) Tree Replacement Scale*; revise scale as standard condition size is for 15-gallon replacement species. FTSP requirement is the same.

2. *Page 4.8-29, SC 8-6(5), second sentence*; 35-inch+ alternative tree replacement standard cited is inconsistent with County requirement in SC 8-6(3). The County *does not have two standards* for trees exceeding 35-inches in diameter. Please delete second sentence.

E. Section 4.9, Aesthetics/Visual:

1. *Page 4.9-20, SC 9-1*; delete reference to "its designee in-fee". County is *not* accepting fee dedication, only scenic and resource preservation easement dedications to ensure preservation of open space in perpetuity through the Saddleback Meadows project, if approved.

F. Section 4.11, Recreation:

1. *Figure 4.11.1*; correct figure nomenclature is "Foothill/Trabuco Specific Plan *Recreation* Plan" per Exhibit II-8 of the FTSP. Please revise.

2. *Page 4.11-8, M 11-4, Local Riding and Hiking Trail Dedication*; change to read as follows:

   "*A* local riding and hiking trail is to be dedicated to the County within a recreation easement aligned *east-west* through the proposed project *connecting the Live Oak Canyon Trail to the offsite Viewpoint Spur Trail.* Dedication of the recreation easement and improvements shall be done in compliance with the conditions listed above. *Maintenance of the local trail shall be the responsibility of the applicant or its assigns*".

3. *Page 4.11-5, last paragraph, second sentence*; change to read as follows:

   " . . . Aliso Creek Trail via Live Oak Canyon Trail and *local east-west riding and hiking trail to offsite* Viewpoint Spur Trail (see Figure 4.11.2)".

4. *Page 4.11-6, PDF 11-1*; revise to read as follows:

   "The local east-west riding and hiking trail shall be constructed onsite, *linking to the offsite Viewpoint Spur Trail*, ultimately . . ."

5. *Page 4.11-7, PDF 11-2*; change to read as follows:

   " . . . , as well as the local *east-west riding and hiking trail connection to the offsite Viewpoint Spur Trail, . . .*"

G. Additional Comments From HBP Trails Implementation Staff:

(Note, due to HBP staffing and time constraints it was not possible to merge the following additional comments with those in A through F, above. However, the comments are internally consistent throughout.)

1. *HBP is withdrawing its request for a staging area near the entrance to the project.* Instead, we are requesting only a *small rest area* at the same location, with no vehicular parking. (To distinguish this feature from the Ridgetop Rest Area, we suggest referring to it as the Entry Rest Area.) The Entry Rest Area would be described as follows:

   - Smaller in size than the original proposed staging area.
   - No vehicular parking.

- Amenities would include benches, fencing, a bike rack, a horse tie-up, and landscaping with shade trees.

Where appropriate, our following comments reflect this change from staging area to rest area.

2. *Page 1-24*:

- *PDF 5-2*; revise as follows: "The entry street shall be designed to include a traffic signal, a crosswalk for the Live Oak Canyon Trail..."

- *M 5-2*; revise as follows: "The developer shall provide a traffic signal at the main project access point to El Toro Road, pedestrian buttons and separate horse-height buttons on the north and south sides of the entry road (to accommodate the Live Oak Canyon Trail), and trail warning signage."

3. *Page 1-36*:

- *Recreation, third sentence*; revise as follows: "However, the project proposes two rest areas and trail connections to the Aliso Creek Trail and Live Oak Canyon Trail."

- *PDF 11-1;* revise as follows: "A Local Trail shall be designed and constructed per County of Orange standards for a regional riding and hiking trail. The trail shall be aligned east-west and set back from the project's main road by at least 10 feet, to provide space for shade trees and landscaping. The trail shall connect to both the Viewpoint Spur Trail and the Live Oak Canyon Trail.

- *Add PDF 11-3;* "A trail rest stop (Entry Rest Area) shall be designed and constructed on the north side of the project entry road."

- Add PDF 11-4; "A trail rest stop (Ridgetop Rest Area) shall be designed and constructed. The rest area shall be located at a high point about 700 feet south of the water tank site (in the northeast area of the project site)."

4. *Page 1-37, M 11-3, 1b*; delete "and a grade-separated crossing".

5. Page 1-39:

- *M 11-5*; revise the mitigation measure as follows:

  "A trail rest stop (Ridgetop Rest Area) shall be located at a high point about 700 feet south of the water tank site (in the northeast area of the project site). The subject rest stop and related amenities...shall be constructed and dedicated to the County. The rest stop shall connect to the Viewpoint Spur Trail via the Local Riding and Hiking Trail."

- *Add M 11-6*:

"A trail rest stop (Entry Rest Area) shall be located on the north side of the project entry road. The subject rest stop and related amenities (benches, fencing, a bike rack, a horse tie-up, and landscaping with shade trees) shall be constructed and dedicated to the County. The rest stop shall connect to the Local Trail."

6. *Figure 2.7: Proposed Site Plan*:

Add the Live Oak Canyon Trail (which the applicant is to improve and dedicate to the County).

7. *Page 2-15, 4th bullet point*:

Revise as follows: "Construction and dedication of the Live Oak Canyon Regional Riding and Hiking Trail, within a recreation easement aligned north-south from the Aliso Creek Trail to the southerly project boundary. The project also includes two trail rest stops, the Entry Rest Area and the Ridgetop Rest Area (see Figure 2.7)."

8. *Page 2-18, Transportation/Circulation*:

Revise the first sentence as follows: "...immediately south of the existing Aliso Creek Bikeway/Trail undercrossing structure."

9. *Page 4.5-13, Bikeway Facilities*:

- Delete the reference to the Master Plan of Countywide Bikeways. This was replaced in 1995 by OCTA's regional Commuter Bikeways Strategic Plan (CBSP). (The County has a plan that serves as a subset of the CBSP. Known as the "Bikeway Plan", it covers only the unincorporated areas and bikeways along certain flood control channels.)

- The El Toro Road Bikeway is a Class II (on-road, striped lanes) bikeway, rather than a Class I (paved off-road) bikeway. (The Class I bikeway in this area is the Aliso Creek Bikeway.)

- Throughout this section, change "trail" to "bikeway". "Trail" refers to unpaved riding and hiking trails. "Bikeway" refers to paved routes (on-road and off-road).

- In the project vicinity, there are four proposed or existing regional bikeways: the Aliso Creek Bikeway (Class I), the El Toro Road Bikeway (Class II), the Santiago Canyon Road Bikeway (Class II), and the Live Oak Canyon Road Bikeway (Class II).

- Re-write the first paragraph to reflect the comments above, and delete the second paragraph (as some phrases are incorrect).

10. *Page 4.5-28, PDF 5-2*; Revise to read as follows: "The entry street shall be designed to include a traffic signal, a crosswalk for the Live Oak Canyon Trail..."

11. *Page 4.5-30*:

Add M 5-3; "The applicant shall provide a traffic signal at the main project access point to El Toro Road, pedestrian buttons and separate horse-height buttons on the north and south sides of the entry road (to accommodate the Live Oak Canyon Trail), a crosswalk for the trail, and trail warning signage."

12. *Page 4.11-3, Regional Bikeways*:

Include the following: "The project also abuts the El Toro Road Bikeway, a regional Class II (on-road, striped lanes) bikeway along El Toro Road."

13. *Page 4.11-3: Riding and Hiking Trails*:

- Change the second sentence to read: "Regional riding and hiking trails are intended for use by equestrians, pedestrians (walking, hiking, and jogging), and mountain bicyclists". (Delete the phrase, "depending on the trail surface and its designated use". All regional riding and hiking trails have a natural or decomposed granite surface, and are used by all three user types.)

- In the third sentence, delete the reference to the El Toro Bikeway. (See above.)

- Change the second paragraph to read "The Aliso Creek Trail begins in Aliso-Wood Canyons Regional Park and continues northward along Aliso Creek. The trail enters the project site from the west at the existing El Toro Road trail/bikeway undercrossing, and continues northward along the east side of El Toro Road. North of Live Oak Canyon Road the trail becomes the Santiago Creek Trail. The Aliso Creek Bikeway is generally parallel to this trail."

14. *Figure 4.11.2*:

Show the Aliso Creek Bikeway continuing west (through the bikeway/trail undercrossing) and south (parallel to the Aliso Creek Trail).

15. *Page 4.11-6: Project Impacts*:

- Note that the Live Oak Canyon Trail currently exists as a single-track trail along the west side of the project site, and must be kept open during construction.

- Change the first sentence in the last paragraph to read, "The applicant would improve the existing Live Oak Canyon Trail per County regional trail standards."

16. *Page 4.11-7*:

- *Add PDF 11-3*: "A Local Trail shall be designed and constructed per County of Orange standards for a regional riding and hiking trail. The trail shall be set back from the project's main road by at least 10 feet, to provide space for shade trees and landscaping. The trail shall connect to both the Viewpoint Spur Trail and the Live Oak Canyon Trail.

- *Add PDF 11-4*: "An Entry Rest Area shall be designed and constructed on the north side of the project entry road, near the project entrance. The rest area shall connect to the Local Trail."

- *Add PDF 11-5*: "A Ridgetop Rest Area shall be designed and constructed on the east side of the project site. The rest area shall connect to the Viewpoint Spur Trail via the Local Trail."

17. *Page 4.11-8, M 11-3, 1b*:

Delete "and a grade-separated crossing".

18. *Page 4.11-8, M 11-5*:

HBP was incorrect in earlier comments regarding the location of the rest area and the Viewpoint Spur Trail. Therefore, revise the mitigation measure as follows:

"A trail rest stop (Ridgetop Rest Area) shall be located at a high point about 700 feet south of the water tank site (in the northeast area of the project site). The subject rest stop and related amenities...shall be constructed and dedicated to the County. The rest stop shall connect to the offsite Viewpoint Spur Trail via the Local Riding and Hiking Trail."

19. *Page 4.11-8/9*:

- *Add M 11-6 to read as follows:*

Entry Rest Area: "A trail rest stop (Entry Rest Area) is to be constructed and dedicated to the County. The rest stop shall be located north of the project entry road, near the project entrance. The rest area shall include the following amenities: fencing, benches, a bike rack, a horse tie-up, and landscaping with shade trees. The rest stop shall connect to the Local Trail."

Thank you for the opportunity to comment. Should you have any questions, please contact Wayne Johnson at 834-6787 or Jeff Dickman at 834-5372.

Eric Jessen

County of Orange **MEMO**

DATE: April 9, 2002

TO: Tim Neely, Manager, Environmental Planning Services

Attention: Bill Grieman

FROM: Manager, Subdivision and Grading Services

SUBJECT: Traffic Review
Pre Draft Revised Subsequent EIR 566
Saddleback Meadows

This is a Pre-Draft Environmental Impact Report (EIR) for the proposed Saddleback Meadows project.

The site is comprised of a 299 unit single family residential development located on the eastern side of El Toro Road, approximately one-half mile south of the intersection of Santiago Canyon Road and Live Oak Canyon Road.

DISCUSSION:

Traffic Review has reviewed the Draft Revised Subsequent Environmental Impact Report 566 titled; "Saddleback Meadows" – dated March, 2002, prepared by HDR, and the associated Traffic Study titled; "Saddleback Meadows Growth Management / CMP Traffic Analysis (Revised)" – dated February 4, 2002, prepared by Urban Crossroads, Inc. Traffic Review has the following comments:

DRAFT EIR:

- Page 1-25 Table 1.1 - Summary of Impacts / Mitigation Measures:

  Need to add mitigations for off site intersections identified as impacted in the Traffic Study.

Section 4.5 Transportation / Traffic

- Page 4.5-22

  Need to identify the following six intersections as project impacts and identify project fair share of the proposed improvements:

  1. El Toro Road at Ridgeline Road
  2. El Toro Road at Valley Vista Way
  3. El Toro Road at Glenn Ranch Road
  4. Portola Parkway at Glenn Ranch Road
  5. Portola Parkway at Foothill Transportation Corridor (FTC)
  6. Portola Parkway at El Toro Road

DISCUSSION: continued

DRAFT EIR: continued

Section 4.5 Transportation / Traffic continued

- Page 4.5-27

  Need to identify project fair share percentage of improvements to Santiago Canyon Road and payment of fees in addition to standard Santiago Canyon Road Fee Program as mitigation.

- Page 4.5-29

  Need to revise section 4.5.5 to accurately identify that the circulation system requires improvements to mitigate project increases. Revise the second sentence to read "Under 2025 plus project without proposed improvements, the circulation system would not operate at acceptable LOS at six intersections and along Santiago Canyon Road."

- Page 4.5-30

  Add the fair shares for identified intersections and Santiago Canyon Road improvements as mitigation measures.

APPENDIX "F" - TRAFFIC STUDY:

- Page 4-9 Table 4-3

  Identify Portola Parkway at Foothill Transportation Corridor (FTC) as a 0.03 ICU project increase.

- Page 4-17 Table 4-6

  Identify the amount of ICU increase for:

El Toro Road at Ridgeline Road	⇒	0.01
El Toro Road at Project Entrance	⇒	0.99
El Toro Road at Valley Vista Way	⇒	0.08
El Toro Road at Glenn Ranch Road	⇒	0.09
Portola Parkway at Glenn Ranch Road	⇒	0.04
Portola Parkway at El Toro Road	⇒	0.01

DISCUSSION: continued

APPENDIX "F" - TRAFFIC STUDY: continued

- Page 4-19

Section "C"

Need to identify the ICU increases, project fair share and required improvements for the six impacted intersections.

Section "D"

Need to include a Highway Capacity Manuel (HCM) Rural Two Lane Road analysis of Santiago Canyon Road. Also need to identify amount of project impact and proposed mitigations.

Patrick J. Stanton

KEH:kch

APPENDIX B

PROJECT CHRONOLOGY

APPENDIX B: SADDLEBACK MEADOWS
SUMMARY LAND USE ENTITLEMENT PROCESSING CHRONOLOGY
(1978 – 2001)

August 1978

- ✓ The Board of Supervisors of Orange County approved General Plan Amendment 78-1. Final Environmental Impact Report #59 was prepared and certified in conjunction with plan amendment.

March 1979

- ✓ The property owner submitted a Zone Change Application, Tentative Tract Map and Initial Study requests for mobile home subdivision to Orange County.

December 1980

- ✓ The Board of Supervisors approved Tentative Tract Map 10692, calling for development of a 714 lot single-family mobile home/manufactured housing subdivision and a small commercial site.

June 1984

- ✓ The Board of Supervisors approved the Development Plan (2nd revised) for Saddleback Meadows. This plan called for the 705 lot mobile home/manufactured housing subdivision and 1.7 acres of neighborhood commercial use.

October 1984 through July 1986

- ✓ The Orange County Subdivision Committee approved a 589-day tolling of the deadline to record the Final Map for Tentative Tract 10692 in October 1984. This action extended the expiration date for recording the Final Map for Saddleback Meadows to July 1986.

July 1986 through November 1998

- ✓ Sewer Moratorium. The Final Map did not record on in July 1986 because on July 16, 1986, the Santa Ana Mountains County Water District imposed a sewer moratorium. This moratorium tolled the expiration deadline for the tentative map until the moratorium was lifted in November 1988.

December 1988

- ✓ Final Map No. 10692 was recorded, and associated improvement bonds and fees (in excess of $2,000,000) were paid.

1990 through 1993

- ✓ During this period the Saddleback Meadows property was involved in various thrift regulation, bankruptcy and foreclosing proceedings

December 1991

- ✓ The Board of Supervisors approved the Foothill/Trabuco Specific Plan which incorporated for the Saddleback Meadows property the site plan and development standards of Final Map (10692)

April 1994

- ✓ California Quartet filed with the County a Grading Application GA940031 for a portion, approximately 98 acres, of the site.

August 1994

- ✓ The environmental "Initial Study" was completed for the Grading Application and County staff decided that an environmental impact report (EIR) was necessary.

- ✓ California Quartet files a Letter of Appeal with the County, contesting the requirement for an EIR for the Grading Application.

January 1995

- ✓ After several postponements, two hearings were held before the Planning Commission regarding the appeal of the EIR requirement (on January 17, & 31, 1995).

- ✓ On January 31, 1995 California Quartet. Ltd. withdrew the appeal of the County's determination to require the preparation of an EIR and clarified its intent to pursue a project that is more environmentally sensitive than the approved (705 lot) Final Map. The Planning Commission directed the applicant to develop a more compatible project in response to public testimony, staff concerns, and the Planning Commissions' direction (a process that was to take approximately 120 days).

February through June 1995

- ✓ California Quartet initiated contacts with community residents and neighboring property owners and undertook an intensive data gathering and design process.

- ✓ On June 9, 1995 a meeting with staff of the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) was held at USFWS offices at Carlsbad to discuss environmental permitting.

- ✓ The initial design process continued from February through late June 1995. On June 30, California Quartet submitted a 318-lot proposal for informal review by County staff. The submittal was called a "Revised Site Development Plan for Saddleback Meadows."

July 1995

- ✓ California Quartet submitted a formal Planning Application to the County based on a revised project proposal for 318 lots. The Planning Application consisted of:
    - o Zone change;
    - o Area Plan;
    - o EIR 561;
    - o A Site Development Permit for geo-technical testing on the property was processed to permit continuation of geo-technical testing on the site after the County issued a stop-work notice[1].

August through December 1995

- ✓ County staff completed the Initial Study on August 11, 1995 and issued and a Notice of Preparation (NOP) of an Environmental Impact Report for the revised project.

- ✓ California Quartet conducted an additional work session with community residents on August 14, 1995.

- ✓ The County staff convened on August 24, 1995 a public meeting on the revised project in the form of a Public Scoping meeting in conjunction with the preparation of the Draft EIR.

- ✓ California Quartet arranged for and participated in meetings with representatives of the neighboring St. Michael's Abbey and other nearby property owners contacted all the neighboring homeowner's associations to arrange for meetings to review their potential concerns.

- ✓ In October 1995, California Quartet sent an informational mailer with detachable questionaire to over 2,000 households in the area.

[1] *This exploratory work was performed to provide geological data for use in conjunction with the revised site development plan. The County determined that since this was a new application, the Saddleback Meadows project would have to abide by the geo-technical investigation requirements of the Foothill Trabuco Specific Plan. The Specific Plan requires a site development permit to allow geo-technical testing on any property contained within the boundaries of the Specific Plan area, although Final Map 10692 is exempt from the requirements of the Specific Plan.*

- ✓ California Quartet also contacted members of the Foothill/Trabuco Specific Plan Review Board.

- ✓ On October 15, 1995 California Quartet submitted the Application for Vesting Tentative Tract Map 15230 that was based on the revised site plan.

- ✓ On November 9, 1995 a work session was held at the Saddleback Meadows property. Attendees included representatives of the Army Corps of Engineers (USACE), California Department of Fish and Game (CDFG), County of Orange (Harbors Beaches and Parks), California Quartet and environmental consultants. The purpose of the session was to familiarize environmental permit agency staff with the site and to identify issues and concerns to be addressed in processing permits with USACE, USFWS and CDFG.

- ✓ County's planning staff met with staff from USFWS & CDFG on December 15, 1995 to discuss the proposed Saddleback Meadows project

February 1996

- ✓ County environmental review staff filed a Notice of Completion of the Draft Environmental Impact Report and begins the public circulation and comment period on February 5, 1996.

- ✓ The County's Director of Planning discussed Draft EIR 561 at the Foothill Trabuco Review Board meeting of February 16, 1996.

- ✓ The draft EIR was delivered to the USACE, CDFG and USFWS on February 13, 1996. On February 26, 1996 a meeting was held to present the Saddleback Meadows Draft EIR (#561) to representatives of the environmental permitting agencies. This session was held at the Carlsbad offices of the USFWS and attended by representatives of the USFWS, CDFG, and USACE.

March 1996

- ✓ On March 8, 1996 the Foothill Trabuco Review Board considered the alternative plan proposed for the Saddleback Meadows property and heard testimony from the public.

- ✓ On March 19, 1996 the first Planning Commission hearing on the revised project proposal was held. The purpose of this first hearing was to afford the public an opportunity to comment on the Draft EIR document prior to the close of the 45-day public comment period (March 25, 1996).

- ✓ A second Planning Commission public hearing was held on April 2, 1996 at which California Quartet provided a detailed briefing on the proposal for a revised project.

- ✓ Letters commenting on the Drafr EIR were received from the California Department of Fish and Game and United States Fish and Wildlife Service on March 25, 1996.

May 1996

- ✓ On May 5, 1996 the third Planning Commission hearing was postponed due to County staff concerns about the Resource Agencies (U.S. Fish and Wildlife Service & California Department of Fish and Game) sudden and unexpected reversal of their position on the location and design of the wildlife corridor.

- ✓ On May 8, 1996 a work session was convened with County EMA staff regarding alternative wildlife corridor alignments. General and specific discussion regarding suggestions for design modifications with the applicant explaining the economic/financial ramifications of the suggestions and how they would render the project infeasible from an economic and development objective standpoint EIR alternative No. 7 was reviewed with particular focus on the size and width concerns of the wildlife corridor, which had appeared to be the primary source of the environmental agency concerns regarding the proposed project.

- ✓ On May 17, 1996 a work session was convened. Representatives of the USACE, CDFG, USFWS and County staff discussed wildlife corridor design issues and Alternative 7. The resource agencies, primarily the CDFG asked for significant changes in the wildlife corridor location/alignment and its design. These comments conflicted with earlier comments from the agency.

- ✓ On May 20, 1996 the same environmental agency representatives who attended the May 17, 1996 participated in a tour of the Saddleback Meadows property. The purpose of this tour was to visualize in the field what was discussed at the previous week's session (May 17th).

- ✓ On May 23, 1996 the first meeting was held with new counsel representing St. Michael's Abbey This meeting served to re-establish dialogue with applicant. The Abbey had suddenly, and without explanation, terminated discussion in November of 1995.

- ✓ Based on comments from May 17 and May 20, 1996 sessions with representatives of environmental agencies several additional alternative development plans were prepared and presented to County planning staff on May 24, 1996.

- ✓ A meeting with County staff was held on May 28, 1996 to discuss further refinements of the alternative development plans.

June 1996

- ✓ Prior to the June 5, 1996 Planning Commission public hearing (this was to be hearing number 3) EMA staff recommended that the Planning Commission approve a project with a reduced lot yield of 299 lots (to become known as Alternative No. 8.)

- ✓ On June 5, 1996 the third Planning Commission public hearing was held. EMA staff recommend Alternative No. 8 with 299 Lots, California Quartet, Ltd. countered with a version of Alternative No. 8 with 318 lots fitting within the same development footprint as the 299 lot project. The Planning Commission continued the hearing to July 10, 1996.

July 1996

- ✓ In early July 1996 the Orange County Tax Assessor's Office approved a payment plan for resolving the former owner's property tax delinquencies that dated back to 1991.
- ✓ On July 10, 1996 the fourth Planning Commission public hearing was held. After the staff recommended approval of a 299-lot project, the matter was continued to July 30, 1996.
- ✓ On July 19, 1996 the Foothill Trabuco Review Board considered further refinements the alternative plan as proposed and revised by California Quartet for the Saddleback Meadows property and heard testimony from the public.
- ✓ On July 30, 1996 the fifth Planning Commission public hearing was held and the Planning Commission was unable to reach agreement on the lot yield. The Commissioners voted four times on varying lot yields ranging from 318 lots to 260 lots. However, a majority of the commissioners were in agreement on the proposed development footprint as depicted by Staff recommended Alternative No. 8. The Commission voted to recommend that the Board of Supervisors certify the EIR for the project.

August through September 1996

- ✓ On August 2, 1996 California Quartet, Ltd. appealed the Planning Commission action of July 30, because the Commission's failure to reach agreement on the lot yield represented a "de-facto" project denial.
- ✓ The Saddleback Valley Unified School District Board approved a school facilities mitigation agreement for Saddleback Meadows (September 3, 1996).
- ✓ On September 10, 1996 California Quartet submitted a revised site plan (referred to as Alternative 9) that had a lot yield of 318 lots to County staff and requested that this alternative be considered by the Board of Supervisors as a plan, which better addressed the concerns and issues raised by the public, and the Planning Commissioners at the previous hearing.
- ✓ On September 20, 1996 the Foothill Trabuco Review Board considered Alternative 9 (318-lots) and representatives of California Quartet made a presentation and answered questions.

October 1996

- ✓ The Orange County Board of Supervisors held on October 22, 1996 a public hearing on the appeal of Planning Commission decision of July 30, 1996. Supervisor Silva recused himself from voting on the project and the Board denied the Appeal. The Supervisors then considered a motion to approve a project with a density cap of 100 lots (Draft EIR alternative No. 4). The motion did not carry and, at the request of Supervisor Stanton, the Board directed staff to report back to the Board on the process to initiate a reversion to acreage on the Saddleback Meadows property, (i.e. remove the existing Recorded Final Tract Map).

November 1996

- ✓ On November 5, 1996 the Board of Supervisors heard a County staff report concerning the reversion to acreage procedure. The motion to initiate the reversion to acreage did not carry. Supervisor Saltarelli requested staff to inquire about the potential acquisition of the Saddleback Meadows property for public purposes. The Board did not certify the EIR.

- ✓ On November 7 and 8, 1996 California Quartet attempted to re-submit the Grading Application based on Final Tract map. The County staff refused to accept any applications for submittal of anything relating to Saddleback Meadows. The County had determined that the previous Grading Application filed in April 1994 had expired in 1995; therefore, a new application would be necessary to continue processing the Grading Application.

- ✓ On November 8, 1996 California Quartet received a letter from Thomas Mathews, the County Planning Director, concerning Supervisor Saltarelli's desire to explore possible full or partial acquisition of the Saddleback Meadows property. In response, California Quartet's Counsel transmitted to County Counsel, a draft of a proposed Tolling Agreement to extend the deadline for filing a legal challenge to the Board decision of October 5, 1996.

- ✓ On November 15, 1996 California Quartet's counsel submitted to the County a Demand Letter concerning the processing of a Rough Grading Plan Application which the project civil engineer had attempted to submit on November 8 and 9, 1996 and also submitted a letter regarding Settlement Discussions concerning the sale of Saddleback Meadows property for public purposes laying out the ground rules for such negotiations.

- ✓ On November 18, 1996 California Quartet provided County staff with several sketch studies, which presented reduced development areas and lot yields as requested by County staff.

- ✓ On November 26, 1996 the Tolling Agreement was executed between California Quartet, Ltd. and the County of Orange. The Tolling agreement was effective on November 21, 1996 and was to expire 180 days from the effective date (May 20, 1997).

- ✓ On November 27, 1996 California Quartet received a letter from County staff regarding California Quartet's attempt to file a Grading Application for Tract 10692. The letter stated that the reason the application was not accepted by the County was due to a misunderstanding by staff and invited California Quartet to resubmit the application.

December 1996

- ✓ On December 3, 1996 the County staff accepted the Grading Application for Tract 10692 (705 lots), which was assigned Grading Application Number GA960048.

- ✓ On December 24, 1996 the County staff circulated a Notice of Preparation (NOP) for a Draft Subsequent Environmental Impact Report related to Grading Application GA960048, Tract Map 10692. This started a 30-day comment period.

February 1997

- ✓ Due to concerns related to processing technicalities the County staff re-circulated the Notice of Preparation document.
- ✓ On February 7, 1997 a meeting requested by County staff was held to discuss potential full/partial acquisition possibilities with applicant and representatives from the community and neighbors. Attendees from the community included, two members, representatives from the Foothill/Trabuco Review Board; St. Michaels Abbey; the Vedanta Society/Rama Krishna Monastery, and the Hidden Ridge community.
- ✓ On February 21, 1997 representatives of California Quartet made an informational presentation before the Foothill Trabuco Review Board concerning the Notice of Preparation for the EIR for the grading permit application for the 705-lot project (existing Final Map for the Saddleback Meadows property).
- ✓ On February 28, 1997 the County held a follow-up session to the February 7, 1997 session with the same group of representatives from the community, to receive their feedback from the previous meeting.

April 1997

- ✓ On April 7, 1997 the County's Director of Planning & Development Services sent a letter to the Members of the Board of Supervisors providing a summary of the alternatives proposed by the landowner but not acted on by the Board of Supervisors in October and the results of several meetings which had been held to explore acquisition of all or a portion of the property.[2]

May through September 1997

- ✓ The EIR for the Grading Application for the 705-lot project was prepared and circulated for public and governmental agency review and comment.
- ✓ On August 1, 1997 representatives of California Quartet made an informational presentation before the Foothill Trabuco Review Board concerning an application for an informational sign concerning the705-unit Final Map to be posted at the Saddleback Meadows property.

[2] *Community representatives maintained that a 100-unit project clustered adjacent to El Toro Road was the maximum development acceptable. However, California Quartet indicated that the 100-unit alternative was not economically feasible. In this letter, the Planning Director reported that his understanding was that the landowner would entertain any offer to purchase (for preservation of open space) all or a portion of the property, even though the property was not being marketed. The Planning Director indicated that County staff was unaware of any viable sources of funds, private or public, for this purpose and expressed the opinion that further exploration of public acquisition was not warranted.*

October 1997

- ✓ On October 22, 1997 the first Planning Commission public hearing was held to review certification of Subsequent EIR 566 to allow for the grading and development to implement the recorded (705 lot) Final Map. The hearing was continued to December 3, 1998.

November 1997

- ✓ The Orange County Board of Supervisors discussed amending the standard appeal procedures for SEIR 566 that would allow the SEIR to be directly to the Board of Supervisors following certification by the Planning Commission (November 25, 1997) No decision was reached and the hearing was continued to December 9, 1997.

December 1997

- ✓ On December 3, 1997 the Planning Commission voted to certify Final Subsequent EIR 561. On December 9, the Board of Supervisors held a first reading of "An Ordinance of the County of Orange providing for appeal of certain Grading Permits". The item was continued to December 16, 1997 at which time the Board failed to approved the ordinance change.

- ✓ On December 17, 1997 the Chair of the Planning Commission sent a letter to members of the Board of Supervisors regarding the Commissions recent certification of SEIR 566 on Saddleback Meadows and recommending that the Board revisit an alternative zoning designation for Saddleback Meadows, suggesting Alternative No. 4 in SEIR 566 (299-lots).

- ✓ On December 18, 1997 the Vedanta Society of Southern California filed a notice of appeal regarding the Planning Commission's certification of FSEIR 566.

January 1998

- ✓ On January 27, 1998 the Board of Supervisors held a hearing to consider the appeal of the Planning Commission's certification of SEIR 566, as filed by the Vedanta Society of Southern California. The hearing was continued for a month.

February 1998

- ✓ Dialog between California Quartet and St. Michael's Abbey was re-established on February 9, 1998 when counsel, representing the Saddleback Meadows Land Conservancy, transmitted to California Quartet an offer to purchase a portion of Saddleback Meadows for approximately $5.2 million. This offer was made prior to the February 24th hearing by the Board of Supervisors of an appeal of the Planning Commission approval of the Environmental Impact Report for the Grading Application for Recorded Tract Map 10692 (for 705 lots for mobile home or manufactured housing.)

- ✓ California Quartet transmitted a response to the Conservancy offer to the Deputy County Counsel's office, stating the reasons why the partial acquisition offer was rejected.

- ✓ The offer for partial acquisition of Saddleback Meadows became a point of discussion at the February 24, 1998 hearing before the Board of Supervisors on the EIR certification appeal. The Board deadlocked 2-2 on the appeal question after being advised by County Counsel that a tie vote would have the effect of upholding the prior Planning Commission action.

- ✓ At the conclusion of the February 24, 1998 SEIR appeal hearing; Supervisor Spitzer expressed his desire to bring about a settlement between parties in connection with the Abbey's offer to purchase a portion of the property in return for a significantly reduced development project. It was agreed among the Supervisors that Supervisor Spitzer would provide the Board with an update report within 45 days -- by April 14, 1998.

March 1998

- ✓ The first in a series of nine settlement/negotiation meetings held during 1998,including representatives of California Quartet, St. Michael's Abbey (the Norbertine Fathers of Orange), the Rama Krishna Monastery (Vedanta Society) and County staff, was held on March 6, 1998.[3]

- ✓ Following the meeting of March 6, 1998 California Quartet analyzed the feasibility of various reduced density/development envelope concepts. St. Michael's Abbey reviewed these alternatives during the course of those negotiations in conjunction with a potential partial purchase of the remainder property.[4]

- ✓ On March 6, 1998 the Vedanta Society filed a lawsuit challenging the validity of the EIR for the Grading Application, arguing that a majority vote of the Board of Supervisors was required to reject the appeal of the December 3, 1997 certification of the EIR for the Grading Application.

- ✓ At a second settlement meeting held on March 23, 1998 California Quartet discussed reduced development alternatives that had been analyzed since the last meeting and the County staff presented the so-called "Mathews Plan" that was prepared by County staff.

[3] *The meetings were held during 1998 on March 6, March 23, April 1, April 20, May 8, August 27, September 22, October 30, and November 18.*

[4] *The analyses of each of these concepts included performing conceptual site planning design, development cost studies, view and premium analysis, and finally running preliminary financial proformas for each of these scenarios. During the course of these negotiations California Quartet determined that a reduced development alternative in conjunction with a partial purchase of the remaining open space areas by the Abbey could be made financially feasible under certain circumstances Major deal points included the following. the maximum development density, the purchase price of the open space, defining the development area, use of the open space for environmental mitigation needs of the project, restrictions on the purchased land for open space uses only, indemnification and release of liability relating to the purchased open space, and a guarantee of support for the project by the opposing parties.*

April 1998

- ✓ A third settlement meeting at which California Quartet presented a modified version of the staff alternative (a.k.a. the "Modified Mathews Plan" 130-150 units) was held on April 1, 1998.

- ✓ On April 14, 1998 Supervisor Spitzer provided Board members with a status update on the Saddleback Meadows negotiations.

- ✓ A work session with County staff was held at the County offices on April 20, 1998 to review geo-technical questions and concerns related to Staff alternative and the modified staff ("Mathews Plan"). Representatives of St Michael's Abbey, including geologists, participated in this discussion.

- ✓ A fourth settlement session was held on April 20, 1998 at which representatives of St. Michael's Abbey and the Rama Krishna Monastery discussed their concerns about geo-technical stability issues.

- ✓ California Quartet arranged an additional work session that was held on April 23, 1998 involving the geo-technical consultants to discuss/address the concerns raised in this meeting. Counsel to the Abbey conveyed the Abbey's latest offer in tabular form offering different amounts for various scenarios and requested California Quartet to return with a counter offer at the next settlement meeting.

May 1998

- ✓ On May 4, 1998 California Quartet convened a work session involving the respective geo-technical consultants to discuss and review concerns raised by representatives of the Abbey and the Monastery. Unfortunately, no consensus was reached at this session.

- ✓ At a fifth settlement meeting held on May 8, 1998 California Quartet presented a response to the partial acquisition offer of April 23, 1998 in tabular form involving modifications to the so-called "Mathews Plan." At this session representatives of the Abbey and Supervisor Spitzer appeared to agree to a partial acquisition in the amount of $5.2 million in conjunction with a development program. Funding from The Abbey was anticipated to be $4.2 million and $1.0 million was to come from the County[5].

- ✓ On May 26, 1998 California Quartet representatives attended a meeting at which legal counsel for St Michael's Abbey proposed acquisition of the entire property for $12.2 million, with $10.2 million to come from the Abbey and $2.0 million from the County.

[5] *However, counsel representing the Rama Krishna Monastery, rejected the idea of a modification to the staff proposed development program After a caucus among Supervisor Spitzer and representatives of the Norbertine Fathers of Orange (St. Michael's Abbey) and the Vedanta Society (Rama Krishna Monastery) the meeting concluded with counsel for the Norbertines (Verlyn "Sonny" Jensen) and Supervisor Spitzer making a combined cash offer of $8.0 million ($7.0 million from the Abbey and $1 0 million from the County) for the entire property*

June 1998

- ✓ Supervisor Spitzer presented status report on Saddleback Meadows settlement negotiations at the Board of Supervisors meeting of June 2, 1998. The Board directed County Counsel and staff to prepare for consideration by the Board a settlement agreement containing the following "conceptual" terms:

  1) $1.5 million in appropriated County funds (referred to as the "Strawberry Field Funds") to acquire an interest in the property with the understanding that these funds were to be used only in conjunction with $10.5 million from St. Michael's Abbey to purchase the entire property. Escrow was to close on or before October 29, 1998 with the understanding that if the "Strawberry Field funds" turned out not to be available the development option would not be "triggered" until the Board had had an opportunity to explore alternative funding. The County's contribution of $1.5 million was to be reimbursed in the event the property was used for a purpose which derives financial benefit;

  2) All litigation by St. Michael's Abbey and/or California Quartet be tolled;

  3) County staff was to immediately begin processing an amendment to the General Plan, amendment to the Specific Plan, Zone Change, Area Plan, and Tentative Tract Map applications and any other required plan/application for the 299-lot development plan to be considered for approval if the acquisition was not completed by October 29, 1998 and;

  4) California Quartet would cease processing any permits related to the 705-unit manufactured home subdivision (Final Map 10692) until October 30, 1998.

- ✓ On June 12, 1998 California Quartet received from St. Michael's Abbey a letter of intent regarding purchase and sale of the Saddleback Meadows property that included a provision that would allow St. Michael's Abbey to develop the property.

- ✓ On June 15, 1998 California Quartet formally requested that County cease processing of the grading plan check application based on Recorded Tract Map 10692 (705 units), in accordance with the conceptual terms of the settlement agreement referenced in the Board of Supervisors motion of June 2, 1998.

- ✓ On June 22, 1998 California Quartet submitted to the County applications for the Area Plan & Zone Change for the 299-lot "Contingency Plan" that would be adopted if St. Michael's Abbey failed to perform on acquiring the property.

- ✓ At the Board of Supervisors meeting held on June 23, 1998, Supervisor Spitzer provided Board Members with a Saddleback Meadows Settlement negotiations update and reported that St. Michael's Abbey apparently had decided not to follow through on their offer to work with the County to acquire the Saddleback Meadowsproperty as had been reported on June 2, 1998.

July 1998

- ✓ On July 3, 1998 the Saddleback Meadows Land Conservancy, Norbertine Fathers (St. Michael's Abbey) and the Vedanta Society of Southern California (Rama Krishna Monastery) transmitted to California Quartet a "Summary of Settlement Terms" and a "Supplemental Term Sheet" proposing partial purchase of the property for $5.2 million.

- ✓ On July 17, 1998 California Quartet provided a detailed response to the partial acquisition offer of July 3, 1998.

- ✓ On July 27, 1998 California Quartet provided a detailed analysis of the impact of "ridgeline protection" criteria proposed by the Vedanta Society. California Quartet surveyed and staked the edge of the "Vedanta Ridgeline" with 10' tall white PVC poles so that its view of the ridgeline could be viewed and studied relative to the viewpoint of the Rama Krishna Monastery.

August 1998

- ✓ A site tour was held on August 10, 1998 to allow representatives of the Vedanta Society (Rama Krishna Monastery) to view the ridgeline on the Saddleback Meadows property. The purpose of the site visit/meeting was to discuss the issue of the "Vedanta Ridgeline Protection" proposal which when physically interpreted, severely impacted the development envelope for the partial development alternative's so as to make the project financially infeasible.

- ✓ On August 11, 1998 Supervisor Spitzer provided other Board members with a status report on the Saddleback Meadows settlement negotiations and invited Supervisor Wilson to participate in the negotiations with him. Supervisor Wilson accepted Supervisor Spitzer's invitation and the next status report was set for October 6, 1998. This was the same date that the Board members designated as the deadline for reaching a mutually satisfactory agreement on the matter.

- ✓ On August 11, 1998 the United States Fish and Wildlife Service and California Department of Fish and Game wrote an unusual joint letter to the Board of Supervisors commenting on the 299 Lot Contingency Plan and also indicating they (the Agencies) had been informed by interested parties that a new clustered development alternative proposal, along with the purchase of significant open space on the site, had been offered to the property owner.

- ✓ On August 25, 1998 the Planning Commission heard the Area Plan/Zone Change application along with the Addendum to Supplement EIR 566. The Commission voted to continue the item to October 7, 1998 the day after the deadline for the settlement negotiations and the next Board of Supervisors status report on Saddleback Meadows.

- ✓ On August 27, 1998 the sixth settlement negotiation session was conducted with both Supervisors Spitzer and Wilson involved. The main issue of discussion was protection of the ridgeline. This issue was not resolved during this session. The next negotiation session was scheduled for September 15, 1998

- ✓ On August 28, 1998 counsel to the Vedanta Society sent to California Quartet copies of the Vedanta Alternate Study, consisting of a site plan prepared by its consultant engineer/site planner. The study showed a plan for 120 lots.

September 1998

- ✓ A meeting was held at the offices of the counsel to the Vedanta Society on September 10, 1998 at which representatives of California Quartet offered an analysis of Vedanta Alternative Plan as received by California Quartet on September 1, 1998.

- ✓ California Quartet provided a cost and revenues comparison impact analysis of the Vedanta Alternative Plan (120-lots) as compared to the Modified Staff Alternative (127-lots) on September 14, 1998.

- ✓ The seventh settlement negotiation meeting was held at the County Hall of Administration on September 22, 1998 with Supervisors Wilson and Supervisor Spitzer in attendance. Discussion focused on California Quartet's analysis of the Vedanta Alternative Plan and the Vedanta ridgeline protection issue. California Quartet explained how the Vedanta ridgeline protection proposal rendered the reduced development alternative financially unfeasible, unless the purchase price was increased to offset the additional costs and lost revenues that would result from an alternative that honored the ridgeline provision. Counsel for Vedanta, the Norbertines and Saddleback Meadows Land Conservancy informed the participants in this session that his clients would accept the Modified Staff Alternative (127-lots) without the ridgeline provision along with a total purchase price of $5.2 M (which would include $1M from the County) so long as the area outside the 44-acre development bubble was not disturbed in any way (including fuel modification), despite the fact that "environmental mitigation" would be necessary outside the 44-acre development to accommodate fuel modification, geo-technical mitigation, and natural resource management.

- ✓ Counsel to Vedanta Society, submitted a letter to the County's Planning Director on September 23, 1998. The letter objected to the County's continued processing of the Contingency 299-Lot Plan and alleged the County's failure to comply with the procedural requirements of the Foothill/Trabuco Specific Plan by failing to forward California Quartet's Area Plan and Zone Change Application to the Foothill Trabuco Specific Plan Review Board for its review and recommendations prior to the Planning Commission's consideration of the application.

October 1998

- ✓ On October 4, 1998 California Quartet signed and delivered to Supervisor Spitzer's a revised Memorandum of Understanding (MOU) between California Quartet and The Saddleback Meadows Land Conservancy.

- ✓ On October 5, 1998 counsel for St. Michael's Abbey transmitted another version of the MOU reflecting their understanding of the "deal" reached at the September 22, 1998 meeting held at the County offices.

- ✓ On October 5, 1998 Supervisor Spitzer sent a memorandum to the other Board members providing an update on the Saddleback Meadows settlement negotiations.

- ✓ County Counsel sent on October 6, 1998 a memorandum to Members of the Planning Commission concluding that the Commission could take action on the Saddleback Meadows Zone Change and Area Plan prior to the Foothill Trabuco Specific Plan Review Board completing a further review of the project.

- ✓ Counsel for California Quarter wrote on October 6, 1998 to counsel for St. Michael's Abbey and the Rama Krishna Monastery responding to the "offer letter" dated October 5, 1998.

- ✓ On October 7, 1998 the Planning Commission heard the Area Plan/Zone Change application along with the Addendum to Supplemental EIR 566. The Commission certified the addendum to the EIR, approved the Area Plan and recommended that the Board of Supervisors approve the Zone Change.

- ✓ On October 10, 1998 the Foothill Trabuco Review Board met to consider the 299-lot plan for Saddleback Meadows. California Quartet representatives and counsel and consultants to St. Michael's Abbey and the Rama Krishna Monastery made presentations.

- ✓ The eighth Saddleback Meadows negotiation meeting was called by Supervisor Spitzer's office and convened on October 30, 1998. Supervisor Spitzer pressed representatives of St. Michael's Abbey and the Saddleback Meadows Land Conservancy on the question of whether there was a commitment to acquire a portion of the Saddleback Meadows property. There was a mutual agreement that California Quartet would prepare a "Conceptual Remedial Grading Plan" based on the 127-lot reduced alternative and present it to the group prior to the November 24th Board of Supervisor's hearing on Saddleback Meadows.

- ✓ Counsel for St. Michael's Abbey and the Saddleback Meadows Land Conservancy distributed on October 31, 1998 a Draft of the MOU document, reflecting extensive changes compared to document signed by California Quartet on October 5, 1998.

November 1998

- ✓ At the Board of Supervisors hearing of November 3, 1998 representatives of the Saddleback Meadows Land Conservancy and California Quartet executed a Memorandum of Understanding (MOU) for partial acquisition and development of the Saddleback Meadows property. The County did not and could not sign the MOU at that time because County Counsel advised the Board not to do so until the proposed action was properly noticed. The Board continued the hearing to November 24th, 1998 at which time the appeals for both the Tentative Tract maps and the Area Plan were to be heard in conjunction with consideration of the acquisition agreement (i.e. Purchase and Sales Agreement).

- ✓ Counsel for the Vedanta Society filed on November 5, 1998 an appeal of the Orange County Subdivision Committee's approval of the Contingency 299-Lot Tentative Tract Maps on behalf of the Vedanta Society and the Saddleback Meadows Land Conservancy.

- ✓ Counsel for California Quartet distributed the proposed Purchase and Sale Agreement for the partial acquisition and development alternative to the involved parties on November 17, 1998. This version incorporated revisions to the draft provided by Counsel for the Saddleback Meadows Land Conservancy on October 31, 1998. California Quartet delivered copies of the "Conceptual Remedial Grading Plan" to counsel for Vedanta, Supervisor Spitzer and the County Planning Director.

- ✓ A ninth negotiation session was held at Supervisor Spitzer's office on November 18, 1998 to review/discuss the "Conceptual Remedial Grading Plan" and comments from counsel for the Norbertines, Vedanta and the Saddleback Meadows Land Conservancy regarding the draft Purchase & Sales Agreement sent by counsel for California Quartet on November 17, 1998.

- ✓ The Board of Supervisors held a public hearing on November 24, 1998. The hearing dealt with the status of negotiations and appeal of the 299 Lot Contingency Plan and related entitlement documents. Testimony was received and the public hearing closed with final action continued to December 8, 1998.

- ✓ Counsel for California Quartet sent a letter on November 25, 1998 on behalf of California Quartet to Counsel for the Norbertines responding to a document entitled "Purchase Agreement for Real Property And Escrow Instructions for the Purchase of Saddleback Meadows (Spitzer-Wilson 44-acre Compromise)," dated November 23, 1998 consisting of 29 pages delivered November 24, 1998 by the Office of Supervisor Spitzer at approximately 5:30 p.m. in the hearing room of the Board of Supervisors prior to the hearing for the Contingency Plan for 299 units on the Saddleback Meadows property.

December 1998

- ✓ Counsel for California Quartet sent a letter on December 1, 1998 on behalf of California Quartet to Counsel for the Norbertines regarding the preparation of the proposed Conservation Easement. Counsel for California Quartet circulated a proposed Land Purchase Agreement reflecting the business terms set forth in a Memorandum of Understanding dated November 3, 1998 between the Saddleback Meadows Land Conservancy, the County of Orange and California Quartet. Instead of receiving responsive comments, or a redlined version of the document with proposed changes, California Quartet's counsel received on November 24th a partial copy of a completely new draft agreement. Further, counsel for California Quartet claimed that this substantially revised agreement imposed an unrealistic and unattainable deadline.

- ✓ Counsel for California Quartet sent a December 7, 1998 letter to the Board of Supervisors responding to arguments made by counsel for Vedanta supporting their appeals of the Planning Commission's action on the Area Plan and the Subdivision Committee's action approving the tentative tract maps.

- ✓ The Board of Supervisors considered the matter of Saddleback Meadows on December 8, 1998 and denied the Vedanta Society's appeals (on a 2 to 2 vote) upholding the Planning Commission and Subdivision Committee's approvals of the Area Plan and Tract Maps, respectively. The Board certified SEIR #566 and approved the appropriate Findings and Statement of Overriding Conditions. The Board also adopted the resolutions and ordinances approving the Zone Change for the 299- lot Contingency plan.

- ✓ The County of Orange Department of Planning and Development Services filed a Notice of Determination on the Final Supplemental Environmental Impact Report, starting the 30-day statute of limitations for filing a legal challenge under the California Environmental Quality Act (December 9, 1998.)

- ✓ An e-mail that was addressed to all Board Members of the Sea and Sage Chapter of the Audubon Society, inviting them to join in a lawsuit challenging the environmental document for Saddleback Meadows that was soon to be filed by St. Michael's Abbey, the Endangered habitat's League, and the Rural Canyons Conservation Fund.

January 1999

- ✓ A Petition for Writ of Mandate and Complaint for Declaratory Relief Verification was filed with the Orange County Superior Court by the Endangered Habitats League on January 8, 1999.

- ✓ A Petition for Writ of Mandate and Complaint for Declaratory Relief was filed by the Norbertine Fathers on January 8, 1999.

- ✓ A site visit with representatives of the Army Corps of Engineers and a project biologist was held on January 13, 1999.

- ✓ Counsel for the Vedanta Society filed a Notice of Related cases in Vedanta, Norbertine and Endangered Habitats Actions on January 21, 1999.

- ✓ Joint Status Conference Statement of all parties was filed with the Orange County Superior Court on January 22, 1999.

February 1999

- ✓ The Answer of Real Party-in-Interest was filed with the Orange County superior Court by California Quartet in the Norbertine Action on February 16, 1999. Also, a Summons on Cross Complaint; Verified Cross-Complaint of Real Parties-In-Interest for Breach of Contract, Unfair Business Practices, Intentional Interference with Economic Relationship and Declaratory Relief was filed in the Norbertine Action.

March 1999

- ✓ A Stipulation and Order addressing the briefing schedule and the hearing date for the Motion for Summary Adjudication was executed by the parties to litigation and filed with the Orange County Superior Court on March 3, 1999.
- ✓ An amended Petition and Complaint was filed in Orange County Superior Court by counsel for the Endangered Habitats League on March 9, 1999.
- ✓ The Norbertines substituted counsel (replacing Ed Connor with Mary Hudson) on March 18, 1999.

April 1999

- ✓ The Orange County Superior Court consolidated the Vedanta, Norbertine and Endangered Habitat lawsuits by Minute Order on April 8, 1999. Also, the County agreed to provide the Petitioners with notice prior to the issuance of grading permits for the Saddleback Meadows property.
- ✓ Counsel for the Vedanta Society filed on April 23, a motion to dismiss all cross-claims by Real Parties in connection with the Norbertine action.

May 1999

- ✓ A Memorandum of Points and Authorities was filed by counsel for the Norbertines in support of their motion to dismiss the Cross Compliant filed by Real Parties on May 6, 1999 and Real Parties (California Quartet) filed an opposition to this motion on May 7, 1999.
- ✓ Counsel for Vedanta filed their reply in support of their motion to strike California Quartet's cross complaint on May 12, 1999.
- ✓ California Quartet filed its opposition to Vedanta's motion to strike the cross complaint on May 27, 1999.

June 1999

- ✓ Counsel for the Norbertines and Saddleback Meadows Land Conservancy filed their reply to the California Quartet cross complaint on June 2, 1999.
- ✓ California Quartet filed applications with the Army Corps of Engineers (Nationwide 404 Permit), State Water Quality Control Board (401 Permit), and State Department of Fish & Game (1603 Permit) on June 14, 1999.
- ✓ Judge Thomas of the Orange County Superior Court entered his judgment denying the California Quartet cross complaint in June 1999.

July 1999

- ✓ The parties failed to reach agreement on a briefing schedule and the scope of the administrative record.
- ✓ Site visit with Army Corps of Engineers and biologists employed by California Quartet on July 8, 1999.
- ✓ California Quartet waived the 30-day clock at request of California Department of Fish & Game on July 15, 1999.
- ✓ The Regional Water Quality Control Board e-mailed a request for additional information on July 27, 1999.

August 1999

- ✓ The Army Corps of Engineers issued a request for additional information on August 3, 1999.
- ✓ Counsel for Vedanta filed an amended complaint and request for declaratory relief with the Orange County Superior Court on August 9, 1999 and moved for summary judgment on the 2-2-vote issue on August 10, 1999

September 1999

- ✓ California Quartet provided additional information to the Army Corps of Engineers on September 3, 1999.
- ✓ California Quartet filed its opposition to the Vedanta motion on the 2-2-vote issue on September 10, 1999.
- ✓ California Quartet provided a response to a request for information from the Regional Water Quality Control Board on September 29, 1999.
- ✓ Counsel for Vedanta filed their reply to California Quartet's opposition to the motion on the 2-2-vote issue on September 27, 1999.

October 1999

- ✓ Counsel for Vedanta filed a statement with the Superior Court concerning their motion for a summary adjudication of the 2-2-vote issue on October 15, 1999.
- ✓ The Army Corps of Engineers issued a verbal request for additional information on October, 15, 1999.
- ✓ California Quartet provided additional information to Corps on October 22, 1999.

- ✓ Settlement agreement and release of all claims on the cross complaint executed on October, 15, 1999.

December 1999

- ✓ Orange County Superior Court Judge Thomas ruled that the 2-2 vote (on February 24, 1998) by the Board of Supervisors on the Vedanta appeal (of the December 7, 1997 Planning Commission certification of the Supplemental Environmental Impact Report for the Grading Application for the 705 lot project) had the affect of granting the Vedanta appeal.

- ✓ Counsel for Vedanta filed a proposed order granting their motion for summary adjudication on the 2-2-vote issue.

- ✓ A meeting between the Army Corps of Engineers and consultant team and a site visit with the Corps and project biologists was held on December 15, 1999.

- ✓ California Quartet filed on December 17, 1999 a draft Biological Assessment at the request of the Army Corps of Engineers as a prelude to the Section 7 process.

- ✓ The County and California Quartet filed on December 29, 1999 their objection to the Vedanta draft of the court order.

- ✓ The Superior Court entered on December 30, its order on the 2-2-vote issue.

January 2000

- ✓ California Quartet filed a writ petition with the Fourth District Court of Appeal on the 2-2-vote issue on January 3, 2000.

- ✓ Counsel for Vedanta filed, on January 5, 2000 a motion to remove its remaining claims based on the rationale that the Superior Court ruling on the 2-2 vote issue has made them moot. January 13, 2000: Site visit with Corps, Corps requests additional information.

- ✓ Counsel for Vedanta and the other co-litigants filed an opposition to the California Quartet writ petition to the Fourth District Court of Appeal on January 18, 2000.

- ✓ California Quartet provided additional information to Corps on January 21, 2000.

- ✓ Counsel for California Quartet filed opposition to the Vedanta motion for summary adjudication on January 25, 2000.

- ✓ The Army Corps of Engineers indicated on January 31, 2000 that it intended to deem the California Quartet application incomplete and require that a new application be filed.

February 2000

- ✓ On February 10, 2000 The California Department of Fish and Game informed California Quartet that the Section 1603 Streambed Alteration Permit application was reassigned to new staff person, and that no review has been conducted since application was filed.

- ✓ A meeting was held on February 15, 2000 between representatives of California Quartet and staff at the Los Angeles District Office of the Army Corps of Engineers at which the Corps agreed to continue to process the Section 404 application if requested information could be submitted timely.

- ✓ The Regional Water Quality Control Board informed California Quartet on February 22, 2000 that the file has been reassigned to new staff person and that California Quartet's previous response could not be located.

- ✓ Judge Thomas of the Orange County Superior Court granted on February 23, 2000 the Vedanta motion for summary adjudication and dismissal of the remaining causes of action in the consolidated cases (Vedanta, Norbertine, Audubon and Endangered Habitats.)[6]

- ✓ On February 29, 2000 California Quartet submitted to the Army Corps of Engineers an updated jurisdictional delineation report.

May 2000

- ✓ On May 10, 2000 consultants for California Quartet led a site visit of Saddleback and a potential off-site mitigation opportunity (Southern California Edison's Viejo property). The visit was attended by representatives from the Army Corps of Engineers, U.S. Fish and Wildlife Service, State Department of Fish and Game, and State Regional Water Quality Control Board.

June 2000

- ✓ In June 2000 California Quartet submitted to the Army Corps of Engineers and the California Department of Fish & Game conceptual plans for biological mitigation at two off-site locations, Hidden Ranch and Southern California Edison's Viejo property.

September 2000

- ✓ On September 5, 2000 the Army Corps of Engineers submitted a request for a formal Section 7 consultation to the U.S. Fish & Wildlife Service.

[6] *The County and California Quartet (as Real Party In-Interest) had filed in January 2000, an appeal with the Fourth District Court of Appeal, thereby automatically staying implementation of Judge Thomas' order until the appellate court disposes of the appeal.*

October 2000

- ✓ On October 10, 2000 consultants of California Quartet led a meeting attended by representatives from the Army Corps of Engineers, U.S. Fish and Wildlife Service, State Department of Fish and Game, and State Regional Water Quality Control Board.

- ✓ On October 18, 2000 California Quartet's biologist gave a tour of the Saddleback property to U.S Fish and Wildlife Service.

- ✓ On October 24, 2000 the Service acknowledged the Corps' request and expected to provide a biological opinion by no later than January 22, 2000. Army Corps of Engineers suggests that all issues regarding impact delineation and mitigation have been resolved, pending receipt of the Service's biological opinion.

- ✓ On October 30, 2000 the Fourth District Court of Appeal issued a nineteen page decision upholding the Orange County Superior Court decision on the 2-2 vote issue, concluding that a majority vote of the Board of Supervisors is required to reject the appeal of the certification of the EIR for the Grading Application for the Final Map for Saddleback Meadows (the 705 lot project).

November 2000

- ✓ On November 17, 2000 consultants of California Quartet met with U.S. Fish and Wildlife Service. Meeting also attended by representatives of Army Corps of Engineers and State Department of Fish and Game. Fish and Game announces that their project manager would soon be leaving. Service requests that dry sampling for Riverside Fairy Shrimp cysts be conducted at the two breached ponds.

December 2000

- ✓ On December 7, 2000 California Quartet's biologists gave State Fish and Game a tour of the site with a focus on wildlife corridors.

- ✓ On December 20, 2000 additional biological information was submitted to U.S. Fish and Wildlife Service. Included are results of dry sampling, which found some cysts, but at very low density.

January 2001

- ✓ On January 3, 2001 the Fourth District Court of Appeal issued a remittatur, formally returning Vedanta Society v. County of Orange to the Orange County Superior Court.

- ✓ In December the Army Corps of Engineers had announced their project manager responsible for the 404 Permit Application for the Saddleback Meadows project would be leaving. On January 10, 2000 a transition meeting was held between California Quartet's consultants and the Army Corps of Engineers staff.

- ✓ On January 25, 2001 U.S. Fish and Wildlife Service requested 60-day extension of Section 7 consultation.

March 2001

- ✓ New project manager assigned by California Department of Fish and Game to 1603 application. On March 8, 2001. California Quartet's consultants took new project manager on tour of property and proposed off site mitigation.

- ✓ On March 12, 2001 the Los Angeles District of the Army Corps of Engineers issued a Pre-Construction Notification under Nationwide Permit 26 for impacts to 1.26 acres of jurisdictional wetlands consisting of 0.40 acres of seasonal ponds and 0.86 acres of mulefat scrub and 1.49 acres of non-wetland waters of the United States consisting of mostly ephemeral streams.

- ✓ On March 21, 2001 the County of Orange issued a Public Notice of Availability for Final Subsequent EIR 566 and Addendum Numbers 1 and 2. The purpose of the notice was to inform the public about the availability of the environmental documents for review at County offices and local libraries.

- ✓ On March 22, 2001 California Quartet agreed to a request by the U.S. Fish and Wildlife Service for an extension of the consultanon period per regulations implementing Section 7 of the Federal Endangered Species Act.

April 2001

- ✓ On April 4, 2001 the Wetlands Regulatory Office of Region IX of the U.S. Environmental Protection Agency issued a letter requesting that the Army Corps of Engineers require an Individual Permit (instead of a Nationwide Permit) for Saddleback Meadows.

- ✓ On April 5, 2001 California Quartet's consultants met with U.S. Fish and Wildlife Service to continue discussions on Section 7 consultation.

- ✓ On April 18, 2001 U.S. Fish and Wildlife Service requested 60 to 70 day extension of Section 7 consultation.

May 2001

- ✓ On May 9, 2001 the County of Orange Planning Commission recommended by a 3-2 vote that a new EIR be prepared for the 299-lot project.

- ✓ On May 22, 2001 the County Board of Supervisors upheld the Commission's recommendation.

June 2001

- ✓ Helix Environmental completes focused survey for gnatcatchers and finds none.

July 2001

- ✓ On July 17, 2001 California Quartet's consultants met with U.S. Fish and Wildlife Service to continue discussions on the Section 7 consultation.
- ✓ On July 19, 2001 California Department of Fish and Game issued a draft 1603 permit.

August 2001

- ✓ On August 6, 2001 the Notice of Preparation for the Supplemental Environmental Impact Report 566 was circulated.
- ✓ On August 9, 2001 California Quartet's consultants presented a refined mitigation plan to the U.S. Fish and Wildlife Service in order to address their concerns regarding the Riverside Fairy Shrimp.

September 2001

- ✓ On September 29, 2001 an updated Water Quality Management Plan was filed with the Regional Water Quality Control Board.

October 2001

- ✓ On October 22, 2001 RWQCB issued a letter requesting more information.
- ✓ On October 25, 2001 the environmental consultant submitted the First Administrative Draft of Subsequent Environmental Impact Report 566 to Orange County Department of Planning and Development Services.
- ✓ On October 26, 2001 the U.S. Fish and Wildlife Service issued a final Biological Opinion.

APPENDIX C

GEOTECHNICAL REPORT

GANICO
Geotechnical, Inc.

March 26, 2002
Project G4816-04.3

California Quartet
C/o TPG Management, Inc.
5274 La Jolla Boulevard
La Jolla, California 92037

Attention: Mr. Joe La Cava

Subject: Geotechnical Assessment for Tentative Tract Map 15230
299 Lots
Saddleback Meadows Development
Orange County, California

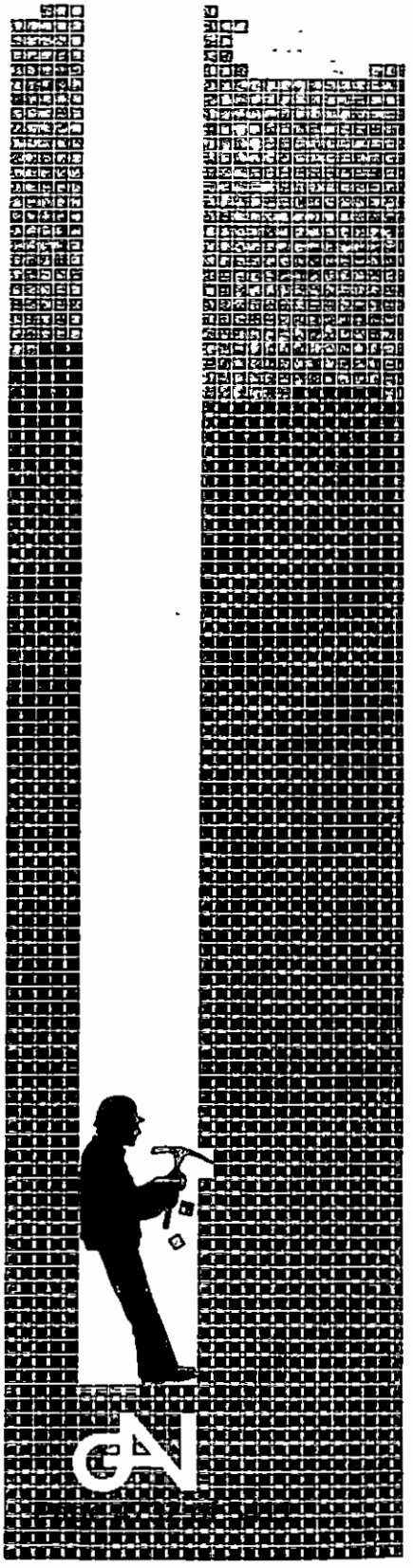
Gentlemen:

1. INTRODUCTION

a) This report presents the results of our investigation for the Saddleback Meadows Contingency Plan – 299 Lots, prepared by Hunsaker & Associates, dated August, 2001.

b) The Plan is the product resulting from the revision and compilation of earlier development concept plans. The Plan contains 299 residential lots.

c) The Plan, which was prepared by Hunsaker and Associates, and used as the base plan for our Geotechnical EIR contained 318 lots. This 299-lot Plan is geotechnically very similar, with only minor changes, mostly involving the proposed loffel walls.



d) References cited during the most current investigation and for previous work on the site are presented in *References, Appendix A*. The Geotechnical EIR for Tentative Tract 15230 is dated November 27, 1995 *(presented as Reference No. 9)*. Our previous Geotechnical Investigation report for Tentative Tract 10692, the Entitled Plan, is dated January 6, 1994 *(Reference No. 8)*.

e) The current Saddleback Meadows Contingency Plan contains minor earthwork revisions, including graded berms for use as view shed barriers.

f) Geotechnical Cross Sections A–A', B–B' and C–C' from the 318 Lot Plan have been revised showing the new grades. The site geology and the locations of exploratory excavations are shown on the *Geologic Map, Plate 1*. The Geologic Key is shown on *Plate 2*. The Logs of Borings for the most recent site exploration are included in this report (Borings BC–1 through BC–17). Logs of Borings and Test Pits for previous exploration by GANA and other consultants are found in the GANA report dated January 1, 1994 (Ref. 8).

2. PURPOSE

a) The purpose of this investigation was to evaluate the Saddleback Meadows Contingency Plan and its impact on the site conditions, to revise the previous geotechnical cross sections to reflect the new grades, to conduct stability analyses and to provide other additional geotechnical data to supplement our previous Geotechnical EIR of November, 1995.

b) A secondary purpose was to evaluate the extent of the removal areas, the grading envelope and the estimated removal volumes.

3. SCOPE

The scope of services we have provided for this assessment is outlined as follows:

a) Evaluation of the Contingency Plan grades and their impact on the site;

b) Revision of the Geotechnical Cross Sections A–A', B–B' and C–C' to evaluate stability influence of new grades;

c) Conducted static and pseudostatic stability analyses along portions of the revised cross sections;

d) Review and evaluation of major landslide structures and re–evaluation of the materials shear strengths to provide clarification of changes from previous reports;

e) Preparation of graphic illustrations;

f) Evaluation of the extent of removal areas, the grading envelope and the estimated removal volumes;

g) Preparation of this report presenting our findings, conclusions and recommendations.

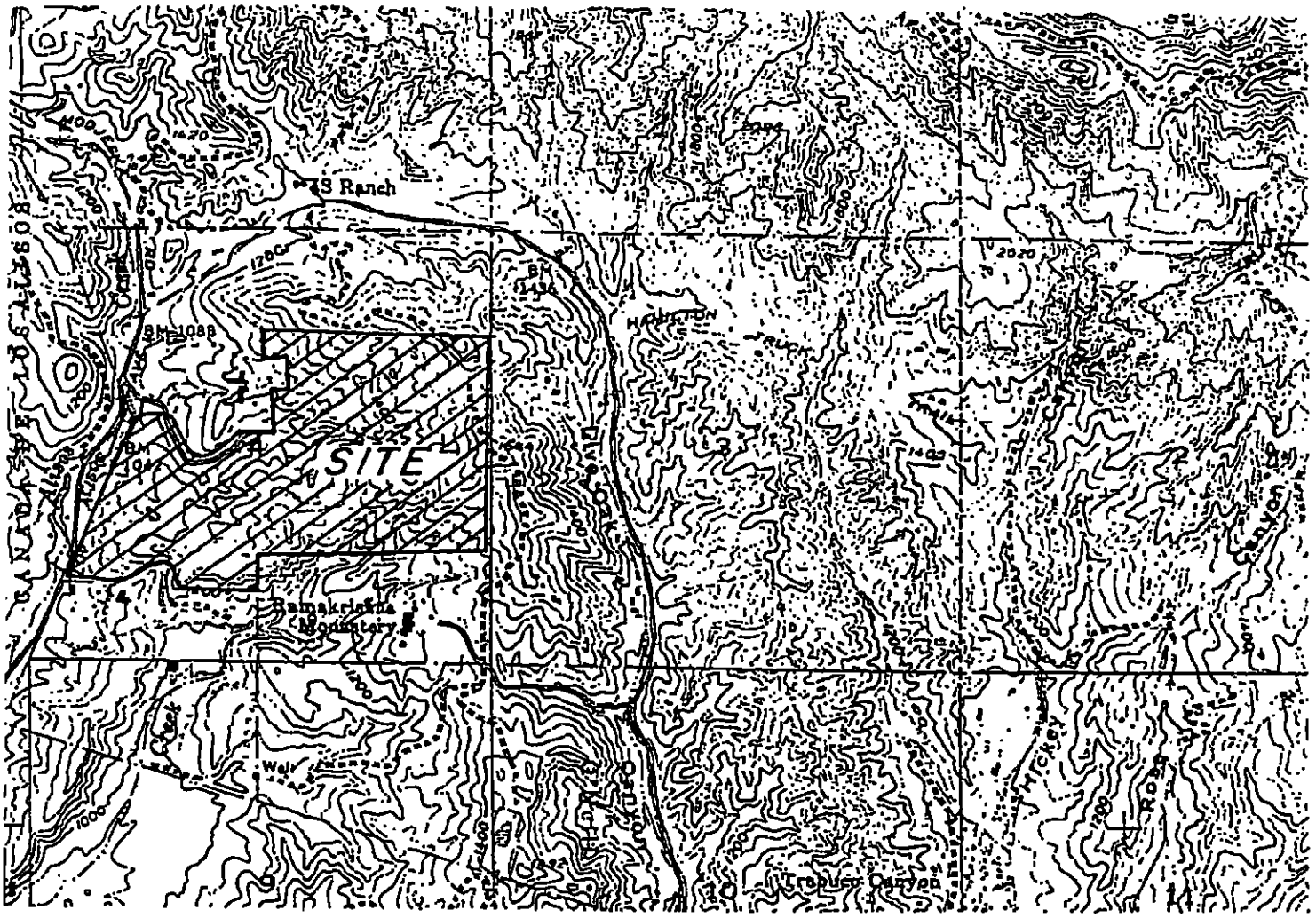
4. QUALIFICATIONS

a) A more detailed evaluation of the slope stability, including analyses of buttress backcuts and forecuts, individual cut slope buttresses, etc. will be conducted during the 40–scale grading plan review which accompanies the grading permit application.

b) Although no major changes are anticipated in the final grading plan from the current plan, any revisions will be reviewed and re–analyzed, if required.

c) Shear strength parameters utilized in our Slope Stability analyses are presented in Section 9,d. They reflect the lower values, or the more conservative results of tests obtained from samples taken from the site. The shear test results are presented in *Direct Shear Diagrams, Figures 2 and 3*.

LOCATION MAP



Base Map: USGS Santiago Peak Quadrangle
7.5 Minute Series, 1982

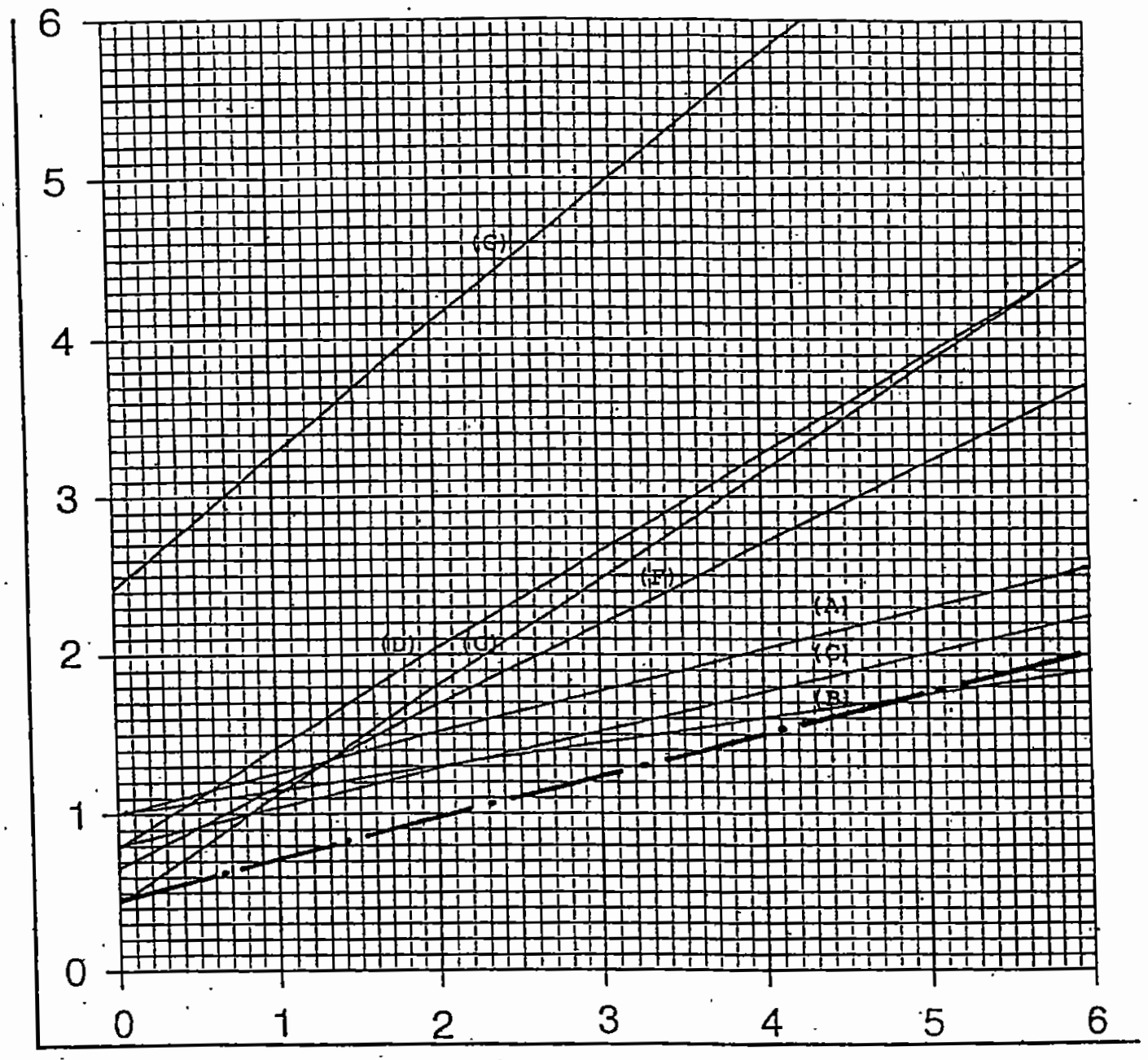
2000 0 2000 4000
scale feet

GANICO *Geotechnical, Inc.*
Geologic and Soil Engineers

Saddleback Meadows	
Date: arch 2002	
Project No: G4816-04 3	Figure No: 1

DIRECT SHEAR TEST DIAGRAM

(PEAK RESULTS)



Boring No.	Sample Depth	Undisturbed/ Remolded	Boring No.	Sample Depth	Undisturbed/ Remolded
(A) BA-2	85-86	Remolded	(E) BA-13	138	Undisturbed
(B) BA-2	85-86	Undisturbed	(F) BC-4	46.5	Undisturbed
(C) BA-3	131	Undisturbed	(G) BC-2	44	Undisturbed
(D) BA-6	69-69.5	Undisturbed			

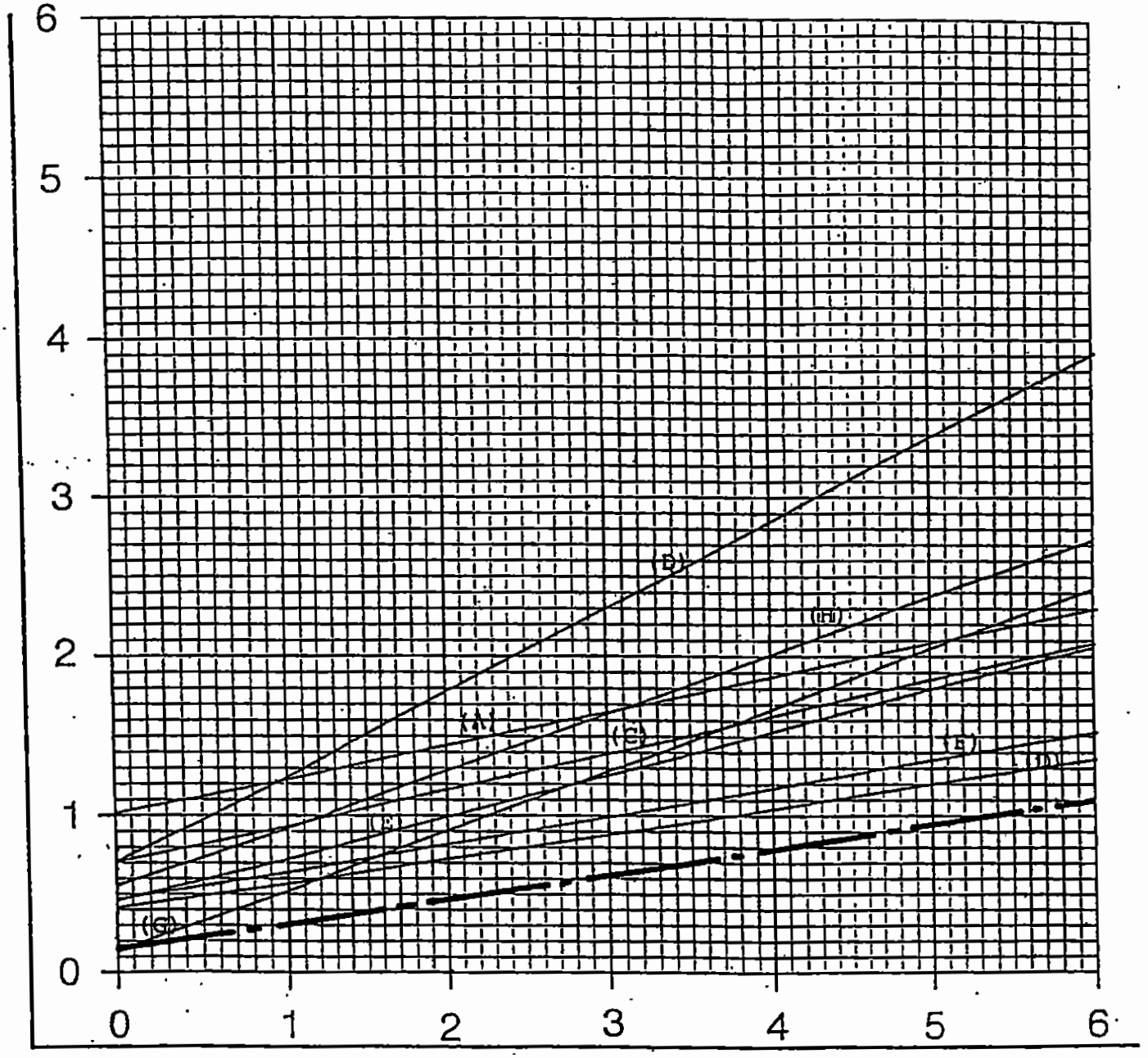
—•— Plot of values used for pseudo-static

GANICO Geotechnical, Inc.
Geologic and Soil Engineers

Project Name:	Saddleback Meadows
Date:	March 2002
Project No:	G4816-04.3
Figure No.:	2

DIRECT SHEAR TEST DIAGRAM

(RESIDUAL/RESHEAR RESULTS)



	Boring No.	Sample Depth	Residual Reshear	Undisturbed/ Remolded	Boring No.	Sample Depth	Residual Reshear	Undisturbed/ Remolded
(A)	BA-2	85-86	Reshear	Remolded	(E) BA-13	138	Residual	Undisturbed
(B)	BA-2	85-86	Residual	Undisturbed	(F) BA-13	138	Reshear	Undisturbed
(C)	BA-3	131	Reshear	Undisturbed	(G) BC-4	465	Residual	Undisturbed
(D)	BA-6	69-69.5	Residual	Undisturbed	(H) BC-12	44	Residual	Undisturbed

—•— Plot of values used for static stability analyses

GANICO *Geotechnical, Inc.*
Geologic and Soil Engineers

Project Name:	Saddleback Meadows
Date	March 2002
Project No	G4816-04.3
Figure No.	3

5. FIELD EXPLORATION

a) The first generated Logs of Borings, test pits and dozer pits, excavated prior to our latest site exploration are presented in the January 6, 1994 report.

b) Logs of Borings excavated during the most recent subsurface exploration on the site are presented in the *Field Exploration, Appendix B*. Boring, Test Pit and Dozer Pit locations are shown on the *Geologic Map, Plate 1*.

6. STABILITY ANALYSES

The results of our stability analyses for the major landslides on–site are presented in the *Stability Analyses, Appendix C, Volume 1 (cross sections with results) and Volume 2 (Computer Output)*. All procedures and results conform to the County of Orange Grading Code regulations. Stability analyses were conducted utilizing the Alternate 4 plan grades.

7. SITE CONDITIONS

7.1 Location

The location of the site is shown on the *Location Map, Figure 1*.

7.2 Surface Conditions

A description of the surface conditions at the site is presented in the November, 1995 report. Based on several site visits since our most recent subsurface exploration, the site conditions are essentially unchanged, with the exception of some additional erosion within the canyon along the north boundary with the Abbey property and within the gullies on site.

7.3 Geologic Conditions

a) The geologic conditions at the site are essentially the same as those presented in the November, 1995 report, maps and cross sections.

b) Some minor adjustments have been made to the cross section where changes were warranted by additional review and analysis of the subsurface data.

c) Explanations for the changes made to the geologic conditions shown in the January 6, 1994 report are presented in this report.

8. REVISED GEOLOGIC CONDITIONS

a) A number of changes have been made to the geologic map and cross sections for the January 6, 1994 report. These changes were included in the Geologic Map and Geologic Cross Sections in the November 27, 1995 report. As a result of new subsurface data found in our recent Borings BC–1 through BC–17 and from additional field mapping, a number of changes have been made on the geologic map and cross sections for our January 6, 1994 report.

b) These revisions are shown in the cross sections for this report and in the November 27, 1995 report, and they are summarized and described as follows:

8.1 Central Ridge Area

a) The ridge area above and to the east of the old ranch house was originally shown as a landslide with a possible lower slide surface; Cross Section 7–7', Plate 9 illustrates this in the January, 1994 report.

b) Section B–B' of the November, 1995 report and in this report, depicts the revised geologic structure in this area.

c) The landslide interpretation was eliminated for the following reasons:

i) The Petra boring data, in Boring PB–9 does not show any shears or landslide materials.

ii) The bedrock materials observed in our recent deep Borings BC–5, BC–12 and BC–14 were observed to be essentially undisturbed and only minor shear surfaces were observed in the borings. A slide surface deeper than the BC–5 and BC–12 borings is very unlikely.

iii) The rupture surface logged in Boring BB–13, located just south of the east end of Section B–B', was originally interpreted as a basal landslide surface. We have, however, determined that since the surface was not encountered in PB–9, it must pass beneath the boring, which would cause the extrapolation of any potential slide surface to occur well below the deepest slide surface shown in Section B–B'. Therefore, the shear surfaces encountered in Boring BB–13 are interpreted as being of a tectonic derivation since it is unreasonable to assume that basal landslide surfaces would be present at the projected depth. The structural projection of the "basal surface" in the BB–13 boring is shown on the upper east end of Section B–B' of this report.

iv) Based on our geologic mapping in the canyon north of the ridge, we regard the exposed bedrock on the south side of the canyon is undisturbed and the materials on the north side are disturbed.

v) Regardless of whether there is a slide or no slide condition present, the only consequence would be a negligible variation in remedial grading quantities. If a slide is present, an estimated 4 percent increase in the remedial grading quantities would be required to construct an upper shear key in the area of Boring BC–14. However, there would be no change in the present grading envelope.

8.2 Reconstruction of Landslide Structure

8.2.1 Main Slide Area (Sections A–A' and B–B')

a) Our subsurface exploration that was conducted within the past year was initiated to provide more detail to the structure of the deeper slide surfaces and refine remedial grading quantities.

b) Boring BC–1 was drilled to encounter and confirm the location of the basal slide surface shown in Sections 2–2' and 3–3' of the January 6, 1994 report. Section A–A' of this report was constructed essentially along the same line as section 2–2'.

c) At a depth of 120 feet, BC–1 did not encounter this projected slide plane which had been expected from the information obtained in BA–9 and BC–1 (in Section 2–2'). However, an ash bed and a thick, fat, sheared clay zone was encountered at 152 to 154 feet, which was interpreted as the slide material encountered in BA–9.

d) Based on the projection of the rupture zones in BA–9 and BC–1, the structure was extrapolated upslope and downslope along Section A–A' and generally parallel to the known structures; becoming flat and then warping upward along the fault zone to the west and becoming steeper, upslope to the east.

e) Another deeper slide surface was constructed based on the subsurface date from Borings BA–4 and B–22. Structurally, it generally parallels the BA–9 surface.

f) A hypothetical slide surface was constructed connecting the lower and intermediate surfaces in the area of the A–A'/B–B' intersection (refer to the queried, dashed contact).

g) A shallower slide surface was constructed based on boring data found in Borings BA–3 and BA–11. The upper and lower splays to the west represent two hypothetical options. They represent the toe geometry typical of generic landslides common to the south County.

8.2.2 Southerly Slide Area (Section C–C')

a) Cross Section C–C' of the November 27, 1995 report and C–C' in this report were constructed generally along the same trend as Section 4–4' of the January 6, 1994 report.

b) Based on the subsurface data from our recent Boring BC–15 and a re–evaluation of boring data from B–7, B–36, BA–13 and PB–10, we have eliminated the deep slide interpretation in the east half of Section C–C'. The shallow landslides remain.

c) Along Section C–C', the first deep slide surface from the east that passes through B–37 and beneath PB–29 is a hypothetical surface. The intermediate surface above is based on data from B–37 and PB–29.

9. SLOPE STABILITY ANALYSES

a) Slope stability analyses were performed using the UTEXAS2 Slope Stability computer program on what has been determined to be typically critical cross sections. The output documents for the slope stability analyses are presented in the *Stability Analyses, Appendix C, Volume 2.*

b) The strength parameters utilized in the analyses were selected based on the combined results of the field exploration, data from prior consultants and our laboratory test data. The laboratory shear tests include those which were conducted on specimens from hand–driven samples collected by a geologist during the down–hole logging process. They were obtained from the borings drilled specifically to explore the actual rupture surfaces. Lastly, the shear strength values used reflects those values used for similar previous investigations completed over the years in the same and adjacent site areas. The test results were reported in our previous report *(Reference January 6, 1994 report).*

c) The strength parameters used in the static analyses are based on the residual shear strengths, whereas those used in the seismic analyses are based on the peak strengths. Graphic plots of the laboratory results of the shear tests are shown in *Figures 2 and 3.* They also depict the shear strength values used in our slope stability analyses. It is notable that the values used in the analyses are more conservative than the actual strengths obtained.

d) The shear strengths used in the analyses are as follows:

Geologic Conditions	Angle of Friction (degrees)		Cohesion (lb/ft^2)	
	Static	Seismic	Static	Seismic
Rupture Surface	9	15	150	450
Fill	25	28	250	450
Bedrock/Across Bedding	30	30	350	350
Along Bedding	21	21	138	138

e) Remedial measures have been proposed where the factors of safety failed to reach the required 1.5 for the static condition and 1.1 for the seismic condition. The remedial grading is shown on the enclosed cross sections in Appendix C. Although the horizontal acceleration of 0.15g is required by County Code, the application of it to this site and to the computer programs for slope stability currently in vogue are in doubt; the values have been increased to meet the County standard.

10. CONCLUSIONS AND RECOMMENDATIONS

a) The remedial grading required for the Saddleback Meadows Contingency Plan – 299 Lots (dated June 22, 1998) is significantly reduced from the 705–unit grading concept for the original Entitled Plan. The total Remedial Grading quantity is approximately 6.8 million cubic yards.

b) We conclude that the site is developable.

The opportunity to be of service is sincerely appreciated. If you have any questions, please call.

Very truly yours,

GANICO Geotechnical, Inc.

Gerald A. Nicoll
President
CEG 34
(Exp. December 31, 2003)

Peter C. Yong
Vice President, Engineering
RGE 919
(Exp. September 30, 2005)

GAN/PCY/GDH:cn/ck

Enclosures:

Location Map	- Figure 1, Text
Direct Shear Test Diagrams	- Figures 2 and 3, Text
References	- Appendix A
Field Exploration	- Appendix B
Unified Soils Classification System	- Figure B-1
Logs of Borings	- Figures B-2 through B-18
Stability Analyses	- Appendix C
Geologic Map, Plate 1 (from November 1995 report)	- In pocket
Geologic Key, Plate 2	- In pocket
Geologic Cross Sections	- Plates 3 to 5 (in pockets)
Computer Output Documents	- Volume 2

APPENDIX A

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APPENDIX B

Field Exploration

a) The site was explored utilizing a truck–mounted bucket auger drill rig to excavate 17 borings to depths of 77 to 173 feet below the existing ground surface. All borings were subsequently backfilled. Approximate locations of the borings are shown on the *Geologic Map, Plate 1*, of the November 1995 report.

b) The soils and bedrock encountered in the borings were logged and sampled by our Geologist. The soils were visually classified in accordance with the Unified Soil Classification System described in *Figure B-1*. The Logs of the Borings are presented in *Figures B-2 to B-18*. (The logs, as presented, are based on the field logs, modified as required from the results of the laboratory tests.) Driven ring and bulk samples were obtained from the excavations for laboratory inspection and testing. The depths at which the samples were obtained are indicated on the logs.

c) The number of blows during sampling was recorded, together with the depth of penetration, the driven weight and the height of fall. The energy required per foot of penetration for given samples was then calculated, and is indicated on the logs. These drive energies provide a measure of the density or consistency of the soil.

d) Ground water and seepage was encountered as noted on the Logs of Borings.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	DESCRIPTIONS
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size.)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size.)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size.)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size.)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

PARTICLE SIZE LIMITS

SILT or CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

No.200 No.40 No.10 No.4 3/4 in. 3 in. 12 in.

U. S. STANDARD SIEVE SIZE

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Saddleback Meadows
County of Orange, CA

Date: June 1998

Project No: 4816 04.3

Figure No.: 3

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	24 inches	1146 feet	BC-1
Date Drilled: 5/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0		CL	Sandy CLAY: dark grayish-brown, moist, stiff
									@ 4-7 feet, some thin light brown sand partings and carbon pieces
						5			@ 7-9 feet, more Sandy and lighter colored @ 8 feet, 8 inch layer of Siltstone fragments @ 9 feet, 6 inch layer of Siltstone fragments COLLUVIUM
								SM	Silty SAND: fine-grained, light brown, damp, medium dense; with fine sand laminations and scattered carbon pieces and some thin layers of Siltstone fragments
		11.48				10			@ 14-15 feet, thin layers of Siltstone gravel
						15			@ 18 feet, more dense and becomes slightly Clayey @ 19.6 feet, becomes more Sandy
		17.23				20			@ 21 feet, becomes very Sandy, still fine-grained; 12 inch layer of Sand with Siltstone fragments
									@ 24 feet, layer of Siltstone fragments @ 25.6 feet, Contact: N40E,11NW
						25		CL	Sandy CLAY: dark greenish-gray, moist, stiff, with Siltstone fragments and some carbon
								SC	Clayey SAND: fine-grained, greenish-gray, moist, dense
								ML	Sandy SILT: dark greenish-gray, moist, stiff

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04 Figure No.: B-2.1

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation.	Boring Number
Bucket Auger	30 inches	1146 feet	BC-1
Date Drilled: 5/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
		12.91							Sandy, Clayey SILTSTONE: greenish-gray, moist, weathered, blocky fracture to 32 feet @ 32-33 feet, Sandy SILTSTONE: greenish-gray
						35		LANDSLIDE MATERIAL	Silty SANDSTONE: fine- to medium-grained, medium greenish-gray, very dense @ 35.5 feet, becomes fine-grained @ 36 feet, medium- to coarser-grained @ 36.6 feet, becomes fine-grained and yellowish-greenish-gray; very Silty @ 37.5 feet, Bedding: N-S,11W; on laminations @ 38 feet, Siltstone ripups @ 39.6-41 feet, Contact: N10E,36NW (scour surface)
		43.02				40			Clayey SILTSTONE: dark greenish-gray and reddish-brown, very stiff
						45			Sandy SILTSTONE: dark greenish-gray, stiff, with thin red-brown Siltstone beds @ 42 feet, becomes more Sandy @ 43.5 feet, less Sandy, very stiff @ 44 feet, 12 inch dark greenish-gray Siltstone bed @ 45 feet, 12 inch red-brown Sandy SILTSTONE bed with green-gray mottling @ 46-48 feet, Sandy Clayey SILTSTONE with cemented nodules (carbonate) @ 48 feet, becomes Sandy SILTSTONE again with some red-brown mottling to 49 feet @ 49 feet, becomes more Sandy @ 49.6 feet, very fine Silty SANDSTONE bed, green-gray @ 51 feet, thin disc. cem. layer @ 51-52.5 feet, very fine Silty SANDSTONE: green-gray @ 51.6 feet, thin white cemented layer: N10W,11SW @ 52.7 feet, slight seepage at base of cemented layer @ 52.7-53.3 feet, very Sandy, medium green-gray Sandy SILTSTONE; grades to Silty SANDSTONE
		60.23				50			
						55			Silty SANDSTONE: very fine- to fine-grained, greenish-gray, very dense, saturated @ 54.5 feet, water weeping from sidewall (wet, grades to Sandy SILTSTONE Sandy SILTSTONE: medium to dark greenish-gray, very stiff, wet (sidewall weeping) @ 59 feet, still wet

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Project No.:

Figure No.: 2.9

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	24 inches	1146± feet	BC-1
Date Drilled: 5/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
		43.43							@ 61 feet, light brown inclusions @ 64 feet, tubular structures, still wet @ 65 feet, tubular structures, still wet
						65		LANDSLIDE MATERIAL	Silty SANDSTONE: very fine- to fine-grained, medium to dark greenish-gray, very dense, saturated @ 67 feet, less moist, no sidewall weeping @ 68 feet, becomes dark green-gray
						70			
						75			Sandy SILTSTONE: interbedded greenish-gray and reddish-brown, with some 6-12 inch red-brown Clayey SILTSTONE beds and some 18-24 inch Silty SANDSTONE Beds @ 74-75 feet, dark greenish-gray @ 75-76 feet, red-brown @ 76-78 feet, very fine to fine-grained Silty SANDSTONE @ 77.5 feet, white carbonate nodules @ 78-79 feet, red-brown Clayey SILTSTONE @ 79-80.5 feet, dark greenish-gray @ 80.5-81.5 feet, red-brown Clayey SILTSTONE @ 81.5-82.5 feet, dark greenish-gray @ 82.5-84 feet, green-gray Silty SANDSTONE @ 84 feet, 2 inch irregular, light gray cemented bed: N40W,10SW @ 84.2-84.6 feet, very Sandy, green-gray @ 84.6-85.6 feet, red-brown @ 85.6-86.5 feet, dark green-gray @ 86.5-88 feet, red-brown @ 88-89 feet, dark green-gray @ 89-90 feet, red-brown
		43.43				80			
						85			

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Figure No.: B-2.3

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1146± feet	BC-1

Date Drilled: 5/23/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE: Bulk	SAMPLE: Tube	Drive Energy Ft Kips/Ft	Field Moisture % Dry Weight	Dry Density LB/CU FT.	Shear Resistance Kips/SQ FT.	Depth Feet	Soil/Rock Symbol	Soil/Rock Type	Description and Remarks
						95		LANDSLIDE MATERIAL	@ 90-92 feet, dark greenish-gray @ 92-94 feet, very fine, dark greenish-gray Silty SANDSTONE @ 93.6 feet, white cemented nodules (carbonate) @ 94-95 feet, red-brown @ 95-98 feet, dark greenish-gray, grades to Silty SANDSTONE @ 98-103 feet, very fine- to fine-grained Silty SANDSTONE: greenish-gray
						100			@ 101 feet, white carbonate nodules @ 103-104 feet, reddish-brown Sandy SILTSTONE @ 104-105 feet, dark greenish-gray, more Sandy @ 105 feet, white carbonate layer @ 105-107.5 feet, red-brown Clayey SILTSTONE with white carbonate nodules @ 107.5-108.5 feet, dark greenish-gray Sandy SILTSTONE @ 108.5-110 feet, red-brown Clayey SILTSTONE (no cemented nodules) @ 110-111 feet, dark greenish-gray Sandy SILTSTONE @ 111-111.5 feet, red-brown Clayey SILTSTONE @ 111.5-112.5 feet, dark greenish-gray, Sandy SILTSTONE @ 112.5-113.5 feet, reddish-brown @ 113.5 feet, becomes greenish-gray @ 114 feet, becomes green @ 115-118 feet, fine-grained, dark green-gray Silty SS
						105			
						110			
						115			@ 118-119 feet, cemented @ 119-120 feet, red-brown Clayey SILTSTONE with cemented nodules

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COUNTY OF ORANGE, CALIFORNIA

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Figure No.: B-2.4

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1144± feet	BC-1
Date Drilled. 5/24/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						125		LANDSLIDE MATERIAL	@ 120-121 feet, dark green-gray slightly Clayey Sandy SILTSTONE with cemented nodules @ 121-122.5 feet, red Clayey SILTSTONE @ 122.5-123.5 feet, dark greenish-gray Sandy SILTSTONE @ 123.5-124.7 feet, cemented @ 124.7-126 feet, cemented @ 126-128.5 feet, dark greenish-gray Sandy SILTSTONE with cemented nodules, more cemented from 127-127.5 feet @ 128.5-129 feet, red-brown @ 129-133 feet, medium greenish-brown Sandy SILTSTONE
						130			@ 130.5-132.5 feet, lots of cemented nodules
	136.61					135			@ 133-134.5 feet, very fine, medium greenish-gray, very dense Silty SANDSTONE @ 134.5 feet, becomes Sandy SILTSTONE again, medium brownish-gray, very stiff @ 136 feet, becomes medium greenish-brown @ 137 feet, greenish-gray @ 138 feet, becomes darker and more Sandy @ 139.5-142 feet, red-brown Clayey SILTSTONE
						140			@ 142 feet, becomes greenish-gray Sandy SILTSTONE @ 143.5 feet, water level on 5/25/95 (boring bailed)
						145			@ 147-148 feet, yellowish-brown ash bed @ 148-149 feet, yellowish-brown to red-brown Sandy SILTSTONE @ 149-150 feet, greenish-gray Silty SANDSTONE with yellow-brown and red-brown SILTSTONE Beds (less stiff)

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Figure No.: B-2.5

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation.	Boring Number
Bucket Auger	30 inches	1144 feet	BC-1
Date Drilled. 5/25/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU. FT | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

155
160
165
170
175

LSM

@ 150-152 feet, fine- to medium-grained Silty SANDSTONE: medium greenish-gray
@ 152-153 feet, greenish-gray ASH Bed (bentonitic?)
@ 153-154± feet, thick, reddish-brown (5YR4/3) CLAY Bed, very plastic, with red-brown and greenish-gray ASH (or bentonite) fragments and a thin, cemented, light gray ASH Bed

LANDSLIDE MATERIAL

Bottom of Boring at 154 feet.
Notes:
1) Water level at 143.5 feet. (elev. 100.5') on 5/25/95 from seepage accumulation.
2) Seepage at 53-65 feet.
3) Boring bailed and then down-hole logged.
4) Boring backfilled.
5) County EMA issued temporary stop work order and boring could not be deepened.

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Figure No.: B-2.6

LOG OF BORING

Drill Rig: Bucket Auger	Boring Diameter: 30 inches	Boring Elevation: 1319 feet	Boring Number: BC-2
Date Drilled: 6/22/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH: FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						5		MATERIAL	Silty SANDSTONE: very fine- to fine-grained, medium greenish-gray, dense @ 1-2 feet, broken ash bed, pink and pinkish-gray and greenish-gray: N5W,16SW, thin shear at base and greenish-gray Silty SS below @ 5 feet, becomes light to medium greenish-gray
						10			@ 7.6-8.6 feet, cemented, oxidized SS bed @ 8.6 feet, 5 inch broken Sandstone bed @ 9 feet, 3 inch dark greenish-gray SS bed: N20W,15SW; fractured @ 9.3 feet, 8 inch Sandy Siltstone bed @ 10 feet, fine-grained, greenish-gray
		68.91	11.9	123.7					@ 12.6 feet, grades to Sandy Siltstone
						15		LANDSLIDE	Sandy SILTSTONE: dark greenish-gray, stiff @ 15 feet, more sandy @ 15.6 feet, more sandy and darker @ 17.6 feet, less silty @ 19.6 feet, more silty and dark greenish-gray
						20			@ 21.3-22 feet, Clayey SILTSTONE: dark greenish-gray, disturbed, sheared, some remolded clay at 21.5 feet @ 21.7 feet, Rupture Surface: N3E,12NW, well developed, no striations @ 21.7-22 feet, thinly laminated @ 22 feet, Bedding: N3E,12NW
						25		BEDROCK	@ 25 feet, grades to very fine Silty SS Silty SANDSTONE: very fine-grained, greenish-gray @ 28 feet, 12 inch Sandy Siltstone bed, greenish-gray @ 29 feet, becomes medium greenish-gray @ 30 feet, more Silty

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Figure No.: B-3.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1319 feet	BC-2
Date Drilled: 6/22/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
		94.64							@ 31 feet, more Sandy @ 33 feet, more Silty @ 34 feet, more Sandy, greenish-gray @ 35.6 feet, more Silty; grades to Sandy SILTSTONE
						35			Sandy SILTSTONE: greenish-gray, grades to Silty SANDSTONE
									Silty SANDSTONE: fine-grained, greenish-gray
						40			@ 40 feet, slight seepage from hairline fracture: N60E,75SE @ 42 feet, less Silty and coarser and salt and pepper appearance
						45		BEDROCK	Clayey SILTSTONE: pinkish-brown, very stiff, possible bentonite or Ash Bed
									Sandy SILTSTONE: medium greenish-gray @ 49 feet, more Sandy @ 50 feet, Silty SANDSTONE bed
						50			@ 52.6 feet, more Silty @ 54 feet, less Silty @ 54.6-55.5 feet, fine, cemented Silty SANDSTONE bed
						55			Silty SANDSTONE: fine-grained, cark greenish-gray
		68.24	19.2	108.8					Volcanic ASH: pinkish-brown, undisturbed

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Figure No.: B-2

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation.	Boring Number
Bucket Auger	30 inches	1319 feet	BC-2
Date Drilled. 6/22/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Sandy SILTSTONE: greenish-gray
									@ 60 feet, becomes olive-brown
									Silty SANDSTONE: fine-grained, dark greenish-gray
									@ 62 feet, becomes coarser
						65			Sandy SILTSTONE: medium greenish-gray
									@ 65.6 feet, becomes lighter colored
									@ 69 feet, becomes darker colored
						70			Silty SANDSTONE: fine-grained, dark greenish-gray with thin, wavy laminations of light sand, some minor cross bedding
									Sandy SILTSTONE: greenish-gray
									Clayey SILTSTONE: brown to olive-brown, very stiff
						75			@ 75 feet, becomes disturbed with some internal shearing
									@ 75.3 feet, sheared, bentonitic clay, pinkish-brown and brown, remolded, plastic
									@ 75.6-76 feet; irregular rupture surface: N10W,15SW; 1-2 inch very plastic clay above surface, some lineation down dip
						80			Sandy SILTSTONE: greenish-gray
									@ 77 feet, more Sandy
									Silty SANDSTONE: fine-grained, greenish-gray
									@ 82.6 feet, becomes fine- to medium-grained and olive brown
						85			@ 85 feet, dark greenish-brown, very moist
									@ 89 feet, becomes dark greenish-gray
									VAQUEROS-SESPE FORMATION
	31.02	19.2	108.8						

BEDROCK

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Figure No.: 7

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1319 feet	BC-2
Date Drilled: 6/22/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

Bottom of Boring at 90 feet.

Notes:

1) Seepage at 40 feet.
2) No caving.
3) Boring down-hole logged and backfilled.

95
100
105
110
115

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.:

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1365 feet	BC-3
Date Drilled: 6/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	ORY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						0		CL	Sandy CLAY: grayish-brown, moist, firm
									@ 4 feet, lighter colored and sandstone chunks, less clayey
						5		SC	Clayey SAND
									@ 7-8 feet, irregular contact dips west GRABEN SOIL
	**	28.71				10			Silty SANDSTONE: fine-grained, medium green-gray, very closely fractured and disturbed, loose blocky zones
									@ 12 feet, Fractures: N45E,80NW; N40E,70NW
									@ 12-16 feet, open fractures, sheared, general structure: N80W,60SW
									@ 14.6-17 feet, large inclusion of Sandy CLAY
	**	<5.74				15			
									@ 17-24 feet, very fine-grained, generally
						20		LANDSLIDE	@ 20-28 feet, some caving, mostly on SW side
		<5.74							
									@ 24 feet, more coarse
						25			@ 27 feet, offset bed pink ash: N65W,20NE
									@ 27-29 feet, open fractures
									** No Recovery

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Plate No. B-4.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1365 feet	BC-3
Date Drilled: 6/23/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling with the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOILROCK SYMBOL | SOILROCK TYPE | Description and Remarks

Silty SANDSTONE: fine-grained, green-gray with some red-brown oxide staining (specks)

@ 88 feet, more Sandy

VAQUEROS-SESPE FORMATION

BEDROCK

95

100

105

110

115

Bottom of Boring at 92 feet.

Notes:

1) Seepage at 61 feet.
2) Caving at 20-28 feet..
3) Water at 90 feet after logging.
4) Boring backfilled.

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County of Orange, California

Project No.: 4816-04

Figure No.: B-4.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1365 feet	BC-3

Date Drilled: 6/23/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
		12.91	14.2	110.6				LANDSLIDE	@ 34 feet, becomes dark greenish-gray, Sandy SILTSTONE, very broken
						35			@ 36.5 feet, Slide Plane: N-S,14W; striations dip S 60W; W/1-2" remolded, pinkish-gray and green-gray bentonitic Clay
									LANDSLIDE MATERIAL
		21.51	23.6	87.6					Volcanic ASH: medium gray, soapy texture
						40			VAQUEROS-SESPE FORMATION
								BEDROCK	Silty SANDSTONE: very fine-grained, medium green-gray, very dense
									@ 40-41 feet, slightly cemented
									VAQUEROS-SESPE FORMATION
									Sandy SILTSTONE: green-gray, very stiff
									@ 41.5 feet, becomes olive-brown
						45			
									@ 48 feet, becomes less Sandy and medium to dark greenish-gray
									@ 48.5-49 feet, SILTSTONE BED: N5W,14SW; dark green-gray
									@ 49.5 feet, 6 inch cement bed
						50			@ 51-52.5 feet, cemented
									Silty SANDSTONE: very fine-grained, dark green-gray
									@ 53.5 feet, becomes brown
									@ 54.5 feet, becomes coarser and lighter colored and salt and pepper appearance
						55			VAQUEROS-SESPE FORMATION
									Sandy SILTSTONE: olive-brown, very stiff
									@ 58.5-59 feet, cement nodules, minor shearing
									@ 59 feet, green-gray

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Project No.: 4816-04

Figure No.: B-4.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1365 feet	BC-3

Date Drilled: 6/23/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									@ 61 feet, seepage from 2 fractures: N50E,80NW
									@ 62 feet, becomes more Sandy
									@ 63 feet, olive-brown and less Sandy
						65			@ 65 feet, dark reddish-gray
									@ 67-68 feet, hard
									@ 68 feet, becomes green-gray
						70			@ 70 feet, darker and less Sandy
									@ 71.2-72 feet, pinkish-gray ASH Bed: N20W,12SW; irregular
	▯	15.51	31.7	84.0					@ 72 feet, dark greenish-gray
									@ 73 feet, becomes olive-brown
						75			VAQUEROS-SESPE FORMATION
								BEDROCK	Silty SANDSTONE: very fine to fine-grained, olive-brown, very dense
									@ 76 feet, Sandy SILTSTONE bed
									@ 77 feet, darker and more Sandy
									@ 79 feet, less Sandy
						80			@ 80 feet, more Sandy
									@ 81 feet, Bedding: N5W,15SW
									@ 81.5-83 feet, medium green-gray with wavy laminations and cross bedding
									VAQUEROS-SESPE FORMATION
									Clayey SILTSTONE: brown to olive-brown, stiff
						85			@ 85.5-86 feet, Sheared CLAY: brown and pinkish-brown
									@ 86 feet, Rupture Surface: N10W,15SW; moderately polished, lineations N85W, moderately polished and somewhat irregular surface
									@ 86.3-87 feet, Sandy SILTSTONE
									VAQUEROS-SESPE FORMATION

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Figure No.: B-4.3

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1517 feet	BC-4
Date Drilled: 6/27/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at an, other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						5		LANDSLIDE MATERIAL	Silty SANDSTONE: fine-grained, light gray and light gray-brown, closely fractured, very disturbed and generally blocky to 14 feet; some caving 0-14 feet @ 4 feet, parallel fracturing: N20W,74NE @ 6 feet, becomes medium greenish-gray, very fractured
						10			@ 11 feet, Fractures: N40W,70NE @ 13-14 feet, broken cemented bed dips NE 30°
						15			LANDSLIDE MATERIAL
						20			Sandy SILTSTONE: greenish-gray, closely fractured and disturbed @ 16-17 feet, dark greenish-gray Clayey SILTSTONE bed, broken @ 17-18 feet, broken displaced 3 inch pink ash bed @ 18 feet, becomes dark greenish-gray, still very disturbed
	I	17.23	31.0	88.7					@ 21.6 feet, becomes very micaceous and dark gray @ 23 feet, Shear: N40W,80SW; bedrock below shear stiffer and less mica and some 1/2 open fractures: N50E,85SE @ 24 feet, medium to dark greenish-gray, still disturbed
						25			@ 27 feet, becomes brown @ 28-29 feet, block of green-gray ash on NE side of boring

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Project No.: 4816-04

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1517 feet	BC-4
Date Drilled: 6/27/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
								LANDSLIDE	@29-33 feet, Shear Zone N-S,55W
									@ 33-34 feet, broken blocks of SANDSTONE and SILTSTONE
									@ 34.5 feet, becomes brown Clayey SILTSTONE, sheared
						35			@ 34.8-35 feet, brown CLAY gouge
									@ 35 feet, Slide Plane: N30W,20SW; even, moderately polished surface with well developed striations dip S80W
									LANDSLIDE MATERIAL
									Clayey SILTSTONE: brown, very stiff, some minor shears
						40			VAQUEROS-SESPE FORMATION
		55.93	12.8	120.0					Sandy SILTSTONE: greenish-gray, very stiff, undisturbed
								BEDROCK	@ 37-38 feet, fine-grained, olive-brown to dark green-gray Silty SANDSTONE
									@ 38 feet, becomes darker
						45			@ 39.6 feet, becomes less Sandy
									@ 41 feet, becomes olive-brown
		55.93	34.1	88.0					@ 41.6-42.6 feet, somewhat Clayey with minor shears
									@ 41.6 feet, becomes more Sandy, olive-brown
									@ 44 feet, becomes more Sandy and micaceous
									@ 45.6 feet, becomes less Sandy
						50			@ 46-46.5 feet, Clayey, olive-brown
									@ 46.5-47.5 feet, pink to pinkish-gray ash bed: N40W,20SW; lower contact irregular with minor shearing
									@ 47.5 feet, becomes olive-brown to 48 feet, then dark green-gray and more Sandy
									@ 49.6 feet, becomes olive-brown
									VAQUEROS-SESPE FORMATION
						55			Silty SANDSTONE: fine-grained, dark green-gray
									@ 52.5 feet, becomes more Sandy with red-brown specks
									@ 53 feet, seepage from side wall (weeping) and becomes coarser
									@ 54 feet, irregular bed of very Silty SS with red-brown specks, lighter colored

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Project No.: 4816-04

Figure No.: B-5.2

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation.	Boring Number
Bucket Auger	30 inches	1517 feet	BC-4
Date Drilled: 6/27/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOURCK SYMBOL	SOURCK TYPE	Description and Remarks
	■	58/24	17.0	112.1					@ 54.5 feet, becomes olive-brown with red-brown specks, saturated @ 57-58 feet, light gray cemented SS: N20W,20SW with cross bedding and red-brown spots @ 58-59 feet, red-brown stained @ 59 feet, becomes medium gray @ 60 feet, becomes finer VAQUEROS-SESPE FORMATION
						65			Sandy SILTSTONE: medium green-gray, very stiff @ 61.5-62 feet, Clayey @ 62 feet, more Sandy @ 63 feet, pinkish-brown and greenish-gray and laminated @ 64-66.5 feet, olive-brown to brown SILTSTONE @ 66.5-66.7 feet, CLAY Bed: N27W,22SW Shear at Base: N12W,21SW @ 66.7 feet, becomes olive-brown Sandy SILTSTONE @ 67 feet, becomes less Sandy and red-brown @ 69-70 feet, red-brown specks VAQUEROS-SESPE FORMATION
						70			
						75			Silty SANDSTONE: fine-grained, green-gray, very dense @ 72-73 feet, Sandy SILTSTONE: green-gray and red-brown @ 73-76 feet, zones of green-gray and red-brown @ 76-69 feet, red-brown Sandy SILTSTONE bed @ 79 feet, more Sandy @ 81.5 feet, becomes fine- to medium-grained and red-brown to yellow-brown and mica, saturated, weeping VAQUEROS-SESPE FORMATION
						80			
						85			Bottom of Boring at 90 feet. Notes: 1) Seepage at 53 feet and below 81 feet. 2) Moderate caving at 0-14 feet. 3) Boring backfilled.

BEDROCK

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Figure: B-5.3

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0	CL		Silty CLAY: dark gray-brown, moist, firm
									@ 4 feet, lighter colored
						5			@ 6-7 feet, graduates to weathered SILTSTONE COLLUVIUM
	17.23	12.4	109.6			10			Clayey SILTSTONE: light greenish-gray and pinkish-gray zones, very closely fractured and blocky to 10 feet, some dark red stringers along bedding @ 8.5 feet, Shear: N-S,16W; small sandstone blocks above; becomes dark olive-brown below @ 10 feet, becomes less fractured and blocky @ 11 feet, grades to Sandy SILTSTONE VAQUEROS-SESPE FORMATION
						15		BEDROCK	Sandy SILTSTONE: dark green-gray to olive-brown with red oxide specks, very stiff and finely micaceous @ 16 feet, 6 inch pink-gray Siltstone Bed:N10W,17SW @ 16.5 feet, 6 inch dark green-gray, fine Silty SANDSTONE Bed @ 17 feet, becomes red-brown Sandy SILTSTONE @ 18-19 feet, red-brown SILTSTONE Bed @ 19 feet, becomes dark green-gray and deep red-brown @ 20 feet, grades to Silty SANDSTONE VAQUEROS-SESPE FORMATION
	40.19	14.9	117.9			20			Silty SANDSTONE: fine-grained, red-brown to reddish-gray, micaceous @ 22-23 feet, deep red-brown, micaceous SILTSTONE Bed @ 23 feet, becomes fine- to medium-grained, mostly red-gray, salt and pepper appearance @ 26 feet, becomes light yellowish-gray and coarser, appears arkosic @ 27 feet, some red-brown SILTSTONE rip-ups along bedding @ 28-28.5 feet, light orange-gray, medium to coarse-grained
						25			

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Project No.: 4816-04

Figure No.: B-6.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

35

@ 28.5-33 feet, cemented SANDSTONE: light green-gray and pink-gray zones
@ 33 feet, becomes fine- to medium-grained and yellow-brown and slightly cemented
@ 34 feet, becomes light red-brown
@ 35 feet, pinkish-gray with filled worm? tubes

@ 37.5 feet, thin cemented bed, below is medium pinkish-brown
@ 38-39 feet, some cemented nodules in pinkish-brown, fine- to medium-grained SANDSTONE

40

@ 41-42 feet, light greenish-gray with load struct. and worm? tubes
@ 42 feet, becomes pinkish-brown with some cement nodules
@ 43-44 feet, deep red-brown, very micaceous SILTSTONE bed with some very thin laminations
@ 44 feet, Bedding: N10W,13SW
@ 44 feet, fine- to medium-grained, dark red with medium gray, wavy laminations and slight seepage
@ 46 feet, some SILTSTONE rip-ups along bedding, some cross bedding, seepage more intense
@ 47.5 feet, 6 inch brownish-red Clayey SILTSTONE Bed
@ 48 feet, 4 inch greenish-gray Silty SS Bed, heavier seepage

45

50

VAQUEROS-SESPE FORMATION

Sandy SILTSTONE: deep reddish-brown with some green mottling
@ 49 feet, becomes olive-brown, still mottled
@ 50 feet, more Sandy
@ 51 feet, darker and micaceous
@ 52.5 feet, thin SILTSTONE Bed: N20W,15SW; medium greenish-gray
@ 53 feet, red-brown to reddish-gray with green mottling, micaceous
@ 55 feet, grades to SANDSTONE

55

VAQUEROS-SESPE FORMATION

BEDROCK

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Figure No.: B-6.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	The log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU.FT. | SHEAR RESISTANCE KIPS/SQ.FT. | DEPTH FEET | SOILROCK SYMBOL | SOILROCK TYPE | Description and Remarks

65
70
75
80
85

BEDROCK

Silty SANDSTONE: deep reddish-brown with green mottling, micaceous
@ 55.5 feet, becomes coarser and red-brown
@ 58 feet, green-gray SS bed
@ 58.2 feet, olive SILTSTONE, Sandy
@ 59-60 feet, olive-brown and cemented nodules
Sandy SILTSTONE: light greenish-gray
@ 61 feet, thin, light pinkish-gray SILTSTONE Bed
@ 65-66 feet, pinkish-brown SILTSTONE with red-brown laminations
@ 66-66.5 feet, dark red-brown Sandy SILTSTONE
@ 66.5 feet, becomes olive-brown and red-brown
@ 68-69 feet, some cemented nodules

@ 71-72.5 feet, fine Silty SANDSTONE: medium greenish-gray and brownish-red zones
VAQUEROS-SESPE FORMATION

Clayey SILTSTONE: olive-brown to red-brown, with some light colored cemented nodules
@ 74 feet, thin shear dips SW approximately 12°
@ 75.5 feet, less Clayey and olive-brown
VAQUEROS-SESPE FORMATION

Sandy SILTSTONE: olive-brown, very stiff
@ 77 feet, becomes more Sandy and greenish-gray
@ 78 feet, becomes mottled
@ 78.5-80.5 feet, cemented fine Silty SS bed
@ 80.5 feet, becomes olive-brown to green-gray Sandy SILTSTONE
@ 82-85 feet, very fine-grained Silty SS bed, medium greenish-gray
@ 85 feet, dark red-brown micaceous Sandy SILTSTONE
@ 87.5-88.5 feet, green mottling
VAQUEROS-SESPE FORMATION

Silty SANDSTONE: fine- to medium-grained, olive to red-brown, very dense

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Project No.: 4816-04

Figure No.: B-6.3

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

@ 92-93.5 feet, very fine and some light cemented nodules
@ 93 feet, becomes coarser

@ 96-97 feet, olive-brown SILTSTONE
VAQUEROS-SESPE FORMATION

100

Sandy SILTSTONE: olive-brown, slightly cemented
@ 97-101.5 feet, light gray cemented nodules

@ 101.5-102.5 feet, medium red-brown

VAQUEROS-SESPE FORMATION

105

Silty SANDSTONE: very fine-grained, greenish-gray to olive-brown

@ 106 feet, lighter colored
@ 107.5 feet, 6 inch Sandy SILTSTONE Bed: greenish-gray to olive-brown
@ 108-110 feet, very fine Silty SANDSTONE
@ 110 feet, thin, light gray cemented Bed: N20W,17SW
VAQUEROS-SESPE FORMATION

110

Sandy SILTSTONE: light to medium greenish-gray to olive-brown
VAQUEROS-SESPE FORMATION

115

SILTSTONE: light to medium greenish-gray to olive-brown; possibly some volcanic ash

@ 118-120 feet, olive-brown

@ 120 feet, becomes saturated Silty SANDSTONE

BEDROCK

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Saddleback Meadows
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Project No.: 4816-04

Figure No.: B-6.1

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1293.5 feet	BC-5
Date Drilled: 6/28/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

125
130
135
140
145

BEDROCK

Silty SANDSTONE: fine- to medium-grained, medium greenish-gray
@ 122 feet, becomes lighter colored

@ 124 feet, becomes coarser

@ 125-126 feet, medium to coarse pebbly SANDSTONE
@ 126 feet, very fine Silty SANDSTONE: medium greenish-gray to olive
@ 128.5 feet, standing water
@ 128-145 feet, mostly fine- to medium-grained, greenish-gray, Silty SANDSTONE: with some olive-brown Sandy SILTSTONE beds and cemented beds

VAQUEROS-SESPE FORMATION

Bottom of Boring at 145 feet.
Notes:
1) Standing water at 128 feet.
2) Seepage at 44 and 48 feet.
3) No caving.
4) Boring down-hole logged and backfilled.

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04
Figure No.: B-6.5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						0	CL		Silty CLAY: dark brown, damp stiff COLLUVIUM
									Silty SANDSTONE: fine-grained, light greenish-gray, closely fractured
						5			Sandy SILTSTONE: medium greenish-gray, closely fractured with some open structure @ 8 feet, 3/4 inch open fractures: E-W, 80S and N-S, 80E
						10			Silty SANDSTONE: very fine-grained, light to medium greenish-gray, very closely fractured and blocky, disturbed
									Sandy SILTSTONE: medium greenish-gray, very disturbed, blocky @ 14 feet, Shear: N10E,55NW and Fracture: N-S,75W @ 15-17 feet, some blocks of Sandstone and minor to moderate caving @ 17 feet, firmer but still closely fractured and becomes olive-brown and less Sandy
						15			
						20			
	X	17.23	12.2	118.7					@ 21 feet, becomes more Sandy and darker @ 23-24 feet, Sandstone block on east wall
						25			@ 25 feet, Shear: N-S,85W, very closely fractured @ 28 feet, Shear: N50W,60NE; fine Silty SS below shear, light to medium greenish-gray @ 29 feet, becomes medium greenish-gray Sandy SILTSTONE again

LANDSLIDE MATERIAL

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-7.1

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Silty SANDSTONE: very fine-grained, light to medium greenish-gray, closely fractured
									@ 33 feet, red oxide-stained clasts
						35			Sandy SILTSTONE: medium greenish-gray, very closely fractured, blocky
	☐	68.83	12.7	116.1		40			
									@ 42 feet, less Sandy
									@ 44 feet, more Sandy and dark greenish-gray
						45			@ 45-46 feet, light brown SILTSTONE and ash bed on NE side of boring
									@ 46 feet, less Sandy
									@ 47 feet, Shear: N40E,75SE; very fine Silty SANDSTONE below
									Silty SANDSTONE: very fine-grained, medium gray to olive-brown, dry, closely fractured
						50			@ 50 feet, very slight seepage from hairline fracture
									Sandy SILTSTONE: medium greenish-gray, closely fractured
									@ 52 feet, dark olive-brown, micaceous
									@ 53.5 feet, slight seepage from fracture:N40W,70SW
									@ 56-57 feet, greenish-gray, very fine-grained Silty SS bed
						55			@ 57 feet, Sandy SILTSTONE: dark olive-brown
									Clayey SILTSTONE: medium brown
									@ 58.5 feet, Sheared CLAY: yellow-brown to medium greenish-brown
									@ 59 feet, Rupture Surface, Cross Hole:N10E,12NW, faint striations west: pockets of sheared clay gouge to 59.5 feet

LANDSLIDE MATERIAL

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-3.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE Bulk	SAMPLE Tube	Drive Energy Ft. Kips/Ft.	Field Moisture % Dry Weight	Dry Density Lb/Cu. Ft.	Shear Resistance Kips/Sq. Ft.	Depth, Feet	Soil/Rock Symbol	Soil/Rock Type	Description and Remarks
								LANDSLIDE MATL	Sandy SILTSTONE: medium greenish-gray to olive-brown
									@ 60.5 feet, becomes firmer and dark olive-brown and less fractured
									SILTSTONE: medium to dark olive-brown
						65			@ 62 feet, becomes finely micaceous; Polished Shear: N35E,35NW, faint to moderate striations N80W; Sandy at 62.5 feet
									Clayey SILTSTONE: dark olive-brown, random shearing
									@ 64.5 feet, 2-6 inch bentonite layer: N35E,45NW; offset by irregular shear zone: N-S to N15E, 50-60W
						70			@ 66 feet, darker and more Clayey
									@ 66.7 feet, Slide Plane: N10W,13SW; well developed striations and dark lineations: S55W; 12 inch intense shearing above SP and light pinkish-gray bentonite along SP
									LANDSLIDE MATERIAL
						75		BEDROCK	Silty SANDSTONE: very fine-grained, dark green to olive-gray, cemented
									Sandy SILTSTONE: dark olive-brown, stiff
									@ 71.5 feet, 6 inch dark olive-brown SILTSTONE Bed: N10W,12SW
									@ 72.1 feet, becomes Sandy SILTSTONE again, dark olive-brown, cemented
									@ 74 feet, medium olive-brown
									@ 76.5 feet, less Sandy
						80			SILTSTONE: medium olive-brown
									@ 81 feet, becomes dark olive-brown
									Sandy SILTSTONE: medium to dark olive-brown
									@ 85-87 feet, cemented
						85			@ 87 feet, lighter colored
									@ 88.5 feet, darker and more Sandy
		74.45	20.8	101.4					

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Figure No.: B-3

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1409 feet	BC-6
Date Drilled. 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOURCK SYMBOL | SOILROCK TYPE | Description and Remarks

95

100

105

110

115

BEDROCK

SILTSTONE: medium brown
@ 91 feet, Rupture Surface: N40E,29NW
@ 91-92.5 feet, wedge of broken Sandy SILTSTONE and cemented bed (6-18 inches)
@ 92.5 feet, Shear: N30W,42NE

Sandy SILTSTONE: medium to dark olive-brown, very Sandy
@ 93-94.5 feet, cemented
@ 95 feet, becomes more Sandy and dark olive-brown to greenish-gray
@ 97 feet, medium olive-brown, less Sandy

@ 99 feet, 1 inch CLAY Bed: N-S,14W, medium brown, possibly remolded
@ 99.1 feet, more Sandy and darker

Silty SANDSTONE: very fine-grained dark olive-brown
@ 102 feet, seepage from sidewall, little coarser
@ 103-105.5 feet, finer and light gray cemented nodules

SILTSTONE: medium brown

Sandy SILTSTONE: greenish-gray

VAQUEROS-SESPE FORMATION

Bottom of Boring at 120 feet.
Notes:
1) Seepages at 50, 53.5, and 102 feet.
2) Some caving at 64-66 feet.
3) Boring down-hole logged and backfilled.

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Figure: B-7.4

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1232 feet	BC-7
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
								CL	Silty CLAY: dark grayish-brown, damp to moist, stiff
									@ 3 feet, lighter colored
									@ 4-5 feet, Clayey SAND: fine- to coarse-grained, brown
									COLLUVIUM
								SC	
						5		SM	Silty SAND: fine- to coarse-grained, yellowish-brown with light gray mottling, loose to medium dense, dry to damp
									@ 7-9 feet, Shear Zone: N70E,65SE; some rock fragments
									COLLUVIUM
		11.48	6.0	109.9		10			Silty SANDSTONE: fine- to medium-grained, yellowish-brown with some light gray mottling
									@ 12 feet, predominantly light yellowish-gray
									@ 12 feet, medium to coarse SANDSTONE Bed: N75E,30NW
									@ 13 feet, some inclusions of light brown Silty SAND and becomes fine-grained and reddish-brown oxidized
						15			@ 18 feet, firmer
									@ 19 feet, more yellow
									@ 20-21 feet, orange-brown with some cemented Sandstone fragments
						20			@ 21 feet, Shear Zone: N20W,45NE
									Sandy SILTSTONE: medium to dark olive-brown, micaceous, medium gray Sandy stringers dip NW; stiff
									@ 24 feet, becomes firmer
						25			Clayey SILTSTONE: olive-brown with gray mottling, soft, disturbed
		11.48	17.7	106.2					@ 26-27.3 feet, soft, sheared ash bed, light greenish-gray with orange mottling, dips 35°SE
									@ 27.3-28 feet, becomes dark gray Clayey SILTSTONE, soft, disturbed
									@ 28.5 feet, fine Silty SANDSTONE inclusions
									@ 29 feet, broken angular clasts and cement nodules

LANDSLIDE MATERIAL

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Figure No.: 8.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1232 feet	BC-7
Date Drilled: 6/30/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35		LANDSLIDE MATERIAL	@ 30.5 feet, Shear dips 45°NE with 6 inch block medium gray SAND SILTSTONE on NE side and red-brown, sheared Clay gouge on SW side with small fragments of pink ash @ 31-32 feet, irregular Rupture Surface: N27W,30NE, well developed striations S80E Sandy SILTSTONE: medium greenish-gray to olive-brown, stiff @ 35 feet, darker SILTSTONE: olive-brown
									Clayey SILTSTONE: medium brown @ 39 feet, polished shears @ 39.5 feet, Shear: N60W,30SW @ 40 feet, less sheared, less clayey @ 40.5 feet, olive-brown, Sandy SILTSTONE @ 41 feet, finely micaceous and red-brown ox.
						40			
	30.11	17.3	112.4						
									Silty SANDSTONE: very fine to fine, red-brown with medium greenish-gray patches @ 43.5 feet, 6 inch red-brown Clayey SILTSTONE BED: N10W,15SW @ 43.5-44 feet, some thin Clayey laminations in Sandy SILTSTONE bed @ 44.5-45 feet, olive-brown Sandy SILTSTONE with red-oxidized specks @ 45 feet, light gray Clayey SILTSTONE @ 45.5 feet, light greenish-gray Silty SANDSTONE
						45			
									Sandy SILTSTONE: red-brown @ 48 feet, becomes more Sandy with green patches Silty SANDSTONE: fine-grained, mdedium greenish-gray, salt and pepper appearance @ 52.9 feet; 1-3 inch Clayey Gouge Zone: N50W,12SW dark red-brown, very plastic @ 53 feet, Rupture Surface: N50W,12SW; no striations, dull, even surface LANDSLIDE MATL.
						50			
						55		BEDROCK	@ 53-54 feet, Ash Bed: light greenish-gray, soft, punky, some internal shearing @ 54 feet, Contact: N50W,12SW; becomes fine-grained and gray to light yellowish-green @ 56.5-57.5 feet, cemented, seepage at 57 feet @ 58-59 feet, very fine-grained and dark greenish-gray

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Figure No.: B-7.2

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
EZ Bore 120	24 inches	1451 feet	BC-8
te Drilled: 7/5/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE JLK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						0			Silty CLAY: light gray-brown, dry, loose COLLUVIUM
									@ 3 feet, Clayey SILTSTONE: dark gray-green, thinly laminated, moderately hard and moderately well cemented; Bedding: N45W,31NW
									@ 3.2 feet, Bentonite: pinkish-gray, soft, moist,
						5			@ 5.2 feet, Joint, open, infilled with blocky SILTSTONE Attitude: N32E,76SE
									@ 6 feet, SILTSTONE becomes olive-brown to dark green; increasingly fractured at 9 feet
									@ 9.7 feet, Fracture Attitudes: N53W,57NW,N26E, 71SE
			10.3	118.7		10			
									@ 13 feet, Silty SANDSTONE: fine-grained, dark reddish-brown, moderately hard, slightly cemented, micaceous
									@ 14.5 feet (1/2 foot thick) thinly laminated, interbedded dark green Sandy SILTSTONE
						15			@ 15 feet, SANDSTONE becoems pinkish-brown, highly micaceous, poorly cemented
									@ 15.9-17.4 feet, becomes uncemented and loose
									@ 18 feet, becomes very light greenish-gray, increasingly cemented
			23.6	96		20			@ 18.5 feet, Bedding: N70W,13NE
									@ 20 feet, SILTSTONE: dark grayish-green, hard and well cemented
									@ 20.4 feet, becomes dark reddish-brown, broken
									@ 20.6 feet, Silty CLAY: olive-brown, very moist, soft to medium stiff, polished, somewhat sheared but unstriated, irregularly bedded
						25			@ 21.4 feet, Rupture Surface: sheared, polished, soft CLAY, 1/2 inch thick: N50W,32SW; striations, N31E (S31W)
									Sandy SILTSTONE: olive-brown, moderately hard, well cemented, non-micaceous, N10W,13NE
									@ 25 feet, Silty SANDSTONE: fine-grained, dark reddish-brown, cemented, hard, micaceous

LANDSLIDE MATERIAL

LANDSLIDE?

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County of Orange, California

Project No.:

Figure No.:

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation.	Boring Number
EZ-Bore 120	24 inches	1451 feet	BC-8
Date Drilled: 7/5/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ.FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35		LANDSLIDE?	@ 31.8 feet, seepage @ 34.3 feet, Sandy SILTSTONE: dark reddish-brown to grayish-green, moderately hard, micaceous, cemented in part @ 34.8 feet, becomes olive-brown, less cemented @ 35.6 feet, standing ground water @ 38 feet, heavy ground water encountered
						40			@ 39 feet, Silty SANDSTONE: fine-grained, yellow brown, poorly cemented with somewhat weathered, very moist to saturated, possible caving in boring LANDSLIDE? @ 43 feet, becomes somewhat cemented @ 44 feet, becomes well cemented, hard @ 45 feet, grades to Sandy SILTSTONE: dark reddish-brown to dark grayish-green, soft to moderately hard, appears weathered and micaceous
						45		/BEDROCK	
						50			Sandy SILTSTONE: olive-brown, moderately hard, somewhat cemented @ 48 feet, becomes very hard
	81.74	13.2	119.4			55			@ 55 feet, becomes dark grayish-green, brittle, less cemented, hard where intact, highly micaceous @ 57 feet, SILTSTONE: olive-brown, very hard, cemented

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Project No.: 4816.04 | Figure No.: B-9.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
EZ Bore 120	24 inches	1451 feet	BC-8
Date Drilled: 7/5/95 AK	The log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU. FT. | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH: FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

18.6

65

70

75

80

85

BEDROCK

@ 64 feet, becomes grayish-green, with minor amounts of pinkish-gray, moist ASH

@ 66 feet, greenish-gray to grayish-green, very hard

Silty SANDSTONE: fine-grained, light greenish-gray, hard, highly micaceous

Sandy SILTSTONE: dark grayish-green, hard, well cemented, dark reddish brown CLAY inclusions present in matrix (<5%)
@ 74 feet, inclusions increasing to 8-10%

@ 76 feet, becomes very hard, interbedded alternating SILTSTONE and SANDSTONE

Silty SANDSTONE: fine-grained, light greenish-gray very hard, well cemented

Sandy SILTSTONE: pinkish-brown, thinly laminated, very hard, intermixed with dark grayish-green SILTSTONE
@ 81.5 feet, becomes dark grayish-green
@ 82.5 feet, becomes light yellow-brown, very hard moderately well cemented bed, non-micaceous
@ 85 feet, thinly layered reddish fine-grained SAND lenses present

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Figure No.: B-8-3

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation.	Boring Number
EZ Bore 120	24 inches	1451 feet	BC-8
Date Drilled: 7/5/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	☐	55.24	20.0	104.1		95		BEDROCK	@ 91 feet, heavy caliche-banding present; SILTSTONE still hard but somewhat broken @ 92 feet, SILTSTONE (siliceous), very hard but broken and fractured (according to driller) @ 93 feet, Silty CLAY: dark grayish-green, very moist, medium stiff to stiff, (2-4 inches thick) Est. by spoil pile observ. appears somewhat sheared @ 94 feet, SILTSTONE: olive-brown to yellow-brown, hard, interlayered with moist bentonitic ASH @ 96 feet, Silty SANDSTONE: fine-grained, reddish, uncemented to slightly cemented, moderately hard, intermixed with moist bentonitic ASH @ 98 feet, Sandy SILTSTONE: dark grayish-green, poorly to moderately well cemented, moderately hard, micaceous @ 100 feet, becomes SILTSTONE: olive-brown, moderately well cemented, very hard @ 105 feet, becomes micaceous, hard VAQUEROS/SESPE FORMATION
						100			
						105			Bottom of Boring at 105 feet. Notes: 1) Heavy ground water at 38 feet. 2) Ca ving at 38 feet. 3) Boring downhole logged to 32 feet, then backfilled.
						110			
						115			

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Figure No.: B-4

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9
Date Drilled. 7/6/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0	ML		Clayey SILT: light gray-green, poorly cemented, possibly weathered bedrock COLLUVIUM
						5	CL		@ 5.8 feet, Silty CLAY: dark grayish-green to olive-brown, very moist, soft to medium stiff; fragments of broken hard Siltstone intermixed @ 6 feet, becomes stiff @ 7.8 feet, becomes very moist to saturated, softer, highly micaceous @ 9 feet, becomes dark blue-gray
						10		LANDSLIDE	@ 10.2 feet, Clayey SILTSTONE: olive-brown, highly weathered, but stiff @ 11.1 feet, becomes less weathered, harder @ 12 feet, becomes dark gray-green, well cemented, poorly bedded @ 13.2 feet, becomes olive-brown, more pure SILTSTONE @ 13.5 feet, Bedding: N75E,36NW @ 15.6 feet, becomes highly weathered, almost soil form, pockets of soft wet areas within remaining stiffer mass; irregularly bedded, nearly cahotic @ 17.2 feet, light seepage @ 20.3 feet, Bedding: N25E,31NW @ 20.5 feet, becomes dark grayish-green, well cemented, hard @ 22 feet, becomes olive-brown @ 22.5 feet, Bedding: N75W,27NE @ 23.6 feet, becomes highly weathered, very moist, medium stiff to stiff
						15			
						20			
						25			@ 24.6 feet, Bedding: N65W,44NE @ 25.3-31.8 feet, Shear Zone with intersecting fractures, generally restricted to east side of boring @ 26 feet, Seepage @ 27 feet, open fracture or caved area (massive) intersecting bedding in fracture N17E,31NW, N29E,19NW, caved/fracture zone = 3' wide, x 4.5' long by 3' deep, heavy seepage present; fractured infilled with melange of (continued)
	<5.74	20.0	10½.1						

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Project No.: 4816.04

Figure No.: B-10.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9
Date Drilled: 7/6/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									SANDSTONE, SILTSTONE, CLAY, highly chaotic vertical joint or fault = N87W, 76NE
	■	<4.3	23.9	98.3		35			
						40			
						45			LANDSLIDE
						50			
						55			@ 58 feet, Sandy SILTSTONE: olive-brown, moderately well cemented, moderately hard, non-micaceous

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Figure No.: B-10

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9

Date Drilled: 7/6/95 AK

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	24.82		9 23.7	101.8					@ 61 feet, slight seepage present @ 62.5 feet, less cementation, crumbly @ 63 feet, Bentonitic CLAY Zone: 6 inches thick est., very moist, pinkish-gray, intermixed with polished faintly striated SILTSTONE @ 63.5 feet, Sheared Silty CLAY intermixed with broken Siltstone fragment, polished, very moist, dark grayish-green, abundant bentonitic ASH, Shear Attitude: N43E,31NW
						65			@ 65 feet, Sandy SILTSTONE: dark greenish-gray, hard, well-cemented but broken and fractured @ 66.5 feet (1" est), thick polished CLAY Seam, interbedded with Siltstone (cemented) matrix @ 68 feet, 2-3 inch thick hard/stiff bentonitic layer, moist
						70			@ 69 feet, Silty SANDSTONE: fine-grained, light grayish-green, poorly cemented, damp, moderately hard, highly micaceous @ 70 feet, becomes well cemented, hard @ 71 feet, becomes dark grayish-green
						75		LANDSLIDE	@ 73 feet, olive-brown, Silty CLAY layer present, very moist, soft to medium stiff, unpolished @ 74 feet, Clayey SILTSTONE: dark grayish-green, well cemented, hard, polished on fresh surfaces @ 75 feet, Clay seam 1/2 inch thick, unpolished, unstriated @ 76.4 feet, Bentonitic Clay 3 inches thick, very moist, soft, sheared, N31W,21NE, brittle, polished LANDSLIDE DEBRIS
	77.55	-	-			80		BEDROCK	@ 77 feet, Sandy SILTSTONE: olive-brown, moderately hard, cemented, hard, highly micaceous @ 81 feet, becomes pinkish-brown, fine- to medium-grained
						85			@ 86 feet, Clayey SILTSTONE: olive-brown, moderately well cemented, hard, micaceous @ 87 feet, less hard, non-micaceous

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Project No.: 4816-04

Figure No.: B-10.3

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation:	Boring Number
EZ-Bore 120	24 inches	1384 feet	BC-9
Date Drilled: 7/6/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK, TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ.FT. | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95
100
105
110
115

BEDROCK

@ 94 feet, Silty SANDSTONE: dark gray-brown, fine-grained, well cemented, very hard, highly micaceous
@ 95.5 feet, becomes pinkish-brown
@ 96 feet, becomes dark greenish-gray with dark blue-gray, cemented, very hard
@ 97 feet, Clayey SILTSTONE: olive-brown to yellow-brown, moderately well cemented, moderately hard non-micaceous

@ 106 feet, becomes very hard

@ 107 feet, Silty SANDSTONE: fine-grained, dark grayish-green, hard, slightly cemented, non-micaceous
@ 109 feet, Clayey SILTSTONE: olive-brown, moderately hard, moderately well cemented, micaceous
@ 112 feet, Siliceous Siltstone Bed (possible marker with BC-8) 6" to 1' thick, olive-brown, broken
@ 113 feet, Sandy SILTSTONE: olive-brown, hard, moderately well cemented
@ 117 feet, Clayey SILTSTONE: dark grayish-green to light pinkish-gray, well cemented, hard, thinly laminated
VAQUEROS/SESPE FORMATION

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Project No.: 4816-04

Figure No.: B-10.4

LOG OF BORING

Drill Rig: EZ-Bore 120	Boring Diameter: 24 inches	Boring Elevation: 1384 feet	Boring Number
te Drilled: 7/6/95 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		BC-9

SAMPLE

BLK	TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						125		BEDROCK	

Bottom of Boring at 125 feet.

Notes:

1) Boring drilled to 65 feet on 7/6/95; on 7/7/95 it had caved to 31".
2) Seepage at
3) Caving at
4) Boring left open on 7/7/95; on 7/10/95 boring depth was 28'. Hole left open and covered.
5) Boring backfill on 7/11/95.

130

135

140

145

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Figure No.: B-10.5

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1072 feet	BC-10
Date Drilled: 7/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						0		CL	Sandy CLAY: gray-brown, moist, stiff
									@ 2 feet, lighter colored, more Sandy
									OLDER ALLUVIUM
						5		ML	Clayey Sandy SILT: brown to yellowish-brown, moist, stiff, some red-brown and yellow mottling
									@ 4.5 feet, scattered Siltstone fragments
									@ 9 feet, more Clayey, more moist, some thin SAND laminations
						10			@ 12 feet, becomes grayish-brown and soft with 1/4 inch lenses of reddish Silty CLAY
									@ 14 feet, becomes very moist to saturated
									@ 15 feet, stiffer
						15			
									@ 18 feet, becomes light yellowish- to greenish-brown, very moist and soft
									OLDER ALLUVIUM
	T	<5.74	24.4	98.3		20		SM	Clayey Silty SAND: fine- to medium-grained, yellowish-brown, saturated to wet, seepage
									OLDER ALLUVIUM
								CL	Silty CLAY: dark brown, very moist, stiff, some Siltstone fragments
						25			@ 25 feet, scattered inclusions of dark reddish-brown Silty SAND
									@ 27 feet, seepage
									@ 27.5 feet, stiffer
									@ 28.5 feet, becomes soft, loose
									OLDER ALLUVIUM

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-11.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1072 feet	BC-10
Date Drilled: 7/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
							CL		Silty SANDSTONE: fine- to medium-grained, light greenish-gray, very weathered, slightly Clayey, very moist, medium dense
									@ 32 feet, becomes light gray
						35		LANDSLIDE MATERIAL	@ 35 feet, becomes light yellow-brown with lenses of CLAY and less moisture
									@ 35.5 feet, stiffer, alteirnate beds of yellow-brown and greenish-gray CLAY
									Clayey SILTSTONE: bluish- to greenish-gray, weathered, moist, medium stiff to stiff
	▮	17.21	19.2	110.8		40			@ 37.5 feet, becomes darker
									@ 40 feet, heavy seepage
									Silty SANDSTONE: fine-grained, dark greenish-gray, hard, moist, micaceous
						45			Sandy SILTSTONE: dark greenish-gray, micaceous, stiff
						50			
						55			Silty SANDSTONE: fine-grained, dark greenish-gray, micaceous

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County of Orange, California

Project No.: 4816-04

Figure No.: B-11.2

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1072 feet	BC-10
Date Drilled: 7/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
	24.82	21.6	104.9			65		LANDSLIDE MATERIAL	Sandy SILTSTONE: dark greenish-gray @ 61 feet, reddish-brown Clayey SILTSTONE Bed @ 64 feet, light greenish-gray Silty SANDSTONE Bed @ 68 feet, light greenish-brown SILTSTONE Bed, moist, very stiff @ 69 feet, medium olive brown with some cemented nodules, less Sandy @ 70 feet, dark greenish-gray with red oxide spots and more Sandy, very moist, and a greenish-gray CLAY Bed @ 72 feet, red-brown SILTSTONE Bed @ 73 feet, moderately thick greenish-gray, plastic CLAY @ 74 feet, becomes more Sandy with some red-brown SILTSTONE Beds
						70			
						75			Silty SANDSTONE: fine- to medium-grained, light to medium greenish-gray, arkosic, very dense @ 79 feet, finer and mostly light greenish-gray with slight pink tinge
						80			@ 82 feet, some color as at 79 but no pink @ 84 feet, slightly darker
						85			Bottom of Boring at 85 feet. Notes: 1) Seepage at 20, 27 and 40 feet. 2) Intense caving from 20-32 feet. 3) Down-hole logged to 20 feet.

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Project No.: 4816-04

Figure No.: B-10

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11
ate Drilled: September 25, 1995 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

LANDSLIDE

Siltstone: light grayish-brown, weathered, brittle, moderately well cemented, poorly bedded

@ 1 foot, becomes pinkish-gray

@ 3 feet, becomes light grayish-green to grayish-brown, increasingly brittle

@ 4.1 feet, Bedding: N49W,21NE

@ 5 feet, Silty SANDSTONE: very fine-grained, dark blue-gray, moderately hard, highly micaceous

@ 6 feet, SILTSTONE: dark grayish-green, moderately hard, micaceous, somewhat fractured

@ 8.7 feet, Fracture: N85E,76SE, well cemented and hard

@ 10.4-10.9 feet, Sheared SILTSTONE: moderately hard, polished, faint striations, strongly defined on fresh surfaces; base comprised of soft/loose, brittle moist SILTSTONE; Rupture Surface: N71W,27NE; Striations: N51E

@ 10.9 feet, SILTSTONE: dark grayish-green, well cemented, moderately hard, micaceous, somewhat broken

@ 12.6-13.0 feet, Siliceous SILTSTONE Bed: light reddish-brown to dark grayish-green, fracture and broken; Bedding: N21W,27NE

@ 15.1-16.4 feet, Fault: N41E,52NW, infilled with dry pinkish-gray ASH, loose intermixed with broken Siltstone fragments

@ 16.4 feet, Silty SANDSTONE: fine-grained, light gray, moderately well cemented, poorly bedded, massive, moist

@ 17.9 feet, becomes light grayish-green to light yellow-brown, dry, poorly cemented and somewhat weathered and crumbly

@ 23.9 feet, grades to dark grayish-green yellow banding; better cemented, poorly bedded

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Saddleback Meadows
County of Orange, California

Project No.:

Figure No.: B-12.1

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11
Date Drilled: September 25, 1995 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ. FT | DEPTH, FEET | SOILROCK SYMBOL | SOILROCK TYPE | Description and Remarks

35

40

45

50

55

LANDSLIDE

@ 30 feet, becomes well cemented, hard
@ 31.8 feet, light yellow-brown to very light yellow-gray
@ 34.5 feet, Bedding 1/8 inch SILTSTONE Seam: N41E,31NW
@ 38 feet, Sandy SILTSTONE: dark grayish-green, very well cemented, hard, highly micaceous, massive, poorly bedded
@ 39.5 feet, grades to dark reddish-brown to reddish-gray, increasingly micaceous, very hard

@ 41 feet, Silty SANDSTONE: fine-grained, dark grayish-green, well cemented, very hard, highly micaceous, poorly bedded

@ 42.6 feet, Sandy SILTSTONE: dark reddish-brown, very well cemented, hard, poorly bedded, somewhat micaceous

@ 51.5 feet, open intersecting fracture zone: 2-3 inches: Fracture: N70E,85SE,N45W,61SW
@ 51.8 feet, Bedding: N60W,32NE; faint polishing and possible striations along bedding ranging from N28E to N2W
@ 52.5 feet, Shear Zone: with broken sheared polished strongly defined, striated, moderately hard SILTSTONE
@ 55.1-55.3 feet, becomes light orange-brown to pinkish-brown; Rupture Surface: N49W,24SW; Striations S40W to S70W
~~@ 56-56.3 feet, becomes increasingly Clayey~~
@ 58.5-59.3 feet, Basal Rupture Surface: sheared CLAY Gouge: pinkish-brown to dark gray, very moist, soft to medium stiff, polished, internally sheared, striated, very plastic N45W,19 to 23SW; Striations S45W

LANDSLIDE DEBRIS

@ 59.3 feet, Silty SANDSTONE: very fine-grained, dark bluish-gray, well cemented, hard

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Saddleback Meadows
County of Orange, California

Project No.:

Figure No.:

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11
Date Drilled: September 25, 1995 AK	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU. FT. | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | *Description and Remarks*

65

@ 62 feet, becomes medium gray, non-micaceous
@ 66.9 feet, Sandy SILTSTONE: dark reddish-brown, very well cemented, very hard, massive and poorly bedded, micaceous
@ 68.2-68.6 feet, Silty SANDSTONE: very fine-grained, light gray, well cemented, hard

70

@ 70.8 feet, light seepage present, south side
@ 71.9-72.6 feet, SILTSTONE: dark reddish-brown, very well cemented, very hard, poorly bedded and massive

@ 72.6 feet, Silty SANDSTONE: dark bluish-gray, very hard, well cemented, somewhat micaceous
@ 75.3 feet, becomes light grayish-green

75

BEDROCK

80

@ 82.6 feet, moderate seepage
@ 82.6-83.7 feet, Siliceous SILTSTONE Bed: N45E,19NW

85

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Saddleback Meadows
County of Orange, California

Project No.:

Figure No.: B-12.2

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
EZ Bore 90	24 inches	1083 feet	BC-11

Date Drilled: September 25, 1995 AK

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

100

105

110

115

BEDROCK

@ 92 feet, SILTSTONE: dark reddish-brown, well cemented, very hard, micaceous

@ 102.5 feet, becomes Siliceous, broken and somewhat fractured, pinkish-gray

@ 107 feet, becomes light gray-brown to light gray, very hard and cemented

@ 109 feet, abundant heavy seepage; standing water at 116 feet

VAQUEROS-SESPE FORMATION
(Undifferentiated)

Bottom of Boring at 120 feet.
Notes:
1) No caving.
2) Seepage at 70.8 and 82.6 feet.
3) Standing water at 116 feet.
4) Boring downhole logged to 111 feet.
5) Boring backfilled and tamped.

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Saddleback Meadows
County of Orange, California

Project No.: Figure No.:

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Silty CLAY: dark gray-brown, moist, stiff COLLUVIUM
									Clayey SILTSTONE: light greenish-brown, very broken @ 3-5 feet, medium greenish-brown Silty CLAY with carbonate specks, moist, stiff; probably soft, sheared bedrock @ 5-6 feet, Clayey SILTSTONE: medium greenish-brown, very closely fractured, blocky
						5			Sandy SILTSTONE: olive-brown, closely fractured @ 9 feet, dark gray with red specks and more Sandy
						10			
	40.19	9.8	126.7					BEDROCK	Silty SANDSTONE: fine-grained, medium greenish-gray with some red mottling @ 11-12 feet, red mottling, more intense and darker @ 13-15 feet, reddish-gray with green mottling; still fine-grained
						15			Sandy SILTSTONE: reddish-brown, soft at 15.5-16 feet @ 16 feet, 1/8" CLAY seam: N60W,18SW @ 16.5-17.5 feet, darker red-brown
									Silty SANDSTONE: fine- to medium-grained, deep reddish-brown with green mottling @ 19 feet, 6 inch olive-brown Sandy SILTSTONE Bed: N20W,14SW @ 20 feet, becomes medium greenish-gray and slightly cemented
	40.19	8.4	127.8			20			@ 20.5 feet, thin white cemented bed @ 20.7 feet, becomes light greenish-gray @ 21-22 feet, slight seepage (walls weeping) @ 22-23 feet, cemented, greenish-gray with red-brown mottling, still fine- to medium-grained @ 28 feet, becomes light greenish-gray and slightly cemented @ 30 feet, more reddish-brown staining
						25			

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-13.1

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35			@ 30.5 feet, load structure @ 30.5–31.5 feet, worm tubes @ 31.5 feet, becomes light pinkish, greenish-brown @ 32–35 feet, cemented; same color as above @ 32 feet, becomes more red-brown @ 34 feet, becomes olive-brown @ 35 feet, less cemented and red-brown with green mottling @ 36–39.5 feet, cemented and greenish-gray with red-brown mottling @ 39.5 feet, dark red-brown and finer-grained
						40			@ 41–42 feet, medium green-gray with dark green laminations
	■	34.42	12.0	103.8		45		BEDROCK	Sandy SILTSTONE: reddish-brown, very stiff, some thin green SANDSTONE beds @ 43 feet, thin SS bed: N20W,12SW @ 43.3 feet, thin apple green SS bed @ 44–45.8 feet, Ash bed, green-gray with red strings @ 44.5 feet, Ash bed becomes olive-brown @ 45.8 feet, lower contact: N20W,16SW; thin green SS bed at base and red-brown Sandy SILTSTONE with green mottling below @ 50 feet, becomes olive-brown with red mottling @ 52–53.5 feet, some cemented nodules in red-brown with green mottling @ 53.5 feet, becomes light greenish-gray and less Sandy
						55			@ 57 feet, becomes olive-brown @ 58 feet, thin cemented bed @ 58.1 feet, becomes light greenish-gray @ 58.5–60.5 feet, well laminated and some wavy bed @ 59 feet, Bedding: N25W,17SW

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No. B-13.2

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU. FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

@ 60.5 feet, red-brown with green-gray mottling
@ 62 feet, becomes less Sandy
@ 63-64 feet, olive-brown
@ 64-65 feet, red-brown and more Sandy

65

Silty SANDSTONE: fine- to medium-grained, reddish-brown with green mottling

@ 68 feet, thin green SANDSTONE Bed: N22W,14SW
@ 68.8-69.2 feet, olive-brown with red streaks
ASH Bed: N20W,13SW
@ 68.8-69.2 feet, Sheared, olive-brown CLAY Bed with dull to moderately polished, somewhat irregular shear surface at base: N20E,16NW; no striations
@ 69.2 feet, becomes greenish-gray, fine Silty SS
@ 70 feet, becomes fine- to medium-grained

70

Sandy SILTSTONE: greenish-gray to olive-brown with green mottling
@ 74 feet, becomes lighter colored

75

BEDROCK

Silty SANDSTONE: fine- to medium-grained, light greenish-gray, with white carbone cementation
@ 75.5-78 feet, cemented
@ 78 feet, becomes very fine and light to medium greenish-gray
@ 80 feet, grades to Sandy SILTSTONE

80

Sandy SILTSTONE: light greenish-gray, very stiff
@ 81-82 feet, less Sandy with red-brown oxide staining
@ 82 feet, becomes more Sandy with less red-brown oxidization
@ 84 feet, some white carbonate nodules and mostly red oxide-stained with green-gray mottling

85

Silty SANDSTONE: fine-grained, red-brown with green mottling
Sandy SILTSTONE: olive-brown with red-oxide staining
@ 88.5-89 feet, some cemented nodules

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Project No.: 4816-04

Figure No.: B-13.3

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation.	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						95			Silty SANDSTONE: olive-brown Sandy SILTSTONE: red-brown, very stiff @ 91 feet, 8 inch gray SILTSTONE Bed with cemented nodules @ 91.7 feet, olive-brown @ 92.5 feet, thin cemented bed: N15W,13SW @ 93.5 feet, becomes medium greenish-brown, very stiff @ 95 feet, dark greenish-gray @ 96.5 feet, olive-brown @ 97.5 feet, becomes less Sandy @ 98 feet, becomes dark greenish-gray and more Sandy
						100			Silty SANDSTONE: fine-grained, dark greenish-gray, very dense @ 100.5-104.2 feet, very slight seepage from SANDSTONE
						105		BEDROCK	Sandy SILTSTONE: dark greenish-gray @ 107 feet, 2 inch cemented bed @ 107.5-108.5 feet, cemented SANDSTONE Bed @ 108-108.5 feet, cemented bed, laminations: N20W,14SW
						110			@ 112 feet, less Sandy
						115			@ 117 feet, thin cemented bed @ 117-118 feet, some light gray and dark green laminations @ 118 feet, 2 inch green SANDSTONE bed @ 118.2-118.8 feet, Clayey SILTSTONE Bed or ASH Bed: greenish-gray to olive-brown Silty SANDSTONE: fine- to medium-grained, medium greenish-gray

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Project No.: 4816-04

Figure: B-13.4

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
te Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK, TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB./CU. FT. | SHEAR RESISTANCE KIPS/SQ. FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

@ 121 feet, lighter colored

Sandy SILTSTONE: medium to dark greenish-gray, slightly cemented
@ 123.7 feet, cemented nodules and more Sandy

125

@ 126.5-127.5 feet, cemented SANDSTONE Beds

@ 128.5-129.5 feet, thin cemented beds

130

@ 130 feet, 4 inch cemented bed

@ 133-133.5 feet, cemented nodules, becomes more Sandy and darker green-gray

135

BEDROCK

Silty SANDSTONE: fine-grained, medium- to dark greenish-gray, very dense, slightly cemented

@ 138.5 feet, 3 inch pinkish-gray, irregular cemented bed

140

Sandy SILTSTONE: dark greenish-gray, very stiff
@ 141.5-142.5 feet, laminated, less Sandy

Silty SANDSTONE: fine-grained, dark greenish-gray

145

@ 148 feet, becomes finer and slightly cemented, slow drilling

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County of Orange, California

Project No.: 4816-04

Figure No.: B-13.5

LOG OF BORING

Drill Rig.	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1241 feet	BC-12
Date Drilled: 10/2/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						155		BEDROCK	VAQUEROS-SESPE FORMATION
									Bottom of Boring at 155 feet.
									Notes:
									1) Slight seepage at 21, 101 and 121 feet.
									2) No caving.
									3) Boring down-hole logged and backfilled.
						160			
						165			
						170			
						175			

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County of Orange, California

Project No.: 4816-04

Figure: B-13.6

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled: 10/4/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

BULK	TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
SAMPLE									
								CL	Silty CLAY: dark gray, damp to moist, stiff COLLUVIUM
						5			Clayey SILTSTONE: olive-brown, well bedded, very closely fractured, lots of white carbonate @ 5 feet, Bedding: N-S,16W @ 7 feet, Contact: N20W,15SW VAQUEROS-SESPE FORMATION
						10			Silty SANDSTONE: dark to medium green-gray, micaceous, fine-grained @ 8.5 feet, thin white SAND Bed: N20W,17SW @ 9 feet, becomes fine- to coarse-grained, light green-gray and less micaceous
									Sandy SILTSTONE: medium to dark green-gray, very stiff
						15		BEDROCK	Silty SANDSTONE: very fine-grained, light green-gray, thinly laminated and some wavy bedding Sandy SILTSTONE: greenish-gray, thinly laminated Silty SANDSTONE: very fine-grained, medium greenish gray
									Sandy SILTSTONE: medium greenish-gray, very stiff
						20			Silty SANDSTONE: fine-grained, light to medium green-gray, thinly laminated to 20.5 feet @ 22.5 feet, becomes dark gerenish-gray @ 23-29 feet, Irregular Fracture: N80W,80SW; vertical; N80W,80NE, some open portions to 3/8 inch @ 28-29 feet, Sandy SILTSTONE @ 29 feet, Ash Bed: N-S,11W; 2 inches thick, light brown, fine-grained and green-gray to olive-brown below @ 30 feet, lighter colored and micaceous @ 32 feet, becomes finer
						25			

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-14.1

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled: 10/4/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB./CU. FT. | SHEAR RESISTANCE KIPS/SQ. FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

BEDROCK

35
40
45
50
55

Sandy SILTSTONE to very fine Silty SANDSTONE: light greenish-gray
@ 34 feet, tight fracture: N75W,85SW

@ 48 feet, white cemented nodules and worm tubes
@ 48-49 feet, less Sandy

@ 51 feet, white cementation and small Siltstone ripups

Sandy SILTSTONE: dark greenish-gray to olive-brown very stiff
@ 53 feet, more Sandy
@ 54 feet, grades to SS
Silty SANDSTONE: very fine-grained, pale greenish-gray, very dense
@ 57-57.5 feet, cemented nodules
@ 57.5-59.5 feet, Arkosic SANDSTONE: fine-grained, very light gray to white with pinkish-brown blotches, friable, some thin laminations and cross bedding

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Saddleback Meadows
County of Orange, California

Project No.:

Figure No.: R-14.2

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled: 10/4/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU. FT. | SHEAR RESISTANCE KIPS/SQ. FT. | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | *Description and Remarks*

65

Sandy SILTSTONE: dark greenish-gray, very Sandy
@ 62-64 feet, lighter colored, more Sandy
@ 64 feet, less Sandy
@ 66 feet, cemented zone, olive-brown
@ 68 feet, darker, less Sandy
@ 71 feet, more Sandy
@ 72 feet, less Sandy, cemented at 72.8 feet
@ 73 feet, 4-6 inch ASH Bed, olive brown: N15W,11SW
@ 73.5 feet, 3 inch light gray SANDSTONE Bed

70

Volcanic ASH: olive brown to pinkish-brown with pink mottling at base, very stiff

75

BEDROCK

Sandy SILTSTONE: olive-brown, very stiff
@ 78 feet, Less Sandy

80

Silty SANDSTONE: fine-grained, gray to olive brown
~~@ 82-83.5 feet, coarser and very slight seepage~~

85

Sandy SILTSTONE: olive brown
SILTSTONE: olive brown, very stiff
@ 88 feet, becomes dark greenish-gray
@ 89.5 feet, cemented nodules
@ 89.5-90 feet, olive brown
@ 90-91 feet, dark greenish-gray

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-4

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
Date Drilled: 10/4/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Sandy SILTSTONE: dark green-gray, very slight seepage (spot)
									Silty SANDSTONE: very fine- to fine-grained, dark greenish-gray, some cementation
									@ 92 feet, very slight seepage (spot)
									@ 93 feet, becomes medium brown
						95			Sandy SILTSTONE: dark greenish-gray
									SILTSTONE: brown to olive-brown, very stiff
									@ 97.5 feet, 2 inch cemented bed N-S,10W
									Sandy SILTSTONE: dark olive-brown
						100			@ 99.5 feet, becomes dark green-gray and more Sandy
									@ 102 feet, dark olive-brown and less Sandy
									@ 104 feet, more Sandy
						105		BEDROCK	
									@ 108 feet, becomes dark greenish-gray
									@ 109 feet, less Sandy
						110			Volcanic ASH: pinkish-gray to pinkish-greenish-gray, very dense
									Sandy SILTSTONE: dark greenish-gray, very stiff
									@ 111-112 feet, brown and less Sandy
									@ 112-113 feet, olive brown then dark green-gray and more Sandy
						115			@ 113.3-114 feet, dark green-gray Silty SANDSTONE bed
									@ 114.5 feet, becomes olive brown
									@ 118.5 feet, becomes more Sandy and lighter colored
									VAQUEROS-SESPE FORMATION

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County of Orange, California

Project No.: 4816-04

Figure No.: B-14.4

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1427.5 feet	BC-13
le Drilled: 10/5/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE

ILK	TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Bottom of Boring at 120 feet.
									Notes:
									1) Very slight seepage at 83.5 and 92 feet.
									2) No caving.
									3) Boring down-hole logged and backfilled.
						125			
						130			
						135			
						140			
						145			

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County of Orange, California

Project No.: 4816-04

Figure B-14.5

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14
Date Drilled: 10/5/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
								CL	Silty CLAY: gray-brown, stiff, roots TOPSOIL
									Clayey SILTSTONE: greenish-gray, well bedded, closely fractured @ 2-4 feet, Sandy SILTSTONE: reddish-gray, some thin gray-green SANDSTONE Beds VAQUEROS-SESPE FORMATION
						5			Silty SANDSTONE: fine- to medium-grained, light greenish-gray, arkosic @ 6 feet, thin red-gray SILTSTONE Bed: N10W,14SW @ 7-8.5 feet, reddish-gray SILTSTONE Bed with green SANDSTONE laminations at base @ 8.5 feet, becomes pale greenish-white @ 9 feet, becomes light pinkish-brown @ 9-9.5 feet, reddish-gray SILTSTONE rip-ups @ 10-11 feet, worm tubes or filled burrows @ 11 feet, becomes pale greenish-brown with pink mottling @ 13-14.5 feet, irregular pinkish-gray, thin layers of Silty SANDSTONE @ 16 feet, becomes slightly cemented @ 17 feet, becomes predominantly pinkish-gray with plae greenish-brown mottling and still slightly cemented @ 19 feet, worm tubes @ 20 feet, becomes finer-grained with some light gray and reddish-gray, micaceous laminations and some wavy bedding, less cemented @ 22.5 feet, becomes coarser @ 23 feet, Bedding: N20W,15SW @ 24 feet, SILTSTONE rip-ups in pinkish SAND-STONE @ 24.5 feet, 1 inch dark red-brown SILTSTONE Bed: N20W,12S @ 25-27 feet, SILTSTONE rip-ups in pinkish SANDSTONE: fine to medium, pale green-gray and light pink-gray ark. SANDSTONE with cross bedding
	22.97	7.6	119.6			10		BEDROCK	
						15			
	63.16	7.2	120.9			20			
						25			Sandy SILTSTONE: medium to dark reddish-gray with light green=gray mottling SILTSTONE: dark olive-brown with red mottling and specks, very stiff

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-15.1

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14

Date Drilled: 10/5/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	■	40.19	13.4	121.5					Sandy SILTSTONE: medium to dark reddish-gray with light green-gray mottling
									SILTSTONE: dark olive-brown with red mottling and specks, very stiff
									Sandy SILTSTONE: red-gray with green-gray mottling
						35			@ 33 feet, becomes more Sandy
									@ 33.5 feet, 6 inch very fine Silty SANDSTONE Bed, dark red-brown
									@ 34-35 feet, very Sandy SILTSTONE: dark red-brown
									SILTSTONE: reddish- to olive-brown, very stiff
									Sandy SILTSTONE: red-brown, very stiff
						40			@ 37 feet, olive-brown
									@ 38.4 feet, light greenish-gray with some red-brown mottling
									@ 39 feet, 6 inch cemented bed: N18W,14SW
									@ 39.5 feet, red-brown mottling
									@ 42 feet, thin cemented bed and becomes olive-brown
						45			@ 43-43.5 feet, thin cemented beds
	■	52.93	15.2	119.5					@ 44-45 feet, very thin laminations of fine, light gray SAND
									@ 45.5 feet, becomes darker and less Sandy
									@ 46 feet, some cemented nodules
									@ 46-46.5 feet, mostly reddish-gray, then becomes dark olive-brown
						50			@ 47.5 feet, grades to Sandy SILTSTONE
									Silty SANDSTONE: fine-grained, olive-brown and reddish-gray, micaceous
									@ 49.5-51 feet, mostly red-gray
									@ 51 feet, becomes coarser and lighter colored
									@ 51.5 feet, becomes olive-brown, still micaceous
									@ 52.5 feet, 2 inch green-gray SANDSTONE Bed
						55			SILTSTONE: dark olive-brown, with cemented nodules in upper half and red-brown at base
									Silty SANDSTONE: fine-grained, medium green-gray with 3 inch SANDSTONE Bed
									@ 55.7 -56.2 feet, SILTSTONE Bed
									@ 56.2 feet, 1/2-1 inch pinkish-gray and greenish-gray ASH Bed: N22W,12SW; party remolded, no basal shear

BEDROCK

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-15.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14

Date Drilled: 10/5/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB./CU.FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH, FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

65
70
75
80
85

BEDROCK

@ 56.3 feet, becomes fine- to medium-grained, pale green-gray, thinly laminated with low angle cross bedding to 57.8 feet
@ 57.8 feet, 2 inch olive-brown ASH Bed

Sandy SILTSTONE: dark red-brown with green-gray mottling
@ 59 feet, predominantly medium olive-brown
@ 58.5-60 feet, some cemented nodules

Silty SANDSTONE: fine-grained, some cemented nodules
@ 60-60.7 feet, cemented bed, red-brown
@ 61.7 feet, 4 inch cemented bed, very micaceous and dark reddish-gray and very fine-grained, medium gray below
@ 63 feet, more Silty
@ 63.5 feet, less Silty

Sandy SILTSTONE: greenish-gray
@ 65.8 feet, becomes red-brown with green-gray mottling and more Sandy

Silty SANDTSTONE: very fine-grained, red-brown, micaceous

Sandy SILTSTONE: dark olive-brown, very stiff
@ 69 feet, lighter colored and more Sandy
@ 69.7 feet, infilled burrows and light pink

Silty SANDSTONE: medium olive-brown
@ 72 feet, 6 inch SILTSTONE Bed: olive-brown with cemented nodules
@ 74.5-75 feet, coarser
@ 75 feet, becomes very fine-grained

Sandy SILTSTONE: olive-brown with cemented nodules, very stiff
@ 82 feet, more Sandy and dark olive-brown
@ 84 feet, grades to Silty SANDSTONE

Silty SANDSTONE: very fine-grained, very dense
@ 85 feet, becomes fine-grained

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-15.3

LOG OF BORING

Drill Rig	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1394 feet	BC-14
e Drilled: 10/5/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									Sandy SILTSTONE: olive-brown, very stiff
									Silty SANDSTONE: very fine-grained, olive-brown, micaceous
									@ 91.2-91.8 feet, white and gray SAND laminations
									@ 92.7-93 feet, dark olive Sandy SILTSTONE with thin SAND laminations
						95			Volcanic ASH? olive brown with very thin white SAND laminations
									Sandy SILTSTONE: olive-brown, thin SAND laminations
								BEDROCK	Volcanic ASH: dark greenish-gray to dark olive brown, very stiff, soapy texture
						100			@ 98.3 feet, thin, pink bentonite seam: N22W15S 1/8-1/4 inch thick, appears sheared but no well developed shear surface at the base
									@ 98.4-99.3 feet, some random shears
									Silty SANDSTONE: fine-grained, dark olive-brown
									@ 99.6 feet, becomes lighter colored
						105			VAQUEROS-SESPE FORMATION
									Bottom of Boring at 105 feet.
									Notes:
									1) No seepage encountered.
									2) No caving.
									3) Boring down-hole logged and backfilled.
						110			
						115			

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-14

LOG OF BORING

Drill Rig:	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1249 feet	BC-15
Date Drilled:	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB./CU FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						5		LANDSLIDE MATERIAL	Sandy CLAY: brown, moist, stiff @ 4 feet, lighter colored @ 7-9.2 feet, becomes light greenish-gray Silty SANDSTONE with red-brown and orange mottling with soil and broken SILTSTONE and COBBLE @ 8-9.2 feet, gravel and cobbles in clayey matrix with Sandstone and Siltstone fragments; irregular zone @ 9.2-10 feet; orange-brown Sandy SILT @ 10 feet, sharp contact: N28W,15SW COLLUVIUM LANDSLIDE MATERIAL
	■	45.94	11.9	122.3		10			
						15		BEDROCK	Clayey SILTSTONE: medium gray, moderately well bedded; some yellow jarosite, stiff @ 10.7 feet, becomes Sandy and lighter colored @ 12 feet, grades to Silty SANDSTONE Silty SANDSTONE: fine- to medium-grained with few coarse, angular grains, arkosic, light yellow-gray with some yellow jarosite staining @ 16 feet, 18 inch oval, soft weathered concretion, orange and red-brown; east side of hole @ 17.5-18.5 feet, cemented concretion with red-brown and orange oxide around outside; east side boring @ 18.5-20 feet, orange-brown and fine- to coarse-grained with rounded gravel and 1 large cobble @ 20 feet, becomes light yellow to greenish-brown, fine- to medium, still arkosic @ 22 feet, becomes fine- to coarse-grained @ 24 feet, slight seepage above Clayey SS bed @ 24.5 feet, irregular, medium gray Clayey SANDSTONE @ 24.8 feet, becomes fine- to medium-grained and medium olive-brown, cemented to 25.2 feet, sl. below @ 26.5-27.5 fee,t dark green to blue-gray Sandy SILTSTONE Bed grades to Clayey SANDSTONE
	■	45.94	7.7	133.6		20			
						25			

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Saddleback Meadows
county of Orange, California

Project No.:

Figure No.:

LOG OF BORING

Drill Rig: Bucket Auger	Boring Diameter: 30 inches	Boring Elevation: 1249 feet	Boring Number: BC-15
te Drilled.	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						35		BEDROCK	Clayey SANDSTONE: dark greenish-gray, fine- to medium-grained @ 31 feet, becomes lighter colored and fine- to coarse-grained @ 27-32 feet, some spalling from sidewalls @ 32 feet, becomes yellow-brown, irregular contact: approxiamtely N25W,12-15SW @ 33.5 feet, becomes coarser-grained and arkosic, damp @ 34.5 feet, becomes dark blue-gray and fine- to medium-grained and slightly Clayey @ 37 feet, becomes lighter colored and coarser @ 39-39.6 feet, slightly cemented @ 40 feet, becomes predominantly light yellow-brown with light green mottling @ 41 feet, slight seepage @ 44 feet, becomes fine- to medium-grained Silty SANDSTONE @ 43-45 feet, slight seepage
						40			
						45			Silty SANDSTONE: fine- to medium-grained, medium blue-gray @ 45 feet, some rounded gravel @ 45-52 feet, some spalling @ 48 feet, 6 inch cemented bed @ 48.5 feet, becomes fine- to coarse-grained, damp @ 50 feet, lighter colored: light gray to green-gray, arkosic
	55.93	8.7	131.0			50			
						55			@ 57 feet, becomes harder, some sub-angular and rounded gravel clasts, becomes lighter colored and coarser @ 60 feet, some rounded gravel clasts

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-16.2

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation	Boring Number
Bucket Auger	30 inches	1249 feet	BC-15
Date Drilled: 10/10/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									@ 63-64 feet, cemented
									@ 64 feet, becomes medium greenish-gray, still fine- to coarse-grained
	■	68.24	10.2	122.3					@ 65-66 feet, some dark Siltstone ripups
									@ 68 feet, 6 inch cement bed
						65		BEDROCK	
									@ 70 feet, 6 inch cement bed
						70			@ 71-72 feet, slightly cemented
									@ 72 feet, erosional contact dips WSW at about 20°
									Sandy SILTSTONE: dark greenish-gray, very stiff
									@ 73.5 feet, thin CLAY Bed: N35W,11SW
									Silty SANDSTONE: fine- to medium-grained, light green-gray, slightly cemented
						75			SILTSTONE: dark greenish-gray, very stiff
									@ 75 feet, grades to Sandy SILTSTONE
									Sandy SILTSTONE: medium greenish-gray, cemented nodules, damp
									@ 77-78 feet, lighter colored and more Sandy; grad. contact
						80		BEDROCK	Silty SANDSTONE: fine- to medium-grained, dark green-gray, very Silty
									@ 79 feet, becomes lighter and coarser
									@ 80 feet, becomes light gray to light green-gray
									@ 82 feet, some rounded pebbles and gravel clasts
									@ 83 feet, becomes coarser
						85			@ 84 feet, fine to medium SANDSTONE Bed 2 inches thick: N20W,11SW
									@ 84.5 feet, less coarse
									@ 87 feet, 6 inch cement bed
									Clayey SILTSTONE: dark green-gray, very stiff
									@ 89 feet, less Clayey, grades to Sandy SILTSTONE

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-16.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1249 feet	BC-15
Date Drilled: 10/10/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	37.42	15.4	112.6			95		BEDROCK	Sandy SILTSTONE: dark to medium greenish-gray, micaceous, grades to Silty SS Silty SANDSTONE: fine-grained, dark greenish-gray, very dense, micaceous Silty SANDSTONE: fine-grained, dark greenish-gray, very dense, micaceous @ 99 feet, becomes fine- to medium-grained @ 100-101 feet, slight seepage
						100		BEDROCK	Sandy SILTSTONE: dark greenish-gray, very stiff, damp to moist, some cemented nodules
						105			Volcanic ASH: dark greenish-gray, very stiff, sopay texture @ 106.7-108 feet, some random slicks @ 108 feet, 1/8 inch CLAY seam: N25W,11SW; somewhat irregular, some remolded, no well developed shear surface LANDSLIDE MATERIAL
						110		BEDROCK	Sandy SILTSTONE: dark greenish-gray, very stiff, damp to moist; some Silty SANDSTONE interbeds
						115			Bottom of Boring at 130 feet. Notes: 1) Slight seepage at 24, 41, 45 and 100 feet. 2) Minor spalling from SANDSTONE from 27-32 feet and 45-52 feet. 3) Boring down-hole logged and backfilled.

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Tustin, California

SADDLEBACK MEADOWS
COUNTY OF ORANGE, CALIFORNIA

Project No.: 4816-04

Figure No.: B-15

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1245 feet	BC-15
Date Drilled: 10/15/95 · GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE: BULK	SAMPLE: TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH. FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						125		BEDROCK	Sandy SILTSTONE: dark greenish gray very stiff damp to moist; some Silty SANDSTONE interbeds
						130			VAQUEROS-SESPE FORMATION
						135			Bottom of Boring at 130 feet. Notes: 1) Slight seepage at 24, 41, 45 and 100 feet. 2) Minor spalling from SANDSTONE from 27-32 feet and 45-52 feet. 3) Boring down-hole logged and backfilled.
						140			
						145			

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure: B-16.5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16
Date Drilled: 10/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
							CL		Silty CLAY: gray-brown, damp, stiff
									COLLUVIUM
									Sandy SILTSTONE: dark gray-brown, very weathered very closely fractured
									@ 4 feet, closely fractured, less blocky and dark gray to greenish-gray
						5			@ 6-7 feet, SILTSTONE: dark olive-brown to dark gray
									@ 6.5 feet, Fracture Zone: N25E,50SE, soft and broken
									@ 7 feet, dark green-gray Sandy SILTSTONE
									@ 8 feet, Shear with Carb.: N20W,42NE
						10			
	☐	23.00	13.2	117.4					@ 11 feet, becomes less Sandy, olive-brown, moderately fractured
									@ 13-14 feet, SILTSTONE Bed: dips approximately 20°NW, olive-brown
									@ 14 feet, becomes olive-brown Sandy SILTSTONE
									@ 14.5 feet, Fracture: N45E,60NW
						15			Silty SANDSTONE: fine-grained, green-gray, Bedding: N63E,17NW
									Clayey SILTSTONE: olive-brown, some cemented nodules, moderately fractured; sandy at base
									Silty SANDSTONE: fine-grained, green-gray, irregular contact, cross-hole attitude: N20E,15NW
						20			Sandy SILTSTONE: green-gray to olive-brown, cemented nodules
									@ 20 feet, more Sandy
									Silty SANDSTONE: fine-grained, medium green-gray, cemented
									Sandy SILTSTONE: dark greenish-gray, very stiff
						25			@ 25 feet, becomes dark olive-brown and more fractured
									@ 25.5 feet, Shear Zone: N80E,16NW and N50W,78NE
	☐	34.45	12.7	122.1					Silty SANDSTONE: very fine-grained, greenish-gray
									Sandy SILTSTONE: dark olive-brown, cemented nodules
									@ 29 feet, fewer cemented nodules

LANDSLIDE MATERIAL

G.A. NICOLL & ASSOCIATES, INC.
EARTH SCIENCE CONSULTANTS
Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-17.1

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation.	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16
Date Drilled: 10/11/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU FT	SHEAR RESISTANCE KIPS/SQ.FT	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
									SILTSTONE: brown, stiff, no cemented nodules
									@ 32 feet, very slight seepage from fracture: N-S,85W
									@ 32 feet, Shear: N75W,28NE; cuts fracture above
									@ 33 feet, becomes olive-brown and less fractured
						35			Sandy SILTSTONE: dark greenish-gray, some light pinkish-gray cemented nodules
									@ 35 feet, very slight seepage
									@ 35-36 feet, cemented, light gray
									@ 36-37 feet, dark green-gray again with some cemented nodules and pebbles
									@ 37 feet, becomes predominantly olive-brown to brown
						40			@ 39.5-40 feet, chocolate brown Clayey SILTSTONE with some rounded pebbles and gravel, sheared
									@ 40 feet, 1-2 inch Sheared CLAY: N80W,18NE with some polished pebbles
									@ 42 feet, some pinkish-gray staining
						45			Silty SANDSTONE: very fine-grained, medium olive-brown with orange oxidization, fossil fragment and some small white, round cemented nodules
									@ 46 feet, becomes light greenish-gray to yellow-brown
									@ 49-53 feet, round, cemented nodules
		21.51	9.8	110.0					
						50			@ 54.5-59 feet, Bioturbaceous, numerous filled burrows, elongate to 10 inches long and 1/2-1 inch diameter, broken and wavy dark gray SILT laminations, predominantly yellow-brown color with light orange staining
									@ 59 feet, less bioturbaceous
									@ 61 feet, fossil fragment
									@ 62 feet, more filled burrows
						55			@ 62.4-63 feet, cemented
									@ 63 feet, becomes more Silty
									@ 64-65 feet, intense burrowing
									@ 66 feet, irregular contact
									LANDSLIDE MATERIAL

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816.04

Figure No.: B-17.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16

Date Drilled: 10/11/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT.	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOILROCK SYMBOL	SOILROCK TYPE	Description and Remarks
						65		LANDSLIDE MATERIAL	Sandy SILTSTONE; dark olive-brown, burrowing into SILTSTONE from SANDSTONE above @ 67.5 feet, becomes less Sandy and red-brown @ 68.5 feet, becomes more Sandy and greenish-gray
									Silty SANDSTONE: fine-grained, greenish-gray
									Sandy SILTSTONE: dark olive-brown, very stiff
						70			Silty SANDSTONE: fine-grained, yellow-brown, saturated, seepage at 71-75 feet; irregular scour surface at base
	77.55	15.9	114.4						
						75			Sandy SILTSTONE: dark gray to green-gray
									Silty SANDSTONE: fine- to medium-grained, yellow-brown
									Sandy SILTSTONE: dark green-gray, lots of cemented nodules, very stiff
						80			Clayey SILTSTONE: pinkish-brown with green mottling, no cemented nodules @ 79 feet, Shears: N70W,48NE and N70W,43NE
									@ 83 feet, tight fracture
						85		BEDROCK	@ 84.5 feet, Shear Surface: N70W,35NE: moderately polished, faint striations N20W @ 85.5 feet, 1-2 inch remolded CLAY seam, very plastic, dark green-gray with pink tinge: N70E,17NW @ 85.6 feet, Rupture Surface: N70E,15-17NW polished, slightly irregular surface LANDSLIDE MATERIAL

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-17.3

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1130 feet	BC-16
Date Drilled	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		
10/11/95 GDH			

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

Clayey SILTSTONE: pinkish-brown, very stiff, some tight random shears to 86.2 feet
VAQUEROS-SESPE FORMATION

Sandy SILTSTONE: brown
@ 87.2 feet, becomes greenish-gray and more Sandy
@ 88 feet, Bedding: N70E,22NW
@ 88 feet, some pink-brown mottling
@ 90 feet, Fracture: N30E,55NW: dark green-gray on NW side and pinkish-brown on SE side
@ 93 feet, becomes harder, grades to Silty SS

Silty SANDSTONE: very fine- to fine-grained, greenish-gray, very dense
VAQUEROS-SESPE FORMATION

BEDROCK

95
100
105
110
115

Bottom of Boring at 100 feet.
Notes:
1) Seepage at 35, 71 and 75 feet.
2) No caving.
3) Boring down-hole logged and backfilled.

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-17.4

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
							CL		Sandy CLAY: grayish-brown, damp, stiff @ 1.5 feet, becomes lighter with SILT AND SAND INCLUSIONS @ 2-4 feet, very mottled brown and yellow-brown, SANDSTONE/soil mix COLLUIVUM
						5		LANDSLIDE MATERIAL	Silty SANDSTONE: very fine- to fine-grained, light yellow to orange-brown with gray Siltstone fragments, soft, moist @ 9-18 feet, shear zone with lots of Siltstone fragments in light orange-brown matrix of very fine to fine Silty SAND: some ribbony structure; zone dips to the north
	■	17.23	16.4	104.4		10			
						15			@ 18-20 feet, Shear Zone: N20E,48SE; lots of Siltstone fragments and soft Clayey pockets and concretion fragments
						20			
T	■	11.48	20.2	104.3		25			@ 26 feet, fewer Siltstone fragments, still soft, a well rounded SANDSTONE cobble

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-18.1

LOG OF BORING

Drill Rig:	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17

Date Drilled: 10/12/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT. KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ. FT.	DEPTH, FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
	■	8.60	21.7	101.2					@ 32.5 feet, very slight seepage @ 32.5-34 feet, cemented concretion on south 1/2 of boring @ 34.5-35.5 feet; concretion on north wall
						35			
								LANDSLIDE MATERIAL	@ 36.5-37.5 feet, 6 inch concretion on south wall, 14 inch concretion on north wall and very slight seepage @ 37-39.5 feet, light gray with orange and yellow mottling, very fine @ 39.5 feet, Shear Zone: N60W,42SW, striations downdip
						40			
	■	12.91	26.0	97.1					@ 41 feet, Shear in CLAY: N-S, 12-15E; irregular, well developed striations S47E @ 41.5 feet, base of Sheared CLAY, irregular; approx. N10W,18NE; becomes orange-brown again below, very moist; SANDSTONE below @ 43 feet, 12 inch concretion, very slight seepage @ 44-45 feet, Siltstone fragments in brown Silty SAND Matrix on east wall
						45			
									@ 45-46.5 feet, light gray, very fine-grained Silty SS, dips NE at about 25° @ 46-47 feet, fossil hash, medium orange-brown
	■	12.91	22.2	104.4		50			@ 51 feet, light gray, very fine Silty SANDSTONE along shear @ 51.7 feet, light seepage @ 52-53.5 feet, Shear Zone: N20W,75NE; dark brown SILTSTONE on SE side
						55			@ 56 feet, large dark gray Siltstone fragment @ 57 feet, large gray Sandstone fragments @ 57-57.5 feet, zone of dark gray, very plastic Silty CLAY @ 57.6 feet, Rupture Surface, somewhat irregular: N65W,18NE; striations N60W, well developed @ 57.6-59 feet, fine,soft, medium to dark gray Silty SANDSTONE, micaceous

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EARTH SCIENCE CONSULTANTS
Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure: B-18.2

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.		

SAMPLE BULK	SAMPLE TUBE	DRIVE ENERGY FT KIPS/FT	FIELD MOISTURE % DRY WEIGHT	DRY DENSITY LB/CU. FT.	SHEAR RESISTANCE KIPS/SQ FT.	DEPTH FEET	SOIL/ROCK SYMBOL	SOIL/ROCK TYPE	Description and Remarks
						65			@ 59-60.5 feet, Irregular layer of dark gray to black Silty CLAY with lots of Siltstone and Sandstone fragments and ribbony structure @ 62.5 feet, Sheared Silty CLAY: light grayish-green, numerous pebbles and subrounded gravels present @ 65 feet, Rupture Surface: N70W,38NE, striations (faint), N52W BURIED ALLUVIUM/COLLUVIUM
	9					70			Silty SANDSTONE: light gray, with olive-brown mottling, disturbed, soft, highly micaceous along bedding @ 68.5-70 feet, Concretionary Zone: intact, light to moderate seepage @ 70-71 feet, very plastic with thin laminations @ 72 feet, becomes olive-brown; well cemented
	21.71	27.2	95.0			75			LANDSLIDE MATERIAL @ 77 feet, Cemented Sandy SILTSTONE: light gray-green, very hard, poorly bedded and massive @ 79.4 feet, Bedding: N65E,22NW
	58.94	17.0	110.5			80			Sheared Silty CLAY: light pink to light pinkish-gray, very moist, soft, mottled, intermixed with pink ASH, N86W,30NE, striations N16E @ 81.9-82.4 feet, Cemented ASH Bed: fractured and somewhat polished, N76W,52NE
						85			Sandy SILTSTONE: olive-brown, well cemented, poorly bedded, massive @ 89.6 feet, Bedding: N27E,28NW

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-1&3

LOG OF BORING

Drill Rig.	Boring Diameter:	Boring Elevation:	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
Date Drilled. 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: BULK | TUBE | DRIVE ENERGY FT. KIPS/FT. | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

95

100

105

110

115

MATERIAL

LANDSLIDE

@ 91.6 feet, Silty SANDSTONE: fine-grained, light gray, well cemented, micaceous, N75W,33NE

@ 95.5 feet, N25W,36NE

@ 100.7-101.2 feet, Sheared Silty CLAY: pinkish-gray, very soft, moist, polished, mottled, unstriated, N75W,21NE

@ 101.2-102.2 feet, Cemented ASH Bed: irregular, broken, polished and striated, N70W,12NE, Striation N23E

Sandy SILTSTONE: greyish-green, very well cemented, massive, hard

@ 105.8 feet, Silty SANDSTONE: fine-grained, olive-brown, poorly bedded, moderately hard

@ 109 feet, becomes light grayish-green, highly micaceous, less cemented, somewhat weathered

@ 111.4 feet, 8 inch thick irregular Silty CLAY Bed: polished, stiff

Sandy SILTSTONE: olive-brown, well cemented, poorly bedded

Sheared Silty CLAY: olive-brown to light gray-green, very moist, internally sheared, highly polished, mottled, well defined rupture surface at 120.5 feet: N41W,26NE

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.:

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17
e Drilled: 10/12/95 GDH	This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions		

SAMPLE: ULK, TUBE | DRIVE ENERGY FT. KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOIL/ROCK SYMBOL | SOIL/ROCK TYPE | Description and Remarks

125
130
135
140
145

LANDSLIDE MATERIAL

@ 120.5-121 feet, Bentonitic ASH; pinkish-gray, somewhat cemented and stiff, appears intact

Sandy SILTSTONE: olive-brown, well cemented, hard
Silty SANDSTONE: fine-grained, light gray, micaceous, hard, poorly bedded

@ 126.9 feet, Sandy SILTSTONE: olive-brown, very well cemented, well indurated, poorly bedded and massive

Silty SANDSTONE: fine-grained, light gray, well cemented, hard, poorly bedded

@ 137.2-137.4 feet, Sheared Silty CLAY: olive-brown, polished, irregular faint striations, moist, stiff, N73W,24NE

Silty SANDSTONE: light gray, well cemented, hard, massive, poorly bedded

@ 141.8 feet, Silty CLAY : intermixed with broken scattered cherty fragments
@ 142.4 feet, Sheared Silty CLAY: remolded, mottled, chaotic mixture with pockets of pink ASH
@ 143.2 feet, Rupture Surface (?) N20W,41NE, striations (highly irregular) N18E to N70E

Sandy SILTSTONE: olive-brown, well cemented, poorly bedded
@ 146 feet, becomes dark pinkish-brown, highly polished on fresh surfaces, unsheared, well cemented, intact
@ 147.5 feet, Bedding: N40W,44NE

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Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.: B-18.5

LOG OF BORING

Drill Rig	Boring Diameter	Boring Elevation	Boring Number
Bucket Auger	30 inches	1073 feet	BC-17

Date Drilled: 10/12/95 GDH

This log is a representation of subsurface conditions at the time and place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.

SAMPLE: BULK | TUBE | DRIVE ENERGY FT KIPS/FT | FIELD MOISTURE % DRY WEIGHT | DRY DENSITY LB/CU.FT. | SHEAR RESISTANCE KIPS/SQ FT | DEPTH FEET | SOILROCK SYMBOL | SOILROCK TYPE | Description and Remarks

155

Silty SANDSTONE: light-pinkish-brown, fine-grained, somewhat cemented, poorly bedded

@ 150.5 feet, Sheared Silty CLAY: grayish-green, very moist, soft to stiff, polished, unstriated, somewhat remolded

@ 152 feet, becomes highly chaotic with grayish-green Silty CLAY intermixed with pink ASH and broken Siltstone fragments

@ 153.9 feet, Contact: N5W,26NE

LANDSLIDE MATERIAL

160

Sandy SILTSTONE: olive-brown, well-cemented, firm, faintly polsihed on fresh surfaces

@ 156.9 feet, 2 inch thick Sheared Silty CLAY Seam: polished, unstriated dark green medium stiff

N25W,30NE VASQUEROS SESPE FM

Silty SANDSTONE: fine-grained, light gray, well cemented, well indurated, poorly bedded, massive

@ 169 feet, becomes less cemented

165

LANDSLIDE MATERIAL

FAULTED BEDROCK

170

VAQUEROS SESPE FM

175

Bottom of Boring at 173 feet.

Notes:

1) Minor caving at 100-150 feet.
2) Seepage at 51.7 and 70 feet.
3) Boring downhole logged and backfilled.

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Tustin, California

Saddleback Meadows
County of Orange, California

Project No.: 4816-04

Figure No.:

APPENDIX C

Slope Stability Analyses
Cross Sections

UNITS

Qp	Pond Sediments
Fill	Fill
Qal	Alluvium
Qcol	Colluvium, includes landslide graben soils
Qalo	Old Alluvium
Qf	Mapped and /or inferred area of surficial instability
Qls	Mapped and /or inferred landslide, arrows show direction of movement
Qls(Qalo)	(Qalo) Indicates predominant material disturbed older alluvium at toe of slide
Tvs	vaqueros and Sespe formations, undifferentiated
Ts	Sespe formation

SYMBOLS

- Geologic contact, dotted where buried, queried where uncertain
- Scarp
- Fault, queried where uncertain, dotted where buried
- C C' — Geologic Cross Section
- Boring by Moore & Taber
- Boring by Leighton and Associates, Inc.
- Test Pit by Leighton and Associates, Inc.
- Test Pit by Leighton and Associates, Inc.
- Dozer Pit by Leighton and Associates, Inc.
- Boring by G.A Nicoll and Associates, Inc.
- Boring by Petra Geotechnical, Inc.
- Boring by G.A Nicoll and Associates, Inc.
- Boring by G.A Nicoll and Associates, Inc.

Showing depth

CORRECTIVE GRADING

- Key — Major Buttress or Shear Key, showing spot elevations
- Other Buttress or Stability Fill Key, showing key width
- See Geotechnical Cross Sections, Plates D-1 through D-8 symbol shows subdrain locations in cross sections
- 20' — Limits of Removal Area, showing estimated overage removal depth
- Approximate location of major subdrain; arrows show flow direction, "o" indicates outlet location
- Limits of grading, including corrective grading
- Synclinal Fold Axis, Showing direction of plunge

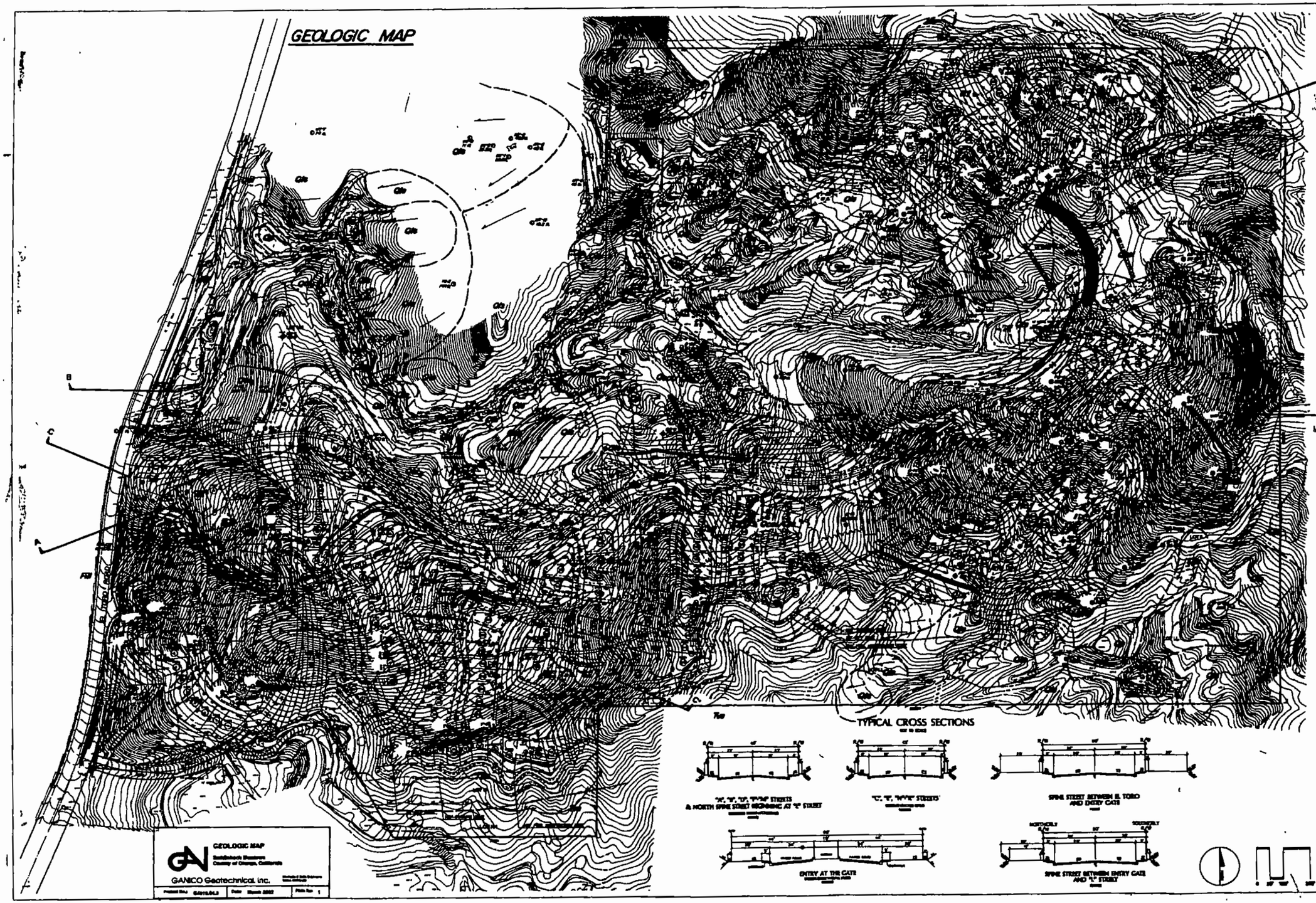
GEOLOGIC KEY

Saddleback Meadows
County of Orange, California

GANICO Geotechnical, Inc.

Project No.: G4816.04.3 | Plate No.: 2

GEOLOGIC MAP



NOTES

1. EXISTING LAND USE : VACANT
2. PROPOSED LAND USE : SINGLE FAMILY RESIDENTIAL, DEVELOPMENT, PARK
3. EXISTING ZONING / LAND USE DESIGNATION : FOOTHILL / TRABUCO SPECIFIC PLAN (1988 DISTRICT)
4. DOMESTIC WATER SERVICE PROVIDED BY : TRABUCO CANYON WATER DISTRICT
5. SANITARY SEWER SERVICE PROVIDED BY : TRABUCO CANYON WATER DISTRICT
6. GAS SERVICE PROVIDED BY : SOUTHERN CALIFORNIA GAS COMPANY
7. ELECTRIC SERVICE PROVIDED BY : SOUTHERN CALIFORNIA EDISON COMPANY
8. TELEPHONE SERVICE PROVIDED BY : PACIFIC BELL
9. CABLE TELEVISION PROVIDED BY : COX COMMUNICATIONS
10. PROJECT IS LOCATED WITHIN THE SADDLEBACK VALLEY SCHOOL DISTRICT
11. NO BUILDINGS EXIST ON THE SITE
12. ALL PROPOSED UTILITIES ARE TO BE UNDERGROUND
13. GRADING BEYOND BANKS AS DEFINED IN ACCORDANCE WITH THE COUNTY OF ORANGE FLOOD CONTROL DISTRICT STANDARDS
14. ALL GRADING SHALL CONFORM TO THE COUNTY OF ORANGE GRADING AND EXCAVATION CODE, EXCLUDED WORKS SHALL BE 2:1 (UNLESS OTHERWISE SHOWN) AND ASEA PLAN 1996.
15. IN THE DESIGN OF THIS MAP THE SOILS ACCESS GUIDELINES ADOPTED BY THE BOARD OF SUPERVISORS WERE CONSIDERED.
16. ALL SLOPES TYPE C UNLESS OTHERWISE NOTED
17. MULTIPLE FINAL MAPS MAY BE FILED ON THIS TENTATIVE MAP
18. THE NECESSARY ENCROACHMENT PERMITS SHALL BE OBTAINED FROM THE COUNTY OF ORANGE PRIOR TO CONSTRUCTION.
19. THIS IS AN APPLICATION FOR A DEVELOPMENT PERMIT.

LOT SUMMARY TABLE

LOT NUMBER	LAND USE
1 THRU 109	RESIDENTIAL LOTS
200	PUMP STATION PURPOSES
201	GATED ENTRY
A THRU D	STREETS
E - F, etc. PL E (XX.XXX AC)	RESTRICTED SCENIC PRESERVATION EASEMENT
etc. (X.XXX SQ AC)	REGIONAL PARK
CO	SEWER LIFT STATION

LEGAL DESCRIPTION

TRACT No. 15230 IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF ORANGE, STATE OF CALIFORNIA AS RECORDED IN BOOK 825, PAGES 9-20 ON NOV. 16, 1998.

SLOPE DESIGNATIONS

- MAINTAINED BY PUBLIC AGENCY OR HOME OWNERS ASSOCIATION
- MAINTAINED BY HOME OWNERS ASSOCIATION
- MAINTAINED BY INDIVIDUAL OWNERS

ESTIMATED EARTHWORK

CUT: XXX,XXX CYD
FILL: XXX,XXX CYD
NOTE: CUT / FILL VOLUMES DO NOT INCLUDE REMEDIAL GRADING.

DEVIATION REQUESTS :

1. TYPE "C" SLOPE HEIGHTS OVER 30' AS SHOWN
2. CROSSLOT GRADE LESS THAN 250' ON "H" & "I" STREETS
3. 15% GRADE ON "E" STREET

STATEMENT OF OWNERSHIP

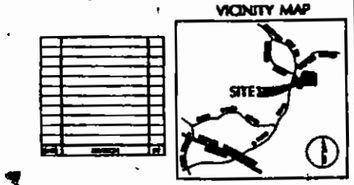
I (WE) ACKNOWLEDGE THAT I (WE) ARE (AM) THE RECORD OWNER(S) OF THE PROPERTY INVOLVED IN THIS APPLICATION OR ARE (AM) AUTHORIZED TO ACT FOR THE RECORD OWNER(S) THEREOF. I (WE) ALSO ACKNOWLEDGE THAT ADDITIONAL INFORMATION MAY BE REQUIRED BY THE COUNTY OF ORANGE TO PROCESS THIS APPLICATION.

DATE _____

ZONE	"A" (AG)
AREA	XXX.X AC.
GROSS AREA	XXX.X ACRES
CONTROLLED EASEMENT	X
TOTAL LOTS	XXX (EXCLUDING 20 LETTERED)

PROPOSED USE	A RESIDENTIAL
PROPOSED USE	XX RESIDENTIAL
PROPOSED USE	PARK

VICINITY MAP



PREPARED FOR:

CALIFORNIA QUARTET, LTD.
3323 West Avenue, Ste 250
Sacramento, CA 95833-3699
Phone: (949) 453-7200

PREPARED BY:

H&A
HOWARD & ASSOCIATES

TENTATIVE TRACT NO. 15230

A VESTING TENTATIVE TRACT MAP

SHEET 1 OF 1

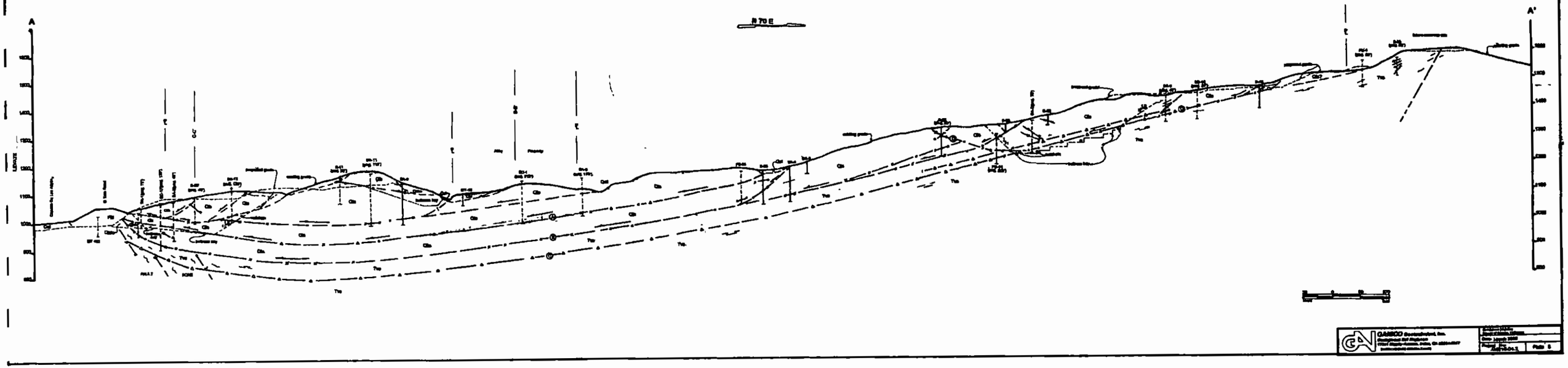
TYPICAL CROSS SECTIONS

GEOLOGIC MAP
Saddleback Preserve
County of Orange, California

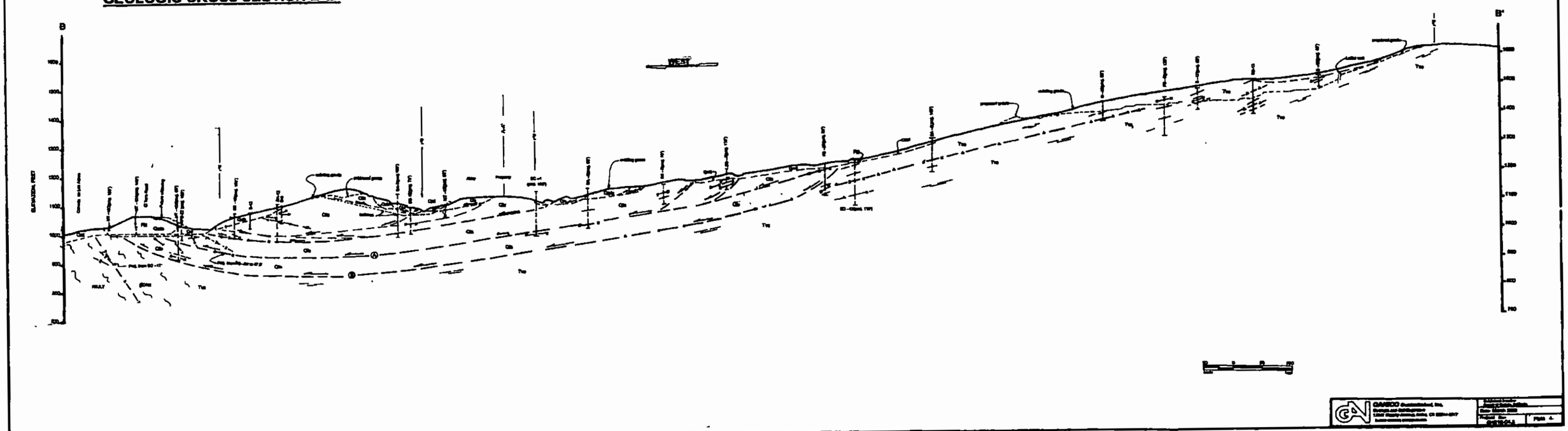
GANICO Geotechnical Inc.

Project No. GAN-0A.3 | Date: March 2002 | Plate No. 1

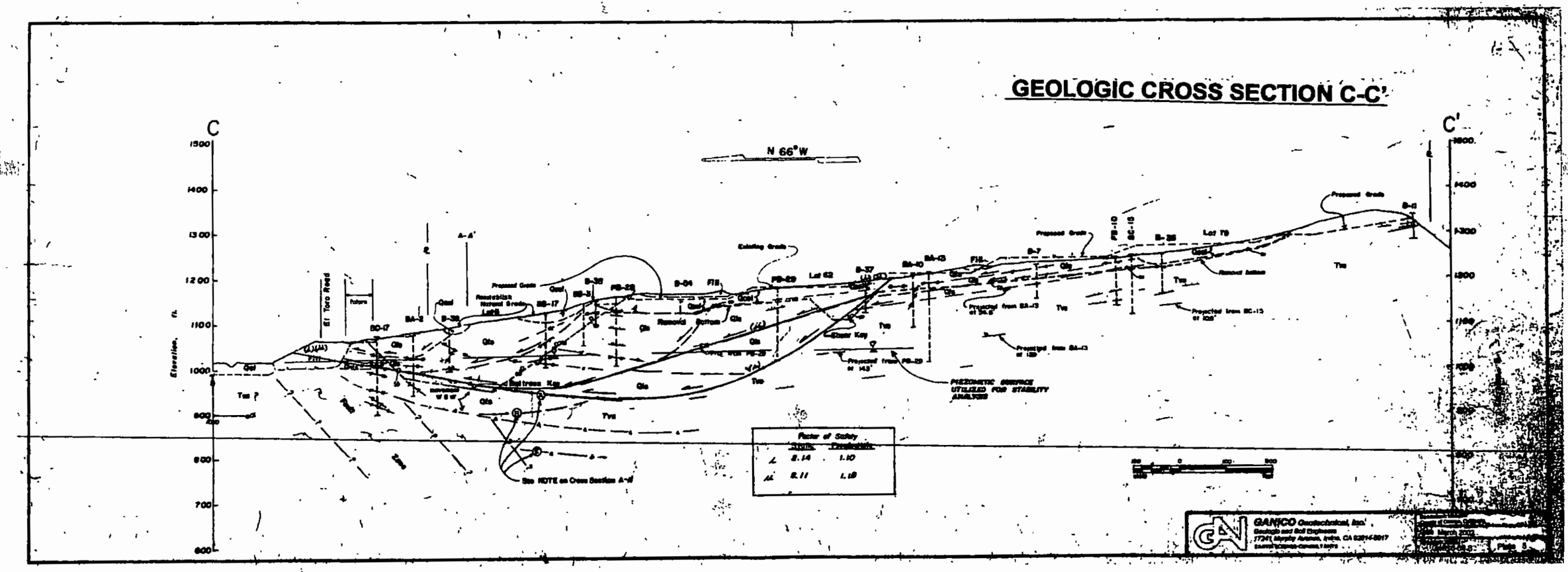
GEOLOGIC CROSS SECTION A-A'



GEOLOGIC CROSS SECTION B-B'



GEOLOGIC CROSS SECTION C-C'



The full size geotechnical drawings are on file at HDR and are available upon request.

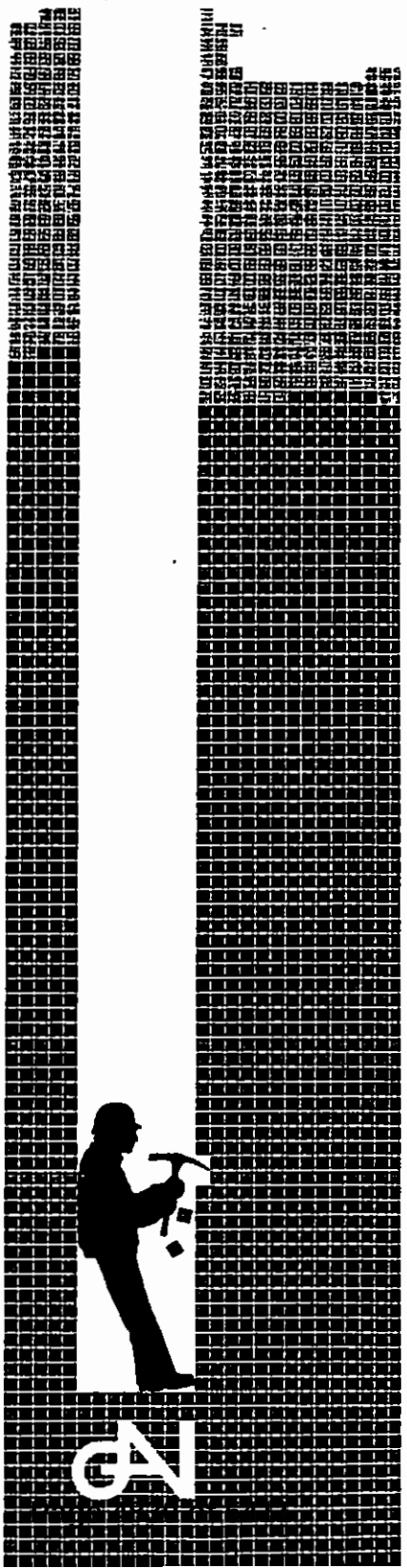
GANICO
Geotechnical, Inc.

VOLUME 2 OF 2

COMPUTER OUTPUT DOCUMENTS

STABILITY ANALYSES

Project G4816-04.3
March 26, 2002



Geologic and Soil Engineers
17241 Murphy Avenue, Irvine, CA 92614-5917 (949) 250-9111, FAX (949) 250-7411

CROSS SECTION A-A'

Slice (a)

(Static)

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

TABLE NO. 1

```
*********************************************
* COMPUTER PROGRAM DESIGNATION - UTEXAS2 *
* ORIGINALLY CODED BY STEPHEN G. WRIGHT  *
* VERSION NO. 1.209                      *
* LAST REVISION DATE 11/23/87            *
* SERIAL NO. 00004                       *
* (C) COPYRIGHT 1985 STEPHEN G. WRIGHT   *
* ALL RIGHTS RESERVED                    *
*********************************************
```

```
*****************************************************************
*                                                               *
*                                                               *
*        RESULTS OF COMPUTATIONS PERFORMED USING THIS COMPUTER *
* PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY *
*   HAVE BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL  *
* DATA OR FIELD EXPERIENCE. THE USER SHOULD UNDERSTAND THE  *
*  ALGORITHMS AND ANALYTICAL PROCEDURES USED IN THE COMPUTER *
* PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS     *
* PROGRAM BEFORE ATTEMPTING ITS USE.                        *
*                                                           *
*                                                           *
*     NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G. WRIGHT *
*   MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES, EXPRESSED OR *
*  IMPLIED, CONCERNING THE ACCURACY, RELIABILITY, USEFULNESS *
* OR ADAPTABILITY OF THIS COMPUTER PROGRAM.                 *
*                                                           *
*                                                           *
*                                                           *
*****************************************************************
```

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3150.000	420.000
2	3200.000	430.000
3	3360.000	430.000
4	3510.000	460.000
5	3610.000	360.000

PROFILE LINE 2 - MATERIAL TYPE = 1
BUTIRESS FILL

POINT	X	Y
1	3510.000	460.000
2	3560.000	470.000
3	3770.000	530.000
4	3830.000	545.000
5	4160.000	550.000
6	4260.000	585.000
7	4400.000	585.000

PROFILE LINE 3 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3770.000	400.000
2	3940.000	510.000
3	4335.000	535.000
4	4400.000	585.000
5	4425.000	585.000
6	4620.000	640.000
7	4700.000	640.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

```
TABLE NO.  3
*******************************
* NEW MATERIAL PROPERTY DATA *
*******************************

DATA FOR MATERIAL TYPE  1
FILL\QAL


     UNIT WEIGHT OF MATERIAL =  130.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - -      250.000
     FRICTION ANGLE - - - - -  25.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  2
     NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE  2
QLS


     UNIT WEIGHT OF MATERIAL =  125.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - -      150.000
     FRICTION ANGLE - - - - -  9.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  2
     NEGATIVE PORE PRESSURES SET TO ZERO

     ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA
RETAINED
1    UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
          ARADI-SADDLEBACK MEADOWS

          JOB NO. 4816-07, SECTION A-A'  (UPPER SECTION)

          FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE


TABLE NO.  4
*******************************
* NEW PIEZOMETRIC LINE DATA *
*******************************

LINE
 NO.    POINT      X          Y
```

2 - UNIT WEIGHT OF WATER = 62.40

2 1 3150.000 345.000

2 2 3580.000 400.000

2 3 4360.000 495.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9

****

* NEW ANALYSIS/COMPUTATION DATA *

****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SUREACE COORDINATES

POINT	X	Y
1	3150.000	420.000
2	3180.000	400.000
3	3375.000	340.000
4	3500.000	340.000
5	4320.000	540.000
6	4360.000	575.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES

(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR
CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

SEISMIC COEFFICIENT = .000

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

---

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10

****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES

POINT	X	Y
1	3150.000	420.000
2	3200.000	430.000
3	3360.000	430.000
4	3510.000	460.000
5	3560.000	470.000
6	3770.000	530.000
7	3830.000	545.000
8	4160.000	550.000
9	4260.000	585.000
10	4400.000	585.000
11	4425.000	585.000
12	4620.000	640.000
13	4700.000	640.000

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	3150.0	420.0					
1	3165.0	410.0	48750.0	2	150.00	9.00	.0
	3180.0	400.0					
2	3190.0	396.9	77692.3	2	150.00	9.00	.0
	3200.0	393.8					
3	3216.2	388.8	167098.8	2	150.00	9.00	.0
	3232.5	383.9					
4	3248.7	378.9	207685.2	2	150.00	9.00	.0
	3265.0	373.9					
5	3281.2	368.9	248271.9	2	150.00	9.00	.0
	3297.5	363.9					
6	3313.1	359.0	277357.7	2	150.00	9.00	425.0
	3328.7	354.2					
7	3344.4	349.4	314970.8	2	150.00	9.00	1275.1
	3360.0	344.6					
8	3367.5	342.3	167235.6	2	150.00	9.00	1904.0
	3375.0	340.0					
9	3390.6	340.0	375488.3	2	150.00	9.00	2232.5
	3406.3	340.0					

	10	3421.9	340.0	399902.3	2	150.00
9.00	2481.9					
		3437.5	340.0			
	11	3453.1	340.0	424316.4	2	150.00
9.00	2731.4					
		3468.8	340.0			
	12	3484.4	340.0	448730.5	2	150.00
9.00	2980.8					
		3500.0	340.0			
	13	3505.0	341.2	147225.6	2	150.00
9.00	3069.3					
		3510.0	342.4			
	14	3522.5	345.5	367538.2	2	150.00
9.00	2942.6					
		3535.0	348.5			
	15	3547.5	351.6	367858.2	2	150.00
9.00	2761.7					
		3560.0	354.6			
	16	3570.0	357.1	296745.6	2	150.00
9.00	2598.8					
		3580.0	359.5			
	17	3592.3	362.5	370015.7	2	150.00
9.00	2433.1					
		3604.5	365.5			
	18	3607.3	366.2	83750.3	1	250.00
25.00	2318.8					
		3610.0	366.8			
	19	3626.0	370.7	491401.9	1	250.00
25.00	2175.9					
		3642.0	374.6			
	20	3658.0	378.5	496967.9	1	250.00
25.00	1932.1					
		3674.0	382.4			
	21	3690.0	386.3	502533.9	1	250.00
25.00	1688.3					
		3706.0	390.2			
	22	3722.0	394.1	508099.9	1	250.00
25.00	1444.5					
		3738.0	398.0			

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *

* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*

****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	3738.0	398.0					
23	3754.0	402.0	513665.9	1	250.00	25.00	1200.6
	3770.0	405.9					
24	3777.3	407.6	234414.6	1	250.00	25.00	1023.4
	3784.5	409.4					
25	3795.9	412.2	366950.7	2	150.00	9.00	881.5
	3807.3	414.9					
26	3818.6	417.7	366318.2	2	150.00	9.00	708.2
	3830.0	420.5					
27	3843.6	423.8	425908.2	2	150.00	9.00	518.0
	3857.2	427.1					
28	3870.8	430.4	402430.0	2	150.00	9.00	310.8
	3884.4	433.8					
29	3898.0	437.1	378952.1	2	150.00	9.00	103.6
	3911.6	440.4					
30	3925.8	443.9	371041.7	2	150.00	9.00	0
	3940.0	447.3					
31	3958.3	451.8	442692.3	2	150.00	9.00	.0
	3976.7	456.3					
32	3995.0	460.7	403925.8	2	150.00	9.00	.0
	4013.3	465.2					
33	4031.7	469.7	365159.1	2	150.00	9.00	.0
	4050.0	474.1					
34	4068.3	478.6	326392.6	2	150.00	9.00	.0
	4086.7	483.1					
35	4105.0	487.6	287624.3	2	150.00	9.00	.0
	4123.3	492.0					
36	4141.7	496.5	248857.9	2	150.00	9.00	.0
	4160.0	501.0					

	37	4176.7	505.0	216780.1	2	150.00
9.00	.0					
		4193.3	509.1			
	38	4210.0	513.2	233108.4	2	150.00
9.00	.0					
		4226.7	517.2			
	39	4243.3	521.3	249433.8	2	150.00
9.00	.0					
		4260.0	525.4			
	40	4273.5	528.7	197841.9	2	150.00
9.00	.0					
		4287.1	532.0			
	41	4303.5	536.0	209900.6	1	250.00
25.00	.0					
		4320.0	540.0			
	42	4327.5	546.6	74953.1	1	250.00
25.00	.0					
		4335.0	553.1			
	43	4347.5	564.1	68046.9	1	250.00
25.00	.0					
		4360.0	575.0			

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****

*

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
				FORCES DUE TO SURFACE PRESSURES			
1	3165.0	0.	416.5	0.	0.	.0	.0
2	3190.0	0.	412.5	0.	0.	.0	.0
3	3216.2	0.	409.4	0.	0.		

.0	.0					
	4	3248.7	0.	404.4	0.	0.
.0	.0					
	5	3281.2	0.	399.4	0.	0.
.0	.0					
	6	3313.1	0.	394.5	0.	0.
.0	.0					
	7	3344.4	0.	389.7	0.	0.
.0	.0					
	8	3367.5	0.	386.9	0.	0.
.0	.0					
	9	3390.6	0.	388.1	0.	0.
.0	.0					
	10	3421.9	0.	391.2	0.	0.
.0	.0					
	11	3453.1	0.	394.3	0.	0.
.0	.0					
	12	3484.4	0.	397.4	0.	0.
.0	.0					
	13	3505.0	0.	400.1	0.	0.
.0	.0					
	14	3522.5	0.	404.3	0.	0.
.0	.0					
	15	3547.5	0.	410.1	0.	0.
.0	.0					
	16	3570.0	0.	415.5	0.	0.
.0	.0					
	17	3592.3	0.	421.1	0.	0.
.0	.0					
	18	3607.3	0.	424.8	0.	0.
.0	.0					
	19	3626.0	0.	429.8	0.	0.
.0	.0					
	20	3658.0	0.	438.3	0.	0.
.0	.0					
	21	3690.0	0.	446.7	0.	0.
.0	.0					
	22	3722.0	0.	455.2	0.	0.
.0	.0					
	23	3754.0	0.	463.7	0.	0.
.0	.0					
	24	3777.3	0.	469.7	0.	0.
.0	.0					
	25	3795.9	0.	474.4	0.	0.
.0	.0					
	26	3818.6	0.	480.2	0.	0.
.0	.0					
	27	3843.6	0.	484.9	0.	0.
.0	.0					
	28	3870.8	0.	488.5	0.	0.
.0	.0					
	29	3898.0	0.	492.1	0.	0.
.0	.0					
	30	3925.8	0.	495.6	0.	0.

.0	.0					
	31	3958.3	0.	499.8	0.	0.
.0	.0					
	32	3995.0	0.	504.5	0.	0.
.0	.0					
	33	4031.7	0.	509.2	0.	0.
.0	.0					
	34	4068.3	0.	514.0	0.	0.
.0	.0					
	35	4105.0	0.	518.7	0.	0.
.0	.0					
	36	4141.7	0.	523.4	0.	0.
.0	.0					
	37	4176.7	0.	530.7	0.	0.
.0	.0					
	38	4210.0	0.	540.5	0.	0.
.0	.0					
	39	4243.3	0.	550.4	0.	0.
.0	.0					
	40	4273.5	0.	556.9	0.	0.
.0	.0					
	41	4303.5	0.	560.5	0.	0.
.0	.0					
	42	4327.5	0.	565.8	0.	0.
.0	.0					
	43	4347.5	0.	574.5	0.	0.

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

FORCES DUE TO SURFACE PRESSURES

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y

.0 .0
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 23

****
*
* INFORMATION GENERATED DURING ITERATIVE SOLUTION FOR THE FACTOR *
* OF SAFETY AND SIDE FORCE INCLINATION BY SPENCER'S PROCEDURE *
*
****

ITERATION	TRIAL FACTOR OF SAFETY	TRIAL SIDE FORCE INCLINATION (DEGREES)	FORCE IMBALANCE (LBS.)	MOMENT IMBALANCE (FT.-LBS.)	DELTA-F	DELTA THETA (DEGREES)
1	3.00000	15.0000	.8743E+06	.5757E+09		
FIRST-ORDER CORRECTIONS TO F AND THETA					-.257E+01	-.113E+01
VALUES FACTORED BY .194E+00 - DELTAS TOO LARGE					-.500E+00	-.220E+00
2	2.50000	14.7802	.6701E+06	.4472E+09		
FIRST-ORDER CORRECTIONS TO F AND THETA					-.138E+01	-.137E+01
VALUES FACTORED BY .363E+00 - DELTAS TOO LARGE					-.500E+00	-.497E+00
3	2.00000	14.2835	.3649E+06	.2602E+09		
FIRST-ORDER CORRECTIONS TO F AND THETA					-.495E+00	-.201E+01
SECOND-ORDER CORRECTION - ITERATION 1					-.414E+00	-.201E+01
SECOND-ORDER CORRECTION - ITERATION 2					-.412E+00	-.201E+01
SECOND-ORDER CORRECTION - ITERATION 3					-.412E+00	-.201E+01
4	1.58787	12.2741	-.1635E+05	.4147E+08		
FIRST-ORDER CORRECTIONS TO F AND THETA						

-.304E-01 -.528E+01
SECOND-ORDER CORRECTION - ITERATION 1 .....
-.274E-01 -.528E+01
SECOND-ORDER CORRECTION - ITERATION 2 .....
-.274E-01 -.528E+01

5 1.56043 6.9987 .4253E+03 -.3353E+07
FIRST-ORDER CORRECTIONS TO F AND THETA .....
.230E-02 .360E+00
SECOND-ORDER CORRECTION - ITERATION 1 .....
.231E-02 .360E+00
SECOND-ORDER CORRECTION - ITERATION 2 .....
.231E-02 .360E+00

6 1.56274 7.3586 -.5273E-01 -.1797E+04
FIRST-ORDER CORRECTIONS TO F AND THETA .....
.146E-05 .191E-03
SECOND-ORDER CORRECTION - ITERATION 1 .....
.146E-05 .191E-03

7 1.56274 7.3588 .7617E-01 -.4198E+01
FIRST-ORDER CORRECTIONS TO F AND THETA .....
-.541E-07 .103E-05

FACTOR OF SAFETY - - - - - - - - - 1.563
SIDE FORCE INCLINATION - - - - - - 7.36
NUMBER OF ITERATIONS - - - - - - - 7
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 24

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.563 SIDE FORCE INCLINATION = 7.36 DEGREES

-------- VALUES AT CENTER OF BASE OF SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS

	1	3165.0	410.0	2041.9	2041.9
302.9					
	2	3190.0	396.9	4286.7	4286.7
530.4					
	3	3216.2	388.8	5661.5	5661.5
669.8					
	4	3248.7	378.9	7025.5	7025.5
808.0					
	5	3281.2	368.9	8389.5	8389.5
946.3					
	6	3313.1	359.0	9707.5	9282.5
1036.8					
	7	3344.4	349.4	10979.6	9704.5
1079.5					
	8	3367.5	342.3	12125.3	10221.4
1131.9					
	9	3390.6	340.0	12157.9	9925.4
1101.9					
	10	3421.9	340.0	12946.2	10464.3
1156.5					
	11	3453.1	340.0	13734.5	11003.2
1211.2					
	12	3484.4	340.0	14522.8	11542.1
1265.8					
	13	3505.0	341.2	14137.5	11068.2
1217.8					
	14	3522.5	345.5	14115.9	11173.3
1228.4					
	15	3547.5	351.6	14126.2	11364.5
1247.8					
	16	3570.0	357.1	14242.2	11643.4
1276.1					
	17	3592.3	362.5	14489.0	12056.0
1317.9					
	18	3607.3	366.2	14370.7	12051.9
3756.2					
	19	3626.0	370.7	14461.7	12285.8
3826.0					
	20	3658.0	378.5	14617.1	12685.0
3945.1					
	21	3690.0	386.3	14772.5	13084.2
4064.2					
	22	3722.0	394.1	14927.9	13483.4
4183.3					
	23	3754.0	402.0	15083.2	13882.6
4302.4					
	24	3777.3	407.6	15164.5	14141.1
4379.6					
	25	3795.9	412.2	15468.7	14587.2
1574.4					
	26	3818.6	417.7	15440.1	14731.9
1589.1					
	27	3843.6	423.8	15010.8	14492.8

1564.8					
	28	3870.8	430.4	14180.8	13870.0
1501.7					
	29	3898.0	437.1	13350.7	13247.1
1438.6					
	30	3925.8	443.9	12503.1	12503.1
1363.2					
	31	3958.3	451.8	11563.6	11563.6
1268.0					
	32	3995.0	460.7	10550.1	10550.1
1165.2					
	33	4031.7	469.7	9536.5	9536.5
1062.5					
	34	4068.3	478.6	8523.0	8523.0
959.8					
	35	4105.0	487.6	7509.4	7509.4
857.1					
	36	4141.7	496.5	6495.9	6495.9
754.3					
	37	4176.7	505.0	6223.9	6223.9
726.8					
	38	4210.0	513.2	6693.5	6693.5
774.4					
	39	4243.3	521.3	7163.1	7163.1
822.0					
	40	4273.5	528.7	6998.4	6998.4
805.3					
1					

VALUES AT CENTER OF BASE OF SLICE

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	4303.5	536.0	5961.9	5961.9	1939.0
42	4327.5	546.6	3652.1	3652.1	1249.7
43	4347.5	564.1	1948.7	1948.7	741.4

CHECK SUMS - (ALL SHOULD BE SMALL)

SUM OF FORCES IN VERTICAL DIRECTION = .25 (= .246E+00)

SHOULD NOT EXCEED .100E+03

SUM OF FORCES IN HORIZONTAL DIRECTION = .41 (= .413E+00)

SHOULD NOT EXCEED .100E+03

SUM OF MOMENTS ABOUT COORDINATE ORIGIN =

(= .708E+02)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .07
(= .741E-01)
SHOULD NOT EXCEED .100E+03
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
*-SURFACE-IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.563 SIDE FORCE INCLINATION = 7.36 DEGREES

VALUES AT RIGHT SIDE OF SLICE

SIGMA AT TOP	SIGMA SLICE AT BOTTOM	SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		1	3180.0	50340.	411.9	.459
1449.3	2391.2					
		2	3200.0	87636.	407.6	.398
973.1	4061.1					
		3	3232.5	166632.	401.9	.391
1241.8	5920.2					
		4	3265.0	263903.	396.8	.409
2121.1	7202.3					
		5	3297.5	379449.	391.9	.423
3076.6	8303.0					
		6	3328.7	506328.	387.2	.435
4033.7	9222.5					
		7	3360.0	646897.	382.6	.441
4797.5	10099.3					
		8	3375.0	720445.	380.3	.433
4610.3	10755.5					
		9	3406.3	755166.	382.4	.427
4246.1	10846.0					
		10	3437.5	791608.	384.4	.421
3900.4	10982.8					

	11	3468.8	829772.	386.3	.414
3572.1	11156.1				
	12	3500.0	869656.	388.1	.408
3260.1	11358.5				
	13	3510.0	847167.	390.7	.410
3294.6	10999.1				
	14	3535.0	791344.	397.2	.418
3412.5	10065.1				
	15	3560.0	735947.	404.0	.426
3507.1	9099.5				
	16	3580.0	691629.	409.6	.431
3473.0	8332.9				
	17	3604.5	636863.	417.0	.439
3427.9	7348.1				
	18	3610.0	638254.	417.6	.432
3196.7	7581.7				
	19	3642.0	647892.	421.0	.390
1848.4	8969.5				
	20	3674.0	660150.	424.3	.348
495.7	10404.2				
	21	3706.0	675029.	427.6	.307
-865.6	11888.3				
	22	3738.0	692529.	430.8	.267
-2239.0	13424.3				
	23	3770.0	712649.	434.1	.227
-3623.5	15021.6				
	24	3784.5	722617.	435.5	.211
-4250.9	15788.2				
	25	3807.3	672209.	440.3	.204
-4150.5	14871.0				
	26	3830.0	622297.	445.2	.201
-3980.7	14022.8				
	27	3857.2	564821.	451.1	.203
-3713.9	13184.9				
	28	3884.4	511165.	457.0	.207
-3428.5	12475.4				
	29	3911.6	461329.	462.8	.212
-3152.3	11797.1				
	30	3940.0	412996.	468.9	.217
-2870.4	11115.9				
	31	3976.7	355601.	476.8	.226
-2505.1	10259.4				
	32	4013.3	303548.	484.7	.236
-2132.0	9423.6				
	33	4050.0	256836.	492.6	.248
-1749.6	8616.6				
	34	4086.7	215466.	500.4	.264
-1355.7	7850.9				
	35	4123.3	179437.	508.2	.282
-948.4	7147.8				
	36	4160.0	148751.	515.9	.288
-778.0	6472.3				
	37	4193.3	122157.	523.0	.265
-948.2	5558.1				

```
            38        4226.7       93313.        531.0       .246
-864.1     4163.5
            39        4260.0       62219.        541.3       .278
-357.9     2513.0
            40        4287.1       37618.        554.2       .419
360.6      1046.4
1

                  ---------------  VALUES AT  RIGHT SIDE  OF SLICE
---------------

                                          Y-COORD.  OF       FRACTION
SIGMA      SIGMA
           SLICE                    SIDE  SIDE FORCE         OF
AT         AT
             NO.      X-RIGHT     FORCE    LOCATION         HEIGHT
TOP       BOTTOM
------------------------------------------------------------------------
            41        4320.0       53721.        552.3       .274
-420.2     2788.2
            42        4335.0       24291.        562.4       .292
-185.5     1697.1
            43        4360.0           1.      -2701.4       BELOW
-3.4        3.4


           CHECK SUMS - (ALL SHOULD BE SMALL)
           SUM OF FORCES IN  VERTICAL DIRECTION    =            .25
(=  .246E+00)
                SHOULD NOT EXCEED     .100E+03
           SUM  OF FORCES IN HORIZONTAL DIRECTION  =            .41
(=  .413E+00)
                SHOULD NOT EXCEED     .100E+03
           SUM OF  MOMENTS ABOUT COORDINATE ORIGIN =          70.77
(=  .708E+02)
                SHOULD NOT EXCEED     .100E+03
           SHEAR STRENGTH/SHEAR FORCE CHECK-SUM    =            .07
(=  .741E-01)
                SHOULD NOT EXCEED     .100E+03


           END-OF-FILE ENCOUNTERED WHILE READING COMMAND
           WORDS - END OF PROBLEM(S) ASSUMED
```

CROSS SECTION A-A'

Slice (a)

(Seismic)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************

     ***************************************************************
           *
          *
           *      RESULTS OF COMPUTATIONS PERFORMED USING THIS
     COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
     THEY *
           *   HAVE  BEEN   VERIFIED   BY  INDEPENDENT   ANALYSES,
     EXPERIMENTAL   *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
     THE   *
           *  ALGORITHMS  AND ANALYTICAL  PROCEDURES  USED IN  THE
     COMPUTER  *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
          *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
          *
          *
          *
           *     NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
     WRIGHT *
           * MAKE OR ASSUME LIABILITY FOR ANY  WARRANTIES,
     EXPRESSED OR  *
           *  IMPLIED, CONCERNING  THE ACCURACY,  RELIABILITY,
     USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
          *
           *
          *

     ***************************************************************
     1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
     G. WRIGHT
                      ARADI-SADDLEBACK MEADOWS

                      JOB NO. 4816-07, SECTION A-A' (UPPER  SECTION)

                      FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3150.000	420.000
2	3200.000	430.000
3	3360.000	430.000
4	3510.000	460.000
5	3610.000	360.000

PROFILE LINE 2 - MATERIAL TYPE = 1
BUTTRESS FILL

POINT	X	Y
1	3510.000	460.000
2	3560.000	470.000
3	3770.000	530.000
4	3830.000	545.000
5	4160.000	550.000
6	4260.000	585.000
7	4400.000	585.000

PROFILE LINE 3 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3770.000	400.000
2	3940.000	510.000
3	4335.000	535.000
4	4400.000	585.000
5	4425.000	585.000
6	4620.000	640.000
7	4700.000	640.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL\QAL

UNIT WEIGHT OF MATERIAL = 130.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION = = = = = = = = = 350.000
FRICTION ANGLE = = = = = 28.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 2
NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE 2
QLS

UNIT WEIGHT OF MATERIAL = 125.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION = = = = = = = = = 450.000
FRICTION ANGLE = = = = = 15.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 2
NEGATIVE PORE PRESSURES SET TO ZERO

ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 4
****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO. POINT X Y

2 - UNIT WEIGHT OF WATER = 62.40

2 1 3150.000 345.000

2 2 3580.000 400.000

2 3 4360.000 495.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9

****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE-SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y
1	3150.000	420.000
2	3180.000	400.000
3	3375.000	340.000
4	3500.000	340.000
5	4320.000	540.000
6	4360.000	575.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

SEISMIC COEFFICIENT = .150

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10

****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES

POINT	X	Y
1	3150.000	420.000
2	3200.000	430.000
3	3360.000	430.000
4	3510.000	460.000
5	3560.000	470.000
6	3770.000	530.000
7	3830.000	545.000
8	4160.000	550.000
9	4260.000	585.000
10	4400.000	585.000
11	4425.000	585.000
12	4620.000	640.000
13	4700.000	640.000

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	3150.0	420.0					
1	3165.0	410.0	48750.0	2	450.00	15.00	.0
	3180.0	400.0					
2	3190.0	396.9	77692.3	2	450.00	15.00	.0
	3200.0	393.8					
3	3216.2	388.8	167098.8	2	450.00	15.00	.0
	3232.5	383.9					
4	3248.7	378.9	207685.2	2	450.00	15.00	.0
	3265.0	373.9					
5	3281.2	368.9	248271.9	2	450.00	15.00	.0
	3297.5	363.9					
6	3313.1	359.0	277357.7	2	450.00	15.00	425.0
	3328.7	354.2					
7	3344.4	349.4	314970.8	2	450.00	15.00	1275.1
	3360.0	344.6					
8	3367.5	342.3	167235.6	2	450.00	15.00	1904.0
	3375.0	340.0					
9	3390.6	340.0	375488.3	2	450.00	15.00	2232.5
	3406.3	340.0					

10	3421.9	340.0	399902.3	2	450.00	15.00
	2481.9					
	3437.5	340.0				
11	3453.1	340.0	424316.4	2	450.00	15.00
	2731.4					
	3468.8	340.0				
12	3484.4	340.0	448730.5	2	450.00	15.00
	2980.8					
	3500.0	340.0				
13	3505.0	341.2	147225.6	2	450.00	15.00
	3069.3					
	3510.0	342.4				
14	3522.5	345.5	367538.2	2	450.00	15.00
	2942.6					
	3535.0	348.5				
15	3547.5	351.6	367858.2	2	450.00	15.00
	2761.7					
	3560.0	354.6				
16	3570.0	357.1	296745.6	2	450.00	15.00
	2598.8					
	3580.0	359.5				
17	3592.3	362.5	370015.7	2	450.00	15.00
	2433.1					
	3604.5	365.5				
18	3607.3	366.2	83750.3	1	350.00	28.00
	2318.8					
	3610.0	366.8				
19	3626.0	370.7	491401.9	1	350.00	28.00
	2175.9					
	3642.0	374.6				
20	3658.0	378.5	496967.9	1	350.00	28.00
	1932.1					
	3674.0	382.4				
21	3690.0	386.3	502533.9	1	350.00	28.00
	1688.3					
	3706.0	390.2				
22	3722.0	394.1	508099.9	1	350.00	28.00
	1444.5					
	3738.0	398.0				

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *

* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*

****

	SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
		3738.0	398.0					
	23	3754.0	402.0	513665.9	1	350.00	28.00	1200.6
		3770.0	405.9					
	24	3777.3	407.6	234414.6	1	350.00	28.00	1023.4
		3784.5	409.4					
	25	3795.9	412.2	366950.7	2	450.00	15.00	881.5
		3807.3	414.9					
	26	3818.6	417.7	366318.2	2	450.00	15.00	708.2
		3830.0	420.5					
	27	3843.6	423.8	425908.2	2	450.00	15.00	518.0
		3857.2	427.1					
	28	3870.8	430.4	402430.0	2	450.00	15.00	310.8
		3884.4	433.8					
	29	3898.0	437.1	378952.1	2	450.00	15.00	103.6
		3911.6	440.4					
	30	3925.8	443.9	371041.7	2	450.00	15.00	.0
		3940.0	447.3					
	31	3958.3	451.8	442692.3	2	450.00	15.00	.0
		3976.7	456.3					
	32	3995.0	460.7	403925.8	2	450.00	15.00	.0
		4013.3	465.2					
	33	4031.7	469.7	365159.1	2	450.00	15.00	.0
		4050.0	474.1					
	34	4068.3	478.6	326392.6	2	450.00	15.00	.0
		4086.7	483.1					
	35	4105.0	487.6	287624.3	2	450.00	15.00	.0
		4123.3	492.0					
	36	4141.7	496.5	248857.9	2	450.00	15.00	.0
		4160.0	501.0					

	37	4176.7	505.0	216780.1	2	450.00
15.00	.0					
		4193.3	509.1			
	38	4210.0	513.2	233108.4	2	450.00
15.00	.0					
		4226.7	517.2			
	39	4243.3	521.3	249433.8	2	450.00
15.00	.0					
		4260.0	525.4			
	40	4273.5	528.7	197841.9	2	450.00
15.00	.0					
		4287.1	532.0			
	41	4303.5	536.0	209900.6	1	350.00
28.00	.0					
		4320.0	540.0			
	42	4327.5	546.6	74953.1	1	350.00
28.00	.0					
		4335.0	553.1			
	43	4347.5	564.1	68046.9	1	350.00
28.00	.0					
		4360.0	575.0			

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL * SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
				FORCES DUE TO SURFACE PRESSURES			
1	3165.0	7313.	416.5	0.	0.	.0	.0
2	3190.0	11654.	412.5	0.	0.	.0	.0
3	3216.2	25065.	409.4	0.	0.		

.0	.0					
	4	3248.7	31153.	404.4	0.	0.
.0	.0					
	5	3281.2	37241.	399.4	0.	0.
.0	.0					
	6	3313.1	41604.	394.5	0.	0.
.0	.0					
	7	3344.4	47246.	389.7	0.	0.
.0	.0					
	8	3367.5	25085.	386.9	0.	0.
.0	.0					
	9	3390.6	56323.	388.1	0.	0.
.0	.0					
	10	3421.9	59985.	391.2	0.	0.
.0	.0					
	11	3453.1	63647.	394.3	0.	0.
.0	.0					
	12	3484.4	67310.	397.4	0.	0.
.0	.0					
	13	3505.0	22084.	400.1	0.	0.
.0	.0					
	14	3522.5	55131.	404.3	0.	0.
.0	.0					
	15	3547.5	55179.	410.1	0.	0.
.0	.0					
	16	3570.0	44512.	415.5	0.	0.
.0	.0					
	17	3592.3	55502.	421.1	0.	0.
.0	.0					
	18	3607.3	12563.	424.8	0.	0.
.0	.0					
	19	3626.0	73710.	429.8	0.	0.
.0	.0					
	20	3658.0	74545.	438.3	0.	0.
.0	.0					
	21	3690.0	75380.	446.7	0.	0.
.0	.0					
	22	3722.0	76215.	455.2	0.	0.
.0	.0					
	23	3754.0	77050.	463.7	0.	0.
.0	.0					
	24	3777.3	35162.	469.7	0.	0.
.0	.0					
	25	3795.9	55043.	474.4	0.	0.
.0	.0					
	26	3818.6	54948.	480.2	0.	0.
.0	.0					
	27	3843.6	63886.	484.9	0.	0.
.0	.0					
	28	3870.8	60365.	488.5	0.	0.
.0	.0					
	29	3898.0	56843.	492.1	0.	0.
.0	.0					
	30	3925.8	55656.	495.6	0.	0.

.0 .0					
31	3958.3	66404.	499.8	0.	0.
.0 .0					
32	3995.0	60589.	504.5	0.	0.
.0 .0					
33	4031.7	54774.	509.2	0.	0.
.0 .0					
34	4068.3	48959.	514.0	0.	0.
.0 .0					
35	4105.0	43144.	518.7	0.	0.
.0 .0					
36	4141.7	37329.	523.4	0.	0.
.0 .0					
37	4176.7	32517.	530.7	0.	0.
.0 .0					
38	4210.0	34966.	540.5	0.	0.
.0 .0					
39	4243.3	37415.	550.4	0.	0.
.0 .0					
40	4273.5	29676.	556.9	0.	0.
.0 .0					
41	4303.5	31485.	560.5	0.	0.
.0 .0					

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A' (UPPER SECTION)

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****
* *
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
* *
****
*

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	FORCES DUE TO SURFACE PRESSURES X	Y
42	4327.5	11243.	565.8	0.	0.		
.0 .0							
43	4347.5	10207.	574.5	0.	0.		

```
  .0        .0
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                    ARADI-SADDLEBACK  MEADOWS

                    JOB  NO. 4816-07, SECTION A-A' (UPPER SECTION)

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE


           TABLE NO. 23

**************************************************************************
*
           * INFORMATION  GENERATED DURING ITERATIVE  SOLUTION FOR
THE FACTOR *
           * OF  SAFETY AND  SIDE FORCE  INCLINATION BY  SPENCER'S
PROCEDURE    *
**************************************************************************
*
                    TRIAL      TRIAL
                   FACTOR   SIDE FORCE    FORCE        MOMENT
      DELTA
           ITER-      OF      INCLINATION   IMBALANCE   IMBALANCE
DELTA-F    THETA
           ATION    SAFETY    (DEGREES)     (LBS.)    (FT.-LBS.)
          (DEGREES)

                1   3.00000     15.0000    .2366E+07    .1334E+10
           FIRST-ORDER CORRECTIONS TO F AND THETA .........
-.467E+01  .581E-01
           VALUES  FACTORED  BY    .107E+00 -  DELTAS  TOO LARGE
-.500E+00  .622E-02

                2   2.50000     15.0062    .2061E+07    .1162E+10
           FIRST-ORDER CORRECTIONS TO F AND THETA .........
-.281E+01  .602E-01
           VALUES  FACTORED BY    .178E+00  -  DELTAS TOO  LARGE
-.500E+00  .107E-01

                3   2.00000     15.0169    .1601E+07    .9022E+09
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.139E+01  .660E-01
           VALUES FACTORED  BY     .361E+00 -  DELTAS  TOO  LARGE
-.500E+00  .238E-01

                4   1.50000     15.0407    .8248E+06    .4631E+09
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.395E+00  .943E-01
           SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.326E+00  .943E-01
           SECOND-ORDER  CORRECTION  -  ITERATION      2
```

```
-.323E+00   .943E-01
            SECOND-ORDER  CORRECTION  -  ITERATION      3  ........
-.323E+00   .943E-01

               5   1.17676     15.1350  -.4326E+05  -.2934E+08
            FIRST-ORDER CORRECTIONS  TO  F  AND  THETA  .........
.147E-01    .497E+00
            SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.148E-01    .497E+00
            SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
.148E-01    .497E+00

               6   1.19156     15.6322    .6002E+01    .1422E+07
            FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.511E-03   -.118E+00
            SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.510E-03   -.118E+00

               7   1.19105     15.5143   -.1367E+00    .2639E+04
            FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.958E-06   -.213E-03
            SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.958E-06   -.213E-03

               8   1.19105     15.5141    .8008E-01  -.4455E+01
            FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.492E-08   .436E-05

            FACTOR OF SAFETY ---------------------  1.191
            SIDE FORCE INCLINATION - - - - -  15.51
            NUMBER OF ITERATIONS - - - - - -  8
1           UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                     ARADI-SADDLEBACK MEADOWS

                     JOB NO.  4816-07, SECTION A-A' (UPPER SECTION)

                     FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE


            TABLE NO. 24
            ************************************************
            * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL    *
            * SURFACE IN CASE OF A SEARCH)                 *
            ************************************************

            SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
            FACTOR OF SAFETY  =  1.191     SIDE FORCE INCLINATION =
15.51 DEGREES

                  ---------  VALUES  AT  CENTER  OF  BASE  OF
SLICE---------

                                          TOTAL     EFFECTIVE
```

SLICE NO.	X-CENTER	Y-CENTER	NORMAL STRESS	NORMAL STRESS	SHEAR STRESS
1	3165.0	410.0	3176.9	3176.9	1092.5
2	3190.0	396.9	5037.6	5037.6	1511.1
3	3216.2	388.8	6579.1	6579.1	1857.9
4	3248.7	378.9	8108.5	8108.5	2202.0
5	3281.2	368.9	9637.9	9637.9	2546.0
6	3313.1	359.0	11067.2	10642.2	2772.0
7	3344.4	349.4	12396.6	11121.6	2879.8
8	3367.5	342.3	13609.7	11705.7	3011.2
9	3390.6	340.0	12245.5	10013.0	2630.4
10	3421.9	340.0	13027.5	10545.5	2750.2
11	3453.1	340.0	13809.4	11078.1	2870.0
12	3484.4	340.0	14591.4	11610.6	2989.8
13	3505.0	341.2	13299.4	10230.1	2679.3
14	3522.5	345.5	13281.3	10338.6	2703.7
15	3547.5	351.6	13294.1	10532.4	2747.3
16	3570.0	357.1	13406.4	10807.6	2809.2
17	3592.3	362.5	13642.1	11209.0	2899.5
18	3607.3	366.2	13864.1	11545.3	5447.9
19	3626.0	370.7	13958.9	11783.0	5554.0
20	3658.0	378.5	14120.8	12188.6	5735.1
21	3690.0	386.3	14282.6	12594.3	5916.2
22	3722.0	394.1	14444.4	13000.0	6097.3
23	3754.0	402.0	14606.2	13405.6	6278.4
24	3777.3	407.6	14693.2	13669.8	6396.3
25	3795.9	412.2	14593.3	13711.9	

3462.6					
	26	3818.6	417.7	14569.4	13861.2
3496.2					
	27	3843.6	423.8	14167.9	13650.0
3448.6					
	28	3870.8	430.4	13388.9	13078.1
3320.0					
	29	3898.0	437.1	12609.8	12506.2
3191.3					
	30	3925.8	443.9	11812.3	11812.3
3035.2					
	31	3958.3	451.8	10926.4	10926.4
2835.9					
	32	3995.0	460.7	9970.7	9970.7
2620.9					
	33	4031.7	469.7	9014.9	9014.9
2405.9					
	34	4068.3	478.6	8059.1	8059.1
2190.9					
	35	4105.0	487.6	7103.3	7103.3
1975.8					
	36	4141.7	496.5	6147.6	6147.6
1760.8					
	37	4176.7	505.0	5891.1	5891.1
1703.1					
	38	4210.0	513.2	6333.9	6333.9
1802.7					
	39	4243.3	521.3	6776.8	6776.8
1902.4					
	40	4273.5	528.7	6621.4	6621.4
1867.4					
1					

-------- VALUES AT CENTER OF BASE OF SLICE ----------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	4303.5	536.0	5810.8	5810.8	2887.9
42	4327.5	546.6	3056.0	3056.0	1658.1
43	4347.5	564.1	1611.7	1611.7	1013.3

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = .32
(= .315E+00)
SHOULD NOT EXCEED .100E+03

```
          SUM  OF FORCES IN HORIZONTAL DIRECTION   =          .41
(=  .410E+00)
               SHOULD NOT EXCEED      .100E+03
          SUM OF  MOMENTS ABOUT COORDINATE ORIGIN  =      -143.13
(= -.143E+03)
               SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM     =          .11
(=  .110E+00)
               SHOULD NOT EXCEED      .100E+03

          ***** WARNING ***** ONE OF CHECK SUMS IS TOO LARGE
1         UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION A-A' (UPPER  SECTION)

                    FACTOR  OF SAFETY ALONG NONCIRCULAR SURFACE

          TABLE NO. 25
          ********************************************
          * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
          * SURFACE IN CASE OF A SEARCH)              *
          ********************************************

          SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
          FACTOR OF SAFETY =  1.191     SIDE FORCE INCLINATION =
15.51 DEGREES

                              VALUES AT RIGHT SIDE OF SLICE

                                          Y-COORD.  OF       FRACTION
  SIGMA      SIGMA
             SLICE                    SIDE   SIDE FORCE      OF
  AT         AT
             NO.      X-RIGHT      FORCE    LOCATION       HEIGHT
  TOP      BOTTOM

                1       3180.0      92365.      413.6        .524
3920.6     2925.6
                2       3200.0     143808.      410.9        .494
3869.7     4156.3
                3        3232.5     248677.      406.6        .492
4950.7     5433.8
                4       3265.0     374692.      402.5        .511
6852.1     6009.0
                5       3297.5     521853.      398.5        .524
8702.3     6503.1
                6       3328.7     679164.      394.8        .535
10472.8    6802.8
                7        3360.0     847394.      391.3        .542
11856.0    7103.1
```

	8	3375.0	933426.	389.5	.532
11540.4	7801.9				
	9	3406.3	960282.	393.7	.541
11641.8	7003.9				
	10	3437.5	987222.	397.6	.546
11504.4	6528.8				
	11	3468.8	1014248.	401.1	.547
11193.4	6297.4				
	12	3500.0	1041359.	404.2	.544
10754.9	6252.1				
	13	3510.0	1012582.	407.5	.553
10951.0	5647.8				
	14	3535.0	941469.	415.8	.577
11410.6	4168.0				
	15	3560.0	871356.	424.3	.602
11684.9	2816.8				
	16	3580.0	815599.	431.4	.618
11564.9	1961.2				
	17	3604.5	747115.	440.3	.638
11223.2	1058.8				
	18	3610.0	745852.	440.9	.631
10913.5	1323.9				
	19	3642.0	740735.	444.2	.586
9093.0	2923.5				
	20	3674.0	739456.	447.0	.537
7248.2	4614.0				
	21	3706.0	742014.	449.2	.486
5381.0	6391.0				
	22	3738.0	748408.	451.2	.432
3493.5	8250.6				
	23	3770.0	758638.	452.8	.379
1603.0	10185.6				
	24	3784.5	764529.	453.5	.355
776.1	11083.2				
	25	3807.3	705120.	458.5	.351
563.3	10362.3				
	26	3830.0	646741.	463.3	.348
458.4	9681.5				
	27	3857.2	580243.	468.8	.353
549.3	8903.6				
	28	3884.4	519131.	474.3	.362
774.1	8152.6				
	29	3911.6	463405.	479.8	.373
995.7	7441.0				
	30	3940.0	410192.	485.6	.385
1243.3	6713.4				
	31	3976.7	347782.	493.3	.407
1621.6	5746.5				
	32	4013.3	292095.	501.2	.436
2092.2	4724.8				
	33	4050.0	243132.	509.5	.476
2706.5	3609.3				
	34	4086.7	200893.	518.3	.535
3554.1	2329.7				

	35	4123.3	165377.	527.7	.622	
4799.7	751.4					
	36	4160.0	136584.	537.9	.713	
5788.0	-708.1					
	37	4193.3	112049.	547.7	.734	
4935.2	-827.0					
	38	4226.7	84682.	557.8	.724	
3408.5	-499.4					
	39	4260.0	54483.	569.2	.765	
2377.1	-543.6					
	40	4287.1	30774.	582.6	.955	
2085.0	-966.7					
1						

---------- VALUES AT RIGHT SIDE OF SLICE ----------

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		41	4320.0	48373.	556.6	.368
216.5	1855.0					
		42	4335.0	20890.	565.9	.401
255.4	1007.6					
		43	4360.0	3.	12915.1	ABOVE
-2.8	2.8					

CHECK SUMS - (ALL SHOULD BE SMALL)

SUM OF FORCES IN VERTICAL DIRECTION = .32
(= .315E+00)
SHOULD NOT EXCEED .100E+03

SUM OF FORCES IN HORIZONTAL DIRECTION = .41
(= .410E+00)
SHOULD NOT EXCEED .100E+03

SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -143.13
(= -.143E+03)
SHOULD NOT EXCEED .100E+03

SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .11
(= .110E+00)
SHOULD NOT EXCEED .100E+03

***** WARNING ***** ONE OF CHECK SUMS IS TOO LARGE

END-OF-FILE ENCOUNTERED WHILE READING COMMAND
WORDS - END OF PROBLEM(S) ASSUMED

CROSS SECTION A-A'

Slice (b)

(Static)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************

     ***********************************************************************
                *
          *
                *    RESULTS OF COMPUTATIONS PERFORMED USING THIS
     COMPUTER *
                * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
     THEY *
                *   HAVE   BEEN   VERIFIED   BY  INDEPENDENT   ANALYSES,
     EXPERIMENTAL    *
                * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
     THE   *
                *  ALGORITHMS  AND ANALYTICAL  PROCEDURES  USED IN  THE
     COMPUTER  *
                * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
          *
                * PROGRAM BEFORE ATTEMPTING ITS USE.
          *
                *
          *
                *    NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
     WRIGHT *
                *   MAKE  OR  ASSUME  LIABILITY  FOR  ANY  WARRANTIES,
     EXPRESSED OR *
                *  IMPLIED,  CONCERNING   THE  ACCURACY,   RELIABILITY,
     USEFULNESS  *
                * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
          *
                *
          *

     ***********************************************************************
     1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
     G. WRIGHT
                         ARADI-SADDLEBACK MEADOWS

                         JOB NO. 4816-07, SECTION A-A'

                         FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
EL TORO RD.FILL\BUTTRESS FILL\QAL

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	80.000	90.000
2	390.000	90.000
3	400.000	85.000
4	440.000	75.000
5	470.000	100.000
6	595.000	100.000
7	815.000	210.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000

PROFILE LINE 3 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1890.000	210.000
2	2010.000	220.000
3	2110.000	260.000
4	2470.000	285.000
5	2560.000	280.000

6	2630.000	280.000
7	2750.000	320.000
8	3010.000	400.000
9	3200.000	430.000
10	3360.000	430.000
11	3510.000	460.000
12	3610.000	360.000

PROFILE LINE 4 - MATERIAL TYPE = 1
BUTTRESS FILL

POINT	X	Y
1	3510.000	460.000
2	3560.000	470.000
3	3770.000	530.000
4	3830.000	545.000
5	4160.000	550.000
6	4260.000	585.000
7	4400.000	585.000

PROFILE LINE 5 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3770.000	400.000
2	3940.000	510.000
3	4335.000	539.000
4	4400.000	585.000
5	4425.000	585.000
6	4620.000	640.000
7	4700.000	640.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL\QAL

```
                UNIT WEIGHT OF MATERIAL =  130.000

                CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
                COHESION - - - - - - - - -      250.000
                FRICTION ANGLE - - - - - -  25.000 DEGREES

                PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
                NUMBER OF THE PIEZOMETRIC LINE USED =  1
                NEGATIVE PORE PRESSURES SET TO ZERO

            DATA FOR MATERIAL TYPE  2
            QLS


                UNIT WEIGHT OF MATERIAL =  125.000

                CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
                COHESION - - - - - - - - -      150.000
                FRICTION ANGLE - - - - - -   9.000 DEGREES

                PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
                NUMBER OF THE PIEZOMETRIC LINE USED =  1
                NEGATIVE PORE PRESSURES SET TO ZERO

            ALL  NEW  MATERIAL  PROPERTIES DEFINED  -  NO  OLD DATA
RETAINED
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                        JOB NO. 4816-07, SECTION A-A

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

            TABLE NO.  4
            ******************************
            * NEW PIEZOMETRIC LINE DATA *
            ******************************

            LINE
             NO.     POINT        X             Y

              1 - UNIT WEIGHT OF WATER =   62.40

              1         1       80.000      115.000

              1         2     1080.000      135.000

              1         3     2080.000      155.000

              1         4     3080.000       175.000
```

1 5 4700.000 200.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9

****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y
1	170.000	160.000
2	320.000	70.000
3	400.000	-30.000
4	660.000	-20.000
5	900.000	-50.000
6	1100.000	-50.000
7	1960.000	60.000
8	2680.000	190.000
9	3340.000	350.000
10	3480.000	445.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR
CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

SEISMIC COEFFICIENT = .000

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10

****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000

16	2010.000	220.000
17	2110.000	260.000
18	2470.000	285.000
19	2560.000	280.000
20	2630.000	280.000
21	2750.000	320.000
22	3010.000	400.000
23	3200.000	430.000
24	3360.000	430.000
25	3510.000	460.000
26	3560.000	470.000
27	3770.000	530.000
28	3830.000	545.000
29	4160.000	550.000
30	4260.000	585.000
31	4400.000	585.000
32	4425.000	585.000
33	4620.000	640.000
34	4700.000	640.000

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ARADI-SADDLEBACK-MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *
****

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	170.0	160.0					
1	204.8	139.1	189342.8	1	250.00	25.00	.0
	239.7	118.2					
2	239.8	118.1	1757.2	1	250.00	25.00	6.2
	240.0	118.0					
3	255.0	109.0	179400.0	1	250.00	25.00	592.8

		270.0	100.0				
	4	278.3	95.0	122677.4	1	250.00	
25.00	1495.5						
		286.7	90.0				
	5	303.3	80.0	329753.2	2	150.00	
9.00	2462.7						
		320.0	70.0				
	6	355.0	52.5	1024528.0	2	150.00	
9.00	4243.2						
		390.0	35.0				
	7	395.0	32.5	181597.2	2	150.00	
9.00	5541.1						
		400.0	30.0				
	8	420.0	26.2	784897.5	2	150.00	
9.00	5968.3						
		440.0	22.3				
	9	445.0	21.3	208595.1	2	150.00	
9.00	6299.5						
		450.0	20.4				
	10	460.0	18.5	425679.5	2	150.00	
9.00	6498.2						
		470.0	16.5				
	11	501.3	10.5	1389618.0	2	150.00	
9.00	7044.7						
		532.5	4.5				
	12	563.8	-1.5	1483519.0	2	150.00	
9.00	7872.7						
		595.0	-7.5				
	13	627.5	-13.8	1637188.0	2	150.00	
9.00	8717.3						
		660.0	-20.0				
	14	672.5	-21.6	651289.1	2	150.00	
9.00	9260.9						
		685.0	-23.1				
	15	713.8	-26.7	1594502.0	2	150.00	
9.00	9634.2						
		742.5	-30.3				
	16	771.3	-33.9	1768709.0	2	150.00	
9.00	10154.4						
		800.0	-37.5				
	17	807.5	-38.4	487064.1	2	150.00	
9.00	10482.4						
		815.0	-39.4				
	18	857.5	-44.7	2875842.0	2	150.00	
9.00	10934.8						
		900.0	-50.0				
	19	932.5	-50.0	2254688.0	2	150.00	
9.00	11359.9						
		965.0	-50.0				
	20	997.5	-50.0	2214063.0	2	150.00	
9.00	11441.0						
		1030.0	-50.0				
	21	1055.0	-50.0	1687500.0	2	150.00	
9.00	11512.8						

```
                    1080.0     -50.0
              22    1090.0      -50.0    675000.0      2      150.00
9.00     11556.5
                    1100.0     -50.0
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                     ARADI-SADDLEBACK MEADOWS

                     JOB NO. 4816-07, SECTION A-A'

                     FACTOR OF SAFETY ALONG NONCIRCULAR  SURFACE


          TABLE NO. 20

**************************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
          *

**************************************************************************
*
            SLICE                                SLICE    MATL.
FRICTION     PORE
              NO.        X          Y          WEIGHT   TYPE     COHESION
ANGLE     PRESSURE
                    1100.0     -50.0
              23    1120.0      -47.4   1337209.0      2      150.00
9.00     11434.3
                    1140.0     -44.9
              24    1171.3      -40.9   2077239.0      2      150.00
9.00     11089.2
                    1202.5     -36.9
              25    1233.8      -32.9   2092910.0      2      150.00
9.00     10668.4
                    1265.0     -28.9
              26     1298.8     -24.6    2116365.0     2       150.00
9.00     10230.7
                    1332.5     -20.3
              27    1366.3      -15.9   1811487.0      2      150.00
9.00      9776.2
                    1400.0     -11.6
              28     1450.0      -5.2    2471657.0     2       150.00
9.00      9212.3
                    1500.0       1.2
              29     1550.0       7.6   2499273.0      2       150.00
9.00      8538.9
                    1600.0      14.0
              30    1650.0       20.3   2526890.0      2      150.00
9.00      7865.6
```

		1700.0	26.7				
	31	1740.0	31.9	1981395.0	2	150.00	
9.00	7259.6						
		1780.0	37.0				
	32	1807.5	40.5	1268478.0	2	150.00	
9.00	6805.1						
		1835.0	44.0				
	33	1862.5	47.5	1151363.0	2	150.00	
9.00	6434.7						
		1890.0	51.0				
	34	1925.0	55.5	1377193.0	2	150.00	
9.00	6013.9						
		1960.0	60.0				
	35	1985.0	64.5	958767.4	2	150.00	
9.00	5527.8						
		2010.0	69.0				
	36	2045.0	75.3	1388212.0	2	150.00	
9.00	4926.7						
		2080.0	81.7				
	37	2095.0	84.4	636093.8	2	150.00	
9.00	4425.7						
		2110.0	87.1				
	38	2155.0	95.2	1889063.0	2	150.00	
9.00	3824.6						
		2200.0	103.3				
	39	2245.0	111.5	1776563.0	2	150.00	
9.00	2922.9						
		2290.0	119.6				
	40	2335.0	127.7	1684063.0	2	150.00	
9.00	2021.2						
		2380.0	135.8				
	41	2425.0	144.0	1551563.0	2	150.00	
9.00	1119.6						
		2470.0	152.1				
	42	2503.4	158.1	1043234.0	2	150.00	
9.00	334.4						
		2536.7	164.1				
	43	2548.4	166.2	332547.6	2	150.00	
9.00	.0						
		2560.0	168.3				
	44	2595.0	174.7	921788.3	2	150.00	
9.00	.0						
		2630.0	181.0				

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

```
**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
           * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
          *

**********************************************************************
*
```

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	2630.0	181.0					
45	2655.0	185.5	642795.2	2	150.00	9.00	.0
	2680.0	190.0					
46	2715.0	198.5	961174.3	2	150.00	9.00	.0
	2750.0	207.0					
47	2793.3	217.5	1255136.0	2	150.00	9.00	.0
	2836.7	228.0					
48	2880.0	238.5	1316415.0	2	150.00	9.00	.0
	2923.3	249.0					
49	2966.7	259.5	1377691.0	2	150.00	9.00	.0
	3010.0	270.0					
50	3045.0	278.5	1111613.0	2	150.00	9.00	.0
	3080.0	287.0					
51	3110.0	294.2	911602.8	2	150.00	9.00	.0
	3140.0	301.5					
52	3170.0	308.8	873564.6	2	150.00	9.00	.0
	3200.0	316.1					
53	3235.0	324.5	922727.1	2	150.00	9.00	.0
	3270.0	333.0					
54	3305.0	341.5	774242.5	2	150.00	9.00	.0
	3340.0	350.0					
55	3350.0	356.8	183035.8	2	150.00	9.00	.0
	3360.0	363.6					
56	3390.0	383.9	390535.6	2	150.00	9.00	.0
	3420.0	404.3					
57	3450.0	424.6	175178.6	2	150.00	9.00	.0

3480.0 445.0

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *
****

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
1	204.8	0.	149.5	0.	0.	.0	.0
2	239.8	0.	139.0	0.	0.	.0	.0
3	255.0	0.	132.0	0.	0.	.0	.0
4	278.3	0.	123.3	0.	0.	.0	.0
5	303.3	0.	118.4	0.	0.	.0	.0
6	355.0	0.	110.0	0.	0.	.0	.0
7	395.0	0.	104.1	0.	0.	.0	.0
8	420.0	0.	103.3	0.	0.	.0	.0
9	445.0	0.	103.4	0.	0.	.0	.0
10	460.0	0.	102.5	0.	0.	.0	.0
11	501.3	0.	98.6	0.	0.	.0	.0
12	563.8	0.	92.7	0.	0.	.0	.0
13	627.5	0.	86.5	0.	0.		

FORCES DUE TO SURFACE PRESSURES

.0	.0					
	14	672.5	0.	82.4	0.	0.
.0	.0					
	15	713.8	0.	84.1	0.	0.
.0	.0					
	16	771.3	0.	89.1	0.	0.
.0	.0					
	17	807.5	0.	91.4	0.	0.
.0	.0					
	18	857.5	0.	90.6	0.	0.
.0	.0					
	19	932.5	0.	88.8	0.	0.
.0	.0					
	20	997.5	0.	86.3	0.	0.
.0	.0					
	21	1055.0	0.	85.0	0.	0.
.0	.0					
	22	1090.0	0.	85.0	0.	0.
.0	.0					
	23	1120.0	0.	86.3	0.	0.
.0	.0					
	24	1171.3	0.	92.1	0.	0.
.0	.0					
	25	1233.8	0.	101.1	0.	0.
.0	.0					
	26	1298.8	0.	100.8	0.	0.
.0	.0					
	27	1366.3	0.	91.4	0.	0.
.0	.0					
	28	1450.0	0.	93.6	0.	0.
.0	.0					
	29	1550.0	0.	107.5	0.	0.
.0	.0					
	30	1650.0	0.	121.4	0.	0.
.0	.0					
	31	1740.0	0.	130.9	0.	0.
.0	.0					
	32	1807.5	0.	132.7	0.	0.
.0	.0					
	33	1862.5	0.	131.3	0.	0.
.0	.0					
	34	1925.0	0.	134.2	0.	0.
.0	.0					
	35	1985.0	0.	141.2	0.	0.
.0	.0					
	36	2045.0	0.	154.7	0.	0.
.0	.0					
	37	2095.0	0.	169.2	0.	0.
.0	.0					
	38	2155.0	0.	179.2	0.	0.
.0	.0					
	39	2245.0	0.	190.4	0.	0.
.0	.0					
	40	2335.0	0.	201.7	0.	0.

.0 .0
41 2425.0 0. 212.9 0. 0.
.0 .0
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

FORCES DUE TO SURFACE PRESSURES

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
42	2503.4	0.	220.6	0.	0.	.0	.0
43	2548.4	0.	223.4	0.	0.	.0	.0
44	2595.0	0.	227.3	0.	0.	.0	.0
45	2655.0	0.	236.9	0.	0.	.0	.0
46	2715.0	0.	253.4	0.	0.	.0	.0
47	2793.3	0.	275.4	0.	0.	.0	.0
48	2880.0	0.	299.2	0.	0.	.0	.0
49	2966.7	0.	323.1	0.	0.	.0	.0
50	3045.0	0.	342.0	0.	0.	.0	.0
51	3110.0	0.	355.0	0.	0.	.0	.0
52	3170.0	0.	367.0	0.	0.	.0	.0
53	3235.0	0.	377.3	0.	0.	.0	.0

```
  .0        .0
             54   3305.0        0.        385.8         0.        0.
  .0        .0
             55   3350.0        0.        393.4         0.        0.
  .0        .0
             56   3390.0        0.        410.0         0.        0.
  .0        .0
             57   3450.0        0.        436.3         0.        0.
  .0        .0
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                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION A-A'

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE


          TABLE NO. 23

     ************************************************************************
     *                                                                      *
          * INFORMATION  GENERATED DURING ITERATIVE SOLUTION FOR
     THE FACTOR *
          * OF  SAFETY AND  SIDE FORCE  INCLINATION BY  SPENCER'S
     PROCEDURE    *
     *                                                                      *
     ************************************************************************

                         TRIAL      TRIAL
                       FACTOR    SIDE FORCE    FORCE       MOMENT
          DELTA
               ITER-      OF       INCLINATION  IMBALANCE   IMBALANCE
     DELTA-F   THETA
               ATION    SAFETY     (DEGREES)     (LBS.)    (FT.-LBS.)
        (DEGREES)

                  1    3.00000      15.0000     .1134E+07    .2085E+10
               FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
     -.143E+01 -.842E+01
               VALUES  FACTORED  BY   .350E+00  -  DELTAS TOO  LARGE
     -.500E+00 -.295E+01

                  2    2.50000      12.0514     .6336E+06    .1369E+10
               FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
     -.623E+00 -.662E+01
               VALUES  FACTORED  BY    .802E+00 -  DELTAS  TOO  LARGE
     -.500E+00 -.531E+01

                  3    2.00000       6.7376  -.6033E+05    .3525E+09
               FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
     -.225E-01 -.236E+01
               SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
```

```
-.212E-01 -.236E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
-.212E-01 -.236E+01

             4   1.97882     4.3729   .2013E+03   .6611E+06
          FIRST-ORDER  CORRECTIONS  TO   F  AND  THETA  .........
-.168E-03 -.435E-02
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.168E-03 -.435E-02

             5   1.97865     4.3686   .9531E+00   .5445E+02
          FIRST-ORDER  CORRECTIONS  TO   F  AND  THETA  .........
-.400E-06 -.607E-07

          FACTOR OF SAFETY - - - - - - - - -      1.979
          SIDE FORCE INCLINATION - - - - - -      4.37
          NUMBER OF ITERATIONS - - - - - - -      5
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G. WRIGHT
                  ARADI-SADDLEBACK MEADOWS

                  JOB NO. 4816-07, SECTION A-A'

                  FACTOR OF SAFETY ALONG NONCIRCULAR  SURFACE

          TABLE NO. 24
          ************************************************
          * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL    *
          * SURFACE IN CASE OF A SEARCH)                 *
          ************************************************

          SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
          FACTOR OF SAFETY =  1.979     SIDE  FORCE INCLINATION =
4.37 DEGREES

                  VALUES  AT  CENTER  OF  BASE  OF
SLICE

                                                  TOTAL     EFFECTIVE
          SLICE                                   NORMAL    NORMAL
SHEAR
            NO.     X-CENTER   Y-CENTER          STRESS     STRESS
STRESS

              1        204.8      139.1         3526.7     3526.7
957.5
              2        239.8      118.1         6960.5     6954.2
1765.3
              3        255.0      109.0         7512.9     6920.1
1757.2
              4        278.3       95.0         9069.1     7573.5
1911.2
              5        303.3       80.0        10900.3     8437.6
```

751.2					
	6	355.0	52.5	15818.1	11574.9
1002.3					
	7	395.0	32.5	19600.8	14059.7
1201.2					
	8	420.0	26.2	20247.4	14279.1
1218.8					
	9	445.0	21.3	21523.5	15224.0
1294.4					
	10	460.0	18.5	21959.5	15461.3
1313.4					
	11	501.3	10.5	22932.9	15888.2
1347.6					
	12	563.8	-1.5	24473.3	16600.5
1404.6					
	13	627.5	-13.8	25960.1	17242.8
1456.0					
	14	672.5	-21.6	26600.4	17339.4
1463.8					
	15	713.8	-26.7	28317.3	18683.2
1571.3					
	16	771.3	-33.9	31418.2	21263.8
1777.9					
	17	807.5	-38.4	33168.7	22686.2
1891.8					
	18	857.5	-44.7	34559.6	23624.8
1966.9					
	19	932.5	-50.0	34836.9	23476.9
1955.1					
	20	997.5	-50.0	34207.5	22766.5
1898.2					
	21	1055.0	-50.0	33892.6	22379.8
1867.2					
	22	1090.0	-50.0	33892.4	22335.9
1863.7					
	23	1120.0	-47.4	33014.7	21580.5
1803.3					
	24	1171.3	-40.9	32821.6	21732.4
1815.4					
	25	1233.8	-32.9	33067.2	22398.8
1868.8					
	26	1298.8	-24.6	30961.6	20730.9
1735.3					
	27	1366.3	-15.9	26505.0	16728.8
1414.9					
	28	1450.0	-5.2	24411.5	15199.2
1292.5					
	29	1550.0	7.6	24681.1	16142.2
1367.9					
	30	1650.0	20.3	24950.7	17085.1
1443.4					
	31	1740.0	31.9	24453.7	17194.1
1452.1					
	32	1807.5	40.5	22771.0	15965.9

1353.8					
	33	1862.5	47.5	20669.3	14234.6
1215.2					
	34	1925.0	55.5	19425.2	13411.3
1149.3					
	35	1985.0	64.5	18797.5	13269.8
1138.0					
	36	2045.0	75.3	19434.7	14508.0
1237.1					
	37	2095.0	84.4	20772.4	16346.7
1384.3					
	38	2155.0	95.2	20558.6	16734.0
1415.3					
	39	2245.0	111.5	19328.3	16405.4
1389.0					
	40	2335.0	127.7	18098.0	16076.8
1362.7					
1					

SLICE	VALUES AT CENTER OF BASE OF SLICE		TOTAL NORMAL	EFFECTIVE NORMAL	SHEAR
NO.	X-CENTER	Y-CENTER	STRESS	STRESS	STRESS
41	2425.0	144.0	16867.7	15748.2	1336.4
42	2503.4	158.1	15286.2	14951.8	1272.7
43	2548.4	166.2	13984.1	13984.1	1195.2
44	2595.0	174.7	12875.6	12875.6	1106.5
45	2655.0	185.5	12569.8	12569.8	1082.0
46	2715.0	198.5	13295.5	13295.5	1140.1
47	2793.3	217.5	14023.6	14023.6	1198.4
48	2880.0	238.5	14708.9	14708.9	1253.2
49	2966.7	259.5	15394.2	15394.2	1308.1
50	3045.0	278.5	15378.4	15378.4	1306.8
51	3110.0	294.2	14712.8	14712.8	1253.5
52	3170.0	308.8	14098.4	14098.4	1204.3
53	3235.0	324.5	12763.2	12763.2	1097.5

54	3305.0	341.5	10707.4	10707.4	932.9
55	3350.0	356.8	8278.0	8278.0	738.4
56	3390.0	383.9	5875.5	5875.5	546.1
57	3450.0	424.6	2612.6	2612.6	284.9

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = 1.49
(= .149E+01)
SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = 3.34
(= .334E+01)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -11.88
(= -.119E+02)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .27
(= .265E+00)
SHOULD NOT EXCEED .100E+03
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25
****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.979 SIDE FORCE INCLINATION = 4.37 DEGREES

---------- VALUES AT RIGHT SIDE OF SLICE ----------

SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT	SIGMA AT TOP	SIGMA AT BOTTOM
1	239.7	214779.	141.8	.564	7079.2	3165.9

	2	240.0	216701.	141.6	.597
8646.6	2293.7				
	3	270.0	405198.	128.2	.540
9589.9	5890.1				
	4	286.7	528099.	121.6	.499
8296.3	8356.4				
	5	320.0	771854.	110.6	.452
6130.5	11024.9				
	6	390.0	1397468.	88.7	.388
3332.0	16813.6				
	7	400.0	1507805.	85.4	.381
2962.9	17734.3				
	8	440.0	1712902.	81.1	.366
2082.8	19166.9				
	9	450.0	1767396.	80.1	.365
2021.0	19516.9				
	10	470.0	1878447.	77.9	.364
2059.2	20177.2				
	11	532.5	2239357.	71.4	.371
2774.6	21968.8				
	12	595.0	2622409.	65.2	.378
3613.1	23553.6				
	13	660.0	3042775.	58.9	.385
4584.0	25015.3				
	14	685.0	3162844.	57.7	.381
4201.3	25480.2				
	15	742.5	3457583.	54.7	.365
2842.8	26773.6				
	16	800.0	3786587.	51.2	.346
1086.9	28325.6				
	17	815.0	3877419.	50.3	.344
916.5	28723.4				
	18	900.0	4413358.	44.8	.342
847.4	30911.1				
	19	965.0	4540807.	47.1	.353
1942.3	30985.8				
	20	1030.0	4664549.	49.4	.367
3450.4	30879.2				
	21	1080.0	4758183.	51.2	.375
4383.0	30760.4				
	22	1100.0	4795566.	52.0	.378
4705.8	30713.7				
	23	1140.0	4698502.	57.1	.381
5053.7	29988.4				
	24	1202.5	4549149.	65.2	.382
5003.1	28988.0				
	25	1265.0	4401172.	73.3	.394
6176.7	27668.6				
	26	1332.5	4250550.	82.0	.439
11598.7	24818.0				
	27	1400.0	4116830.	90.5	.485
17720.6	21268.8				
	28	1500.0	3933303.	102.7	.511
21010.3	18437.8				

	29	1600.0	3753887.	115.1	.503
18971.4	18263.5				
	30	1700.0	3578582.	127.6	.504
18197.4	17438.8				
	31	1780.0	3444139.	137.5	.528
21039.8	15009.7				
	32	1835.0	3358159.	144.3	.570
26994.8	11057.7				
	33	1890.0	3279362.	150.9	.610
33200.5	6774.6				
	34	1960.0	3185620.	159.1	.636
37007.4	3758.8				
	35	2010.0	3072492.	166.5	.623
33971.2	5176.3				
	36	2080.0	2912995.	177.0	.573
25097.8	9826.5				
	37	2110.0	2841800.	181.6	.571
24432.3	9814.2				
	38	2200.0	2634499.	195.5	.566
22505.7	9742.0				
	39	2290.0	2444874.	209.2	.586
24173.9	7709.7				
	40	2380.0	2272925.	222.5	.606
25984.4	5730.9				
1					

VALUES AT RIGHT SIDE OF SLICE

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		41	2470.0	2118652.	235.3	.636
29364.2	2929.4					
		42	2536.7	2019086.	244.4	.685
36253.1	-1885.2					
		43	2560.0	1988077.	247.4	.702
38914.2	-3716.8					
		44	2630.0	1902547.	256.1	.728
43563.6	-6797.7					
		45	2680.0	1842996.	262.3	.678
35600.6	-1144.8					
		46	2750.0	1696755.	273.4	.590
23196.7	6887.0					
		47	2836.7	1505418.	287.5	.502
12770.2	12524.0					
		48	2923.3	1304410.	302.2	.428
5937.9	14981.9					
		49	3010.0	1093730.	317.7	.374
2108.3	15014.7					

```
            50        3080.0     923745.        330.7        .353
865.1    13980.8
            51        3140.0     784548.        342.2        .342
338.4    12807.7
            52        3200.0     651354.        354.1        .342
306.9    11376.5
            53        3270.0     511182.        368.3        .363
950.5     9562.0
            54         3340.0     394444.        382.3        .404
2090.0     7742.5
            55        3360.0     296584.        392.5        .417
2146.2     6372.5
            56        3420.0      89534.        422.4        .479
2070.1     2664.2
            57       3480.0          -0.        124.8     BELOW
21.4      -21.6

            CHECK SUMS - (ALL SHOULD BE SMALL)
            SUM OF  FORCES IN VERTICAL DIRECTION      =          1.49
(=  .149E+01)
                 SHOULD NOT EXCEED      .100E+03
            SUM OF FORCES IN  HORIZONTAL DIRECTION  =          3.34
(=   .334E+01)
                 SHOULD NOT EXCEED      .100E+03
            SUM OF MOMENTS  ABOUT COORDINATE ORIGIN =        -11.88
(= -.119E+02)
                 SHOULD NOT EXCEED      .100E+03
            SHEAR STRENGTH/SHEAR FORCE CHECK-SUM    =          .27
(=   .265E+00)
                 SHOULD NOT EXCEED      .100E+03

            END-OF-FILE ENCOUNTERED WHILE READING COMMAND
            WORDS - END OF PROBLEM(S) ASSUMED
```

CROSS SECTION A-A'

Slice (b)

(Seismic)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************

     ***************************************************************
           *
           *        RESULTS OF COMPUTATIONS PERFORMED USING THIS
     COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
     THEY *
           *   HAVE BEEN   VERIFIED   BY INDEPENDENT   ANALYSES,
     EXPERIMENTAL   *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
     THE   *
           *  ALGORITHMS  AND ANALYTICAL PROCEDURES  USED IN  THE
     COMPUTER  *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
          *
           *PROGRAM BEFORE ATTEMPTING ITS USE.
          *
           *
        *
           *      NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN  G.
     WRIGHT *
           *   MAKE  OR  ASSUME   LIABILITY  FOR  ANY  WARRANTIES,
     EXPRESSED OR  *
           *  IMPLIED,  CONCERNING   THE  ACCURACY,   RELIABILITY,
     USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
        *
           *
        *

     ***************************************************************
     1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
     G. WRIGHT
                      ARADI-SADDLEBACK MEADOWS

                      JOB NO. 4816-07, SECTION A-A'

                      FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
EL TORO RD.FILL\BUTTRESS FILL\QAL

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	80.000	90.000
2	390.000	90.000
3	400.000	85.000
4	440.000	75.000
5	470.000	100.000
6	595.000	100.000
7	815.000	210.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000

PROFILE LINE 3 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1890.000	210.000
2	2010.000	220.000
3	2110.000	260.000
4	2470.000	285.000
5	2560.000	280.000

6	2630.000	280.000
7	2750.000	320.000
8	3010.000	400.000
9	3200.000	430.000
10	3360.000	430.000
11	3510.000	460.000
12	3610.000	360.000

PROFILE LINE 4 - MATERIAL TYPE = 1
BUTTRESS FILL

POINT	X	Y
1	3510.000	460.000
2	3560.000	470.000
3	3770.000	530.000
4	3830.000	545.000
5	4160.000	550.000
6	4260.000	585.000
7	4400.000	585.000

PROFILE LINE 5 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3770.000	400.000
2	3940.000	510.000
3	4335.000	535.000
4	4400.000	585.000
5	4425.000	585.000
6	4620.000	640.000
7	4700.000	640.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL\QAL

```
                UNIT WEIGHT OF MATERIAL =  130.000

                CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
                COHESION - - - - - - - - -     350.000
                FRICTION ANGLE - - - - - -  28.000 DEGREES

                PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
                NUMBER OF THE PIEZOMETRIC LINE USED =  1
                NEGATIVE PORE PRESSURES SET TO ZERO

            DATA FOR MATERIAL TYPE  2
            QLS

                UNIT WEIGHT OF MATERIAL =  125.000

                CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
                COHESION - - - - - - - - -     450.000
                FRICTION ANGLE - - - - - -  15.000 DEGREES

                PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
                NUMBER OF THE PIEZOMETRIC LINE USED =  1
                NEGATIVE PORE PRESSURES SET TO ZERO

            ALL  NEW  MATERIAL  PROPERTIES DEFINED  -  NO  OLD DATA
RETAINED
1           UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                        ARADI-SADDLEBACK MEADOWS

                        JOB NO. 4816-07, SECTION A-A

                        FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

            TABLE NO.  4
            ******************************
            * NEW PIEZOMETRIC LINE DATA *
            ******************************

            LINE
             NO.     POINT        X             Y

               1 - UNIT WEIGHT OF WATER =   62.40

               1         1       80.000      115.000

               1         2     1080.000      135.000

               1         3     2080.000      155.000

               1         4     3080.000      175.000
```

1 5 4700.000 200.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9

****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y
1	170.000	160.000
2	320.000	70.000
3	400.000	30.000
4	660.000	-20.000
5	900.000	-50.000
6	1100.000	-50.000
7	1960.000	60.000
8	2680.000	190.000
9	3340.000	350.000
10	3480.000	445.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

SEISMIC COEFFICIENT = .150

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES

(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR
CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10

****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA
WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000

16	2010.000	220.000
17	2110.000	260.000
18	2470.000	285.000
19	2560.000	280.000
20	2630.000	280.000
21	2750.000	320.000
22	3010.000	400.000
23	3200.000	430.000
24	3360.000	430.000
25	3510.000	460.000
26	3560.000	470.000
27	3770.000	530.000
28	3830.000	545.000
29	4160.000	550.000
30	4260.000	585.000
31	4400.000	585.000
32	4425.000	585.000
33	4620.000	640.000
34	4700.000	640.000

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *
****

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	170.0	160.0					
1	204.8	139.1	189342.8	1	350.00	28.00	.0
	239.7	118.2					
2	239.8	118.1	1757.2	1	350.00	28.00	6.2
	240.0	118.0					
3	255.0	109.0	179400.0	1	350.00	28.00	592.8

		1700.0	26.7				
	31	1740.0	31.9	1981395.0	2	450.00	
15.00	7259.6						
		1780.0	37.0				
	32	1807.5	40.5	1268478.0	2	450.00	
15.00	6805.1						
		1835.0	44.0				
	33	1862.5	47.5	1151363.0	2	450.00	
15.00	6434.7						
		1890.0	51.0				
	34	1925.0	55.5	1377193.0	2	450.00	
15.00	6013.9						
		1960.0	60.0				
	35	1985.0	64.5	958767.4	2	450.00	
15.00	5527.8						
		2010.0	69.0				
	36	2045.0	75.3	1388212.0	2	450.00	
15.00	4926.7						
		2080.0	81.7				
	37	2095.0	84.4	636093.8	2	450.00	
15.00	4425.7						
		2110.0	87.1				
	38	2155.0	95.2	1889063.0	2	450.00	
15.00	3824.6						
		2200.0	103.3				
	39	2245.0	111.5	1776563.0	2	450.00	
15.00	2922.9						
		2290.0	119.6				
	40	2335.0	127.7	1664063.0	2	450.00	
15.00	2021.2						
		2380.0	135.8				
	41	2425.0	144.0	1551563.0	2	450.00	
15.00	1119.6						
		2470.0	152.1				
	42	2503.4	158.1	1043234.0	2	450.00	
15.00	334.4						
		2536.7	164.1				
	43	2548.4	166.2	332547.6	2	450.00	
15.00	.0						
		2560.0	168.3				
	44	2595.0	174.7	921788.3	2	450.00	
15.00	.0						
		2630.0	181.0				

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

```
**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
         *

**********************************************************************
*

          SLICE                                  SLICE    MATL.
FRICTION    PORE
            NO.      X            Y        WEIGHT    TYPE    COHESION
ANGLE   PRESSURE

                    2630.0     181.0
               45   2655.0      185.5     642795.2      2      450.00
15.00          .0
                    2680.0     190.0
               46   2715.0      198.5     961174.3      2      450.00
15.00          .0
                    2750.0     207.0
               47   2793.3      217.5     1255136.0     2      450.00
15.00          .0
                    2836.7     228.0
               48   2880.0      238.5     1316415.0     2      450.00
15.00          .0
                    2923.3     249.0
               49   2966.7      259.5     1377691.0     2      450.00
15.00          .0
                    3010.0     270.0
               50   3045.0      278.5     1111613.0     2      450.00
15.00          .0
                    3080.0     287.0
               51   3110.0      294.2     911602.8      2      450.00
15.00          .0
                    3140.0     301.5
               52   3170.0      308.8     873564.6      2      450.00
15.00          .0
                    3200.0     316.1
               53   3235.0      324.5     922727.1      2      450.00
15.00          .0
                    3270.0     333.0
               54   3305.0      341.5     774242.5      2      450.00
15.00          .0
                    3340.0     350.0
               55   3350.0      356.8     183035.8      2      450.00
15.00          .0
                    3360.0     363.6
               56   3390.0      383.9     390535.6      2      450.00
15.00          .0
                    3420.0     404.3
               57   3450.0      424.6     175178.6      2      450.00
15.00          .0
```

3480.0 445.0

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *

* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)

****

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	FORCES DUE TO SURFACE PRESSURES: NORMAL FORCE	SHEAR FORCE	X	Y
1	204.8	28401.	149.5	0.	0.	.0	.0
2	239.8	264.	139.0	0.	0.	.0	.0
3	255.0	26910.	132.0	0.	0.	.0	.0
4	278.3	18402.	123.3	0.	0.	.0	.0
5	303.3	49463.	118.4	0.	0.	.0	.0
6	355.0	153679.	110.0	0.	0.	.0	.0
7	395.0	27240.	104.1	0.	0.	.0	.0
8	420.0	117735.	103.3	0.	0.	.0	.0
9	445.0	31289.	103.4	0.	0.	.0	.0
10	460.0	63852.	102.5	0.	0.	.0	.0
11	501.3	208443.	98.6	0.	0.	.0	.0
12	563.8	222528.	92.7	0.	0.	.0	.0
13	627.5	245578.	86.5	0.	0.	.0	.0

.0	.0					
	14	672.5	97693.	82.4	0.	0.
.0	.0					
	15	713.8	239175.	84.1	0.	0.
.0	.0					
	16	771.3	265306.	89.1	0.	0.
.0	.0					
	17	807.5	73060.	91.4	0.	0.
.0	.0					
	18	857.5	431376.	90.6	0.	0.
.0	.0					
	19	932.5	338203.	88.8	0.	0.
.0	.0					
	20	997.5	332109.	86.3	0.	0.
.0	.0					
	21	1055.0	253125.	85.0	0.	0.
.0	.0					
	22	1090.0	101250.	85.0	0.	0.
.0	.0					
	23	1120.0	200581.	86.3	0.	0.
.0	.0					
	24	1171.3	311586.	92.1	0.	0.
.0	.0					
	25	1233.8	313936.	101.1	0.	0.
.0	.0					
	26	1298.8	317455.	100.8	0.	0.
.0	.0					
	27	1366.3	271723.	91.4	0.	0.
.0	.0					
	28	1450.0	370749.	93.6	0.	0.
.0	.0					
	29	1550.0	374891.	107.5	0.	0.
.0	.0					
	30	1650.0	379033.	121.4	0.	0.
.0	.0					
	31	1740.0	297209.	130.9	0.	0.
.0	.0					
	32	1807.5	190272.	132.7	0.	0.
.0	.0					
	33	1862.5	172704.	131.3	0.	0.
.0	.0					
	34	1925.0	206579.	134.2	0.	0.
.0	.0					
	35	1985.0	143815.	141.2	0.	0.
.0	.0					
	36	2045.0	208232.	154.7	0.	0.
.0	.0					
	37	2095.0	95414.	169.2	0.	0.
.0	.0					
	38	2155.0	283359.	179.2	0.	0.
.0	.0					
	39	2245.0	266484.	190.4	0.	0.
.0	.0					
	40	2335.0	249609.	201.7	0.	0.

.0 .0

41 2425.0 232734. 212.9 0. 0.

.0 .0

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *

* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
42	2503.4	156485.	220.6	0.	0.	.0	.0
43	2548.4	49882.	223.4	0.	0.	.0	.0
44	2595.0	138268.	227.3	0.	0.	.0	.0
45	2655.0	96419.	236.9	0.	0.	.0	.0
46	2715.0	144176.	253.4	0.	0.	.0	.0
47	2793.3	188270.	275.4	0.	0.	.0	.0
48	2880.0	197462.	299.2	0.	0.	.0	.0
49	2966.7	206654.	323.1	0.	0.	.0	.0
50	3045.0	166742.	342.0	0.	0.	.0	.0
51	3110.0	136740.	355.0	0.	0.	.0	.0
52	3170.0	131035.	367.0	0.	0.	.0	.0
53	3235.0	138409.	377.3	0.	0.	.0	.0

FORCES DUE TO SURFACE PRESSURES

```
  .0        .0
             54   3305.0   116136.      385.8        0.          0.
  .0        .0
             55   3350.0    27455.      393.4        0.          0.
  .0        .0
             56   3390.0    58580.      410.0         0.         0.
  .0        .0
             57   3450.0    26277.       436.3       0.          0.
  .0        .0
1           UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION A-A'

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE


            TABLE NO. 23

**********************************************************************
*
            * INFORMATION GENERATED DURING ITERATIVE SOLUTION FOR
THE FACTOR *
            * OF SAFETY AND SIDE FORCE INCLINATION BY SPENCER'S
PROCEDURE  *

**********************************************************************
*
                                  TRIAL       TRIAL
                          FACTOR   SIDE-FORCE   FORCE       MOMENT
        DELTA
          ITER-     OF     INCLINATION  IMBALANCE  IMBALANCE
DELTA-F   THETA
          ATION  SAFETY   (DEGREES)    (LBS.)   (FT.-LBS.)
  (DEGREES)

                1  3.00000    15.0000   .9404E+07   .4085E+10
            FIRST-ORDER CORRECTIONS TO F AND THETA .........
-.520E+01 -.197E+01
            VALUES FACTORED BY  .962E-01 - DELTAS TOO LARGE
-.500E+00 -.189E+00

                2  2.50000    14.8106   .8314E+07   .3635E+10
            FIRST-ORDER CORRECTIONS TO F AND THETA .........
-.316E+01 -.209E+01
            VALUES FACTORED BY   .158E+00 - DELTAS TOO LARGE
-.500E+00 -.330E+00

                3  2.00000    14.4806   .6658E+07   .2962E+10
            FIRST-ORDER CORRECTIONS TO F AND THETA .........
-.160E+01 -.227E+01
            VALUES FACTORED BY   .312E+00 - DELTAS TOO LARGE
```

```
-.500E+00 -.708E+00

              4   1.50000     13.7731    .3850E+07    .1861E+10
             FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.518E+00 -.254E+01
             VALUES  FACTORED  BY    .966E+00  -  DELTAS TOO  LARGE
-.500E+00 -.245E+01

              5   1.00000     11.3192  -.1844E+07  -.1245E+09
             FIRST-ORDER  CORRECTIONS  TO  F AND  THETA  .........
.881E-01 -.221E+01
             SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.106E+00 -.221E+01
             SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
.106E+00 -.221E+01
             SECOND-ORDER  CORRECTION  -  ITERATION      3  ........
.106E+00 -.221E+01

              6   1.10619     9.1073    .4832E+05  -.6991E+08
             FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.863E-03  .481E+00
             SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.822E-03  .481E+00
             SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
-.822E-03  .481E+00

              7   1.10537     9.5882  -.1148E+02  -.4669E+05
             FIRST-ORDER  CORRECTIONS  TO  F  AND THETA  .........
.231E-05   .272E-03
             SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.231E-05  -.272E-03

              8   1.10537     9.5884  -.9883E+00    .1327E+03
             FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
.594E-07  -.193E-05
             SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.594E-07  -.193E-05

              9   1.10537     9.5884  -.1113E+01  -.1973E+03
             FIRST-ORDER  CORRECTIONS  TO  F AND  THETA  .........
.786E-07 -.560E-07
             SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.786E-07 -.544E-07

             10   1.10537     9.5884  -.2148E+00    .5586E+02
             FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
.120E-07 -.584E-06

             FACTOR OF SAFETY - - - - - - - - -      1.105
             SIDE FORCE INCLINATION - - - - -        9.59
             NUMBER OF ITERATIONS - - - - - -       10
1            UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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                    ARADI-SADDLEBACK MEADOWS
```

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 24

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.105 SIDE FORCE INCLINATION = 9.59 DEGREES

SLICE NO.	VALUES AT CENTER OF BASE OF SLICE X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
1	204.8	139.1	5469.4	5469.4	2947.5
2	239.8	118.1	10497.1	10490.8	5363.0
3	255.0	109.0	11068.5	10475.7	5355.7
4	278.3	95.0	12981.9	11486.4	5841.8
5	303.3	80.0	13332.3	10869.6	3041.9
6	355.0	52.5	18383.1	14139.9	3834.7
7	395.0	32.5	22662.3	17121.2	4557.4
8	420.0	26.2	21307.7	15339.4	4125.5
9	445.0	21.3	22645.0	16345.4	4369.3
10	460.0	18.5	23095.3	16597.1	4430.3
11	501.3	10.5	24093.1	17048.4	4539.7
12	563.8	-1.5	25674.8	17802.1	4722.4
13	627.5	-13.8	27198.2	18480.9	4887.0
14	672.5	-21.6	27380.3	18119.3	4799.3
15	713.8	-26.7	29153.9	19519.7	

5138.8					
	16	771.3	-33.9	32366.4	22212.0
5791.4					
	17	807.5	-38.4	34177.8	23695.4
6151.0					
	18	857.5	-44.7	35605.4	24670.6
6387.4					
	19	932.5	-50.0	34838.8	23478.8
6098.5					
	20	997.5	-50.0	34200.1	22759.1
5924.0					
	21	1055.0	-50.0	33879.5	22366.7
5828.9					
	22	1090.0	-50.0	33877.6	22321.1
5817.9					
	23	1120.0	-47.4	32111.6	20677.3
5419.4					
	24	1171.3	-40.9	31927.7	20838.5
5458.5					
	25	1233.8	-32.9	32173.4	21505.0
5620.0					
	26	1298.8	-24.6	30122.7	19892.0
5229.0					
	27	1366.3	-15.9	25775.7	15999.5
4285.5					
	28	1450.0	-5.2	23738.5	14526.2
3928.3					
	29	1550.0	7.6	24011.2	15472.2
4157.7					
	30	1650.0	20.3	24283.9	16418.3
4387.0					
	31	1740.0	31.9	23806.7	16547.1
4418.2					
	32	1807.5	40.5	22169.3	15364.2
4131.5					
	33	1862.5	47.5	20121.4	13686.7
3724.8					
	34	1925.0	55.5	18912.0	12898.1
3533.7					
	35	1985.0	64.5	18097.3	12569.5
3454.0					
	36	2045.0	75.3	18714.7	13788.0
3749.4					
	37	2095.0	84.4	20007.0	15581.2
4184.1					
	38	2155.0	95.2	19803.9	15979.3
4280.6					
	39	2245.0	111.5	18622.4	15699.5
4212.7					
	40	2335.0	127.7	17440.9	15419.7
4144.9					
1					

-------- VALUES AT CENTER OF BASE OF

SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	2425.0	144.0	16259.4	15139.9	4077.1
42	2503.4	158.1	14738.7	14404.3	3898.8
43	2548.4	166.2	13485.0	13485.0	3676.0
44	2595.0	174.7	12416.3	12416.3	3416.9
45	2655.0	185.5	12121.5	12121.5	3345.4
46	2715.0	198.5	12612.0	12612.0	3464.3
47	2793.3	217.5	13303.6	13303.6	3632.0
48	2880.0	238.5	13954.5	13954.5	3789.8
49	2966.7	259.5	14605.4	14605.4	3947.5
50	3045.0	278.5	14590.4	14590.4	3943.9
51	3110.0	294.2	13958.2	13958.2	3790.6
52	3170.0	308.8	13374.6	13374.6	3649.2
53	3235.0	324.5	12106.4	12106.4	3341.8
54	3305.0	341.5	10153.7	10153.7	2868.4
55	3350.0	356.8	7036.5	7036.5	2112.8
56	3390.0	383.9	4956.1	4956.1	1608.5
57	3450.0	424.6	2130.7	2130.7	923.6

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = 1.58
(= .158E+01)
SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = 2.92
(= .292E+01)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = 75.86
(= .759E+02)
SHOULD NOT EXCEED .100E+03

SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .51
(= .508E+00)
SHOULD NOT EXCEED .100E+03
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.105 SIDE FORCE INCLINATION = 9.59 DEGREES

VALUES AT RIGHT SIDE OF SLICE

SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT	SIGMA AT TOP	SIGMA AT BOTTOM
1	239.7	411375.	144.3	.623	16878.7	2526.3
2	240.0	414923.	144.1	.660	20296.9	418.4
3	270.0	752633.	131.4	.602	22927.0	5507.2
4	286.7	964373.	125.4	.560	20413.0	9659.4
5	320.0	1287468.	117.4	.529	16576.5	11721.5
6	390.0	2056368.	98.4	.458	10995.1	18320.1
7	400.0	2189879.	95.1	.448	10249.4	19476.9
8	440.0	2404060.	91.6	.431	8647.4	20845.7
9	450.0	2460805.	90.6	.429	8513.6	21141.5
10	470.0	2575997.	88.6	.428	8519.2	21636.2
11	532.5	2946038.	82.3	.431	9444.2	22746.3

	12	595.0	3332655.	76.2	.435
10380.1	23761.2				
	13	660.0	3750546.	69.9	.438
11369.4	24710.1				
	14	685.0	3859928.	68.8	.432
10651.0	25170.2				
	15	742.5	4129542.	65.4	.411
8172.6	26807.1				
	16	800.0	4434132.	60.5	.382
4950.5	29109.6				
	17	815.0	4518601.	59.0	.377
4503.1	29654.9				
	18	900.0	5015401.	50.6	.363
3183.5	32506.7				
	19	965.0	5074426.	51.0	.367
3698.1	32691.2				
	20	1030.0	5128129.	51.9	.376
4784.5	32538.0				
	21	1080.0	5166992.	52.8	.381
5384.2	32355.1				
	22	1100.0	5182314.	53.2	.382
5566.1	32285.1				
	23	1140.0	5032118.	57.7	.384
5599.8	31514.0				
	24	1202.5	4803254.	64.5	.380
4938.5	30553.0				
	25	1265.0	4580255.	70.7	.384
5299.4	29532.1				
	26	1332.5	4352507.	78.1	.423
9876.6	26999.8				
	27	1400.0	4144609.	87.4	.470
15935.9	22881.0				
	28	1500.0	3859074.	102.1	.508
20020.8	18253.3				
	29	1600.0	3589057.	116.2	.508
18488.6	16716.4				
	30	1700.0	3334559.	129.4	.512
17643.7	15194.0				
	31	1780.0	3144549.	139.7	.539
20088.0	12460.4				
	32	1835.0	3023864.	147.2	.586
25734.5	8149.7				
	33	1890.0	2912924.	155.5	.638
32119.3	2994.9				
	34	1960.0	2782552.	166.3	.682
36859.1	-1646.1				
	35	2010.0	2646154.	176.0	.683
35022.5	-1681.2				
	36	2080.0	2461265.	189.0	.645
27322.8	1858.2				
	37	2110.0	2381893.	194.2	.647
26747.3	1638.4				
	38	2200.0	2158856.	209.3	.650
24841.1	1291.3				

	39	2290.0	1966214.	223.9	.682
26556.3	-1199.4				
	40	2380.0	1803966.	238.1	.716
28545.6	-3653.3				
1					

---------- VALUES AT RIGHT SIDE OF SLICE ----------

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		41	2470.0	1672112.	251.6	.761
32308.3	-7104.0					
		42	2536.7	1597189.	261.3	.829
40013.0	-13128.1					
		43	2560.0	1575870.	264.7	.856
43232.7	-15642.6					
		44	2630.0	1519061.	275.3	.914
50546.8	-21517.3					
		45	2680.0	1479937.	282.8	.870
44050.7	-16689.6					
		46	2750.0	1362602.	296.5	.796
33160.8	-9269.8					
		47	2836.7	1207425.	313.1	.717
23090.7	-3028.6					
		48	2923.3	1042925.	329.0	.643
15377.3	-1163.2					
		49	3010.0	869101.	343.6	.578
9880.1	3575.2					
		50	3080.0	728878.	354.4	.543
7300.4	4283.7					
		51	3140.0	614957.	362.9	.516
5580.3	4609.7					
		52	3200.0	506823.	370.4	.489
4193.1	4797.0					
		53	3270.0	395338.	378.1	.465
3172.3	4867.6					
		54	3340.0	306443.	385.3	.441
2433.6	5120.5					
		55	3360.0	224605.	395.1	.454
2308.2	4071.5					
		56	3420.0	58428.	424.9	.547
1954.9	1100.2					
		57	3480.0	0.	394.7	BELOW
-1.4	1.5					

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = 1.58

```
(=  .158E+01)
                SHOULD NOT EXCEED      .100E+03
          SUM OF FORCES IN  HORIZONTAL DIRECTION  =          2.92
(=  .292E+01)
                SHOULD NOT EXCEED      .100E+03
          SUM  OF MOMENTS ABOUT COORDINATE  ORIGIN =        75.86
(=  .759E+02)
                SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM    =          .51
(=  .508E+00)
                SHOULD NOT EXCEED      .100E+03

          END-OF-FILE ENCOUNTERED WHILE READING COMMAND
          WORDS - END OF PROBLEM(S) ASSUMED
```

CROSS SECTION A-A'

Slice (c)

(Static)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************


     ***************************************************************
           *
      *
           *        RESULTS OF COMPUTATIONS PERFORMED USING THIS
     COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
     THEY..* _
           *   HAVE  BEEN  VERIFIED  BY  INDEPENDENT  ANALYSES,
     EXPERIMENTAL   *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
     THE    *
           *  ALGORITHMS  AND ANALYTICAL  PROCEDURES  USED IN  THE
     COMPUTER  *
           *PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
      *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
      *
      *
           *
      *
           *     NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
     WRIGHT *
           *  MAKE  OR  ASSUME  LIABILITY  FOR  ANY  WARRANTIES;
     EXPRESSED OR  *
           *  IMPLIED,  CONCERNING  THE  ACCURACY,  RELIABILITY,
     USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
      *
           *
      *

     ***************************************************************
     1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
     G. WRIGHT
                      ARADI-SADDLEBACK MEADOWS

                      JOB NO. 4816-07, SECTION A-A'

                      FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
EL TORO RD.FILL\BUTTRESS FILL

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	230.000	125.000
2	275.000	125.000
3	290.000	140.000
4	390.000	90.000

PROFILE LINE 3 - MATERIAL TYPE = 1
QAL

POINT	X	Y
1	80.000	110.000
2	85.000	100.000
3	130.000	100.000
4	170.000	125.000
5	230.000	125.000
6	390.000	90.000

PROFILE LINE 4 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	80.000	90.000
2	390.000	90.000
3	400.000	85.000

4	440.000	75.000
5	470.000	100.000
6	595.000	100.000
7	815.000	210.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000

PROFILE LINE 5 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1890.000	210.000
2	2010.000	220.000
3	2110.000	260.000
4	2470.000	285.000
5	2560.000	280.000
6	2630.000	280.000
7	2750.000	320.000
8	3010.000	400.000
9	3200.000	430.000
10	3360.000	430.000
11	3510.000	460.000
12	3610.000	360.000

PROFILE LINE 6 - MATERIAL TYPE = 1
BUTTRESS FILL

POINT	X	Y
1	3510.000	460.000
2	3560.000	470.000
3	3770.000	530.000
4	3830.000	545.000
5	4160.000	550.000
6	4260.000	585.000
7	4400.000	585.000

PROFILE LINE 7 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3770.000	400.000
2	3940.000	510.000

3	4335.000	535.000
4	4400.000	585.000
5	4425.000	585.000
6	4620.000	640.000
7	4700.000	640.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3

****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL\QAL

UNIT WEIGHT OF MATERIAL = 130.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION - - - - - - - - - 250.000
FRICTION ANGLE - - - - - 25.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE 2
QLS

UNIT WEIGHT OF MATERIAL = 125.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION - - - - - - - - - 150.000
FRICTION ANGLE - - - - - 9.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 4
****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO.	POINT	X	Y
1 - UNIT WEIGHT OF WATER = 62.40			
1	1	80.000	115.000
1	2	1080.000	135.000
1	3	2080.000	155.000
1	4	3080.000	175.000
1	5	4700.000	200.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9
****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y
1	135.000	140.000
2	380.000	100.000

3	730.000	40.000
4	900.000	20.000
5	1120.000	20.000
6	1960.000	60.000
7	2220.000	100.000
8	2680.000	190.000
9	3340.000	350.000
10	3480.000	445.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

SEISMIC COEFFICIENT = .000

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10
****
* NEW SLOPE GEOMETRY DATA *

****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA
WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000
16	2010.000	220.000
17	2110.000	260.000
18	2470.000	285.000
19	2560.000	280.000
20	2630.000	280.000
21	2750.000	320.000
22	3010.000	400.000
23	3200.000	430.000
24	3360.000	430.000
25	3510.000	460.000
26	3560.000	470.000
27	3770.000	530.000
28	3830.000	545.000
29	4160.000	550.000
30	4260.000	585.000
31	4400.000	585.000
32	4425.000	585.000
33	4620.000	640.000
34	4700.000	640.000

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

```
**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
         *

**********************************************************************
*

          SLICE                                  SLICE   MATL.
FRICTION    PORE
            NO.       X            Y          WEIGHT    TYPE    COHESION
ANGLE   PRESSURE

                    135.0        140.0
                1   152.5        137.1       59763.9      1       250.00
25.00          .0
                    170.0        134.3
                2   198.4        129.6      224453.2      1       250.00
25.00          .0
                    226.9        125.0
                3   228.4        124.7       14322.4      1       250.00
25.00          .0
                    230.0        124.5
                4   234.6        123.7       43300.1      1       250.00
25.00          .0
                    239.2        123.0
                5   239.6        122.9        3869.8      2       150.00
9.00           .0
                    240.0        122.9
                6   252.7        120.8      115029.3      2       150.00
9.00           .0
                    265.4        118.7
                7   267.7        118.3       19190.1      2       150.00
9.00          26.2
                    270.0        118.0
                8   272.5        117.6       21221.6      2       150.00
9.00          81.1
                    275.0        117.1
                9   282.5        115.9       69955.1      2       150.00
9.00         195.4
                    290.0        114.7
               10   327.6        108.6      509485.5      2       150.00
9.00         710.9
                    365.2        102.4
               11   372.6        101.2      132675.8      1       250.00
25.00       1225.5
                    380.0        100.0
               12   385.0         99.1       95183.7      1       250.00
25.00       1370.1
                    390.0         98.3
               13   395.0         97.4       99940.1      1       250.00
25.00       1489.6
```

		400.0	96.6			
	14	420.0	93.1	447323.9	1	250.00
25.00	1788.2					
		440.0	89.7			
	15	445.0	88.9	123721.8	1	250.00
25.00	2086.8					
		450.0	88.0			
	16	452.3	87.6	58808.3	1	250.00
25.00	2174.3					
		454.6	87.2			
	17	462.3	85.9	197256.6	2	150.00
9.00	2293.8					
		470.0	84.6			
	18	501.3	79.2	853013.4	2	150.00
9.00	2758.7					
		532.5	73.9			
	19	563.8	68.5	936718.8	2	150.00
9.00	3505.3					
		595.0	63.1			
	20	640.0	55.4	1485804.0	2	150.00
9.00	4416.1					
		685.0	47.7			
	21	707.5	43.9	840457.1	2	150.00
9.00	5222.4					
		730.0	40.0			
	22	765.0	35.9	1526345.0	2	150.00
9.00	5791.8					
		800.0	31.8			

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

```
**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
          *
**********************************************************************
*
```

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE

		800.0	31.8				
	23	807.5	30.9	357089.3	2	150.00	
9.00	6156.9						
		815.0	30.0				
	24	857.5	25.0	2135413.0	2	150.00	
9.00	6586.3						
		900.0	20.0				
	25	932.5	20.0	1685938.0	2	150.00	
9.00	6991.9						
		965.0	20.0				
	26	997.5	20.0	1645313.0	2	150.00	
9.00	7073.0						
		1030.0	20.0				
	27	1055.0	20.0	1250000.0	2	150.00	
9.00	7144.8						
		1080.0	20.0				
	28	1100.0	20.0	1000000.0	2	150.00	
9.00	7201.0						
		1120.0	20.0				
	29	1130.0	20.5	498809.5	2	150.00	
9.00	7208.7						
		1140.0	21.0				
	30	1171.3	22.4	1582496.0	2	150.00	
9.00	7137.6						
		1202.5	23.9				
	31	1233.8	25.4	1637370.0	2	150.00	
9.00	7029.9						
		1265.0	26.9				
	32	1298.8	28.5	1668415.0	2	150.00	
9.00	6917.9						
		1332.5	30.1				
	33	1366.3	31.7	1409263.0	2	150.00	
9.00	6801.5						
		1400.0	33.3				
	34	1450.0	35.7	1959822.0	2	150.00	
9.00	6657.2						
		1500.0	38.1				
	35	1550.0	40.5	2087798.0	2	150.00	
9.00	6484.8						
		1600.0	42.9				
	36	1650.0	45.2	2215774.0	2	150.00	
9.00	6312.5						
		1700.0	47.6				
	37	1740.0	49.5	1804762.0	2	150.00	
9.00	6157.4						
		1780.0	51.4				
	38	1835.0	54.0	2281845.0	2	150.00	
9.00	5993.7						
		1890.0	56.7				
	39	1925.0	58.3	1352604.0	2	150.00	
9.00	5838.6						
		1960.0	60.0				
	40	1985.0	63.8	962940.8	2	150.00	
9.00	5569.4						

		2010.0	67.7				
	41	2045.0	73.1	1408077.0	2	150.00	
9.00	5068.3						
		2080.0	78.5				
	42	2095.0	80.8	649615.4	2	150.00	
9.00	4650.7						
		2110.0	83.1				
	43	2165.0	91.5	2368864.0	2	150.00	
9.00	4066.1						
		2220.0	100.0				
	44	2261.7	108.2	1691459.0	2	150.00	
9.00	3150.0						
		2303.3	116.3				

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	2303.3	116.3					
45	2345.0	124.5	1581904.0	2	150.00	9.00	2236.6
	2386.7	132.6					
46	2428.3	140.8	1472353.0	2	150.00	9.00	1323.2
	2470.0	148.9					
47	2509.5	156.6	1246734.0	2	150.00	9.00	433.3
	2549.1	164.4					
48	2554.5	165.5	157070.4	2	150.00	9.00	.0
	2560.0	166.5					
49	2595.0	173.4	933016.3	2	150.00	9.00	.0

	2630.0	180.2				
50	2655.0	185.1	645154.0	2	150.00	
9.00	.0					
	2680.0	190.0				
51	2715.0	198.5	961174.3	2	150.00	
9.00	.0					
	2750.0	207.0				
52	2793.3	217.5	1255136.0	2	150.00	
9.00	.0					
	2836.7	228.0				
53	2880.0	238.5	1316415.0	2	150.00	
9.00	.0					
	2923.3	249.0				
54	2966.7	259.5	1377691.0	2	150.00	
9.00	.0					
	3010.0	270.0				
55	3045.0	278.5	1111613.0	2	150.00	
9.00	.0					
	3080.0	287.0				
56	3110.0	294.2	911602.8	2	150.00	
9.00	.0					
	3140.0	301.5				
57	3170.0	308.8	873564.6	2	150.00	
9.00	.0					
	3200.0	316.1				
58	3235.0	324.5	922727.1	2	150.00	
9.00	.0					
	3270.0	333.0				
59	3305.0	341.5	774242.5	2	150.00	
9.00	.0					
	3340.0	350.0				
60	3350.0	356.8	183035.8	2	150.00	
9.00	.0					
	3360.0	363.6				
61	3390.0	383.9	390535.6	2	150.00	
9.00	.0					
	3420.0	404.3				
62	3450.0	424.6	175178.6	2	150.00	
9.00	.0					
	3480.0	445.0				

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR

CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*

****
*

FORCES DUE TO
SURFACE PRESSURES

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
1	152.5	0.	143.7	0.	0.	.0	.0
2	198.4	0.	144.8	0.	0.	.0	.0
3	228.4	0.	142.4	0.	0.	.0	.0
4	234.6	0.	141.9	0.	0.	.0	.0
5	239.6	0.	141.5	0.	0.	.0	.0
6	252.7	0.	138.3	0.	0.	.0	.0
7	267.7	0.	134.7	0.	0.	.0	.0
8	272.5	0.	134.1	0.	0.	.0	.0
9	282.5	0.	134.4	0.	0.	.0	.0
10	327.6	0.	135.1	0.	0.	.0	.0
11	372.6	0.	135.6	0.	0.	.0	.0
12	385.0	0.	135.8	0.	0.	.0	.0
13	395.0	0.	135.9	0.	0.	.0	.0
14	420.0	0.	136.2	0.	0.	.0	.0
15	445.0	0.	136.4	0.	0.	.0	.0
16	452.3	0.	136.3	0.	0.	.0	.0
17	462.3	0.	135.6	0.	0.	.0	.0
18	501.3	0.	132.4	0.	0.	.0	.0
19	563.8	0.	127.2	0.	0.	.0	.0
20	640.0	0.	120.8	0.	0.	.0	.0

21	707.5	0.	118.4	0.	0.
.0	.0				
22	765.0	0.	123.0	0.	0.
.0	.0				
23	807.5	0.	126.1	0.	0.
.0	.0				
24	857.5	0.	125.5	0.	0.
.0	.0				
25	932.5	0.	123.8	0.	0.
.0	.0				
26	997.5	0.	121.3	0.	0.
.0	.0				
27	1055.0	0.	120.0	0.	0.
.0	.0				
28	1100.0	0.	120.0	0.	0.
.0	.0				
29	1130.0	0.	120.2	0.	0.
.0	.0				
30	1171.3	0.	123.7	0.	0.
.0	.0				
31	1233.8	0.	130.2	0.	0.
.0	.0				
32	1298.8	0.	127.4	0.	0.
.0	.0				
33	1366.3	0.	115.2	0.	0.
.0	.0				
34	1450.0	0.	114.1	0.	0.
.0	.0				
35	1550.0	0.	124.0	0.	0.
.0	.0				
36	1650.0	0.	133.9	0.	0.
.0	.0				
37	1740.0	0.	139.8	0.	0.
.0	.0				
38	1835.0	0.	137.0	0.	0.
.0	.0				
39	1925.0	0.	135.6	0.	0.
.0	.0				
40	1985.0	0.	140.9	0.	0.
.0	.0				
41	2045.0	0.	153.5	0.	0.
.0	.0				

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

```
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF  AN AUTOMATIC SEARCH)
         *

**********************************************************************
*

                                                          FORCES    DUE    TO
SURFACE PRESSURES
                                                  Y FOR
           SLICE                 SEISMIC       SEISMIC      NORMAL     SHEAR
             NO.       X         FORCE          FORCE       FORCE      FORCE
 X         Y

             42    2095.0          0.          167.4          0.         0.
  .0        .0
             43    2165.0          0.          177.7          0.         0.
  .0        .0
             44    2261.7          0.          189.3          0.         0.
  .0        .0
             45    2345.0          0.          200.4          0.         0.
  .0        .0
             46    2428.3          0.          211.4          0.         0.
  .0        .0
             47    2509.5          0.          219.7          0.         0.
  .0        .0
             48    2554.5          0.          222.9          0.         0.
  .0        .0
             49    2595.0          0.          226.7          0.         0.
  .0        .0
             50    2655.0          0.          236.7          0.         0.
  .0        .0
             51    2715.0          0.          253.4          0.         0.
  .0        .0
             52    2793.3          0.          275.4          0.         0.
  .0        .0
             53    2880.0          0.          299.2          0.         0.
  .0        .0
             54    2966.7          0.          323.1          0.         0.
  .0        .0
             55    3045.0          0.          342.0          0.         0.
  .0        .0
             56    3110.0          0.          355.0          0.         0.
  .0        .0
             57    3170.0          0.          367.0          0.         0.
  .0        .0
             58    3235.0          0.          377.3          0.         0.
  .0        .0
             59    3305.0          0.          385.8          0.         0.
  .0        .0
             60    3350.0          0.          393.4          0.         0.
  .0        .0
```

```
            61   3390.0        0.       410.0        0.        0.
  .0        .0
            62   3450.0        0.       436.3        0.        0.
  .0        .0
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                   ARADI-SADDLEBACK MEADOWS

                   JOB NO. 4816-07, SECTION A-A

                   FACTOR OF SAFETY ALONG NONCIRCULAR  SURFACE


           TABLE NO. 23

*********************************************************************
*
           * INFORMATION  GENERATED DURING ITERATIVE  SOLUTION FOR
THE FACTOR *
           * OF  SAFETY AND  SIDE FORCE  INCLINATION BY  SPENCER'S
PROCEDURE  *
*********************************************************************
*
                    TRIAL      TRIAL
                   FACTOR    SIDE FORCE     FORCE       MOMENT
        DELTA
           ITER-      OF     INCLINATION   IMBALANCE   IMBALANCE
DELTA-F    THETA
           ATION   SAFETY     (DEGREES)      (LBS.)    (FT.-LBS.)
    (DEGREES)

              1   3.00000      15.0000    .1346E+07    .1692E+10
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.153E+01 -.772E+01
           VALUES FACTORED  BY   .327E+00 -  DELTAS  TOO  LARGE
-.500E+00 -.252E+01

              2   2.50000      12.4759    .8136E+06    .1149E+10
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.683E+00 -.651E+01
           VALUES  FACTORED  BY   .732E+00  -  DELTAS  TOO LARGE
-.500E+00 -.477E+01

              3   2.00000       7.7102    .5640E+05    .3795E+09
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.610E-01 -.315E+01
           SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.593E-01 -.315E+01
           SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
-.593E-01 -.315E+01

              4   1.94073       4.5601  -.8077E+02    .8221E+07
```

```
          FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.705E-03 -.716E-01
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.704E-03 -.716E-01

             5   1.94002      4.4886  -.7891E+00    .9028E+03
          FIRST-ORDER  CORRECTIONS  TO  F  AND THETA  .........
.266E-06 -.802E-05
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.266E-06 -.801E-05

             6   1.94002      4.4885  -.5469E-01  -.2506E+02
          FIRST-ORDER CORRECTIONS  TO  F  AND  THETA  .........
.263E-07  .207E-06

          FACTOR OF SAFETY - - - - - - - -      1.940
          SIDE FORCE INCLINATION - - - - -       4.49
          NUMBER OF ITERATIONS = - - - - -       6
1         UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION A-A'

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE


          TABLE NO. 24
          ********************************************
          * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
          * SURFACE IN CASE OF A SEARCH)              *
          ********************************************

          SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
          FACTOR OF SAFETY =  1.940     SIDE FORCE INCLINATION =
 4.49 DEGREES

          ---------  VALUES AT CENTER OF BASE OF
SLICE---------

                                                 TOTAL     EFFECTIVE
          SLICE                                  NORMAL    NORMAL
SHEAR
            NO.     X-CENTER     Y-CENTER        STRESS    STRESS
STRESS

             1        152.5        137.1         1871.4    1871.4
578.7
             2        198.4         129.6        4281.2    4281.2
1157.9
             3        228.4         124.7        4966.6    4966.6
1322.6
             4        234.6         123.7        5101.9    5101.9
1355.2
```

	5	239.6	122.9	4990.8	4990.8
484.8					
	6	252.7	120.8	4698.2	4698.2
460.9					
	7	267.7	118.3	4342.2	4316.0
429.7					
	8	272.5	117.6	4404.8	4323.7
430.3					
	9	282.5	115.9	4835.9	4640.5
456.2					
	10	327.6	108.6	7012.4	6301.5
591.8					
	11	372.6	101.2	9574.3	8348.8
2135.6					
	12	385.0	99.1	10219.7	8849.6
2256.0					
	13	395.0	97.4	10725.4	9235.8
2348.8					
	14	420.0	93.1	11989.5	10201.3
2580.9					
	15	445.0	88.9	13253.6	11166.7
2812.9					
	16	452.3	87.6	13560.5	11386.2
2865.7					
	17	462.3	85.9	13267.8	10974.1
973.2					
	18	501.3	79.2	14088.3	11329.6
1002.3					
	19	563.8	68.5	15458.8	11953.4
1053.2					
	20	640.0	55.4	17014.3	12598.1
1105.8					
	21	707.5	43.9	19241.1	14018.7
1221.8					
	22	765.0	35.9	22290.1	16498.3
1424.2					
	23	807.5	30.9	24337.0	18180.2
1561.6					
	24	857.5	25.0	25680.6	19094.3
1636.2					
	25	932.5	20.0	26065.8	19073.9
1634.5					
	26	997.5	20.0	25436.3	18363.2
1576.5					
	27	1055.0	20.0	25121.3	17976.5
1544.9					
	28	1100.0	20.0	25120.9	17920.0
1540.3					
	29	1130.0	20.5	24894.4	17685.7
1521.2					
	30	1171.3	22.4	25273.6	18136.0
1557.9					
	31	1233.8	25.4	26150.8	19120.9
1638.4					

	32	1298.8	28.5	24672.2	17754.3
1526.8					
	33	1366.3	31.7	20837.9	14036.3
1223.3					
	34	1450.0	35.7	19560.0	12902.8
1130.7					
	35	1550.0	40.5	20838.7	14353.8
1249.2					
	36	1650.0	45.2	22117.3	15804.8
1367.6					
	37	1740.0	49.5	22519.0	16361.6
1413.1					
	38	1835.0	54.0	20706.1	14712.5
1278.4					
	39	1925.0	58.3	19287.1	13448.6
1175.3					
	40	1985.0	63.8	18942.0	13372.5
1169.1					

--------- VALUES AT CENTER OF BASE OF SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	2045.0	73.1	19780.2	14711.9	
1278.4					
42	2095.0	80.8	21288.6	16637.9	
1435.6					
43	2165.0	91.5	21168.4	17102.4	
1473.6					
44	2261.7	108.2	19824.5	16674.5	
1438.6					
45	2345.0	124.5	18533.3	16296.7	
1407.8					
46	2428.3	140.8	17242.1	15918.8	
1376.9					
47	2509.5	156.6	15381.3	14948.1	
1297.7					
48	2554.5	165.5	13998.6	13998.6	
1220.2					
49	2595.0	173.4	12995.8	12995.8	
1138.3					
50	2655.0	185.1	12580.5	12580.5	
1104.4					
51	2715.0	198.5	13287.7	13287.7	
1162.1					
52	2793.3	217.5	14015.4	14015.4	
1221.5					
53	2880.0	238.5	14700.2	14700.2	

1277.5	54	2966.7	259.5	15385.1	15385.1
1333.4	55	3045.0	278.5	15369.3	15369.3
1332.1	56	3110.0	294.2	14704.1	14704.1
1277.8	57	3170.0	308.8	14090.0	14090.0
1227.6	58	3235.0	324.5	12755.7	12755.7
1118.7	59	3305.0	341.5	10701.1	10701.1
951.0	60	3350.0	356.8	8260.7	8260.7
751.7	61	3390.0	383.9	5863.0	5863.0
556.0	62	3450.0	424.6	2606.7	2606.7
290.1					

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = 1.23
(= .123E+01)
SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = 2.21
(= .221E+01)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -23.74
(= -.237E+02)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK SUM = .22
(= .222E+00)
SHOULD NOT EXCEED .100E+03

UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.940 SIDE FORCE INCLINATION = 4.49 DEGREES

---------- VALUES AT RIGHT SIDE OF SLICE

SIGMA AT TOP	SIGMA SLICE AT BOTTOM	NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		1	170.0	31043.	138.5	.237
-999.0	4473.3					
		2	226.9	136979.	134.4	.268
-1521.3	9324.7					
		3	230.0	143666.	134.2	.273
-1461.0	9527.8					
		4	239.2	163849.	133.6	.286
-1253.5	10080.3					
		5	240.0	164898.	133.6	.306
-774.6	10161.6					
		6	265.4	196198.	133.4	.447
4048.6	7870.4					
		7	270.0	201438.	133.3	.470
5036.7	7245.7					
		8	275.0	207203.	133.3	.477
5261.1	6951.2					
		9	290.0	225946.	133.0	.466
4580.9	6913.0					
		10	365.2	356860.	128.8	.400
2141.1	8627.0					
		11	380.0	411950.	126.2	.367
-1173.8	10331.8					
		12	390.0	452153.	124.6	.350
607.3	11405.5					
		13	400.0	494156.	123.0	.336
97.5	12420.9					
		14	440.0	680174.	117.6	.298
-1529.2	16058.4					
		15	450.0	731180.	116.3	.293
-1844.2	16908.9					
		16	454.6	755361.	115.7	.292
-1915.0	17315.3					
		17	470.0	805385.	115.1	.304
-1426.0	17415.8					
		18	532.5	1019630.	111.9	.342
501.6	17790.3					
		19	595.0	1251797.	108.3	.371
2297.8	18184.5					
		20	685.0	1614942.	102.7	.391
3941.6	18942.2					
		21	730.0	1818980.	99.4	.374
2822.1	20031.8					
		22	800.0	2103115.	96.0	.342
613.7	21754.4					
		23	815.0	2169690.	95.1	.340

459.3	22131.1					
		24	900.0	2566790.	90.4	.340
499.7	24209.2					
		25	965.0	2673360.	92.6	.354
1635.2	24366.3					
		26	1030.0	2776148.	94.9	.373
3274.1	24269.9					
		27	1080.0	2853632.	96.8	.384
4318.4	24130.4					
		28	1120.0	2915434.	98.3	.391
5056.7	24008.2					
		29	1140.0	2922170.	99.7	.390
4956.7	23951.6					
		30	1202.5	2944391.	104.0	.388
4703.3	23785.5					
		31	1265.0	2969034.	108.2	.399
5766.2	23321.1					
		32	1332.5	2992862.	112.8	.454
11799.5	20919.7					
		33	1400.0	3008500.	117.7	.509
19138.8	17083.9					
		34	1500.0	3028490.	125.0	.537
22749.8	14546.2					
		35	1600.0	3054254.	132.1	.518
19635.4	15740.8					
		36	1700.0	3085793.	139.0	.509
18124.8	16174.6					
		37	1780.0	3113137.	144.5	.536
21751.1	14010.5					
		38	1890.0	3145405.	152.1	.604
32278.7	7421.1					
		39	1960.0	3163439.	157.1	.623
35173.0	5302.8					
		40	2010.0	3075916.	163.7	.608
32054.1	6799.2					
1						

-VALUES -AT-RIGHT- SIDE OF SLICE

SIGMA AT TOP	SIGMA SLICE AT BOTTOM	NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		41	2080.0	2952006.	173.1	.558
23441.5	11275.7					
		42	2110.0	2896651.	177.3	.561
23530.7	10881.7					
		43	2220.0	2699904.	192.5	.552
21028.7	11083.4					
		44	2303.3	2495939.	206.2	.572

22674.6	8998.7				
	45	2386.7	2310512.	219.5	.593
24472.2	6951.5				
	46	2470.0	2143624.	232.5	.625
28018.2	3969.6				
	47	2549.1	2007881.	244.0	.685
36347.3	-1902.1				
	48	2560.0	1991215.	245.5	.690
37147.0	-2457.7				
	49	2630.0	1892607.	254.9	.719
41965.8	-5663.4				
	50	2680.0	1824548.	261.5	.671
34502.3	-396.9				
	51	2750.0	1679966.	272.7	.584
22416.8	7364.4				
	52	2836.7	1490788.	286.9	.497
12268.5	12775.8				
	53	2923.3	1292038.	301.7	.424
5629.7	15088.4				
	54	3010.0	1083714.	317.3	.371
1922.2	15041.3				
	55	3080.0	915631.	330.4	.350
732.6	13980.5				
	56	3140.0	777998.	341.9	.339
238.5	12795.7				
	57	3200.0	646306.	353.9	.340
228.8	11362.3				
	58	3270.0	507729.	368.1	.362
885.1	9554.7				
	59	3340.0	392349.	382.2	.403
-2033.9	-7744.7				
	60	3360.0	294975.	392.4	.416
2094.5	6376.7				
	61	3420.0	88995.	422.3	.477
2032.7	2672.3				
	62	3480.0	3.	-983.3	BELOW
3.3	-3.3				

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = 1.23
(= .123E+01)
SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = 2.21
(= .221E+01)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -23.74
(= -.237E+02)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .22
(= .222E+00)
SHOULD NOT EXCEED .100E+03

Creekside Daily Devotional
March 27, 2002

"I Must Be Better Than Him."

"Thank God, I am not like Jeffrey Dahmer!" That is so easy to say, the words just tumble out. His conviction on 17 counts of murder, mayhem and evil placed him in prison for life. On November 28, 1994, a fellow inmate executed him. It was almost as if a collective, "Good!" could be heard all over the nation.

It is so easy to measure ourselves by the worst of us. That was the Pharisee's problem. The toughest test is to measure ourselves by Jesus. James said it this way, "For whoever keeps the whole law and yet stumbles at just one point is guilty of breaking all of it." James 2:10 We can only be free when we are as broken as the tax collector. A bad attitude is as bad as murder.

In a TV interview, Dahmer spoke of needing inner peace. Mary Mott, of Arlington, Virginia, was moved to send him a World Bible School correspondence course which he completed and returned to her. In his thank you note for the lessons, he told her he wanted to become a Christian. Roy Ratcliff, a minister for the Church of Christ, went to the Columbia Correctional Institution in Portage, Wisconsin, studied further with him and baptized him on May 10, 1994. Two weeks prior to being killed, Dahmer was quoted as saying he was at peace with himself and God.

In his book, In The Grip Of Grace, Max Lucado wrote that he was troubled by Jeffrey Dahmer's conversion. Although he knew the conversion should not bother him, it did. "Grace for a cannibal," he wrote. Grace is not easy. How unlike God we can be.

It is better to be a tax collector than a Pharisee, is it not?

Carl Thompson
Carlsbad, California

CROSS SECTION A-A'

Slice (c)

(Seismic)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************

***************************************************************
           *
     *     *
           *       RESULTS OF COMPUTATIONS PERFORMED USING THIS
COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
THEY *
           *   HAVE BEEN VERIFIED BY INDEPENDENT ANALYSES,
EXPERIMENTAL  *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
THE   *
           *  ALGORITHMS AND ANALYTICAL PROCEDURES USED IN THE
COMPUTER  *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
     *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
     *     *
           *
     *
           *       NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
WRIGHT *
           *  MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES,
EXPRESSED OR *
           *  IMPLIED, CONCERNING THE ACCURACY, RELIABILITY,
USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
     *
           *
     *

***************************************************************
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION A-A'

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
EL TORO RD.FILL\BUTTRESS FILL

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	230.000	125.000
2	275.000	125.000
3	290.000	140.000
4	390.000	90.000

PROFILE LINE 3 - MATERIAL TYPE = 1
QAL

POINT	X	Y
1	80.000	110.000
2	85.000	100.000
3	130.000	100.000
4	170.000	125.000
5	230.000	125.000
6	390.000	90.000

PROFILE LINE 4 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	80.000	90.000
2	390.000	90.000
3	400.000	85.000

4	440.000	75.000
5	470.000	100.000
6	595.000	100.000
7	815.000	210.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000

PROFILE LINE 5 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1890.000	210.000
2	2010.000	220.000
3	2110.000	260.000
4	2470.000	285.000
5	2560.000	280.000
6	2630.000	280.000
7	2750.000	320.000
8	3010.000	400.000
9	3200.000	430.000
10	3360.000	430.000
11	3510.000	460.000
12	3610.000	360.000

PROFILE LINE 6 - MATERIAL TYPE = 1
BUTTRESS FILL

POINT	X	Y
1	3510.000	460.000
2	3560.000	470.000
3	3770.000	530.000
4	3830.000	545.000
5	4160.000	550.000
6	4260.000	585.000
7	4400.000	585.000

PROFILE LINE 7 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	3770.000	400.000
2	3940.000	510.000

3	4335.000	535.000
4	4400.000	585.000
5	4425.000	585.000
6	4620.000	640.000
7	4700.000	640.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3

****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL\QAL

UNIT WEIGHT OF MATERIAL = 130.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION - - - - - - - - - - 350.000
FRICTION ANGLE - - - - - - 28.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE 2
QLS

UNIT WEIGHT OF MATERIAL = 125.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION - - - - - - - - - 450.000
FRICTION ANGLE - - - - - - 15.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 4
****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO.	POINT	X	Y
1 - UNIT WEIGHT OF WATER = 62.40			
1	1	80.000	115.000
1	2	1080.000	135.000
1	3	2080.000	155.000
1	4	3080.000	175.000
1	5	4700.000	200.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9
****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y
1	135.000	140.000
2	380.000	100.000

3	730.000	40.000
4	900.000	20.000
5	1120.000	20.000
6	1960.000	60.000
7	2220.000	100.000
8	2680.000	190.000
9	3340.000	350.000
10	3480.000	445.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

SEISMIC COEFFICIENT = .150

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10
****
* NEW SLOPE GEOMETRY DATA *

****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA
WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	80.000	110.000
2	170.000	160.000
3	240.000	160.000
4	270.000	150.000
5	450.000	185.000
6	685.000	185.000
7	800.000	220.000
8	900.000	230.000
9	1030.000	220.000
10	1140.000	220.000
11	1265.000	240.000
12	1400.000	185.000
13	1700.000	230.000
14	1780.000	230.000
15	1890.000	210.000
16	2010.000	220.000
17	2110.000	260.000
18	2470.000	285.000
19	2560.000	280.000
20	2630.000	280.000
21	2750.000	320.000
22	3010.000	400.000
23	3200.000	430.000
24	3360.000	430.000
25	3510.000	460.000
26	3560.000	470.000
27	3770.000	530.000
28	3830.000	545.000
29	4160.000	550.000
30	4260.000	585.000
31	4400.000	585.000
32	4425.000	585.000
33	4620.000	640.000
34	4700.000	640.000

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

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**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
          *

**********************************************************************
*

          SLICE                                    SLICE    MATL.
FRICTION    PORE
             NO.       X            Y          WEIGHT    TYPE    COHESION
ANGLE    PRESSURE

                     135.0      140.0
               1     152.5      137.1       59763.9       1       350.00
28.00          .0
                     170.0      134.3
               2     198.4      129.6      224453.2       1       350.00
28.00          .0
                     226.9      125.0
               3     228.4      124.7       14322.4       1       350.00
28.00          .0
                     230.0      124.5
               4     234.6      123.7       43300.1       1       350.00
28.00          .0
                     239.2      123.0
               5     239.6      122.9        3869.8       2       450.00
15.00          .0
                     240.0      122.9
               6     252.7      120.8      115029.3       2       450.00
15.00          .0
                     265.4      118.7
               7     267.7      118.3       19190.1       2       450.00
15.00         26.2
                     270.0      118.0
               8     272.5      117.6       21221.6       2       450.00
15.00         81.1
                     275.0      117.1
               9     282.5      115.9       69955.1       2       450.00
15.00        195.4
                     290.0      114.7
              10     327.6      108.6      509485.5       2       450.00
15.00        710.9
                     365.2      102.4
              11     372.6      101.2      132675.8       1       350.00
28.00       1225.5
                     380.0      100.0
              12     385.0       99.1       95183.7       1       350.00
28.00       1370.1
                     390.0       98.3
              13     395.0       97.4       99940.1       1       350.00
28.00       1489.6
```

```
                    400.0      96.6
              14     420.0       93.1     447323.9     1        350.00
28.00      1788.2
                    440.0      89.7
              15     445.0       88.9    123721.8     1        350.00
28.00      2086.8
                    450.0      88.0
              16    452.3        87.6      58808.3     1       350.00
28.00      2174.3
                    454.6      87.2
              17     462.3       85.9     197256.6     2        450.00
15.00      2293.8
                    470.0      84.6
              18     501.3       79.2     853013.4     2        450.00
15.00      2758.7
                    532.5      73.9
              19     563.8       68.5     936718.8     2       450.00
15.00      3505.3
                    595.0      63.1
              20     640.0       55.4    1485804.0     2        450.00
15.00      4416.1
                    685.0      47.7
              21     707.5       43.9     840457.1     2        450.00
15.00      5222.4
                    730.0      40.0
              22     765.0       35.9    1526345.0     2        450.00
15.00      5791.8
                    800.0      31.8
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G. WRIGHT
                    ARADI-SADDLEBACK MEADOWS
                    JOB NO. 4816-07; SECTION A-A
                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
                    TABLE NO. 20

**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
          *

**********************************************************************
*

          SLICE                              SLICE     MATL.
FRICTION     PORE
            NO.       X            Y        WEIGHT    TYPE    COHESION
ANGLE    PRESSURE
```

		800.0	31.8				
	23	807.5	30.9	357089.3	2	450.00	
15.00	6156.9						
		815.0	30.0				
	24	857.5	25.0	2135413.0	2	450.00	
15.00	6586.3						
		900.0	20.0				
	25	932.5	20.0	1685938.0	2	450.00	
15.00	6991.9						
		965.0	20.0				
	26	997.5	20.0	1645313.0	2	450.00	
15.00	7073.0						
		1030.0	20.0				
	27	1055.0	20.0	1250000.0	2	450.00	
15.00	7144.8						
		1080.0	20.0				
	28	1100.0	20.0	1000000.0	2	450.00	
15.00	7201.0						
		1120.0	20.0				
	29	1130.0	20.5	498809.5	2	450.00	
15.00	7208.7						
		1140.0	21.0				
	30	1171.3	22.4	1582496.0	2	450.00	
15.00	7137.6						
		1202.5	23.9				
	31	1233.8	25.4	1637370.0	2	450.00	
15.00	7029.9						
		1265.0	26.9				
	32	1298.8	28.5	1668415.0	2	450.00	
15.00	6917.9						
		1332.5	30.1				
	33	1366.3	31.7	1409263.0	2	450.00	
15.00	6801.5						
		1400.0	33.3				
	34	1450.0	35.7	1959822.0	2	450.00	
15.00	6657.2						
		1500.0	38.1				
	35	1550.0	40.5	2087798.0	2	450.00	
15.00	6484.8						
		1600.0	42.9				
	36	1650.0	45.2	2215774.0	2	450.00	
15.00	6312.5						
		1700.0	47.6				
	37	1740.0	49.5	1804762.0	2	450.00	
15.00	6157.4						
		1780.0	51.4				
	38	1835.0	54.0	2281845.0	2	450.00	
15.00	5993.7						
		1890.0	56.7				
	39	1925.0	58.3	1352604.0	2	450.00	
15.00	5838.6						
		1960.0	60.0				
	40	1985.0	63.8	962940.8	2	450.00	
15.00	5569.4						

```
                  2010.0      67.7
              41   2045.0       73.1   1408077.0      2        450.00
15.00      5068.3
                  2080.0      78.5
              42   2095.0       80.8    649615.4      2        450.00
15.00      4650.7
                  2110.0      83.1
              43   2165.0       91.5   2368864.0      2        450.00
15.00      4066.1
                  2220.0     100.0
              44   2261.7      108.2   1691459.0      2        450.00
15.00      3150.0
                  2303.3     116.3
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION A-A

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

          TABLE NO. 20

**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE  IN THE CASE OF AN AUTOMATIC SEARCH)
          *
**********************************************************************
*
          SLICE                                SLICE    MATL.
FRICTION    PORE
            NO.       X          Y          WEIGHT   TYPE    COHESION
ANGLE     PRESSURE
                  2303.3     116.3
              45   2345.0       124.5   1581904.0      2        450.00
15.00      2236.6
                  2386.7     132.6
              46   2428.3       140.8   1472353.0      2        450.00
15.00      1323.2
                  2470.0     148.9
              47   2509.5       156.6   1246734.0      2        450.00
15.00       433.3
                  2549.1     164.4
              48   2554.5       165.5    157070.4      2        450.00
15.00          .0
                  2560.0     166.5
              49    2595.0       173.4   933016.3       2        450.00
15.00          .0
```

		2630.0	180.2			
	50	2655.0	185.1	645154.0	2	450.00
15.00	.0					
		2680.0	190.0			
	51	2715.0	198.5	961174.3	2	450.00
15.00	.0					
		2750.0	207.0			
	52	2793.3	217.5	1255136.0	2	450.00
15.00	.0					
		2836.7	228.0			
	53	2880.0	238.5	1316415.0	2	450.00
15.00	.0					
		2923.3	249.0			
	54	2966.7	259.5	1377691.0	2	450.00
15.00	.0					
		3010.0	270.0			
	55	3045.0	278.5	1111613.0	2	450.00
15.00	.0					
		3080.0	287.0			
	56	3110.0	294.2	911602.8	2	450.00
15.00	.0					
		3140.0	301.5			
	57	3170.0	308.8	873564.6	2	450.00
15.00	.0					
		3200.0	316.1			
	58	3235.0	324.5	922727.1	2	450.00
15.00	.0					
		3270.0	333.0			
	59	3305.0	341.5	774242.5	2	450.00
15.00	.0					
		3340.0	350.0			
	60	3350.0	356.8	183035.8	2	450.00
15.00	.0					
		3360.0	363.6			
	61	3390.0	383.9	390535.6	2	450.00
15.00	.0					
		3420.0	404.3			
	62	3450.0	424.6	175178.6	2	450.00
15.00	.0					
		3480.0	445.0			

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR

CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*

****
*

FORCES DUE TO
SURFACE PRESSURES

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
1	152.5	8965.	143.7	0.	0.	.0	.0
2	198.4	33668.	144.8	0.	0.	.0	.0
3	228.4	2148.	142.4	0.	0.	.0	.0
4	234.6	6495.	141.9	0.	0.	.0	.0
5	239.6	580.	141.5	0.	0.	.0	.0
6	252.7	17254.	138.3	0.	0.	.0	.0
7	267.7	2879.	134.7	0.	0.	.0	.0
8	272.5	3183.	134.1	0.	0.	.0	.0
9	282.5	10493.	134.4	0.	0.	.0	.0
10	327.6	76423.	135.1	0.	0.	.0	.0
11	372.6	19901.	135.6	0.	0.	.0	.0
12	385.0	14278.	135.8	0.	0.	.0	.0
13	395.0	14991.	135.9	0.	0.	.0	.0
14	420.0	67099.	136.2	0.	0.	.0	.0
15	445.0	18558.	136.4	0.	0.	.0	.0
16	452.3	8821.	136.3	0.	0.	.0	.0
17	462.3	29588.	135.6	0.	0.	.0	.0
18	501.3	127952.	132.4	0.	0.	.0	.0
19	563.8	140508.	127.2	0.	0.	.0	.0
20	640.0	222871.	120.8	0.	0.	.0	.0

	21	707.5	126069.	118.4	0.	0.
.0	.0					
	22	765.0	228952.	123.0	0.	0.
.0	.0					
	23	807.5	53563.	126.1	0.	0.
.0	.0					
	24	857.5	320312.	125.5	0.	0.
.0	.0					
	25	932.5	252891.	123.8	0.	0.
.0	.0					
	26	997.5	246797.	121.3	0.	0.
.0	.0					
	27	1055.0	187500.	120.0	0.	0.
.0	.0					
	28	1100.0	150000.	120.0	0.	0.
.0	.0					
	29	1130.0	74821.	120.2	0.	0.
.0	.0					
	30	1171.3	237374.	123.7	0.	0.
.0	.0					
	31	1233.8	245605.	130.2	0.	0.
.0	.0					
	32	1298.8	250262.	127.4	0.	0.
.0	.0					
	33	1366.3	211390.	115.2	0.	0.
.0	.0					
	34	1450.0	293973.	114.1	0.	0.
.0	.0					
	35	1550.0	313170.	124.0	0.	0.
.0	.0					
	36	1650.0	332366.	133.9	0.	0.
.0	.0					
	37	1740.0	270714.	139.8	0.	0.
.0	.0					
	38	1835.0	342277.	137.0	0.	0.
.0	.0					
	39	1925.0	202891.	135.6	0.	0.
.0	.0					
	40	1985.0	144441.	140.9	0.	0.
.0	.0					
	41	2045.0	211212.	153.5	0.	0.
.0	.0					

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

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*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF  AN AUTOMATIC SEARCH)
         *

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FORCES DUE TO SURFACE PRESSURES

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
42	2095.0	97442.	167.4	0.	0.	.0	.0
43	2165.0	355330.	177.7	0.	0.	.0	.0
44	2261.7	253719.	189.3	0.	0.	.0	.0
45	2345.0	237286.	200.4	0.	0.	.0	.0
46	2428.3	220853.	211.4	0.	0.	.0	.0
47	2509.5	187010.	219.7	0.	0.	.0	.0
48	2554.5	23561.	222.9	0.	0.	.0	.0
49	2595.0	139952.	226.7	0.	0.	.0	.0
50	2655.0	96773.	236.7	0.	0.	.0	.0
51	2715.0	144176.	253.4	0.	0.	.0	.0
52	2793.3	188270.	275.4	0.	0.	.0	.0
53	2880.0	197462.	299.2	0.	0.	.0	.0
54	2966.7	206654.	323.1	0.	0.	.0	.0
55	3045.0	166742.	342.0	0.	0.	.0	.0
56	3110.0	136740.	355.0	0.	0.	.0	.0
57	3170.0	131035.	367.0	0.	0.	.0	.0
58	3235.0	138409.	377.3	0.	0.	.0	.0
59	3305.0	116136.	385.8	0.	0.	.0	.0
60	3350.0	27455.	393.4	0.	0.	.0	.0

```
             61    3390.0    58580.       410.0        0.        0.
  .0        .0
             62    3450.0    26277.       436.3        0.        0.
  .0        .0
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                   ARADI-SADDLEBACK MEADOWS

                   JOB NO. 4816-07, SECTION A-A'

                   FACTOR OF SAFETY ALONG NONCIRCULAR  SURFACE


            TABLE NO. 23

     **********************************************************************
     *
                  * INFORMATION GENERATED DURING ITERATIVE SOLUTION FOR
     THE FACTOR *
                  * OF SAFETY AND SIDE FORCE INCLINATION BY SPENCER'S
     PROCEDURE  *
     **********************************************************************
     *
                        TRIAL      TRIAL
                       FACTOR     SIDE FORCE     FORCE        MOMENT
           DELTA
                      ITER=       OF       INCLINATION    IMBALANCE    IMBALANCE
     DELTA-F     THETA
                     ATION       SAFETY     (DEGREES)      (LBS.)      (FT.-LBS.)
     (DEGREES)

                        1    3.00000      15.0000    .8265E+07    .3441E+10
                   FIRST-ORDER CORRECTIONS TO F AND THETA .........
          -.508E+01 -.169E+01
                   VALUES FACTORED BY   .985E-01 - DELTAS TOO LARGE
          -.500E+00 -.166E+00

                        2    2.50000      14.8336    .7286E+07    .3051E+10
                   FIRST-ORDER CORRECTIONS TO F AND THETA .........
          -.308E+01 -.180E+01
                   VALUES FACTORED BY   .162E+00 - DELTAS TOO LARGE
          -.500E+00 -.292E+00

                        3    2.00000      14.5412    .5803E+07    .2469E+10
                   FIRST-ORDER CORRECTIONS TO F AND THETA .........
          -.156E+01 -.199E+01
                   VALUES FACTORED BY   .321E+00 - DELTAS TOO LARGE
          -.500E+00 -.639E+00

                        4    1.50000      13.9022    .3300E+07    .1518E+10
                   FIRST-ORDER CORRECTIONS TO F AND THETA .........
          -.493E+00 -.234E+01
```

```
            SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.396E+00 -.234E+01
            SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
-.392E+00 -.234E+01
            SECOND-ORDER  CORRECTION  -  ITERATION      3  ........
-.392E+00 -.234E+01

               5   1.10799     11.5591  -.2464E+06   .1727E+09
            FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA .........
.146E-01 -.201E+01
            SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.152E-01 -.201E+01
            SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
.152E-01 -.201E+01

               6   1.12323      9.5464   .4520E+03  -.9867E+07
            FIRST-ORDER  CORRECTIONS  TO  F AND  THETA  .........
.167E-03  .847E-01
            SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.167E-03  .847E-01

               7   1.12339     9.6311   .2891E+00   .5478E+04
            FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.136E-06 -.462E-04
            SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.136E-06 -.462E-04

               8   1.12339     9.6310   .3516E+00   .1227E+02
            FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.285E-07  .429E-06

            FACTOR OF SAFETY  =  =  =  =  =  =  =  =  =  1.123
            SIDE FORCE INCLINATION  -  -  -  -  -  -  -  9.63
            NUMBER OF ITERATIONS  -  -  -  -  -  -  8
1           UTEXAS2  -  VER.  1.209  -  11723/87  -  SN00004  -  (C)  1985  S.
G.  WRIGHT
                     ARADI-SADDLEBACK MEADOWS

                  JOB NO.  4816-07, SECTION A-A

                     FACTOR OF  SAFETY ALONG NONCIRCULAR SURFACE


            TABLE NO.  24
            ************************************************
            *  FINAL RESULTS FOR SHEAR SURFACE (CRITICAL   *
            *  SURFACE IN CASE OF A SEARCH)                *
            ************************************************

            SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
            FACTOR OF SAFETY =    1.123     SIDE FORCE INCLINATION =
 9.63 DEGREES

                  ---------   VALUES   AT   CENTER   OF   BASE   OF
```

SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
1	152.5	137.1	2169.9	2169.9	1338.6
2	198.4	129.6	4848.0	4848.0	2606.2
3	228.4	124.7	5609.7	5609.7	2966.7
4	234.6	123.7	5760.1	5760.1	3037.8
5	239.6	122.9	5398.9	5398.9	1688.3
6	252.7	120.8	5090.0	5090.0	1614.6
7	267.7	118.3	4712.3	4686.1	1518.3
8	272.5	117.6	4774.7	4693.6	1520.1
9	282.5	115.9	5222.2	5026.8	1599.6
10	327.6	108.6	7485.7	6774.8	2016.5
11	372.6	101.2	10578.7	9353.2	4738.5
12	385.0	99.1	11317.7	9947.6	5019.8
13	395.0	97.4	11866.5	10376.9	5223.0
14	420.0	93.1	13238.6	11450.4	5731.1
15	445.0	88.9	14610.6	12523.8	6239.1
16	452.3	87.6	14941.8	12767.5	6354.5
17	462.3	85.9	14017.3	11723.6	3196.9
18	501.3	79.2	14853.6	12094.9	3285.4
19	563.8	68.5	16252.6	12747.3	3441.0
20	640.0	55.4	17836.1	13420.0	3601.5
21	707.5	43.9	20137.4	14915.0	3958.1
22	765.0	35.9	23003.9	17212.1	4506.0
23	807.5	30.9	25115.9	18959.0	4922.6

	24	857.5	25.0	26491.2	19904.9
5148.2					
	25	932.5	20.0	26119.4	19127.5
4962.8					
	26	997.5	20.0	25481.2	18408.2
4791.3					
	27	1055.0	20.0	25160.8	18016.0
4697.7					
	28	1100.0	20.0	25158.5	17957.5
4683.7					
	29	1130.0	20.5	24663.5	17454.8
4563.8					
	30	1171.3	22.4	25043.3	17905.7
4671.4					
	31	1233.8	25.4	25920.6	18890.7
4906.3					
	32	1298.8	28.5	24449.9	17532.1
4582.3					
	33	1366.3	31.7	20631.4	13829.9
3699.2					
	34	1450.0	35.7	19361.7	12704.5
3430.8					
	35	1550.0	40.5	20640.8	14156.0
3777.0					
	36	1650.0	45.2	21919.9	15607.4
4123.2					
	37	1740.0	49.5	22324.5	16167.1
4256.7					
	38	1835.0	54.0	20522.1	14528.4
3865.9					
	39	1925.0	58.3	19112.0	13273.5
3566.5					
	40	1985.0	63.8	18344.3	12774.9
3447.6					
1					

VALUES AT CENTER OF BASE OF SLICE

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	2045.0	73.1	19162.7	14094.4	
3762.3					
42	2095.0	80.8	20630.8	15980.1	
4212.1					
43	2165.0	91.5	20519.8	16453.7	
4325.1					
44	2261.7	108.2	19039.9	15889.9	
4190.6					
45	2345.0	124.5	17801.9	15565.2	

4113.2					
	46	2428.3	140.8	16563.8	15240.5
4035.7					
	47	2509.5	156.6	14778.3	14345.1
3822.1					
	48	2554.5	165.5	13450.9	13450.9
3608.8					
	49	2595.0	173.4	12487.2	12487.2
3379.0					
	50	2655.0	185.1	12088.1	12088.1
3283.8					
	51	2715.0	198.5	12614.6	12614.6
3409.4					
	52	2793.3	217.5	13306.3	13306.3
3574.4					
	53	2880.0	238.5	13957.3	13957.3
3729.6					
	54	2966.7	259.5	14608.3	14608.3
3884.9					
	55	3045.0	278.5	14593.3	14593.3
3881.3					
	56	3110.0	294.2	13961.0	13961.0
3730.5					
	57	3170.0	308.8	13377.3	13377.3
3591.3					
	58	3235.0	324.5	12109.0	12109.0
3288.8					
	59	3305.0	341.5	10156.0	10156.0
2822.9					
	60	3350.0	356.8	7048.0	7048.0
2081.6					
	61	3390.0	383.9	4965.0	4965.0
1584.8					
	62	3450.0	424.6	2136.2	2136.2
910.1					

CHECK SUMS - (ALL SHOULD BE SMALL)

SUM OF FORCES IN VERTICAL DIRECTION = 1.34
(= .134E+01)
SHOULD NOT EXCEED .100E+03

SUM OF FORCES IN HORIZONTAL DIRECTION = 2.33
(= .233E+01)
SHOULD NOT EXCEED .100E+03

SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -1258.22
(= -.126E+04)
SHOULD NOT EXCEED .100E+03

SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .45
(= .454E+00)
SHOULD NOT EXCEED .100E+03

***** WARNING ***** ONE OF CHECK SUMS IS TOO LARGE

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.123 SIDE FORCE INCLINATION = 9.63 DEGREES

		VALUES AT RIGHT SIDE OF SLICE			
SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		1	170.0	51004.	138.9	.261
-1219.1	6864.3					
		2	226.9	212860.	135.4	.298
-1283.6	13275.6					
		3	230.0	222987.	135.3	.304
-1095.7	13477.7					
		4	239.2	253504.	134.9	.321
-482.6	13988.2					
		5	240.0	255013.	134.9	.344
461.2	13895.2					
		6	265.4	300549.	135.7	.519
10037.2	8019.0					
		7	270.0	308275.	135.9	.549
12021.2	6567.5					
		8	275.0	316708.	136.1	.560
12553.5	5906.5					
		9	290.0	343374.	136.4	.554
11420.8	5853.6					
		10	365.2	512726.	133.8	.475
6523.9	8776.3					
		11	380.0	589917.	130.8	.431
4762.0	11531.9					
		12	390.0	646030.	128.8	.407
3736.3	13237.6					
		13	400.0	704435.	127.0	.387
2822.9	14825.2					
		14	440.0	960974.	120.8	.333

-18.6	20318.9					
		15	450.0	1030838.	119.4	.325
-555.3	21559.0					
		16	454.6	1063894.	118.8	.323
-670.6	22121.3					
		17	470.0	1121099.	118.3	.336
175.1	21836.6					
		18	532.5	1361013.	116.0	.379
3332.7	20813.4					
		19	595.0	1613260.	113.2	.411
6052.6	20052.1					
		20	685.0	1995089.	108.5	.432
8290.3	19667.6					
		21	730.0	2205444.	105.3	.412
6428.6	20974.3					
		22	800.0	2485297.	100.6	.367
2636.7	23503.8					
		23	815.0	2550819.	99.3	.362
2229.9	24035.0					
		24	900.0	2938483.	91.8	.347
1125.4	26848.7					
		25	965.0	3009172.	92.2	.352
1633.1	27310.9					
		26	1030.0	3074730.	93.3	.365
2851.7	27317.2					
		27	1080.0	3122793.	94.5	.373
3626.8	27161.0					
		28	1120.0	3160677.	95.6	.378
4157.1	27004.2					
		29	1140.0	3153542.	96.7	.376
3945.8	26906.4					
		30	1202.5	3133312.	100.1	.369
3249.7	26731.7					
		31	1265.0	3116977.	102.7	.372
3547.5	26651.4					
		32	1332.5	3097150.	106.6	.419
8627.8	24857.0					
		33	1400.0	3068744.	112.9	.481
16156.8	20382.5					
		34	1500.0	3025038.	123.4	.527
21407.6	15433.8					
		35	1600.0	2990798.	132.6	.521
19302.9	14955.3					
		36	1700.0	2966024.	140.3	.516
17913.6	14689.9					
		37	1780.0	2950584.	146.0	.545
21243.6	12275.7					
		38	1890.0	2925705.	155.6	.626
32116.6	4401.8					
		39	1960.0	2908522.	162.7	.659
35928.2	874.2					
		40	2010.0	2793733.	171.3	.657
33843.2	1055.4					
1						

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	VALUES AT RIGHT SIDE OF SLICE: SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		41	2080.0	2637312.	182.9	.616
25988.8	4684.3					
		42	2110.0	2570066.	187.4	.621
26086.9	4108.0					
		43	2220.0	2339993.	203.1	.615
23254.4	4269.2					
		44	2303.3	2121984.	217.9	.646
25010.5	1619.5					
		45	2386.7	1934571.	232.3	.680
27058.5	-1038.7					
		46	2470.0	1777756.	246.2	.728
31087.8	-4853.0					
		47	2549.1	1662705.	259.1	.815
40765.5	-12557.3					
		48	2560.0	1649651.	260.9	.824
41877.9	-13456.9					
		49	2630.0	1574144.	272.4	.887
49613.4	-19753.5					
		50	2680.0	1522580.	280.7	.850
43650.8	-15504.8					
		51	2750.0	1401285.	294.5	.778
32771.1	-8205.0					
		52	2836.7	1240966.	311.2	.701
22733.0	-2116.1					
		53	2923.3	1071100.	327.2	.629
15066.6	1918.7					
		54	3010.0	891687.	342.1	.566
9624.9	4178.4					
		55	3080.0	746955.	353.0	.532
7089.2	4780.8					
		56	3140.0	629318.	361.8	.506
5408.2	5018.5					
		57	3200.0	517607.	369.5	.481
4063.1	5117.1					
		58	3270.0	402302.	377.6	.460
3097.7	5082.8					
		59	3340.0	310129.	385.2	.439
2433.2	5210.7					
		60	3360.0	227490.	395.0	.453
2310.3	4150.5					
		61	3420.0	59483.	424.8	.544
1961.4	1148.6					
		62	3480.0	-0.	343.7	BELOW

```
4.3       -4.4


          CHECK SUMS - (ALL SHOULD BE SMALL)
          SUM OF FORCES IN VERTICAL  DIRECTION     =            1.34
(=  .134E+01)
               SHOULD NOT EXCEED      .100E+03
          SUM OF FORCES IN  HORIZONTAL DIRECTION  =            2.33
(=  .233E+01)
               SHOULD NOT EXCEED      .100E+03
          SUM OF MOMENTS  ABOUT COORDINATE ORIGIN  =        -1258.22
(= -.126E+04)
               SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM     =             .45
(=  .454E+00)
               SHOULD NOT EXCEED      .100E+03

          ***** WARNING ***** ONE OF CHECK SUMS IS TOO LARGE


          END-OF-FILE ENCOUNTERED WHILE READING COMMAND
          WORDS - END OF PROBLEM(S) ASSUMED
```

CROSS SECTION B-B'

Slice (c)

(Static)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************


**********************************************************************
           *
      *
           *        RESULTS OF COMPUTATIONS PERFORMED USING THIS
COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
THEY *
           *   HAVE BEEN VERIFIED BY INDEPENDENT ANALYSES,
EXPERIMENTAL   *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
THE   *
           *  ALGORITHMS AND ANALYTICAL PROCEDURES USED IN THE
COMPUTER *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
      *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
      *
           *
      *
           *        NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
WRIGHT *
           *  MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES,
EXPRESSED OR  *
           *  IMPLIED, CONCERNING THE ACCURACY, RELIABILITY,
USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
      *
           *
      *

**********************************************************************
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION B-B'

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
FILL\QAL

POINT	X	Y
1	150.000	130.000
2	190.000	150.000
3	220.000	165.000
4	290.000	165.000
5	340.000	145.000
6	400.000	135.000
7	480.000	125.000
8	530.000	150.000
9	550.000	160.000
10	640.000	180.000
11	770.000	210.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	150.000	100.000
2	420.000	100.000
3	480.000	105.000
4	670.000	160.000
5	770.000	210.000
6	920.000	245.000
7	980.000	240.000
8	1100.000	200.000
9	1175.000	170.000
10	1225.000	195.000
11	1280.000	200.000
12	1330.000	220.000
13	1450.000	240.000
14	1530.000	245.000
15	1665.000	210.000

PROFILE LINE 3 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1665.000	210.000
2	1795.000	215.000

3	2240.000	285.000
4	2310.000	275.000
5	2380.000	310.000
6	2640.000	330.000
7	2670.000	330.000
8	2950.000	410.000
9	3250.000	470.000
10	3360.000	500.000
11	3510.000	500.000
12	3630.000	520.000
13	3800.000	540.000
14	3860.000	540.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL

UNIT WEIGHT OF MATERIAL = 130.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION = 250.000
FRICTION ANGLE = 25.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE 2
QLS

UNIT WEIGHT OF MATERIAL = 125.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION = 150.000
FRICTION ANGLE = 9.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1

NEGATIVE PORE PRESSURES SET TO ZERO

ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 4

****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO.	POINT	X	Y
1 - UNIT WEIGHT OF WATER = 62.40			
1	1	.000	118.000
1	2	1600.000	118.000
1	3	3820.000	118.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9

****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y

1	150.000	130.000
2	230.000	80.000
3	310.000	40.000
4	430.000	.000
5	570.000	-30.000
6	670.000	-40.000
7	1010.000	-40.000
8	1340.000	.000
9	2240.000	140.000
10	2500.000	210.000
11	2580.000	250.000
12	2665.000	320.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

THE FOLLOWING REPRESENT EITHER -DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE-IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

SEISMIC COEFFICIENT = .000

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10
****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	150.000	130.000
2	190.000	150.000
3	220.000	165.000
4	290.000	165.000
5	340.000	145.000
6	400.000	135.000
7	480.000	125.000
8	530.000	150.000
9	550.000	160.000
10	640.000	180.000
11	770.000	210.000
12	920.000	245.000
13	980.000	240.000
14	1100.000	200.000
15	1175.000	170.000
16	1225.000	195.000
17	1280.000	200.000
18	1330.000	220.000
19	1450.000	240.000
20	1530.000	245.000
21	1665.000	210.000
22	1795.000	215.000
23	2240.000	285.000
24	2310.000	275.000
25	2380.000	310.000
26	2640.000	330.000
27	2670.000	330.000
28	2950.000	410.000
29	3250.000	470.000
30	3360.000	500.000
31	3510.000	500.000
32	3630.000	520.000
33	3800.000	540.000
34	3860.000	540.000

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*

****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	150.0	130.0					
1	159.6	124.0	26956.8	1	250.00	25.00	.0
	169.2	118.0					
2	179.6	111.5	90043.2	1	250.00	25.00	405.6
	190.0	105.0					
3	194.0	102.5	51480.0	1	250.00	25.00	967.2
	198.0	100.0					
4	209.0	93.1	189076.3	2	150.00	9.00	1552.2
	220.0	86.3					
5	225.0	83.1	105593.8	2	150.00	9.00	2176.2
	230.0	80.0					
6	260.0	65.0	769500.0	2	150.00	9.00	3307.2
	290.0	50.0					
7	300.0	45.0	296100.0	2	150.00	9.00	4555.2
	310.0	40.0					
8	325.0	35.0	442650.0	2	150.00	9.00	5179.2
	340.0	30.0					
9	370.0	20.0	912000.0	2	150.00	9.00	6115.2
	400.0	10.0					
10	410.0	6.7	321083.3	2	150.00	9.00	6947.2
	420.0	3.3					
11	425.0	1.7	164333.3	2	150.00	9.00	7259.2
	430.0	.0					

```
              12     455.0       -5.4    840565.5      2        150.00
9.00      7697.5
                     480.0     -10.7
              13      505.0     -16.1     966137.3     2        150.00
9.00      8366.1
                     530.0     -21.4
              14      540.0     -23.6     449691.7     2        150.00
9.00      8834.1
                     550.0     -25.7
              15     560.0      -27.9    478604.8      2        150.00
9.00      9101.5
                     570.0     -30.0
              16     605.0      -33.5   1810933.0      2      150.00
9.00      9453.6
                     640.0     -37.0
              17      655.0     -38.5     836526.3     2        150.00
9.00      9765.6
                     670.0     -40.0
              18     695.0      -40.0  -1459375.0      2      -150.00
9.00      9859.2
                     720.0     -40.0
              19     745.0      -40.0   1528125.0      2      150.00
9.00      9859.2
                     770.0     -40.0
              20      807.5     -40.0    2425781.0     2        150.00
9.00      9859.2
                     845.0     -40.0
              21     882.5      -40.0   2589844.0      2       150.00
9.00      9859.2
                     920.0     -40.0
              22     950.0      -40.0   2118750.0      2      150.00
9.00      9859.2
                     980.0     -40.0
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                     ARADI-SADDLEBACK MEADOWS
                     JOB NO. 4816-07, SECTION B-B'
                     FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

          TABLE NO. 20

**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF  AN AUTOMATIC SEARCH)
          *

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*
```

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	980.0	-40.0					
23	995.0	-40.0	1031250.0	2	150.00	9.00	9859.2
	1010.0	-40.0					
24	1032.5	-37.3	1461222.0	2	150.00	9.00	9689.0
	1055.0	-34.5					
25	1077.5	-31.8	1346165.0	2	150.00	9.00	9348.7
	1100.0	-29.1					
26	1137.5	-24.5	1964489.0	2	150.00	9.00	8894.8
	1175.0	-20.0					
27	1200.0	-17.0	1246686.0	2	150.00	9.00	8422.1
	1225.0	-13.9					
28	1252.5	-10.6	1430729.0	2	150.00	9.00	8025.0
	1280.0	-7.3					
29	1305.0	-4.2	1339015.0	2	150.00	9.00	7627.9
	1330.0	-1.2					
30	1335.0	-.6	276799.3	2	150.00	9.00	7401.0
	1340.0	.0					
31	1367.5	4.3	1526059.0	2	150.00	9.00	7096.3
	1395.0	8.6					
32	1422.5	12.8	1530261.0	2	150.00	9.00	6562.4
	1450.0	17.1					
33	1490.0	23.3	2191667.0	2	150.00	9.00	5907.2
	1530.0	29.6					
34	1565.0	35.0	1758102.0	2	150.00	9.00	5179.2
	1600.0	40.4					
35	1632.5	45.5	1405023.0	2	150.00	9.00	4524.0
	1665.0	50.6					
36	1697.5	55.6	1264566.0	2	150.00	9.00	3893.1
	1730.0	60.7					
37	1762.5	65.7	1202726.0	2	150.00	9.00	3262.1
	1795.0	70.8					
38	1832.9	76.7	1368808.0	2	150.00	9.00	2578.3
	1870.9	82.6					

```
            39    1908.8       88.5   1370067.0      2       150.00
9.00      1841.7
                  1946.8       94.4
            40    1984.7      100.3   1371325.0      2       150.00
9.00      1105.0
                  2022.7      106.2
            41    2060.6      112.1   1372588.0      2       150.00
9.00       368.3
                  2098.6      118.0
            42     2133.9     123.5   1280055.0      2        150.00
9.00          .0
                  2169.3      129.0
            43     2204.6     134.5    1281152.0     2        150.00
9.00          .0
                  2240.0      140.0
            44    2275.0       149.4  1142548.0      2       150.00
9.00          .0
                  2310.0      158.8
1         UTEXAS2 -- VER. 1.209 -- 11/23/87 -- SN00004 -- (C) 1985 S.
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                  ARADI-SADDLEBACK MEADOWS

                  JOB NO. 4816-07, SECTION B-B'

                  FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

            TABLE NO. 20

*********************************************************************
*
            * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
            * SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
            *
*********************************************************************
*
            SLICE                              SLICE    MATL.
FRICTION     PORE
             NO.        X           Y          WEIGHT   TYPE    COHESION
ANGLE     PRESSURE

                  2310.0      158.8
            45    2345.0       168.3  1087019.0      2       150.00
9.00          .0
                  2380.0      177.7
            46    2410.0       185.8   949038.4      2       150.00
9.00          .0
                  2440.0      193.8
            47    2470.0       201.9   862499.9      2        150.00
9.00          .0
                  2500.0      210.0
```

```
            48   2520.0      220.0    503846.1      2       150.00
9.00         .0
                  2540.0     230.0
            49   2560.0      240.0    419230.8      2       150.00
9.00         .0
                  2580.0     250.0
            50    2610.0      274.7    397398.4      2       150.00
9.00         .0
                  2640.0     299.4
            51   2652.5      309.7    63419.2       2       150.00
9.00         .0
                  2665.0     320.0
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                  JOB NO. 4816-07, SECTION B-B'
                  FACTOR OF SAFETY  ALONG NONCIRCULAR SURFACE

            TABLE NO. 21

*********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
          *
*********************************************************************
*
                                                    FORCES    DUE   TO
SURFACE PRESSURES
                                          Y FOR
            SLICE          SEISMIC     SEISMIC     NORMAL     SHEAR
              NO.     X      FORCE       FORCE      FORCE      FORCE
  X         Y

              1    159.6        0.        129.4        0.         0.
 .0        .0
              2    179.6        0.         128.1       0.         0.
 .0        .0
              3    194.0         0.        127.3        0.         0.
 .0        .0
              4    209.0        0.        126.4        0.         0.
 .0        .0
              5    225.0        0.        124.3        0.         0.
 .0        .0
              6    260.0        0.         115.4       0.         0.
 .0        .0
              7    300.0         0.        103.6        0.         0.
 .0        .0
```

8	325.0	0.	93.6	0.	0.	
.0	.0					
9	370.0	0.	80.5	0.	0.	
.0	.0					
10	410.0	0.	70.7	0.	0.	
.0	.0					
11	425.0	0.	67.2	0.	0.	
.0	.0					
12	455.0	0.	61.8	0.	0.	
.0	.0					
13	505.0	0.	61.1	0.	0.	
.0	.0					
14	540.0	0.	66.2	0.	0.	
.0	.0					
15	560.0	0.	67.7	0.	0.	
.0	.0					
16	605.0	0.	69.9	0.	0.	
.0	.0					
17	655.0	0.	73.0	0.	0.	
.0	.0					
18	695.0	0.	76.7	0.	0.	
.0	.0					
19	745.0	0.	82.2	0.	0.	
.0	.0					
20	807.5	0.	89.4	0.	0.	
.0	.0					
21	882.5	0.	98.1	0.	0.	
.0	.0					
22	950.0	0.	101.3	0.	0.	
.0	.0					
23	995.0	0.	97.5	0.	0.	
.0	.0					
24	1032.5	0.	92.6	0.	0.	
.0	.0					
25	1077.5	0.	87.8	0.	0.	
.0	.0					
26	1137.5	0.	80.2	0.	0.	
.0	.0					
27	1200.0	0.	82.8	0.	0.	
.0	.0					
28	1252.5	0.	93.4	0.	0.	
.0	.0					
29	1305.0	0.	102.9	0.	0.	
.0	.0					
30	1335.0	0.	110.1	0.	0.	
.0	.0					
31	1367.5	0.	115.3	0.	0.	
.0	.0					
32	1422.5	0.	124.1	0.	0.	
.0	.0					
33	1490.0	0.	132.9	0.	0.	
.0	.0					
34	1565.0	0.	135.5	0.	0.	
.0	.0					

	35	1632.5	0.	132.0	0.	0.
.0	.0					
	36	1697.5	0.	133.4	0.	0.
.0	.0					
	37	1762.5	0.	139.7	0.	0.
.0	.0					
	38	1832.9	0.	148.8	0.	0.
.0	.0					
	39	1908.8	0.	160.7	0.	0.
.0	.0					
	40	1984.7	0.	172.6	0.	0.
.0	.0					
	41	2060.6	0.	184.4	0.	0.
.0	.0					

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

FORCES DUE TO SURFACE PRESSURES

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
42	2133.9	0.	195.9	0.	0.		
.0	.0						
43	2204.6	0.	207.0	0.	0.		
.0	.0						
44	2275.0	0.	214.7	0.	0.		
.0	.0						
45	2345.0	0.	230.4	0.	0.		
.0	.0						
46	2410.0	0.	249.0	0.	0.		
.0	.0						
47	2470.0	0.	259.4	0.	0.		
.0	.0						

```
            48    2520.0        0.       270.4        0.        0.
  .0        .0
            49    2560.0        0.       281.9        0.        0.
  .0        .0
            50    2610.0        0.       301.2        0.        0.
  .0        .0
            51    2652.5        0.       319.9        0.        0.
  .0        .0
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                   ARADI-SADDLEBACK MEADOWS

                   JOB NO. 4816-07, SECTION B-B'

                   FACTOR OF SAFETY ALONG NONCIRCULAR  SURFACE

          TABLE NO. 23

**********************************************************************
*                                                                    *
         * INFORMATION GENERATED  DURING ITERATIVE SOLUTION  FOR
THE FACTOR *
         * OF  SAFETY AND  SIDE FORCE  INCLINATION BY  SPENCER'S
PROCEDURE    *

**********************************************************************
*
```

ITERATION	TRIAL FACTOR OF SAFETY	TRIAL SIDE FORCE INCLINATION (DEGREES)	FORCE IMBALANCE (LBS.)	MOMENT IMBALANCE (FT.-LBS.)	DELTA-F	DELTA THETA (DEGREES)
1	3.00000	15.0000	.7243E+06	.1338E+10		
FIRST-ORDER CORRECTIONS TO F AND THETA					-.130E+01	-.914E+01
VALUES FACTORED BY .384E+00 - DELTAS TOO LARGE					-.500E+00	-.351E+01
2	2.50000	11.4873	.3644E+06	.8362E+09		
FIRST-ORDER CORRECTIONS TO F AND THETA					-.534E+00	-.688E+01
VALUES FACTORED BY .936E+00 - DELTAS TOO LARGE					-.500E+00	-.644E+01
3	2.00000	5.0468	-.1246E+06	.1165E+09		
FIRST-ORDER CORRECTIONS TO F AND THETA					.401E-01	-.138E+01
SECOND-ORDER CORRECTION - ITERATION 1					.415E-01	-.138E+01

```
          SECOND-ORDER  CORRECTION  -  ITERATION     2  ........
.415E-01 -.138E+01

             4   2.04151     3.6692    .1136E+03  -.3223E+07
          FIRST-ORDER  CORRECTIONS  TO  F AND  THETA  .........
.656E-03  .346E-01
          SECOND-ORDER  CORRECTION  -  ITERATION     1  ........
.657E-03  .346E-01

             5   2.04216     3.7038  -.5625E+00   .3652E+03
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
.236E-06 -.418E-05
          SECOND-ORDER  CORRECTION  -  ITERATION     1  ........
.236E-06 -.416E-05

             6   2.04216     3.7038  -.1680E+00  -.3174E+02
          FIRST-ORDER  CORRECTIONS  TO  F AND  THETA  .........
.102E-06  .262E-06

          FACTOR OF SAFETY - - - - - - - - -     2.042
          SIDE FORCE INCLINATION - - - - - -     3.70
          NUMBER OF ITERATIONS - - - - - - -     6
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                  ARADI-SADDLEBACK MEADOWS

                  JOB  NO. 4816-07, SECTION B-B'

                  FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

          TABLE NO. 24
          ********************************************
          * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
          * SURFACE IN CASE OF A SEARCH)              *
          ********************************************

          SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
          FACTOR OF SAFETY =  2.042      SIDE FORCE INCLINATION =
 3.70 DEGREES

                  --------  VALUES  AT  CENTER  OF  BASE  OF
SLICE---------

                                                TOTAL    EFFECTIVE
          SLICE                                 NORMAL     NORMAL
SHEAR
            NO.     X-CENTER  Y-CENTER     STRESS      STRESS
STRESS

             1        159.6     124.0      1855.8      1855.8
546.2
             2        179.6      111.5     5423.1       5017.5
1268.1
```

	3	194.0	102.5	7938.6	6971.4
1714.3					
	4	209.0	93.1	9449.8	7897.6
686.0					
	5	225.0	83.1	11581.8	9405.6
802.9					
	6	260.0	65.0	13770.5	10463.3
885.0					
	7	300.0	45.0	15854.5	11299.3
949.8					
	8	325.0	35.0	15433.9	10254.7
868.8					
	9	370.0	20.0	15873.0	9757.8
830.2					
	10	410.0	6.7	16747.3	9800.1
833.5					
	11	425.0	1.7	17137.3	9878.1
839.6					
	12	455.0	-5.4	17278.8	9581.3
816.6					
	13	505.0	-16.1	19867.7	11501.7
965.5					
	14	540.0	-23.6	23135.5	14301.4
1182.6					
	15	560.0	-27.9	24628.4	15526.9
1277.7					
	16	605.0	-33.5	26267.4	16813.8
1377.5					
	17	655.0	-38.5	28316.6	18551.0
1512.2					
	18	695.0	-40.0	29289.8	19430.6
1580.4					
	19	745.0	-40.0	30671.7	20812.5
1687.6					
	20	807.5	-40.0	32462.0	22602.8
1826.5					
	21	882.5	-40.0	34660.5	24801.3
1997.0					
	22	950.0	-40.0	35445.7	25586.5
2057.9					
	23	995.0	-40.0	34503.5	24644.3
1984.8					
	24	1032.5	-37.3	32117.2	22428.2
1812.9					
	25	1077.5	-31.8	29589.8	20241.1
1643.3					
	26	1137.5	-24.5	25911.2	17016.3
1393.2					
	27	1200.0	-17.0	24664.9	16242.8
1333.2					
	28	1252.5	-10.6	25729.7	17704.6
1446.6					
	29	1305.0	-4.2	26485.7	18857.8
1536.0					

	30	1335.0	-.6	27373.5	19972.5
1622.5					
	31	1367.5	4.3	27322.3	20226.0
1642.1					
	32	1422.5	12.8	27393.7	20831.3
1689.1					
	33	1490.0	23.3	26969.2	21062.0
1707.0					
	34	1565.0	35.0	24722.5	19543.3
1589.2					
	35	1632.5	45.5	21276.8	16752.8
1372.8					
	36	1697.5	55.6	19147.9	15254.9
1256.6					
	37	1762.5	65.7	18208.2	14946.0
1232.6					
	38	1832.9	76.7	17743.9	15165.6
1249.7					
	39	1908.8	88.5	17755.1	15913.4
1307.7					
	40	1984.7	100.3	17766.3	16661.3
1365.7					
1					

	VALUES AT CENTER OF BASE OF SLICE			
SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS
SHEAR STRESS				
	41	2060.6	112.1	17777.5	17409.2
1423.7					
	42	2133.9	123.5	17790.7	17790.7
1453.2					
	43	2204.6	134.5	17805.9	17805.9
1454.4					
	44	2275.0	149.4	15781.7	15781.7
1297.4					
	45	2345.0	168.3	15014.0	15014.0
1237.9					
	46	2410.0	185.8	15293.2	15293.2
1259.5					
	47	2470.0	201.9	13897.4	13897.4
1151.3					
	48	2520.0	220.0	11784.9	11784.9
987.5					
	49	2560.0	240.0	9800.7	9800.7
833.6					
	50	2610.0	274.7	5905.2	5905.2
531.4					
	51	2652.5	309.7	2230.8	2230.8

246.5

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = 1.30
(= .130E+01)
SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = 2.02
(= .202E+01)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = 97.62
(= .976E+02)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .19
(= .193E+00)
SHOULD NOT EXCEED .100E+03
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25
****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
-SURFACE IN CASE OF A SEARCH)-
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 2.042 --- SIDE FORCE INCLINATION = 3.70 DEGREES

VALUES AT RIGHT SIDE OF SLICE

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		1	169.2	32825.	124.6	.307
-243.7	3276.7					
		2	190.0	129904.	115.7	.237
-1667.4	7428.8					
		3	198.0	183423.	112.3	.227
-2161.2	8940.4					
		4	220.0	328753.	104.9	.241
-2350.4	10816.6					
		5	230.0	409336.	101.2	.249

-2417.7	12029.1 6	290.0	876524.	84.8	.308
-1195.8	16677.1 7	310.0	1054437.	79.2	.335
108.2	17878.8 8	340.0	1235216.	74.6	.376
2665.3	18138.7 9	400.0	1603259.	65.5	.443
8411.9	17144.0 10	420.0	1731847.	62.4	.457
9922.6	16837.1 11	430.0	1797505.	60.8	.463
10635.3	16698.1 12	480.0	2023936.	56.4	.468
11354.8	16789.2 13	530.0	2285625.	51.2	.424
7202.2	19407.7 14	550.0	2408687.	48.6	.403
5473.8	20606.7 15	570.0	2540065.	45.9	.390
4470.5	21601.3 16	640.0	2820948.	42.3	.365
2498.9	23438.6 17	670.0	2951537.	40.6	.355
1718.5	24240.7 18	720.0	3030724.	41.7	.343
717.6	24648.3 19	770.0	3115281.	42.7	.331
-190.7	25056.1 20	845.0	3252553.	44.0	.314
-1413.8	25681.1 21	920.0	3402639.	45.0	.303
-2179.1	26411.3 22	980.0	3526370.	45.8	.309
-1872.3	27177.5 23	1010.0	3586038.	46.3	.320
-1076.1	27583.9 24	1055.0	3492239.	51.5	.345
976.5	26953.9 25	1100.0	3404606.	56.6	.376
3842.3	25981.1 26	1175.0	3273264.	64.9	.422
8597.6	23863.8 27	1225.0	3190267.	70.3	.414
7590.5	23726.5 28	1280.0	3098105.	76.3	.396
5480.7	23805.0 29	1330.0	3014210.	81.8	.376
3510.8	23756.0 30	1340.0	2997220.	82.9	.374
3297.0	23689.1 31	1395.0	2853479.	90.5	.369
2724.7	22896.5 32	1450.0	2711714.	98.2	.367

2507.6	22003.1				
	33	1530.0	2512237.	109.6	.381
3444.9	20452.4				
	34	1600.0	2353949.	119.3	.423
6771.1	18432.1				
	35	1665.0	2227782.	127.8	.470
11101.6	15963.1				
	36	1730.0	2115618.	135.9	.496
13542.4	14267.1				
	37	1795.0	2011416.	143.9	.499
13625.3	13781.2				
	38	1870.9	1896539.	153.0	.488
12156.2	14065.0				
	39	1946.8	1785941.	162.1	.468
9997.7	14671.7				
	40	2022.7	1679621.	171.0	.448
8004.8	15174.7				

1

VALUES AT RIGHT SIDE OF SLICE

SIGMA AT TOP	SIGMA SLICE AT BOTTOM	NO.	X-RIGHT	FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		41	2098.6	1577581.	179.9	.428
6168.2	15583.2					
		42	2169.3	1484454.	188.2	.409
4617.1	15832.8					
		43	2240.0	1391243.	196.5	.404
4240.4	15628.9					
		44	2310.0	1184206.	209.7	.399
3657.0	14894.0					
		45	2380.0	987492.	222.9	.359
1207.3	14439.2					
		46	2440.0	815662.	235.0	.341
313.4	13166.2					
		47	2500.0	659918.	247.2	.341
260.3	11797.5					
		48	2540.0	463308.	261.9	.345
360.3	9657.0					
		49	2580.0	300296.	277.0	.359
606.0	7344.4					
		50	2640.0	39850.	308.9	.315
-144.9	2786.5					
		51	2665.0	8.	68.7	BELOW
1.3	-1.3					

CHECK SUMS - (ALL SHOULD BE SMALL)

```
          SUM OF FORCES IN  VERTICAL DIRECTION     =            1.30
(=   .130E+01)
               SHOULD NOT EXCEED      .100E+03
          SUM OF FORCES IN  HORIZONTAL DIRECTION   =            2.02
(=   .202E+01)
               SHOULD NOT EXCEED      .100E+03
          SUM OF MOMENTS  ABOUT COORDINATE ORIGIN =           97.62
(=   .976E+02)
               SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM     =             .19
(=   .193E+00)
               SHOULD NOT EXCEED      .100E+03

          END-OF-FILE ENCOUNTERED WHILE READING COMMAND
          WORDS - END OF PROBLEM(S) ASSUMED
```

CROSS SECTION B-B'

Slice (c)

(Seismic)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************


     ***************************************************************
           *
     *     *
           *     RESULTS OF COMPUTATIONS PERFORMED USING THIS
     COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
     THEY *
           *   HAVE BEEN VERIFIED BY INDEPENDENT ANALYSES,
     EXPERIMENTAL  *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
     THE  *
           *  ALGORITHMS AND ANALYTICAL PROCEDURES USED IN THE
     COMPUTER *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
     *     *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
     *     *
           *
     *     *
           *     NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
     WRIGHT *
           *  MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES,
     EXPRESSED OR *
           *  IMPLIED, CONCERNING THE ACCURACY, RELIABILITY,
     USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
     *     *
           *
     *     *

     ***************************************************************
     1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
     G. WRIGHT
                     ARADI-SADDLEBACK MEADOWS

                     JOB NO. 4816-07, SECTION B-B'

                     FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
FILL\QAL

POINT	X	Y
1	150.000	130.000
2	190.000	150.000
3	220.000	165.000
4	290.000	165.000
5	340.000	145.000
6	400.000	135.000
7	480.000	125.000
8	530.000	150.000
9	550.000	160.000
10	640.000	180.000
11	770.000	210.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	150.000	100.000
2	420.000	100.000
3	480.000	105.000
4	670.000	160.000
5	770.000	210.000
6	920.000	245.000
7	980.000	240.000
8	1100.000	200.000
9	1175.000	170.000
10	1225.000	195.000
11	1280.000	200.000
12	1330.000	220.000
13	1450.000	240.000
14	1530.000	245.000
15	1665.000	210.000

PROFILE LINE 3 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1665.000	210.000
2	1795.000	215.000

3	2240.000	285.000
4	2310.000	275.000
5	2380.000	310.000
6	2640.000	330.000
7	2670.000	330.000
8	2950.000	410.000
9	3250.000	470.000
10	3360.000	500.000
11	3510.000	500.000
12	3630.000	520.000
13	3800.000	540.000
14	3860.000	540.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C). 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO.-4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3

****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1

FILL\QAL

UNIT WEIGHT OF MATERIAL = 130.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION = = = = = = = = = 350.000
FRICTION ANGLE = = = = = 28.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE 2

QLS

UNIT WEIGHT OF MATERIAL = 125.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION = = = = = = = = = 450.000
FRICTION ANGLE = = = = = 15.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1

NEGATIVE PORE PRESSURES SET TO ZERO

ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 4

****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO.	POINT	X	Y
1 - UNIT WEIGHT OF WATER = 62.40			
1	1	.000	118.000
1	2	1600.000	118.000
1	3	3820.000	118.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9

****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y

1	150.000	130.000
2	230.000	80.000
3	310.000	40.000
4	430.000	.000
5	570.000	-30.000
6	670.000	-40.000
7	1010.000	-40.000
8	1340.000	.000
9	2240.000	140.000
10	2500.000	210.000
11	2580.000	250.000
12	2665.000	320.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

SEISMIC COEFFICIENT = .150

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES

(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10
****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	150.000	130.000
2	190.000	150.000
3	220.000	165.000
4	290.000	165.000
5	340.000	145.000
6	400.000	135.000
7	480.000	125.000
8	530.000	150.000
9	550.000	160.000
10	640.000	180.000
11	770.000	210.000
12	920.000	245.000
13	980.000	240.000
14	1100.000	200.000
15	1175.000	170.000
16	1225.000	195.000
17	1280.000	200.000
18	1330.000	220.000
19	1450.000	240.000
20	1530.000	245.000
21	1665.000	210.000
22	1795.000	215.000
23	2240.000	285.000
24	2310.000	275.000
25	2380.000	310.000
26	2640.000	330.000
27	2670.000	330.000
28	2950.000	410.000
29	3250.000	470.000
30	3360.000	500.000
31	3510.000	500.000
32	3630.000	520.000
33	3800.000	540.000
34	3860.000	540.000

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*

****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	150.0	130.0					
1	159.6	124.0	26956.8	1	350.00	28.00	.0
	169.2	118.0					
2	179.6	111.5	90043.2	1	350.00	28.00	405.6
	190.0	105.0					
3	194.0	102.5	51480.0	1	350.00	28.00	967.2
	198.0	100.0					
4	209.0	93.1	189076.3	2	450.00	15.00	1552.2
	220.0	86.3					
5	225.0	83.1	105593.8	2	450.00	15.00	2176.2
	230.0	80.0					
6	260.0	65.0	769500.0	2	450.00	15.00	3307.2
	290.0	50.0					
7	300.0	45.0	296100.0	2	450.00	15.00	4555.2
	310.0	40.0					
8	325.0	35.0	442650.0	2	450.00	15.00	5179.2
	340.0	30.0					
9	370.0	20.0	912000.0	2	450.00	15.00	6115.2
	400.0	10.0					
10	410.0	6.7	321083.3	2	450.00	15.00	6947.2
	420.0	3.3					
11	425.0	1.7	164333.3	2	450.00	15.00	7259.2
	430.0	.0					

```
              12      455.0       -5.4    840565.5      2       450.00
15.00      7697.5
                      480.0      -10.7
              13      505.0       -16.1    966137.3      2       450.00
15.00      8366.1
                      530.0      -21.4
              14      540.0       -23.6    449691.7      2       450.00
15.00      8834.1
                      550.0      -25.7
              15      560.0       -27.9    478604.8      2       450.00
15.00      9101.5
                      570.0      -30.0
              16      605.0       -33.5   1810933.0      2       450.00
15.00      9453.6
                      640.0      -37.0
              17      655.0       -38.5    836526.3      2       450.00
15.00      9765.6
                      670.0      -40.0
              18      695.0       -40.0   1459375.0      2       450.00
15.00      9859.2
                      720.0      -40.0
              19      745.0       -40.0   1528125.0      2       450.00
15.00      9859.2
                      770.0      -40.0
              20      807.5       -40.0   2425781.0      2       450.00
15.00      9859.2
                      845.0      -40.0
              21      882.5       -40.0   2589844.0      2       450.00
15.00      9859.2
                      920.0      -40.0
              22      950.0       -40.0   2118750.0      2       450.00
15.00      9859.2
                      980.0      -40.0
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
                    ARADI-SADDLEBACK MEADOWS
                    JOB NO. 4816-07, SECTION B-B

                    FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

              TABLE NO. 20

**********************************************************************
*
              * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
              * SHEAR SURFACE IN THE CASE OF  AN AUTOMATIC SEARCH)
             *

**********************************************************************
*
```

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	980.0	-40.0					
23	995.0	-40.0	1031250.0	2	450.00	15.00	9859.2
	1010.0	-40.0					
24	1032.5	-37.3	1461222.0	2	450.00	15.00	9689.0
	1055.0	-34.5					
25	1077.5	-31.8	1346165.0	2	450.00	15.00	9348.7
	1100.0	-29.1					
26	1137.5	-24.5	1964489.0	2	450.00	15.00	8894.8
	1175.0	-20.0					
27	1200.0	-17.0	1246686.0	2	450.00	15.00	8422.1
	1225.0	-13.9					
28	1252.5	-10.6	1430729.0	2	450.00	15.00	8025.0
	1280.0	-7.3					
29	1305.0	-4.2	1339015.0	2	450.00	15.00	7627.9
	1330.0	-1.2					
30	1335.0	-.6	276799.3	2	450.00	15.00	7401.0
	1340.0	.0					
31	1367.5	4.3	1526059.0	2	450.00	15.00	7096.3
	1395.0	8.6					
32	1422.5	12.8	1530261.0	2	450.00	15.00	6562.4
	1450.0	17.1					
33	1490.0	23.3	2191667.0	2	450.00	15.00	5907.2
	1530.0	29.6					
34	1565.0	35.0	1758102.0	2	450.00	15.00	5179.2
	1600.0	40.4					
35	1632.5	45.5	1405023.0	2	450.00	15.00	4524.0
	1665.0	50.6					
36	1697.5	55.6	1264566.0	2	450.00	15.00	3893.1
	1730.0	60.7					
37	1762.5	65.7	1202726.0	2	450.00	15.00	3262.1
	1795.0	70.8					
38	1832.9	76.7	1368808.0	2	450.00	15.00	2578.3
	1870.9	82.6					

		270.0	100.0				
	4	278.3	95.0	122677.4	1	350.00	
28.00	1495.5						
		286.7	90.0				
	5	303.3	80.0	329753.2	2	450.00	
15.00	2462.7						
		320.0	70.0				
	6	355.0	52.5	1024528.0	2	450.00	
15.00	4243.2						
		390.0	35.0				
	7	395.0	32.5	181597.2	2	450.00	
15.00	5541.1						
		400.0	30.0				
	8	420.0	26.2	784897.5	2	450.00	
15.00	5968.3						
		440.0	22.3				
	9	445.0	21.3	208595.1	2	450.00	
15.00	6299.5						
		450.0	20.4				
	10	460.0	18.5	425679.5	2	450.00	
15.00	6498.2						
		470.0	16.5				
	11	501.3	10.5	1389618.0	2	450.00	
15.00	7044.7						
		532.5	4.5				
	12	563.8	-1.5	1483519.0	2	450.00	
15.00	7872.7						
		595.0	-7.5				
	13	627.5	-13.8	1637188.0	2	450.00	
15.00	8717.3						
		660.0	-20.0				
	14	672.5	-21.6	651289.1	2	450.00	
15.00	9260.9						
		685.0	-23.1				
	15	713.8	-26.7	1594502.0	2	450.00	
15.00	9634.2						
		742.5	-30.3				
	16	771.3	-33.9	1768709.0	2	450.00	
15.00	10154.4						
		800.0	-37.5				
	17	807.5	-38.4	487064.1	2	450.00	
15.00	10482.4						
		815.0	-39.4				
	18	857.5	-44.7	2875842.0	2	450.00	
15.00	10934.8						
		900.0	-50.0				
	19	932.5	-50.0	2254688.0	2	450.00	
15.00	11359.9						
		965.0	-50.0				
	20	997.5	-50.0	2214063.0	2	450.00	
15.00	11441.0						
		1030.0	-50.0				
	21	1055.0	-50.0	1687500.0	2	450.00	
15.00	11512.8						

1080.0 -50.0
22 1090.0 -50.0 675000.0 2 450.00
15.00 11556.5
1100.0 -50.0
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT
ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION A-A'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	1100.0	-50.0					
23	1120.0	-47.4	1337209.0	2	450.00	15.00	11434.3
	1140.0	-44.9					
24	1171.3	-40.9	2077239.0	2	450.00	15.00	11089.2
	1202.5	-36.9					
25	1233.8	-32.9	2092910.0	2	450.00	15.00	10668.4
	1265.0	-28.9					
26	1298.8	-24.6	2116365.0	2	450.00	15.00	10230.7
	1332.5	-20.3					
27	1366.3	-15.9	1811487.0	2	450.00	15.00	9776.2
	1400.0	-11.6					
28	1450.0	-5.2	2471657.0	2	450.00	15.00	9212.3
	1500.0	1.2					
29	1550.0	7.6	2499273.0	2	450.00	15.00	8538.9
	1600.0	14.0					
30	1650.0	20.3	2526890.0	2	450.00	15.00	7865.6

	39	1908.8	88.5	1370067.0	2	450.00
15.00	1841.7					
		1946.8	94.4			
	40	1984.7	100.3	1371325.0	2	450.00
15.00	1105.0					
		2022.7	106.2			
	41	2060.6	112.1	1372588.0	2	450.00
15.00	368.3					
		2098.6	118.0			
	42	2133.9	123.5	1280055.0	2	450.00
15.00	.0					
		2169.3	129.0			
	43	2204.6	134.5	1281152.0	2	450.00
15.00	.0					
		2240.0	140.0			
	44	2275.0	149.4	1142548.0	2	450.00
15.00	.0					
		2310.0	158.8			

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
****

	SLICE			SLICE	MATL.		
FRICTION	PORE						
	NO.	X	Y	WEIGHT	TYPE	COHESION	
ANGLE	PRESSURE						
		2310.0	158.8				
	45	2345.0	168.3	1087019.0	2	450.00	
15.00	.0						
		2380.0	177.7				
	46	2410.0	185.8	949038.4	2	450.00	
15.00	.0						
		2440.0	193.8				
	47	2470.0	201.9	862499.9	2	450.00	
15.00	.0						
		2500.0	210.0				

```
            48    2520.0      220.0    503846.1      2        450.00
15.00          .0
                  2540.0      230.0
            49    2560.0      240.0    419230.8      2        450.00
15.00          .0
                  2580.0      250.0
            50    2610.0      274.7    397398.4      2        450.00
15.00          .0
                  2640.0      299.4
            51    2652.5      309.7     63419.2      2        450.00
15.00          .0
                  2665.0      320.0
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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                   ARADI-SADDLEBACK MEADOWS

                   JOB NO. 4816-07, SECTION B-B'

                   FACTOR OF SAFETY  ALONG NONCIRCULAR SURFACE

           TABLE NO. 21

**************************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
          *

**************************************************************************
*

                                                        FORCES    DUE    TO
    SURFACE PRESSURES
                                          Y FOR
          SLICE          SEISMIC    SEISMIC    NORMAL   SHEAR
          NO.      X     FORCE      FORCE      FORCE    FORCE
     X         Y

                1    159.6     4044.      129.4       0.       0.
    .0        .0
                2    179.6    13506.      128.1       0.       0.
    .0        .0
                3    194.0     7722.      127.3       0.       0.
    .0        .0
                4    209.0    28361.      126.4       0.       0.
    .0        .0
                5    225.0    15839.      124.3       0.       0.
    .0        .0
                6    260.0   115425.      115.4       0.       0.
    .0        .0
                7    300.0    44415.      103.6       0.       0.
    .0        .0
```

8	325.0	66398.	93.6	0.	0.	
.0	.0					
9	370.0	136800.	80.5	0.	0.	
.0	.0					
10	410.0	48163.	70.7	0.	0.	
.0	.0					
11	425.0	24650.	67.2	0.	0.	
.0	.0					
12	455.0	126085.	61.8	0.	0.	
.0	.0					
13	505.0	144921.	61.1	0.	0.	
.0	.0					
14	540.0	67454.	66.2	0.	0.	
.0	.0					
15	560.0	71791.	67.7	0.	0.	
.0	.0					
16	605.0	271640.	69.9	0.	0.	
.0	.0					
17	655.0	125479.	73.0	0.	0.	
.0	.0					
18	695.0	218906.	76.7	0.	0.	
.0	.0					
19	745.0	229219.	82.2	0.	0.	
.0	.0					
20	807.5	363867.	89.4	0.	0.	
.0	.0					
21	882.5	388477.	98.1	0.	0.	
.0	.0					
22	950.0	317813.	101.3	0.	0.	
.0	.0					
23	995.0	154688.	97.5	0.	0.	
.0	.0					
24	1032.5	219183.	92.6	0.	0.	
.0	.0					
25	1077.5	201925.	87.8	0.	0.	
.0	.0					
26	1137.5	294673.	80.2	0.	0.	
.0	.0					
27	1200.0	187003.	82.8	0.	0.	
.0	.0					
28	1252.5	214609.	93.4	0.	0.	
.0	.0					
29	1305.0	200852.	102.9	0.	0.	
.0	.0					
30	1335.0	41520.	110.1	0.	0.	
.0	.0					
31	1367.5	228909.	115.3	0.	0.	
.0	.0					
32	1422.5	229539.	124.1	0.	0.	
.0	.0					
33	1490.0	328750.	132.9	0.	0.	
.0	.0					
34	1565.0	263715.	135.5	0.	0.	
.0	.0					

35	1632.5	210754.	132.0	0.	0.
.0	.0				
36	1697.5	189685.	133.4	0.	0.
.0	.0				
37	1762.5	180409.	139.7	0.	0.
.0	.0				
38	1832.9	205321.	148.8	0.	0.
.0	.0				
39	1908.8	205510.	160.7	0.	0.
.0	.0				
40	1984.7	205699.	172.6	0.	0.
.0	.0				
41	2060.6	205888.	184.4	0.	0.
.0	.0				

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *

* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****

FORCES DUE TO SURFACE PRESSURES

SLICE NO.	X	SEISMIC FORCE	SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE
X	Y		Y FOR		
42	2133.9	192008.	195.9	0.	0.
.0	.0				
43	2204.6	192173.	207.0	0.	0.
.0	.0				
44	2275.0	171382.	214.7	0.	0.
.0	.0				
45	2345.0	163053.	230.4	0.	0.
.0	.0				
46	2410.0	142356.	249.0	0.	0.
.0	.0				
47	2470.0	129375.	259.4	0.	0.
.0	.0				

```
            48    2520.0    75577.      270.4        0.        0.
  .0        .0
            49    2560.0    62885.      281.9        0.        0.
  .0        .0
            50    2610.0    59610.      301.2        0.        0.
  .0        .0
            51    2652.5     9513.      319.9        0.        0.
  .0        .0
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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                   ARADI-SADDLEBACK MEADOWS

                   JOB NO. 4816-07, SECTION B-B'

                   FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

          TABLE NO. 23

     **************************************************************************
     *
          * INFORMATION GENERATED DURING ITERATIVE SOLUTION FOR
     THE FACTOR *
          * OF SAFETY AND SIDE FORCE INCLINATION BY SPENCER'S
     PROCEDURE    *

     **************************************************************************
     *
                        TRIAL      TRIAL
                      FACTOR     SIDE FORCE    FORCE      MOMENT
          DELTA
          ITER-        OF      INCLINATION   IMBALANCE  IMBALANCE
     DELTA-F    THETA
          ATION     SAFETY     (DEGREES)      (LBS.)     (FT.-LBS.)
       (DEGREES)

               1   3.00000      15.0000     .7190E+07   .2553E+10
               FIRST-ORDER CORRECTIONS TO F AND THETA .........
     -.507E+01 -.152E+01
               VALUES FACTORED BY   .987E-01 - DELTAS TOO LARGE
     -.500E+00 -.150E+00

                  2   2.50000     14.8504    .6335E+07    .2261E+10
               FIRST-ORDER CORRECTIONS TO F AND THETA .........
     -.307E+01 -.161E+01
               VALUES FACTORED BY   .163E+00 - DELTAS TOO LARGE
     -.500E+00 -.262E+00

                  3   2.00000     14.5882    .5038E+07    .1824E+10
               FIRST-ORDER CORRECTIONS TO F AND THETA .........
     -.155E+01 -.176E+01
               VALUES FACTORED BY    .323E+00 - DELTAS TOO LARGE
     -.500E+00 -.567E+00
```

```
            4   1.50000     14.0209    .2842E+07    .1103E+10
          FIRST-ORDER  CORRECTIONS  TO   F  AND  THETA  .........
-.488E+00 -.198E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.392E+00 -.198E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
-.388E+00 -.198E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      3  ........
-.388E+00 -.198E+01

            5   1.11197     12.0425  -.2195E+06    .8015E+08
          FIRST-ORDER CORRECTIONS  TO  F  AND  THETA  .........
.127E-01 -.125E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.133E-01 -.125E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
.133E-01 -.125E+01

            6   1.12530     10.7945    .3508E+03  -.2892E+07
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
.120E-03  .285E-01
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
.120E-03  .285E-01

            7   1.12542     10.8231    .8574E+00   .1293E+04
          FIRST-ORDER  CORRECTIONS  TO   F  AND  THETA  .........
-.139E-06 -.108E-04
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.139E-06 -.108E-04

            8   1.12542     10.8231  -.1426E+00  -.2708E+02
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
.133E-07 -.107E-07

          FACTOR OF SAFETY ..................  1.125
          SIDE FORCE INCLINATION ............  10.82
          NUMBER OF ITERATIONS ..............  8
1         UTEXAS2 - VER. 1.209 - 11/23/87 -- SN00004 - (C) 1985 S.
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                  ARADI-SADDLEBACK MEADOWS

                  JOB NO. 4816-07, SECTION B-B'

                  FACTOR  OF SAFETY ALONG NONCIRCULAR SURFACE


          TABLE NO. 24
          ********************************************
          * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
          * SURFACE IN CASE OF A SEARCH)              *
          ********************************************

          SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
```

FACTOR OF SAFETY = 1.125 SIDE FORCE INCLINATION = 10.82 DEGREES

-------- VALUES AT CENTER OF BASE OF SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
1	159.6	124.0	3268.4	3268.4	1855.2
2	179.6	111.5	8693.1	8287.5	4226.5
3	194.0	102.5	12388.8	11421.6	5707.2
4	209.0	93.1	12201.6	10649.4	2935.3
5	225.0	83.1	14806.4	12630.2	3406.9
6	260.0	65.0	16475.4	13168.2	3535.0
7	300.0	45.0	18797.3	14242.1	3790.7
8	325.0	35.0	17124.6	11945.4	3243.9
9	370.0	20.0	17513.3	11398.1	3113.6
10	410.0	6.7	18407.8	11460.5	3128.5
11	425.0	1.7	18813.6	11554.4	3150.8
12	455.0	-5.4	18258.9	10561.4	2914.4
13	505.0	-16.1	21012.4	12646.3	3410.8
14	540.0	-23.6	24520.8	15686.7	4134.7
15	560.0	-27.9	26118.9	17017.4	4451.5
16	605.0	-33.5	26975.4	17521.8	4571.6
17	655.0	-38.5	29097.5	19331.9	5002.5
18	695.0	-40.0	29312.4	19453.2	5031.4
19	745.0	-40.0	30711.7	20852.5	5364.6
20	807.5	-40.0	32524.3	22665.1	5796.1
21	882.5	-40.0	34750.4	24891.2	6326.2

22	950.0	-40.0	35545.5	25686.3
6515.4				
23	995.0	-40.0	34591.4	24732.2
6288.3				
24	1032.5	-37.3	31203.7	21514.7
5522.2				
25	1077.5	-31.8	28741.9	19393.3
5017.1				
26	1137.5	-24.5	25157.9	16263.1
4271.9				
27	1200.0	-17.0	23950.3	15528.2
4096.9				
28	1252.5	-10.6	24998.7	16973.7
4441.1				
29	1305.0	-4.2	25745.5	18117.6
4713.4				
30	1335.0	-.6	26617.4	19216.4
4975.0				
31	1367.5	4.3	26344.9	19248.6
4982.7				
32	1422.5	12.8	26422.0	19859.6
5128.2				
33	1490.0	23.3	26021.2	20114.0
5188.8				
34	1565.0	35.0	23858.6	18679.4
4847.2				
35	1632.5	45.5	20535.2	16011.2
4211.9				
36	1697.5	55.6	18485.2	14592.2
3874.1				
37	1762.5	65.7	17585.6	14323.5
3810.1				
38	1832.9	76.7	17146.7	14568.4
3868.4				
39	1908.8	88.5	17168.6	15327.0
4049.0				
40	1984.7	100.3	17190.5	16085.5
4229.6				
1				

---------- VALUES AT CENTER OF BASE OF SLICE----------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	2060.6	112.1	17212.4	16844.1	4410.2
42	2133.9	123.5	17230.7	17230.7	4502.3
43	2204.6	134.5	17245.4	17245.4	

```
4505.8
            44        2275.0      149.4      14787.0      14787.0
3920.4
            45        2345.0      168.3      14066.9      14066.9
3749.0
            46        2410.0      185.8      14328.7      14328.7
3811.3
            47        2470.0      201.9      13019.5      13019.5
3499.6
            48        2520.0      220.0      10359.5      10359.5
2866.3
            49        2560.0      240.0       8602.0       8602.0
2447.9
            50        2610.0      274.7       4725.2       4725.2
1524.9
            51        2652.5      309.7       1690.5       1690.5
802.3
-------------------------------------------------------------------------------

          CHECK SUMS - (ALL SHOULD BE SMALL)
          SUM OF FORCES IN VERTICAL DIRECTION     =        1.11
(=  .111E+01)
               SHOULD NOT EXCEED      .100E+03
          SUM OF FORCES IN  HORIZONTAL DIRECTION  =        2.01
(=  .201E+01)
               SHOULD NOT EXCEED      .100E+03
          SUM OF  MOMENTS ABOUT COORDINATE ORIGIN  =       31.31
(=  .313E+02)
-------------------------------------------------------------------------------
               SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM     =         .34
(=  .338E+00)
               SHOULD NOT EXCEED      .100E+03
1         UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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-------------------------------------------------------------------------------
                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION B-B'

                  FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE


          TABLE NO. 25
          ***********************************************
          * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL   *
          * SURFACE IN CASE OF A SEARCH)                *
          ***********************************************

          SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
          FACTOR OF SAFETY =  1.125      SIDE FORCE INCLINATION =
10.82 DEGREES

                  ---------------- VALUES  AT RIGHT  SIDE OF  SLICE
----------------
```

SIGMA AT TOP	SIGMA SLICE AT BOTTOM	NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		1	169.2	72079.	125.5	.348
297.6	6257.6					
		2	190.0	262887.	117.0	.267
-2288.8	13764.8					
		3	198.0	364576.	113.7	.255
-3135.8	16398.4					
		4	220.0	572258.	108.0	.281
-2279.8	16785.0					
		5	230.0	685035.	104.7	.291
-2025.3	17857.0					
		6	290.0	1286678.	90.3	.357
1577.4	20790.6					
		7	310.0	1510023.	85.4	.388
4164.6	21188.6					
		8	340.0	1715851.	82.4	.443
9321.0	19123.4					
		9	400.0	2123381.	76.9	.534
20053.4	13260.8					
		10	420.0	2262990.	74.8	.554
22748.0	11668.6					
		11	430.0	2333820.	73.8	.562
23995.0	10935.4					
		12	480.0	2552985.	72.8	.582
26039.0	8903.2					
		13	530.0	2808277.	69.8	.532
19179.3	13001.1					
		14	550.0	2930785.	67.5	.506
16156.0	15078.4					
		15	570.0	3062302.	64.9	.488
14347.2	16590.5					
		16	640.0	3303798.	61.9	.456
10977.9	18921.3					
		17	670.0	3417714.	60.0	.441
9546.2	20040.2					
		18	720.0	3450970.	61.1	.424
7714.8	20713.9					
		19	770.0	3490686.	61.2	.405
5886.3	21537.2					
		20	845.0	3562813.	59.9	.374
3158.6	23005.4					
		21	920.0	3650355.	56.7	.345
909.0	24678.3					
		22	980.0	3724793.	53.9	.338
334.8	25973.8					
		23	1010.0	3759370.	53.0	.344
903.6	26448.2					
		24	1055.0	3615934.	57.3	.368

2968.4	25496.2				
	25	1100.0	3480599.	62.5	.402
6173.2	23836.2				
	26	1175.0	3273934.	73.2	.463
12423.5	19533.7				
	27	1225.0	3144318.	80.6	.465
11997.1	18383.3				
	28	1280.0	3004829.	88.0	.451
9897.1	18060.0				
	29	1330.0	2881420.	94.1	.432
7606.0	18049.4				
	30	1340.0	2856951.	95.2	.430
7311.6	18006.8				
	31	1395.0	2673432.	102.7	.423
6384.9	17242.1				
	32	1450.0	2496745.	109.5	.418
5669.3	16543.3				
	33	1530.0	2254975.	118.6	.424
5763.4	15349.3				
	34	1600.0	2067434.	127.1	.465
8601.1	13186.2				
	35	1665.0	1920203.	136.6	.524
13120.7	9840.3				
	36	1730.0	1793166.	146.8	.568
16298.3	6901.8				
	37	1795.0	1680602.	157.0	.589
17271.6	5267.2				
	38	1870.9	1564371.	168.4	.594
16676.5	4611.9				
	39	1946.8	1461639.	178.7	.583
14912.7	4959.5				
	40	2022.7	1372407.	187.7	.564
12893.6	5748.3				
1					

VALUES AT RIGHT SIDE OF SLICE

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT SIDE	Y-COORD. OF SIDE FORCE	FRACTION OF HEIGHT
		41	2098.6	1296675.	195.4	.535
10630.3	6966.7				
		42	2169.3	1232359.	201.5	.501
8389.3	8320.6				
		43	2240.0	1167964.	207.0	.479
7191.1	9227.0				
		44	2310.0	989155.	220.5	.484
6878.1	8373.6				
		45	2380.0	820425.	233.4	.442

```
4178.4     8616.5
             46        2440.0      672657.        243.0        .407
2404.9     8536.5
             47        2500.0      540597.        251.8        .383
1448.5     8273.7
             48         2540.0      369438.        265.5        .385
1210.9     6651.2
             49        2580.0     229947.        279.3        .388
989.2      5003.0
             50        2640.0       24698.       311.3        .395
295.9      1315.5
             51       2665.0           5.       2254.6     ABOVE
-6.7        6.7

          CHECK SUMS - (ALL SHOULD BE SMALL)
          SUM OF FORCES  IN VERTICAL DIRECTION      =          1.11
(= .111E+01)
                SHOULD NOT EXCEED      .100E+03
          SUM OF FORCES IN  HORIZONTAL DIRECTION  =          2.01
(= .201E+01)
                SHOULD NOT EXCEED      .100E+03
          SUM OF MOMENTS ABOUT  COORDINATE ORIGIN =         31.31
(=  .313E+02)
                SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM     =           .34
(=  .338E+00)
                SHOULD NOT EXCEED      .100E+03
```

END-OF-FILE ENCOUNTERED WHILE READING COMMAND WORDS - END OF PROBLEM(S) ASSUMED

CROSS SECTION B-B'

Slice (f)

(Static)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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           TABLE NO. 1
           ******************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2 *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT  *
           * VERSION NO. 1.209                      *
           * LAST REVISION DATE 11/23/87            *
           * SERIAL NO. 00004                       *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT   *
           * ALL RIGHTS RESERVED                    *
           ******************************************


*****************************************************************
           *
      *    *-----------------------------------------------------
           * RESULTS OF COMPUTATIONS PERFORMED USING THIS
COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
THEY *
           *  HAVE BEEN VERIFIED BY INDEPENDENT ANALYSES,
EXPERIMENTAL  *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
THE  *
           *  ALGORITHMS AND ANALYTICAL PROCEDURES USED IN THE
COMPUTER  *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
      *    *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
      *    *-----------------------------------------------------
           *
      *    *-----------------------------------------------------
           * NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
WRIGHT *
           *  MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES,
EXPRESSED OR *
           *  IMPLIED, CONCERNING THE ACCURACY, RELIABILITY,
USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
      *    *
           *
      *    *

*****************************************************************
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                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION B-B'

                    FACTOR OF SAFETY  ALONG CIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
QLS

POINT	X	Y
1	480.000	125.000
2	525.000	145.000
3	570.000	100.000
4	640.000	95.000
5	760.000	175.000

PROFILE LINE 2 - MATERIAL TYPE = 2
FILL

POINT	X	Y
1	525.000	145.000
2	550.000	160.000
3	640.000	180.000
4	780.000	210.000
5	845.000	230.000

PROFILE LINE 3 - MATERIAL TYPE = 3
ACROSS BEDDING

POINT	X	Y
1	760.000	175.000
2	845.000	230.000
3	920.000	245.000
4	1100.000	200.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *

```
**********

DATA FOR MATERIAL TYPE  1
QLS


     UNIT WEIGHT OF MATERIAL =  125.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - - -     150.000
     FRICTION ANGLE - - - - -   9.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  1
     NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE  2
FILL


     UNIT WEIGHT OF MATERIAL = 130.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - - -     250.000
     FRICTION ANGLE - - - - -  25.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  1
     NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE  3
ACROSS BEDDING


     UNIT WEIGHT OF MATERIAL = 130.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - - -     350.000
     FRICTION ANGLE - - - - -  30.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  1
     NEGATIVE PORE PRESSURES SET TO ZERO

ALL  NEW  MATERIAL  PROPERTIES DEFINED  -  NO  OLD DATA
RETAINED
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               JOB NO. 4816-07, SECTION B-B'

               FACTOR OF SAFETY  ALONG CIRCULAR SURFACE
```

```
TABLE NO.  4
******************************
* NEW PIEZOMETRIC LINE DATA *
******************************

LINE
 NO.     POINT        X             Y

  1 - UNIT  WEIGHT OF WATER =   62.40

  1          1          .000      118.000

  1          2      1600.000      118.000

  1          3      3820.000      118.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED
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                JOB NO. 4816-07, SECTION B-B'

                FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 9
**********************************
* NEW ANALYSIS/COMPUTATION DATA *
**********************************

CIRCULAR SHEAR SURFACE(S)

AUTOMATIC SEARCH PERFORMED

STARTING CENTER COORDINATE FOR SEARCH AT -
                                                    X  =
700.000                                             /
                                                    Y  =
600.000

REQUIRED ACCURACY FOR CRITICAL CENTER (= MINIMUM
SPACING BETWEEN GRID POINTS) =        1.000

CRITICAL SHEAR  SURFACE NOT ALLOWED TO PASS BELOW Y =
 80.000

FOR THE INITIAL MODE OF SEARCH
ALL CIRCLES ARE TANGENT TO HORIZONTAL LINE AT -
                                                    Y  =
100.000
```

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR
CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

INITIAL TRIAL VALUES FOR FACTOR OF SAFETY (AND SIDE FORCE INCLINATION
FOR SPENCER'S PROCEDURE) WILL BE KEPT CONSTANT DURING SEARCH

MAXIMUM SUBTENDED ANGLE TO BE USED FOR SUBDIVISION OF THE
CIRCLE INTO SLICES = 3.00 DEGREES

DEPTH OF CRACK = .000

SEARCH WILL BE CONTINUED TO LOCATE A MORE CRITICAL SHEAR
SURFACE (IF ONE EXISTS) AFTER THE INITIAL MODE IS COMPLETE

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

SEISMIC COEFFICIENT = .000

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 10
****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA
WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	480.000	125.000
2	525.000	145.000
3	550.000	160.000
4	640.000	180.000
5	780.000	210.000
6	845.000	230.000
7	920.000	245.000
8	1100.000	200.000

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JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 14

****
* SHORT-FORM TABLE FOR SEARCH WITH CIRCULAR SHEAR SURFACES *
****

FACTOR OF SAFETY	SIDE FORCE INCLIN.	MODE	CENTER COORDINATES OF CRITICAL CIRCLE X	Y	RADIUS
1.549	12.55	2 TANGENT LINE AT Y = 100.0	597.000	385.000	285.000
1.549	12.55	3 CONSTANT RADIUS OF R = 285.0	597.000	385.000	285.000

TABLE NO. 15
***** FINAL CRITICAL CIRCLE INFORMATION *****
X COORDINATE OF CENTER - - - - - - - - 597.000
Y COORDINATE OF CENTER - - - - - - - - 385.000
RADIUS - - - - - - - - - - - - - - - - 285.000
FACTOR OF SAFETY - - - - - - - - - - - 1.549
SIDE FORCE INCLINATION - - - - - - - - 12.55

NUMBER OF CIRCLES TRIED - - - - - - - 112
NO. OF CIRCLES F CALC. FOR - - - - - - 73

***** CAUTION ***** FACTOR OF SAFETY COULD NOT BE COMPUTED FOR SOME
OF GRID POINTS AROUND THE MINIMUM
***** RESULTS MAY BE ERRONEOUS *****
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 20

****
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	480.1	125.1					
1	487.0	122.2	10217.7	1	150.00	9.00	.0
	493.9	119.3					
2	495.6	118.7	5678.1	1	150.00	9.00	.0
	497.3	118.0					
3	504.4	115.6	35732.8	1	150.00	9.00	151.3
	511.4	113.1					
4	518.2	111.2	52220.6	1	150.00		

9.00	424.5					
		525.0	109.2			
	5	532.3	107.5	76784.3	1	150.00
9.00	652.1					
		539.5	105.9			
	6	544.8	104.9	69681.7	1	150.00
9.00	818.8					
		550.0	103.9			
	7	557.4	102.9	112182.8	1	150.00
9.00	944.4					
		564.8	101.8			
	8	566.7	101.6	30664.2	1	150.00
9.00	1021.9					
		568.6	101.4			
	9	569.3	101.4	11622.7	2	250.00
25.00	1038.9					
		570.0	101.3			
	10	577.4	100.8	126420.1	2	250.00
25.00	1075.2					
		584.9	100.3			
	11	590.9	100.1	108617.6	2	250.00
25.00	1115.2					
		597.0	100.0			
	12	604.5	100.2	139430.2	2	250.00
25.00	1111.0					
		611.9	100.4			
	13	619.4	101.0	143939.2	2	250.00
25.00	1062.3					
		626.8	101.6			
	14	633.4	102.4	130715.1	2	250.00
25.00	972.7					
		640.0	103.3			
	15	647.3	104.6	146993.9	2	250.00
25.00	837.4					
		654.7	105.9			
	16	655.9	106.2	24440.5	2	250.00
25.00	739.1					
		657.1	106.4			
	17	664.4	108.2	144984.0	1	150.00
9.00	612.9					
		671.6	109.9			
	18	678.8	112.1	141007.3	1	150.00
9.00	369.3					
		685.9	114.2			
	19	691.3	116.1	104123.3	1	150.00
9.00	117.8					
		696.7	118.0			
	20	703.6	120.8	129871.5	1	150.00
9.00	.0					
		710.5	123.6			
	21	717.3	126.7	121444.6	1	150.00
9.00	.0					
		724.0	129.9			
	22	730.6	133.4	111680.9	1	150.00

```
9.00          .0
                    737.2     136.9
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                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION B-B'

                    FACTOR OF SAFETY ALONG CIRCULAR SURFACE


          TABLE NO. 20

**************************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
          *
**************************************************************************
*

          SLICE                                  SLICE   MATL.
FRICTION    PORE
            NO.       X            Y          WEIGHT    TYPE   COHESION
ANGLE    PRESSURE

                    737.2     136.9
               23     743.6     140.7     100762.1     1      150.00
9.00          .0
                    750.0     144.6
               24     755.0     147.9      72496.8     1      150.00
9.00          .0
                    760.0     151.2
               25     766.0     155.6      80204.9     3      350.00
30.00         .0
                    772.0     160.1
               26     776.0     163.3      47617.0     3      350.00
30.00         .0
                    780.0     166.5
               27     785.6     171.5      58545.4     3      350.00
30.00         .0
                    791.2     176.4
               28     796.5     181.6      46338.4     3      350.00
30.00         .0
                    801.8     186.8
               29     806.9     192.3      34019.8     3      350.00
30.00         .0
                    811.9     197.8
               30     816.7     203.6      21863.1     3      350.00
30.00         .0
                    821.4     209.3
               31     825.3     214.6       9523.9     3      350.00
```

30.00 .0
829.2 219.8
32 831.6 223.2 1628.6 2 250.00
25.00 .0
833.9 226.6
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 21

****
* *
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *
* *
****

FORCES DUE TO SURFACE PRESSURES

SLICE NO.	X	Y FOR SEISMIC FORCE	SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
1	487.0	0.	125.2	0.	0.	.0	.0
2	495.6	0.	125.3	0.	0.	.0	.0
3	504.4	0.	125.7	0.	0.	.0	.0
4	518.2	0.	126.6	0.	0.	.0	.0
5	532.3	0.	128.6	0.	0.	.0	.0
6	544.8	0.	131.1	0.	0.	.0	.0
7	557.4	0.	132.4	0.	0.	.0	.0
8	566.7	0.	132.7	0.	0.	.0	.0
9	569.3	0.	132.8	0.	0.	.0	.0
10	577.4	0.	133.4	0.	0.	.0	.0
11	590.9	0.	134.6	0.	0.		

.0	.0				
	12	604.5	0.	136.1	0.	0.
.0	.0				
	13	619.4	0.	138.2	0.	0.
.0	.0				
	14	633.4	0.	140.5	0.	0.
.0	.0				
	15	647.3	0.	143.1	0.	0.
.0	.0				
	16	655.9	0.	144.8	0.	0.
.0	.0				
	17	664.4	0.	146.8	0.	0.
.0	.0				
	18	678.8	0.	150.3	0.	0.
.0	.0				
	19	691.3	0.	153.8	0.	0.
.0	.0				
	20	703.6	0.	157.5	0.	0.
.0	.0				
	21	717.3	0.	161.9	0.	0.
.0	.0				
	22	730.6	0.	166.7	0.	0.
.0	.0				
	23	743.6	0.	171.7	0.	0.
.0	.0				
	24	755.0	0.	176.5	0.	0.
.0	.0				
	25	766.0	0.	181.3	0.	0.
.0	.0				
	26	776.0	0.	186.2	0.	0.
.0	.0				
	27	785.6	0.	191.6	0.	0.
.0	.0				
	28	796.5	0.	198.3	0.	0.
.0	.0				
	29	806.9	0.	205.3	0.	0.
.0	.0				
	30	816.7	0.	212.4	0.	0.
.0	.0				
	31	825.3	0.	219.3	0.	0.
.0	.0				
	32	831.6	0.	224.5	0.	0.
.0	.0				

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 23

```
**********************************************************************
*
          * INFORMATION  GENERATED DURING ITERATIVE  SOLUTION FOR
THE FACTOR *
          * OF  SAFETY AND  SIDE FORCE  INCLINATION BY  SPENCER'S
PROCEDURE    *

**********************************************************************
*

                    TRIAL      TRIAL
                   FACTOR    SIDE  FORCE     FORCE       MOMENT
      DELTA
          ITER-       OF        INCLINATION    IMBALANCE    IMBALANCE
DELTA-F    THETA
          ATION  SAFETY    (DEGREES)       (LBS.)    (FT.-LBS.)
    (DEGREES)

              1   3.00000     15.0000   .2563E+06    .1585E+08
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.271E+01 -.651E+00
          VALUES  FACTORED BY     .184E+00  =  DELTAS TOO  LARGE
-.500E+00 -.120E+00

              2   2.50000     14.8800   .1996E+06    .1252E+08
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.148E+01 -.730E+00
          VALUES  FACTORED  BY     .339E+00  -  DELTAS  TOO  LARGE
-.500E+00 -.247E+00

              3   2.00000     14.6328   .1151E+06    .7662E+07
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.555E+00 -.908E+00
          VALUES  FACTORED  BY    .900E+00  -  DELTAS  TOO LARGE
-.500E+00 -.817E+00

              4   1.50000     13.8153  -.2339E+05    .4008E+06
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
.418E-01 -.170E+01
          SECOND-ORDER  CORRECTION  -  ITERATION     1  ........
.439E-01 -.170E+01
          SECOND-ORDER  CORRECTION  -  ITERATION     2  ........
.439E-01 -.170E+01

              5   1.54393     12.1131   .4501E+02  -.4515E+06
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
.521E-02  .442E+00
          SECOND-ORDER  CORRECTION  -  ITERATION     1  ........
.524E-02  .442E+00
          SECOND-ORDER  CORRECTION  -  ITERATION     2  ........
.524E-02  .442E+00

              6   1.54916     12.5554  -.6232E-01    .6750E+03
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
```

-.785E-05 -.659E-03
SECOND-ORDER CORRECTION - ITERATION 1 .....
-.785E-05 -.659E-03

7 1.54915 12.5548 -.3326E-01 -.7506E+00
FIRST-ORDER CORRECTIONS TO F AND THETA .....
.943E-07 -.361E-07

FACTOR OF SAFETY - - - - - - - - - 1.549
SIDE FORCE INCLINATION - - - - - - 12.55
NUMBER OF ITERATIONS - - - - - - - 7
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 24

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.549 SIDE FORCE INCLINATION = 12.55 DEGREES

SLICE NO.	VALUES AT CENTER OF BASE OF SLICE X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
1	487.0	122.2	956.2	956.2	194.6
2	495.6	118.7	2014.4	2014.4	302.8
3	504.4	115.6	2979.1	2827.7	385.9
4	518.2	111.2	4385.6	3961.1	501.8
5	532.3	107.5	5877.5	5225.4	631.1
6	544.8	104.9	7266.9	6448.1	756.1
7	557.4	102.9	8149.7	7205.3	833.5
8	566.7	101.6	8551.7	7529.8	

866.7					
	9	569.3	101.4	9223.3	8184.4
2624.9					
	10	577.4	100.8	9415.9	8340.7
2672.0					
	11	590.9	100.1	9680.2	8565.1
2739.5					
	12	604.5	100.2	9838.4	8727.4
2788.4					
	13	619.4	101.0	9909.7	8847.4
2824.5					
	14	633.4	102.4	9879.2	8906.5
2842.3					
	15	647.3	104.6	9742.2	8904.9
2841.8					
	16	655.9	106.2	9622.5	8883.5
2835.4					
	17	664.4	108.2	9466.7	8853.7
1002.0					
	18	678.8	112.1	9176.4	8807.2
997.3					
	19	691.3	116.1	8851.1	8733.2
989.7					
	20	703.6	120.8	8452.6	8452.6
961.0					
	21	717.3	126.7	7935.0	7935.0
908.1					
	22	730.6	133.4	7344.8	7344.8
847.8					
	23	743.6	140.7	6687.6	6687.6
780.6					
	24	755.0	147.9	6045.3	6045.3
714.9					
	25	766.0	155.6	4839.4	4839.4
2029.5					
	26	776.0	163.3	4170.4	4170.4
1780.2					
	27	785.6	171.5	3524.8	3524.8
1539.6					
	28	796.5	181.6	2784.1	2784.1
1263.5					
	29	806.9	192.3	2028.5	2028.5
981.9					
	30	816.7	203.6	1268.6	1268.6
698.7					
	31	825.3	214.6	564.0	564.0
436.1					
	32	831.6	223.2	88.5	88.5
188.0					

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = .05
(= .503E-01)

SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = .11
(= .112E+00)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -17.07
(= -.171E+02)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .03
(= .267E-01)
SHOULD NOT EXCEED .100E+03
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.549 SIDE FORCE INCLINATION = 12.55 DEGREES

		VALUES AT RIGHT SIDE OF SLICE				
SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		1	493.9	8387.	123.7	.372
157.9	1220.5					
		2	497.3	12133.	122.8	.326
-34.5	1646.0					
		3	511.4	32517.	120.4	.282
-379.9	2838.4					
		4	525.0	57036.	118.8	.264
-638.3	3703.9					
		5	539.5	86845.	117.6	.246
-925.8	4467.8					
		6	550.0	109488.	117.1	.241
-1081.3	4988.6					
		7	564.8	139427.	117.0	.246
-1154.5	5583.4					
		8	568.6	146370.	117.1	.250

-1144.8	5701.4				
	9	570.0	151501.	116.9	.246
-1220.0	5902.5				
	10	584.9	202131.	115.7	.229
-1827.7	7674.0				
	11	597.0	238686.	115.8	.225
-2156.6	8771.2				
	12	611.9	277359.	116.7	.223
-2447.4	9827.4				
	13	626.8	308517.	118.3	.222
-2674.8	10651.7				
	14	640.0	329763.	120.1	.220
-2861.4	11253.7				
	15	654.7	346205.	122.6	.216
-3085.0	11834.2				
	16	657.1	348207.	123.0	.215
-3126.3	11925.2				
	17	671.6	328871.	127.2	.225
-2721.6	11077.4				
	18	685.9	303217.	131.8	.233
-2366.6	10194.9				
	19	696.7	279891.	135.6	.238
-2117.1	9486.3				
	20	710.5	245170.	141.0	.244
-1799.4	8490.7				
	21	724.0	206545.	147.0	.251
-1462.8	7381.3				
	22	737.2	165328.	153.7	.263
-1072.3	6119.0				
	23	750.0	122950.	161.5	.287
-570.4	4637.4				
	24	760.0	89049.	169.3	.332
-15.7	3205.3				
	25	772.0	70141.	176.0	.331
-23.4	2862.8				
	26	780.0	57154.	180.9	.328
-38.2	2588.7				
	27	791.2	39127.	188.3	.321
-76.2	2137.8				
	28	801.8	23113.	196.1	.310
-106.1	1616.3				
	29	811.9	10420.	204.3	.294
-108.9	1033.9				
	30	821.4	2269.	212.8	.257
-75.6	405.9				
	31	829.2	-287.	222.7	.538
-64.2	-40.5				
	32	833.9	2.	260.3	ABOVE
.0	.0				

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = .05
(= .503E-01)

```
                SHOULD NOT EXCEED      .100E+03
          SUM OF FORCES IN  HORIZONTAL DIRECTION  =              .11
(=  .112E+00)
                SHOULD NOT EXCEED      .100E+03
          SUM OF MOMENTS  ABOUT COORDINATE ORIGIN =           -17.07
(= -.171E+02)
                SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM    =              .03
(=  .267E-01)
                SHOULD NOT EXCEED      .100E+03

          ***** CAUTION ***** FORCES  BETWEEN SLICES ARE NEGATIVE
AT POINTS
                                ALONG  THE  UPPER  ONE-HALF OF  THE
SHEAR SURFACE -
                                A TENSION CRACK MAY BE NEEDED.
```

CROSS SECTION B-B'

Slice (g)

(Seismic)

```
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************


*****************************************************************
           *
      *
           *          RESULTS OF COMPUTATIONS PERFORMED USING  THIS
COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
THEY *
           *   HAVE  BEEN  VERIFIED  BY  INDEPENDENT   ANALYSES,
EXPERIMENTAL  *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
THE   *
           *  ALGORITHMS  AND ANALYTICAL  PROCEDURES  USED IN  THE
COMPUTER  *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
      *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
      *
           *
      *
           *     NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN  G.
WRIGHT *
           *   MAKE  OR  ASSUME   LIABILITY  FOR  ANY  WARRANTIES,
EXPRESSED OR *
           *  IMPLIED,  CONCERNING   THE  ACCURACY,   RELIABILITY,
USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
      *
           *
      *

*****************************************************************
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION B-B'

                    FACTOR OF SAFETY  ALONG CIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
QLS

POINT	X	Y
1	480.000	125.000
2	525.000	145.000
3	570.000	100.000
4	640.000	95.000
5	760.000	175.000

PROFILE LINE 2 - MATERIAL TYPE = 2
FILL

POINT	X	Y
1	525.000	145.000
2	550.000	160.000
3	640.000	180.000
4	780.000	210.000
5	845.000	230.000

PROFILE LINE 3 - MATERIAL TYPE = 3
ACROSS BEDDING

POINT	X	Y
1	760.000	175.000
2	845.000	230.000
3	920.000	245.000
4	1100.000	200.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *

```
**********

DATA FOR MATERIAL TYPE  1
OLS


     UNIT WEIGHT OF MATERIAL =  125.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - -     450.000
     FRICTION ANGLE - - - - -  15.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  1
     NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE  2
FILL


     UNIT WEIGHT OF MATERIAL =  130.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - -     350.000
     FRICTION ANGLE - - - - -  28.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  1
     NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE  3
ACROSS BEDDING


     UNIT WEIGHT OF MATERIAL =  130.000

     CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
     COHESION - - - - - - - -     350.000
     FRICTION ANGLE - - - - -  30.000 DEGREES

     PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
     NUMBER OF THE PIEZOMETRIC LINE USED =  1
     NEGATIVE PORE PRESSURES SET TO ZERO

ALL  NEW  MATERIAL  PROPERTIES DEFINED  -  NO  OLD DATA
RETAINED
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               ARADI-SADDLEBACK MEADOWS

               JOB NO. 4816-07, SECTION B-B'

               FACTOR OF SAFETY  ALONG CIRCULAR SURFACE
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TABLE NO. 4
****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO.	POINT	X	Y
1 - UNIT WEIGHT OF WATER = 62.40			
1	1	.000	118.000
1	2	1600.000	118.000
1	3	3820.000	118.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 9
****
* NEW ANALYSIS/COMPUTATION DATA *
****

CIRCULAR SHEAR SURFACE(S)

AUTOMATIC SEARCH PERFORMED

STARTING CENTER COORDINATE FOR SEARCH AT -

X = 700.000

Y = 600.000

REQUIRED ACCURACY FOR CRITICAL CENTER (= MINIMUM SPACING BETWEEN GRID POINTS) = 1.000

CRITICAL SHEAR SURFACE NOT ALLOWED TO PASS BELOW Y = 80.000

FOR THE INITIAL MODE OF SEARCH
ALL CIRCLES ARE TANGENT TO HORIZONTAL LINE AT -

Y = 100.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

SEISMIC COEFFICIENT = .150

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

INITIAL TRIAL VALUES FOR FACTOR OF SAFETY (AND SIDE FORCE INCLINATION
FOR SPENCER'S PROCEDURE) WILL BE KEPT CONSTANT DURING SEARCH

MAXIMUM SUBTENDED ANGLE TO BE USED FOR SUBDIVISION OF THE
CIRCLE INTO SLICES = 3.00 DEGREES

DEPTH OF CRACK = .000

SEARCH WILL BE CONTINUED TO LOCATE A MORE CRITICAL SHEAR
SURFACE (IF ONE EXISTS) AFTER THE INITIAL MODE IS COMPLETE

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 10
****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	480.000	125.000
2	525.000	145.000
3	550.000	160.000
4	640.000	180.000
5	780.000	210.000
6	845.000	230.000
7	920.000	245.000
8	1100.000	200.000

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 14

****
* SHORT-FORM TABLE FOR SEARCH WITH CIRCULAR SHEAR SURFACES *
****

FACTOR OF SAFETY	SIDE FORCE INCLIN.	MODE	CENTER COORDINATES OF CRITICAL CIRCLE X	Y	RADIUS
1.305	21.75	2 TANGENT LINE AT Y = 100.0	620.000	504.000	404.000
1.305	21.75	3 CONSTANT RADIUS OF R = 404.0	620.000	504.000	404.000

TABLE NO. 15
***** FINAL CRITICAL CIRCLE INFORMATION *****
X COORDINATE OF CENTER - - - - - - - - 620.000
Y COORDINATE OF CENTER - - - - - - - - 504.000
RADIUS - - - - - - - - - - - - - - - - 404.000
FACTOR OF SAFETY - - - - - - - - - - - 1.305
SIDE FORCE INCLINATION - - - - - - - - 21.75

NUMBER OF CIRCLES TRIED - - - - - - - 101
NO. OF CIRCLES F CALC. FOR - - - - - - 67

***** CAUTION ***** FACTOR OF SAFETY COULD NOT BE COMPUTED FOR SOME
OF GRID POINTS ARDUND THE MINIMUM
***** RESULTS MAY BE ERRONEOUS *****
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 20

****
* *
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *
* *
****

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	480.0	125.0					
1	490.1	121.6	19658.3	1	450.00	15.00	.0
	500.1	118.2					
2	500.4	118.1	1368.2	1	450.00	15.00	.0
	500.8	118.0					
3	510.9	115.1	60089.2	1	450.00	15.00	178.2
	521.1	112.3					
4	523.1	111.8	15689.9	1	450.00		

15.00	386.4					
		525.0	111.3			
	5	535.3	109.1	110526.2	1	450.00
15.00	554.6					
		545.7	106.9			
	6	547.8	106.5	28971.4	1	450.00
15.00	717.4					
		550.0	106.1			
	7	558.2	104.8	121170.2	1	450.00
15.00	821.3					
		566.4	103.6			
	8	568.2	103.3	28152.7	2	350.00
28.00	915.0					
		570.0	103.1			
	9	580.5	102.1	177078.9	2	350.00
28.00	993.9					
		591.0	101.0			
	10	601.6	100.6	194781.0	2	350.00
28.00	1088.4					
		612.2	100.1			
	11	616.1	100.0	75900.3	2	350.00
28.00	1120.8					
		620.0	100.0			
	12	630.0	100.2	201578.3	2	350.00
28.00	1107.7					
		640.0	100.5			
	13	644.5	100.8	94574.7	2	350.00
28.00	1075.1					
		649.1	101.0			
	14	659.6	102.1	224068.1	1	450.00
15.00	993.1					
		670.1	103.1			
	15	680.6	104.7	226508.5	1	450.00
15.00	829.5					
		691.0	106.3			
	16	701.4	108.4	225347.5	1	450.00
15.00	597.5					
		711.7	110.6			
	17	722.0	113.2	220663.0	1	450.00
15.00	297.9					
		732.2	115.9			
	18	735.7	116.9	74934.6	1	450.00
15.00	65.6					
		739.2	118.0			
	19	749.3	121.4	209029.5	1	450.00
15.00	.0					
		759.3	124.8			
	20	759.6	124.9	7317.1	1	450.00
15.00	.0					
		760.0	125.0			
	21	769.8	129.0	201369.6	3	350.00
30.00	.0					
		779.6	132.9			
	22	779.8	133.0	3586.6	3	350.00

30.00 .0

780.0 133.0

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 20

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *

* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)

****

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	780.0	133.0					
23	789.6	137.5	188351.1	3	350.00	30.00	.0
	799.2	141.9					
24	808.5	146.9	174905.6	3	350.00	30.00	.0
	817.9	151.8					
25	827.0	157.2	158770.0	3	350.00	30.00	.0
	836.1	162.6					
26	840.5	165.5	73297.6	3	350.00	30.00	.0
	845.0	168.5					
27	853.6	174.6	128186.8	3	350.00	30.00	.0
	862.3	180.7					
28	870.5	187.3	103209.7	3	350.00	30.00	.0
	878.8	193.8					
29	886.8	200.8	77533.5	3	350.00	30.00	.0
	894.7	207.8					
30	902.3	215.2	51681.4	3	350.00	30.00	.0
	909.8	222.6					
31	914.9	228.0	21109.6	3	350.00		

30.00 .0
920.0 233.4
32 924.2 238.2 6256.9 3 350.00
30.00 .0
928.3 242.9
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 21

****
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

FORCES DUE TO SURFACE PRESSURES

SLICE NO.	X	Y FOR SEISMIC FORCE	SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE
1	490.1	2949.	125.5	0.	0.
.0	.0				
2	500.4	205.	126.1	0.	0.
.0	.0				
3	510.9	9013.	126.9	0.	0.
.0	.0				
4	523.1	2353.	128.0	0.	0.
.0	.0				
5	535.3	16579.	130.4	0.	0.
.0	.0				
6	547.8	4346.	132.8	0.	0.
.0	.0				
7	558.2	18176.	133.5	0.	0.
.0	.0				
8	568.2	4223.	133.7	0.	0.
.0	.0				
9	580.5	26562.	134.4	0.	0.
.0	.0				
10	601.6	29217.	136.0	0.	0.
.0	.0				
11	616.1	11385.	137.4	0.	0.

.0	.0				
	12	630.0	30237.	139.0	0.	0.
.0	.0				
	13	644.5	14186.	140.9	0.	0.
.0	.0				
	14	659.6	33610.	143.2	0.	0.
.0	.0				
	15	680.6	33976.	147.0	0.	0.
.0	.0				
	16	701.4	33802.	151.2	0.	0.
.0	.0				
	17	722.0	33099.	155.8	0.	0.
.0	.0				
	18	735.7	11240.	159.1	0.	0.
.0	.0				
	19	749.3	31354.	162.8	0.	0.
.0	.0				
	20	759.6	1098.	165.6	0.	0.
.0	.0				
	21	769.8	30205.	168.4	0.	0.
.0	.0				
	22	779.8	538.	171.5	0.	0.
.0	.0				
	23	789.6	28253.	175.2	0.	0.
.0	.0				
	24	808.5	26236.	182.8	0.	0.
.0	.0				
	25	827.0	23816.	190.8	0.	0.
.0	.0				
	26	840.5	10995.	197.1	0.	0.
.0	.0				
	27	853.6	19228.	203.1	0.	0.
.0	.0				
	28	870.5	15481.	211.2	0.	0.
.0	.0				
	29	886.8	11630.	219.6	0.	0.
.0	.0				
	30	902.3	7752.	228.3	0.	0.
.0	.0				
	31	914.9	3166.	236.0	0.	0.
.0	.0				
	32	924.2	939.	241.1	0.	0.
.0	.0				

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 23

```
**********************************************************************
*
          * INFORMATION  GENERATED DURING ITERATIVE  SOLUTION FOR
THE FACTOR *
          * OF  SAFETY AND  SIDE FORCE  INCLINATION BY  SPENCER'S
PROCEDURE    *

**********************************************************************
*

                  TRIAL      TRIAL
                 FACTOR    SIDE  FORCE     FORCE       MOMENT
      DELTA
          ITER-      OF       INCLINATION    IMBALANCE    IMBALANCE
DELTA-F    THETA
          ATION  SAFETY   (DEGREES)      (LBS.)    (FT.-LBS.)
    (DEGREES)

             1   3.00000     15.0000    .7488E+06   .3190E+08
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.409E+01  .113E+01
          VALUES  FACTORED BY     .122E+00  -  DELTAS TOO  LARGE
-.500E+00  .138E+00

             2   2.50000     15.1378    .6374E+06   .2673E+08
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.242E+01  .127E+01
          VALUES FACTORED  BY     .206E+00 -  DELTAS  TOO  LARGE
-.500E+00  .261E+00

             3   2.00000     15.3990    .4729E+06   .1867E+08
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.114E+01  .155E+01
          VALUES  FACTORED  BY    .437E+00  -  DELTAS  TOO LARGE
-.500E+00  .677E+00

             4   1.50000     16.0764    .1964E+06   .3699E+07
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.254E+00  .254E+01
          SECOND-ORDER  CORRECTION  -  ITERATION     1  ........
-.219E+00  .254E+01
          SECOND-ORDER  CORRECTION  -  ITERATION     2  ........
-.218E+00  .254E+01
          SECOND-ORDER  CORRECTION  -  ITERATION     3  ........
-.218E+00  .254E+01

             5   1.28213     18.6117  -.5725E+04  -.6578E+07
          FIRST-ORDER CORRECTIONS  TO  F  AND  THETA  .........
.237E-01  .337E+01
          SECOND-ORDER  CORRECTION  -  ITERATION     1  ........
.245E-01  .337E+01
          SECOND-ORDER  CORRECTION  -  ITERATION     2  ........
.245E-01  .337E+01
```

```
            6   1.30664     21.9783   -.5090E+02    .4546E+06
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.133E-02 -.232E+00
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.133E-02 -.232E+00

            7   1.30531     21.7459   -.2454E-01    .1087E+04
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.323E-05 -.551E-03
          SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.323E-05 -.551E-03

            8   1.30531     21.7454    .1135E-01   -.7944E+00
          FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.375E-08  .121E-05

          FACTOR OF SAFETY - - - - - - - - -     1.305
          SIDE FORCE INCLINATION - - - - - -     21.75
          NUMBER OF ITERATIONS - - - - - - -     8
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G. WRIGHT
                  ARADI-SADDLEBACK MEADOWS

                  JOB NO. 4816-07, SECTION B-B

                  FACTOR OF SAFETY  ALONG CIRCULAR SURFACE

          TABLE NO. 24
          ********************************************
          * FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
          * SURFACE IN CASE OF A SEARCH)              *
          ********************************************

     SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
     FACTOR OF SAFETY = 1.305     SIDE FORCE INCLINATION =
21.75 DEGREES

                 ------------  VALUES  AT  CENTER  OF  BASE  OF
SLICE----------

                                                 TOTAL     EFFECTIVE
          SLICE                                  NORMAL    NORMAL
SHEAR
            NO.     X-CENTER    Y-CENTER         STRESS    STRESS
STRESS

             1        490.1       121.6          1652.0    1652.0
683.9
             2        500.4       118.1          2901.3    2901.3
940.3
             3        510.9       115.1          3984.9    3806.7
1126.2
             4        523.1       111.8          5165.0    4778.6
```

1325.7					
	5	535.3	109.1	6551.1	5996.4
1575.7					
	6	547.8	106.5	7942.6	7225.2
1827.9					
	7	558.2	104.8	8525.2	7703.9
1926.2					
	8	568.2	103.3	10043.4	9128.4
3986.5					
	9	580.5	102.1	10339.9	9346.0
4075.1					
	10	601.6	100.6	10726.0	9637.6
4193.9					
	11	616.1	100.0	10903.4	9782.5
4253.0					
	12	630.0	100.2	10970.8	9863.1
4285.8					
	13	644.5	100.8	10991.5	9916.4
4307.5					
	14	659.6	102.1	10280.3	9287.2
2251.2					
	15	680.6	104.7	10127.7	9298.3
2253.5					
	16	701.4	108.4	9851.6	9254.1
2244.4					
	17	722.0	113.2	9459.3	9161.4
2225.4					
	18	735.7	116.9	9146.4	9080.8
2208.8					
	19	749.3	121.4	8757.9	8757.9
2142.5					
	20	759.6	124.9	8454.7	8454.7
2080.3					
	21	769.8	129.0	8311.9	8311.9
3944.6					
	22	779.8	133.0	7929.3	7929.3
3775.3					
	23	789.6	137.5	7592.3	7592.3
3626.3					
	24	808.5	146.9	6908.0	6908.0
3323.6					
	25	827.0	157.2	6159.9	6159.9
2992.7					
	26	840.5	165.5	5571.6	5571.6
2732.5					
	27	853.6	174.6	4860.3	4860.3
2417.9					
	28	870.5	187.3	3858.0	3858.0
1974.5					
	29	886.8	200.8	2853.2	2853.2
1530.1					
	30	902.3	215.2	1857.6	1857.6
1089.8					
	31	914.9	228.0	1030.7	1030.7

724.0

32 924.2 238.2 284.5 284.5
394.0

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = .07
(= .704E-01)
SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = .12
(= .121E+00)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = .67
(= .666E+00)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .04
(= .404E-01)
SHOULD NOT EXCEED .100E+03

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION B-B'

FACTOR OF SAFETY ALONG CIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.305 SIDE FORCE INCLINATION =
21.75 DEGREES

VALUES AT RIGHT SIDE OF SLICE

SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT	SIGMA AT TOP	SIGMA AT BOTTOM
1	500.1	23674.	125.1	.437	874.3	1925.7
2	500.8	24810.	125.0	.429	815.0	2026.0
3	521.1	64304.	122.8	.339	60.3	3794.8
4	525.0	72648.	122.4	.322		

-138.3	4052.8				
	5	545.7	121153.	120.6	.270
-840.5	5296.0				
	6	550.0	131678.	120.2	.268
-912.1	5585.9				
	7	566.4	169534.	119.3	.261
-1136.4	6378.0				
	8	570.0	185281.	118.5	.251
-1381.7	6993.1				
	9	591.0	272051.	116.9	.233
-2225.7	9648.7				
	10	612.2	347118.	117.7	.239
-2477.8	11222.2				
	11	620.0	371561.	118.3	.242
-2491.8	11627.3				
	12	640.0	425440.	120.5	.252
-2423.2	12366.2				
	13	649.1	445702.	121.8	.256
-2359.3	12594.3				
	14	670.1	437581.	127.2	.289
-1287.5	11042.2				
	15	691.0	417145.	133.2	.318
-432.2	9587.5				
	16	711.7	385602.	139.8	.344
280.8	8164.6				
	17	732.2	344607.	147.2	.373
906.8	6726.6				
	18	739.2	328522.	150.0	.384
1113.3	6215.9				
	19	759.3	277155.	159.0	.423
1717.8	4654.9				
	20	760.0	275178.	159.3	.425
1740.7	4595.3				
	21	779.6	255857.	164.7	.413
1481.1	4688.1				
	22	780.0	255417.	164.8	.411
1424.7	4704.4				
	23	799.2	227339.	171.3	.397
1091.6	4616.2				
	24	817.9	192582.	178.6	.383
766.3	4354.0				
	25	836.1	153571.	186.5	.370
486.1	3928.7				
	26	845.0	133095.	190.8	.366
396.1	3651.7				
	27	862.3	93281.	199.7	.361
274.2	3010.2				
	28	878.8	57377.	209.3	.361
202.4	2278.8				
	29	894.7	28097.	219.4	.362
139.2	1483.7				
	30	909.8	7931.	230.1	.369
77.7	644.4				
	31	920.0	398.	243.9	.983

```
135.3      -65.9
             32          928.3           4.      -1578.5     BELOW
.0         .0

           CHECK SUMS - (ALL SHOULD BE SMALL)
           SUM OF FORCES IN  VERTICAL DIRECTION     =              .07
(=  .704E-01)
                 SHOULD NOT EXCEED      .100E+03
           SUM OF FORCES IN  HORIZONTAL DIRECTION   =              .12
(=  .121E+00)
                 SHOULD NOT EXCEED      .100E+03
           SUM OF MOMENTS ABOUT  COORDINATE ORIGIN =              .67
(=  .666E+00)
                 SHOULD NOT EXCEED      .100E+03
           SHEAR STRENGTH/SHEAR FORCE CHECK-SUM     =              .04
(=  .404E-01)
                 SHOULD NOT EXCEED      .100E+03
```

CROSS SECTION C-C'

Slice (a)

(Static)

TABLE NO. 1

```
*****************************************
* COMPUTER PROGRAM DESIGNATION - UTEXAS2 *
* ORIGINALLY CODED BY STEPHEN G. WRIGHT  *
* VERSION NO. 1.209                      *
* LAST REVISION DATE 11/23/87            *
* SERIAL NO. 00004                       *
* (C) COPYRIGHT 1985 STEPHEN G. WRIGHT   *
* ALL RIGHTS RESERVED                    *
*****************************************
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*************************************************************
*                                                           *
*        RESULTS OF COMPUTATIONS PERFORMED USING THIS COMPUTER *
* PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS THEY *
*   HAVE BEEN VERIFIED BY INDEPENDENT ANALYSES, EXPERIMENTAL *
* DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND THE *
*  ALGORITHMS AND ANALYTICAL PROCEDURES USED IN THE COMPUTER *
* PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS     *
* PROGRAM BEFORE ATTEMPTING ITS USE.                        *
*                                                           *
*      NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.       *
* WRIGHT MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES,       *
* EXPRESSED OR IMPLIED, CONCERNING THE ACCURACY, RELIABILITY, *
* USEFULNESS OR ADAPTABILITY OF THIS COMPUTER PROGRAM.      *
*                                                           *
*************************************************************
```


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ARADI-SADDLEBACK MEADOWS

JOB NO. 4818-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
EL TORO RD. FILL

POINT	X	Y
1	130.000	120.000
2	180.000	140.000
3	220.000	160.000
4	290.000	160.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	130.000	120.000
2	135.000	110.000
3	175.000	105.000
4	200.000	130.000
5	290.000	130.000
6	300.000	160.000
7	325.000	165.000
8	460.000	75.000

PROFILE LINE 3 - MATERIAL TYPE = 1
BUTTRESS FILL

POINT	X	Y
1	325.000	165.000
2	530.000	185.000
3	770.000	200.000
4	870.000	245.000

PROFILE LINE 4 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	480.000	70.000
2	520.000	100.000
3	650.000	100.000
4	870.000	245.000
5	1010.000	250.000

6	1120.000	250.000
7	1160.000	250.000
8	1260.000	270.000
9	1390.000	270.000
10	1480.000	305.000
11	1645.000	305.000

PROFILE LINE 5 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1645.000	305.000
2	1740.000	315.000
3	1905.000	320.000
4	2000.000	370.000
5	2290.000	370.000
6	2365.000	410.000
7	2400.000	410.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL

UNIT WEIGHT OF MATERIAL = 130.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION = 250.000
FRICTION ANGLE = 25.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE 2
QLS

UNIT WEIGHT OF MATERIAL = 125.000 .

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION - - - - - - - - - 150.000
FRICTION ANGLE - - - - - 9.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 4
****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO.	POINT	X	Y
1 - UNIT WEIGHT OF WATER = 62.40			
1	1	100.000	119.000
1	2	400.000	125.000
1	3	1500.000	143.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9
****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y
1	180.000	140.000
2	630.000	60.000
3	850.000	35.000
4	1030.000	40.000
5	1110.000	60.000
6	1210.000	100.000
7	1345.000	180.000
8	1450.000	260.000
9	1490.000	300.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

SEISMIC COEFFICIENT = .000

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10

****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	130.000	120.000
2	180.000	140.000
3	220.000	160.000
4	290.000	160.000
5	290.000	130.000
6	300.000	160.000
7	325.000	165.000
8	530.000	195.000
9	770.000	200.000
10	870.000	245.000
11	1010.000	250.000
12	1120.000	250.000
13	1160.000	250.000
14	1260.000	270.000
15	1390.000	270.000
16	1480.000	305.000
17	1645.000	305.000
18	1740.000	315.000
19	1905.000	320.000
20	2000.000	370.000
21	2290.000	370.000
22	2365.000	410.000
23	2400.000	410.000

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****

```
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF  AN AUTOMATIC SEARCH)
         *

**********************************************************************
*

           SLICE                                  SLICE    MATL.
FRICTION    PORE
             NO.       X          Y              WEIGHT   TYPE   COHESION
ANGLE   PRESSURE

                     180.0      140.0
                1    190.0       138.2          17622.2     1       250.00
25.00          .0
                     200.0      136.4
                2     210.0      134.7          52866.7      1       250.00
25.00          .0
                     220.0      132.9
                3     228.1      131.4          60323.7      1      250.00
25.00          .0
                     236.3      130.0
                4    257.2       126.3         182626.4      2      150.00
9.00           .0
                     278.1      122.6
                5    284.0       121.5         59099.2       2       150.00
9.00         73.5
                     290.0      120.4
                6    295.0       119.6          31805.6      2       150.00
9.00        208.7
                     300.0      118.7
                7    312.5       116.4         143923.6      2      150.00
9.00        424.7
                     325.0      114.2
                8    343.8       110.9         269366.1      2      150.00
9.00        810.3
                     362.5      107.6
                9    381.3       104.2         332056.7      2      150.00
9.00       1273.1
                     400.0      100.9
               10    414.4       98.3          298279.5      2       150.00
9.00       1679.4
                     428.9      95.8
               11     444.4       93.0          362222.6      1       250.00
25.00      2042.8
                     460.0      90.2
               12    475.0        87.6          387643.1      1       250.00
25.00      2413.1
                     490.0      84.9
               13     496.3        83.8          174703.1      1       250.00
25.00      2671.4
                     502.6      82.6
```

14	511.3	81.1	249974.7	2	150.00
9.00	2853.1				
	520.0	79.6			
15	525.0	78.7	149215.4	2	150.00
9.00	3018.8				
	530.0	77.8			
16	546.7	74.8	518109.3	2	150.00
9.00	3281.3				
	563.3	71.9			
17	580.0	68.9	545809.9	2	150.00
9.00	3685.1				
	596.7	65.9			
18	613.3	63.0	573511.5	2	150.00
9.00	4088.9				
	630.0	60.0			
19	640.0	58.9	355799.3	2	150.00
9.00	4372.0				
	650.0	57.7			
20	670.0	55.5	729257.6	2	150.00
9.00	4615.3				
	690.0	53.2			
21	710.0	50.9	751045.5	2	150.00
9.00	4939.8				
	730.0	48.6			
22	750.0	46.4	772833.3	2	150.00
9.00	5264.3				
	770.0	44.1			

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	770.0	44.1					

	23	790.0	41.8	839254.5	2	150.00
9.00	5588.8					
		810.0	39.5			
	24	830.0	37.3	950309.1	2	150.00
9.00	5913.3					
		850.0	35.0			
	25	860.0	35.3	513264.7	2	150.00
9.00	6068.4					
		870.0	35.8			
	26	887.5	36.0	916927.1	2	150.00
9.00	6048.8					
		905.0	36.5			
	27	922.5	37.0	918142.4	2	150.00
9.00	6023.9					
		940.0	37.5			
	28	957.5	38.0	919357.6	2	150.00
9.00	5998.9					
		975.0	38.5			
	29	992.5	39.0	920572.9	2	150.00
9.00	5974.0					
		1010.0	39.4			
	30	1020.0	39.7	525694.4	2	150.00
9.00	5954.4					
		1030.0	40.0			
	31	1050.0	45.0	1025000.0	2	150.00
9.00	5655.7					
		1070.0	50.0			
	32	1090.0	55.0	975000.0	2	150.00
9.00	5072.6					
		1110.0	60.0			
	33	1115.0	62.0	235000.0	2	150.00
9.00	4661.3					
		1120.0	64.0			
	34	1140.0	72.0	890000.0	2	150.00
9.00	4062.8					
		1160.0	80.0			
	35	1172.5	85.0	523437.5	2	150.00
9.00	3284.8					
		1185.0	90.0			
	36	1197.5	95.0	507812.5	2	150.00
9.00	2686.3					
		1210.0	100.0			
	37	1222.5	107.4	484664.3	2	150.00
9.00	1937.6					
		1235.0	114.8			
	38	1247.5	122.2	453993.1	2	150.00
9.00	1038.7					
		1260.0	129.6			
	39	1268.2	134.5	277598.8	2	150.00
9.00	294.6					
		1276.4	139.3			
	40	1293.5	148.5	516712.2	2	150.00
9.00	.0					
		1310.7	159.7			

	41	1327.8	169.8	429503.6	2	150.00
9.00	.0					
		1345.0	180.0			
	42	1358.3	188.6	229017.9	2	150.00
9.00	.0					
		1367.5	197.1			
	43	1378.8	205.7	180803.5	2	150.00
9.00	.0					
		1390.0	214.3			
	44	1405.0	225.7	187946.4	2	150.00
9.00	.0					
		1420.0	237.1			

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*
****
*

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	1420.0	237.1					
45	1435.0	248.6	145982.2	2	150.00	9.00	.0
	1450.0	260.0					
46	1465.0	275.0	90625.0	2	150.00	9.00	.0
	1480.0	290.0					
47	1485.0	295.0	12500.0	2	150.00	9.00	.0
	1490.0	300.0					

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

TABLE NO. 21

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
*

****
*

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	FORCES DUE TO SURFACE PRESSURES NORMAL FORCE	SHEAR FORCE	X	Y
1	190.0	0.	141.6	0.	0.	.0	.0
2	210.0	0.	144.8	0.	0.	.0	.0
3	228.1	0.	145.7	0.	0.	.0	.0
4	257.2	0.	143.2	0.	0.	.0	.0
5	284.0	0.	140.9	0.	0.	.0	.0
6	295.0	0.	132.3	0.	0.	.0	.0
7	312.5	0.	139.5	0.	0.	.0	.0
8	343.8	0.	139.5	0.	0.	.0	.0
9	381.3	0.	139.0	0.	0.	.0	.0
10	414.4	0.	138.3	0.	0.	.0	.0
11	444.4	0.	137.7	0.	0.	.0	.0
12	475.0	0.	137.3	0.	0.	.0	.0
13	496.3	0.	136.9	0.	0.	.0	.0
14	511.3	0.	136.9	0.	0.	.0	.0
15	525.0	0.	136.8	0.	0.	.0	.0
16	546.7	0.	135.5	0.	0.	.0	.0

	17	580.0	0.	132.9	0.	
.0	.0					
	18	613.3	0.	130.4	0.	0.
.0	.0					
	19	640.0	0.	128.6	0.	0.
.0	.0					
	20	670.0	0.	127.4	0.	0.
.0	.0					
	21	710.0	0.	125.5	0.	0.
.0	.0					
	22	750.0	0.	123.5	0.	0.
.0	.0					
	23	790.0	0.	125.7	0.	0.
.0	.0					
	24	830.0	0.	132.3	0.	0.
.0	.0					
	25	860.0	0.	137.9	0.	0.
.0	.0					
	26	887.5	0.	140.8	0.	0.
.0	.0					
	27	922.5	0.	141.9	0.	0.
.0	.0					
	28	957.5	0.	143.1	0.	0.
.0	.0					
	29	992.5	0.	144.2	0.	0.
.0	.0					
	30	1020.0	0.	144.9	0.	0.
.0	.0					
	31	1050.0	0.	147.5	0.	0.
.0	.0					
	32	1090.0	0.	152.5	0.	0.
.0	.0					
	33	1115.0	0.	156.0	0.	0.
.0	.0					
	34	1140.0	0.	161.0	0.	0.
.0	.0					
	35	1172.5	0.	168.8	0.	0.
.0	.0					
	36	1197.5	0.	176.3	0.	0.
.0	.0					
	37	1222.5	0.	185.0	0.	0.
.0	.0					
	38	1247.5	0.	194.9	0.	0.
.0	.0					
	39	1268.2	0.	202.2	0.	0.
.0	.0					
	40	1293.5	0.	209.8	0.	0.
.0	.0					
	41	1327.8	0.	219.9	0.	0.
.0	.0					

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****
*
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL *
* SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****
*

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	NORMAL FORCE	SHEAR FORCE	X	Y
				FORCES DUE TO SURFACE PRESSURES			
42	1356.3	0.	229.3	0.	0.	.0	.0
43	1378.8	0.	237.9	0.	0.	.0	.0
44	1405.0	0.	250.8	0.	0.	.0	.0
45	1435.0	0.	268.0	0.	0.	.0	.0
46	1465.0	0.	287.1	0.	0.	.0	.0
47	1485.0	0.	300.0	0.	0.	.0	.0

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 23

****
*
* INFORMATION GENERATED DURING ITERATIVE SOLUTION FOR THE FACTOR *
* OF SAFETY AND SIDE FORCE INCLINATION BY SPENCER'S PROCEDURE *

```
*
                    TRIAL      TRIAL
                   FACTOR    SIDE FORCE     FORCE         MOMENT
       DELTA
           ITER-       OF        INCLINATION    IMBALANCE    IMBALANCE
DELTA-F     THETA
           ATION   SAFETY    (DEGREES)      (LBS.)    (FT.-LBS.)
    (DEGREES)

              1   3.00000     15.0000    .5941E+06    .3613E+09
           FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.202E+01 -.771E+01
           VALUES  FACTORED  BY   .248E+00  -  DELTAS TOO  LARGE
-.500E+00 -.191E+01

              2   2.50000     13.0908    .4089E+06    .2716E+09
           FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.105E+01 -.669E+01
           VALUES  FACTORED  BY    .478E+00 -  DELTAS  TOO  LARGE
-.500E+00 -.320E+01

              3   2.00000      9.8933    .1464E+06    .1464E+09
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.316E+00 -.452E+01
           SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.281E+00 -.452E+01
           SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
-.280E+00 -.452E+01
           SECOND-ORDER  CORRECTION  -  ITERATION      3  ........
-.280E+00 -.452E+01

              4   1.71975      5.3754  -.5165E+04    .9264E+07
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
-.387E-02 -.326E+00
           SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
-.386E-02 -.326E+00
           SECOND-ORDER  CORRECTION  -  ITERATION      2  ........
-.386E-02 -.326E+00

              5   1.71589      5.0499  -.2852E+00  -.2786E+05
           FIRST-ORDER  CORRECTIONS  TO  F  AND  THETA  .........
 .245E-04  .978E-03
           SECOND-ORDER  CORRECTION  -  ITERATION      1  ........
 .245E-04  .978E-03

              6   1.71591      5.0508  -.2676E+00    .7341E+00
           FIRST-ORDER  CORRECTIONS  TO  F  AND THETA  .........
 .229E-08  .587E-07

           FACTOR OF SAFETY - - - - - - - -      1.716
           SIDE FORCE INCLINATION - - - - -       5.05
           NUMBER OF ITERATIONS - - - - - -      6
```

1 UTEXAS2 - VER. 1.239 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 24

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.716 SIDE FORCE INCLINATION = 5.05 DEGREES

-------- VALUES AT CENTER OF BASE OF SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
1	190.0	138.2	1008.7	1008.7	419.8
2	210.0	134.7	2941.1	2941.1	944.9
3	228.1	131.4	4113.1	4113.1	1263.5
4	257.2	126.3	4572.3	4572.3	509.5
5	284.0	121.5	5192.7	5119.2	559.9
6	295.0	119.6	3332.9	3124.3	375.8
7	312.5	116.4	6011.9	5587.3	603.1
8	343.8	110.9	7488.1	6677.7	703.8
9	381.3	104.2	9218.1	7945.0	820.8
10	414.4	98.3	10749.1	9069.7	924.6
11	444.4	93.0	12637.1	10594.3	3024.7
12	475.0	87.6	14020.0	11606.9	3299.9
13	496.3	83.8	14984.6	12313.2	3491.9

	14	511.3	81.1	14956.3	12103.2
1204.6					
	15	525.0	78.7	15494.8	12475.9
1239.0					
	16	546.7	74.8	16135.9	12854.6
1273.9					
	17	580.0	68.9	16991.5	13306.3
1315.6					
	18	613.3	63.0	17847.0	13758.1
1357.3					
	19	640.0	58.9	18249.7	13877.7
1368.4					
	20	670.0	55.5	18699.5	14084.2
1387.4					
	21	710.0	50.9	19254.1	14314.3
1408.7					
	22	750.0	46.4	19808.7	14544.4
1429.9					
	23	790.0	41.8	21512.0	15923.2
1557.2					
	24	830.0	37.3	24364.1	18450.9
1790.5					
	25	860.0	35.3	25715.3	19646.9
1900.9					
	26	887.5	36.0	26251.8	20203.0
1952.2					
	27	922.5	37.0	26286.8	20262.9
1957.7					
	28	957.5	38.0	26321.7	20322.8
1963.3					
	29	992.5	39.0	26356.7	20382.7
1968.8					
	30	1020.0	39.7	26339.4	20385.0
1969.0					
	31	1050.0	45.0	24778.1	19122.4
1852.5					
	32	1090.0	55.0	23564.3	18491.8
1794.3					
	33	1115.0	62.0	22184.4	17523.2
1704.9					
	34	1140.0	72.0	20993.6	16930.8
1650.2					
	35	1172.5	85.0	19739.1	16454.3
1606.2					
	36	1197.5	95.0	19135.6	16449.3
1605.7					
	37	1222.5	107.4	17683.5	15745.9
1540.8					
	38	1247.5	122.2	16529.0	15490.3
1517.2					
	39	1268.2	134.5	15387.0	15092.3
1480.5					
	40	1293.5	149.5	13665.9	13665.9
1348.8					

1

-------- VALUES AT CENTER OF BASE OF SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	1327.8	169.8	11353.5	11353.5	1135.4
42	1356.3	188.8	8959.4	8959.4	914.4
43	1378.8	205.7	7062.2	7062.2	739.3
44	1405.0	225.7	5494.4	5494.4	594.6
45	1435.0	248.6	4256.0	4256.0	480.3
46	1465.0	275.0	2508.4	2508.4	318.9
47	1485.0	295.0	998.1	998.1	179.5

CHECK SUMS - (ALL SHOULD BE SMALL)

SUM OF FORCES IN VERTICAL DIRECTION = .46
(= .461E+00)
SHOULD NOT EXCEED .100E+03

SUM OF FORCES IN HORIZONTAL DIRECTION = 1.08
(= .108E+01)
SHOULD NOT EXCEED .100E+03

SUM OF MOMENTS ABOUT COORDINATE ORIGIN = 71.80
(= .718E+02)
SHOULD NOT EXCEED .100E+03

SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .11
(= .113E+00)
SHOULD NOT EXCEED .100E+03

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.716 SIDE FORCE INCLINATION = 5.05 DEGREES

---------- VALUES AT RIGHT SIDE OF SLICE ----------

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
		1	200.0	12029.	139.1	.196
-726.5	2494.5					
		2	220.0	41500.	137.1	.168
-1638.6	4935.1					
		3	236.3	74040.	135.7	.191
-2098.8	7015.6					
		4	278.1	129581.	134.6	.321
-251.4	7147.0					
		5	290.0	147314.	134.0	.423
2459.9	6695.5					
		6	300.0	157035.	134.0	.642
12147.2	979.3					
		7	325.0	198996.	132.2	.358
595.2	7290.4					
		8	362.5	275606.	129.2	.343
261.9	8462.9					
		9	400.0	368199.	125.8	.332
-50.5	9819.7					
		10	428.9	450361.	123.1	.324
-305.3	10930.7					
		11	460.0	615131.	117.4	.288
-1776.5	14740.0					
		12	490.0	789580.	113.2	.271
-2806.7	17894.6					
		13	502.6	867702.	111.6	.267
-3164.5	19118.2					
		14	520.0	935027.	110.9	.275
-2869.4	19212.4					
		15	530.0	975119.	110.4	.281
-2626.8	19348.5					
		16	563.3	1113742.	108.8	.298
-1901.7	19818.3					
		17	596.7	1258850.	106.9	.314
-1096.8	20320.0					
		18	630.0	1410443.	105.0	.328
-314.0	20812.0					
		19	650.0	1479556.	104.6	.335
112.1	20976.5					
		20	690.0	1620599.	103.7	.348

963.8	21274.2					
	21	730.0	1765025.	102.7	.359	
1831.1	21528.6					
	22	770.0	1912835.	101.8	.360	
1914.2	21873.6					
	23	810.0	2073528.	100.5	342	
587.1	22561.4					
	24	850.0	2256604.	98.8	.317	
-1068.9	23435.4					
	25	870.0	2280428.	99.9	.313	
-1373.5	23447.0					
	26	905.0	2323400.	101.8	.311	
-1470.7	23541.6					
	27	940.0	2366533.	103.7	.315	
-1231.1	23681.9					
	28	975.0	2409825.	105.5	.319	
-982.9	23814.2					
	29	1010.0	2453277.	107.4	.323	
-707.7	23939.8					
	30	1030.0	2478121.	108.5	.326	
-499.1	24008.6					
	31	1070.0	2303762.	117.0	.335	
111.3	22838.8					
	32	1110.0	2139251.	125.4	.344	
742.1	21688.9					
	33	1120.0	2067282.	128.5	.347	
905.6	21236.9					
	34	1160.0	1796340.	140.9	.355	
1384.5	19513.2					
	35	1185.0	1638491.	148.6	.355	
1281.6	18501.8					
	36	1210.0	1486689.	156.4	.352	
1048.7	17462.8					
	37	1235.0	1262360.	167.5	.351	
863.7	15881.7					
	38	1260.0	1054610.	178.8	.352	
857.9	14197.8					
	39	1276.4	928957.	186.3	.360	
1119.8	13044.5					
	40	1310.7	696505.	202.2	.385	
1956.3	10620.5					
1						

---------- VALUES AT RIGHT SIDE OF SLICE ----------

SIGMA AT TOP	SIGMA SLICE AT BOTTOM	SLICE NO.	X-RIGHT	Y-COORD. OF SIDE FORCE	SIDE FORCE LOCATION	FRACTION OF HEIGHT
		41	1345.0	503896.	218.1	.424

```
5025.7    3125.5
            42        1367.5      370362.       231.1        .467
4051.8    6075.5
            43        1390.0      265522.       243.6        .499
4495.5    4526.7
            44         1420.0      157352.       259.4        .500
3519.7    3521.1
            45        1450.0       74156.       275.7        .471
1828.2    2603.9
            46        1480.0       8218.        294.6        .325
-30.2     1197.2
            47       1490.0           5.       4590.1     ABOVE
-6.0       6.0


          CHECK SUMS - (ALL SHOULD BE SMALL)
          SUM OF FORCES IN VERTICAL DIRECTION     =            .46
(=  .461E+00)
               SHOULD NOT EXCEED      .100E+03
          SUM OF FORCES IN  HORIZONTAL DIRECTION  =           1.08
(=  .108E+01)
               SHOULD NOT EXCEED      .100E+03
          SUM OF MOMENTS ABOUT  COORDINATE ORIGIN =          71.80
(=  .718E+02)
               SHOULD NOT EXCEED      .100E+03
          SHEAR STRENGTH/SHEAR FORCE CHECK-SUM    =           .11
(=  .113E+00)
               SHOULD NOT EXCEED      .100E+03


          END-OF-FILE ENCOUNTERED WHILE READING COMMAND
          WORDS - END OF PROBLEM(S) ASSUMED
```

CROSS SECTION C-C'

Slice (a)

Seismic

```
1          UTEXAS2  - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
G. WRIGHT

           TABLE NO. 1
           ********************************************
           * COMPUTER PROGRAM DESIGNATION - UTEXAS2   *
           * ORIGINALLY CODED BY STEPHEN G. WRIGHT    *
           * VERSION NO. 1.209                        *
           * LAST REVISION DATE 11/23/87              *
           * SERIAL NO. 00004                         *
           * (C) COPYRIGHT 1985 STEPHEN G. WRIGHT     *
           * ALL RIGHTS RESERVED                      *
           ********************************************


*****************************************************************
           *
     *
           *          RESULTS OF COMPUTATIONS PERFORMED USING THIS
COMPUTER *
           * PROGRAM SHOULD NOT BE USED FOR DESIGN PURPOSES UNLESS
THEY *
           *   HAVE BEEN VERIFIED BY INDEPENDENT ANALYSIS,
EXPERIMENTAL   *
           * DATA OR FIELD EXPERIENCE.  THE USER SHOULD UNDERSTAND
THE   *
           *  ALGORITHMS AND ANALYTICAL PROCEDURES USED IN THIS
COMPUTER  *
           * PROGRAM AND MUST HAVE READ ALL DOCUMENTATION FOR THIS
    *
           * PROGRAM BEFORE ATTEMPTING ITS USE.
     *
           *
     *
           *      NEITHER THE UNIVERSITY OF TEXAS NOR STEPHEN G.
WRIGHT *
           *   MAKE OR ASSUME LIABILITY FOR ANY WARRANTIES,
EXPRESSED OR  *
           *  IMPLIED, CONCERNING THE ACCURACY, RELIABILITY,
USEFULNESS  *
           * OR ADAPTABILITY OF THIS COMPUTER PROGRAM.
     *
           *
     *

*****************************************************************
1          UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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                   ARADI-SADDLEBACK MEADOWS

                   JOB NO. 4816-07, SECTION C-C'

                   FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE
```

TABLE NO. 2
****
* NEW PROFILE LINE DATA *
****

PROFILE LINE 1 - MATERIAL TYPE = 1
EL TORO RD. FILL

POINT	X	Y
1	130.000	120.000
2	180.000	140.000
3	220.000	160.000
4	290.000	160.000

PROFILE LINE 2 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	130.000	120.000
2	135.000	110.000
3	175.000	105.000
4	200.000	130.000
5	290.000	130.000
6	300.000	160.000
7	325.000	165.000
8	460.000	75.000

PROFILE LINE 3 - MATERIAL TYPE = 1
BUTTRESS FILL

POINT	X	Y
1	325.000	165.000
2	530.000	195.000
3	770.000	200.000
4	870.000	245.000

PROFILE LINE 4 - MATERIAL TYPE = 2
QLS

POINT	X	Y
1	490.000	70.000
2	520.000	100.000
3	650.000	100.000
4	870.000	245.000
5	1010.000	250.000

6	1120.000	250.000
7	1160.000	250.000
8	1260.000	270.000
9	1390.000	270.000
10	1480.000	305.000
11	1645.000	305.000

PROFILE LINE 5 - MATERIAL TYPE = 2
QLS (CONT.)

POINT	X	Y
1	1645.000	305.000
2	1740.000	315.000
3	1905.000	320.000
4	2000.000	370.000
5	2290.000	370.000
6	2365.000	410.000
7	2400.000	410.000

ALL NEW PROFILE LINES DEFINED - NO OLD LINES RETAINED
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 3
****
* NEW MATERIAL PROPERTY DATA *
****

DATA FOR MATERIAL TYPE 1
FILL

UNIT WEIGHT OF MATERIAL = 130.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION - - - - - - - - - 350.000
FRICTION ANGLE - - - - - 28.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

DATA FOR MATERIAL TYPE 2
QLS

UNIT WEIGHT OF MATERIAL = 125.000

CONVENTIONAL (ISOTROPIC) SHEAR STRENGTHS
COHESION - - - - - - - - - 450.000
FRICTION ANGLE - - - - - - 15.000 DEGREES

PORE WATER PRESSURES DEFINED BY PIEZOMETRIC LINE
NUMBER OF THE PIEZOMETRIC LINE USED = 1
NEGATIVE PORE PRESSURES SET TO ZERO

ALL NEW MATERIAL PROPERTIES DEFINED - NO OLD DATA RETAINED

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ARAD1-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 4
****
* NEW PIEZOMETRIC LINE DATA *
****

LINE NO.	POINT	X	Y
1 - UNIT WEIGHT OF WATER = 62.40			
1	1	100.000	119.000
1	2	400.000	125.000
1	3	1500.000	143.000

ALL NEW PIEZOMETRIC LINES DEFINED - NO OLD LINES RETAINED

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ARAD1-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 9
****
* NEW ANALYSIS/COMPUTATION DATA *
****

NONCIRCULAR SHEAR SURFACE(S)

COMPUTATIONS PERFORMED FOR SINGLE SHEAR SURFACE

SHEAR SURFACE COORDINATES -

POINT	X	Y
1	180.000	140.000
2	630.000	60.000
3	850.000	35.000
4	1030.000	40.000
5	1110.000	60.000
6	1210.000	100.000
7	1345.000	180.000
8	1450.000	260.000
9	1490.000	300.000

SHORT FORM OF OUTPUT WILL BE USED FOR SEARCH

SEISMIC COEFFICIENT = .150

THE FOLLOWING REPRESENT EITHER DEFAULT OR PREVIOUSLY DEFINED VALUES:

INITIAL TRIAL ESTIMATE FOR THE FACTOR OF SAFETY = 3.000

INITIAL TRIAL ESTIMATE FOR SIDE FORCE INCLINATION = 15.000 DEGREES
(APPLICABLE TO SPENCER'S PROCEDURE ONLY)

MAXIMUM NUMBER OF ITERATIONS ALLOWED FOR CALCULATING THE FACTOR OF SAFETY = 40

ALLOWED FORCE IMBALANCE FOR CONVERGENCE = 100.000

ALLOWED MOMENT IMBALANCE FOR CONVERGENCE = 100.000

NUMBER OF INCREMENTS FOR SLICE SUBDIVISION = 30

DEPTH OF WATER IN CRACK = .000

UNIT WEIGHT OF WATER IN CRACK = 62.400

PROCEDURE USED TO COMPUTE THE FACTOR OF SAFETY: SPENCER

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ARAD1-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 10
****
* NEW SLOPE GEOMETRY DATA *
****

NOTE - NO DATA WERE INPUT, SLOPE GEOMETRY DATA WERE GENERATED BY THE PROGRAM

SLOPE COORDINATES -

POINT	X	Y
1	130.000	120.000
2	180.000	140.000
3	220.000	160.000
4	290.000	160.000
5	290.000	130.000
6	300.000	160.000
7	325.000	165.000
8	530.000	195.000
9	770.000	200.000
10	870.000	245.000
11	1010.000	250.000
12	1120.000	250.000
13	1160.000	250.000
14	1260.000	270.000
15	1390.000	270.000
16	1480.000	305.000
17	1645.000	305.000
18	1740.000	315.000
19	1905.000	320.000
20	2000.000	370.000
21	2290.000	370.000
22	2365.000	410.000
23	2400.000	410.000

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ARAD1-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****

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*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL  *
          * SHEAR SURFACE IN THE CASE OF  AN AUTOMATIC SEARCH)
          *

*************************************************************************
*
```

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	180.0	140.0					
1	190.0	138.2	17622.2	1	350.00	28.00	.0
	200.0	136.4					
2	210.0	134.7	52866.7	1	350.00	28.00	.0
	220.0	132.9					
3	228.1	131.4	60323.7	1	350.00	28.00	.0
	236.3	130.0					
4	257.2	126.3	182626.4	2	450.00	15.00	.0
	278.1	122.6					
5	284.0	121.5	59099.2	2	450.00	15.00	73.5
	290.0	120.4					
6	295.0	119.6	31805.6	2	450.00	15.00	208.7
	300.0	118.7					
7	312.5	116.4	143923.6	2	450.00	15.00	424.7
	325.0	114.2					
8	343.8	110.9	269366.1	2	450.00	15.00	810.3
	362.5	107.6					
9	381.3	104.2	332056.7	2	450.00	15.00	1273.1
	400.0	100.9					
10	414.4	98.3	298279.5	2	450.00	15.00	1679.4
	428.9	95.8					
11	444.4	93.0	362222.6	1	350.00	28.00	2042.8
	460.0	90.2					
12	475.0	87.6	387643.1	1	350.00	28.00	2413.1
	490.0	84.9					
13	496.3	83.8	174703.1	1	350.00	28.00	2671.4
	502.6	82.6					

	14	511.3	81.1	249974.7	2	450.00
15.00	2853.1					
		520.0	79.6			
	15	525.0	78.7	149215.4	2	450.00
15.00	3018.8					
		530.0	77.8			
	16	546.7	74.8	518109.3	2	450.00
15.00	3281.3					
		563.3	71.9			
	17	580.0	68.9	545809.9	2	450.00
15.00	3685.1					
		596.7	65.9			
	18	613.3	63.0	573511.5	2	450.00
15.00	4088.9					
		630.0	60.0			
	19	640.0	58.9	355799.3	2	450.00
15.00	4372.0					
		650.0	57.7			
	20	670.0	55.5	729257.6	2	450.00
15.00	4615.3					
		690.0	53.2			
	21	710.0	50.9	751045.5	2	450.00
15.00	4939.8					
		730.0	48.6			
	22	750.0	46.4	772833.3	2	450.00
15.00	5264.3					
		770.0	44.1			

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ARAD1-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 20

****

* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH) *

****

SLICE NO.	X	Y	SLICE WEIGHT	MATL. TYPE	COHESION	FRICTION ANGLE	PORE PRESSURE
	770.0	44.1					

	23	790.0	41.8	839254.5	2	450.00
15.00	5588.8					
		810.0	39.5			
	24	830.0	37.5	950309.1	2	450.00
15.00	5913.3					
		850.0	35.0			
	25	860.0	35.3	513264.7	2	450.00
15.00	6068.4					
		870.0	35.6			
	26	887.5	36.0	916927.1	2	450.00
15.00	6048.8					
		905.0	36.5			
	27	922.5	37.0	918142.4	2	450.00
15.00	6023.9					
		940.0	37.5			
	28	957.5	38.0	919357.6	2	450.00
15.00	5998.9					
		975.0	38.5			
	29	992.5	39.0	920572.9	2	450.00
15.00	5974.0					
		1010.0	39.4			
	30	1020.0	39.7	525694.4	2	450.00
15.00	5954.4					
		1030.0	40.0			
	31	1050.0	45.0	1025000.0	2	450.00
15.00	5655.7					
		1070.0	50.0			
	32	1090.0	55.0	975000.0	2	450.00
15.00	5072.6					
		1110.0	60.0			
	33	1115.0	62.0	235000.0	2	450.00
15.00	4661.3					
		1120.0	64.0			
	34	1140.0	72.0	890000.0	2	450.00
15.00	4062.8					
		1160.0	80.0			
	35	1172.5	85.0	523437.5	2	450.00
15.00	3284.8					
		1185.0	90.0			
	36	1197.5	95.0	507812.5	2	450.00
15.00	2686.3					
		1210.0	100.0			
	37	1222.5	107.4	484664.3	2	450.00
15.00	1937.6					
		1235.0	114.8			
	38	1247.5	122.2	453993.1	2	450.00
15.00	1038.7					
		1260.0	129.6			
	39	1268.2	134.5	277596.8	2	450.00
15.00	294.6					
		1276.4	139.3			
	40	1293.5	149.5	516712.2	2	450.00
15.00	.0					
		1310.7	159.7			

```
              41     1327.8      169.8    429533.6      2        450.00
15.00           .0
                    1345.0      180.0
              42     1356.3      188.6     229017.9      2        450.00
15.00           .0
                    1367.5      197.1
              43     1378.8      209.7     180803.5      2        450.00
15.00           .0
                    1390.0      214.3
              44     1405.0      225.7    187946.4      2        450.00
15.00           .0
                    1420.0      237.1
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                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION C-C'

                    FACTOR OF SAFETY  ALONG NONCIRCULAR SURFACE


          TABLE NO. 20

**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF  AN AUTOMATIC SEARCH)
          *

**********************************************************************
*

          SLICE                                SLICE    MATL.
FRICTION    PORE
            NO.        X           Y          WEIGHT   TYPE     COHESION
ANGLE    PRESSURE

                    1420.0      237.1
              45    1435.0      248.6    145982.2      2        450.00
15.00           .0
                    1450.0      260.0
              46    1465.0      275.0      90625.0      2        450.00
15.00           .0
                    1480.0      290.0
              47     1485.0      295.0     12500.0      2        450.00
15.00           .0
                    1490.0      300.0
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                    ARADI-SADDLEBACK MEADOWS

                    JOB NO. 4816-07, SECTION C-C'
```

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

****
* INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR CRITICAL SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
****

SLICE NO.	X	SEISMIC FORCE	Y FOR SEISMIC FORCE	FORCES DUE TO SURFACE PRESSURES NORMAL FORCE	SHEAR FORCE	X	Y
1	190.0	2643.	141.6	0.	0.	.0	.0
2	210.0	7930.	144.8	0.	0.	.0	.0
3	228.1	9049.	145.7	0.	0.	.0	.0
4	257.2	27394.	143.2	0.	0.	.0	.0
5	284.0	8865.	140.9	0.	0.	.0	.0
6	295.0	4771.	132.3	0.	0.	.0	.0
7	312.5	21589.	139.5	0.	0.	.0	.0
8	343.8	40405.	139.5	0.	0.	.0	.0
9	381.3	49809.	139.0	0.	0.	.0	.0
10	414.4	44742.	138.3	0.	0.	.0	.0
11	444.4	54333.	137.7	0.	0.	.0	.0
12	475.0	58146.	137.3	0.	0.	.0	.0
13	496.3	26205.	136.9	0.	0.	.0	.0
14	511.3	37496.	136.9	0.	0.	.0	.0
15	525.0	22382.	136.8	0.	0.	.0	.0
16	546.7	77716.	135.5	0.	0.	.0	.0

17	580.0	81871.	132.9	0.	0.	.0 .0
18	613.3	86027.	130.4	0.	0.	.0 .0
19	640.0	53370.	128.6	0.	0.	.0 .0
20	670.0	109389.	127.4	0.	0.	.0 .0
21	710.0	112657.	125.5	0.	0.	.0 .0
22	750.0	115925.	123.5	0.	0.	.0 .0
23	790.0	125888.	125.7	0.	0.	.0 .0
24	830.0	142546.	132.3	0.	0.	.0 .0
25	860.0	76990.	137.9	0.	0.	.0 .0
26	887.5	137539.	140.8	0.	0.	.0 .0
27	922.5	137721.	141.9	0.	0.	.0 .0
28	957.5	137904.	143.1	0.	0.	.0 .0
29	992.5	138086.	144.2	0.	0.	.0 .0
30	1020.0	78854.	144.9	0.	0.	.0 .0
31	1050.0	153750.	147.5	0.	0.	.0 .0
32	1090.0	146250.	152.5	0.	0.	.0 .0
33	1115.0	35250.	156.0	0.	0.	.0 .0
34	1140.0	133500.	161.0	0.	0.	.0 .0
35	1172.5	78516.	168.8	0.	0.	.0 .0
36	1197.5	76172.	176.3	0.	0.	.0 .0
37	1222.5	72700.	185.0	0.	0.	.0 .0
38	1247.5	68099.	194.9	0.	0.	.0 .0
39	1268.2	41640.	202.2	0.	0.	.0 .0
40	1293.5	77507.	209.8	0.	0.	.0 .0
41	1327.8	64430.	219.9	0.	0.	.0 .0

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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 21

```
**********************************************************************
*
          * INFORMATION FOR INDIVIDUAL SLICES (INFORMATION IS FOR
CRITICAL *
          * SHEAR SURFACE IN THE CASE OF AN AUTOMATIC SEARCH)
         *
**********************************************************************
*
                                                        FORCES     DUE    TO
SURFACE PRESSURES
                                          Y FOR
          SLICE                SEISMIC    SEISMIC     NORMAL     SHEAR
            NO.       X        FORCE      FORCE       FORCE      FORCE
 X          Y

            42    1356.3     34353.       229.3         0.         0.
  .0         .0
            43    1378.8     27121.       237.9         0.         0.
  .0         .0
            44    1405.0      28192.      250.8         0.         0.
  .0         .0
            45    1435.0     21897.       268.0        0.         0.
  .0         .0
            46    1465.0     13594.       287.1        0.         0.
  .0         .0
            47    1485.0       1875.      300.0         0.         0.
  .0         .0
1         UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S.
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ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 23

```
**********************************************************************
*
          * INFORMATION  GENERATED DURING ITERATIVE  SOLUTION FOR
THE FACTOR *
          * OF  SAFETY AND  SIDE FORCE  INCLINATION BY  SPENCER'S
PROCEDURE    *
```

```
*****************************************************************
*

                  TRIAL      TRIAL
                 FACTOR   SIDE FORCE     FORCE        MOMENT
      DELTA
          ITER-      OF        INCLINATION    IMBALANCE     IMBALANCE
DELTA-F     THETA
          ATION   SAFETY    (DEGREES)       (LBS.)     (FT.-LBS.)
    (DEGREES)

              1    3.00000     15.0000    .3017E+07    .5006E+09
          FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.472E+01 -.114E+01
          VALUES  FACTORED  BY    .106E+00  -  DELTAS  TOO  LARGE.
-.500E+00 -.121E+00

              2    2.50000     14.8793    .2632E+07    .4393E+09
          FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.204E+01 -.121E+01
          VALUES  FACTORED  BY    .176E+00  -  DELTAS  TOO  LARGE
-.500E+00 -.213E+00

              3    2.00000     14.6663    .2048E+07    .3477E+09
          FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.140E+01 -.131E+01
          VALUES  FACTORED  BY    .357E+00  -  DELTAS  TOO LARGE
-.500E+00 -.468E+00

              4    1.50000     14.1981    .1060E+07    .1971E+09
          FIRST-ORDER  CORRECTIONS  TO  F   AND  THETA  .........
-.407E+00 -.145E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      1  .........
-.336E+00 -.145E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      2  .........
-.333E+00 -.145E+01
          SECOND-ORDER  CORRECTION  -  ITERATION      3  .........
-.333E+00 -.145E+01

              5    1.16680     12.7485  -.5955E+05    .1617E+08
          FIRST-ORDER CORRECTIONS  TO  F  AND  THETA  .........
.750E-02 -.734E+00
          SECOND-ORDER  CORRECTION  -  ITERATION      1  .........
.767E-02 -.734E+00
          SECOND-ORDER  CORRECTION  -  ITERATION      2  .........
.767E-02 -.734E+00

              6    1.17447     12.0142    .1818E+02  -.5040E+06
          FIRST-ORDER  CORRECTIONS  TO  F  AND THETA  .........
.121E-03   .164E-01
          SECOND-ORDER  CORRECTION  -  ITERATION      1  .........
.122E-03   .164E-01

              7    1.17459     12.0306  -.1010E+01    .4780E+01
```

FIRST-ORDER CORRECTIONS TO F AND DELTA .....
.2041E 00 .5161E-05

FACTOR OF SAFETY - - - - 1.175
SIDE FORCE INCLINATION - - - 12.03
NUMBER OF ITERATIONS - - - 7
1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985
D. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 24
****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.175 SIDE FORCE INCLINATION
12.03 DEGREES

-------- VALUES AT CENTER OF BASE OF
SLICE---------

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
1	190.0	138.2	1234.7	1234.7	856.9
2	210.0	134.7	3407.3	3407.3	1840.4
3	228.1	131.4	4725.2	4725.2	2436.9
4	257.2	126.3	5011.9	5011.9	1526.4
5	284.0	121.5	5666.7	5593.2	1659.0
6	295.0	119.6	3677.3	3468.6	1174.4
7	312.5	116.4	6512.2	6087.6	1771.8
8	343.8	110.9	8054.3	7244.0	2035.6
9	381.3	104.2	9860.9	8587.8	2342.2
10	414.4	98.3	11459.8	9780.4	2614.2

5724.7	11	444.4	93.0	14030.9	11988.1
6238.1	12	475.0	87.6	15535.4	13122.3
6598.7	13	496.3	83.8	16584.8	13913.4
5347.9	14	511.3	81.1	15849.5	12996.4
5438.0	15	525.0	78.7	16410.1	13391.3
3529.7	16	546.7	74.8	17072.8	13791.5
3637.9	17	580.0	68.9	17953.1	14268.0
3746.6	18	613.3	63.0	18833.4	14744.4
3694.0	19	640.0	58.9	18885.6	14513.7
3742.1	20	670.0	55.5	19339.7	14724.4
3795.4	21	710.0	50.9	19897.9	14958.1
3848.7	22	750.0	46.4	20456.2	15191.9
4175.4	23	790.0	41.8	22212.9	16624.1
4775.6	24	830.0	37.3	25168.2	19254.9
4835.9	25	860.0	35.3	25587.6	19519.3
4963.1	26	887.5	36.0	26125.6	20076.8
4977.0	27	922.5	37.0	26161.6	20137.7
4990.9	28	957.5	38.0	26197.6	20198.6
5004.7	29	992.5	39.0	26233.5	20259.5
5005.4	30	1020.0	39.7	26217.0	20262.6
4430.0	31	1050.0	45.0	23395.9	17740.2
4302.0	32	1090.0	55.0	22251.6	17179.0
3946.6	33	1115.0	62.0	20282.2	15621.0
3833.2	34	1140.0	72.0	19186.8	15124.0
3747.0	35	1172.5	85.0	18030.9	14746.1
3756.0	36	1197.5	95.0	17471.8	14785.5
3479.1	37	1222.5	107.4	15491.7	13554.1

38	1247.5	122.2	14448.3	13409.6
3442.1				
39	1269.2	134.5	12921.2	12126.5
3177.4				
40	1292.5	149.5	11701.6	11901.6
2999.1				

VALUES AT CENTER OF BASE OF SLICE

SLICE NO.	X-CENTER	Y-CENTER	TOTAL NORMAL STRESS	EFFECTIVE NORMAL STRESS	SHEAR STRESS
41	1327.8	169.8	9873.4	9873.4	2635.4
42	1356.3	188.6	7489.3	7489.3	2091.6
43	1378.8	205.7	5878.2	5878.2	1724.1
44	1405.0	225.7	4546.9	4546.9	1420.3
45	1435.0	248.6	3495.2	3495.2	1180.4
46	1465.0	275.0	1883.4	1883.4	812.7
47	1485.0	295.0	652.4	652.4	531.9

CHECK SUMS - (ALL SHOULD BE SMALL)

SUM OF FORCES IN VERTICAL DIRECTION = .4
(= .446E+00)

SHOULD NOT EXCEED .100E+03

SUM OF FORCES IN HORIZONTAL DIRECTION = 1.1
(= .115E+01)

SHOULD NOT EXCEED .100E+03

SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -88.1
(= -.882E+02)

SHOULD NOT EXCEED .100E+03

SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .1
(= .163E+00)

SHOULD NOT EXCEED .100E+03

1 UTEXAS2 - VER. 1.209 - 11/23/87 - SN00004 - (C) 1985 S. G. WRIGHT

ARADI-SADDLEBACK MEADOWS

JOB NO. 4816-07, SECTION C-C'

FACTOR OF SAFETY ALONG NONCIRCULAR SURFACE

TABLE NO. 25

****
* FINAL RESULTS FOR SHEAR SURFACE (CRITICAL *
* SURFACE IN CASE OF A SEARCH) *
****

SPENCER'S PROCEDURE USED TO COMPUTE FACTOR OF SAFETY
FACTOR OF SAFETY = 1.175 SIDE FORCE INCLINATION
12.03 DEGREES

VALUES AT RIGHT SIDE OF SLI..

SIGMA AT TOP	SIGMA AT BOTTOM	SLICE NO.	X-RIGHT	SIDE FORCE	Y-COORD. OF SIDE FORCE LOCATION	FRACTION OF HEIGHT
668.4	3454.6	1	200.0	19308.	139.9	.253
-1988.5	6763.4	2	220.0	61222.	137.8	.195
-2381.0	9319.6	3	236.3	106416.	136.6	.219
1310.4	8189.5	4	278.1	181824.	136.8	.379
6364.5	6158.9	5	290.0	205231.	136.6	.503
24116.2	-6138.5	6	300.0	219045.	137.3	.780
3271.5	7305.8	7	325.0	271855.	136.2	.436
2686.0	8612.2	8	362.5	363494.	133.5	.413
2100.4	10132.7	9	400.0	469586.	130.2	.391
1614.4	11383.6	10	428.9	561115.	127.4	.375
-540.2	16415.3	11	460.0	767220.	120.7	.322
-1902.9	20361.4	12	490.0	983830.	116.1	.299
-2339.4	21843.3	13	502.6	1080404.	114.4	.293
-1794.8	21556.0	14	520.0	1151494.	114.1	.303
-1388.4	21485.0	15	530.0	1193589.	113.8	.310
-201.4	21332.6	16	563.3	1337855.	112.7	.330
		17	596.7	1486911.	111.5	.348

1062.6	21231.2					
	18	630.0	1640756.	110.1	.365	
2254.6	21158.3					
	19	650.0	1705612.	110.1	.375	
2959.3	20910.1					
	20	690.0	1836693.	110.0	.392	
4333.6	20417.8					
	21	730.0	1969207.	109.9	.407	
5669.8	19919.1					
	22	770.0	2103154.	109.8	.410	
5913.8	19766.0					
	23	810.0	2248442.	108.8	.388	
4065.7	20579.9					
	24	850.0	2414978.	106.4	.355	
1544.7	21957.1					
	25	870.0	2420614.	107.2	.348	
1004.3	22000.8					
	26	905.0	2431624.	108.2	.342	
578.0	22101.7					
	27	940.0	2442909.	109.3	.342	
579.0	22175.8					
	28	975.0	2454470.	110.4	.342	
581.9	22250.4					
	29	1010.0	2466305.	111.4	.342	
607.1	22324.4					
	30	1030.0	2473145.	112.1	.343	
677.0	22359.4					
	31	1070.0	2257909.	120.2	.351	
1185.0	20898.2					
	32	1110.0	2056807.	128.5	.360	
1719.4	19455.6					
	33	1120.0	1978167.	131.6	.363	
1872.2	18931.2					
	34	1160.0	1684558.	144.0	.374	
2338.2	16903.4					
	35	1185.0	1515700.	151.8	.374	
2216.3	15752.3					
	36	1210.0	1355185.	159.5	.372	
1910.6	14657.2					
	37	1235.0	1135020.	170.4	.370	
1616.6	13166.3					
	38	1260.0	934522.	181.2	.369	
1413.0	11686.1					
	39	1276.4	815277.	188.2	.374	
1487.4	10718.0					
	40	1310.7	597314.	203.0	.392	
1879.4	8710.6					
1						

---------- VALUES AT RIGHT SIDE OF SLICE ----------

SIGMA	SIGMA	Y-COORD. OF	FRACTION

SLICE NO.	X-RIGHT	SIDE FORCE	SIDE FORCE LOCATION	OF HEIGHT	AT TOP	AT BOTTOM
41	1345.0	418650.	218.1	.423	2458.6	6640.4
42	1367.5	300372.	230.7	.461	3083.4	4981.0
43	1390.0	209272.	243.2	.493	3339.3	3642.5
44	1420.0	117753.	259.5	.502	2617.3	2556.0
45	1450.0	49888.	276.4	.491	1301.9	1545.6
46	1480.0	3149.	297.0	.498	217.0	222.2
47	1490.0	0.	348.1	ABOVE	5.4	-5.2

CHECK SUMS - (ALL SHOULD BE SMALL)
SUM OF FORCES IN VERTICAL DIRECTION = .4[illegible]
(= .446E+00)
SHOULD NOT EXCEED .100E+03
SUM OF FORCES IN HORIZONTAL DIRECTION = 1.1[illegible]
(= .115E+01)
SHOULD NOT EXCEED .100E+03
SUM OF MOMENTS ABOUT COORDINATE ORIGIN = -88.1[illegible]
(= -.882E+02)
SHOULD NOT EXCEED .100E+03
SHEAR STRENGTH/SHEAR FORCE CHECK-SUM = .1[illegible]
(= .163E+00)
SHOULD NOT EXCEED .100E+03

END-OF-FILE ENCOUNTERED WHILE READING COMMAND
WORDS - END OF PROBLEM(S) ASSUMED

APPENDIX D

HYDROLOGY TECHNICAL REPORT

SADDLEBACK MEADOWS
TENTATIVE TRACT 15230
W.O.#1665-1
DATE: 11/26/01

		EXISTING CONDITION		PROPOSED CONDITION	
	LOCATION	WATERSHED AREA	Q100	WATERSHED AREA	Q100
		(acre)	(cfs)	(acre)	(cfs)
1	Ex. Facility "J01" per SD plan # J01-701-15	186 6	438.9	196.0	536 7
2	Ex. 24" RCP, line "B", per SD plan # J01-701-15	6 7	22 7	6.9	27 2
3	Ex 24" RCP, lines "A", "B", & "C", per imp. plans Tract 12724	16 8	59 7	17.7	69.3
4	To Oso Creek @ Tract Boundary	44 9	130.6	36.7	106.2

HYDROLOGY ANALYSIS

For

TENTATIVE TRACT 15230

Saddleback Meadows

Prepared By:

HUNSAKER & ASSOCIATES IRVINE, INC.

Three Hughes
Irvine, CA 92618
(949) 583-1010

W.O.#: 1665-1/HYD ANALYSIS(Saddleback Meadows)

HYDROLOGY
ANALYSIS
FOR
TRACT 15230
SADDLEBACK MEADOWS

FOR PLAN CHECK ONLY.

PREPARED UNDER THE SUPERVISION OF:

9/24/01

NICK V. NGUYEN DATE

RCE 59138 EXP. 06/30/03

TABLE OF CONTENTS

INTRODUCTION ——— SECTION 1

EXISTING CONDITION CALCULATIONS ——— SECTION 2

- 100-YEAR STORM
- 50-YEAR STORM
- 10-YEAR STORM
- 2-YEAR STORM

PROPOSED CONDITION CALCULATIONS ——— SECTION 3

- 100-YEAR STORM
- 50-YEAR STORM
- 10-YEAR STORM
- 2-YEAR STORM

HYDROLOGY MAPS ——— SECTION 4

- EXISTING CONDITION
- PROPOSED CONDITION

INTRODUCTION

Tentative Tract 15230 is a proposed residential development known as Saddleback Meadows in the County of Orange. The project site locates adjacent to east of El Toro Road between Glenn Ranch Road and Ridgeline Road (see vicinity map for detail).

The purpose of this hydrology study is to determine the storm drain system required for Tentative Tract 15230.

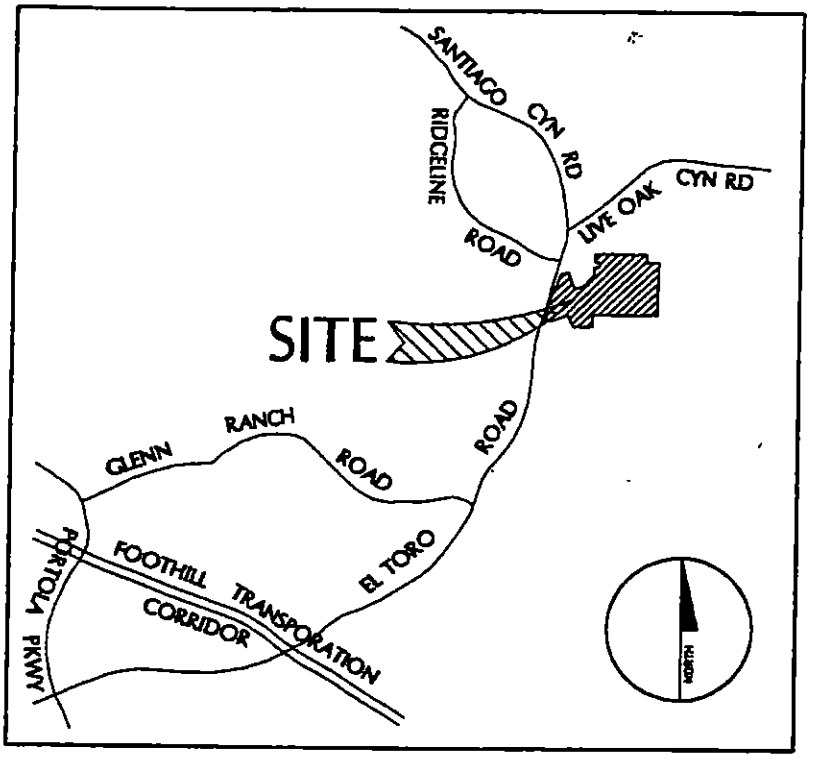
In the developed condition the site has eight different storm drain systems. Lines "A", "B", and "C" collect flows from areas A, B, and C with proposed 18" R.C.P., 36" R.C.P., 42" R.C.P., respectively. The three proposed storm drain systems above discharge the runoffs into the existing natural channel. The flows then travel west toward El Toro Road to the existing facility "J01" at node 459. Line "E" collects flows from area E with a proposed 36" R.C.P., and discharges into the existing facility "J01" at node 459. The flows will confluence with the flows produced from areas A, B, and C at node 459, and eventually discharges into Alisos Creek by "J01". Line "F" collects flows from area F at node 504 with a proposed 24" R.C.P. and will be connected to the existing 24" R.C.P. (line "B" per storm drain plans No.J01-701-15). The flows then discharges into Alisos Creek. There are two existing 24" R.C.P. (lines "B" & "C" per improvement plans for tract 12724) in Valley Vista Street at nodes 607 and 703 collect flows from areas G and H then discharges into Alisos Creek with the existing 24" R.C.P. line "A" in El Toro Road. The last system line "D" collect flows from area D with a proposed 24" R.C.P. and discharges into a proposed earth channel at node 317 then into Oso Creek with the natural channel. See hydrology map for details.

In the existing condition the site has five existing drainage system. The existing facility "J01" collects flows from area A at node 459 and discharges into Alisos Creek. The existing 24" R.C.P. (line "B" per storm drain plans No.J01-701-15) collects flows from area F at node 504 and discharges into Alisos Creek. The two existing 24" R.C.P. (lines "B" & "C" per improvement plans for tract 12724) in Valley Vista Street at nodes 607 and 703 collect flows

from areas G and H then discharges into Alisos Creek with the existing 24" R.C.P. line "A" in El Toro Road. The last system the existing earth channel collects flows from area D at node 324 and discharge into Oso Creek with the natural channel.

The hydrology calculations were prepared using the 1986 Orange County HydrologyManual as incorporated in the A.E.S. rational method software package. Soil group was based on current USGS Hydrological Orange county Soil Group Map. All pertinent information is included on the hydrology map contained in this report.

VICINITY MAP



SOIL MAP

EXISTING CONDITION
HYDROLOGY CALCULATIONS

100-YEAR STORM

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
               (Reference: 1986 OCEMA HYDROLOGY CRITERION)
          (c) Copyright 1983-2000 Advanced Engineering Software (aes)
              Ver. 8.0  Release Date: 01/01/2000  License ID 1239

                          Analysis prepared by:

                                                                  10-92
                            HUNSAKER & ASSOCIATES
                                 Irvine,Inc.
                       Planning * Engineering * Surveying
                Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* t.t. 15230                                                              *
* ex. cond.                                                               *
* area "A"                                                                *
 **************************************************************************

  FILE NAME: 5.19
  TIME/DATE OF STUDY: 10:36 07/17/2001
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                        --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 1   30.0     20.0   0.018/0.018/0.020    0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1540.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.873
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.454
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        0.50      0.30       1.00     84    8.87
```

2

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.87
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.87

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1540.00  DOWNSTREAM(FEET) =   1480.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   320.00   CHANNEL SLOPE =  0.1875
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1538 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.87
 FLOW VELOCITY(FEET/SEC) =   2.70 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  10.85
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.85
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.991
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        2.60      0.30       1.00    84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    8.64
 EFFECTIVE AREA(ACRES) =     3.10   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3.10       PEAK FLOW RATE(CFS) =      10.30

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.00   CHANNEL SLOPE =  0.1798
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1499 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     10.30
 FLOW VELOCITY(FEET/SEC) =   4.71 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.15   Tc(MIN.) =  13.99
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1490.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.99
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.445
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        18.60      0.30      1.00     84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   18.60      SUBAREA RUNOFF(CFS) =   52.65
  EFFECTIVE AREA(ACRES) =    21.70   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    21.70       PEAK FLOW RATE(CFS) =      61.42

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1188.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   950.00   CHANNEL SLOPE =  0.1389
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     61.42
  FLOW VELOCITY(FEET/SEC) =   7.88 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.01   Tc(MIN.) =  16.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  2440.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.188
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 D       31.00      0.20      1.00     96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   31.00      SUBAREA RUNOFF(CFS) =   83.36
  EFFECTIVE AREA(ACRES) =    52.70   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    52.70       PEAK FLOW RATE(CFS) =     139.76

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      6.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1188.00  DOWNSTREAM(FEET) =   1140.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0923
  CHANNEL FLOW THRU SUBAREA(CFS) =    139.76
  FLOW VELOCITY(FEET/SEC) =  15.96 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.54   Tc(MIN.) =  16.54
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.54
```

4

```
 RAINFALL INTENSITY(INCH/HR) =   3.13
 AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.24
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   52.70
 TOTAL STREAM AREA(ACRES) =   52.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    139.76

****************************************************************************
 FLOW PROCESS FROM NODE       5.10 TO NODE       5.20 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1651.80  DOWNSTREAM(FEET) =   1510.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.539
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.889
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.10      0.30       1.00     84    7.54
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      4.54
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.54

****************************************************************************
 FLOW PROCESS FROM NODE       5.20 TO NODE       5.30 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1460.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   360.00   CHANNEL SLOPE =  0.1389
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      4.54
 FLOW VELOCITY(FEET/SEC) =   3.31 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =   9.35
 LONGEST FLOWPATH FROM NODE      5.10 TO NODE       5.30 =   630.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       5.30 TO NODE       5.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.35
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.352
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        4.40      0.30       1.00     84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    4.40      SUBAREA RUNOFF(CFS) =   16.05
 EFFECTIVE AREA(ACRES) =    5.50    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     5.50       PEAK FLOW RATE(CFS) =      20.06
```

```
**************************************************************************
 FLOW PROCESS FROM NODE      5.30 TO NODE      5.40 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1920.00   CHANNEL SLOPE =  0.1510
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1355 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     20.06
 FLOW VELOCITY(FEET/SEC) =   5.60 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   5.72   Tc(MIN.) =  15.07
 LONGEST FLOWPATH FROM NODE      5.10 TO NODE      5.40 =  2550.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE      5.40 TO NODE      5.40 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  15.07
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.292
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       24.80      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   69.02
 EFFECTIVE AREA(ACRES) =    30.30   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    30.30       PEAK FLOW RATE(CFS) =      83.83

**************************************************************************
 FLOW PROCESS FROM NODE      5.40 TO NODE      6.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.1765
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     83.83
 FLOW VELOCITY(FEET/SEC) =   9.42 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.30   Tc(MIN.) =  15.37
 LONGEST FLOWPATH FROM NODE      5.10 TO NODE      6.00 =  2720.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  15.37
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.259
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       11.80      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   11.80      SUBAREA RUNOFF(CFS) =   32.48
```

6

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 EFFECTIVE AREA(ACRES) =    42.10   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    42.10        PEAK FLOW RATE(CFS) =     115.39

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  15.37
RAINFALL INTENSITY(INCH/HR) =   3.26
AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   42.10
TOTAL STREAM AREA(ACRES) =   42.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =    115.39

** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     139.76  16.54     3.127   0.24( 0.24) 1.00     52.7        1.00
    2     115.39  15.37     3.259   0.21( 0.21) 1.00     42.1        5.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     251.15  15.37     3.259   0.23( 0.23) 1.00     91.1        5.10
    2     250.17  16.54     3.127   0.23( 0.23) 1.00     94.8        1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    251.15    Tc(MIN.) =    15.37
EFFECTIVE AREA(ACRES) =    91.06   AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     94.80
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1088.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0520
CHANNEL FLOW THRU SUBAREA(CFS) =    251.15
FLOW VELOCITY(FEET/SEC) =  14.36 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  16.53
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =  3960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  16.53
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.129
SUBAREA LOSS RATE DATA(AMC III):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        9.20      0.20       1.00     96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS) =    24.25
EFFECTIVE AREA(ACRES) =   100.26    AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =   104.00        PEAK FLOW RATE(CFS) =     261.94

****************************************************************************
FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  16.53
RAINFALL INTENSITY(INCH/HR) =   3.13
AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =  100.26
TOTAL STREAM AREA(ACRES) =  104.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =    261.94

****************************************************************************
FLOW PROCESS FROM NODE      6.10 TO NODE      6.20 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1240.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.453
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.618
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                B        0.50      0.30       1.00     84    8.45
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      1.94
TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.94

****************************************************************************
FLOW PROCESS FROM NODE      6.20 TO NODE      6.30 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1190.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.1471
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1330 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      1.94
FLOW VELOCITY(FEET/SEC) =   2.55 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.22   Tc(MIN.) =  10.68
LONGEST FLOWPATH FROM NODE      6.10 TO NODE      6.30 =   610.00 FEET
```

8

```
 ****************************************************************************
  FLOW PROCESS FROM NODE       6.30 TO NODE       6.30 IS CODE =  81
 ----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 ============================================================================
  MAINLINE Tc(MIN) =  10.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.025
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.80      0.30       1.00    84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =     6.03
  EFFECTIVE AREA(ACRES) =     2.30    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     2.30        PEAK FLOW RATE(CFS) =        7.71

 ****************************************************************************
  FLOW PROCESS FROM NODE       6.30 TO NODE       6.40 IS CODE =  53
 ----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1190.00  DOWNSTREAM(FEET) =   1114.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.1086
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1064 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =       7.71
  FLOW VELOCITY(FEET/SEC) =   3.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.23   Tc(MIN.) =  13.91
  LONGEST FLOWPATH FROM NODE      6.10 TO NODE       6.40 =  1310.00 FEET.

 ****************************************************************************
  FLOW PROCESS FROM NODE       6.40 TO NODE       6.40 IS CODE =  81
 ----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 ============================================================================
  MAINLINE Tc(MIN) =  13.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.457
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        6.50      0.30       1.00    84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     6.50      SUBAREA RUNOFF(CFS) =    18.47
  EFFECTIVE AREA(ACRES) =     8.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     8.80        PEAK FLOW RATE(CFS) =       25.00

 ****************************************************************************
  FLOW PROCESS FROM NODE       6.40 TO NODE       7.00 IS CODE =  52
 ----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1114.00  DOWNSTREAM(FEET) =   1088.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.0591
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.00
  FLOW VELOCITY(FEET/SEC) =   7.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  14.86
```

```
 LONGEST FLOWPATH FROM NODE      6.10 TO NODE      7.00 =  1750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.86
 RAINFALL INTENSITY(INCH/HR) =   3.32
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    8.80
 TOTAL STREAM AREA(ACRES) =    8.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.00

****************************************************************************
 FLOW PROCESS FROM NODE      6.50 TO NODE      6.60 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1280.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.290
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.666
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.50      0.30       1.00     84    8.29
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.96
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.96

****************************************************************************
 FLOW PROCESS FROM NODE      6.60 TO NODE      6.70 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1210.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   270.00   CHANNEL SLOPE =  0.2593
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1831 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.96
 FLOW VELOCITY(FEET/SEC) =   3.00 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =   9.79
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE      6.70 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.70 TO NODE      6.70 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.79
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.222
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
```

```
10
       LAND USE                GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                   B        1.30       0.30        1.00     84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     4.59
  EFFECTIVE AREA(ACRES) =     1.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      1.80       PEAK FLOW RATE(CFS) =       6.35

****************************************************************************
  FLOW PROCESS FROM NODE       6.70 TO NODE       6.80 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =   1104.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   590.00   CHANNEL SLOPE =  0.1797
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1498 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      6.35
  FLOW VELOCITY(FEET/SEC) =   4.01 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =  12.24
  LONGEST FLOWPATH FROM NODE      6.50 TO NODE      6.80 =  1110.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.712
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                   D        4.50       0.20        1.00     96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     4.50      SUBAREA RUNOFF(CFS) =    14.22
  EFFECTIVE AREA(ACRES) =     6.30    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      6.30       PEAK FLOW RATE(CFS) =       19.75

****************************************************************************
  FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.712
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                   B        5.50       0.30        1.00     84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     5.50      SUBAREA RUNOFF(CFS) =    16.89
  EFFECTIVE AREA(ACRES) =    11.80    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.26   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     11.80       PEAK FLOW RATE(CFS) =       36.64

****************************************************************************
```

```
 FLOW PROCESS FROM NODE       6.80 TO NODE       7.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1104.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0889
 CHANNEL FLOW THRU SUBAREA(CFS) =     36.64
 FLOW VELOCITY(FEET/SEC) =  10.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.28   Tc(MIN.) =  12.52
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE      7.00 =  1290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.52
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.656
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        0.40      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     0.40      SUBAREA RUNOFF(CFS) =     1.24
 EFFECTIVE AREA(ACRES) =    12.20    AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    12.20        PEAK FLOW RATE(CFS) =       37.30

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.52
 RAINFALL INTENSITY(INCH/HR) =   3.66
 AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   12.20
 TOTAL STREAM AREA(ACRES) =   12.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.30

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)    NODE
     1     261.94  16.53     3.129   0.23( 0.23) 1.00    100.3        5.10
     1     259.80  17.71     3.002   0.23( 0.23) 1.00    104.0        1.00
     2      25.00  14.86     3.320   0.30( 0.30) 1.00      8.8        6.10
     3      37.30  12.52     3.656   0.26( 0.26) 1.00     12.2        6.50

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)    NODE
     1     295.26  12.52     3.656   0.24( 0.24) 1.00     95.6        5.10
     2     309.61  14.86     3.320   0.24( 0.24) 1.00    111.1        6.10
```

```
12
        3    316.86  16.53    3.129  0.23( 0.23) 1.00   121.3        5.10
      4    312.28  17.71    3.002  0.23( 0.23) 1.00   125.0        1.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    316.86    Tc(MIN.) =    16.53
  EFFECTIVE AREA(ACRES) =   121.26   AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    125.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =  3960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      8.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1088.00  DOWNSTREAM(FEET) =   1038.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1220.00   CHANNEL SLOPE =  0.0410
  CHANNEL FLOW THRU SUBAREA(CFS) =    316.86
  FLOW VELOCITY(FEET/SEC) =  13.71 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =  18.01
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      8.00 =  5180.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      8.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.975
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 D       27.30      0.20       1.00    96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   27.30      SUBAREA RUNOFF(CFS) =   68.18
  EFFECTIVE AREA(ACRES) =   148.56   AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   152.30       PEAK FLOW RATE(CFS) =     367.24

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE    459.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1038.00  DOWNSTREAM(FEET) =   1018.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =   650.00   CHANNEL SLOPE =  0.0303
  CHANNEL FLOW THRU SUBAREA(CFS) =    367.24
  FLOW VELOCITY(FEET/SEC) =  12.35 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =  18.89
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE    459.00 =  5830.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.898
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
```

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
NATURAL FAIR COVER "OPEN BRUSH"	B	14.00	0.30	1.00	84
NATURAL FAIR COVER "OPEN BRUSH"	D	20.30	0.20	1.00	96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.24
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 34.30 SUBAREA RUNOFF(CFS) = 82.02
EFFECTIVE AREA(ACRES) = 182.86 AREA-AVERAGED Fm(INCH/HR) = 0.23
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 186.60 PEAK FLOW RATE(CFS) = 438.94

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 186.60 TC(MIN.) = 18.89
EFFECTIVE AREA(ACRES) = 182.86 AREA-AVERAGED Fm(INCH/HR)= 0.23
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 1.00
PEAK FLOW RATE(CFS) = 438.94

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	435.68	14.93	3.310	0.23(0.23)	1.00	157.2	6.50
2	438.24	17.23	3.050	0.23(0.23)	1.00	172.7	6.10
3	438.94	18.89	2.898	0.23(0.23)	1.00	182.9	5.10
4	430.50	20.08	2.794	0.23(0.23)	1.00	186.6	1.00

END OF RATIONAL METHOD ANALYSIS

1

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
               (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                            Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* T.T. 15230, SADDLEBACK MEADOWS                                          *
* AREA 'B' AND DRAINAGE 13                                                *
* EXISTING CONDITION                                                      *
 **************************************************************************

  FILE NAME: 17.1
  TIME/DATE OF STUDY: 09:14 09/24/2001
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                        --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ==================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1649.00  DOWNSTREAM(FEET) =   1490.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.849
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.778
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 D       0.70      0.20       1.00     96    7.85
```

2

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.88
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.88

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.1667
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.88
 FLOW VELOCITY(FEET/SEC) =   3.02 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =   9.17
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   540.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.17
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.404
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.80      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   18.16
 EFFECTIVE AREA(ACRES) =     5.50   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     5.50       PEAK FLOW RATE(CFS) =      20.81

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE =  0.1806
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     20.81
 FLOW VELOCITY(FEET/SEC) =   5.97 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.01   Tc(MIN.) =  11.19
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1260.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.19
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.923
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        6.20      0.20      1.00     96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     6.20      SUBAREA RUNOFF(CFS) =   20.77
  EFFECTIVE AREA(ACRES) =    11.70    AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    11.70        PEAK FLOW RATE(CFS) =      39.20

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1455
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.20
  FLOW VELOCITY(FEET/SEC) =   6.90 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.66   Tc(MIN.) =  13.84
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  2360.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.467
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       23.80      0.20      1.00     96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    23.80      SUBAREA RUNOFF(CFS) =   69.97
  EFFECTIVE AREA(ACRES) =    35.50    AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    35.50        PEAK FLOW RATE(CFS) =     104.37

****************************************************************************
  FLOW PROCESS FROM NODE      5.00 TO NODE      4.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1160.00  DOWNSTREAM(FEET) =   1140.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.0952
  CHANNEL FLOW THRU SUBAREA(CFS) =    104.37
  FLOW VELOCITY(FEET/SEC) =  14.84 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.24   Tc(MIN.) =  14.08
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  2570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.433
  SUBAREA LOSS RATE DATA(AMC III):
```

4

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	1.00	0.20	1.00	96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 2.91
EFFECTIVE AREA(ACRES) = 36.50 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 36.50 PEAK FLOW RATE(CFS) = 106.20

****
FLOW PROCESS FROM NODE 4.00 TO NODE 4.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 14.08
RAINFALL INTENSITY(INCH/HR) = 3.43
AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 36.50
TOTAL STREAM AREA(ACRES) = 36.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 106.20

****
FLOW PROCESS FROM NODE 4.00 TO NODE 4.00 IS CODE = 7

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<< DATA FROM NODE 4
==========
DRAINAGE 13

USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 14.00 RAINFALL INTENSITY(INCH/HR) = 3.44
EFFECTIVE AREA(ACRES) = 8.40
TOTAL AREA(ACRES) = 8.40 PEAK FLOW RATE(CFS) = 24.50
AREA-AVERAGED Fm(INCH/HR) = 0.20 AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 1.00
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

****
FLOW PROCESS FROM NODE 4.00 TO NODE 4.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 14.00
RAINFALL INTENSITY(INCH/HR) = 3.44
AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 8.40
TOTAL STREAM AREA(ACRES) = 8.40
PEAK FLOW RATE(CFS) AT CONFLUENCE = 24.50

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	106.20	14.08	3.433	0.20(0.20)	1.00	36.5	1.00
2	24.50	14.00	3.444	0.20(0.20)	1.00	8.4	4.00

```
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     130.47  14.00     3.444   0.20( 0.20) 1.00     44.7        4.00
     2     130.61  14.08     3.433   0.20( 0.20) 1.00     44.9        1.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    130.61    Tc(MIN.) =    14.08
 EFFECTIVE AREA(ACRES) =    44.90   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     44.90
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  2570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      6.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1090.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.0794
 CHANNEL FLOW THRU SUBAREA(CFS) =    130.61
 FLOW VELOCITY(FEET/SEC) =  14.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  14.80
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  3200.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.80
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.328
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               D        9.30      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    9.30      SUBAREA RUNOFF(CFS) =   26.18
 EFFECTIVE AREA(ACRES) =    54.20   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    54.20       PEAK FLOW RATE(CFS) =     152.60
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     54.20  TC(MIN.) =     14.80
 EFFECTIVE AREA(ACRES) =     54.20  AREA-AVERAGED Fm(INCH/HR)=  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 PEAK FLOW RATE(CFS)    =    152.60

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     152.58  14.72     3.340   0.20( 0.20) 1.00     54.0        4.00
     2     152.60  14.80     3.328   0.20( 0.20) 1.00     54.2        1.00
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
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                            Analysis prepared by:

                            HUNSAKER & ASSOCIATES
                                 Irvine,Inc.
                          Planning * Engineering * Surveying
                       Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* t.t. 15230                                                              *
* 100-yr storm, ex. cond.                                                 *
* drainage 13, at southerly property line                                 *
 **************************************************************************

  FILE NAME: 13-EX.DAT
  TIME/DATE OF STUDY: 10:32 07/17/2001
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ==================  ======  =====  ======  =====  ======
  1   24.0     19.0   0.017/0.017/0.020   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     15.0   0.017/0.017/0.020   0.50    1.50 0.0313 0.125 0.0150
  3   18.0     13.0   0.017/0.017/0.020   0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1400.00
```

2

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.004
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.417
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        0.50      0.20       1.00    96    9.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.90
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.90

****************************************************************************
 FLOW PROCESS FROM NODE       2.00 TO NODE       3.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1330.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =  0.2000
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1600 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.90
 FLOW VELOCITY(FEET/SEC) =   2.77 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.10   Tc(MIN.) =  11.11
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE       3.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       3.00 TO NODE       3.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.11
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.938
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.30      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    4.37
 EFFECTIVE AREA(ACRES) =    1.80   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     1.80       PEAK FLOW RATE(CFS) =       6.06

****************************************************************************
 FLOW PROCESS FROM NODE       3.00 TO NODE       4.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1330.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   750.00   CHANNEL SLOPE =  0.2533
 SLOPE ADJUSTMENT CURVE USED:
```

```
 EFFECTIVE SLOPE = .1811 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      6.06
 FLOW VELOCITY(FEET/SEC) =   4.34 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  13.99
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1400.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.99                                    SEE MAP 4
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.446             AREA 'B'
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        6.60      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    6.60      SUBAREA RUNOFF(CFS) =   19.28
 EFFECTIVE AREA(ACRES) =     8.40   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     8.40       PEAK FLOW RATE(CFS) =      24.54
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =      8.40  TC(MIN.) =     13.99
 EFFECTIVE AREA(ACRES) =       8.40  AREA-AVERAGED Fm(INCH/HR)=  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 PEAK FLOW RATE(CFS)    =     24.54
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS

1
```

```
**********************************************************************
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                        Analysis prepared by:

                      HUNSAKER  &  ASSOCIATES
                            Irvine, Inc.
                    Planning * Engineering * Surveying
          Three Hughes * Irvine, California 92718 * (714)583-1010

 *************************** DESCRIPTION OF STUDY **************************
* W.O. #1665-1, TRACT 15230 SADDLEBACK MEADOWS                             *
* AREA "F"                                                                 *
* 100-YEAR EXISTING CONDITION                                              *
 ***************************************************************************

  FILE NAME: H:\AES96\HYDROSFT\RATSC6\D\1665\15230\F-EX.HC1
  TIME/DATE OF STUDY:  9: 1   4/23/1999
```

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = .90
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF-WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP	HIKE	MANNING FACTOR (n)
1	24.0	19.0	.017/ .017/ .020	.50	1.50	.03125	.1250	.01500
2	20.0	15.0	.017/ .017/ .020	.50	1.50	.03125	.1250	.01500
3	18.0	13.0	.017/ .017/ .020	.50	1.50	.03125	.1250	.01500

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = -.10 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

```
**********************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  2.1
----------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
======================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
  ELEVATION DATA: UPSTREAM(FEET) =   1172.00  DOWNSTREAM(FEET) =   1110.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.895
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.487
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

138

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	B	.50	.30	1.00	84	8.89
NATURAL FAIR COVER "OPEN BRUSH"	D	.60	.20	1.00	96	8.89

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA RUNOFF(CFS) = 4.20
TOTAL AREA(ACRES) = 1.10 PEAK FLOW RATE(CFS) = 4.20

****
FLOW PROCESS FROM NODE 502.00 TO NODE 504.00 IS CODE = 5.3

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1110.00 DOWNSTREAM(FEET) = 1028.60
CHANNEL LENGTH THRU SUBAREA(FEET) = 450.00 CHANNEL SLOPE = .1809
CHANNEL FLOW THRU SUBAREA(CFS) = 4.20
FLOW VELOCITY(FEET/SEC) = 3.84 (PER LACFCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.95 Tc(MIN.) = 10.85

****
FLOW PROCESS FROM NODE 504.00 TO NODE 504.00 IS CODE = 8.1

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 10.85
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.990
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	1.50	.30	1.00	84
NATURAL FAIR COVER "OPEN BRUSH"	D	4.10	.20	1.00	96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .23
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 5.60 SUBAREA RUNOFF(CFS) = 18.97
EFFECTIVE AREA(ACRES) = 6.70 AREA-AVERAGED Fm(INCH/HR) = .23
AREA-AVERAGED Fp(INCH/HR) = .23 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 6.70 PEAK FLOW RATE(CFS) = 22.68

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 6.70 TC(MIN.) = 10.85
EFFECTIVE AREA(ACRES) = 6.70 AREA-AVERAGED Fm(INCH/HR)= .23
AREA-AVERAGED Fp(INCH/HR) = .23 AREA-AVERAGED Ap = 1.00
PEAK FLOW RATE(CFS) = 22.68

END OF RATIONAL METHOD ANALYSIS

```
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                        Analysis prepared by:

                        HUNSAKER  &  ASSOCIATES
                              Irvine,Inc.
                      Planning * Engineering * Surveying
                Three Hughes * Irvine, California 92718 * (714)583-1010

 *************************** DESCRIPTION OF STUDY ***************************
* W.O. #1665-1, TRACT 15230 SADDLEBACK MEADOWS                              *
* AREA "G"                                                                  *
* 100-YEAR EXISTING CONDITION                                               *
 ****************************************************************************

  FILE NAME: H:\AES96\HYDROSFT\RATSC6\D\1665\15230\G-EX.HC1
  TIME/DATE OF STUDY:  9:40  4/23/1999
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH   CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ==========  ====================  ======  =====  ====  ====  =======
  1   24.0      19.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   20.0      15.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  3   18.0      13.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  -.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE     601.00 TO NODE     602.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1254.00  DOWNSTREAM(FEET) =   1134.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.303
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.662
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

140

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	D	1.40	.20	1.00	96	8.30

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA RUNOFF(CFS) = 5.62
TOTAL AREA(ACRES) = 1.40 PEAK FLOW RATE(CFS) = 5.62

****
FLOW PROCESS FROM NODE 602.00 TO NODE 603.00 IS CODE = 5.1

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
===
ELEVATION DATA: UPSTREAM(FEET) = 1134.00 DOWNSTREAM(FEET) = 1077.40
CHANNEL LENGTH THRU SUBAREA(FEET) = 430.00 CHANNEL SLOPE = .1316
CHANNEL BASE(FEET) = 1.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = .030 MAXIMUM DEPTH(FEET) = 1.00
CHANNEL FLOW THRU SUBAREA(CFS) = 5.62
FLOW VELOCITY(FEET/SEC) = 7.41 FLOW DEPTH(FEET) = .41
TRAVEL TIME(MIN.) = .97 Tc(MIN.) = 9.27

****
FLOW PROCESS FROM NODE 603.00 TO NODE 603.00 IS CODE = 8.1

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
===
MAINLINE Tc(MIN) = 9.27
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.376
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	D	6.10	.20	.85	91

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = .85
SUBAREA AREA(ACRES) = 6.10 SUBAREA RUNOFF(CFS) = 23.09
EFFECTIVE AREA(ACRES) = 7.50 AREA-AVERAGED Fm(INCH/HR) = .18
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .88
TOTAL AREA(ACRES) = 7.50 PEAK FLOW RATE(CFS) = 28.35

****
FLOW PROCESS FROM NODE 603.00 TO NODE 703.00 IS CODE = 6.2

>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 2 USED)<<<<<
===
UPSTREAM ELEVATION(FEET) = 1077.40 DOWNSTREAM ELEVATION(FEET) = 1019.30
STREET LENGTH(FEET) = 515.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 20.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00
INSIDE STREET CROSSFALL(DECIMAL) = .017
OUTSIDE STREET CROSSFALL(DECIMAL) = .017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = .020

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29.83
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = .45
HALFSTREET FLOOD WIDTH(FEET) = 18.54

```
   AVERAGE FLOW VELOCITY(FEET/SEC.) =     9.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.37
 STREET FLOW TRAVEL TIME(MIN.) =     .88   Tc(MIN.) =  10.15
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.131
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  D         .80       .20        .10     91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA AREA(ACRES) =     .80      SUBAREA RUNOFF(CFS) =    2.96
 EFFECTIVE AREA(ACRES) =    8.30    AREA-AVERAGED Fm(INCH/HR) =   .16
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .80
 TOTAL AREA(ACRES) =    8.30        PEAK FLOW RATE(CFS) =      29.66

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .45   HALFSTREET FLOOD WIDTH(FEET) =  18.54
 FLOW VELOCITY(FEET/SEC.) =  9.75   DEPTH*VELOCITY(FT*FT/SEC.) =   4.35

****************************************************************************
 FLOW PROCESS FROM NODE    703.00 TO NODE    703.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.15
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.131
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D         8.50      .20       1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    8.50      SUBAREA RUNOFF(CFS) =   30.07
 EFFECTIVE AREA(ACRES) =   16.80    AREA-AVERAGED Fm(INCH/HR) =   .18
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .90
 TOTAL AREA(ACRES) =    16.80       PEAK FLOW RATE(CFS) =      59.73
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     16.80  TC(MIN.) =     10.15
 EFFECTIVE AREA(ACRES) =     16.80  AREA-AVERAGED Fm(INCH/HR)=   .18
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .90
 PEAK FLOW RATE(CFS)    =     59.73
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

50-YEAR STORM

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* T.T. 15230                                                              *
* EXISTING CONDITION                                                      *
* AREA 'A'                                                                *
 **************************************************************************

  FILE NAME: 5.19
  TIME/DATE OF STUDY: 12:43 04/11/2000
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =======  ==================  ======  =====  ====  ====  ======
  1   30.0     20.0   0.018/0.018/0.020    0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1540.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.873
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.930
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        0.50      0.30       1.00    66    8.87
```

2

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.63
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.63

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1540.00  DOWNSTREAM(FEET) =   1480.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   320.00   CHANNEL SLOPE =  0.1875
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1538 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.63
 FLOW VELOCITY(FEET/SEC) =   2.59 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =  10.94
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.94
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.492
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        2.60      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    7.47
 EFFECTIVE AREA(ACRES) =     3.10   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3.10       PEAK FLOW RATE(CFS) =       8.90

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.00   CHANNEL SLOPE =  0.1798
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1499 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      8.90
 FLOW VELOCITY(FEET/SEC) =   4.49 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.30   Tc(MIN.) =  14.24
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1490.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.24
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.007
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        18.60      0.30      1.00     66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   18.60      SUBAREA RUNOFF(CFS) =   45.32
 EFFECTIVE AREA(ACRES) =    21.70   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    21.70       PEAK FLOW RATE(CFS) =      52.87

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   950.00   CHANNEL SLOPE =  0.1389
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     52.87
 FLOW VELOCITY(FEET/SEC) =   7.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =  16.35
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  2440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.35
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.781
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       31.00      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   31.00      SUBAREA RUNOFF(CFS) =   72.00
 EFFECTIVE AREA(ACRES) =    52.70   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    52.70       PEAK FLOW RATE(CFS) =     120.45

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      6.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1188.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0923
 CHANNEL FLOW THRU SUBAREA(CFS) =    120.45
 FLOW VELOCITY(FEET/SEC) =  15.25 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.57   Tc(MIN.) =  16.92
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  16.92
```

4

```
 RAINFALL INTENSITY(INCH/HR) =   2.73
AREA-AVERAGED Fm(INCH/HR) =  0.24
AREA-AVERAGED Fp(INCH/HR) =  0.24
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   52.70
TOTAL STREAM AREA(ACRES) =   52.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =    120.45

****************************************************************************
FLOW PROCESS FROM NODE      5.10 TO NODE      5.20 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
ELEVATION DATA: UPSTREAM(FEET) =   1651.80  DOWNSTREAM(FEET) =   1510.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.539
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.310
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                B        1.10      0.30       1.00    66    7.54
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      3.97
TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      3.97

****************************************************************************
FLOW PROCESS FROM NODE      5.20 TO NODE      5.30 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1460.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   360.00   CHANNEL SLOPE =  0.1389
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      3.97
FLOW VELOCITY(FEET/SEC) =   3.17 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =   9.43
LONGEST FLOWPATH FROM NODE      5.10 TO NODE      5.30 =   630.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      5.30 TO NODE      5.30 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =   9.43
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.796
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                B        4.40      0.30       1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    4.40      SUBAREA RUNOFF(CFS) =   13.84
EFFECTIVE AREA(ACRES) =     5.50   AREA-AVERAGED Fm(INCH/HR) =  0.30
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     5.50       PEAK FLOW RATE(CFS) =
```

```
**************************************************************************
 FLOW PROCESS FROM NODE      5.30 TO NODE      5.40 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1920.00   CHANNEL SLOPE =  0.1510
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1355 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     17.31
 FLOW VELOCITY(FEET/SEC) =   5.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   6.01   Tc(MIN.) =  15.44
 LONGEST FLOWPATH FROM NODE      5.10 TO NODE      5.40 =  2550.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE      5.40 TO NODE      5.40 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  15.44
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.872
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       24.80      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   59.65
 EFFECTIVE AREA(ACRES) =    30.30   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    30.30       PEAK FLOW RATE(CFS) =      72.38

**************************************************************************
 FLOW PROCESS FROM NODE      5.40 TO NODE      6.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.1765
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     72.38
 FLOW VELOCITY(FEET/SEC) =   8.97 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.32   Tc(MIN.) =  15.76
 LONGEST FLOWPATH FROM NODE      5.10 TO NODE      6.00 =  2720.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  15.76
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.840
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       11.80      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   11.80      SUBAREA RUNOFF(CFS) =   28.03
```

6

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 EFFECTIVE AREA(ACRES) =    42.10   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    42.10        PEAK FLOW RATE(CFS) =      99.52

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  15.76
RAINFALL INTENSITY(INCH/HR) =   2.84
AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   42.10
TOTAL STREAM AREA(ACRES) =   42.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     99.52

** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     120.45  16.92     2.727   0.24( 0.24) 1.00     52.7        1.00
    2      99.52  15.76     2.840   0.21( 0.21) 1.00     42.1        5.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     215.72  16.92     2.727   0.23( 0.23) 1.00     94.8        1.00
    2     216.75  15.76     2.840   0.23( 0.23) 1.00     91.2        5.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    216.75    Tc(MIN.) =    15.76
EFFECTIVE AREA(ACRES) =    91.18   AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     94.80
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1088.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0520
CHANNEL FLOW THRU SUBAREA(CFS) =    216.75
FLOW VELOCITY(FEET/SEC) =  13.71 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  16.97
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =  3960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  16.97
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.723
SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        9.20      0.20       1.00     83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS) =    20.89
EFFECTIVE AREA(ACRES) =   100.38    AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =   104.00        PEAK FLOW RATE(CFS) =     225.58

****************************************************************************
FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  16.97
RAINFALL INTENSITY(INCH/HR) =   2.72
AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =  100.38
TOTAL STREAM AREA(ACRES) =  104.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =    225.58

****************************************************************************
FLOW PROCESS FROM NODE       6.10 TO NODE       6.20 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1240.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.453
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.039
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                B        0.50      0.30       1.00     66    8.45
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      1.68
TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.68

****************************************************************************
FLOW PROCESS FROM NODE       6.20 TO NODE       6.30 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1190.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.1471
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1330 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      1.68
FLOW VELOCITY(FEET/SEC) =   2.43 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.33   Tc(MIN.) =  10.79
LONGEST FLOWPATH FROM NODE      6.10 TO NODE      6.30 =   610.00 FEET.
```

8

```
 ****************************************************************************
  FLOW PROCESS FROM NODE       6.30 TO NODE       6.30 IS CODE =  81
 ----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 ============================================================================
  MAINLINE Tc(MIN) =  10.79
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.519
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        1.80      0.30       1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =     5.21
  EFFECTIVE AREA(ACRES) =     2.30    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     2.30        PEAK FLOW RATE(CFS) =        6.66

 ****************************************************************************
  FLOW PROCESS FROM NODE       6.30 TO NODE       6.40 IS CODE =  53
 ----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1190.00  DOWNSTREAM(FEET) =   1114.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.1086
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1064 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =       6.66
  FLOW VELOCITY(FEET/SEC) =   3.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.40   Tc(MIN.) =  14.18
  LONGEST FLOWPATH FROM NODE      6.10 TO NODE       6.40 =  1310.00 FEET.

 ****************************************************************************
  FLOW PROCESS FROM NODE       6.40 TO NODE       6.40 IS CODE =  81
 ----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 ============================================================================
  MAINLINE Tc(MIN) =  14.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.014
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        6.50      0.30       1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     6.50      SUBAREA RUNOFF(CFS) =    15.88
  EFFECTIVE AREA(ACRES) =     8.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     8.80        PEAK FLOW RATE(CFS) =       21.49

 ****************************************************************************
  FLOW PROCESS FROM NODE       6.40 TO NODE       7.00 IS CODE =  52
 ----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1114.00  DOWNSTREAM(FEET) =   1088.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.0591
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.49
  FLOW VELOCITY(FEET/SEC) =   7.43 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  15.17
```

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 LONGEST FLOWPATH FROM NODE      6.10 TO NODE      7.00 =  1750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.17
 RAINFALL INTENSITY(INCH/HR) =   2.90
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    8.80
 TOTAL STREAM AREA(ACRES) =    8.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.49

****************************************************************************
 FLOW PROCESS FROM NODE      6.50 TO NODE      6.60 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1280.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.290
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.084
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.50      0.30       1.00     66    8.29
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.70
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.70

****************************************************************************
 FLOW PROCESS FROM NODE      6.60 TO NODE      6.70 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1210.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   270.00   CHANNEL SLOPE =  0.2593
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1831 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.70
 FLOW VELOCITY(FEET/SEC) =   2.86 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.57   Tc(MIN.) =   9.86
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE      6.70 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.70 TO NODE      6.70 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.86
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.702
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
```

10

```
       LAND USE              GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.30       0.30        1.00     66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     3.98
  EFFECTIVE AREA(ACRES) =     1.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     1.80        PEAK FLOW RATE(CFS) =        5.51

****************************************************************************
  FLOW PROCESS FROM NODE       6.70 TO NODE       6.80 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =   1104.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   590.00   CHANNEL SLOPE =  0.1797
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1498 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =       5.51
  FLOW VELOCITY(FEET/SEC) =   3.83 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.57   Tc(MIN.) =  12.43
  LONGEST FLOWPATH FROM NODE       6.50 TO NODE       6.80 =  1110.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.43
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                D        4.50       0.20        1.00     83
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     4.50      SUBAREA RUNOFF(CFS) =    12.34
  EFFECTIVE AREA(ACRES) =     6.30    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     6.30        PEAK FLOW RATE(CFS) =       17.11

****************************************************************************
  FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.43
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        5.50       0.30        1.00     66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     5.50      SUBAREA RUNOFF(CFS) =    14.59
  EFFECTIVE AREA(ACRES) =    11.80    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.26   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    11.80        PEAK FLOW RATE(CFS) =       31.70

****************************************************************************
```

```
 FLOW PROCESS FROM NODE       6.80 TO NODE       7.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1104.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0889
 CHANNEL FLOW THRU SUBAREA(CFS) =     31.70
 FLOW VELOCITY(FEET/SEC) =  10.14 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.30   Tc(MIN.) =  12.73
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE       7.00 =  1290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.73
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.204
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        0.40      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     0.40      SUBAREA RUNOFF(CFS) =     1.08
 EFFECTIVE AREA(ACRES) =    12.20   AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     12.20      PEAK FLOW RATE(CFS) =       32.33

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.73
 RAINFALL INTENSITY(INCH/HR) =   3.20
 AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   12.20
 TOTAL STREAM AREA(ACRES) =   12.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.33

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1    224.27  18.14     2.622   0.23( 0.23) 1.00    104.0        1.00
     1    225.58  16.97     2.723   0.23( 0.23) 1.00    100.4        5.10
     2     21.49  15.17     2.901   0.30( 0.30) 1.00      8.8        6.10
     3     32.33  12.73     3.204   0.26( 0.26) 1.00     12.2        6.50

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1    266.54  15.17     2.901   0.24( 0.24) 1.00    110.7        6.10
     2    272.64  16.97     2.723   0.23( 0.23) 1.00    121.4        5.10
```

12

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       3    269.40  18.14    2.622  0.23( 0.23) 1.00   125.0        1.00
       4    254.26  12.73    3.204  0.24( 0.24) 1.00    94.9        6.50

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    272.64    Tc(MIN.) =    16.97
  EFFECTIVE AREA(ACRES) =   121.38   AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    125.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =  3960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      8.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1088.00  DOWNSTREAM(FEET) =   1038.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1220.00   CHANNEL SLOPE =  0.0410
  CHANNEL FLOW THRU SUBAREA(CFS) =    272.64
  FLOW VELOCITY(FEET/SEC) =  13.08 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =  18.53
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      8.00 =  5180.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      8.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.53
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.591
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       27.30      0.20       1.00    83
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   27.30     SUBAREA RUNOFF(CFS) =   58.74
  EFFECTIVE AREA(ACRES) =   148.68   AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   152.30       PEAK FLOW RATE(CFS) =     316.15
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    152.30  TC(MIN.) =     18.53
  EFFECTIVE AREA(ACRES) =    148.68  AREA-AVERAGED Fm(INCH/HR)=  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  PEAK FLOW RATE(CFS)    =    316.15

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
   NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
      1    304.55  14.32     2.998  0.23( 0.23) 1.00    122.2        6.50
      2    312.53  16.73     2.744  0.23( 0.23) 1.00    138.0        6.10
      3    316.15  18.53     2.591  0.23( 0.23) 1.00    148.7        5.10
      4    311.71  19.70     2.503  0.23( 0.23) 1.00    152.3        1.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS

1
```

```
**************************************************************************
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                          Analysis prepared by:

                          HUNSAKER & ASSOCIATES
                               Irvine,Inc.
                       Planning * Engineering * Surveying
           Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* T.T.15230                                                               *
* EXISTING CONDITION                                                      *
* AREA 'B'                                                                *
 **************************************************************************

  FILE NAME: 17.1
  TIME/DATE OF STUDY: 08:10 04/07/2000
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  ====  ======
  1   30.0     20.0    0.018/0.018/0.020    0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1649.00  DOWNSTREAM(FEET) =   1490.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.849
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.213
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
```

```
"OPEN BRUSH"                D        0.70      0.20      1.00     83     7.85
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      2.53
TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.53

****************************************************************************
FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1450.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.1667
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      2.53
FLOW VELOCITY(FEET/SEC) =   2.89 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =   9.23
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   540.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =   9.23
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.842
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        4.80      0.20      1.00     83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   15.73
EFFECTIVE AREA(ACRES) =     5.50   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     5.50       PEAK FLOW RATE(CFS) =      18.03

****************************************************************************
FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE =  0.1806
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =     18.03
FLOW VELOCITY(FEET/SEC) =   5.69 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =  11.34
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1260.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  11.34
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.420
SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        6.20      0.20       1.00    83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     6.20      SUBAREA RUNOFF(CFS) =   17.97
EFFECTIVE AREA(ACRES) =    11.70    AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     11.70       PEAK FLOW RATE(CFS) =      33.90

****************************************************************************
FLOW PROCESS FROM NODE       4.00 TO NODE       5.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1455
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =     33.90
FLOW VELOCITY(FEET/SEC) =   6.58 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.79   Tc(MIN.) =  14.13
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  2360.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE       5.00 TO NODE       5.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  14.13
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.020
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D       23.80      0.20       1.00    83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    23.80      SUBAREA RUNOFF(CFS) =   60.40
EFFECTIVE AREA(ACRES) =    35.50    AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     35.50       PEAK FLOW RATE(CFS) =      90.10
============================================================================
END OF STUDY SUMMARY:
TOTAL AREA(ACRES)      =     35.50  TC(MIN.) =     14.13
EFFECTIVE AREA(ACRES) =     35.50  AREA-AVERAGED Fm(INCH/HR)=  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
PEAK FLOW RATE(CFS)    =     90.10
============================================================================
============================================================================
END OF RATIONAL METHOD ANALYSIS

1
```

```
**************************************************************************
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                        Analysis prepared by:

                        HUNSAKER  &  ASSOCIATES
                              Irvine,Inc.
                      Planning * Engineering * Surveying
                Three Hughes * Irvine, California 92718 * (714)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* T.T.15230                                                               *
* EXISTING CONDITION                                                      *
* DRAINAGE 13, AT SOUTHERLY PROPERTY LINE                                 *
 **************************************************************************

  FILE NAME: 13-EX.50
  TIME/DATE OF STUDY:  8:55   4/10/2000
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC II) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ===================  ======  =====  ====  ====  =======
  1   24.0     19.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   20.0     15.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  3   18.0     13.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  -.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1400.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.004
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.897
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D         .50       .20       1.00    83    9.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.66
 TOTAL AREA(ACRES) =       .50   PEAK FLOW RATE(CFS) =      1.66

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  5.3
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1330.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =   .2000
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1600 (PER LACFCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.66
 FLOW VELOCITY(FEET/SEC) =   2.65 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.20   Tc(MIN.) =  11.20

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.20
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.444
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.30       .20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    3.80
 EFFECTIVE AREA(ACRES) =     1.80   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     1.80       PEAK FLOW RATE(CFS) =       5.26

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  5.3
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1330.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   750.00   CHANNEL SLOPE =   .2533
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1811 (PER LACFCD HYDROLOGY MANUAL)
```

```
 CHANNEL FLOW THRU SUBAREA(CFS) =      5.26
 FLOW VELOCITY(FEET/SEC) =   4.14 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.02   Tc(MIN.) =  14.22

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.22
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.009
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        6.60       .20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    6.60      SUBAREA RUNOFF(CFS) =   16.69
 EFFECTIVE AREA(ACRES) =     8.40   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     8.40       PEAK FLOW RATE(CFS) =      21.24
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =      8.40  TC(MIN.) =     14.22
 EFFECTIVE AREA(ACRES) =       8.40  AREA-AVERAGED Fm(INCH/HR)=   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 PEAK FLOW RATE(CFS)    =     21.24
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

10-YEAR STORM

```
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                          Analysis prepared by:

                          HUNSAKER & ASSOCIATES
                               Irvine, Inc.
                        Planning * Engineering * Surveying
                 Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* T.T. 15230                                                             *
* EXISTING CONDITION                                                     *
* AREA 'A'                                                               *
 **************************************************************************

  FILE NAME: 5.19
  TIME/DATE OF STUDY: 12:41 04/11/2000
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ==================  ======  =====  ====  =====  ======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1540.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.873
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.922
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30       1.00     66    8.87
```

2

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.18
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.18

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1540.00  DOWNSTREAM(FEET) =   1480.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   320.00   CHANNEL SLOPE =  0.1875
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1538 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.18
 FLOW VELOCITY(FEET/SEC) =   2.32 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.30   Tc(MIN.) =  11.17
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.17
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.575
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        2.60      0.30       1.00     66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    5.32
 EFFECTIVE AREA(ACRES) =     3.10   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3.10       PEAK FLOW RATE(CFS) =       6.35

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.00   CHANNEL SLOPE =  0.1798
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1499 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      6.35
 FLOW VELOCITY(FEET/SEC) =   4.01 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.70   Tc(MIN.) =  14.87
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1490.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.87
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.173
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        18.60      0.30      1.00     66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   18.60      SUBAREA RUNOFF(CFS) =   31.35
 EFFECTIVE AREA(ACRES) =    21.70   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =    21.70       PEAK FLOW RATE(CFS) =      36.57

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   950.00   CHANNEL SLOPE =  0.1389
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     36.57
 FLOW VELOCITY(FEET/SEC) =   6.63 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.39   Tc(MIN.) =  17.26
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  2440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  17.26
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.998
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       31.00      0.20       1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   31.00      SUBAREA RUNOFF(CFS) =   50.15
 EFFECTIVE AREA(ACRES) =    52.70   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    52.70       PEAK FLOW RATE(CFS) =      83.30

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      6.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1188.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0923
 CHANNEL FLOW THRU SUBAREA(CFS) =     83.30
 FLOW VELOCITY(FEET/SEC) =  13.66 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  17.89
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  17.89
```

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4
 RAINFALL INTENSITY(INCH/HR) =   1.96
 AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.24
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   52.70
 TOTAL STREAM AREA(ACRES) =   52.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     83.30

****************************************************************************
 FLOW PROCESS FROM NODE       5.10 TO NODE       5.20 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1651.80  DOWNSTREAM(FEET) =   1510.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.539
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.212
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.10      0.30       1.00    66    7.54
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.88
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      2.88

****************************************************************************
 FLOW PROCESS FROM NODE       5.20 TO NODE       5.30 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1460.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   360.00   CHANNEL SLOPE =  0.1389
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.88
 FLOW VELOCITY(FEET/SEC) =   2.85 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =   9.65
 LONGEST FLOWPATH FROM NODE       5.10 TO NODE       5.30 =   630.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       5.30 TO NODE       5.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.65
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.799
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        4.40      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    4.40      SUBAREA RUNOFF(CFS) =    9.90
 EFFECTIVE AREA(ACRES) =     5.50   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     5.50       PEAK FLOW RATE(CFS) =
```

```
****************************************************************************
 FLOW PROCESS FROM NODE       5.30 TO NODE       5.40 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1920.00   CHANNEL SLOPE =  0.1510
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1355 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     12.37
 FLOW VELOCITY(FEET/SEC) =   4.76 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   6.72   Tc(MIN.) =  16.36
 LONGEST FLOWPATH FROM NODE       5.10 TO NODE       5.40 =  2550.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       5.40 TO NODE       5.40 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.36
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.062
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)   (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       24.80      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   41.56
 EFFECTIVE AREA(ACRES) =    30.30   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    30.30       PEAK FLOW RATE(CFS) =      50.28

****************************************************************************
 FLOW PROCESS FROM NODE       5.40 TO NODE       6.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.1765
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     50.28
 FLOW VELOCITY(FEET/SEC) =   7.95 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.36   Tc(MIN.) =  16.72
 LONGEST FLOWPATH FROM NODE       5.10 TO NODE       6.00 =  2720.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       6.00 TO NODE       6.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.72
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.036
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)   (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       11.80      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   11.80      SUBAREA RUNOFF(CFS) =   19.50
```

6

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 EFFECTIVE AREA(ACRES) =    42.10   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    42.10        PEAK FLOW RATE(CFS) =      69.08

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  16.72
RAINFALL INTENSITY(INCH/HR) =   2.04
AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   42.10
TOTAL STREAM AREA(ACRES) =   42.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     69.08

** CONFLUENCE DATA **
 STREAM      Q     Tc   Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1      83.30  17.89    1.957  0.24( 0.24) 1.00    52.7        1.00
    2      69.08  16.72    2.036  0.21( 0.21) 1.00    42.1        5.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q     Tc   Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     149.37  17.89    1.957  0.23( 0.23) 1.00    94.8        1.00
    2     150.54  16.72    2.036  0.23( 0.23) 1.00    91.4        5.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    150.54    Tc(MIN.) =    16.72
EFFECTIVE AREA(ACRES) =    91.35   AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     94.80
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1088.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0520
CHANNEL FLOW THRU SUBAREA(CFS) =    150.54
FLOW VELOCITY(FEET/SEC) =  12.25 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =  18.08
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =  3960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  18.08
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.945
SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        9.20      0.20       1.00    83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS).=   14.45
EFFECTIVE AREA(ACRES) =   100.55    AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =   104.00        PEAK FLOW RATE(CFS) =     155.61

****************************************************************************
FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  18.08
RAINFALL INTENSITY(INCH/HR) =   1.95
AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =  100.55
TOTAL STREAM AREA(ACRES) =  104.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     155.61

****************************************************************************
FLOW PROCESS FROM NODE      6.10 TO NODE      6.20 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1240.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.453
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.033
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH"                B        0.50      0.30       1.00    66    8.45
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      1.23
TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.23

****************************************************************************
FLOW PROCESS FROM NODE      6.20 TO NODE      6.30 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1190.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.1471
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1330 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      1.23
FLOW VELOCITY(FEET/SEC) =   2.19 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.59   Tc(MIN.) =  11.04
LONGEST FLOWPATH FROM NODE      6.10 TO NODE      6.30 =   610.00 FEET.
```

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 ************************************************************************
  FLOW PROCESS FROM NODE       6.30 TO NODE       6.30 IS CODE =  81
 ------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 ========================================================================
  MAINLINE Tc(MIN) =  11.04
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.592
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        1.80      0.30       1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =     3.71
  EFFECTIVE AREA(ACRES) =     2.30    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     2.30        PEAK FLOW RATE(CFS) =        4.75

 ************************************************************************
  FLOW PROCESS FROM NODE       6.30 TO NODE       6.40 IS CODE =  53
 ------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1190.00  DOWNSTREAM(FEET) =   1114.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.1086
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1064 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =       4.75
  FLOW VELOCITY(FEET/SEC) =   3.07 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.80   Tc(MIN.) =  14.84
  LONGEST FLOWPATH FROM NODE       6.10 TO NODE       6.40 =  1310.00 FEET.

 ************************************************************************
  FLOW PROCESS FROM NODE       6.40 TO NODE       6.40 IS CODE =  81
 ------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 ========================================================================
  MAINLINE Tc(MIN) =  14.84
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.175
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        6.50      0.30       1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     6.50      SUBAREA RUNOFF(CFS) =    10.97
  EFFECTIVE AREA(ACRES) =     8.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     8.80        PEAK FLOW RATE(CFS) =       14.85

 ************************************************************************
  FLOW PROCESS FROM NODE       6.40 TO NODE       7.00 IS CODE =  52
 ------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1114.00  DOWNSTREAM(FEET) =   1088.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.0591
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.85
  FLOW VELOCITY(FEET/SEC) =   6.73 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  15.93
```

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 LONGEST FLOWPATH FROM NODE      6.10 TO NODE      7.00 =  1750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.93
 RAINFALL INTENSITY(INCH/HR) =   2.09
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    8.80
 TOTAL STREAM AREA(ACRES) =    8.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.85

****************************************************************************
 FLOW PROCESS FROM NODE      6.50 TO NODE      6.60 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1280.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.290
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.065
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.50      0.30       1.00    66    8.29
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.24
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.24

****************************************************************************
 FLOW PROCESS FROM NODE      6.60 TO NODE      6.70 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1210.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   270.00   CHANNEL SLOPE =  0.2593
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1831 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.24
 FLOW VELOCITY(FEET/SEC) =   2.58 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.75   Tc(MIN.) =  10.04
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE      6.70 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.70 TO NODE      6.70 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.04
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.725
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
```

10

```
      LAND USE              GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
NATURAL FAIR COVER
"OPEN BRUSH"                 B        1.30       0.30        1.00      66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     2.84
EFFECTIVE AREA(ACRES) =     1.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =      1.80       PEAK FLOW RATE(CFS) =        3.93

****************************************************************************
 FLOW PROCESS FROM NODE       6.70 TO NODE       6.80 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =   1104.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   590.00   CHANNEL SLOPE =  0.1797
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1498 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.93
 FLOW VELOCITY(FEET/SEC) =   3.42 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  12.91
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE       6.80 =  1110.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.91
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.360
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        4.50       0.20        1.00      83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.50      SUBAREA RUNOFF(CFS) =     8.75
 EFFECTIVE AREA(ACRES) =     6.30    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.23   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      6.30       PEAK FLOW RATE(CFS) =       12.09

****************************************************************************
 FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.91
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.360
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        5.50       0.30        1.00      66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     5.50      SUBAREA RUNOFF(CFS) =    10.20
 EFFECTIVE AREA(ACRES) =    11.80    AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     11.80       PEAK FLOW RATE(CFS) =       22.29

****************************************************************************
```

```
 FLOW PROCESS FROM NODE       6.80 TO NODE       7.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1104.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0889
 CHANNEL FLOW THRU SUBAREA(CFS) =     22.29
 FLOW VELOCITY(FEET/SEC) =   9.20 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.33   Tc(MIN.) =  13.24
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE       7.00 =  1290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.24
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.329
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       0.40      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     0.40      SUBAREA RUNOFF(CFS) =     0.77
 EFFECTIVE AREA(ACRES) =    12.20    AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    12.20        PEAK FLOW RATE(CFS) =       22.72

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.24
 RAINFALL INTENSITY(INCH/HR) =   2.33
 AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   12.20
 TOTAL STREAM AREA(ACRES) =   12.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.72

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     154.31  19.25     1.875   0.23( 0.23) 1.00    104.0       1.00
     1     155.61  18.08     1.945   0.23( 0.23) 1.00    100.6       5.10
     2      14.85  15.93     2.093   0.30( 0.30) 1.00      8.8       6.10
     3      22.72  13.24     2.329   0.26( 0.26) 1.00     12.2       6.50

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     183.88  15.93     2.093   0.24( 0.24) 1.00    109.6       6.10
     2     187.74  18.08     1.945   0.23( 0.23) 1.00    121.6       5.10
```

12

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        3    185.08  19.25    1.875  0.23( 0.23) 1.00    125.0        1.00
        4    176.06  13.24    2.329  0.24( 0.24) 1.00     93.1        6.50

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    187.74    Tc(MIN.) =    18.08
  EFFECTIVE AREA(ACRES) =   121.55   AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    125.00
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =  3960.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      7.00 TO NODE      8.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1088.00  DOWNSTREAM(FEET) =   1038.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1220.00   CHANNEL SLOPE =  0.0410
  CHANNEL FLOW THRU SUBAREA(CFS) =    187.74
  FLOW VELOCITY(FEET/SEC) =  11.64 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.75   Tc(MIN.) =  19.83
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      8.00 =  5180.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      8.00 TO NODE      8.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.840
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                D       27.30      0.20       1.00     83
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   27.30      SUBAREA RUNOFF(CFS) =   40.30
  EFFECTIVE AREA(ACRES) =   148.85   AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =   152.30       PEAK FLOW RATE(CFS) =     215.99
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    152.30  TC(MIN.) =     19.83
  EFFECTIVE AREA(ACRES) =    148.85  AREA-AVERAGED Fm(INCH/HR)=  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
  PEAK FLOW RATE(CFS)   =    215.99

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
   NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
      1    209.28  15.02     2.159  0.23( 0.23) 1.00    120.4        6.50
      2    214.43  17.69     1.968  0.23( 0.23) 1.00    136.9        6.10
      3    215.99  19.83     1.840  0.23( 0.23) 1.00    148.9        5.10
      4    212.89  21.01     1.782  0.23( 0.23) 1.00    152.3        1.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

1

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**************************************************************************
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                          Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* T.T.15230                                                               *
* EXISTING CONDITION                                                      *
* AREA 'B'                                                                *
 *************************************************************************

  FILE NAME: 17.1
  TIME/DATE OF STUDY: 08:13 04/07/2000
=========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ==================  ======  =====  ====  ====  ======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1649.00  DOWNSTREAM(FEET) =   1490.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.849
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.135
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
```

```
"OPEN BRUSH"                D        0.70      0.20      1.00     83     7.85
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      1.85
TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      1.85

****************************************************************************
FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1450.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.1667
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      1.85
FLOW VELOCITY(FEET/SEC) =   2.60 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =   9.39
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   540.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =   9.39
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.850
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap       SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                 D        4.80      0.20      1.00     83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   11.45
EFFECTIVE AREA(ACRES) =     5.50   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     5.50       PEAK FLOW RATE(CFS) =      13.12

****************************************************************************
FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE =  0.1806
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =     13.12
FLOW VELOCITY(FEET/SEC) =   5.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =  11.73
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1260.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  11.73
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.501
SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        6.20      0.20       1.00    83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     6.20      SUBAREA RUNOFF(CFS) =   12.84
EFFECTIVE AREA(ACRES) =    11.70    AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    11.70        PEAK FLOW RATE(CFS) =      24.23

****************************************************************************
FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1455
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =     24.23
FLOW VELOCITY(FEET/SEC) =   5.88 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   3.12   Tc(MIN.) =  14.85
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  2360.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  14.85
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.174
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D       23.80      0.20       1.00    83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   23.80      SUBAREA RUNOFF(CFS) =   42.29
EFFECTIVE AREA(ACRES) =    35.50   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    35.50       PEAK FLOW RATE(CFS) =      63.08
============================================================================
END OF STUDY SUMMARY:
TOTAL AREA(ACRES)      =     35.50  TC(MIN.) =     14.85
EFFECTIVE AREA(ACRES) =     35.50  AREA-AVERAGED Fm(INCH/HR)=  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
PEAK FLOW RATE(CFS)    =     63.08
============================================================================
============================================================================
END OF RATIONAL METHOD ANALYSIS

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**************************************************************************
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                        Analysis prepared by:

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 *************************** DESCRIPTION OF STUDY ***************************
* T.T.15230                                                                 *
* EXISTING CONDITION                                                        *
* DRAINAGE 13, AT SOUTHERLY PROPERTY LINE                                   *
 **************************************************************************

  FILE NAME: 13-EX.50
  TIME/DATE OF STUDY: 17:12   4/ 6/2000
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC II) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)   (FT)  (FT)    (n)
===  =====  =======  ==================  ======  =====  =====  ====  =======
  1   24.0     19.0     .017/ .017/ .020    .50    1.50 .03125 .1250 .01500
  2   20.0     15.0     .017/ .017/ .020    .50    1.50 .03125 .1250 .01500
  3   18.0     13.0     .017/ .017/ .020    .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1400.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.004
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.925
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D         .50       .20       1.00    83    9.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.23
 TOTAL AREA(ACRES) =       .50   PEAK FLOW RATE(CFS) =      1.23

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  5.3
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1330.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =   .2000
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1600 (PER LACFCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.23
 FLOW VELOCITY(FEET/SEC) =   2.40 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.43   Tc(MIN.) =  11.44

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.44
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.540
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        1.30       .20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    2.74
 EFFECTIVE AREA(ACRES) =     1.80   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     1.80       PEAK FLOW RATE(CFS) =       3.79

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  5.3
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1330.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   750.00   CHANNEL SLOPE =   .2533
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1811 (PER LACFCD HYDROLOGY MANUAL)
```

```
 CHANNEL FLOW THRU SUBAREA(CFS) =      3.79
 FLOW VELOCITY(FEET/SEC) =   3.71 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.37   Tc(MIN.) =  14.80

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.80
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.179
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        6.60       .20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    6.60      SUBAREA RUNOFF(CFS) =   11.75
 EFFECTIVE AREA(ACRES) =     8.40   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     8.40       PEAK FLOW RATE(CFS) =      14.96
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =      8.40  TC(MIN.) =     14.80
 EFFECTIVE AREA(ACRES) =       8.40  AREA-AVERAGED Fm(INCH/HR)=   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 PEAK FLOW RATE(CFS)    =     14.96
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

2-YEAR STORM

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                        Planning * Engineering * Surveying
                 Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* T.T. 15230                                                             *
* EXISTING CONDITION                                                     *
* AREA 'A'                                                               *
 **************************************************************************

  FILE NAME: 5.19
  TIME/DATE OF STUDY: 12:38 04/11/2000
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ====================  =====  =====  ====  ====  ======
  1   30.0     20.0    0.018/0.018/0.020    0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1540.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.873
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.629
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       0.50      0.30       1.00     76   8.87
```

```
2
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      0.60
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      0.60

****************************************************************************
 FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1540.00  DOWNSTREAM(FEET) =   1480.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   320.00   CHANNEL SLOPE =  0.1875
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1538 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =      0.60
 FLOW VELOCITY(FEET/SEC) =   2.20 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.43   Tc(MIN.) =  11.30
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.30
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.60      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    2.61
 EFFECTIVE AREA(ACRES) =     3.10   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3.10       PEAK FLOW RATE(CFS) =       3.12

****************************************************************************
 FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.00   CHANNEL SLOPE =  0.1798
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1499 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      3.12
 FLOW VELOCITY(FEET/SEC) =   3.17 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.69   Tc(MIN.) =  15.99
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1490.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.99
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.162
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
```

```
     LAND USE              GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
NATURAL FAIR COVER
"OPEN BRUSH"                 B       18.60       0.30        1.00     46
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   18.60      SUBAREA RUNOFF(CFS) =   14.42
EFFECTIVE AREA(ACRES) =    21.70   AREA-AVERAGED Fm(INCH/HR) =  0.30
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    21.70       PEAK FLOW RATE(CFS) =      16.83

****************************************************************************
FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   950.00   CHANNEL SLOPE =  0.1389
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =     16.83
FLOW VELOCITY(FEET/SEC) =   5.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =  19.08
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  2440.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  19.08
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.050
SUBAREA LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                 D       31.00       0.20        1.00     67
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   31.00      SUBAREA RUNOFF(CFS) =   23.70
EFFECTIVE AREA(ACRES) =    52.70   AREA-AVERAGED Fm(INCH/HR) =  0.24
AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    52.70       PEAK FLOW RATE(CFS) =      38.34

****************************************************************************
FLOW PROCESS FROM NODE      5.00 TO NODE      6.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1188.00  DOWNSTREAM(FEET) =   1140.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0923
CHANNEL FLOW THRU SUBAREA(CFS) =     38.34
FLOW VELOCITY(FEET/SEC) =  10.90 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  19.87
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

4

```
 TIME OF CONCENTRATION(MIN.) =  19.87
RAINFALL INTENSITY(INCH/HR) =   1.03
AREA-AVERAGED Fm(INCH/HR) =  0.24
AREA-AVERAGED Fp(INCH/HR) =  0.24
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   52.70
TOTAL STREAM AREA(ACRES) =   52.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =     38.34

****************************************************************************
 FLOW PROCESS FROM NODE       5.10 TO NODE       5.20 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1651.80  DOWNSTREAM(FEET) =   1510.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.539
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.788
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        1.10      0.30       1.00    46    7.54
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.47
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      1.47

****************************************************************************
 FLOW PROCESS FROM NODE       5.20 TO NODE       5.30 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1460.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   360.00   CHANNEL SLOPE =  0.1389
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1276 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.47
 FLOW VELOCITY(FEET/SEC) =   2.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.64   Tc(MIN.) =  10.17
 LONGEST FLOWPATH FROM NODE      5.10 TO NODE      5.30 =   630.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       5.30 TO NODE       5.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.17
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.506
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        4.40      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.40      SUBAREA RUNOFF(CFS) =     4.77
 EFFECTIVE AREA(ACRES) =     5.50   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     5.50      PEAK FLOW RATE(CFS) =      5.97
```

```
**************************************************************************
 FLOW PROCESS FROM NODE       5.30 TO NODE       5.40 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1920.00   CHANNEL SLOPE =  0.1510
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1355 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =       5.97
 FLOW VELOCITY(FEET/SEC) =   3.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   8.56   Tc(MIN.) =  18.74
 LONGEST FLOWPATH FROM NODE       5.10 TO NODE       5.40 =  2550.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE       5.40 TO NODE       5.40 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  18.74
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.060
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       24.80      0.20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   19.21
 EFFECTIVE AREA(ACRES) =    30.30   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    30.30       PEAK FLOW RATE(CFS) =      22.97

**************************************************************************
 FLOW PROCESS FROM NODE       5.40 TO NODE       6.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.1765
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     22.97
 FLOW VELOCITY(FEET/SEC) =   6.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =  19.20
 LONGEST FLOWPATH FROM NODE       5.10 TO NODE       6:00 =  2720.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE       6.00 TO NODE       6.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  19.20
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.046
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       11.80      0.20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
```

6

```
 SUBAREA AREA(ACRES) =   11.80      SUBAREA RUNOFF(CFS) =    8.98
EFFECTIVE AREA(ACRES) =    42.10   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =    42.10       PEAK FLOW RATE(CFS) =      31.55

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  19.20
RAINFALL INTENSITY(INCH/HR) =   1.05
AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.21
AREA-AVERAGED Ap =  1.00
EFFECTIVE STREAM AREA(ACRES) =   42.10
TOTAL STREAM AREA(ACRES) =   42.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.55

** CONFLUENCE DATA **
 STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1      38.34  19.87    1.025  0.24( 0.24) 1.00    52.7        1.00
    2      31.55  19.20    1.046  0.21( 0.21) 1.00    42.1        5.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1      69.11  19.87    1.025  0.23( 0.23) 1.00    94.8        1.00
    2      69.56  19.20    1.046  0.23( 0.23) 1.00    93.0        5.10

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     69.56    Tc(MIN.) =    19.20
EFFECTIVE AREA(ACRES) =    93.01   AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     94.80
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      6.00 =  2960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1088.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0520
CHANNEL FLOW THRU SUBAREA(CFS) =     69.56
FLOW VELOCITY(FEET/SEC) =   9.72 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  20.92
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      7.00 =  3960.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  20.92
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.996
```

```
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        9.20      0.20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    6.59
 EFFECTIVE AREA(ACRES) =   102.21   AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =   104.00       PEAK FLOW RATE(CFS) =      70.81

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  20.92
 RAINFALL INTENSITY(INCH/HR) =   1.00
 AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =  102.21
 TOTAL STREAM AREA(ACRES) =  104.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     70.81

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.20 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1240.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.453
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.675
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        0.50      0.30       1.00    46    8.45
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      0.62
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      0.62

****************************************************************************
 FLOW PROCESS FROM NODE      6.20 TO NODE      6.30 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1190.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.1471
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1330 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =      0.62
 FLOW VELOCITY(FEET/SEC) =   2.04 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.77   Tc(MIN.) =  11.23
```

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8
 LONGEST FLOWPATH FROM NODE      6.10 TO NODE      6.30 =   610.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.30 TO NODE      6.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.23
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.423
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.80      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =     1.82
 EFFECTIVE AREA(ACRES) =     2.30    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     2.30        PEAK FLOW RATE(CFS) =        2.32

****************************************************************************
 FLOW PROCESS FROM NODE      6.30 TO NODE      6.40 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1190.00  DOWNSTREAM(FEET) =   1114.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.1086
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1064 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =       2.32
 FLOW VELOCITY(FEET/SEC) =   2.42 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.82   Tc(MIN.) =  16.05
 LONGEST FLOWPATH FROM NODE      6.10 TO NODE      6.40 =  1310.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.40 TO NODE      6.40 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.05
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.159
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        6.50      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     6.50      SUBAREA RUNOFF(CFS) =     5.03
 EFFECTIVE AREA(ACRES) =     8.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     8.80        PEAK FLOW RATE(CFS) =        6.80

****************************************************************************
 FLOW PROCESS FROM NODE      6.40 TO NODE      7.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1114.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.0591
 CHANNEL FLOW THRU SUBAREA(CFS) =       6.80
```

```
 FLOW VELOCITY(FEET/SEC) =   5.52 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  17.38
 LONGEST FLOWPATH FROM NODE      6.10 TO NODE      7.00 =  1750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  17.38
 RAINFALL INTENSITY(INCH/HR) =   1.11
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    8.80
 TOTAL STREAM AREA(ACRES) =    8.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.80

****************************************************************************
 FLOW PROCESS FROM NODE      6.50 TO NODE      6.60 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1280.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.290
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.693
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.50      0.30       1.00    46    8.29
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      0.63
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      0.63

****************************************************************************
 FLOW PROCESS FROM NODE      6.60 TO NODE      6.70 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1210.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   270.00   CHANNEL SLOPE =  0.2593
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1831 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =      0.63
 FLOW VELOCITY(FEET/SEC) =   2.40 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.88   Tc(MIN.) =  10.17
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE      6.70 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.70 TO NODE      6.70 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.17
```

10

```
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.506
SUBAREA LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                B        1.30      0.30       1.00    46
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     1.41
EFFECTIVE AREA(ACRES) =     1.80    AREA-AVERAGED Fm(INCH/HR) =  0.30
AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     1.80        PEAK FLOW RATE(CFS) =        1.95

****************************************************************************
FLOW PROCESS FROM NODE       6.70 TO NODE       6.80 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =   1104.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   590.00   CHANNEL SLOPE =  0.1797
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1498 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =       1.95
FLOW VELOCITY(FEET/SEC) =   2.71 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   3.63   Tc(MIN.) =  13.80
LONGEST FLOWPATH FROM NODE       6.50 TO NODE       6.80 =  1110.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  13.80
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.264
SUBAREA LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        4.50      0.20       1.00    67
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     4.50      SUBAREA RUNOFF(CFS) =     4.31
EFFECTIVE AREA(ACRES) =     6.30    AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.23   AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     6.30        PEAK FLOW RATE(CFS) =        5.87

****************************************************************************
FLOW PROCESS FROM NODE       6.80 TO NODE       6.80 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  13.80
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.264
SUBAREA LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                B        5.50      0.30       1.00    46
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     5.50      SUBAREA RUNOFF(CFS) =     4.77
EFFECTIVE AREA(ACRES) =    11.80    AREA-AVERAGED Fm(INCH/HR) =  0.25
AREA-AVERAGED Fp(INCH/HR) =  0.26   AREA-AVERAGED Ap =  1.00
```

```
 TOTAL AREA(ACRES) =    11.80       PEAK FLOW RATE(CFS) =      10.64

****************************************************************************
 FLOW PROCESS FROM NODE      6.80 TO NODE      7.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1104.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   180.00   CHANNEL SLOPE =  0.0889
 CHANNEL FLOW THRU SUBAREA(CFS) =     10.64
 FLOW VELOCITY(FEET/SEC) =   7.57 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.40   Tc(MIN.) =  14.19
 LONGEST FLOWPATH FROM NODE      6.50 TO NODE      7.00 =  1290.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.19
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        0.40      0.20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    0.40      SUBAREA RUNOFF(CFS) =     0.38
 EFFECTIVE AREA(ACRES) =    12.20   AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    12.20       PEAK FLOW RATE(CFS) =      10.80

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.19
 RAINFALL INTENSITY(INCH/HR) =   1.24
 AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.26
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   12.20
 TOTAL STREAM AREA(ACRES) =   12.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.80

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     70.33  21.59     0.978   0.23( 0.23) 1.00    104.0       1.00
     1     70.81  20.92     0.996   0.23( 0.23) 1.00    102.2       5.10
     2      6.80  17.38     1.107   0.30( 0.30) 1.00      8.8       6.10
     3     10.80  14.19     1.244   0.26( 0.26) 1.00     12.2       6.50

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
```

12

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	83.48	17.38	1.107	0.24(0.24)	1.00	105.9	6.10
2	84.75	20.92	0.996	0.23(0.23)	1.00	123.2	5.10
3	83.92	21.59	0.978	0.23(0.23)	1.00	125.0	1.00
4	80.84	14.19	1.244	0.24(0.24)	1.00	88.8	6.50

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 84.75 Tc(MIN.) = 20.92
EFFECTIVE AREA(ACRES) = 123.21 AREA-AVERAGED Fm(INCH/HR) = 0.23
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 125.00
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 7.00 = 3960.00 FEET.

****
FLOW PROCESS FROM NODE 7.00 TO NODE 8.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 1088.00 DOWNSTREAM(FEET) = 1038.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0410
CHANNEL FLOW THRU SUBAREA(CFS) = 84.75
FLOW VELOCITY(FEET/SEC) = 9.15 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 2.22 Tc(MIN.) = 23.14
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 8.00 = 5180.00 FEET.

****
FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN) = 23.14
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.939
SUBAREA LOSS RATE DATA(AMC I):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	27.30	0.20	1.00	67

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 27.30 SUBAREA RUNOFF(CFS) = 18.17
EFFECTIVE AREA(ACRES) = 150.51 AREA-AVERAGED Fm(INCH/HR) = 0.23
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 152.30 PEAK FLOW RATE(CFS) = 96.34

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	96.46	19.61	1.033	0.23(0.23)		1.00	133.2	6.10
2	96.34	23.14	0.939	0.23(0.23)		1.00	150.5	5.10
3	95.33	23.82	0.924	0.23(0.23)		1.00	152.3	1.00
4	95.55	16.45	1.143	0.23(0.23)		1.00	116.1	6.50

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 96.46 Tc(MIN.) = 19.61
AREA-AVERAGED Fm(INCH/HR) = 0.23 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA(ACRES) = 133.23
==========
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 152.30 TC(MIN.) = 19.61
EFFECTIVE AREA(ACRES) = 133.23 AREA-AVERAGED Fm(INCH/HR)= 0.23
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 1.00
PEAK FLOW RATE(CFS) = 96.46

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	95.55	16.45	1.143	0.23(0.23)	1.00	116.1	6.50
2	96.46	19.61	1.033	0.23(0.23)	1.00	133.2	6.10
3	96.34	23.14	0.939	0.23(0.23)	1.00	150.5	5.10
4	95.33	23.82	0.924	0.23(0.23)	1.00	152.3	1.00

END OF RATIONAL METHOD ANALYSIS

1

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                        Analysis prepared by:

                        HUNSAKER & ASSOCIATES
                              Irvine, Inc.
                     Planning * Engineering * Surveying
                Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* T.T.15230                                                               *
* EXISTING CONDITION                                                      *
* AREA 'B'                                                                *
 **************************************************************************

  FILE NAME: 17.1
  TIME/DATE OF STUDY: 08:14 04/07/2000
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 1    30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1649.00  DOWNSTREAM(FEET) =   1490.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.849
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.747
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
```

```
"OPEN BRUSH"                D        0.70      0.20      1.00     67     7.85
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA RUNOFF(CFS) =      0.97
TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      0.97

****************************************************************************
FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1450.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.1667
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) =      0.97
FLOW VELOCITY(FEET/SEC) =   2.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =   9.74
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   540.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =   9.74
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
SUBAREA LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                 D        4.80      0.20      1.00     67
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =    5.81
EFFECTIVE AREA(ACRES) =     5.50   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     5.50       PEAK FLOW RATE(CFS) =       6.65

****************************************************************************
FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE =  0.1806
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      6.65
FLOW VELOCITY(FEET/SEC) =   4.08 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.94   Tc(MIN.) =  12.68
LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =  1260.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  12.68
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.327
```

```
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        6.20      0.20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     6.20      SUBAREA RUNOFF(CFS) =     6.29
 EFFECTIVE AREA(ACRES) =    11.70    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    11.70        PEAK FLOW RATE(CFS) =      11.87

****************************************************************************
 FLOW PROCESS FROM NODE       4.00 TO NODE       5.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1455
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     11.87
 FLOW VELOCITY(FEET/SEC) =    4.64 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.95   Tc(MIN.) =  16.63
 LONGEST FLOWPATH FROM NODE       1.00 TO NODE       5.00 =  2360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       5.00 TO NODE       5.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.63
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.136
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       23.80      0.20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    23.80      SUBAREA RUNOFF(CFS) =    20.04
 EFFECTIVE AREA(ACRES) =    35.50    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    35.50        PEAK FLOW RATE(CFS) =      29.89
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     35.50  TC(MIN.) =     16.63
 EFFECTIVE AREA(ACRES) =     35.50  AREA-AVERAGED Fm(INCH/HR)=  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 PEAK FLOW RATE(CFS)    =     29.89
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS

1
```

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                        Analysis prepared by:

                      HUNSAKER  &  ASSOCIATES
                            Irvine,Inc.
                    Planning * Engineering * Surveying
              Three Hughes * Irvine, California 92718 * (714)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* T.T.15230                                                               *
* EXISTING CONDITION                                                      *
* DRAINAGE 13, AT SOUTHERLY PROPERTY LINE                                 *
 *************************************************************************

  FILE NAME: 13-EX.50
  TIME/DATE OF STUDY:  8:57   4/10/2000
=========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
=========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC I) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE   FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ===================  ======  =====  ====  ====  =======
  1   24.0     19.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   20.0     15.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  3   18.0     13.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  -.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1400.00
```

```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.004
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.615
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D         .50       .20       1.00    67    9.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =        .64
 TOTAL AREA(ACRES) =        .50   PEAK FLOW RATE(CFS) =        .64

****************************************************************************
 FLOW PROCESS FROM NODE       2.00 TO NODE       3.00 IS CODE =  5.3
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1330.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  350.00   CHANNEL SLOPE =   .2000
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1600 (PER LACFCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =        .64
 FLOW VELOCITY(FEET/SEC) =   2.24 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.60   Tc(MIN.) =  11.61

****************************************************************************
 FLOW PROCESS FROM NODE       3.00 TO NODE       3.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.61
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.396
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.30       .20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    1.40
 EFFECTIVE AREA(ACRES) =    1.80    AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    1.80        PEAK FLOW RATE(CFS) =       1.94

****************************************************************************
 FLOW PROCESS FROM NODE       3.00 TO NODE       4.00 IS CODE =  5.3
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1330.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   750.00   CHANNEL SLOPE =   .2533
 SLOPE ADJUSTMENT CURVE USED:
```

```
 EFFECTIVE SLOPE = .1811 (PER LACFCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.94
 FLOW VELOCITY(FEET/SEC) =   2.97 (PER LACFCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.21   Tc(MIN.) =  15.82

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      4.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.82
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.169
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        6.60       .20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    6.60      SUBAREA RUNOFF(CFS) =    5.75
 EFFECTIVE AREA(ACRES) =     8.40   AREA-AVERAGED Fm(INCH/HR) =   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     8.40       PEAK FLOW RATE(CFS) =       7.32
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =      8.40  TC(MIN.) =     15.82
 EFFECTIVE AREA(ACRES) =       8.40  AREA-AVERAGED Fm(INCH/HR)=   .20
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =  1.00
 PEAK FLOW RATE(CFS)    =      7.32
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

PROPOSED CONDITION
HYDROLOGY CALCULATIONS

100-YEAR STORM

```
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                        Analysis prepared by:

                        HUNSAKER & ASSOCIATES
                              Irvine,Inc.
                     Planning * Engineering * Surveying
                Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY **************************
* w.o.#1665-1, saddleback meadows, t.t. 15230                             *
* 100-year storm                                                          *
* areas "A", "B", and "C"                                                 *
 **************************************************************************

  FILE NAME: ABC-DEV.DAT
  TIME/DATE OF STUDY: 09:12 07/16/2001

  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:   MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-   HEIGHT WIDTH  LIP   HIKE    FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY     (FT)   (FT)   (FT)  (FT)     (n)
 1   24.0     19.0   0.017/0.017/0.020     0.50   1.50 0.0313 0.125 0.0150
 2   20.0     15.0   0.017/0.017/0.020     0.50   1.50 0.0313 0.125 0.0150
 3   18.0     13.0   0.017/0.017/0.020     0.50   1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

  INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
  ELEVATION DATA: UPSTREAM(FEET) =  1560.00  DOWNSTREAM(FEET) =  1530.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.956
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.947
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        1.00      0.30       1.00     84   10.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      3.28
  TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      3.28

**************************************************************************
  FLOW PROCESS FROM NODE       2.00 TO NODE       3.00 IS CODE =  53
--------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<

  ELEVATION DATA: UPSTREAM(FEET) =  1530.00  DOWNSTREAM(FEET) =  1452.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  410.00   CHANNEL SLOPE =  0.1902
  CHANNEL FLOW THRU SUBAREA(CFS) =      3.28
  FLOW VELOCITY(FEET/SEC) =  3.63 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =  1.88   Tc(MIN.) =  12.84
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE       3.00 =   710.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE       3.00 TO NODE       3.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

  MAINLINE Tc(MIN) =  12.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.611
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        4.20      0.30       1.00     84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =      4.20      SUBAREA RUNOFF(CFS) =    12.52
  EFFECTIVE AREA(ACRES) =      5.20    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      5.20      PEAK FLOW RATE(CFS) =       15.50

**************************************************************************
  FLOW PROCESS FROM NODE       3.00 TO NODE       4.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

  ELEVATION DATA: UPSTREAM(FEET) =  1452.00  DOWNSTREAM(FEET) =  1416.00
  FLOW LENGTH(FEET) =  180.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.95
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.50
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  12.97
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =   890.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1416.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   485.00   CHANNEL SLOPE =  0.1979
 CHANNEL FLOW THRU SUBAREA(CFS) =     15.50
 FLOW VELOCITY(FEET/SEC) =   6.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  14.27
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  1375.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.27
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.405
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        4.10      0.30       1.00    84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10      SUBAREA RUNOFF(CFS) =   11.46
 EFFECTIVE AREA(ACRES) =     9.30    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     9.30        PEAK FLOW RATE(CFS) =      25.99

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     101.00 TO NODE     102.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1520.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.225

 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.389
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 ".4 DWELLING/ACRE"          B        1.00      0.30       0.90    76    9.23
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
 SUBAREA RUNOFF(CFS) =      3.71
 TOTAL AREA(ACRES) =     1.00   PEAK FLOW RATE(CFS) =      3.71

****************************************************************************
 FLOW PROCESS FROM NODE     102.00 TO NODE     103.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =   1500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   150.00   CHANNEL SLOPE =  0.1333
 CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =    1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      3.71
 FLOW VELOCITY(FEET/SEC) =  11.94   FLOW DEPTH(FEET) =    0.45
 TRAVEL TIME(MIN.) =    0.21   Tc(MIN.) =    9.43
 LONGEST FLOWPATH FROM NODE     101.00 TO NODE     103.00 =   440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     103.00 TO NODE     103.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =    9.43
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.327
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        3.60      0.30       1.00    84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     3.60      SUBAREA RUNOFF(CFS) =   13.05
 EFFECTIVE AREA(ACRES) =     4.60    AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     4.60        PEAK FLOW RATE(CFS) =      16.70

****************************************************************************
 FLOW PROCESS FROM NODE     103.00 TO NODE     111.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1500.00  DOWNSTREAM(FEET) =  1454.00
 FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  23.80
```

```
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     16.70
 PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   9.59
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    111.00 =   660.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.59
 RAINFALL INTENSITY(INCH/HR) =   4.28
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98
 EFFECTIVE STREAM AREA(ACRES) =    4.60
 TOTAL STREAM AREA(ACRES) =    4.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.70

****************************************************************************
 FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1488.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.526
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.892
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D       0.70      0.20       0.50    91    7.53
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      3.02
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      3.02

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1488.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =   410.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.41
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.28
  HALFSTREET FLOOD WIDTH(FEET) =    8.91
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.54
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.56
 STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =   8.76
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.528
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D       0.70      0.20       0.50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    2.79
 EFFECTIVE AREA(ACRES) =    1.40    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    1.40        PEAK FLOW RATE(CFS) =      5.58

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   9.93
 FLOW VELOCITY(FEET/SEC.) =  5.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.74
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.76
 RAINFALL INTENSITY(INCH/HR) =   4.53
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.58

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1483.00
```

```
Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.031
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.142
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50    76    7.03
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      2.70
TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.70

****************************************************************************
 FLOW PROCESS FROM NODE    107.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1483.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.36
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.81
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.58
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.57
 STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =   8.08
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.730
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    3.33
 EFFECTIVE AREA(ACRES) =    1.40    AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    1.40        PEAK FLOW RATE(CFS) =       5.81

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.30   HALFSTREET FLOOD WIDTH(FEET) =  10.03
 FLOW VELOCITY(FEET/SEC.) =  5.95   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
 LONGEST FLOWPATH FROM NODE    106.00 TO NODE    111.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.08
 RAINFALL INTENSITY(INCH/HR) =   4.73
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.24
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.81

 ** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1     16.70   9.59    4.282  0.30( 0.29) 0.98     4.6      101.00
    2      5.58   8.76    4.528  0.20( 0.10) 0.50     1.4      104.00
    3      5.81   8.08    4.730  0.24( 0.12) 0.50     1.4      106.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1     26.83   8.08    4.730  0.28( 0.22) 0.78     6.6      106.00
    2     27.32   8.76    4.528  0.28( 0.22) 0.79     7.0      104.00
    3     27.21   9.59    4.282  0.28( 0.22) 0.80     7.4      101.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     27.32    Tc(MIN.) =     8.76
 EFFECTIVE AREA(ACRES) =     7.00   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =      7.40
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.76
 RAINFALL INTENSITY(INCH/HR) =   4.53
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28
 AREA-AVERAGED Ap =  0.79
 EFFECTIVE STREAM AREA(ACRES) =    7.00
 TOTAL STREAM AREA(ACRES) =    7.40
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.32

****************************************************************************
 FLOW PROCESS FROM NODE     108.00 TO NODE     109.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1594.00  DOWNSTREAM(FEET) =   1530.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.034
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.446
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.70      0.30       1.00    84    9.03
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.61
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.61

****************************************************************************
 FLOW PROCESS FROM NODE     109.00 TO NODE     110.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1465.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.2708
 CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.61
 FLOW VELOCITY(FEET/SEC) =  12.87   FLOW DEPTH(FEET) =   0.16
 TRAVEL TIME(MIN.) =   0.31   Tc(MIN.) =   9.34
 LONGEST FLOWPATH FROM NODE     108.00 TO NODE     110.00 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     110.00 TO NODE     110.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.34
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.354
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.30      0.30       0.50    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.30      SUBAREA RUNOFF(CFS) =     1.14
 EFFECTIVE AREA(ACRES) =     1.00   AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =     1.00      PEAK FLOW RATE(CFS) =      3.69

****************************************************************************
 FLOW PROCESS FROM NODE     110.00 TO NODE     111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1458.00
 STREET LENGTH(FEET) =   240.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.33
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.35
   HALFSTREET FLOOD WIDTH(FEET) =   13.07
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.02
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.42
 STREET FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  10.34
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.092
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        1.50      0.30       0.60    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     1.50      SUBAREA RUNOFF(CFS) =     5.28
 EFFECTIVE AREA(ACRES) =     2.50    AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     2.50      PEAK FLOW RATE(CFS) =      8.73

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.38   HALFSTREET FLOOD WIDTH(FEET) =  14.90
 FLOW VELOCITY(FEET/SEC.) =  4.35   DEPTH*VELOCITY(FT*FT/SEC.) =   1.67
 LONGEST FLOWPATH FROM NODE     108.00 TO NODE     111.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     111.00 TO NODE     111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.34
 RAINFALL INTENSITY(INCH/HR) =   4.09
```

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AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  0.70
EFFECTIVE STREAM AREA(ACRES) =    2.50
TOTAL STREAM AREA(ACRES) =    2.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.73

** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      26.83   8.08     4.730   0.28( 0.22) 0.78      6.6      106.00
    1      27.32   8.76     4.528   0.28( 0.22) 0.79      7.0      104.00
    1      27.21   9.59     4.282   0.28( 0.22) 0.80      7.4      101.00
    2       8.73  10.34     4.092   0.30( 0.21) 0.70      2.5      108.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      34.77   8.08     4.730   0.28( 0.22) 0.76      8.5      106.00
    2      35.55   8.76     4.528   0.28( 0.22) 0.77      9.1      104.00
    3      35.71   9.59     4.282   0.29( 0.22) 0.77      9.7      101.00
    4      34.67  10.34     4.092   0.29( 0.22) 0.77      9.9      108.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     35.71    Tc(MIN.) =     9.59
EFFECTIVE AREA(ACRES) =     9.72   AREA-AVERAGED Fm(INCH/HR) =  0.22
AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.77
TOTAL AREA(ACRES) =      9.90
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    111.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    117.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1454.00  DOWNSTREAM(FEET) =  1432.00
 FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.31
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     35.71
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    9.77
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.77
 RAINFALL INTENSITY(INCH/HR) =   4.23
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.77
 EFFECTIVE STREAM AREA(ACRES) =    9.72
 TOTAL STREAM AREA(ACRES) =    9.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.71

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    117.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.047
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.134
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D        0.90      0.20       0.60     91    7.05
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      4.06
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      4.06

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.05
 RAINFALL INTENSITY(INCH/HR) =   5.13
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    0.90
 TOTAL STREAM AREA(ACRES) =    0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.06

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      34.77   8.26     4.676   0.28( 0.22) 0.76      8.5      106.00
     1      35.55   8.94     4.474   0.28( 0.22) 0.77      9.1      104.00
     1      35.71   9.77     4.229   0.29( 0.22) 0.77      9.7      101.00
     1      34.67  10.52     4.056   0.29( 0.22) 0.77      9.9      108.00
     2       4.06   7.05     5.134   0.20( 0.12) 0.60      0.9      112.00
```

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 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)    NODE
     1     36.79   7.05     5.134   0.28( 0.21) 0.75      8.2      112.00
     2     38.46   8.26     4.676   0.28( 0.21) 0.75      9.4      106.00
     3     39.08   8.94     4.474   0.28( 0.21) 0.75     10.0      104.00
     4     39.04   9.77     4.229   0.28( 0.21) 0.76     10.6      101.00
     5     37.86  10.52     4.056   0.28( 0.21) 0.76     10.8      108.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     39.08    Tc(MIN.) =     8.94
 EFFECTIVE AREA(ACRES) =    10.02   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.75
 TOTAL AREA(ACRES) =     10.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.637
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.033
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "1 DWELLING/ACRE"         D        1.10      0.20       0.80     91   10.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
 SUBAREA RUNOFF(CFS) =      3.83
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      3.83

****************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.50  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =   130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.19
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    9.62
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.61
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.36
 STREET FLOW TRAVEL TIME(MIN.) =   0.47   Tc(MIN.) =  11.11
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.939
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                D        0.20      0.20       0.10     91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA AREA(ACRES) =     0.20      SUBAREA RUNOFF(CFS) =     0.71
 EFFECTIVE AREA(ACRES) =    1.30     AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     1.30        PEAK FLOW RATE(CFS) =      4.45

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.30   HALFSTREET FLOOD WIDTH(FEET) =   9.82
 FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.11
 RAINFALL INTENSITY(INCH/HR) =   3.94
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.45

****************************************************************************
 FLOW PROCESS FROM NODE    115.00 TO NODE    116.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
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```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.928
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.773
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.60      0.20       0.50    91    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      2.52
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.52

****************************************************************************
 FLOW PROCESS FROM NODE    116.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.00  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =   130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.13
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.50
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.26
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.17
 STREET FLOW TRAVEL TIME(MIN.) =   0.51   Tc(MIN.) =   8.44
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.623
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.30      0.20       0.50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    0.30   SUBAREA RUNOFF(CFS) =    1.22
 EFFECTIVE AREA(ACRES) =    0.90   AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    0.90   PEAK FLOW RATE(CFS) =      3.66

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.21
 FLOW VELOCITY(FEET/SEC.) =  4.34   DEPTH*VELOCITY(FT*FT/SEC.) =   1.25
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    117.00 =   390.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.44
 RAINFALL INTENSITY(INCH/HR) =   4.62
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    0.90
 TOTAL STREAM AREA(ACRES) =    0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.66

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1      4.45  11.11    3.939  0.20( 0.14) 0.69     1.3     113.00
    2      3.66   8.44    4.623  0.20( 0.10) 0.50     0.9     115.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1      7.65   8.44    4.623  0.20( 0.12) 0.60     1.9     115.00
    2      7.56  11.11    3.939  0.20( 0.12) 0.61     2.2     113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      7.65   Tc(MIN.) =     8.44
 EFFECTIVE AREA(ACRES) =     1.89   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =      2.20
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1      7.65   8.44    4.623  0.20( 0.12) 0.60     1.9     115.00
    2      7.56  11.11    3.939  0.20( 0.12) 0.61     2.2     113.00
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.
```

```
** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      36.79   7.05     5.134   0.28( 0.21) 0.75      8.2      112.00
    2      38.46   8.26     4.676   0.28( 0.21) 0.75      9.4      106.00
    3      39.08   8.94     4.474   0.28( 0.21) 0.75     10.0      104.00
    4      39.04   9.77     4.229   0.28( 0.21) 0.76     10.6      101.00
    5      37.86  10.52     4.056   0.28( 0.21) 0.76     10.8      108.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      43.90   7.05     5.134   0.27( 0.19) 0.72      9.7      112.00
    2      46.04   8.26     4.676   0.27( 0.19) 0.72     11.3      106.00
    3      46.27   8.44     4.623   0.27( 0.19) 0.72     11.5      115.00
    4      46.71   8.94     4.474   0.27( 0.19) 0.73     12.0      104.00
    5      46.64   9.77     4.229   0.27( 0.20) 0.73     12.7      101.00
    6      45.44  10.52     4.056   0.27( 0.20) 0.73     12.9      108.00
    7      44.26  11.11     3.939   0.27( 0.20) 0.73     13.0      113.00
  TOTAL AREA(ACRES) =      13.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      46.71  Tc(MIN.) =    8.938
EFFECTIVE AREA(ACRES) =    11.97  AREA-AVERAGED Fm(INCH/HR) =  0.19
AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.73
TOTAL AREA(ACRES) =     13.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    120.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1428.50  DOWNSTREAM(FEET) =  1420.00
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.01
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     46.71
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   9.03
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    120.00 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.03
 RAINFALL INTENSITY(INCH/HR) =   4.45
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.73
 EFFECTIVE STREAM AREA(ACRES) =   11.97
 TOTAL STREAM AREA(ACRES) =   13.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     46.71

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    119.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1465.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.934
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.192
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.80      0.30       0.50    76    6.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      3.63
 TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      3.63

****************************************************************************
 FLOW PROCESS FROM NODE    119.00 TO NODE    120.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.74
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    9.62
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.32
```

```
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.86
STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =   7.73
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.833
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        1.00      0.30       0.50    76
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =     1.00      SUBAREA RUNOFF(CFS) =     4.21
EFFECTIVE AREA(ACRES) =    1.80     AREA-AVERAGED Fm(INCH/HR) =  0.15
AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =    1.80         PEAK FLOW RATE(CFS) =       7.59

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =  10.84
FLOW VELOCITY(FEET/SEC.) =  6.77   DEPTH*VELOCITY(FT*FT/SEC.) =   2.13
LONGEST FLOWPATH FROM NODE    118.00 TO NODE    120.00 =   600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.73
 RAINFALL INTENSITY(INCH/HR) =   4.83
 AREA-AVERAGED Fm(INCH/HR) =  0.15
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.80
 TOTAL STREAM AREA(ACRES) =    1.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.59

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     43.90   7.13    5.088  0.27( 0.19) 0.72     9.7     112.00
     1     46.04   8.34    4.650  0.27( 0.19) 0.72    11.3     106.00
     1     46.27   8.52    4.597  0.27( 0.19) 0.72    11.5     115.00
     1     46.71   9.03    4.448  0.27( 0.19) 0.73    12.0     104.00
     1     46.64   9.86    4.203  0.27( 0.20) 0.73    12.7     101.00
     1     45.44  10.61    4.038  0.27( 0.20) 0.73    12.9     108.00
     1     44.26  11.19    3.921  0.27( 0.20) 0.73    13.0     113.00
     2      7.59   7.73    4.833  0.30( 0.15) 0.50     1.8     118.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     51.29   7.13    5.088  0.27( 0.19) 0.69    11.4     112.00
     2     52.53   7.73    4.833  0.27( 0.19) 0.69    12.3     118.00
     3     53.33   8.34    4.650  0.27( 0.19) 0.69    13.1     106.00
     4     53.48   8.52    4.597  0.27( 0.19) 0.69    13.3     115.00
     5     53.68   9.03    4.448  0.27( 0.19) 0.70    13.8     104.00
     6     53.20   9.86    4.203  0.27( 0.19) 0.71    14.5     101.00
     7     51.74  10.61    4.038  0.27( 0.19) 0.71    14.7     108.00
     8     50.37  11.19    3.921  0.27( 0.19) 0.71    14.8     113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     53.68    Tc(MIN.) =     9.03
 EFFECTIVE AREA(ACRES) =    13.77   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     14.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    120.00 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1420.00  DOWNSTREAM(FEET) =  1418.00
 FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.45
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     53.68
 PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =   9.30
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.30
 RAINFALL INTENSITY(INCH/HR) =   4.37
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =   13.77
 TOTAL STREAM AREA(ACRES) =   14.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     53.68

****************************************************************************
 FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1443.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```

```
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.405
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.949
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50    76    7.41
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      2.59
TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.59

****************************************************************************
 FLOW PROCESS FROM NODE    122.00 TO NODE    125.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.38
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.30
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.79
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
 STREET FLOW TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =   8.76
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.526
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"       B        0.40      0.30       0.40    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA AREA(ACRES) =     0.40      SUBAREA RUNOFF(CFS) =     1.59
 EFFECTIVE AREA(ACRES) =     1.00    AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =     1.00        PEAK FLOW RATE(CFS) =       3.95

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.28   HALFSTREET FLOOD WIDTH(FEET) =   9.01
 FLOW VELOCITY(FEET/SEC.) =  4.86   DEPTH*VELOCITY(FT*FT/SEC.) =   1.38
 LONGEST FLOWPATH FROM NODE    121.00 TO NODE    125.00 =   690.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.76
 RAINFALL INTENSITY(INCH/HR) =   4.53
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.46
 EFFECTIVE STREAM AREA(ACRES) =    1.00
 TOTAL STREAM AREA(ACRES) =    1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.95

 ** CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity    Fp(Fm)       Ap    Ae       HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)            (ACRES)     NODE
    1     51.29   7.41     4.948   0.27( 0.19)  0.69     11.4      112.00
    1     52.53   8.00     4.753   0.27( 0.19)  0.69     12.3      118.00
    1     53.33   8.61     4.570   0.27( 0.19)  0.69     13.1      106.00
    1     53.48   8.80     4.517   0.27( 0.19)  0.69     13.3      115.00
    1     53.68   9.30     4.368   0.27( 0.19)  0.70     13.8      104.00
    1     53.20  10.13     4.135   0.27( 0.19)  0.71     14.5      101.00
    1     51.74  10.88     3.984   0.27( 0.19)  0.71     14.7      108.00
    1     50.37  11.47     3.867   0.27( 0.19)  0.71     14.8      113.00
    2      3.95   8.76     4.526   0.30( 0.14)  0.46      1.0      121.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc    Intensity    Fp(Fm)       Ap    Ae       HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)            (ACRES)     NODE
    1     54.95   7.41     4.948   0.27( 0.18)  0.67     12.3      112.00
    2     56.32   8.00     4.753   0.27( 0.18)  0.67     13.2      118.00
    3     57.25   8.61     4.570   0.27( 0.18)  0.68     14.0      106.00
    4     57.40   8.76     4.526   0.27( 0.18)  0.68     14.2      121.00
    5     57.42   8.80     4.517   0.27( 0.18)  0.68     14.3      115.00
    6     57.48   9.30     4.368   0.27( 0.19)  0.68     14.8      104.00
    7     56.80  10.13     4.135   0.27( 0.19)  0.69     15.5      101.00
    8     55.20  10.88     3.984   0.27( 0.19)  0.69     15.7      108.00
    9     53.73  11.47     3.867   0.27( 0.19)  0.69     15.8      113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     57.48    Tc(MIN.) =     9.30
 EFFECTIVE AREA(ACRES) =    14.77   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     15.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =  1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 9.30
RAINFALL INTENSITY(INCH/HR) = 4.37
AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.27
AREA-AVERAGED Ap = 0.68
EFFECTIVE STREAM AREA(ACRES) = 14.77
TOTAL STREAM AREA(ACRES) = 15.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 57.48

****************************************************************************
FLOW PROCESS FROM NODE 123.00 TO NODE 124.00 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 290.00
ELEVATION DATA: UPSTREAM(FEET) = 1453.80 DOWNSTREAM(FEET) = 1443.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.671
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.844
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA     Fp        Ap      SCS   Tc
     LAND USE             GROUP   (ACRES) (INCH/HR) (DECIMAL)  CN  (MIN.)
COMMERCIAL                 B       0.20     0.30      0.10     76    5.67
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA RUNOFF(CFS) = 1.05
TOTAL AREA(ACRES) = 0.20 PEAK FLOW RATE(CFS) = 1.05

****************************************************************************
FLOW PROCESS FROM NODE 124.00 TO NODE 125.00 IS CODE = 62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 3 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1443.00 DOWNSTREAM ELEVATION(FEET) = 1418.00
STREET LENGTH(FEET) = 360.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 13.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.017
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

 **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.50
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.22
  HALFSTREET FLOOD WIDTH(FEET) = 5.25
  AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.22
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.93
STREET FLOW TRAVEL TIME(MIN.) = 1.42 Tc(MIN.) = 7.09
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.111
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA     Fp        Ap      SCS
     LAND USE             GROUP   (ACRES) (INCH/HR) (DECIMAL)  CN
COMMERCIAL                 B       0.20     0.30      0.10     76
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA AREA(ACRES) = 0.20 SUBAREA RUNOFF(CFS) = 0.91
EFFECTIVE AREA(ACRES) = 0.40 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.40 PEAK FLOW RATE(CFS) = 1.83

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.23, HALFSTREET FLOOD WIDTH(FEET) = 5.96
FLOW VELOCITY(FEET/SEC.) = 4.31 DEPTH*VELOCITY(FT*FT/SEC.) = 1.00
LONGEST FLOWPATH FROM NODE 123.00 TO NODE 125.00 = 650.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 125.00 TO NODE 125.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.09
RAINFALL INTENSITY(INCH/HR) = 5.11
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.40
TOTAL STREAM AREA(ACRES) = 0.40
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.83

** CONFLUENCE DATA **
 STREAM    Q     Tc   Intensity  Fp(Fm)   Ap   Ae    HEADWATER
 NUMBER  (CFS)  (MIN.) (INCH/HR) (INCH/HR)      (ACRES)   NODE
    1    54.95  7.41    4.948   0.27( 0.18) 0.67  12.3   112.00
    1    56.32  8.00    4.753   0.27( 0.18) 0.67  13.2   118.00
    1    57.25  8.61    4.570   0.27( 0.18) 0.68  14.0   106.00
    1    57.40  8.76    4.526   0.27( 0.18) 0.68  14.2   121.00
    1    57.42  8.80    4.517   0.27( 0.18) 0.68  14.3   115.00
    1    57.48  9.30    4.368   0.27( 0.19) 0.68  14.8   104.00
    1    56.80 10.13    4.135   0.27( 0.19) 0.69  15.5   101.00
    1    55.20 10.88    3.984   0.27( 0.19) 0.69  15.7   108.00
    1    53.73 11.47    3.867   0.27( 0.19) 0.69  15.8   113.00
    2     1.83  7.09    5.111   0.30( 0.03) 0.10   0.4   123.00
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	56.23	7.09	5.111	0.27(0.18)	0.65	12.1	123.00
2	56.72	7.41	4.948	0.27(0.18)	0.66	12.7	112.00
3	58.02	8.00	4.753	0.27(0.18)	0.66	13.6	118.00
4	58.88	8.61	4.570	0.27(0.18)	0.66	14.4	106.00
5	59.02	8.76	4.526	0.27(0.18)	0.66	14.6	121.00
6	59.03	8.80	4.517	0.27(0.18)	0.66	14.7	115.00
7	59.04	9.30	4.368	0.27(0.18)	0.67	15.2	104.00
8	58.28	10.13	4.135	0.27(0.18)	0.67	15.9	101.00
9	56.62	10.88	3.984	0.27(0.18)	0.68	16.1	108.00
10	55.11	11.47	3.867	0.27(0.18)	0.68	16.2	113.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 59.04 Tc(MIN.) = 9.30
EFFECTIVE AREA(ACRES) = 15.17 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.27 AREA-AVERAGED Ap = 0.67
TOTAL AREA(ACRES) = 16.20
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 125.00 = 1270.00 FEET.

****
FLOW PROCESS FROM NODE 125.00 TO NODE 5.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1418.00 DOWNSTREAM(FEET) = 1330.00
FLOW LENGTH(FEET) = 160.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 46.45
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 59.04
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 9.35
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	56.23	7.15	5.081	0.27(0.18)	0.65	12.1	123.00
2	56.72	7.46	4.918	0.27(0.18)	0.66	12.7	112.00
3	58.02	8.05	4.736	0.27(0.18)	0.66	13.6	118.00
4	58.88	8.67	4.553	0.27(0.18)	0.66	14.4	106.00
5	59.02	8.82	4.509	0.27(0.18)	0.66	14.6	121.00
6	59.03	8.85	4.500	0.27(0.18)	0.66	14.7	115.00
7	59.04	9.35	4.351	0.27(0.18)	0.67	15.2	104.00
8	58.28	10.18	4.123	0.27(0.18)	0.67	15.9	101.00
9	56.62	10.94	3.972	0.27(0.18)	0.68	16.1	108.00
10	55.11	11.53	3.855	0.27(0.18)	0.68	16.2	113.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25.99	14.27	3.405	0.30(0.30)	1.00	9.3	1.00

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1375.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	76.28	7.15	5.081	0.28(0.21)	0.75	16.8	123.00
2	76.93	7.46	4.918	0.28(0.21)	0.75	17.5	112.00
3	78.97	8.05	4.736	0.28(0.21)	0.75	18.8	118.00
4	80.51	8.67	4.553	0.28(0.21)	0.76	20.1	106.00
5	80.79	8.82	4.509	0.28(0.21)	0.76	20.4	121.00
6	80.84	8.85	4.500	0.28(0.21)	0.76	20.4	115.00
7	81.27	9.35	4.351	0.28(0.22)	0.76	21.3	104.00
8	81.11	10.18	4.123	0.28(0.22)	0.77	22.5	101.00
9	80.18	10.94	3.972	0.28(0.22)	0.77	23.3	108.00
10	79.14	11.53	3.855	0.28(0.22)	0.78	23.7	113.00
11	74.34	14.27	3.405	0.29(0.23)	0.79	25.5	1.00

TOTAL AREA(ACRES) = 25.50

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 81.27 Tc(MIN.) = 9.354
EFFECTIVE AREA(ACRES) = 21.26 AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.28 AREA-AVERAGED Ap = 0.76
TOTAL AREA(ACRES) = 25.50
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 5.00 TO NODE 6.00 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1320.00 DOWNSTREAM(FEET) = 1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 950.00 CHANNEL SLOPE = 0.1389
CHANNEL FLOW THRU SUBAREA(CFS) = 81.27
FLOW VELOCITY(FEET/SEC) = 9.03 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.75 Tc(MIN.) = 11.11
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

****
FLOW PROCESS FROM NODE 6.00 TO NODE 6.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 11.11
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.938
SUBAREA LOSS RATE DATA(AMC III):

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"               D       16.50      0.20       1.00    96
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   16.50     SUBAREA RUNOFF(CFS) =   55.52
EFFECTIVE AREA(ACRES) =   37.76   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.87
TOTAL AREA(ACRES) =   42.00       PEAK FLOW RATE(CFS) =    126.76

** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1    127.87   8.94    4.473  0.24( 0.21) 0.87    33.3      123.00
    2    127.84   9.25    4.382  0.24( 0.21) 0.87    34.0      112.00
    3    127.42   9.83    4.212  0.24( 0.21) 0.87    35.3      118.00
    4    127.35  10.43    4.074  0.24( 0.21) 0.87    36.6      106.00
    5    127.34  10.58    4.044  0.24( 0.21) 0.87    36.9      121.00
    6    127.32  10.61    4.038  0.24( 0.21) 0.87    36.9      115.00
    7    126.76  11.11    3.938  0.24( 0.21) 0.87    37.8      104.00
    8    125.00  11.94    3.772  0.24( 0.21) 0.87    39.0      101.00
    9    122.37  12.70    3.631  0.24( 0.21) 0.87    39.8      108.00
   10    120.63  13.29    3.546  0.24( 0.21) 0.87    40.2      113.00
   11    112.01  16.08    3.179  0.25( 0.22) 0.87    42.0        1.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =   127.87  Tc(MIN.) =  8.94
AREA-AVERAGED Fm(INCH/HR) =  0.21  AREA-AVERAGED Fp(INCH/HR) =  0.24
AREA-AVERAGED Ap =  0.87  EFFECTIVE AREA(ACRES) =    33.29

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1424.00  DOWNSTREAM(FEET) =   1421.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.512
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.304
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       D       1.60      0.20       0.60    91    9.51
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA RUNOFF(CFS) =      6.03
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      6.03

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    306.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1421.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =   480.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      9.62
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.37
  HALFSTREET FLOOD WIDTH(FEET) =   14.29
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.18
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.94
 STREET FLOW TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =  11.06
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.949
 SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       0.80      0.30       0.60    76
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       D       1.30      0.20       0.60    91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =    2.10     SUBAREA RUNOFF(CFS) =    7.19
EFFECTIVE AREA(ACRES) =    3.70   AREA-AVERAGED Fm(INCH/HR) =  0.13
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =    3.70       PEAK FLOW RATE(CFS) =      12.71

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.40   HALFSTREET FLOOD WIDTH(FEET) =  16.02
 FLOW VELOCITY(FEET/SEC.) =  5.52   DEPTH*VELOCITY(FT*FT/SEC.) =   2.22
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    306.00 =   750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.06
```

```
 RAINFALL INTENSITY(INCH/HR) =  3.95
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =  3.70
 TOTAL STREAM AREA(ACRES) =  3.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  12.71

****************************************************************************
 FLOW PROCESS FROM NODE  303.00 TO NODE  304.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1424.00  DOWNSTREAM(FEET) =  1419.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  8.638
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.563
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    91    8.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =  3.21
 TOTAL AREA(ACRES) =  0.80   PEAK FLOW RATE(CFS) =  3.21

****************************************************************************
 FLOW PROCESS FROM NODE  304.00 TO NODE  306.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1419.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =  470.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  5.89
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.33
   HALFSTREET FLOOD WIDTH(FEET) =  11.86
   AVERAGE FLOW VELOCITY(FEET/SEC.) =  4.48
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  1.49
 STREET FLOW TRAVEL TIME(MIN.) =  1.75  Tc(MIN.) =  10.39
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.082
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.50      0.30       0.50    76
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.00      0.20       0.50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =  1.50   SUBAREA RUNOFF(CFS) =  5.35
 EFFECTIVE AREA(ACRES) =  2.30   AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22   AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =  2.30   PEAK FLOW RATE(CFS) =  8.22

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36  HALFSTREET FLOOD WIDTH(FEET) =  13.68
 FLOW VELOCITY(FEET/SEC.) =  4.80  DEPTH*VELOCITY(FT*FT/SEC.) =  1.74
 LONGEST FLOWPATH FROM NODE  303.00 TO NODE  306.00 =  770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  306.00 TO NODE  306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.39
 RAINFALL INTENSITY(INCH/HR) =  4.08
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =  2.30
 TOTAL STREAM AREA(ACRES) =  2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  8.22

****************************************************************************
 FLOW PROCESS FROM NODE  305.00 TO NODE  306.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  135.00
 ELEVATION DATA: UPSTREAM(FEET) =  1418.00  DOWNSTREAM(FEET) =  1404.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  B        0.10      0.30       0.10    76    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =  0.55
 TOTAL AREA(ACRES) =  0.10   PEAK FLOW RATE(CFS) =  0.55
```

```
**************************************************************************
 FLOW PROCESS FROM NODE     306.00 TO NODE     306.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =    5.00
 RAINFALL INTENSITY(INCH/HR) =    6.19
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =     0.10
 TOTAL STREAM AREA(ACRES) =     0.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       0.55

 ** CONFLUENCE DATA **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      12.71  11.06     3.949  0.22( 0.13) 0.60      3.7      301.00
     2       8.22  10.39     4.082  0.22( 0.11) 0.50      2.3      303.00
     3       0.55   5.00     6.190  0.30( 0.03) 0.10      0.1      305.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      15.73   5.00     6.190  0.22( 0.12) 0.54      2.9      305.00
     2      20.94  10.39     4.082  0.22( 0.12) 0.55      5.9      303.00
     3      21.00  11.06     3.949  0.22( 0.12) 0.55      6.1      301.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      21.00    Tc(MIN.) =     11.06
 EFFECTIVE AREA(ACRES) =      6.10   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =       6.10
 LONGEST FLOWPATH FROM NODE     303.00 TO NODE     306.00 =    770.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     306.00 TO NODE     308.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1370.00
 FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.09
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     21.00
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  11.32
 LONGEST FLOWPATH FROM NODE     303.00 TO NODE     308.00 =  1070.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     308.00 TO NODE     308.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   11.32
 RAINFALL INTENSITY(INCH/HR) =    3.90
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.55
 EFFECTIVE STREAM AREA(ACRES) =     6.10
 TOTAL STREAM AREA(ACRES) =     6.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      21.00

**************************************************************************
 FLOW PROCESS FROM NODE     307.00 TO NODE     308.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1404.50  DOWNSTREAM(FEET) =   1371.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.677
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.841
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"        B        0.40      0.30       0.40    76    5.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      2.06
 TOTAL AREA(ACRES) =      0.40   PEAK FLOW RATE(CFS) =      2.06

**************************************************************************
 FLOW PROCESS FROM NODE     308.00 TO NODE     308.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    5.68
 RAINFALL INTENSITY(INCH/HR) =    5.84
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.40
 EFFECTIVE STREAM AREA(ACRES) =     0.40
 TOTAL STREAM AREA(ACRES) =     0.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.06
```

```
** CONFLUENCE DATA **
 STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      15.73   5.28    6.045   0.22( 0.12) 0.54     2.9      305.00
    1      20.94  10.65    4.030   0.22( 0.12) 0.55     5.9      303.00
    1      21.00  11.32    3.896   0.22( 0.12) 0.55     6.1      301.00
    2       2.06   5.68    5.841   0.30( 0.12) 0.40     0.4      307.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      17.72   5.28    6.045   0.23( 0.12) 0.53     3.3      305.00
    2      18.18   5.68    5.841   0.23( 0.12) 0.53     3.5      307.00
    3      22.35  10.65    4.030   0.23( 0.12) 0.54     6.3      303.00
    4      22.36  11.32    3.896   0.23( 0.12) 0.54     6.5      301.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    22.36    Tc(MIN.) =    11.32
EFFECTIVE AREA(ACRES) =    6.50   AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.54
TOTAL AREA(ACRES) =     6.50
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    308.00 =  1070.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1370.00  DOWNSTREAM(FEET) =  1363.50
 FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.81
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    22.36
 PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  11.39
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    309.00 TO NODE    310.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1390.00  DOWNSTREAM(FEET) =   1383.00
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.093
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.428
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         D        1.20      0.20       0.70     91    9.09
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      4.63
 TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      4.63

****************************************************************************
 FLOW PROCESS FROM NODE    310.00 TO NODE    313.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1383.00  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.48
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.35
   HALFSTREET FLOOD WIDTH(FEET) =   13.07
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.75
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.68
 STREET FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  10.43
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.075
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.60      0.30       0.50     76
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.00      0.20       0.50     91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.60     SUBAREA RUNOFF(CFS) =    5.70
 EFFECTIVE AREA(ACRES) =    2.80   AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =    2.80       PEAK FLOW RATE(CFS) =       9.95

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  14.70
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 FLOW VELOCITY(FEET/SEC.) =  5.08   DEPTH*VELOCITY(FT*FT/SEC.) =   1.93
 LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.43
 RAINFALL INTENSITY(INCH/HR) =  4.07
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.59
 EFFECTIVE STREAM AREA(ACRES) =   2.80
 TOTAL STREAM AREA(ACRES) =   2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     9.95

****************************************************************************
 FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1389.00  DOWNSTREAM(FEET) =  1379.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   7.259
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.024
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      D        0.60      0.20       0.40    91    7.26
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      2.67
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.67

****************************************************************************
 FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1379.20  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) =  320.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.50
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.33
  HALFSTREET FLOOD WIDTH(FEET) =  11.75
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   4.25
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   1.40
 STREET FLOW TRAVEL TIME(MIN.) =  1.26  Tc(MIN.) =  8.51
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.600
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.20      0.30       0.50    76
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.20      0.20       0.50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.21
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =   1.40   SUBAREA RUNOFF(CFS) =   5.66
 EFFECTIVE AREA(ACRES) =   2.00   AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.21  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =   2.00   PEAK FLOW RATE(CFS) =      8.10

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37  HALFSTREET FLOOD WIDTH(FEET) =  13.79
 FLOW VELOCITY(FEET/SEC.) =  4.66  DEPTH*VELOCITY(FT*FT/SEC.) =   1.70
 LONGEST FLOWPATH FROM NODE    311.00 TO NODE    313.00 =   620.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  8.51
 RAINFALL INTENSITY(INCH/HR) =  4.60
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.21
 AREA-AVERAGED Ap =  0.47
 EFFECTIVE STREAM AREA(ACRES) =   2.00
 TOTAL STREAM AREA(ACRES) =   2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     8.10

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1      9.95  10.43    4.075  0.22( 0.13) 0.59     2.8      309.00
    2      8.10   8.51    4.600  0.21( 0.10) 0.47     2.0      311.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

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** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     17.30  8.51    4.600  0.22( 0.11) 0.53      4.3      311.00
    2     17.10  10.43   4.075  0.22( 0.12) 0.54      4.8      309.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     17.30    Tc(MIN.) =     8.51
EFFECTIVE AREA(ACRES) =     4.29   AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =      4.80
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     17.30  8.51    4.600  0.22( 0.11) 0.53      4.3      311.00
    2     17.10  10.43   4.075  0.22( 0.12) 0.54      4.8      309.00
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     17.72  5.36    6.005  0.23( 0.12) 0.53      3.3      305.00
    2     18.18  5.76    5.800  0.23( 0.12) 0.53      3.5      307.00
    3     22.35  10.73   4.015  0.23( 0.12) 0.54      6.3      303.00
    4     22.36  11.39   3.881  0.23( 0.12) 0.54      6.5      301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     32.02  5.36    6.005  0.22( 0.12) 0.53      6.0      305.00
    2     33.00  5.76    5.800  0.22( 0.12) 0.53      6.4      307.00
    3     37.80  8.51    4.600  0.22( 0.12) 0.53      9.3      311.00
    4     39.20  10.43   4.075  0.22( 0.12) 0.54     10.9      309.00
    5     39.19  10.73   4.015  0.22( 0.12) 0.54     11.1      303.00
    6     38.63  11.39   3.881  0.22( 0.12) 0.54     11.3      301.00
  TOTAL AREA(ACRES) =     11.30

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      39.20  Tc(MIN.) =  10.426
 EFFECTIVE AREA(ACRES) =    10.91  AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =     11.30
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.10 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1363.50  DOWNSTREAM(FEET) =  1290.00
 FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  33.33
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     39.20
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  10.55
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.10 =  1400.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.10 TO NODE      6.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1290.00  DOWNSTREAM(FEET) =   1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   550.00   CHANNEL SLOPE =  0.1855
 CHANNEL FLOW THRU SUBAREA(CFS) =     39.20
 FLOW VELOCITY(FEET/SEC) =   8.18 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  11.67
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     32.02  6.69    5.319  0.22( 0.12) 0.53      6.0      305.00
    2     33.00  7.07    5.121  0.22( 0.12) 0.53      6.4      307.00
    3     37.80  9.77    4.227  0.22( 0.12) 0.53      9.3      311.00
    4     39.20  11.67   3.826  0.22( 0.12) 0.54     10.9      309.00
    5     39.19  11.97   3.766  0.22( 0.12) 0.54     11.1      303.00
    6     38.63  12.64   3.639  0.22( 0.12) 0.54     11.3      301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1    127.87  8.94    4.473  0.24( 0.21) 0.87     33.3      123.00
    2    127.84  9.25    4.382  0.24( 0.21) 0.87     34.0      112.00
    3    127.42  9.83    4.212  0.24( 0.21) 0.87     35.3      118.00
    4    127.35  10.43   4.074  0.24( 0.21) 0.87     36.6      106.00
```

5	127.34	10.58	4.044	0.24(0.21)	0.87	36.9	121.00
6	127.32	10.61	4.038	0.24(0.21)	0.87	36.9	115.00
7	126.76	11.11	3.938	0.24(0.21)	0.87	37.8	104.00
8	125.00	11.94	3.772	0.24(0.21)	0.87	39.0	101.00
9	122.37	12.70	3.631	0.24(0.21)	0.87	39.8	108.00
10	120.63	13.29	3.546	0.24(0.21)	0.87	40.2	113.00
11	112.01	16.08	3.179	0.25(0.22)	0.87	42.0	1.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	146.62	6.69	5.319	0.23(0.19)	0.81	30.9	305.00
2	149.48	7.07	5.121	0.23(0.19)	0.81	32.7	307.00
3	164.19	8.94	4.473	0.23(0.19)	0.81	41.7	123.00
4	164.71	9.25	4.382	0.23(0.19)	0.80	42.8	112.00
5	165.26	9.77	4.227	0.24(0.19)	0.80	44.6	311.00
6	165.26	9.83	4.212	0.24(0.19)	0.80	44.7	118.00
7	165.64	10.43	4.074	0.24(0.19)	0.80	46.5	106.00
8	165.73	10.58	4.044	0.24(0.19)	0.80	46.9	121.00
9	165.74	10.61	4.038	0.24(0.19)	0.80	47.0	115.00
10	165.54	11.11	3.938	0.24(0.19)	0.80	48.2	104.00
11	164.77	11.67	3.826	0.24(0.19)	0.80	49.5	309.00
12	164.20	11.94	3.772	0.24(0.19)	0.80	50.1	101.00
13	164.09	11.97	3.766	0.24(0.19)	0.80	50.1	303.00
14	161.19	12.64	3.639	0.24(0.19)	0.80	51.0	301.00
15	160.91	12.70	3.631	0.24(0.19)	0.80	51.1	108.00
16	158.23	13.29	3.546	0.24(0.19)	0.80	51.5	113.00
17	145.59	16.08	3.179	0.24(0.20)	0.80	53.3	1.00

TOTAL AREA(ACRES) = 53.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 165.74 Tc(MIN.) = 10.609
EFFECTIVE AREA(ACRES) = 46.96 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.24 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 53.30
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

****
FLOW PROCESS FROM NODE 6.00 TO NODE 6.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 6.00 TO NODE 7.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1188.00 DOWNSTREAM(FEET) = 1140.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 520.00 CHANNEL SLOPE = 0.0923
CHANNEL FLOW THRU SUBAREA(CFS) = 165.74
FLOW VELOCITY(FEET/SEC) = 16.81 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.52 Tc(MIN.) = 11.12
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 7.00 = 2900.00 FEET.

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 11.12
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.935
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	10.00	0.20	1.00	96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 10.00 SUBAREA RUNOFF(CFS) = 33.62
EFFECTIVE AREA(ACRES) = 56.96 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 63.30 PEAK FLOW RATE(CFS) = 191.94

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	178.37	7.22	5.043	0.22(0.19)	0.85	40.9	305.00
2	179.90	7.60	4.869	0.22(0.19)	0.85	42.7	307.00
3	192.23	9.46	4.320	0.23(0.19)	0.84	51.7	123.00
4	191.84	9.77	4.229	0.23(0.19)	0.84	52.8	112.00
5	192.08	10.29	4.102	0.23(0.19)	0.84	54.6	311.00
6	192.14	10.34	4.092	0.23(0.19)	0.84	54.7	118.00
7	192.13	10.95	3.971	0.23(0.19)	0.83	56.5	106.00
8	191.99	11.09	3.941	0.23(0.19)	0.83	56.9	121.00
9	191.94	11.12	3.935	0.23(0.19)	0.83	57.0	115.00
10	190.88	11.62	3.835	0.23(0.19)	0.83	58.2	104.00
11	189.10	12.19	3.722	0.23(0.19)	0.83	59.5	309.00
12	187.92	12.46	3.669	0.23(0.19)	0.83	60.1	101.00
13	187.73	12.49	3.663	0.23(0.19)	0.83	60.1	303.00
14	185.12	13.16	3.564	0.23(0.19)	0.83	61.0	301.00
15	184.85	13.22	3.556	0.23(0.19)	0.83	61.1	108.00
16	181.41	13.82	3.470	0.23(0.19)	0.83	61.5	113.00
17	166.51	16.62	3.119	0.24(0.20)	0.84	63.3	1.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 192.23 Tc(MIN.) = 9.46
AREA-AVERAGED Fm(INCH/HR) = 0.19 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.84 EFFECTIVE AREA(ACRES) = 51.72

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
 ELEVATION DATA: UPSTREAM(FEET) =   1590.00  DOWNSTREAM(FEET) =   1574.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.314
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.097
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.40      0.30       1.00    84   10.31
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      4.78
 TOTAL AREA(ACRES) =      1.40   PEAK FLOW RATE(CFS) =      4.78

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1574.00  DOWNSTREAM(FEET) =   1518.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   660.00   CHANNEL SLOPE =  0.0848
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      4.78
 FLOW VELOCITY(FEET/SEC) =  10.76   FLOW DEPTH(FEET) =   0.54
 TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  11.34
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    203.00 =   880.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.34
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.893
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 B        1.90      0.30       0.85    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
 SUBAREA AREA(ACRES) =     1.90   SUBAREA RUNOFF(CFS) =      6.22
 EFFECTIVE AREA(ACRES) =     3.30   AREA-AVERAGED Fm(INCH/HR) =  0.27
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =     3.30   PEAK FLOW RATE(CFS) =      10.75

****************************************************************************
 FLOW PROCESS FROM NODE    203.00 TO NODE    206.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1463.00
 STREET LENGTH(FEET) =   910.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.77
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.39
   HALFSTREET FLOOD WIDTH(FEET) =   15.41
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.43
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.53
 STREET FLOW TRAVEL TIME(MIN.) =   2.36   Tc(MIN.) =  13.69
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.488
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        1.30      0.30       0.50    76
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.70      0.20       0.50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     2.00   SUBAREA RUNOFF(CFS) =      6.04
 EFFECTIVE AREA(ACRES) =     5.30   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =     5.30   PEAK FLOW RATE(CFS) =      15.59

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  16.22
 FLOW VELOCITY(FEET/SEC.) =  6.61   DEPTH*VELOCITY(FT*FT/SEC.) =   2.69
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    206.00 =  1790.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    206.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.69
 RAINFALL INTENSITY(INCH/HR) =   3.49
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.76
 EFFECTIVE STREAM AREA(ACRES) =    5.30
 TOTAL STREAM AREA(ACRES) =    5.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.59
```

```
****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1518.00  DOWNSTREAM(FEET) =   1516.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.989
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.962
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.90      0.30       0.60    76   10.99
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      3.06
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      3.06

****************************************************************************
 FLOW PROCESS FROM NODE    205.00 TO NODE    206.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1516.00  DOWNSTREAM ELEVATION(FEET) = 1462.50
 STREET LENGTH(FEET) =   720.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.82
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.31
   HALFSTREET FLOOD WIDTH(FEET) =   10.33
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.65
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.73
 STREET FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  13.11
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.572
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.80      0.30       0.60    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     1.80     SUBAREA RUNOFF(CFS) =     5.49
 EFFECTIVE AREA(ACRES) =    2.70    AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     2.70       PEAK FLOW RATE(CFS) =      8.24

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  11.96
 FLOW VELOCITY(FEET/SEC.) =  6.17   DEPTH*VELOCITY(FT*FT/SEC.) =   2.06
 LONGEST FLOWPATH FROM NODE    204.00 TO NODE    206.00 =  1020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    206.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.11
 RAINFALL INTENSITY(INCH/HR) =   3.57
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    2.70
 TOTAL STREAM AREA(ACRES) =    2.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.24

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1     15.59  13.69    3.488  0.29( 0.22) 0.76     5.3      201.00
    2      8.24  13.11    3.572  0.30( 0.18) 0.60     2.7      204.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1     23.55  13.11    3.572  0.29( 0.21) 0.70     7.8      204.00
    2     23.62  13.69    3.488  0.29( 0.21) 0.70     8.0      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     23.62    Tc(MIN.) =    13.69
 EFFECTIVE AREA(ACRES) =     8.00   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =      8.00
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    206.00 =  1790.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    210.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1461.00  DOWNSTREAM(FEET) =  1450.00
```

```
 FLOW LENGTH(FEET) =  230.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.87
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     23.62
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =  13.95
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.95
 RAINFALL INTENSITY(INCH/HR) =   3.45
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    8.00
 TOTAL STREAM AREA(ACRES) =    8.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.62

****************************************************************************
 FLOW PROCESS FROM NODE    207.00 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1462.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.164
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.703
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        1.90      0.30       0.70    76    8.16
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      7.68
 TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      7.68

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.16
 RAINFALL INTENSITY(INCH/HR) =   4.70
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    1.90
 TOTAL STREAM AREA(ACRES) =    1.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.68

****************************************************************************
 FLOW PROCESS FROM NODE    208.00 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  230.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.375
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.480
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 B        0.20      0.30       0.10    76    6.38
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =      0.98
 TOTAL AREA(ACRES) =      0.20   PEAK FLOW RATE(CFS) =      0.98

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.38
 RAINFALL INTENSITY(INCH/HR) =   5.48
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =    0.20
 TOTAL STREAM AREA(ACRES) =    0.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.98

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR)  (INCH/HR)         (ACRES)    NODE
    1     23.55  13.37    3.535  0.29( 0.21) 0.70     7.8     204.00
    1     23.62  13.95    3.451  0.29( 0.21) 0.70     8.0     201.00
    2      7.68   8.16    4.703  0.30( 0.21) 0.70     1.9     207.00
    3      0.98   6.38    5.480  0.30( 0.03) 0.10     0.2     208.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25.81	6.38	5.480	0.30(0.20)	0.68	5.4	208.00
2	27.95	8.16	4.703	0.30(0.20)	0.68	6.8	207.00
3	29.86	13.37	3.535	0.30(0.20)	0.69	9.9	204.00
4	29.78	13.95	3.451	0.29(0.20)	0.69	10.1	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29.86 Tc(MIN.) = 13.37
EFFECTIVE AREA(ACRES) = 9.87 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.69
TOTAL AREA(ACRES) = 10.10
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 210.00 = 2020.00 FEET.

****
FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.37
RAINFALL INTENSITY(INCH/HR) = 3.53
AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.69
EFFECTIVE STREAM AREA(ACRES) = 9.87
TOTAL STREAM AREA(ACRES) = 10.10
PEAK FLOW RATE(CFS) AT CONFLUENCE = 29.86

****
FLOW PROCESS FROM NODE 209.00 TO NODE 210.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 240.00
ELEVATION DATA: UPSTREAM(FEET) = 1453.80 DOWNSTREAM(FEET) = 1451.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 9.554
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.292
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL "2 DWELLINGS/ACRE"	D	0.70	0.20	0.70	91	9.55

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.70
SUBAREA RUNOFF(CFS) = 2.62
TOTAL AREA(ACRES) = 0.70 PEAK FLOW RATE(CFS) = 2.62

****
FLOW PROCESS FROM NODE 210.00 TO NODE 210.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.55
RAINFALL INTENSITY(INCH/HR) = 4.29
AREA-AVERAGED Fm(INCH/HR) = 0.14
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.70
EFFECTIVE STREAM AREA(ACRES) = 0.70
TOTAL STREAM AREA(ACRES) = 0.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.62

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25.81	6.38	5.480	0.30(0.20)	0.68	5.4	208.00
1	27.95	8.16	4.703	0.30(0.20)	0.68	6.8	207.00
1	29.86	13.37	3.535	0.30(0.20)	0.69	9.9	204.00
1	29.78	13.95	3.451	0.29(0.20)	0.69	10.1	201.00
2	2.62	9.55	4.292	0.20(0.14)	0.70	0.7	209.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28.06	6.38	5.480	0.29(0.20)	0.68	5.9	208.00
2	30.41	8.16	4.703	0.29(0.20)	0.69	7.4	207.00
3	31.08	9.55	4.292	0.29(0.20)	0.69	8.4	209.00
4	32.00	13.37	3.535	0.29(0.20)	0.69	10.6	204.00
5	31.87	13.95	3.451	0.29(0.20)	0.69	10.8	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 32.00 Tc(MIN.) = 13.37
EFFECTIVE AREA(ACRES) = 10.57 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.29 AREA-AVERAGED Ap = 0.69
TOTAL AREA(ACRES) = 10.80
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 210.00 = 2020.00 FEET.

****
FLOW PROCESS FROM NODE 210.00 TO NODE 215.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1450.00 DOWNSTREAM(FEET) = 1417.50
FLOW LENGTH(FEET) = 560.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.00
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 32.00
PIPE TRAVEL TIME(MIN.) = 0.55 Tc(MIN.) = 13.92
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 215.00 = 2580.00 FEET.

```
**********************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =  1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.92
 RAINFALL INTENSITY(INCH/HR) =   3.46
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =   10.57
 TOTAL STREAM AREA(ACRES) =   10.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.00

**********************************************************************
 FLOW PROCESS FROM NODE    213.00 TO NODE    214.00 IS CODE =  21
----------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
======================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.40  DOWNSTREAM(FEET) =   1432.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.469
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.432
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.90      0.20       0.50     91    6.47
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      4.32
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      4.32

**********************************************************************
 FLOW PROCESS FROM NODE    214.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
======================================================================
 UPSTREAM ELEVATION(FEET) = 1432.20  DOWNSTREAM ELEVATION(FEET) = 1416.20
 STREET LENGTH(FEET) =   290.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.37
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.34
  HALFSTREET FLOOD WIDTH(FEET) =   12.16
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.35
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.81
 STREET FLOW TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =   7.37
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.966
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.40      0.20       0.60     91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    1.40   SUBAREA RUNOFF(CFS) =    6.11
 EFFECTIVE AREA(ACRES) =    2.30   AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =    2.30   PEAK FLOW RATE(CFS) =     10.05

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  13.79
 FLOW VELOCITY(FEET/SEC.) =  5.78   DEPTH*VELOCITY(FT*FT/SEC.) =   2.11
 LONGEST FLOWPATH FROM NODE    213.00 TO NODE    215.00 =   575.00 FEET.

**********************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =  1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.37
 RAINFALL INTENSITY(INCH/HR) =   4.97
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.56
 EFFECTIVE STREAM AREA(ACRES) =    2.30
 TOTAL STREAM AREA(ACRES) =    2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.05

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     28.06    6.94     5.191  0.29( 0.20) 0.68     5.9     208.00
     1     30.41    8.72     4.540  0.29( 0.20) 0.69     7.4     207.00
     1     31.08   10.11     4.139  0.29( 0.20) 0.69     8.4     209.00
     1     32.00   13.92     3.456  0.29( 0.20) 0.69    10.6     204.00
     1     31.87   14.50     3.372  0.29( 0.20) 0.69    10.8     201.00
     2     10.05    7.37     4.966  0.20( 0.11) 0.56     2.3     213.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
    1     37.95   6.94    5.191  0.27( 0.17) 0.65     8.0      208.00
    2     38.68   7.37    4.966  0.27( 0.17) 0.65     8.5      213.00
    3     39.57   8.72    4.540  0.27( 0.18) 0.66     9.7      207.00
    4     39.41  10.11    4.139  0.27( 0.18) 0.66    10.7      209.00
    5     38.92  13.92    3.456  0.28( 0.18) 0.67    12.9      204.00
    6     38.61  14.50    3.372  0.28( 0.18) 0.67    13.1      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     39.57    Tc(MIN.) =     8.72
 EFFECTIVE AREA(ACRES) =     9.75   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.66
 TOTAL AREA(ACRES) =     13.10
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.72
 RAINFALL INTENSITY(INCH/HR) =   4.54
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.66
 EFFECTIVE STREAM AREA(ACRES) =    9.75
 TOTAL STREAM AREA(ACRES) =   13.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.57

****************************************************************************
 FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1445.80

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.560
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.882
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      D        0.30      0.20       0.40     91    7.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      1.30
 TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      1.30

****************************************************************************
 FLOW PROCESS FROM NODE    212.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1445.80  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   460.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.02
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    9.11
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.86
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.39
 STREET FLOW TRAVEL TIME(MIN.) =   1.58   Tc(MIN.) =   9.14
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.415
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.40      0.20       0.50     91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    5.44
 EFFECTIVE AREA(ACRES) =    1.70    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =    1.70        PEAK FLOW RATE(CFS) =       6.61

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.32   HALFSTREET FLOOD WIDTH(FEET) =  11.35
 FLOW VELOCITY(FEET/SEC.) =  5.43   DEPTH*VELOCITY(FT*FT/SEC.) =   1.76
 LONGEST FLOWPATH FROM NODE    211.00 TO NODE    215.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.14
 RAINFALL INTENSITY(INCH/HR) =   4.42
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.48
```

```
EFFECTIVE STREAM AREA(ACRES) =    1.70
TOTAL STREAM AREA(ACRES) =    1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.61

** CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     37.95   6.94     5.191   0.27( 0.17) 0.65      8.0     208.00
    1     38.68   7.37     4.966   0.27( 0.17) 0.65      8.5     213.00
    1     39.57   8.72     4.540   0.27( 0.18) 0.66      9.7     207.00
    1     39.41  10.11     4.139   0.27( 0.18) 0.66     10.7     209.00
    1     38.92  13.92     3.456   0.28( 0.18) 0.67     12.9     204.00
    1     38.61  14.50     3.372   0.28( 0.18) 0.67     13.1     201.00
    2      6.61   9.14     4.415   0.20( 0.10) 0.48      1.7     211.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     43.86   6.94     5.191   0.26( 0.16) 0.63      9.3     208.00
    2     44.69   7.37     4.966   0.26( 0.16) 0.63      9.9     213.00
    3     46.06   8.72     4.540   0.26( 0.17) 0.63     11.4     207.00
    4     46.13   9.14     4.415   0.26( 0.17) 0.63     11.7     211.00
    5     45.60  10.11     4.139   0.26( 0.17) 0.64     12.4     209.00
    6     44.06  13.92     3.456   0.27( 0.17) 0.65     14.6     204.00
    7     43.63  14.50     3.372   0.27( 0.17) 0.65     14.8     201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    46.13    Tc(MIN.) =    9.14
EFFECTIVE AREA(ACRES) =    11.72    AREA-AVERAGED Fm(INCH/HR) =  0.17
AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.63
TOTAL AREA(ACRES) =    14.80
LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    220.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1416.20  DOWNSTREAM(FEET) =  1350.00
 FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  31.73
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    46.13
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   9.28
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    220.00 =  2850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    220.00 TO NODE      6.10 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   960.00   CHANNEL SLOPE =  0.1875
 CHANNEL FLOW THRU SUBAREA(CFS) =    46.13
 FLOW VELOCITY(FEET/SEC) =   8.69 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =  11.12
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE      6.10 =  3810.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    216.00 TO NODE    217.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1616.00  DOWNSTREAM(FEET) =  1513.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.561
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.586
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.60      0.30       1.00     84    8.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.31
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.31

****************************************************************************
 FLOW PROCESS FROM NODE    217.00 TO NODE    218.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1513.00  DOWNSTREAM(FEET) =  1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =  0.1800
 CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.31
 FLOW VELOCITY(FEET/SEC) =  11.81   FLOW DEPTH(FEET) =   0.36
 TRAVEL TIME(MIN.) =   0.49   Tc(MIN.) =   9.05
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    218.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    218.00 TO NODE    218.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 MAINLINE Tc(MIN) =   9.05
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.440
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        2.00      0.30       1.00    84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     2.00      SUBAREA RUNOFF(CFS) =     7.45
 EFFECTIVE AREA(ACRES) =     2.60    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     2.60        PEAK FLOW RATE(CFS) =       9.69

****************************************************************************
 FLOW PROCESS FROM NODE     218.00 TO NODE     219.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1437.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   280.00   CHANNEL SLOPE =  0.0464
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      9.69
 FLOW VELOCITY(FEET/SEC) =  10.18   FLOW DEPTH(FEET) =   0.80
 TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =   9.51
 LONGEST FLOWPATH FROM NODE     216.00 TO NODE     219.00 =   930.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     219.00 TO NODE     219.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.51
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.304
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        3.10      0.30       1.00    84
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.00      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.28
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10      SUBAREA RUNOFF(CFS) =    14.87
 EFFECTIVE AREA(ACRES) =     6.70    AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     6.70        PEAK FLOW RATE(CFS) =       24.24

****************************************************************************
 FLOW PROCESS FROM NODE     219.00 TO NODE     225.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1437.00  DOWNSTREAM(FEET) =  1400.00
 FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.67
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     24.24
 PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   9.74
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    225.00 =  1220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     225.00 TO NODE     225.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.74
 RAINFALL INTENSITY(INCH/HR) =   4.24
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    6.70
 TOTAL STREAM AREA(ACRES) =    6.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.24

****************************************************************************
 FLOW PROCESS FROM NODE     221.00 TO NODE     222.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1417.00  DOWNSTREAM(FEET) =   1408.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.932
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.772
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        0.50      0.20       0.60    91    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      2.09
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      2.09

****************************************************************************
 FLOW PROCESS FROM NODE     222.00 TO NODE     225.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1408.70  DOWNSTREAM ELEVATION(FEET) = 1400.00
 STREET LENGTH(FEET) =   180.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00
```

```
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.017
OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.10
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.28
  HALFSTREET FLOOD WIDTH(FEET) =    8.50
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.21
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.16
STREET FLOW TRAVEL TIME(MIN.) =  0.71   Tc(MIN.) =   8.65
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.561
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D        0.50      0.20       0.50    91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =     0.50      SUBAREA RUNOFF(CFS) =     2.01
EFFECTIVE AREA(ACRES) =     1.00    AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.55
TOTAL AREA(ACRES) =     1.00        PEAK FLOW RATE(CFS) =        4.01

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.62
FLOW VELOCITY(FEET/SEC.) =  4.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.30
LONGEST FLOWPATH FROM NODE    221.00 TO NODE    225.00 =   460.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    225.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.65
 RAINFALL INTENSITY(INCH/HR) =   4.56
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.55
 EFFECTIVE STREAM AREA(ACRES) =    1.00
 TOTAL STREAM AREA(ACRES) =    1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.01

****************************************************************************
 FLOW PROCESS FROM NODE    223.00 TO NODE    224.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1419.00  DOWNSTREAM(FEET) =   1408.30

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.858
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.794
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.60      0.20       0.60    91    7.86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      6.73
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      6.73

****************************************************************************
 FLOW PROCESS FROM NODE    224.00 TO NODE    225.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =  1408.30  DOWNSTREAM ELEVATION(FEET) =  1400.00
 STREET LENGTH(FEET) =   170.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) =  18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.36
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.35
   HALFSTREET FLOOD WIDTH(FEET) =   13.18
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.23
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.86
 STREET FLOW TRAVEL TIME(MIN.) =  0.54   Tc(MIN.) =   8.40
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.634
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        0.80      0.20       0.60    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     0.80      SUBAREA RUNOFF(CFS) =     3.25
 EFFECTIVE AREA(ACRES) =     2.40    AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     2.40        PEAK FLOW RATE(CFS) =        9.75
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END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) = 13.99
FLOW VELOCITY(FEET/SEC.) = 5.46   DEPTH*VELOCITY(FT*FT/SEC.) = 2.01
LONGEST FLOWPATH FROM NODE   223.00 TO NODE   225.00 = 470.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   225.00 TO NODE   225.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 8.40
RAINFALL INTENSITY(INCH/HR) = 4.63
AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.60
EFFECTIVE STREAM AREA(ACRES) = 2.40
TOTAL STREAM AREA(ACRES) = 2.40
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.75

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     24.24  9.74    4.238  0.29( 0.29) 1.00     6.7     216.00
    2      4.01  8.65    4.561  0.20( 0.11) 0.55     1.0     221.00
    3      9.75  8.40    4.634  0.20( 0.12) 0.60     2.4     223.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     36.71  8.40    4.634  0.26( 0.22) 0.85     9.2     223.00
    2     36.88  8.65    4.561  0.26( 0.22) 0.85     9.3     221.00
    3     36.85  9.74    4.238  0.27( 0.23) 0.86    10.1     216.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =   36.88   Tc(MIN.) =   8.65
EFFECTIVE AREA(ACRES) =   9.35   AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.26   AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) =   10.10
LONGEST FLOWPATH FROM NODE   216.00 TO NODE   225.00 = 1220.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   225.00 TO NODE   227.00 IS CODE = 31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 1400.00   DOWNSTREAM(FEET) = 1399.00
FLOW LENGTH(FEET) =   60.00   MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 21.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.87
ESTIMATED PIPE DIAMETER(INCH) = 27.00   NUMBER OF PIPES = 1
PIPE-FLOW(CFS) =   36.88
PIPE TRAVEL TIME(MIN.) = 0.09   Tc(MIN.) = 8.74
LONGEST FLOWPATH FROM NODE   216.00 TO NODE   227.00 = 1280.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   227.00 TO NODE   227.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 8.74
RAINFALL INTENSITY(INCH/HR) = 4.53
AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.26
AREA-AVERAGED Ap = 0.85
EFFECTIVE STREAM AREA(ACRES) = 9.35
TOTAL STREAM AREA(ACRES) = 10.10
PEAK FLOW RATE(CFS) AT CONFLUENCE = 36.88

****************************************************************************
FLOW PROCESS FROM NODE   226.00 TO NODE   227.00 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) = 300.00
ELEVATION DATA: UPSTREAM(FEET) = 1400.00   DOWNSTREAM(FEET) = 1397.50

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.509
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.058
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       D        1.60      0.20       0.60    91   10.51
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60
SUBAREA RUNOFF(CFS) =   5.67
TOTAL AREA(ACRES) =   1.60   PEAK FLOW RATE(CFS) =   5.67

****************************************************************************
FLOW PROCESS FROM NODE   227.00 TO NODE   227.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.51
RAINFALL INTENSITY(INCH/HR) = 4.06
AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.60
```

```
EFFECTIVE STREAM AREA(ACRES) =    1.60
TOTAL STREAM AREA(ACRES) =    1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.67

** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      36.71   8.49     4.607   0.26( 0.22)  0.85     9.2      223.00
    1      36.88   8.74     4.534   0.26( 0.22)  0.85     9.3      221.00
    1      36.85   9.83     4.211   0.27( 0.23)  0.86    10.1      216.00
    2       5.67  10.51     4.058   0.20( 0.12)  0.60     1.6      226.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      41.93   8.49     4.607   0.26( 0.21)  0.82    10.4      223.00
    2      42.16   8.74     4.534   0.26( 0.21)  0.82    10.7      221.00
    3      42.35   9.83     4.211   0.26( 0.21)  0.83    11.6      216.00
    4      41.10  10.51     4.058   0.26( 0.21)  0.82    11.7      226.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     42.35    Tc(MIN.) =     9.83
EFFECTIVE AREA(ACRES) =    11.60   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.83
TOTAL AREA(ACRES) =     11.70
LONGEST FLOWPATH FROM NODE    216.00 TO NODE    227.00 =  1280.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    227.00 TO NODE    228.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1397.50  DOWNSTREAM(FEET) =  1286.00
 FLOW LENGTH(FEET) =   370.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  34.19
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     42.35
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  10.01
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    228.00 =  1650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    228.00 TO NODE      6.10 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1286.00  DOWNSTREAM(FEET) =   1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.1871
 CHANNEL FLOW THRU SUBAREA(CFS) =     42.35
 FLOW VELOCITY(FEET/SEC) =   8.43 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  11.23

 LONGEST FLOWPATH FROM NODE    216.00 TO NODE      6.10 =  2270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.23
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.913
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap       SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        8.80      0.20        1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     8.80     SUBAREA RUNOFF(CFS) =    29.41
 EFFECTIVE AREA(ACRES) =    20.40   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.90
 TOTAL AREA(ACRES) =     20.50     PEAK FLOW RATE(CFS) =       68.01

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      68.99   9.90     4.189   0.23( 0.21)  0.90    19.2      223.00
     2      68.81  10.14     4.131   0.23( 0.21)  0.90    19.5      221.00
     3      68.01  11.23     3.913   0.23( 0.21)  0.90    20.4      216.00
     4      65.80  11.93     3.774   0.23( 0.21)  0.90    20.5      226.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     68.99  Tc(MIN.) =   9.90
 AREA-AVERAGED Fm(INCH/HR) =  0.21  AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  0.90  EFFECTIVE AREA(ACRES) =     19.24

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      68.99   9.90     4.189   0.23( 0.21)  0.90    19.2      223.00
     2      68.81  10.14     4.131   0.23( 0.21)  0.90    19.5      221.00
     3      68.01  11.23     3.913   0.23( 0.21)  0.90    20.4      216.00
     4      65.80  11.93     3.774   0.23( 0.21)  0.90    20.5      226.00
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE      6.10 =  2270.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      43.86   8.95     4.470   0.26( 0.16)  0.63     9.3      208.00
     2      44.69   9.38     4.345   0.26( 0.16)  0.63     9.9      213.00
     3      46.06  10.70     4.020   0.26( 0.17)  0.63    11.4      207.00
     4      46.13  11.12     3.936   0.26( 0.17)  0.63    11.7      211.00
     5      45.60  12.10     3.741   0.26( 0.17)  0.64    12.4      209.00
```

```
    6     44.06  15.93     3.196  0.27( 0.17) 0.65     14.6      204.00
    7     43.63  16.52     3.130  0.27( 0.17) 0.65     14.8      201.00
LONGEST FLOWPATH FROM NODE     201.00 TO NODE       6.10 =  3810.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     110.64   8.95     4.470  0.24( 0.19) 0.80     26.7      208.00
    2     112.57   9.38     4.345  0.24( 0.19) 0.80     28.1      213.00
    3     114.23   9.90     4.189  0.24( 0.19) 0.80     29.7      223.00
    4     114.29  10.14     4.131  0.24( 0.19) 0.80     30.2      221.00
    5     114.46  10.70     4.020  0.24( 0.19) 0.80     31.3      207.00
    6     114.23  11.12     3.936  0.24( 0.19) 0.80     32.0      211.00
    7     114.08  11.23     3.913  0.24( 0.19) 0.80     32.2      216.00
    8     111.49  11.93     3.774  0.24( 0.19) 0.80     32.7      226.00
    9     110.78  12.10     3.741  0.24( 0.19) 0.80     32.9      209.00
   10      99.19  15.93     3.196  0.24( 0.19) 0.79     35.1      204.00
   11      97.53  16.52     3.130  0.24( 0.19) 0.79     35.3      201.00
  TOTAL AREA(ACRES) =     35.30

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      114.46  Tc(MIN.) =   10.702
 EFFECTIVE AREA(ACRES) =     31.32  AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     35.30
 LONGEST FLOWPATH FROM NODE     201.00 TO NODE       6.10 =  3810.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       6.10 TO NODE       6.10 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE       6.10 TO NODE       7.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.1765
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =    114.46
 FLOW VELOCITY(FEET/SEC) =  10.45 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =  10.97
 LONGEST FLOWPATH FROM NODE     201.00 TO NODE       7.00 =  3980.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
```

```
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     110.64   9.23     4.389  0.24( 0.19) 0.80     26.7      208.00
    2     112.57   9.65     4.264  0.24( 0.19) 0.80     28.1      213.00
    3     114.23  10.17     4.125  0.24( 0.19) 0.80     29.7      223.00
    4     114.29  10.42     4.077  0.24( 0.19) 0.80     30.2      221.00
    5     114.46  10.97     3.965  0.24( 0.19) 0.80     31.3      207.00
    6     114.23  11.39     3.881  0.24( 0.19) 0.80     32.0      211.00
    7     114.08  11.51     3.859  0.24( 0.19) 0.80     32.2      216.00
    8     111.49  12.20     3.720  0.24( 0.19) 0.80     32.7      226.00
    9     110.78  12.37     3.686  0.24( 0.19) 0.80     32.9      209.00
   10      99.19  16.22     3.164  0.24( 0.19) 0.79     35.1      204.00
   11      97.53  16.81     3.098  0.24( 0.19) 0.79     35.3      201.00
LONGEST FLOWPATH FROM NODE     201.00 TO NODE       7.00 =  3980.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     178.37   7.22     5.043  0.22( 0.19) 0.85     40.9      305.00
    2     179.90   7.60     4.869  0.22( 0.19) 0.85     42.7      307.00
    3     192.23   9.46     4.320  0.23( 0.19) 0.84     51.7      123.00
    4     191.84   9.77     4.229  0.23( 0.19) 0.84     52.8      112.00
    5     192.08  10.29     4.102  0.23( 0.19) 0.84     54.6      311.00
    6     192.14  10.34     4.092  0.23( 0.19) 0.84     54.7      118.00
    7     192.13  10.95     3.971  0.23( 0.19) 0.83     56.5      106.00
    8     191.99  11.09     3.941  0.23( 0.19) 0.83     56.9      121.00
    9     191.94  11.12     3.935  0.23( 0.19) 0.83     57.0      115.00
   10     190.88  11.62     3.835  0.23( 0.19) 0.83     58.2      104.00
   11     189.10  12.19     3.722  0.23( 0.19) 0.83     59.5      309.00
   12     187.92  12.46     3.669  0.23( 0.19) 0.83     60.1      101.00
   13     187.73  12.49     3.663  0.23( 0.19) 0.83     60.1      303.00
   14     185.12  13.16     3.564  0.23( 0.19) 0.83     61.0      301.00
   15     184.85  13.22     3.556  0.23( 0.19) 0.83     61.1      108.00
   16     181.41  13.82     3.470  0.23( 0.19) 0.83     61.5      113.00
   17     166.51  16.62     3.119  0.24( 0.20) 0.84     63.3        1.00
LONGEST FLOWPATH FROM NODE     108.00 TO NODE       7.00 =  2900.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     278.48   7.22     5.043  0.23( 0.19) 0.84     61.8      305.00
    2     281.52   7.60     4.869  0.23( 0.19) 0.84     64.7      307.00
    3     301.34   9.23     4.389  0.23( 0.19) 0.83     77.3      208.00
    4     303.93   9.46     4.320  0.23( 0.19) 0.83     79.2      123.00
    5     304.56   9.65     4.264  0.23( 0.19) 0.83     80.5      213.00
    6     304.78   9.77     4.229  0.23( 0.19) 0.83     81.3      112.00
    7     306.25  10.17     4.125  0.23( 0.19) 0.83     83.9      223.00
    8     306.34  10.29     4.102  0.23( 0.19) 0.82     84.5      311.00
    9     306.42  10.34     4.092  0.23( 0.19) 0.82     84.8      118.00
   10     306.43  10.42     4.077  0.23( 0.19) 0.82     85.2      221.00
   11     306.58  10.95     3.971  0.23( 0.19) 0.82     87.7      106.00
   12     306.56  10.97     3.965  0.23( 0.19) 0.82     87.9      207.00
   13     306.38  11.09     3.941  0.23( 0.19) 0.82     88.4      121.00
   14     306.32  11.12     3.935  0.23( 0.19) 0.82     88.5      115.00
   15     305.60  11.39     3.881  0.23( 0.19) 0.82     89.7      211.00
   16     305.22  11.51     3.859  0.23( 0.19) 0.82     90.1      216.00
   17     304.53  11.62     3.835  0.23( 0.19) 0.82     90.5      104.00
```

18	300.65	12.19	3.722	0.23(0.19)	0.82	92.2	309.00
19	300.53	12.20	3.720	0.23(0.19)	0.82	92.3	226.00
20	299.08	12.37	3.686	0.23(0.19)	0.82	92.7	209.00
21	298.44	12.46	3.669	0.23(0.19)	0.82	93.0	101.00
22	298.16	12.49	3.663	0.23(0.19)	0.82	93.0	303.00
23	293.50	13.16	3.564	0.24(0.19)	0.82	94.3	301.00
24	293.07	13.22	3.556	0.24(0.19)	0.82	94.4	108.00
25	287.83	13.82	3.470	0.24(0.19)	0.82	95.2	113.00
26	267.82	16.22	3.164	0.24(0.20)	0.82	98.1	204.00
27	264.58	16.62	3.119	0.24(0.20)	0.82	98.5	1.00
28	262.82	16.81	3.098	0.24(0.20)	0.82	98.6	201.00

TOTAL AREA(ACRES) = 98.60

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 306.58 Tc(MIN.) = 10.947
EFFECTIVE AREA(ACRES) = 87.74 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 98.60
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.00 = 3980.00 FEET.

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.90 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1140.00 DOWNSTREAM(FEET) = 1088.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1000.00 CHANNEL SLOPE = 0.0520
CHANNEL FLOW THRU SUBAREA(CFS) = 306.58
FLOW VELOCITY(FEET/SEC) = 15.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.09 Tc(MIN.) = 12.04
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.90 = 4980.00 FEET.

****
FLOW PROCESS FROM NODE 7.90 TO NODE 7.90 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 12.04
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.753
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	12.40	0.20	1.00	96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 39.65
EFFECTIVE AREA(ACRES) = 100.14 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 111.00 PEAK FLOW RATE(CFS) = 320.88

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	297.47	8.35	4.649	0.22(0.19)	0.86	74.2	305.00
2	301.69	8.72	4.538	0.22(0.19)	0.86	77.1	307.00
3	315.16	10.32	4.095	0.22(0.19)	0.85	89.7	208.00
4	318.09	10.55	4.050	0.22(0.19)	0.85	91.6	123.00
5	319.44	10.74	4.012	0.23(0.19)	0.85	92.9	213.00
6	320.08	10.86	3.988	0.23(0.19)	0.85	93.7	112.00
7	322.01	11.26	3.907	0.23(0.19)	0.85	96.3	223.00
8	322.11	11.38	3.884	0.23(0.19)	0.85	96.9	311.00
9	322.10	11.43	3.874	0.23(0.19)	0.85	97.2	118.00
10	322.01	11.51	3.859	0.23(0.19)	0.85	97.6	221.00
11	320.88	12.04	3.753	0.23(0.19)	0.84	100.1	106.00
12	320.79	12.06	3.747	0.23(0.19)	0.84	100.3	207.00
13	320.30	12.18	3.723	0.23(0.19)	0.84	100.8	121.00
14	320.16	12.22	3.717	0.23(0.19)	0.84	100.9	115.00
15	318.75	12.48	3.663	0.23(0.19)	0.84	102.1	211.00
16	318.56	12.60	3.646	0.23(0.19)	0.84	102.5	216.00
17	318.18	12.72	3.629	0.23(0.19)	0.84	102.9	104.00
18	315.87	13.28	3.547	0.23(0.19)	0.84	104.6	309.00
19	315.80	13.30	3.545	0.23(0.19)	0.84	104.7	226.00
20	314.84	13.47	3.520	0.23(0.19)	0.84	105.1	209.00
21	314.32	13.56	3.508	0.23(0.19)	0.84	105.4	101.00
22	314.09	13.59	3.503	0.23(0.19)	0.84	105.4	303.00
23	308.45	14.27	3.405	0.23(0.19)	0.84	106.7	301.00
24	307.94	14.33	3.397	0.23(0.19)	0.84	106.8	108.00
25	301.77	14.93	3.310	0.23(0.19)	0.84	107.6	113.00
26	282.56	17.35	3.036	0.23(0.20)	0.84	110.5	204.00
27	279.68	17.76	2.997	0.23(0.20)	0.84	110.9	1.00
28	278.16	17.95	2.980	0.23(0.20)	0.84	111.0	201.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 322.11 Tc(MIN.) = 11.38
AREA-AVERAGED Fm(INCH/HR) = 0.19 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.85 EFFECTIVE AREA(ACRES) = 96.94

****
FLOW PROCESS FROM NODE 7.90 TO NODE 7.90 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 11.38
RAINFALL INTENSITY(INCH/HR) = 3.88
AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.85
EFFECTIVE STREAM AREA(ACRES) = 96.94
TOTAL STREAM AREA(ACRES) = 111.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 322.11

****
FLOW PROCESS FROM NODE 7.10 TO NODE 7.20 IS CODE = 21

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1315.00  DOWNSTREAM(FEET) =   1220.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.799
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.812
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.70      0.30       1.00    84    7.80
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.84
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.84

****************************************************************************
 FLOW PROCESS FROM NODE       7.20 TO NODE       7.30 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<

 ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1180.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00   CHANNEL SLOPE =  0.1739
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1470 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.84
 FLOW VELOCITY(FEET/SEC) =   3.04 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =   9.06
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE      7.30 =   480.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.30 TO NODE       7.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

 MAINLINE Tc(MIN) =   9.06
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.438
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.30      0.30       1.00    84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     1.30   SUBAREA RUNOFF(CFS) =     4.84
 EFFECTIVE AREA(ACRES) =     2.00   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      2.00   PEAK FLOW RATE(CFS) =      7.45

****************************************************************************
 FLOW PROCESS FROM NODE       7.30 TO NODE       7.40 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<

 ELEVATION DATA: UPSTREAM(FEET) =   1180.00  DOWNSTREAM(FEET) =   1114.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.1065
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1048 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      7.45
 FLOW VELOCITY(FEET/SEC) =   3.54 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.92   Tc(MIN.) =  11.98
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE      7.40 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.40 TO NODE       7.40 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

 MAINLINE Tc(MIN) =  11.98
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.764
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        5.10      0.30       1.00    84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     5.10   SUBAREA RUNOFF(CFS) =    15.90
 EFFECTIVE AREA(ACRES) =     7.10   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      7.10   PEAK FLOW RATE(CFS) =     22.14

****************************************************************************
 FLOW PROCESS FROM NODE       7.40 TO NODE       7.90 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<

 ELEVATION DATA: UPSTREAM(FEET) =   1114.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.0591
 CHANNEL FLOW THRU SUBAREA(CFS) =     22.14
 FLOW VELOCITY(FEET/SEC) =   7.49 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  12.96
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE      7.90 =  1540.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.90 TO NODE       7.90 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.96
 RAINFALL INTENSITY(INCH/HR) =   3.59
 AREA-AVERAGED Fm(INCH/HR) =  0.30
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AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 7.10
TOTAL STREAM AREA(ACRES) = 7.10
PEAK FLOW RATE(CFS) AT CONFLUENCE = 22.14

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	297.47	8.35	4.649	0.22(0.19)	0.86	74.2	305.00
1	301.69	8.72	4.538	0.22(0.19)	0.86	77.1	307.00
1	315.16	10.32	4.095	0.22(0.19)	0.85	89.7	208.00
1	318.09	10.55	4.050	0.22(0.19)	0.85	91.6	123.00
1	319.44	10.74	4.012	0.23(0.19)	0.85	92.9	213.00
1	320.08	10.86	3.988	0.23(0.19)	0.85	93.7	112.00
1	322.01	11.26	3.907	0.23(0.19)	0.85	96.3	223.00
1	322.11	11.38	3.884	0.23(0.19)	0.85	96.9	311.00
1	322.10	11.43	3.874	0.23(0.19)	0.85	97.2	118.00
1	322.01	11.51	3.859	0.23(0.19)	0.85	97.6	221.00
1	320.88	12.04	3.753	0.23(0.19)	0.84	100.1	106.00
1	320.79	12.06	3.747	0.23(0.19)	0.84	100.3	207.00
1	320.30	12.18	3.723	0.23(0.19)	0.84	100.8	121.00
1	320.16	12.22	3.717	0.23(0.19)	0.84	100.9	115.00
1	318.75	12.48	3.663	0.23(0.19)	0.84	102.1	211.00
1	318.56	12.60	3.646	0.23(0.19)	0.84	102.5	216.00
1	318.18	12.72	3.629	0.23(0.19)	0.84	102.9	104.00
1	315.87	13.28	3.547	0.23(0.19)	0.84	104.6	309.00
1	315.80	13.30	3.545	0.23(0.19)	0.84	104.7	226.00
1	314.84	13.47	3.520	0.23(0.19)	0.84	105.1	209.00
1	314.32	13.56	3.508	0.23(0.19)	0.84	105.4	101.00
1	314.09	13.59	3.503	0.23(0.19)	0.84	105.4	303.00
1	308.45	14.27	3.405	0.23(0.19)	0.84	106.7	301.00
1	307.94	14.33	3.397	0.23(0.19)	0.84	106.8	108.00
1	301.77	14.93	3.310	0.23(0.19)	0.84	107.6	113.00
1	282.56	17.35	3.036	0.23(0.20)	0.84	110.5	204.00
1	279.68	17.76	2.997	0.23(0.20)	0.84	110.9	1.00
1	278.16	17.95	2.980	0.23(0.20)	0.84	111.0	201.00
2	22.14	12.96	3.594	0.30(0.30)	1.00	7.1	7.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	316.29	8.35	4.649	0.23(0.20)	0.87	78.7	305.00
2	320.86	8.72	4.538	0.23(0.20)	0.87	81.9	307.00
3	335.47	10.32	4.095	0.23(0.20)	0.86	95.4	208.00
4	338.61	10.55	4.050	0.23(0.20)	0.86	97.4	123.00
5	340.11	10.74	4.012	0.23(0.20)	0.86	98.8	213.00
6	340.85	10.86	3.988	0.23(0.20)	0.86	99.6	112.00
7	343.08	11.26	3.907	0.23(0.20)	0.86	102.5	223.00
8	343.26	11.38	3.884	0.23(0.20)	0.86	103.2	311.00
9	343.28	11.43	3.874	0.23(0.20)	0.86	103.5	118.00
10	343.24	11.51	3.859	0.23(0.20)	0.86	103.9	221.00
11	342.43	12.04	3.753	0.23(0.20)	0.85	106.7	106.00
12	342.36	12.06	3.747	0.23(0.20)	0.85	106.9	207.00
13	341.93	12.18	3.723	0.23(0.20)	0.85	107.5	121.00
14	341.80	12.22	3.717	0.23(0.20)	0.85	107.6	115.00
15	340.52	12.48	3.663	0.23(0.20)	0.85	108.9	211.00
16	340.42	12.60	3.646	0.23(0.20)	0.85	109.4	216.00
17	340.13	12.72	3.629	0.23(0.20)	0.85	109.9	104.00
18	339.33	12.96	3.594	0.23(0.20)	0.85	110.7	7.10
19	337.70	13.28	3.547	0.23(0.20)	0.85	111.7	309.00
20	337.61	13.30	3.545	0.23(0.20)	0.85	111.8	226.00
21	336.48	13.47	3.520	0.24(0.20)	0.85	112.2	209.00
22	335.88	13.56	3.508	0.24(0.20)	0.85	112.5	101.00
23	335.62	13.59	3.503	0.24(0.20)	0.85	112.5	303.00
24	329.32	14.27	3.405	0.24(0.20)	0.85	113.8	301.00
25	328.75	14.33	3.397	0.24(0.20)	0.85	113.9	108.00
26	321.99	14.93	3.310	0.24(0.20)	0.85	114.7	113.00
27	300.94	17.35	3.036	0.24(0.20)	0.85	117.6	204.00
28	297.81	17.76	2.997	0.24(0.20)	0.85	118.0	1.00
29	296.17	17.95	2.980	0.24(0.20)	0.85	118.1	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 343.28 Tc(MIN.) = 11.43
EFFECTIVE AREA(ACRES) = 103.47 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 118.10
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.90 = 4980.00 FEET.

****
FLOW PROCESS FROM NODE 7.90 TO NODE 8.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 1088.00 DOWNSTREAM(FEET) = 1038.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0410
CHANNEL FLOW THRU SUBAREA(CFS) = 343.28
FLOW VELOCITY(FEET/SEC) = 14.06 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.45 Tc(MIN.) = 12.88
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 8.00 = 6200.00 FEET.

****
FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN) = 12.88
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.606
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	25.80	0.20	1.00	96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 25.80 SUBAREA RUNOFF(CFS) = 79.08
EFFECTIVE AREA(ACRES) = 129.27 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.88

```
 TOTAL AREA(ACRES) =   143.90       PEAK FLOW RATE(CFS) =     396.36

****************************************************************************
 FLOW PROCESS FROM NODE       8.00 TO NODE     459.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1038.00  DOWNSTREAM(FEET) =   1018.30
 CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.0313
 CHANNEL FLOW THRU SUBAREA(CFS) =    396.36
 FLOW VELOCITY(FEET/SEC) =  12.86 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  13.69
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    459.00 =  6830.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.69
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.488
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        8.60      0.20       1.00    96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    8.60     SUBAREA RUNOFF(CFS) =   25.45
 EFFECTIVE AREA(ACRES) =   137.87   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.89
 TOTAL AREA(ACRES) =   152.50       PEAK FLOW RATE(CFS) =    408.13

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    389.85  10.66    4.028  0.22( 0.20) 0.91   113.1     305.00
     2    393.13  11.03    3.954  0.22( 0.20) 0.91   116.3     307.00
     3    402.58  12.60    3.646  0.22( 0.20) 0.90   129.8     208.00
     4    405.07  12.82    3.614  0.22( 0.20) 0.90   131.8     123.00
     5    406.15  13.01    3.587  0.22( 0.20) 0.90   133.2     213.00
     6    406.65  13.13    3.570  0.22( 0.20) 0.90   134.0     112.00
     7    408.15  13.53    3.512  0.22( 0.20) 0.89   136.9     223.00
     8    408.17  13.64    3.495  0.22( 0.20) 0.89   137.6     311.00
     9    408.13  13.69    3.488  0.22( 0.20) 0.89   137.9     118.00
    10    408.00  13.77    3.477  0.22( 0.20) 0.89   138.3     221.00
    11    406.65  14.30    3.401  0.22( 0.20) 0.89   141.1     106.00
    12    406.56  14.33    3.397  0.22( 0.20) 0.89   141.3     207.00
    13    406.04  14.45    3.379  0.22( 0.20) 0.89   141.9     121.00
    14    405.89  14.48    3.375  0.22( 0.20) 0.89   142.0     115.00
    15    404.45  14.75    3.336  0.22( 0.20) 0.89   143.3     211.00
    16    403.77  14.86    3.319  0.22( 0.20) 0.89   143.8     216.00
    17    402.79  14.99    3.302  0.22( 0.20) 0.89   144.3     104.00
    18    401.59  15.23    3.274  0.23( 0.20) 0.89   145.1       7.10
    19    399.51  15.56    3.237  0.23( 0.20) 0.89   146.1     309.00
    20    399.40  15.57    3.236  0.23( 0.20) 0.89   146.2     226.00
    21    398.08  15.75    3.216  0.23( 0.20) 0.89   146.6     209.00
    22    397.38  15.84    3.206  0.23( 0.20) 0.89   146.9     101.00
    23    397.08  15.87    3.203  0.23( 0.20) 0.89   146.9     303.00
    24    390.15  16.56    3.125  0.23( 0.20) 0.88   148.2     301.00
    25    389.53  16.62    3.119  0.23( 0.20) 0.88   148.3     108.00
    26    382.29  17.24    3.049  0.23( 0.20) 0.88   149.1     113.00
    27    358.98  19.71    2.825  0.23( 0.20) 0.88   152.0     204.00
    28    355.16  20.12    2.791  0.23( 0.20) 0.88   152.4       1.00
    29    353.26  20.32    2.776  0.23( 0.20) 0.88   152.5     201.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    408.17  Tc(MIN.) =  13.64
 AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.89  EFFECTIVE AREA(ACRES) =    137.58

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.64
 RAINFALL INTENSITY(INCH/HR) =   3.50
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.89
 EFFECTIVE STREAM AREA(ACRES) =  137.58
 TOTAL STREAM AREA(ACRES) =  152.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    408.17

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN.) =  10.46   RAINFALL INTENSITY(INCH/HR) =  4.07
 EFFECTIVE AREA(ACRES) =    39.30
 TOTAL AREA(ACRES) =    43.50        PEAK FLOW RATE(CFS) =    147.80
 AREA-AVERAGED Fm(INCH/HR) =   0.14  AREA-AVERAGED Fp(INCH/HR) =   0.25
 AREA-AVERAGED Ap =  0.54
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
       CONFLUENCE ANALYSES.

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.46
 RAINFALL INTENSITY(INCH/HR) =   4.07
 AREA-AVERAGED Fm(INCH/HR) =  0.14
```

DATA FROM AREA 'E'

AREA-AVERAGED Fp(INCH/HR) = 0.25
AREA-AVERAGED Ap = 0.54
EFFECTIVE STREAM AREA(ACRES) = 39 30
TOTAL STREAM AREA(ACRES) = 43.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 147.80

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	389.85	10.66	4.028	0.22(0.20)	0.91	113.1	305.00
1	393.13	11.03	3.954	0.22(0.20)	0.91	116.3	307.00
1	402.58	12.60	3.646	0.22(0.20)	0.90	129.8	208.00
1	405.07	12.82	3.614	0.22(0.20)	0.90	131.8	123.00
1	406.15	13.01	3.587	0.22(0.20)	0.90	133.2	213.00
1	406.65	13.13	3.570	0.22(0.20)	0.90	134.0	112.00
1	408.15	13.53	3.512	0.22(0.20)	0.89	136.9	223.00
1	408.17	13.64	3.495	0.22(0.20)	0.89	137.6	311.00
1	408.13	13.69	3.488	0.22(0.20)	0.89	137.9	118.00
1	408.00	13.77	3.477	0.22(0.20)	0.89	138.3	221.00
1	406.65	14.30	3.401	0.22(0.20)	0.89	141.1	106.00
1	406.56	14.33	3.397	0.22(0.20)	0.89	141.3	207.00
1	406.04	14.45	3.379	0.22(0.20)	0.89	141.9	121.00
1	405.89	14.48	3.375	0.22(0.20)	0.89	142.0	115.00
1	404.45	14.75	3.336	0.22(0.20)	0.89	143.3	211.00
1	403.77	14.86	3.319	0.22(0.20)	0.89	143.8	216.00
1	402.79	14.99	3.302	0.22(0.20)	0.89	144.3	104.00
1	401.59	15.23	3.274	0.23(0.20)	0.89	145.1	7.10
1	399.51	15.56	3.237	0.23(0.20)	0.89	146.1	309.00
1	399.40	15.57	3.236	0.23(0.20)	0.89	146.2	226.00
1	398.08	15.75	3.216	0.23(0.20)	0.89	146.6	209.00
1	397.38	15.84	3.206	0.23(0.20)	0.89	146.9	101.00
1	397.08	15.87	3.203	0.23(0.20)	0.89	146.9	303.00
1	390.15	16.56	3.125	0.23(0.20)	0.88	148.2	301.00
1	389.53	16.62	3.119	0.23(0.20)	0.88	148.3	108.00
1	382.29	17.24	3.049	0.23(0.20)	0.88	149.1	113.00
1	358.98	19.71	2.825	0.23(0.20)	0.88	152.0	204.00
1	355.16	20.12	2.791	0.23(0.20)	0.88	152.4	1.00
1	353.26	20.32	2.776	0.23(0.20)	0.88	152.5	201.00
2	147.80	10.46	4.068	0.25(0.14)	0.54	39.3	459.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	534.32	10.46	4.068	0.22(0.18)	0.81	150.3	459.00
2	536.14	10.66	4.028	0.22(0.18)	0.82	152.4	305.00
3	536.66	11.03	3.954	0.22(0.18)	0.82	155.6	307.00
4	534.51	12.60	3.646	0.23(0.18)	0.82	169.1	208.00
5	535.80	12.82	3.614	0.23(0.18)	0.82	171.1	123.00
6	535.86	13.01	3.587	0.23(0.18)	0.81	172.5	213.00
7	535.73	13.13	3.570	0.23(0.18)	0.81	173.3	112.00
8	535.07	13.53	3.512	0.23(0.18)	0.81	176.2	223.00
9	534.45	13.64	3.495	0.23(0.18)	0.81	176.9	311.00
10	534.13	13.69	3.488	0.23(0.18)	0.81	177.2	118.00
11	533.60	13.77	3.477	0.23(0.18)	0.81	177.6	221.00
12	529.37	14.30	3.401	0.23(0.19)	0.81	180.4	106.00
13	529.14	14.33	3.397	0.23(0.19)	0.81	180.6	207.00
14	527.96	14.45	3.379	0.23(0.19)	0.81	181.2	121.00
15	527.64	14.48	3.375	0.23(0.19)	0.81	181.3	115.00
16	524.73	14.75	3.336	0.23(0.19)	0.81	182.6	211.00
17	523.44	14.86	3.319	0.23(0.19)	0.81	183.1	216.00
18	521.81	14.99	3.302	0.23(0.19)	0.81	183.6	104.00
19	519.56	15.23	3.274	0.23(0.19)	0.81	184.4	7.10
20	516.09	15.56	3.237	0.23(0.19)	0.81	185.4	309.00
21	515.92	15.57	3.236	0.23(0.19)	0.81	185.5	226.00
22	513.87	15.75	3.216	0.23(0.19)	0.81	185.9	209.00
23	512.80	15.84	3.206	0.23(0.19)	0.81	186.2	101.00
24	512.37	15.87	3.203	0.23(0.19)	0.81	186.2	303.00
25	502.51	16.56	3.125	0.23(0.19)	0.81	187.5	301.00
26	501.65	16.62	3.119	0.23(0.19)	0.81	187.6	108.00
27	491.81	17.24	3.049	0.23(0.19)	0.81	188.4	113.00
28	460.08	19.71	2.825	0.23(0.19)	0.81	191.3	204.00
29	454.96	20.12	2.791	0.23(0.19)	0.81	191.7	1.00
30	452.50	20.32	2.776	0.23(0.19)	0.81	191.8	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 536.66 Tc(MIN.) = 11.03
EFFECTIVE AREA(ACRES) = 155.62 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 196.00
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 459.00 = 6830.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 196.00 TC(MIN.) = 11.03
EFFECTIVE AREA(ACRES) = 155.62 AREA-AVERAGED Fm(INCH/HR)= 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.82
PEAK FLOW RATE(CFS) = 536.66

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	534.32	10.46	4.068	0.22(0.18)	0.81	150.3	459.00
2	536.14	10.66	4.028	0.22(0.18)	0.82	152.4	305.00
3	536.66	11.03	3.954	0.22(0.18)	0.82	155.6	307.00
4	534.51	12.60	3.646	0.23(0.18)	0.82	169.1	208.00
5	535.80	12.82	3.614	0.23(0.18)	0.82	171.1	123.00
6	535.86	13.01	3.587	0.23(0.18)	0.81	172.5	213.00
7	535.73	13.13	3.570	0.23(0.18)	0.81	173.3	112.00
8	535.07	13.53	3.512	0.23(0.18)	0.81	176.2	223.00
9	534.45	13.64	3.495	0.23(0.18)	0.81	176.9	311.00
10	534.13	13.69	3.488	0.23(0.18)	0.81	177.2	118.00
11	533.60	13.77	3.477	0.23(0.18)	0.81	177.6	221.00
12	529.37	14.30	3.401	0.23(0.19)	0.81	180.4	106.00
13	529.14	14.33	3.397	0.23(0.19)	0.81	180.6	207.00
14	527.96	14.45	3.379	0.23(0.19)	0.81	181.2	121.00
15	527.64	14.48	3.375	0.23(0.19)	0.81	181.3	115.00
16	524.73	14.75	3.336	0.23(0.19)	0.81	182.6	211.00
17	523.44	14.86	3.319	0.23(0.19)	0.81	183.1	216.00
18	521.81	14.99	3.302	0.23(0.19)	0.81	183.6	104.00
19	519.56	15.23	3.274	0.23(0.19)	0.81	184.4	7.10

20	516.09	15.56	3.237	0.23(0.19)	0.81	185.4	309.00
21	515.92	15.57	3.236	0.23(0.19)	0.81	185.5	226.00
22	513.87	15.75	3.216	0.23(0.19)	0.81	185.9	209.00
23	512.80	15.84	3.206	0.23(0.19)	0.81	186.2	101.00
24	512.37	15.87	3.203	0.23(0.19)	0.81	186.2	303.00
25	502.51	16.56	3.125	0.23(0.19)	0.81	187.5	301.00
26	501.65	16.62	3.119	0.23(0.19)	0.81	187.6	108.00
27	491.81	17.24	3.049	0.23(0.19)	0.81	188.4	113.00
28	460.08	19.71	2.825	0.23(0.19)	0.81	191.3	204.00
29	454.96	20.12	2.791	0.23(0.19)	0.81	191.7	1.00
30	452.50	20.32	2.776	0.23(0.19)	0.81	191.8	201.00

END OF RATIONAL METHOD ANALYSIS

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* w.o. #1665-1, t.t. 15230, saddleback meadows                           *
* 100-yr storm                                                           *
* area "D"                                                               *
 **************************************************************************

  FILE NAME: D-DEV.DAT
  TIME/DATE OF STUDY: 10:11 07/16/2001

  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO  STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)   (FT)   (FT)    (n)
 1   24.0     19.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150
 2   20.0     15.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150
 3   18.0     13.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE     314.00 TO NODE     315.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

  INITIAL SUBAREA FLOW-LENGTH(FEET) =  265.00
  ELEVATION DATA: UPSTREAM(FEET) =  1410.00  DOWNSTREAM(FEET) =  1392.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  5.000
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.187
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        0.30      0.30       0.10     76    5.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      1.66
  TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      1.66

**************************************************************************
  FLOW PROCESS FROM NODE     315.00 TO NODE     316.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<

  UPSTREAM ELEVATION(FEET) = 1392.00  DOWNSTREAM ELEVATION(FEET) = 1337.50
  STREET LENGTH(FEET) =  530.00  CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.017
  OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    7.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =  1.59  Tc(MIN.) =  6.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.371
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.60      0.30       0.10     76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    0.60     SUBAREA RUNOFF(CFS) =    2.88
  EFFECTIVE AREA(ACRES) =    0.90     AREA-AVERAGED Fm(INCH/HR) =  0.03
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =    0.90        PEAK FLOW RATE(CFS) =      4.33

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27  HALFSTREET FLOOD WIDTH(FEET) =  8.34
  FLOW VELOCITY(FEET/SEC.) =  6.07  DEPTH*VELOCITY(FT*FT/SEC.) =  1.65
  LONGEST FLOWPATH FROM NODE     314.00 TO NODE     316.00 =  795.00 FEET.
```

```
**************************************************************************
 FLOW PROCESS FROM NODE    316.00 TO NODE    317.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1337.50  DOWNSTREAM(FEET) =  1320.00
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.20
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      4.33
 PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   6.78
 LONGEST FLOWPATH FROM NODE    314.00 TO NODE    317.00 =   945.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    317.00 TO NODE    323.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1320.00  DOWNSTREAM(FEET) =  1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   730.00   CHANNEL SLOPE =  0.2466
 CHANNEL FLOW THRU SUBAREA(CFS) =      4.33
 FLOW VELOCITY(FEET/SEC) =  4.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =  2.69   Tc(MIN.) =  9.46
 LONGEST FLOWPATH FROM NODE    314.00 TO NODE    323.00 =  1675.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  9.46
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.319
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       8.00      0.20       1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   8.00    SUBAREA RUNOFF(CFS) =   29.66
 EFFECTIVE AREA(ACRES) =   8.90   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =   8.90      PEAK FLOW RATE(CFS) =      33.13

**************************************************************************
 FLOW PROCESS FROM NODE    323.00 TO NODE    323.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.46
 RAINFALL INTENSITY(INCH/HR) =   4.32
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.91
 EFFECTIVE STREAM AREA(ACRES) =    8.90
 TOTAL STREAM AREA(ACRES) =    8.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     33.13

**************************************************************************
 FLOW PROCESS FROM NODE    318.00 TO NODE    319.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1649.00  DOWNSTREAM(FEET) =   1490.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.849
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.797
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       0.70      0.20       1.00     96    7.85
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.90
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.90

**************************************************************************
 FLOW PROCESS FROM NODE    319.00 TO NODE    320.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.1667
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL).
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.90
 FLOW VELOCITY(FEET/SEC) =   3.02 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =   9.17
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    320.00 =   540.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    320.00 TO NODE    320.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  9.17
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.405
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.60      0.20      1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.60      SUBAREA RUNOFF(CFS) =    17.41
 EFFECTIVE AREA(ACRES) =     5.30    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     5.30        PEAK FLOW RATE(CFS) =      20.06

****************************************************************************
 FLOW PROCESS FROM NODE     320.00 TO NODE     321.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE =  0.1806
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     20.06
 FLOW VELOCITY(FEET/SEC) =   5.89 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.04   Tc(MIN.) =  11.21
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     321.00 =  1260.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     321.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.21
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.918
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        5.10      0.20      1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     5.10      SUBAREA RUNOFF(CFS) =    17.07
 EFFECTIVE AREA(ACRES) =    10.40    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     10.40       PEAK FLOW RATE(CFS) =      34.80

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     322.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1455
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     34.80
 FLOW VELOCITY(FEET/SEC) =   6.63 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.76   Tc(MIN.) =  13.97
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     322.00 =  2360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     322.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.97
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.448
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       16.40      0.20      1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    16.40      SUBAREA RUNOFF(CFS) =    47.94
 EFFECTIVE AREA(ACRES) =    26.80    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     26.80       PEAK FLOW RATE(CFS) =      78.34

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     323.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1160.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.0952
 CHANNEL FLOW THRU SUBAREA(CFS) =     78.34
 FLOW VELOCITY(FEET/SEC) =  13.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.26   Tc(MIN.) =  14.23
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     323.00 =  2570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.23
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.411
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        1.00      0.20      1.00     96
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     1.00      SUBAREA RUNOFF(CFS) =     2.89
 EFFECTIVE AREA(ACRES) =    27.80    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     27.80       PEAK FLOW RATE(CFS) =      80.34

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 14.23
RAINFALL INTENSITY(INCH/HR) = 3.41
AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 27.80
TOTAL STREAM AREA(ACRES) = 27.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 80.34

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	33.13	9.46	4.319	0.20(0.18)	0.91	8.9	314.00
2	80.34	14.23	3.411	0.20(0.20)	1.00	27.8	318.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	101.66	9.46	4.319	0.20(0.19)	0.97	27.4	314.00
2	106.19	14.23	3.411	0.20(0.20)	0.98	36.7	318.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 106.19 Tc(MIN.) = 14.23
EFFECTIVE AREA(ACRES) = 36.70 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 36.70
LONGEST FLOWPATH FROM NODE 318.00 TO NODE 323.00 = 2570.00 FEET.

```
****************************************************************************
FLOW PROCESS FROM NODE    323.00 TO NODE    324.00 IS CODE = 52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
```

ELEVATION DATA: UPSTREAM(FEET) = 1140.00 DOWNSTREAM(FEET) = 1090.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 630.00 CHANNEL SLOPE = 0.0794
CHANNEL FLOW THRU SUBAREA(CFS) = 106.19
FLOW VELOCITY(FEET/SEC) = 13.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.77 Tc(MIN.) = 15.00
LONGEST FLOWPATH FROM NODE 318.00 TO NODE 324.00 = 3200.00 FEET.

```
****************************************************************************
FLOW PROCESS FROM NODE    324.00 TO NODE    324.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

MAINLINE Tc(MIN) = 15.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.300

SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	9.30	0.20	1.00	96

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 9.30 SUBAREA RUNOFF(CFS) = 25.95
EFFECTIVE AREA(ACRES) = 46.00 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 46.00 PEAK FLOW RATE(CFS) = 128.47

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	129.28	10.24	4.111	0.20(0.20)	0.98	36.7	314.00
2	128.47	15.00	3.300	0.20(0.20)	0.98	46.0	318.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 129.28 Tc(MIN.) = 10.24
AREA-AVERAGED Fm(INCH/HR) = 0.20 AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 36.69

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 46.00 TC(MIN.) = 10.24
EFFECTIVE AREA(ACRES) = 36.69 AREA-AVERAGED Fm(INCH/HR)= 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
PEAK FLOW RATE(CFS) = 129.28

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	129.28	10.24	4.111	0.20(0.20)	0.98	36.7	314.00
2	128.47	15.00	3.300	0.20(0.20)	0.98	46.0	318.00

END OF RATIONAL METHOD ANALYSIS

1

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
               (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                          Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* W.O. #1665-1, TRACT 15230 SADDLEBACK MEADOWS                            *
* AREA "E" WITH CONFLUENCE @ NODE 8                                       *
* 100-YEAR DEVELOPED CONDITION                                            *
 **************************************************************************

  FILE NAME: H:\AES96\HYDROSFT\RATSC6\D\1665\15230\E-DEV.HC1
  TIME/DATE OF STUDY: 20:20   4/21/1999
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO    STREET-CROSSFALL:    CURB . GUTTER-GEOMETRIES:   MANNING
     WIDTH   CROSSFALL   IN-  / OUT-/PARK-   HEIGHT  WIDTH  LIP    HIKE   FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY     (FT)    (FT)   (FT)   (FT)     (n)
===  =====  ==========  ======================  ====  =====  =====  =====  =======
  1   24.0      19.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  2   20.0      15.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
  3   18.0      13.0     .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  -.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
  ELEVATION DATA: UPSTREAM(FEET) =   1325.00  DOWNSTREAM(FEET) =   1322.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.803
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.218
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

68

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL "5-7 DWELLINGS/ACRE"	D	1.50	.20	.50	91	9.80

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = .50
SUBAREA RUNOFF(CFS) = 5.56
TOTAL AREA(ACRES) = 1.50 PEAK FLOW RATE(CFS) = 5.56

****
FLOW PROCESS FROM NODE 402.00 TO NODE 403.00 IS CODE = 6.3

>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 3 USED)<<<<<
==========

UPSTREAM ELEVATION(FEET) = 1322.60 DOWNSTREAM ELEVATION(FEET) = 1320.10
STREET LENGTH(FEET) = 245.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 13.00
INSIDE STREET CROSSFALL(DECIMAL) = .017
OUTSIDE STREET CROSSFALL(DECIMAL) = .017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = .020
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = .40

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.25
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = .36
HALFSTREET FLOOD WIDTH(FEET) = 13.58
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.44
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = .88
STREET FLOW TRAVEL TIME(MIN.) = 1.67 Tc(MIN.) = 11.48
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.865
SUBAREA LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	1.00	.30	.50	76
RESIDENTIAL "5-7 DWELLINGS/ACRE"	D	.60	.20	.50	91

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .26
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = .50
SUBAREA AREA(ACRES) = 1.60 SUBAREA RUNOFF(CFS) = 5.38
EFFECTIVE AREA(ACRES) = 3.10 AREA-AVERAGED Fm(INCH/HR) = .12
AREA-AVERAGED Fp(INCH/HR) = .23 AREA-AVERAGED Ap = .50
TOTAL AREA(ACRES) = 3.10 PEAK FLOW RATE(CFS) = 10.46

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = .38 HALFSTREET FLOOD WIDTH(FEET) = 14.90
FLOW VELOCITY(FEET/SEC.) = 2.60 DEPTH*VELOCITY(FT*FT/SEC.) = 1.00

****
FLOW PROCESS FROM NODE 403.00 TO NODE 408.00 IS CODE = 6.2

>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 2 USED)<<<<<
==========

UPSTREAM ELEVATION(FEET) = 1320.10 DOWNSTREAM ELEVATION(FEET) = 1288.50
STREET LENGTH(FEET) = 320.00 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 20.00

```
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.61
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =   .35
  HALFSTREET FLOOD WIDTH(FEET) =   13.03
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.42
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.61
 STREET FLOW TRAVEL TIME(MIN.) =    .72   Tc(MIN.) =  12.19
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.721
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK            B         .70       .30        .25    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .25
 SUBAREA AREA(ACRES) =     .70      SUBAREA RUNOFF(CFS) =    2.30
 EFFECTIVE AREA(ACRES) =    3.80    AREA-AVERAGED Fm(INCH/HR) =   .11
 AREA-AVERAGED Fp(INCH/HR) =   .24  AREA-AVERAGED Ap =   .45
 TOTAL AREA(ACRES) =    3.80        PEAK FLOW RATE(CFS) =      12.36

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .36   HALFSTREET FLOOD WIDTH(FEET) =  13.38
 FLOW VELOCITY(FEET/SEC.) =  7.52   DEPTH*VELOCITY(FT*FT/SEC.) =   2.69

****************************************************************************
 FLOW PROCESS FROM NODE    408.00 TO NODE    408.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    404.00 TO NODE    405.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1306.00  DOWNSTREAM(FEET) =   1301.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.149
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.412
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         D        1.00       .20        .60    91    9.15
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
 SUBAREA RUNOFF(CFS) =      3.86
 TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      3.86

****************************************************************************
 FLOW PROCESS FROM NODE    405.00 TO NODE    408.00 IS CODE =  6.2
----------------------------------------------------------------------------
```

70

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    >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
 ==========================================================================
  UPSTREAM ELEVATION(FEET) = 1301.00  DOWNSTREAM ELEVATION(FEET) = 1287.20
  STREET LENGTH(FEET) =   540.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =   .017
  OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =   .020

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.26
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =   .38
    HALFSTREET FLOOD WIDTH(FEET) =   14.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.58
  STREET FLOW TRAVEL TIME(MIN.) =   2.19   Tc(MIN.) =  11.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.892
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.20       .30        .50    76
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       D         .40       .20        .50    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .28
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
  SUBAREA AREA(ACRES) =    2.60      SUBAREA RUNOFF(CFS) =    8.77
  EFFECTIVE AREA(ACRES) =    3.60    AREA-AVERAGED Fm(INCH/HR) =   .14
  AREA-AVERAGED Fp(INCH/HR) =   .26  AREA-AVERAGED Ap =   .53
  TOTAL AREA(ACRES) =    3.60       PEAK FLOW RATE(CFS) =      12.17

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  .43   HALFSTREET FLOOD WIDTH(FEET) =  17.44
  FLOW VELOCITY(FEET/SEC.) =  4.50   DEPTH*VELOCITY(FT*FT/SEC.) =   1.92

****************************************************************************
  FLOW PROCESS FROM NODE    408.00 TO NODE    408.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 ==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.34
  RAINFALL INTENSITY(INCH/HR) =   3.89
  AREA-AVERAGED Fm(INCH/HR) =   .14
  AREA-AVERAGED Fp(INCH/HR) =   .26
  AREA-AVERAGED Ap =   .53
  EFFECTIVE STREAM AREA(ACRES) =    3.60
  TOTAL STREAM AREA(ACRES) =    3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.17

****************************************************************************
  FLOW PROCESS FROM NODE    406.00 TO NODE    407.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ==========================================================================
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1306.00  DOWNSTREAM(FEET) =   1301.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.429
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.329
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.10       .20        .60    91    9.43
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
 SUBAREA RUNOFF(CFS) =      4.17
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.17

****************************************************************************
 FLOW PROCESS FROM NODE    407.00 TO NODE    408.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1301.70  DOWNSTREAM ELEVATION(FEET) = 1287.20
 STREET LENGTH(FEET) =   550.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.64
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .36
   HALFSTREET FLOOD WIDTH(FEET) =   13.58
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.93
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.42
 STREET FLOW TRAVEL TIME(MIN.) =   2.33   Tc(MIN.) =  11.76
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.808
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        1.50       .30        .50    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =    1.50     SUBAREA RUNOFF(CFS) =    4.94
 EFFECTIVE AREA(ACRES) =    2.60   AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .25  AREA-AVERAGED Ap =   .54
 TOTAL AREA(ACRES) =    2.60       PEAK FLOW RATE(CFS) =       8.59

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .39   HALFSTREET FLOOD WIDTH(FEET) =  15.11
 FLOW VELOCITY(FEET/SEC.) =  4.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.61

****************************************************************************
 FLOW PROCESS FROM NODE    408.00 TO NODE    408.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

72

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TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  11.76
RAINFALL INTENSITY(INCH/HR) =   3.81
AREA-AVERAGED Fm(INCH/HR) =   .14
AREA-AVERAGED Fp(INCH/HR) =   .25
AREA-AVERAGED Ap =   .54
EFFECTIVE STREAM AREA(ACRES) =    2.60
TOTAL STREAM AREA(ACRES) =    2.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.59

** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      12.17  11.34     3.892    .26(  .14)  .53      3.6      404.00
    2       8.59  11.76     3.808    .25(  .14)  .54      2.6      406.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      20.64  11.34     3.892    .26(  .14)  .53      6.1      404.00
    2      20.48  11.76     3.808    .26(  .14)  .53      6.2      406.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     20.64    Tc(MIN.) =    11.34
EFFECTIVE AREA(ACRES) =     6.11   AREA-AVERAGED Fm(INCH/HR) =   .14
AREA-AVERAGED Fp(INCH/HR) =   .26  AREA-AVERAGED Ap =   .53
TOTAL AREA(ACRES) =      6.20

****************************************************************************
 FLOW PROCESS FROM NODE    408.00 TO NODE    408.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      20.64  11.34     3.892    .26(  .14)  .53      6.1      404.00
    2      20.48  11.76     3.808    .26(  .14)  .53      6.2      406.00

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      12.36  12.19     3.721    .24(  .11)  .45      3.8      401.00

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      32.67  11.34     3.892    .25(  .13)  .50      9.6      404.00
    2      32.69  11.76     3.808    .25(  .13)  .50      9.9      406.00
    3      32.36  12.19     3.721    .25(  .13)  .50     10.0      401.00
  TOTAL AREA(ACRES) =     10.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      32.69  Tc(MIN.) =   11.762
EFFECTIVE AREA(ACRES) =     9.87  AREA-AVERAGED Fm(INCH/HR) =   .13
AREA-AVERAGED Fp(INCH/HR) =   .25  AREA-AVERAGED Ap =   .50
```

```
 TOTAL AREA(ACRES) =      10.00

****************************************************************************
 FLOW PROCESS FROM NODE     408.00 TO NODE     408.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     408.00 TO NODE     413.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1283.00  DOWNSTREAM(FEET) =  1238.00
 FLOW LENGTH(FEET) =   460.00   MANNING'S N =  .013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.12
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     32.69
 PIPE TRAVEL TIME(MIN.) =     .36    Tc(MIN.) =  12.12

****************************************************************************
 FLOW PROCESS FROM NODE     413.00 TO NODE     413.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.12
 RAINFALL INTENSITY(INCH/HR) =   3.74
 AREA-AVERAGED Fm(INCH/HR) =    .13
 AREA-AVERAGED Fp(INCH/HR) =    .25
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =    9.87
 TOTAL STREAM AREA(ACRES) =   10.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.69

****************************************************************************
 FLOW PROCESS FROM NODE     409.00 TO NODE     410.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1288.50  DOWNSTREAM(FEET) =   1257.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.978
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.685
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B         .40       .30        .50    76    5.98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      1.99
 TOTAL AREA(ACRES) =       .40   PEAK FLOW RATE(CFS) =      1.99

****************************************************************************
 FLOW PROCESS FROM NODE     410.00 TO NODE     413.00 IS CODE =  6.2
```

74

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>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  2 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1257.00  DOWNSTREAM ELEVATION(FEET) = 1238.00
STREET LENGTH(FEET) =   190.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 20.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =    .017
OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL) =   .020

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.17
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =   .25
  HALFSTREET FLOOD WIDTH(FEET) =    7.29
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.54
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
STREET FLOW TRAVEL TIME(MIN.) =    .57   Tc(MIN.) =   6.55
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.390
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
PUBLIC PARK                B         .20       .30        .85    76
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       D         .30       .20        .50    91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .64
SUBAREA AREA(ACRES) =     .50      SUBAREA RUNOFF(CFS) =    2.35
EFFECTIVE AREA(ACRES) =     .90    AREA-AVERAGED Fm(INCH/HR) =   .16
AREA-AVERAGED Fp(INCH/HR) =   .27  AREA-AVERAGED Ap =   .58
TOTAL AREA(ACRES) =     .90        PEAK FLOW RATE(CFS) =       4.24

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  .27   HALFSTREET FLOOD WIDTH(FEET) =   8.34
FLOW VELOCITY(FEET/SEC.) =  5.95   DEPTH*VELOCITY(FT*FT/SEC.) =   1.62

****************************************************************************
FLOW PROCESS FROM NODE    413.00 TO NODE    413.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   6.55
RAINFALL INTENSITY(INCH/HR) =   5.39
AREA-AVERAGED Fm(INCH/HR) =   .16
AREA-AVERAGED Fp(INCH/HR) =   .27
AREA-AVERAGED Ap =   .58
EFFECTIVE STREAM AREA(ACRES) =     .90
TOTAL STREAM AREA(ACRES) =     .90
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.24

****************************************************************************
FLOW PROCESS FROM NODE    411.00 TO NODE    412.00 IS CODE =  2.1
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1337.50  DOWNSTREAM(FEET) =   1307.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.190
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  B        .30       .30        .10     76    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      1.66
 TOTAL AREA(ACRES) =       .30   PEAK FLOW RATE(CFS) =      1.66

****************************************************************************
 FLOW PROCESS FROM NODE    412.00 TO NODE    413.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1307.00  DOWNSTREAM ELEVATION(FEET) = 1238.00
 STREET LENGTH(FEET) =   720.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 20.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.69
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =   .26
  HALFSTREET FLOOD WIDTH(FEET) =    7.87
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.69
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.50
 STREET FLOW TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =   7.11
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.101
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B         .70       .30        .50     76
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"       D         .20       .20        .40     91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .28
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .48
 SUBAREA AREA(ACRES) =      .90      SUBAREA RUNOFF(CFS) =    4.02
 EFFECTIVE AREA(ACRES) =    1.20     AREA-AVERAGED Fm(INCH/HR) =   .11
 AREA-AVERAGED Fp(INCH/HR) =   .28  AREA-AVERAGED Ap =   .38
 TOTAL AREA(ACRES) =    1.20        PEAK FLOW RATE(CFS) =       5.39

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .29   HALFSTREET FLOOD WIDTH(FEET) =   9.39
 FLOW VELOCITY(FEET/SEC.) =  6.19   DEPTH*VELOCITY(FT*FT/SEC.) =   1.80

****************************************************************************
 FLOW PROCESS FROM NODE    413.00 TO NODE    413.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

76

>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 7.11
RAINFALL INTENSITY(INCH/HR) = 5.10
AREA-AVERAGED Fm(INCH/HR) = .11
AREA-AVERAGED Fp(INCH/HR) = .28
AREA-AVERAGED Ap = .38
EFFECTIVE STREAM AREA(ACRES) = 1.20
TOTAL STREAM AREA(ACRES) = 1.20
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.39

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	32.67	11.70	3.819	.25(.13)	.50	9.6	404.00
1	32.69	12.12	3.735	.25(.13)	.50	9.9	406.00
1	32.36	12.56	3.652	.25(.13)	.50	10.0	401.00
2	4.24	6.55	5.390	.27(.16)	.58	.9	409.00
3	5.39	7.11	5.101	.28(.11)	.38	1.2	411.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	35.56	6.55	5.390	.26(.13)	.50	7.4	409.00
2	39.65	11.70	3.819	.25(.13)	.50	11.7	404.00
3	39.50	12.12	3.735	.25(.13)	.50	12.0	406.00
4	39.02	12.56	3.652	.25(.13)	.50	12.1	401.00
5	36.28	7.11	5.101	.26(.13)	.49	8.0	411.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39.65 Tc(MIN.) = 11.70
EFFECTIVE AREA(ACRES) = 11.74 AREA-AVERAGED Fm(INCH/HR) = .13
AREA-AVERAGED Fp(INCH/HR) = .25 AREA-AVERAGED Ap = .50
TOTAL AREA(ACRES) = 12.10

****
FLOW PROCESS FROM NODE 413.00 TO NODE 418.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1238.00 DOWNSTREAM(FEET) = 1232.50
FLOW LENGTH(FEET) = 50.00 MANNING'S N = .013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 23.00
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 39.65
PIPE TRAVEL TIME(MIN.) = .04 Tc(MIN.) = 11.74

****
FLOW PROCESS FROM NODE 418.00 TO NODE 418.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 414.00 TO NODE 415.00 IS CODE = 2.1

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1257.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.168
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.071
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"2 DWELLINGS/ACRE"          B          .50       .30        .70    76    7.17
RESIDENTIAL
"2 DWELLINGS/ACRE"          D          .70       .20        .70    91    7.17
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .24
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .70
SUBAREA RUNOFF(CFS) =      5.29
TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      5.29

****************************************************************************
FLOW PROCESS FROM NODE    415.00 TO NODE    418.00 IS CODE =  6.2
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  3 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1257.00  DOWNSTREAM ELEVATION(FEET) = 1234.60
STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =    .017
OUTSIDE STREET CROSSFALL(DECIMAL)  =    .017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =    .020

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.23
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =    .34
  HALFSTREET FLOOD WIDTH(FEET) =   12.57
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.30
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.17
STREET FLOW TRAVEL TIME(MIN.) =    .79   Tc(MIN.) =   7.96
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.763
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B         1.50       .30        .60    76
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        D          .40       .20        .60    91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .28
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
SUBAREA AREA(ACRES) =    1.90      SUBAREA RUNOFF(CFS) =    7.86
EFFECTIVE AREA(ACRES) =    3.10    AREA-AVERAGED Fm(INCH/HR) =   .17
AREA-AVERAGED Fp(INCH/HR) =   .26  AREA-AVERAGED Ap =   .64
TOTAL AREA(ACRES) =    3.10        PEAK FLOW RATE(CFS) =      12.82

END OF SUBAREA STREET FLOW HYDRAULICS:
```

78

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    DEPTH(FEET) =  .38   HALFSTREET FLOOD WIDTH(FEET) =  14.39
  FLOW VELOCITY(FEET/SEC.) =  6.81   DEPTH*VELOCITY(FT*FT/SEC.) =   2.56

****************************************************************************
  FLOW PROCESS FROM NODE    418.00 TO NODE    418.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.96
  RAINFALL INTENSITY(INCH/HR) =   4.76
  AREA-AVERAGED Fm(INCH/HR) =   .17
  AREA-AVERAGED Fp(INCH/HR) =   .26
  AREA-AVERAGED Ap =   .64
  EFFECTIVE STREAM AREA(ACRES) =    3.10
  TOTAL STREAM AREA(ACRES) =    3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.82

****************************************************************************
  FLOW PROCESS FROM NODE    416.00 TO NODE    417.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
  ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1271.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.062
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.734
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        D        1.20       .20        .60    91    8.06
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
  SUBAREA RUNOFF(CFS) =      4.98
  TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      4.98

****************************************************************************
  FLOW PROCESS FROM NODE    417.00 TO NODE    418.00 IS CODE =  6.2
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1271.50  DOWNSTREAM ELEVATION(FEET) = 1234.60
  STREET LENGTH(FEET) =   440.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =   .017
  OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =   .020

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =   .32
    HALFSTREET FLOOD WIDTH(FEET) =   11.14
```

```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =     6.34
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     2.03
 STREET FLOW TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =   9.22
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.391
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        1.00       .30        .50    76
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D         .30       .20        .60    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .27
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .52
 SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     4.97
 EFFECTIVE AREA(ACRES) =     2.50    AREA-AVERAGED Fm(INCH/HR) =    .13
 AREA-AVERAGED Fp(INCH/HR) =    .24  AREA-AVERAGED Ap =    .56
 TOTAL AREA(ACRES) =     2.50        PEAK FLOW RATE(CFS) =        9.58

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .34   HALFSTREET FLOOD WIDTH(FEET) =  12.46
 FLOW VELOCITY(FEET/SEC.) =  6.65   DEPTH*VELOCITY(FT*FT/SEC.) =   2.28

****************************************************************************
 FLOW PROCESS FROM NODE     418.00 TO NODE     418.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.22
 RAINFALL INTENSITY(INCH/HR) =   4.39
 AREA-AVERAGED Fm(INCH/HR) =    .13
 AREA-AVERAGED Fp(INCH/HR) =    .24
 AREA-AVERAGED Ap =    .56
 EFFECTIVE STREAM AREA(ACRES) =     2.50
 TOTAL STREAM AREA(ACRES) =     2.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.58

 ** CONFLUENCE DATA **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      12.82   7.96    4.763    .26(  .17)  .64      3.1      414.00
     2       9.58   9.22    4.391    .24(  .13)  .56      2.5      416.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      21.82   7.96    4.763    .25(  .15)  .61      5.3      414.00
     2      21.37   9.22    4.391    .25(  .15)  .60      5.6      416.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      21.82    Tc(MIN.) =      7.96
 EFFECTIVE AREA(ACRES) =      5.26   AREA-AVERAGED Fm(INCH/HR) =    .15
 AREA-AVERAGED Fp(INCH/HR) =    .25  AREA-AVERAGED Ap =    .61
 TOTAL AREA(ACRES) =       5.60

****************************************************************************
 FLOW PROCESS FROM NODE     418.00 TO NODE     418.00 IS CODE =  11
```

80

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21.82	7.96	4.763	.25(.15)	.61	5.3	414.00
2	21.37	9.22	4.391	.25(.15)	.60	5.6	416.00

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	35.56	6.59	5.371	.26(.13)	.50	7.4	409.00
2	36.28	7.15	5.082	.26(.13)	.49	8.0	411.00
3	39.65	11.74	3.812	.25(.13)	.50	11.7	404.00
4	39.50	12.16	3.728	.25(.13)	.50	12.0	406.00
5	39.02	12.59	3.646	.25(.13)	.50	12.1	401.00

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	58.70	7.96	4.763	.25(.14)	.54	13.9	414.00
2	59.16	9.22	4.391	.25(.14)	.54	15.3	416.00
3	55.99	6.59	5.371	.26(.14)	.54	11.8	409.00
4	57.22	7.15	5.082	.26(.14)	.54	12.7	411.00
5	58.10	11.74	3.812	.25(.13)	.53	17.3	404.00
6	57.52	12.16	3.728	.25(.13)	.53	17.6	406.00
7	56.63	12.59	3.646	.25(.13)	.53	17.7	401.00

TOTAL AREA(ACRES) = 17.70

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 59.16 Tc(MIN.) = 9.218
EFFECTIVE AREA(ACRES) = 15.26 AREA-AVERAGED Fm(INCH/HR) = .14
AREA-AVERAGED Fp(INCH/HR) = .25 AREA-AVERAGED Ap = .54
TOTAL AREA(ACRES) = 17.70

****
FLOW PROCESS FROM NODE 418.00 TO NODE 418.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 418.00 TO NODE 420.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1232.50 DOWNSTREAM(FEET) = 1203.00
FLOW LENGTH(FEET) = 300.00 MANNING'S N = .013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 17.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 24.17
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 59.16
PIPE TRAVEL TIME(MIN.) = .21 Tc(MIN.) = 9.43

****
FLOW PROCESS FROM NODE 420.00 TO NODE 420.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

```
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.43
 RAINFALL INTENSITY(INCH/HR) =    4.33
 AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =    .25
 AREA-AVERAGED Ap =    .54
 EFFECTIVE STREAM AREA(ACRES) =   15.26
 TOTAL STREAM AREA(ACRES) =   17.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      59.16

****************************************************************************
 FLOW PROCESS FROM NODE     419.00 TO NODE     420.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1234.00  DOWNSTREAM(FEET) =   1203.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.997
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.675
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE              GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D         .50       .20         .50    91    6.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .50
 SUBAREA RUNOFF(CFS) =      2.51
 TOTAL AREA(ACRES) =       .50   PEAK FLOW RATE(CFS) =      2.51

****************************************************************************
 FLOW PROCESS FROM NODE     420.00 TO NODE     420.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.00
 RAINFALL INTENSITY(INCH/HR) =    5.68
 AREA-AVERAGED Fm(INCH/HR) =    .10
 AREA-AVERAGED Fp(INCH/HR) =    .20
 AREA-AVERAGED Ap =    .50
 EFFECTIVE STREAM AREA(ACRES) =      .50
 TOTAL STREAM AREA(ACRES) =      .50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.51

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      58.70    8.17     4.702    .25(  .14)   .54     13.9     414.00
     1      59.16    9.43     4.330    .25(  .14)   .54     15.3     416.00
     1      55.99    6.80     5.263    .26(  .14)   .54     11.8     409.00
     1      57.22    7.35     4.975    .26(  .14)   .54     12.7     411.00
     1      58.10   11.95     3.771    .25(  .13)   .53     17.3     404.00
     1      57.52   12.37     3.686    .25(  .13)   .53     17.6     406.00
     1      56.63   12.80     3.616    .25(  .13)   .53     17.7     401.00
     2       2.51    6.00     5.675    .20(  .10)   .50       .5     419.00
```

82

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	58.32	6.80	5.263	.25(.14)	.53	12.3	409.00
2	59.41	7.35	4.975	.25(.14)	.53	13.2	411.00
3	60.77	8.17	4.702	.25(.14)	.54	14.4	414.00
4	61.07	9.43	4.330	.25(.14)	.53	15.8	416.00
5	59.75	11.95	3.771	.25(.13)	.53	17.8	404.00
6	59.14	12.37	3.686	.25(.13)	.53	18.1	406.00
7	58.21	12.80	3.616	.25(.13)	.53	18.2	401.00
8	55.89	6.00	5.675	.25(.14)	.53	10.9	419.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 61.07 Tc(MIN.) = 9.43
EFFECTIVE AREA(ACRES) = 15.76 AREA-AVERAGED Fm(INCH/HR) = .14
AREA-AVERAGED Fp(INCH/HR) = .25 AREA-AVERAGED Ap = .53
TOTAL AREA(ACRES) = 18.20

****
FLOW PROCESS FROM NODE 420.00 TO NODE 429.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1203.00 DOWNSTREAM(FEET) = 1197.00
FLOW LENGTH(FEET) = 65.00 MANNING'S N = .013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 18.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 23.59
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 61.07
PIPE TRAVEL TIME(MIN.) = .05 Tc(MIN.) = 9.47

****
FLOW PROCESS FROM NODE 429.00 TO NODE 429.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 421.00 TO NODE 422.00 IS CODE = 2.1

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 300.00
ELEVATION DATA: UPSTREAM(FEET) = 1231.00 DOWNSTREAM(FEET) = 1228.60

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.596
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.041
SUBAREA Tc AND LOSS RATE DATA(AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL "3-4 DWELLINGS/ACRE"	D	.30	.20	.60	91	10.60

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = .60
SUBAREA RUNOFF(CFS) = 1.06
TOTAL AREA(ACRES) = .30 PEAK FLOW RATE(CFS) = 1.06

```
****************************************************************************
 FLOW PROCESS FROM NODE    422.00 TO NODE    423.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1228.60  DOWNSTREAM ELEVATION(FEET) = 1225.20
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.48
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  .31
   HALFSTREET FLOOD WIDTH(FEET) =  10.74
   AVERAGE FLOW VELOCITY(FEET/SEC.) =  2.25
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  .71
 STREET FLOW TRAVEL TIME(MIN.) =  2.22  Tc(MIN.) =  12.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.615
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D         .90       .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  .50
 SUBAREA AREA(ACRES) =  .90   SUBAREA RUNOFF(CFS) =  2.85
 EFFECTIVE AREA(ACRES) =  1.20   AREA-AVERAGED Fm(INCH/HR) =  .10
 AREA-AVERAGED Fp(INCH/HR) =  .20  AREA-AVERAGED Ap =  .52
 TOTAL AREA(ACRES) =  1.20   PEAK FLOW RATE(CFS) =  3.79

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .35  HALFSTREET FLOOD WIDTH(FEET) =  12.87
 FLOW VELOCITY(FEET/SEC.) =  2.48  DEPTH*VELOCITY(FT*FT/SEC.) =  .87

****************************************************************************
 FLOW PROCESS FROM NODE    423.00 TO NODE    425.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1225.20  DOWNSTREAM ELEVATION(FEET) = 1207.40
 STREET LENGTH(FEET) =  300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.44
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  .31
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84

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      HALFSTREET FLOOD WIDTH(FEET) =   10.54
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   1.58
  STREET FLOW TRAVEL TIME(MIN.) =    .98   Tc(MIN.) =  13.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.474
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.10       .30        .50    76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
  SUBAREA AREA(ACRES) =    1.10      SUBAREA RUNOFF(CFS) =    3.29
  EFFECTIVE AREA(ACRES) =    2.30    AREA-AVERAGED Fm(INCH/HR) =   .13
  AREA-AVERAGED Fp(INCH/HR) =   .25  AREA-AVERAGED Ap =   .51
  TOTAL AREA(ACRES) =    2.30       PEAK FLOW RATE(CFS) =       6.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  .33   HALFSTREET FLOOD WIDTH(FEET) =  11.65
  FLOW VELOCITY(FEET/SEC.) =  5.43   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79

****************************************************************************
  FLOW PROCESS FROM NODE    425.00 TO NODE    425.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.79
  RAINFALL INTENSITY(INCH/HR) =   3.47
  AREA-AVERAGED Fm(INCH/HR) =   .13
  AREA-AVERAGED Fp(INCH/HR) =   .25
  AREA-AVERAGED Ap =   .51
  EFFECTIVE STREAM AREA(ACRES) =    2.30
  TOTAL STREAM AREA(ACRES) =    2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.93

****************************************************************************
  FLOW PROCESS FROM NODE    424.00 TO NODE    425.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1205.50  DOWNSTREAM(FEET) =   1203.20

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.686
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.023
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        .80       .30        .60    76   10.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
  SUBAREA RUNOFF(CFS) =      2.77
  TOTAL AREA(ACRES) =       .80   PEAK FLOW RATE(CFS) =      2.77

****************************************************************************
  FLOW PROCESS FROM NODE    425.00 TO NODE    425.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.69
RAINFALL INTENSITY(INCH/HR) = 4.02
AREA-AVERAGED Fm(INCH/HR) = .18
AREA-AVERAGED Fp(INCH/HR) = .30
AREA-AVERAGED Ap = .60
EFFECTIVE STREAM AREA(ACRES) = .80
TOTAL STREAM AREA(ACRES) = .80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.77

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6.93	13.79	3.474	.25(.13)	.51	2.3	421.00
2	2.77	10.69	4.023	.30(.18)	.60	.8	424.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9.30	13.79	3.474	.26(.14)	.54	3.1	421.00
2	9.02	10.69	4.023	.26(.14)	.54	2.6	424.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 9.30 Tc(MIN.) = 13.79
EFFECTIVE AREA(ACRES) = 3.10 AREA-AVERAGED Fm(INCH/HR) = .14
AREA-AVERAGED Fp(INCH/HR) = .26 AREA-AVERAGED Ap = .54
TOTAL AREA(ACRES) = 3.10

```
**********************************************************************
FLOW PROCESS FROM NODE    425.00 TO NODE    429.00 IS CODE =  3.1
----------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

ELEVATION DATA: UPSTREAM(FEET) = 1203.20 DOWNSTREAM(FEET) = 1200.00
FLOW LENGTH(FEET) = 70.00 MANNING'S N = .013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 8.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 11.65
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 9.30
PIPE TRAVEL TIME(MIN.) = .10 Tc(MIN.) = 13.89

```
**********************************************************************
FLOW PROCESS FROM NODE    429.00 TO NODE    429.00 IS CODE =  1
----------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.89
RAINFALL INTENSITY(INCH/HR) = 3.46
AREA-AVERAGED Fm(INCH/HR) = .14
AREA-AVERAGED Fp(INCH/HR) = .26
AREA-AVERAGED Ap = .54

86

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    EFFECTIVE STREAM AREA(ACRES) =     3.10
  TOTAL STREAM AREA(ACRES) =     3.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       9.30

****************************************************************************
  FLOW PROCESS FROM NODE     426.00 TO NODE     427.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1242.00  DOWNSTREAM(FEET) =   1231.60

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.902
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.781
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        D        1.60       .20        .60    91    7.90
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
  SUBAREA RUNOFF(CFS) =      6.71
  TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      6.71

****************************************************************************
  FLOW PROCESS FROM NODE     427.00 TO NODE     428.00 IS CODE =  6.2
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1231.60  DOWNSTREAM ELEVATION(FEET) = 1227.70
  STREET LENGTH(FEET) =   160.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =    .017
  OUTSIDE STREET CROSSFALL(DECIMAL)  =    .017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =    .020

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =    .38
    HALFSTREET FLOOD WIDTH(FEET) =   14.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.53
  STREET FLOW TRAVEL TIME(MIN.) =    .67   Tc(MIN.) =   8.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.583
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        D         .60       .20        .50    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
  SUBAREA AREA(ACRES) =     .60      SUBAREA RUNOFF(CFS) =    2.42
  EFFECTIVE AREA(ACRES) =    2.20    AREA-AVERAGED Fm(INCH/HR) =   .11
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .57
  TOTAL AREA(ACRES) =    2.20        PEAK FLOW RATE(CFS) =       8.85
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 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .39   HALFSTREET FLOOD WIDTH(FEET) =  15.51
 FLOW VELOCITY(FEET/SEC.) =  4.08   DEPTH*VELOCITY(FT*FT/SEC.) =   1.61

****************************************************************************
 FLOW PROCESS FROM NODE    428.00 TO NODE    428.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   8.57
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.583
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D         .90       .20        .50    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =     .90      SUBAREA RUNOFF(CFS) =   3.63
 EFFECTIVE AREA(ACRES) =    3.10    AREA-AVERAGED Fm(INCH/HR) =   .11
 AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .55
 TOTAL AREA(ACRES) =    3.10       PEAK FLOW RATE(CFS) =      12.48

****************************************************************************
 FLOW PROCESS FROM NODE    428.00 TO NODE    429.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1227.70  DOWNSTREAM ELEVATION(FEET) = 1200.30
 STREET LENGTH(FEET) =   660.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.06
   ***STREET FLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =     .44   FLOOD WIDTH(FEET) =   18.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    5.84
   SPLIT DEPTH(FEET) =     .29   SPLIT FLOOD WIDTH(FEET) =    9.11
   SPLIT FLOW(CFS) =    3.27   SPLIT VELOCITY(FEET/SEC.) =    3.95
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .44
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.84
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.55
 STREET FLOW TRAVEL TIME(MIN.) =   1.88   Tc(MIN.) =  10.45
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.069
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        2.10       .30        .60    76
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        2.20       .20        .60    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .25
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88

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   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .60
 SUBAREA AREA(ACRES) =     4.30      SUBAREA RUNOFF(CFS) =    15.17
 EFFECTIVE AREA(ACRES) =    7.40     AREA-AVERAGED Fm(INCH/HR) =    .13
 AREA-AVERAGED Fp(INCH/HR) =   .23   AREA-AVERAGED Ap =    .58
 TOTAL AREA(ACRES) =    7.40         PEAK FLOW RATE(CFS) =       26.22

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .44   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  5.84   DEPTH*VELOCITY(FT*FT/SEC.) =   2.55

****************************************************************************
 FLOW PROCESS FROM NODE    429.00 TO NODE    429.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.45
 RAINFALL INTENSITY(INCH/HR) =   4.07
 AREA-AVERAGED Fm(INCH/HR) =   .13
 AREA-AVERAGED Fp(INCH/HR) =   .23
 AREA-AVERAGED Ap =   .58
 EFFECTIVE STREAM AREA(ACRES) =    7.40
 TOTAL STREAM AREA(ACRES) =    7.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.22

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1       9.30  13.89     3.459    .26(  .14)  .54      3.1      421.00
     1       9.02  10.79     4.003    .26(  .14)  .54      2.6      424.00
     2      26.22  10.45     4.069    .23(  .13)  .58      7.4      426.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      34.79  10.79     4.003    .24(  .14)  .57     10.0      424.00
     2      31.45  13.89     3.459    .24(  .14)  .57     10.5      421.00
     3      35.10  10.45     4.069    .24(  .14)  .57      9.9      426.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     35.10    Tc(MIN.) =    10.45
 EFFECTIVE AREA(ACRES) =     9.90   AREA-AVERAGED Fm(INCH/HR) =    .14
 AREA-AVERAGED Fp(INCH/HR) =   .24  AREA-AVERAGED Ap =    .57
 TOTAL AREA(ACRES) =     10.50

****************************************************************************
 FLOW PROCESS FROM NODE    429.00 TO NODE    429.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      35.10  10.45     4.069    .24(  .14)  .57      9.9      426.00
     2      34.79  10.79     4.003    .24(  .14)  .57     10.0      424.00
     3      31.45  13.89     3.459    .24(  .14)  .57     10.5      421.00
```

```
** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)    NODE
    1      55.89   6.04     5.651    .25(  .14)  .53     10.9      419.00
    2      58.32   6.84     5.240    .25(  .14)  .53     12.3      409.00
    3      59.41   7.40     4.951    .25(  .14)  .53     13.2      411.00
    4      60.77   8.21     4.689    .25(  .14)  .54     14.4      414.00
    5      61.07   9.47     4.317    .25(  .14)  .53     15.8      416.00
    6      59.75  11.99     3.762    .25(  .13)  .53     17.8      404.00
    7      59.14  12.41     3.677    .25(  .13)  .53     18.1      406.00
    8      58.21  12.85     3.610    .25(  .13)  .53     18.2      401.00

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)    NODE
    1      95.66  10.45     4.069    .25(  .13)  .55     26.5      426.00
    2      95.17  10.79     4.003    .25(  .13)  .55     26.8      424.00
    3      87.15  13.89     3.459    .25(  .13)  .54     28.7      421.00
    4      84.35   6.04     5.651    .25(  .14)  .55     16.6      419.00
    5      88.13   6.84     5.240    .25(  .14)  .55     18.7      409.00
    6      89.84   7.40     4.951    .25(  .14)  .55     20.2      411.00
    7      92.69   8.21     4.689    .25(  .14)  .55     22.2      414.00
    8      94.87   9.47     4.317    .25(  .14)  .55     24.7      416.00
    9      93.24  11.99     3.762    .25(  .13)  .54     28.0      404.00
   10      92.18  12.41     3.677    .25(  .13)  .54     28.3      406.00
   11      90.79  12.85     3.610    .25(  .13)  .54     28.5      401.00
  TOTAL AREA(ACRES) =     28.70

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       95.66  Tc(MIN.) =   10.454
 EFFECTIVE AREA(ACRES) =     26.48  AREA-AVERAGED Fm(INCH/HR) =   .13
 AREA-AVERAGED Fp(INCH/HR) =   .25  AREA-AVERAGED Ap =   .55
 TOTAL AREA(ACRES) =     28.70

****************************************************************************
 FLOW PROCESS FROM NODE    429.00 TO NODE    429.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    429.00 TO NODE    433.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1197.00  DOWNSTREAM(FEET) =  1173.50
 FLOW LENGTH(FEET) =   240.00   MANNING'S N =  .013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  27.47
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     95.66
 PIPE TRAVEL TIME(MIN.) =    .15    Tc(MIN.) =  10.60

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
90
    TIME OF CONCENTRATION(MIN.) =  10.60
  RAINFALL INTENSITY(INCH/HR) =   4.04
  AREA-AVERAGED Fm(INCH/HR) =   .13
  AREA-AVERAGED Fp(INCH/HR) =   .25
  AREA-AVERAGED Ap =   .55
  EFFECTIVE STREAM AREA(ACRES) =   26.48
  TOTAL STREAM AREA(ACRES) =   28.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     95.66

****************************************************************************
  FLOW PROCESS FROM NODE    430.00 TO NODE    431.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
  ELEVATION DATA: UPSTREAM(FEET) =   1205.50  DOWNSTREAM(FEET) =   1200.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.937
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.707
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                  B         .10       .30        .10    76    5.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
  SUBAREA RUNOFF(CFS) =       .51
  TOTAL AREA(ACRES) =       .10   PEAK FLOW RATE(CFS) =       .51

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    433.00 IS CODE =  6.2
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1200.00  DOWNSTREAM ELEVATION(FEET) = 1173.50
  STREET LENGTH(FEET) =   230.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =   .017
  OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.68
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =   .21
    HALFSTREET FLOOD WIDTH(FEET) =    4.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.12
  STREET FLOW TRAVEL TIME(MIN.) =    .73   Tc(MIN.) =   6.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.329
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B         .50       .30        .50    76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
```

```
 SUBAREA AREA(ACRES) =      .50      SUBAREA RUNOFF(CFS) =     2.33
 EFFECTIVE AREA(ACRES) =     .60     AREA-AVERAGED Fm(INCH/HR) =   .13
 AREA-AVERAGED Fp(INCH/HR) =   .30  AREA-AVERAGED Ap =   .43
 TOTAL AREA(ACRES) =      .60       PEAK FLOW RATE(CFS) =       2.81

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .24   HALFSTREET FLOOD WIDTH(FEET) =   6.58
 FLOW VELOCITY(FEET/SEC.) =  5.73   DEPTH*VELOCITY(FT*FT/SEC.) =   1.39

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================

 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.67
 RAINFALL INTENSITY(INCH/HR) =   5.33
 AREA-AVERAGED Fm(INCH/HR) =   .13
 AREA-AVERAGED Fp(INCH/HR) =   .30
 AREA-AVERAGED Ap =   .43
 EFFECTIVE STREAM AREA(ACRES) =     .60
 TOTAL STREAM AREA(ACRES) =     .60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.81

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     95.66  10.60     4.040    .25(  .13)  .55     26.5     426.00
     1     95.17  10.93     3.973    .25(  .13)  .55     26.8     424.00
     1     87.15  14.04     3.438    .25(  .13)  .54     28.7     421.00
     1     84.35   6.20     5.573    .25(  .14)  .55     16.6     419.00
     1     88.13   6.99     5.161    .25(  .14)  .55     18.7     409.00
     1     89.84   7.55     4.884    .25(  .14)  .55     20.2     411.00
     1     92.69   8.36     4.645    .25(  .14)  .55     22.2     414.00
     1     94.87   9.62     4.273    .25(  .14)  .55     24.7     416.00
     1     93.24  12.14     3.732    .25(  .13)  .54     28.0     404.00
     1     92.18  12.56     3.651    .25(  .13)  .54     28.3     406.00
     1     90.79  13.00     3.588    .25(  .13)  .54     28.5     401.00
     2      2.81   6.67     5.329    .30(  .13)  .43       .6     430.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     87.08   6.20     5.573    .25(  .14)  .54     17.2     419.00
     2     90.84   6.99     5.161    .25(  .14)  .54     19.3     409.00
     3     92.40   7.55     4.884    .25(  .14)  .54     20.8     411.00
     4     95.13   8.36     4.645    .25(  .14)  .54     22.8     414.00
     5     97.11   9.62     4.273    .25(  .14)  .54     25.3     416.00
     6     97.77  10.60     4.040    .25(  .13)  .54     27.1     426.00
     7     97.24  10.93     3.973    .25(  .13)  .54     27.4     424.00
     8     95.19  12.14     3.732    .25(  .13)  .54     28.6     404.00
     9     94.08  12.56     3.651    .25(  .13)  .54     28.9     406.00
    10     92.65  13.00     3.588    .25(  .13)  .54     29.1     401.00
    11     88.93  14.04     3.438    .25(  .13)  .54     29.3     421.00
    12     89.39   6.67     5.329    .25(  .14)  .54     18.5     430.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

92

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   PEAK FLOW RATE(CFS) =     97.77    Tc(MIN.) =    10.60
 EFFECTIVE AREA(ACRES) =    27.08   AREA-AVERAGED Fm(INCH/HR) =    .13
 AREA-AVERAGED Fp(INCH/HR) =    .25  AREA-AVERAGED Ap =  .54
 TOTAL AREA(ACRES) =     29.30

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.60
 RAINFALL INTENSITY(INCH/HR) =   4.04
 AREA-AVERAGED Fm(INCH/HR) =    .13
 AREA-AVERAGED Fp(INCH/HR) =    .25
 AREA-AVERAGED Ap =    .54
 EFFECTIVE STREAM AREA(ACRES) =   27.08
 TOTAL STREAM AREA(ACRES) =   29.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     97.77

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    433.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   190.00
 ELEVATION DATA: UPSTREAM(FEET) =   1173.00  DOWNSTREAM(FEET) =   1171.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.441
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.621
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp        Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B         .40       .30        .60    76    8.44
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .60
 SUBAREA RUNOFF(CFS) =      1.60
 TOTAL AREA(ACRES) =       .40   PEAK FLOW RATE(CFS) =      1.60

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.44
 RAINFALL INTENSITY(INCH/HR) =   4.62
 AREA-AVERAGED Fm(INCH/HR) =    .18
 AREA-AVERAGED Fp(INCH/HR) =    .30
 AREA-AVERAGED Ap =    .60
 EFFECTIVE STREAM AREA(ACRES) =     .40
 TOTAL STREAM AREA(ACRES) =     .40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.60

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
```

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	87.08	6.20	5.573	.25(| .14)	.54	17.2	419.00
1	90.84	6.99	5.161	.25(| .14)	.54	19.3	409.00
1	92.40	7.55	4.884	.25(| .14)	.54	20.8	411.00
1	95.13	8.36	4.645	.25(| .14)	.54	22.8	414.00
1	97.11	9.62	4.273	.25(| .14)	.54	25.3	416.00
1	97.77	10.60	4.040	.25(| .13)	.54	27.1	426.00
1	97.24	10.93	3.973	.25(| .13)	.54	27.4	424.00
1	95.19	12.14	3.732	.25(| .13)	.54	28.6	404.00
1	94.08	12.56	3.651	.25(| .13)	.54	28.9	406.00
1	92.65	13.00	3.588	.25(| .13)	.54	29.1	401.00
1	88.93	14.04	3.438	.25(| .13)	.54	29.3	421.00
1	89.39	6.67	5.329	.25(| .14)	.54	18.5	430.00
2	1.60	8.44	4.621	.30(| .18)	.60	.4	432.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	88.51	6.20	5.573	.25(	.14)	.54	17.4	419.00
2	90.86	6.67	5.329	.25(	.14)	.54	18.8	430.00
3	92.33	6.99	5.161	.25(	.14)	.54	19.7	409.00
4	93.92	7.55	4.884	.25(	.14)	.54	21.1	411.00
5	96.72	8.36	4.645	.25(	.14)	.55	23.2	414.00
6	98.58	9.62	4.273	.25(	.14)	.55	25.7	416.00
7	99.16	10.60	4.040	.25(	.14)	.55	27.5	426.00
8	98.61	10.93	3.973	.25(	.14)	.54	27.8	424.00
9	96.47	12.14	3.732	.25(	.14)	.54	29.0	404.00
10	95.33	12.56	3.651	.25(	.13)	.54	29.3	406.00
11	93.88	13.00	3.588	.25(	.13)	.54	29.5	401.00
12	90.11	14.04	3.438	.25(	.13)	.54	29.7	421.00
13	96.86	8.44	4.621	.25(	.14)	.55	23.3	432.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 99.16 Tc(MIN.) = 10.60
EFFECTIVE AREA(ACRES) = 27.48 AREA-AVERAGED Fm(INCH/HR) = .14
AREA-AVERAGED Fp(INCH/HR) = .25 AREA-AVERAGED Ap = .55
TOTAL AREA(ACRES) = 29.70

****
FLOW PROCESS FROM NODE 433.00 TO NODE 438.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1170.00 DOWNSTREAM(FEET) = 1149.00
FLOW LENGTH(FEET) = 245.00 MANNING'S N = .013
DEPTH OF FLOW IN 30.0 INCH PIPE IS 21.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 26.14
ESTIMATED PIPE DIAMETER(INCH) = 30.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 99.16
PIPE TRAVEL TIME(MIN.) = .16 Tc(MIN.) = 10.76

****
FLOW PROCESS FROM NODE 438.00 TO NODE 438.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

94

```
   TIME OF CONCENTRATION(MIN.) =  10.76
 RAINFALL INTENSITY(INCH/HR) =   4.01
 AREA-AVERAGED Fm(INCH/HR) =    .14
 AREA-AVERAGED Fp(INCH/HR) =    .25
 AREA-AVERAGED Ap =    .55
 EFFECTIVE STREAM AREA(ACRES) =   27.48
 TOTAL STREAM AREA(ACRES) =   29.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     99.16

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    435.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1174.00  DOWNSTREAM(FEET) =   1172.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.740
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.237
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B         .90       .30        .50    76    9.74
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      3.31
 TOTAL AREA(ACRES) =       .90   PEAK FLOW RATE(CFS) =      3.31

****************************************************************************
 FLOW PROCESS FROM NODE    435.00 TO NODE    438.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1172.00  DOWNSTREAM ELEVATION(FEET) = 1150.00
 STREET LENGTH(FEET) =   270.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 20.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =    .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =    .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =    .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.02
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =    .28
   HALFSTREET FLOOD WIDTH(FEET) =    8.57
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.39
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.49
 STREET FLOW TRAVEL TIME(MIN.) =    .83   Tc(MIN.) =  10.57
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.045
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B         .20       .30        .50    76
 COMMERCIAL                  D         .20       .20        .10    91
```

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .28
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .30
 SUBAREA AREA(ACRES) =     .40     SUBAREA RUNOFF(CFS) =    1.43
 EFFECTIVE AREA(ACRES) =    1.30    AREA-AVERAGED Fm(INCH/HR) =   .13
 AREA-AVERAGED Fp(INCH/HR) =   .30  AREA-AVERAGED Ap =   .44
 TOTAL AREA(ACRES) =    1.30        PEAK FLOW RATE(CFS) =       4.58

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .28   HALFSTREET FLOOD WIDTH(FEET) =   9.04
 FLOW VELOCITY(FEET/SEC.) =  5.61   DEPTH*VELOCITY(FT*FT/SEC.) =   1.60

****************************************************************************
 FLOW PROCESS FROM NODE    438.00 TO NODE    438.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================

 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.57
 RAINFALL INTENSITY(INCH/HR) =   4.05
 AREA-AVERAGED Fm(INCH/HR) =   .13
 AREA-AVERAGED Fp(INCH/HR) =   .30
 AREA-AVERAGED Ap =   .44
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.58

****************************************************************************
 FLOW PROCESS FROM NODE    436.00 TO NODE    437.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================

 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1237.00  DOWNSTREAM(FEET) =   1205.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.710
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.308
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         D        1.10       .20        .70    91    6.71
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .70
 SUBAREA RUNOFF(CFS) =      5.12
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      5.12

****************************************************************************
 FLOW PROCESS FROM NODE    437.00 TO NODE    438.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================

 UPSTREAM ELEVATION(FEET) = 1205.00  DOWNSTREAM ELEVATION(FEET) = 1150.00
 STREET LENGTH(FEET) =   530.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 20.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017
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96

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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.79
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =   .30
  HALFSTREET FLOOD WIDTH(FEET) =   10.21
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   6.73
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.05
STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =   8.02
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.745
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"       B         .30       .30        .40    76
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D         .50       .20        .50    91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .23
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .46
SUBAREA AREA(ACRES) =     .80     SUBAREA RUNOFF(CFS) =    3.34
EFFECTIVE AREA(ACRES) =    1.90   AREA-AVERAGED Fm(INCH/HR) =   .13
AREA-AVERAGED Fp(INCH/HR) =   .21  AREA-AVERAGED Ap =   .60
TOTAL AREA(ACRES) =    1.90       PEAK FLOW RATE(CFS) =       7.90

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  .32   HALFSTREET FLOOD WIDTH(FEET) =  10.92
FLOW VELOCITY(FEET/SEC.) =  6.96   DEPTH*VELOCITY(FT*FT/SEC.) =  2.20

****************************************************************************
 FLOW PROCESS FROM NODE    438.00 TO NODE    438.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================

 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.02
 RAINFALL INTENSITY(INCH/HR) =   4.75
 AREA-AVERAGED Fm(INCH/HR) =   .13
 AREA-AVERAGED Fp(INCH/HR) =   .21
 AREA-AVERAGED Ap =   .60
 EFFECTIVE STREAM AREA(ACRES) =    1.90
 TOTAL STREAM AREA(ACRES) =    1.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.90

 ** CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     88.51   6.36     5.491   .25(  .14)  .54     17.4     419.00
    1     90.86   6.83     5.247   .25(  .14)  .54     18.8     430.00
    1     92.33   7.15     5.080   .25(  .14)  .54     19.7     409.00
    1     93.92   7.71     4.838   .25(  .14)  .54     21.1     411.00
    1     96.72   8.52     4.599   .25(  .14)  .55     23.2     414.00
    1     98.58   9.77     4.227   .25(  .14)  .55     25.7     416.00
    1     99.16  10.76     4.009   .25(  .14)  .55     27.5     426.00
    1     98.61  11.09     3.942   .25(  .14)  .54     27.8     424.00
    1     96.47  12.30     3.701   .25(  .14)  .54     29.0     404.00
    1     95.33  12.72     3.629   .25(  .13)  .54     29.3     406.00
    1     93.88  13.16     3.565   .25(  .13)  .54     29.5     401.00
    1     90.11  14.20     3.415   .25(  .13)  .54     29.7     421.00
```

1	96.86	8.60	4.575	.25(.14)	.55	23.3	432.00
2	4.58	10.57	4.045	.30(.13)	.44	1.3	434.00
3	7.90	8.02	4.745	.21(.13)	.60	1.9	436.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	99.54	6.36	5.491	.25(.13)	.54	19.7	419.00
2	102.17	6.83	5.247	.25(.14)	.54	21.2	430.00
3	103.80	7.15	5.080	.25(.14)	.54	22.2	409.00
4	105.68	7.71	4.838	.25(.14)	.54	23.9	411.00
5	108.58	8.52	4.599	.25(.14)	.55	26.1	414.00
6	108.69	8.60	4.575	.25(.14)	.55	26.3	432.00
7	110.02	9.77	4.227	.25(.13)	.54	28.8	416.00
8	110.33	10.57	4.045	.25(.13)	.54	30.4	434.00
9	110.34	10.76	4.009	.25(.13)	.54	30.7	426.00
10	109.59	11.09	3.942	.25(.13)	.54	31.0	424.00
11	106.76	12.30	3.701	.25(.13)	.54	32.2	404.00
12	105.41	12.72	3.629	.25(.13)	.54	32.5	406.00
13	103.78	13.16	3.565	.25(.13)	.54	32.7	401.00
14	99.57	14.20	3.415	.25(.13)	.54	32.9	421.00
15	106.99	8.02	4.745	.25(.14)	.55	24.8	436.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 110.34 Tc(MIN.) = 10.76
EFFECTIVE AREA(ACRES) = 30.68 AREA-AVERAGED Fm(INCH/HR) = .13
AREA-AVERAGED Fp(INCH/HR) = .25 AREA-AVERAGED Ap = .54
TOTAL AREA(ACRES) = 32.90

****
FLOW PROCESS FROM NODE 438.00 TO NODE 452.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
===
ELEVATION DATA: UPSTREAM(FEET) = 1149.00 DOWNSTREAM(FEET) = 1115.00
FLOW LENGTH(FEET) = 450.00 MANNING'S N = .013
DEPTH OF FLOW IN 33.0 INCH PIPE IS 22.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 25.80
ESTIMATED PIPE DIAMETER(INCH) = 33.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 110.34
PIPE TRAVEL TIME(MIN.) = .29 Tc(MIN.) = 11.05

****
FLOW PROCESS FROM NODE 452.00 TO NODE 452.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
===

****
FLOW PROCESS FROM NODE 439.00 TO NODE 440.00 IS CODE = 2.1

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
===
INITIAL SUBAREA FLOW-LENGTH(FEET) = 220.00
ELEVATION DATA: UPSTREAM(FEET) = 1188.00 DOWNSTREAM(FEET) = 1186.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20

98

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  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =     9.699
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.249
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"2 DWELLINGS/ACRE"         D        1.20       .20        .70     91    9.70
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .70
SUBAREA RUNOFF(CFS) =      4.44
TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      4.44

****************************************************************************
 FLOW PROCESS FROM NODE    440.00 TO NODE    443.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1186.00  DOWNSTREAM ELEVATION(FEET) = 1161.80
 STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.89
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .34
   HALFSTREET FLOOD WIDTH(FEET) =   12.26
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.64
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   1.91
 STREET FLOW TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  10.85
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.990
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.10       .30        .60     76
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D         .90       .20        .60     91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
 SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    6.91
 EFFECTIVE AREA(ACRES) =    3.20    AREA-AVERAGED Fm(INCH/HR) =   .15
 AREA-AVERAGED Fp(INCH/HR) =   .23  AREA-AVERAGED Ap =   .64
 TOTAL AREA(ACRES) =    3.20       PEAK FLOW RATE(CFS) =      11.06

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .37   HALFSTREET FLOOD WIDTH(FEET) =  14.09
 FLOW VELOCITY(FEET/SEC.) =  6.12   DEPTH*VELOCITY(FT*FT/SEC.) =   2.26

****************************************************************************
 FLOW PROCESS FROM NODE    443.00 TO NODE    443.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
 TIME OF CONCENTRATION(MIN.) =  10.85
 RAINFALL INTENSITY(INCH/HR) =   3.99
 AREA-AVERAGED Fm(INCH/HR) =   .15
 AREA-AVERAGED Fp(INCH/HR) =   .23
 AREA-AVERAGED Ap =   .64
 EFFECTIVE STREAM AREA(ACRES) =    3.20
 TOTAL STREAM AREA(ACRES) =    3.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.06

****************************************************************************
 FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1188.00  DOWNSTREAM(FEET) =   1182.90

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.255
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.676
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D         .60       .20        .50    91    8.26
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      2.47
 TOTAL AREA(ACRES) =       .60   PEAK FLOW RATE(CFS) =      2.47

****************************************************************************
 FLOW PROCESS FROM NODE    442.00 TO NODE    443.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1182.90  DOWNSTREAM ELEVATION(FEET) = 1161.90
 STREET LENGTH(FEET) =   295.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL)  =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.39
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .29
   HALFSTREET FLOOD WIDTH(FEET) =    9.21
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.21
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.50
 STREET FLOW TRAVEL TIME(MIN.) =    .94   Tc(MIN.) =   9.20
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.397
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B         .60       .30        .50    76
 RESIDENTIAL
```

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100
    "5-7 DWELLINGS/ACRE"       D          .40        .20        .50    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .26
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .50
  SUBAREA AREA(ACRES) =     1.00      SUBAREA RUNOFF(CFS) =     3.84
  EFFECTIVE AREA(ACRES) =    1.60     AREA-AVERAGED Fm(INCH/HR) =    .12
  AREA-AVERAGED Fp(INCH/HR) =    .24  AREA-AVERAGED Ap = .  .50
  TOTAL AREA(ACRES) =     1.60        PEAK FLOW RATE(CFS) =       6.16

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  .31   HALFSTREET FLOOD WIDTH(FEET) =  10.64
  FLOW VELOCITY(FEET/SEC.) =  5.69   DEPTH*VELOCITY(FT*FT/SEC.) =   1.77

****************************************************************************
  FLOW PROCESS FROM NODE     443.00 TO NODE     443.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.20
  RAINFALL INTENSITY(INCH/HR) =   4.40
  AREA-AVERAGED Fm(INCH/HR) =    .12
  AREA-AVERAGED Fp(INCH/HR) =    .24
  AREA-AVERAGED Ap =    .50
  EFFECTIVE STREAM AREA(ACRES) =    1.60
  TOTAL STREAM AREA(ACRES) =    1.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.16

  ** CONFLUENCE DATA **
   STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
   NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
      1      11.06  10.85     3.990    .23(  .15)  .64      3.2      439.00
      2       6.16   9.20     4.397    .24(  .12)  .50      1.6      441.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
   NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
      1      16.64  10.85     3.990    .23(  .14)  .59      4.8      439.00
      2      16.53   9.20     4.397    .23(  .14)  .59      4.3      441.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     16.64    Tc(MIN.) =    10.85
  EFFECTIVE AREA(ACRES) =     4.80   AREA-AVERAGED Fm(INCH/HR) =    .14
  AREA-AVERAGED Fp(INCH/HR) =    .23  AREA-AVERAGED Ap =    .59
  TOTAL AREA(ACRES) =      4.80

****************************************************************************
  FLOW PROCESS FROM NODE     443.00 TO NODE     445.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1161.00  DOWNSTREAM(FEET) =  1151.90
  FLOW LENGTH(FEET) =    95.00   MANNING'S N =  .013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.78
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
 PIPE-FLOW(CFS) =     16.64
 PIPE TRAVEL TIME(MIN.) =    .09    Tc(MIN.) =  10.94

****************************************************************************
 FLOW PROCESS FROM NODE    445.00 TO NODE    445.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.94
 RAINFALL INTENSITY(INCH/HR) =   3.97
 AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .23
 AREA-AVERAGED Ap =   .59
 EFFECTIVE STREAM AREA(ACRES) =    4.80
 TOTAL STREAM AREA(ACRES) =    4.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.64

****************************************************************************
 FLOW PROCESS FROM NODE    444.00 TO NODE    445.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   240.00
 ELEVATION DATA: UPSTREAM(FEET) =   1173.00  DOWNSTREAM(FEET) =   1151.90

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.447
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.959
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE              GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"       B         .20       .30        .40    76    5.45
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .40
 SUBAREA RUNOFF(CFS) =      1.05
 TOTAL AREA(ACRES) =       .20   PEAK FLOW RATE(CFS) =      1.05

****************************************************************************
 FLOW PROCESS FROM NODE    445.00 TO NODE    445.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.45
 RAINFALL INTENSITY(INCH/HR) =   5.96
 AREA-AVERAGED Fm(INCH/HR) =   .12
 AREA-AVERAGED Fp(INCH/HR) =   .30
 AREA-AVERAGED Ap =   .40
 EFFECTIVE STREAM AREA(ACRES) =     .20
 TOTAL STREAM AREA(ACRES) =     .20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.05

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
     1     16.64  10.94    3.972   .23(  .14)  .59     4.8     439.00
```

102

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        1     16.53   9.29    4.371   .23(  .14)  .59     4.3     441.00
    2       1.05   5.45    5.959   .30(  .12)  .40      .2     444.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     17.30   9.29    4.371   .24(  .14)  .58     4.5     441.00
     2     17.33  10.94    3.972   .24(  .14)  .58     5.0     439.00
     3     14.39   5.45    5.959   .24(  .14)  .57     2.7     444.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     17.33    Tc(MIN.) =    10.94
 EFFECTIVE AREA(ACRES) =     5.00   AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .24  AREA-AVERAGED Ap =   .58
 TOTAL AREA(ACRES) =      5.00

****************************************************************************
 FLOW PROCESS FROM NODE    445.00 TO NODE    448.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1151.90  DOWNSTREAM(FEET) =  1147.00
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  .013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.90
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     17.33
 PIPE TRAVEL TIME(MIN.) =    .06    Tc(MIN.) =  11.00

****************************************************************************
 FLOW PROCESS FROM NODE    448.00 TO NODE    448.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.00
 RAINFALL INTENSITY(INCH/HR) =   3.96
 AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .24
 AREA-AVERAGED Ap =   .58
 EFFECTIVE STREAM AREA(ACRES) =    5.00
 TOTAL STREAM AREA(ACRES) =    5.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.33

****************************************************************************
 FLOW PROCESS FROM NODE    446.00 TO NODE    447.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
 ELEVATION DATA: UPSTREAM(FEET) =   1155.00  DOWNSTREAM(FEET) =   1152.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.213
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.689
```

```
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        .50       .30        .50     76    8.21
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      2.04
 TOTAL AREA(ACRES) =       .50   PEAK FLOW RATE(CFS) =      2.04

****************************************************************************
 FLOW PROCESS FROM NODE    447.00 TO NODE    448.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1152.10  DOWNSTREAM ELEVATION(FEET) = 1147.50
 STREET LENGTH(FEET) =   250.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.53
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .32
   HALFSTREET FLOOD WIDTH(FEET) =   11.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.95
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     .95
 STREET FLOW TRAVEL TIME(MIN.) =   1.41   Tc(MIN.) =   9.63
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.271
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        .80       .30        .50     76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =     .80     SUBAREA RUNOFF(CFS) =    2.97
 EFFECTIVE AREA(ACRES) =    1.30    AREA-AVERAGED Fm(INCH/HR) =   .15
 AREA-AVERAGED Fp(INCH/HR) =   .30  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =    1.30        PEAK FLOW RATE(CFS) =       4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .35   HALFSTREET FLOOD WIDTH(FEET) =  12.77
 FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11

****************************************************************************
 FLOW PROCESS FROM NODE    448.00 TO NODE    448.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.63
 RAINFALL INTENSITY(INCH/HR) =   4.27
 AREA-AVERAGED Fm(INCH/HR) =   .15
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104

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   AREA-AVERAGED Fp(INCH/HR) =   .30
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.82

 ** CONFLUENCE DATA **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     17.30   9.35    4.353   .24(  .14)   .58     4.5     441.00
     1     17.33  11.00    3.960   .24(  .14)   .58     5.0     439.00
     1     14.39   5.51    5.928   .24(  .14)   .57     2.7     444.00
     2      4.82   9.63    4.271   .30(  .15)   .50     1.3     446.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     18.25   5.51    5.928   .25(  .14)   .56     3.5     444.00
     2     22.07   9.35    4.353   .25(  .14)   .56     5.8     441.00
     3     21.79  11.00    3.960   .25(  .14)   .57     6.3     439.00
     4     22.13   9.63    4.271   .25(  .14)   .56     5.9     446.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     22.13   Tc(MIN.) =     9.63
 EFFECTIVE AREA(ACRES) =     5.90   AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .25   AREA-AVERAGED Ap =   .56
 TOTAL AREA(ACRES) =      6.30

****************************************************************************
 FLOW PROCESS FROM NODE    448.00 TO NODE    451.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1147.00  DOWNSTREAM(FEET) =  1146.70
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  .013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.23
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     22.13
 PIPE TRAVEL TIME(MIN.) =    .16    Tc(MIN.) =   9.79

****************************************************************************
 FLOW PROCESS FROM NODE    451.00 TO NODE    451.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.79
 RAINFALL INTENSITY(INCH/HR) =   4.22
 AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .25
 AREA-AVERAGED Ap =   .56
 EFFECTIVE STREAM AREA(ACRES) =    5.90
 TOTAL STREAM AREA(ACRES) =    6.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.13

****************************************************************************
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 FLOW PROCESS FROM NODE    449.00 TO NODE    450.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1155.00  DOWNSTREAM(FEET) =   1152.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.695
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.546
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B         .70       .30        .50    76    8.70
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      2.77
 TOTAL AREA(ACRES) =       .70   PEAK FLOW RATE(CFS) =      2.77

****************************************************************************
 FLOW PROCESS FROM NODE    450.00 TO NODE    451.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1152.20  DOWNSTREAM ELEVATION(FEET) = 1150.60
 STREET LENGTH(FEET) =   165.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.86
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .36
   HALFSTREET FLOOD WIDTH(FEET) =   13.38
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.35
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =     .84
 STREET FLOW TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =   9.86
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.200
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B         .60       .30        .50    76
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA AREA(ACRES) =      .60      SUBAREA RUNOFF(CFS) =    2.19
 EFFECTIVE AREA(ACRES) =    1.30    AREA-AVERAGED Fm(INCH/HR) =   .15
 AREA-AVERAGED Fp(INCH/HR) =   .30  AREA-AVERAGED Ap =   .50
 TOTAL AREA(ACRES) =    1.30        PEAK FLOW RATE(CFS) =       4.74

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .38   HALFSTREET FLOOD WIDTH(FEET) =  14.50
 FLOW VELOCITY(FEET/SEC.) =  2.48   DEPTH*VELOCITY(FT*FT/SEC.) =    .94
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106

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 ****************************************************************************
 FLOW PROCESS FROM NODE     451.00 TO NODE     451.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.86
 RAINFALL INTENSITY(INCH/HR) =   4.20
 AREA-AVERAGED Fm(INCH/HR) =   .15
 AREA-AVERAGED Fp(INCH/HR) =   .30
 AREA-AVERAGED Ap =   .50
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.74

 ** CONFLUENCE DATA **
  STREAM      Q      Tc   Intensity    Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)   NODE
     1     18.25    5.68    5.840    .25(  .14)  .56      3.5     444.00
     1     22.07    9.51    4.306    .25(  .14)  .56      5.8     441.00
     1     21.79   11.16    3.928    .25(  .14)  .57      6.3     439.00
     1     22.13    9.79    4.223    .25(  .14)  .56      5.9     446.00
     2      4.74    9.86    4.200    .30(  .15)  .50      1.3     449.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc   Intensity    Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)   NODE
     1     22.09    5.68    5.840    .26(  .14)  .55      4.2     444.00
     2     26.76    9.51    4.306    .26(  .14)  .55      7.0     441.00
     3     26.85    9.79    4.223    .26(  .14)  .55      7.2     446.00
     4     26.21   11.16    3.928    .26(  .14)  .56      7.6     439.00
     5     26.85    9.86    4.200    .26(  .14)  .55      7.2     449.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     26.85    Tc(MIN.) =     9.79
 EFFECTIVE AREA(ACRES) =     7.18   AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .26  AREA-AVERAGED Ap =   .55
 TOTAL AREA(ACRES) =      7.60

 ****************************************************************************
 FLOW PROCESS FROM NODE     451.00 TO NODE     452.00 IS CODE =  3.1
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1147.00  DOWNSTREAM(FEET) =  1115.00
 FLOW LENGTH(FEET) =   470.00   MANNING'S N =  .013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.56
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     26.85
 PIPE TRAVEL TIME(MIN.) =    .45    Tc(MIN.) =  10.23

 ****************************************************************************
 FLOW PROCESS FROM NODE     452.00 TO NODE     452.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
```

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22.09	6.15	5.595	.26(.14)	.55	4.2	444.00
2	26.76	9.95	4.174	.26(.14)	.55	7.0	441.00
3	26.85	10.23	4.113	.26(.14)	.55	7.2	446.00
4	26.85	10.31	4.098	.26(.14)	.55	7.2	449.00
5	26.21	11.61	3.838	.26(.14)	.56	7.6	439.00

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	99.54	6.66	5.334	.25(.13)	.54	19.7	419.00
2	102.17	7.13	5.091	.25(.14)	.54	21.2	430.00
3	103.80	7.45	4.924	.25(.14)	.54	22.2	409.00
4	105.68	8.01	4.748	.25(.14)	.54	23.9	411.00
5	106.99	8.31	4.659	.25(.14)	.55	24.8	436.00
6	108.58	8.81	4.512	.25(.14)	.55	26.1	414.00
7	108.69	8.89	4.489	.25(.14)	.55	26.3	432.00
8	110.02	10.06	4.147	.25(.13)	.54	28.8	416.00
9	110.33	10.87	3.987	.25(.13)	.54	30.4	434.00
10	110.34	11.05	3.951	.25(.13)	.54	30.7	426.00
11	109.59	11.38	3.884	.25(.13)	.54	31.0	424.00
12	106.76	12.60	3.646	.25(.13)	.54	32.2	404.00
13	105.41	13.02	3.585	.25(.13)	.54	32.5	406.00
14	103.78	13.46	3.522	.25(.13)	.54	32.7	401.00
15	99.57	14.51	3.371	.25(.13)	.54	32.9	421.00

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	118.69	6.15	5.595	.25(.14)	.54	22.5	444.00
2	136.66	9.95	4.174	.25(.14)	.55	35.6	441.00
3	136.94	10.23	4.113	.25(.14)	.55	36.3	446.00
4	136.97	10.31	4.098	.25(.14)	.55	36.5	449.00
5	135.27	11.61	3.838	.25(.14)	.55	38.9	439.00
6	122.25	6.66	5.334	.25(.14)	.54	24.3	419.00
7	125.46	7.13	5.091	.25(.14)	.54	26.2	430.00
8	127.48	7.45	4.924	.25(.14)	.55	27.4	409.00
9	130.05	8.01	4.748	.25(.14)	.55	29.5	411.00
10	131.74	8.31	4.659	.25(.14)	.55	30.6	436.00
11	133.94	8.81	4.512	.25(.14)	.55	32.3	414.00
12	134.14	8.89	4.489	.25(.14)	.55	32.5	432.00
13	136.82	10.06	4.147	.25(.14)	.55	35.9	416.00
14	136.91	10.87	3.987	.25(.14)	.55	37.7	434.00
15	136.82	11.05	3.951	.25(.14)	.55	38.1	426.00
16	135.91	11.38	3.884	.25(.14)	.55	38.6	424.00
17	131.60	12.60	3.646	.25(.14)	.54	39.8	404.00
18	129.83	13.02	3.585	.25(.14)	.54	40.1	406.00
19	127.75	13.46	3.522	.25(.14)	.54	40.3	401.00
20	122.47	14.51	3.371	.25(.14)	.54	40.5	421.00

TOTAL AREA(ACRES) = 40.50

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 136.97 Tc(MIN.) = 10.311
EFFECTIVE AREA(ACRES) = 36.52 AREA-AVERAGED Fm(INCH/HR) = .14
AREA-AVERAGED Fp(INCH/HR) = .25 AREA-AVERAGED Ap = .55
TOTAL AREA(ACRES) = 40.50

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 108
      FLOW PROCESS FROM NODE     452.00 TO NODE     452.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     452.00 TO NODE     458.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1115.00  DOWNSTREAM(FEET) =  1083.00
  FLOW LENGTH(FEET) =   310.00   MANNING'S N =  .013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  30.46
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    136.97
  PIPE TRAVEL TIME(MIN.) =    .17    Tc(MIN.) =  10.48

****************************************************************************
  FLOW PROCESS FROM NODE     458.00 TO NODE     458.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     453.00 TO NODE     454.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
  ELEVATION DATA: UPSTREAM(FEET) =   1150.00  DOWNSTREAM(FEET) =   1131.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.929
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.711
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        D         .50       .20        .50    91    5.93
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
  SUBAREA RUNOFF(CFS) =      2.52
  TOTAL AREA(ACRES) =       .50   PEAK FLOW RATE(CFS) =      2.52

****************************************************************************
  FLOW PROCESS FROM NODE     454.00 TO NODE     457.00 IS CODE =  6.2
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1131.00  DOWNSTREAM ELEVATION(FEET) = 1084.00
  STREET LENGTH(FEET) =   500.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =   .017
  OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
```

```
 STREET PARKWAY CROSSFALL(DECIMAL)  =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.37
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .29
   HALFSTREET FLOOD WIDTH(FEET) =    9.39
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.17
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.79
 STREET FLOW TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =   7.28
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.013
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 B         .30       .30        .85    76
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.00       .20        .60    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .66
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    5.69
 EFFECTIVE AREA(ACRES) =    1.80    AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .22  AREA-AVERAGED Ap =   .61
 TOTAL AREA(ACRES) =    1.80        PEAK FLOW RATE(CFS) =       7.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .32   HALFSTREET FLOOD WIDTH(FEET) =  11.15
 FLOW VELOCITY(FEET/SEC.) =  6.70   DEPTH*VELOCITY(FT*FT/SEC.) =   2.15

****************************************************************************
 FLOW PROCESS FROM NODE    457.00 TO NODE    457.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.28
 RAINFALL INTENSITY(INCH/HR) =   5.01
 AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .22
 AREA-AVERAGED Ap =   .61
 EFFECTIVE STREAM AREA(ACRES) =    1.80
 TOTAL STREAM AREA(ACRES) =    1.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.90

****************************************************************************
 FLOW PROCESS FROM NODE    455.00 TO NODE    456.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1150.00  DOWNSTREAM(FEET) =   1131.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.169
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  6.103
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D         .40       .20        .10    91    5.17
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
 SUBAREA RUNOFF(CFS) =      2.19
```

```
110
     TOTAL AREA(ACRES) =        .40   PEAK FLOW RATE(CFS) =       2.19

****************************************************************************
  FLOW PROCESS FROM NODE     456.00 TO NODE    .457.00 IS CODE =  6.2
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #   2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1131.00  DOWNSTREAM ELEVATION(FEET) = 1084.00
  STREET LENGTH(FEET) =   510.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =   .017
  OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =   .020

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =   .27
    HALFSTREET FLOOD WIDTH(FEET) =    8.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.57
  STREET FLOW TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =   6.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.341
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  D         .80       .20        .10    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .10
  SUBAREA AREA(ACRES) =     .80      SUBAREA RUNOFF(CFS) =    3.83
  EFFECTIVE AREA(ACRES) =    1.20    AREA-AVERAGED Fm(INCH/HR) =   .02
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .10
  TOTAL AREA(ACRES) =    1.20        PEAK FLOW RATE(CFS) =       5.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  .30   HALFSTREET FLOOD WIDTH(FEET) =   9.75
  FLOW VELOCITY(FEET/SEC.) =  6.19   DEPTH*VELOCITY(FT*FT/SEC.) =   1.83

****************************************************************************
  FLOW PROCESS FROM NODE     457.00 TO NODE    457.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   6.64
  RAINFALL INTENSITY(INCH/HR) =   5.34
  AREA-AVERAGED Fm(INCH/HR) =   .02
  AREA-AVERAGED Fp(INCH/HR) =   .20
  AREA-AVERAGED Ap =   .10
  EFFECTIVE STREAM AREA(ACRES) =    1.20
  TOTAL STREAM AREA(ACRES) =    1.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.75

  ** CONFLUENCE DATA **
   STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
   NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)     NODE
```

1	7.90	7.28	5.013	.22(.14)	.61	1.8	453.00
2	5.75	6.64	5.341	.20(.02)	.10	1.2	455.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.29	7.28	5.013	.22(.09)	.41	3.0	453.00
2	13.44	6.64	5.341	.22(.09)	.40	2.8	455.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 13.44 Tc(MIN.) = 6.64
EFFECTIVE AREA(ACRES) = 2.84 AREA-AVERAGED Fm(INCH/HR) = .09
AREA-AVERAGED Fp(INCH/HR) = .22 AREA-AVERAGED Ap = .40
TOTAL AREA(ACRES) = 3.00

****
FLOW PROCESS FROM NODE 457.00 TO NODE 458.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1084.00 DOWNSTREAM(FEET) = 1083.00
FLOW LENGTH(FEET) = 35.00 MANNING'S N = .013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.58
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 13.44
PIPE TRAVEL TIME(MIN.) = .06 Tc(MIN.) = 6.70

****
FLOW PROCESS FROM NODE 458.00 TO NODE 458.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.44	6.70	5.313	.22(.09)	.40	2.8	455.00
2	13.29	7.34	4.985	.22(.09)	.41	3.0	453.00

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	118.69	6.33	5.503	.25(.14)	.54	22.5	444.00
2	122.25	6.84	5.242	.25(.14)	.54	24.3	419.00
3	125.46	7.30	5.003	.25(.14)	.54	26.2	430.00
4	127.48	7.63	4.863	.25(.14)	.55	27.4	409.00
5	130.05	8.18	4.698	.25(.14)	.55	29.5	411.00
6	131.74	8.49	4.608	.25(.14)	.55	30.6	436.00
7	133.94	8.98	4.462	.25(.14)	.55	32.3	414.00
8	134.14	9.06	4.438	.25(.14)	.55	32.5	432.00
9	136.66	10.12	4.135	.25(.14)	.55	35.6	441.00
10	136.82	10.23	4.113	.25(.14)	.55	35.9	416.00
11	136.94	10.40	4.079	.25(.14)	.55	36.3	446.00
12	136.97	10.48	4.064	.25(.14)	.55	36.5	449.00
13	136.91	11.04	3.953	.25(.14)	.55	37.7	434.00
14	136.82	11.22	3.917	.25(.14)	.55	38.1	426.00
15	135.91	11.55	3.850	.25(.14)	.55	38.6	424.00

112

16	135.27	11.78	3.804	.25(.14)	.55	38.9	439.00
17	131.60	12.77	3.621	.25(.14)	.54	39.8	404.00
18	129.83	13.19	3.560	.25(.14)	.54	40.1	406.00
19	127.75	13.63	3.497	.25(.14)	.54	40.3	401.00
20	122.47	14.68	3.345	.25(.14)	.54	40.5	421.00

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	134.73	6.70	5.313	.25(.13)	.53	26.7	455.00
2	138.97	7.34	4.985	.25(.13)	.53	29.3	453.00
3	131.85	6.33	5.503	.25(.13)	.53	25.1	444.00
4	135.66	6.84	5.242	.25(.13)	.53	27.2	419.00
5	138.76	7.30	5.003	.25(.13)	.53	29.2	430.00
6	140.44	7.63	4.863	.25(.13)	.53	30.4	409.00
7	142.56	8.18	4.698	.25(.13)	.53	32.5	411.00
8	144.01	8.49	4.608	.25(.13)	.53	33.6	436.00
9	145.81	8.98	4.462	.25(.13)	.53	35.3	414.00
10	145.95	9.06	4.438	.25(.13)	.53	35.5	432.00
11	147.65	10.12	4.135	.25(.13)	.54	38.6	441.00
12	147.75	10.23	4.113	.25(.13)	.54	38.9	416.00
13	147.78	10.40	4.079	.25(.13)	.54	39.3	446.00
14	147.76	10.48	4.064	.25(.13)	.54	39.5	449.00
15	147.40	11.04	3.953	.25(.13)	.54	40.7	434.00
16	147.21	11.22	3.917	.25(.13)	.54	41.1	426.00
17	146.12	11.55	3.850	.25(.13)	.54	41.6	424.00
18	145.36	11.78	3.804	.25(.13)	.54	41.9	439.00
19	141.19	12.77	3.621	.25(.13)	.54	42.8	404.00
20	139.25	13.19	3.560	.25(.13)	.53	43.1	406.00
21	137.00	13.63	3.497	.25(.13)	.53	43.3	401.00
22	131.31	14.68	3.345	.25(.13)	.53	43.5	421.00
TOTAL AREA(ACRES) =			43.50				

DATA FOR AREA 'A'

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 147.78 Tc(MIN.) = 10.403
EFFECTIVE AREA(ACRES) = 39.34 AREA-AVERAGED Fm(INCH/HR) = .13
AREA-AVERAGED Fp(INCH/HR) = .25 AREA-AVERAGED Ap = .54
TOTAL AREA(ACRES) = 43.50

****
FLOW PROCESS FROM NODE 458.00 TO NODE 458.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 458.00 TO NODE 459.00 IS CODE = 3.1

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1083.00 DOWNSTREAM(FEET) = 1018.30
FLOW LENGTH(FEET) = 175.00 MANNING'S N = .013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 50.21
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 147.78
PIPE TRAVEL TIME(MIN.) = .06 Tc(MIN.) = 10.46

****
FLOW PROCESS FROM NODE 459.00 TO NODE 459.00 IS CODE = 10

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* W.O. #1665-1, TRACT 15230 SADDLEBACK MEADOWS                            *
* AREAS "F", "G" & "H"                                                    *
* 100-YEAR DEVELOPED CONDITION                                            *
 **************************************************************************

  FILE NAME: H:\AES96\HYDROSFT\RATSC6\D\1665\15230\FG-DEV.HC1
  TIME/DATE OF STUDY: 17:50    4/21/1999
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =  .90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC III) ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO    STREET-CROSSFALL:    CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH   CROSSFALL   IN-  / OUT-/PARK-   HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)     SIDE / SIDE/ WAY     (FT)    (FT)   (FT)  (FT)    (n)
 1    24.0      19.0      .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
 2    20.0      15.0      .017/ .017/ .020     .50    1.50 .03125 .1250 .01500
 3    18.0      13.0      .017/ .017/ .020     .50    1.50 .03125 .1250 .01500

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  -.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  2.1
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
  ELEVATION DATA: UPSTREAM(FEET) =   1110.50  DOWNSTREAM(FEET) =   1102.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.544
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.887
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
```

```
120
     DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE               GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
   RESIDENTIAL
   "5-7 DWELLINGS/ACRE"         D        1.40       .20        .50    91    7.54
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .50
   SUBAREA RUNOFF(CFS) =      6.03
   TOTAL AREA(ACRES) =      1.40   PEAK FLOW RATE(CFS) =      6.03

 ****************************************************************************
   FLOW PROCESS FROM NODE     502.00 TO NODE     503.00 IS CODE =  6.2
 ----------------------------------------------------------------------------
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
 ============================================================================
   UPSTREAM ELEVATION(FEET) = 1102.50  DOWNSTREAM ELEVATION(FEET) = 1087.50
   STREET LENGTH(FEET) =   310.00   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
   INSIDE STREET CROSSFALL(DECIMAL) =    .017
   OUTSIDE STREET CROSSFALL(DECIMAL) =    .017

   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
   STREET PARKWAY CROSSFALL(DECIMAL) =    .020

     **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.46
     STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
     STREET FLOW DEPTH(FEET) =    .34
     HALFSTREET FLOOD WIDTH(FEET) =   12.06
     AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.96
     PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.66
   STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =   8.59
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.578
   SUBAREA LOSS RATE DATA(AMC III):
    DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"         D        3.70       .20        .60    91
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .60
   SUBAREA AREA(ACRES) =     3.70      SUBAREA RUNOFF(CFS) =   14.85
   EFFECTIVE AREA(ACRES) =    5.10     AREA-AVERAGED Fm(INCH/HR) =    .11
   AREA-AVERAGED Fp(INCH/HR) =    .20  AREA-AVERAGED Ap =    .57
   TOTAL AREA(ACRES) =    5.10        PEAK FLOW RATE(CFS) =      20.49

   END OF SUBAREA STREET FLOW HYDRAULICS:
   DEPTH(FEET) =  .37   HALFSTREET FLOOD WIDTH(FEET) =  14.29
   FLOW VELOCITY(FEET/SEC.) =  5.51   DEPTH*VELOCITY(FT*FT/SEC.) =   2.06

 ****************************************************************************
   FLOW PROCESS FROM NODE     503.00 TO NODE     504.00 IS CODE =  3.1
 ----------------------------------------------------------------------------
   >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 ============================================================================
   ELEVATION DATA: UPSTREAM(FEET) =  1087.50  DOWNSTREAM(FEET) =  1028.60
   FLOW LENGTH(FEET) =   260.00   MANNING'S N =  .013
   ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
   DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.3 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) =  25.86
   ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
 PIPE-FLOW(CFS) =     20.49
 PIPE TRAVEL TIME(MIN.) =    .17    Tc(MIN.) =   8.75

****************************************************************************
 FLOW PROCESS FROM NODE    504.00 TO NODE    504.00 IS CODE =  8.1
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   8.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.529
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                B        1.20       .30        .85    76
 PUBLIC PARK                D         .60       .20        .85    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .27
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .85
 SUBAREA AREA(ACRES) =    1.80     SUBAREA RUNOFF(CFS) =    6.97
 EFFECTIVE AREA(ACRES) =    6.90   AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .22  AREA-AVERAGED Ap =   .64
 TOTAL AREA(ACRES) =    6.90       PEAK FLOW RATE(CFS) =      27.23

****************************************************************************
 FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  2.1
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1145.00  DOWNSTREAM(FEET) =   1130.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.344
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.980
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B         .50       .30        .60    76    7.34
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D         .70       .20        .60    91    7.34
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
 SUBAREA RUNOFF(CFS) =      5.22
 TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      5.22

****************************************************************************
 FLOW PROCESS FROM NODE    602.00 TO NODE    603.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1130.00  DOWNSTREAM ELEVATION(FEET) = 1036.80
 STREET LENGTH(FEET) =   720.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 20.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020
```

122

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =   .35
    HALFSTREET FLOOD WIDTH(FEET) =   12.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.92
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =   8.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.526
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        D        3.70       .20        .60    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .60
  SUBAREA AREA(ACRES) =    3.70      SUBAREA RUNOFF(CFS) =   14.67
  EFFECTIVE AREA(ACRES) =    4.90    AREA-AVERAGED Fm(INCH/HR) =   .13
  AREA-AVERAGED Fp(INCH/HR) =   .21  AREA-AVERAGED Ap =   .60
  TOTAL AREA(ACRES) =    4.90       PEAK FLOW RATE(CFS) =      19.40

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  .39   HALFSTREET FLOOD WIDTH(FEET) =  15.25
  FLOW VELOCITY(FEET/SEC.) =  9.24   DEPTH*VELOCITY(FT*FT/SEC.) =   3.60

****************************************************************************
  FLOW PROCESS FROM NODE    603.00 TO NODE    607.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1036.80  DOWNSTREAM(FEET) =  1022.00
  FLOW LENGTH(FEET) =   170.00   MANNING'S N =  .013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     19.40
  PIPE TRAVEL TIME(MIN.) =    .16    Tc(MIN.) =   8.92

****************************************************************************
  FLOW PROCESS FROM NODE    607.00 TO NODE    607.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.92
  RAINFALL INTENSITY(INCH/HR) =   4.48
  AREA-AVERAGED Fm(INCH/HR) =   .13
  AREA-AVERAGED Fp(INCH/HR) =   .21
  AREA-AVERAGED Ap =   .60
  EFFECTIVE STREAM AREA(ACRES) =    4.90
  TOTAL STREAM AREA(ACRES) =    4.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.40

****************************************************************************
  FLOW PROCESS FROM NODE    604.00 TO NODE    605.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   1161.00  DOWNSTREAM(FEET) =   1140.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.483
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.425
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp        Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B          .50       .30       .50    76    6.48
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .50
 SUBAREA RUNOFF(CFS) =      2.37
 TOTAL AREA(ACRES) =       .50   PEAK FLOW RATE(CFS) =      2.37

****************************************************************************
 FLOW PROCESS FROM NODE    605.00 TO NODE    606.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1140.00  DOWNSTREAM ELEVATION(FEET) = 1085.00
 STREET LENGTH(FEET) =   540.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 20.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =   .017
 OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =   .020

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.30
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =   .29
   HALFSTREET FLOOD WIDTH(FEET) =    9.28
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.21
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.79
 STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =   7.93
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.772
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp        Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          D         1.40       .20       .70    91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .70
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    5.84
 EFFECTIVE AREA(ACRES) =    1.90    AREA-AVERAGED Fm(INCH/HR) =   .14
 AREA-AVERAGED Fp(INCH/HR) =   .22  AREA-AVERAGED Ap =   .65
 TOTAL AREA(ACRES) =    1.90        PEAK FLOW RATE(CFS) =       7.92

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  .32   HALFSTREET FLOOD WIDTH(FEET) =  11.04
 FLOW VELOCITY(FEET/SEC.) =  6.84   DEPTH*VELOCITY(FT*FT/SEC.) =   2.18

****************************************************************************
 FLOW PROCESS FROM NODE    606.00 TO NODE    607.00 IS CODE =  6.2
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
```

124

```
    UPSTREAM ELEVATION(FEET) = 1085.00  DOWNSTREAM ELEVATION(FEET) = 1022.00
  STREET LENGTH(FEET) =   500.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =    .017
  OUTSIDE STREET CROSSFALL(DECIMAL) =   .017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =   .020

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =   .40
    HALFSTREET FLOOD WIDTH(FEET) =   15.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.72
  STREET FLOW TRAVEL TIME(MIN.) =    .89   Tc(MIN.) =   8.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.510
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp        Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                D        6.50       .20        .85    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =    .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =    .85
  SUBAREA AREA(ACRES) =    6.50      SUBAREA RUNOFF(CFS) =   25.39
  EFFECTIVE AREA(ACRES) =    8.40    AREA-AVERAGED Fm(INCH/HR) =    .16
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =    .80
  TOTAL AREA(ACRES) =    8.40       PEAK FLOW RATE(CFS) =      32.86

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  .45   HALFSTREET FLOOD WIDTH(FEET) =  18.89
  FLOW VELOCITY(FEET/SEC.) = 10.42   DEPTH*VELOCITY(FT*FT/SEC.) =   4.71

****************************************************************************
  FLOW PROCESS FROM NODE    607.00 TO NODE    607.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.82
  RAINFALL INTENSITY(INCH/HR) =   4.51
  AREA-AVERAGED Fm(INCH/HR) =   .16
  AREA-AVERAGED Fp(INCH/HR) =   .20
  AREA-AVERAGED Ap =   .80
  EFFECTIVE STREAM AREA(ACRES) =    8.40
  TOTAL STREAM AREA(ACRES) =    8.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.86

  ** CONFLUENCE DATA **
   STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
   NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1      19.40   8.92    4.478   .21(  .13)  .60      4.9     601.00
      2      32.86   8.82    4.510   .20(  .16)  .80      8.4     604.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
```

```
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)        (ACRES)     NODE
    1       52.02    8.92     4.478    .21(  .15)   .73     13.3      601.00
    2       52.16    8.82     4.510    .21(  .15)   .73     13.2      604.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     52.16    Tc(MIN.) =     8.82
  EFFECTIVE AREA(ACRES) =    13.24   AREA-AVERAGED Fm(INCH/HR) =   .15
  AREA-AVERAGED Fp(INCH/HR) =   .21  AREA-AVERAGED Ap =   .73
  TOTAL AREA(ACRES) =     13.30

****************************************************************************
  FLOW PROCESS FROM NODE    607.00 TO NODE    703.00 IS CODE =  3.1
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1022.00  DOWNSTREAM(FEET) =  1006.00
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  .013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.99
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     52.16
  PIPE TRAVEL TIME(MIN.) =    .09    Tc(MIN.) =   8.90

****************************************************************************
  FLOW PROCESS FROM NODE    703.00 TO NODE    703.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.90
  RAINFALL INTENSITY(INCH/HR) =   4.48
  AREA-AVERAGED Fm(INCH/HR) =    .15
  AREA-AVERAGED Fp(INCH/HR) =    .21
  AREA-AVERAGED Ap =   .73
  EFFECTIVE STREAM AREA(ACRES) =   13.24
  TOTAL STREAM AREA(ACRES) =   13.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     52.16

****************************************************************************
  FLOW PROCESS FROM NODE    701.00 TO NODE    702.00 IS CODE =  2.1
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
  ELEVATION DATA: UPSTREAM(FEET) =   1071.00  DOWNSTREAM(FEET) =   1050.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]** .20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.723
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.834
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                 D        1.30       .20        .85    91    7.72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .85
  SUBAREA RUNOFF(CFS) =      5.46
  TOTAL AREA(ACRES) =      1.30   PEAK FLOW RATE(CFS) =      5.46

****************************************************************************
```

126

```
     FLOW PROCESS FROM NODE     702.00 TO NODE     703.00 IS CODE =  5.1
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1050.00  DOWNSTREAM(FEET) =   1006.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   375.00   CHANNEL SLOPE =   .1157
  CHANNEL BASE(FEET) =      .00   "Z" FACTOR =   1.500
  MANNING'S FACTOR =  .015   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       5.46
  FLOW VELOCITY(FEET/SEC) =  12.53   FLOW DEPTH(FEET) =     .54
  TRAVEL TIME(MIN.) =     .50   Tc(MIN.) =   8.22

****************************************************************************
  FLOW PROCESS FROM NODE     703.00 TO NODE     703.00 IS CODE =  8.1
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   8.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.686
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                 D        3.10       .20         .85    91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =   .20
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =   .85
  SUBAREA AREA(ACRES) =     3.10      SUBAREA RUNOFF(CFS) =   12.60
  EFFECTIVE AREA(ACRES) =     4.40   AREA-AVERAGED Fm(INCH/HR) =   .17
  AREA-AVERAGED Fp(INCH/HR) =   .20  AREA-AVERAGED Ap =   .85
  TOTAL AREA(ACRES) =     4.40       PEAK FLOW RATE(CFS) =      17.88

****************************************************************************
  FLOW PROCESS FROM NODE     703.00 TO NODE     703.00 IS CODE =  1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.22
  RAINFALL INTENSITY(INCH/HR) =   4.69
  AREA-AVERAGED Fm(INCH/HR) =   .17
  AREA-AVERAGED Fp(INCH/HR) =   .20
  AREA-AVERAGED Ap =   .85
  EFFECTIVE STREAM AREA(ACRES) =    4.40
  TOTAL STREAM AREA(ACRES) =    4.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.88

  ** CONFLUENCE DATA **
   STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
   NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
      1      52.02    9.01     4.453   .21(  .15)  .73     13.3      601.00
      1      52.16    8.90     4.484   .21(  .15)  .73     13.2      604.00
      2      17.88    8.22     4.686   .20(  .17)  .85      4.4      701.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
   NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
      1      69.25    8.90     4.484   .20(  .16)  .76     17.6      604.00
```

2	68.98	9.01	4.453	.20(.15)	.76	17.7	601.00
3	68.30	8.22	4.686	.20(.16)	.76	16.6	701.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 69 25 Tc(MIN.) = 8.90
EFFECTIVE AREA(ACRES) = 17.64 AREA-AVERAGED Fm(INCH/HR) = .16
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .76
TOTAL AREA(ACRES) = 17.70

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 17.70 TC(MIN.) = 8.90
EFFECTIVE AREA(ACRES) = 17.64 AREA-AVERAGED Fm(INCH/HR)= .16
AREA-AVERAGED Fp(INCH/HR) = .20 AREA-AVERAGED Ap = .76
PEAK FLOW RATE(CFS) = 69.25

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	68.30	8.22	4.686	.20(.16)	.76	16.6	701.00
2	69.25	8.90	4.484	.20(.16)	.76	17.6	604.00
3	68.98	9.01	4.453	.20(.15)	.76	17.7	601.00

END OF RATIONAL METHOD ANALYSIS

50-YEAR STORM

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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 ************************** DESCRIPTION OF STUDY **************************
* w.o.#1665-1, saddleback meadows, t.t. 15230                             *
* 50-year storm                                                           *
* areas "A", "B", and "C"                                                 *
 **************************************************************************

  FILE NAME: ABC-DEV.DAT
  TIME/DATE OF STUDY: 09:25 07/16/2001

  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:   MANNING
     WIDTH  CROSSFALL   IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE   FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY     (FT)    (FT)  (FT)  (FT)     (n)
 1   24.0     19.0   0.017/0.017/0.020     0.50    1.50 0.0313 0.125 0.0150
 2   20.0     15.0   0.017/0.017/0.020     0.50    1.50 0.0313 0.125 0.0150
 3   18.0     13.0   0.017/0.017/0.020     0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1560.00  DOWNSTREAM(FEET) =   1530.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.956
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.488
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        1.00      0.30       1.00    66   10.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      2.87
  TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      2.87

**************************************************************************
  FLOW PROCESS FROM NODE      2.00 TO NODE      3.00 IS CODE =  53
--------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<

  ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1452.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   410.00   CHANNEL SLOPE =  0.1902
  CHANNEL FLOW THRU SUBAREA(CFS) =      2.87
  FLOW VELOCITY(FEET/SEC) =   3.47 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  12.93
  LONGEST FLOWPATH FROM NODE      1.00 TO NODE      3.00 =   710.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      3.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

  MAINLINE Tc(MIN) =  12.93
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        4.20      0.30       1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     4.20   SUBAREA RUNOFF(CFS) =    10.87
  EFFECTIVE AREA(ACRES) =     5.20   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      5.20   PEAK FLOW RATE(CFS) =      13.46

**************************************************************************
  FLOW PROCESS FROM NODE      3.00 TO NODE      4.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

  ELEVATION DATA: UPSTREAM(FEET) =  1452.00  DOWNSTREAM(FEET) =  1416.00
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.09
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     13.46
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  13.06
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =   890.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1416.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   485.00   CHANNEL SLOPE =  0.1979
 CHANNEL FLOW THRU SUBAREA(CFS) =     13.46
 FLOW VELOCITY(FEET/SEC) =   5.92 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =  14.43
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  1375.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.43
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.985
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        4.10      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10      SUBAREA RUNOFF(CFS) =     9.91
 EFFECTIVE AREA(ACRES) =     9.30    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     9.30        PEAK FLOW RATE(CFS) =     22.47

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1520.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.225
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.844
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 ".4 DWELLING/ACRE"          B        1.00      0.30       0.90    56    9.23
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
 SUBAREA RUNOFF(CFS) =     3.22
 TOTAL AREA(ACRES) =     1.00   PEAK FLOW RATE(CFS) =     3.22

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =   1500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   150.00   CHANNEL SLOPE =  0.1333
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     3.22
 FLOW VELOCITY(FEET/SEC) =  11.49   FLOW DEPTH(FEET) =   0.43
 TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =   9.44
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =   440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.44
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.794
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        3.60      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     3.60      SUBAREA RUNOFF(CFS) =    11.32
 EFFECTIVE AREA(ACRES) =     4.60    AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     4.60        PEAK FLOW RATE(CFS) =     14.49

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    111.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1500.00  DOWNSTREAM(FEET) =  1454.00
 FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.91
```

```
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     14.49
 PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   9.60
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    111.00 =   660.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.60
 RAINFALL INTENSITY(INCH/HR) =   3.76
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98
 EFFECTIVE STREAM AREA(ACRES) =    4.60
 TOTAL STREAM AREA(ACRES) =    4.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.49

****************************************************************************
 FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1488.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.526
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.314
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D       0.70      0.20       0.50     75    7.53
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      2.65
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.65

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1488.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =   410.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.87
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.40
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.36
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.47
 STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =   8.80
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.948
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D       0.70      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.70     SUBAREA RUNOFF(CFS) =     2.42
 EFFECTIVE AREA(ACRES) =    1.40    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    1.40        PEAK FLOW RATE(CFS) =       4.85

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.32
 FLOW VELOCITY(FEET/SEC.) =  5.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.63
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.80
 RAINFALL INTENSITY(INCH/HR) =   3.95
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     4.85

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1483.00
```

```
Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.031
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.483 .
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50    56    7.03
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      2.34
TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.34

****************************************************************************
 FLOW PROCESS FROM NODE    107.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1483.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.79
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.30
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.36
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.46
 STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =   8.12
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.133
 SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    75
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =     0.80      SUBAREA RUNOFF(CFS) =     2.90
EFFECTIVE AREA(ACRES) =     1.40    AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =     1.40        PEAK FLOW RATE(CFS) =       5.05

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.42
FLOW VELOCITY(FEET/SEC.) =  5.77   DEPTH*VELOCITY(FT*FT/SEC.) =   1.68
LONGEST FLOWPATH FROM NODE    106.00 TO NODE    111.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.12
 RAINFALL INTENSITY(INCH/HR) =   4.13
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.24
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.05

 ** CONFLUENCE DATA **
 STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     14.49   9.60    3.758  0.30( 0.29) 0.98     4.6      101.00
    2      4.85   8.80    3.948  0.20( 0.10) 0.50     1.4      104.00
    3      5.05   8.12    4.133  0.24( 0.12) 0.50     1.4      106.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.
          .
 ** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     23.32   8.12    4.133  0.28( 0.22) 0.78     6.6      106.00
    2     23.68   8.80    3.948  0.28( 0.22) 0.79     7.0      104.00
    3     23.68   9.60    3.758  0.28( 0.22) 0.80     7.4      101.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     23.68    Tc(MIN.) =     9.60
 EFFECTIVE AREA(ACRES) =     7.40   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =      7.40
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.60
 RAINFALL INTENSITY(INCH/HR) =   3.76
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28
 AREA-AVERAGED Ap =  0.80
 EFFECTIVE STREAM AREA(ACRES) =    7.40
 TOTAL STREAM AREA(ACRES) =    7.40
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.68

****************************************************************************
 FLOW PROCESS FROM NODE     108.00 TO NODE     109.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1594.00  DOWNSTREAM(FEET) =   1530.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.034
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.890
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.70      0.30       1.00    66    9.03
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.26
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.26

****************************************************************************
 FLOW PROCESS FROM NODE     109.00 TO NODE     110.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1465.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.2708
 CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.26
 FLOW VELOCITY(FEET/SEC) =  12.52   FLOW DEPTH(FEET) =   0.15
 TRAVEL TIME(MIN.) =   0.32   Tc(MIN.) =   9.35
 LONGEST FLOWPATH FROM NODE     108.00 TO NODE     110.00 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     110.00 TO NODE     110.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.35
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.815
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.30      0.30       0.50    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.30     SUBAREA RUNOFF(CFS) =     0.99
 EFFECTIVE AREA(ACRES) =     1.00   AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =     1.00      PEAK FLOW RATE(CFS) =      3.20

****************************************************************************
 FLOW PROCESS FROM NODE     110.00 TO NODE     111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1458.00
 STREET LENGTH(FEET) =   240.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.51
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =   12.26
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.94
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.34
 STREET FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  10.37
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.598
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        1.50      0.30       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     1.50     SUBAREA RUNOFF(CFS) =     4.61
 EFFECTIVE AREA(ACRES) =     2.50   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     2.50      PEAK FLOW RATE(CFS) =      7.62

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  14.09
 FLOW VELOCITY(FEET/SEC.) =  4.21   DEPTH*VELOCITY(FT*FT/SEC.) =   1.56
 LONGEST FLOWPATH FROM NODE     108.00 TO NODE     111.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     111.00 TO NODE     111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.37
 RAINFALL INTENSITY(INCH/HR) =   3.60
```

```
AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.70
EFFECTIVE STREAM AREA(ACRES) = 2.50
TOTAL STREAM AREA(ACRES) = 2.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.62

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     23.32  8.12    4.133  0.28( 0.22) 0.78     6.6     106.00
    1     23.68  8.80    3.948  0.28( 0.22) 0.79     7.0     104.00
    1     23.68  9.60    3.758  0.28( 0.22) 0.80     7.4     101.00
    2      7.62 10.37    3.598  0.30( 0.21) 0.70     2.5     108.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     30.23  8.12    4.133  0.28( 0.22) 0.76     8.5     106.00
    2     30.82  8.80    3.948  0.28( 0.22) 0.77     9.1     104.00
    3     31.08  9.60    3.758  0.29( 0.22) 0.77     9.7     101.00
    4     30.24 10.37    3.598  0.29( 0.22) 0.77     9.9     108.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 31.08  Tc(MIN.) = 9.60
EFFECTIVE AREA(ACRES) = 9.72  AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.29  AREA-AVERAGED Ap = 0.77
TOTAL AREA(ACRES) = 9.90
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 111.00 = 760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 111.00 TO NODE 117.00 IS CODE = 31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1454.00 DOWNSTREAM(FEET) = 1432.00
 FLOW LENGTH(FEET) = 230.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 20.70
 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 31.08
 PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 9.79
 LONGEST FLOWPATH FROM NODE 108.00 TO NODE 117.00 = 990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 117.00 TO NODE 117.00 IS CODE = 1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 9.79
 RAINFALL INTENSITY(INCH/HR) = 3.72
 AREA-AVERAGED Fm(INCH/HR) = 0.22
 AREA-AVERAGED Fp(INCH/HR) = 0.29
 AREA-AVERAGED Ap = 0.77
 EFFECTIVE STREAM AREA(ACRES) = 9.72
 TOTAL STREAM AREA(ACRES) = 9.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 31.08

****************************************************************************
 FLOW PROCESS FROM NODE 112.00 TO NODE 117.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 280.00
 ELEVATION DATA: UPSTREAM(FEET) = 1450.00 DOWNSTREAM(FEET) = 1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.047
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 4.478
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D       0.90      0.20       0.60     75    7.05
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60
 SUBAREA RUNOFF(CFS) = 3.53
 TOTAL AREA(ACRES) = 0.90  PEAK FLOW RATE(CFS) = 3.53

****************************************************************************
 FLOW PROCESS FROM NODE 117.00 TO NODE 117.00 IS CODE = 1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.05
 RAINFALL INTENSITY(INCH/HR) = 4.48
 AREA-AVERAGED Fm(INCH/HR) = 0.12
 AREA-AVERAGED Fp(INCH/HR) = 0.20
 AREA-AVERAGED Ap = 0.60
 EFFECTIVE STREAM AREA(ACRES) = 0.90
 TOTAL STREAM AREA(ACRES) = 0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.53

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     30.23  8.31    4.078  0.28( 0.22) 0.76     8.5     106.00
     1     30.82  8.99    3.902  0.28( 0.22) 0.77     9.1     104.00
     1     31.08  9.79    3.718  0.29( 0.22) 0.77     9.7     101.00
     1     30.24 10.56    3.561  0.29( 0.22) 0.77     9.9     108.00
     2      3.53  7.05    4.478  0.20( 0.12) 0.60     0.9     112.00
```

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 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     31.81   7.05     4.478   0.28( 0.21) 0.75     8.1      112.00
     2     33.44   8.31     4.078   0.28( 0.21) 0.75     9.4      106.00
     3     33.88   8.99     3.902   0.28( 0.21) 0.75    10.0      104.00
     4     33.99   9.79     3.718   0.28( 0.21) 0.76    10.6      101.00
     5     33.02  10.56     3.561   0.28( 0.21) 0.76    10.8      108.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     33.99    Tc(MIN.) =     9.79
 EFFECTIVE AREA(ACRES) =    10.62   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =     10.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.637
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.547
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "1 DWELLING/ACRE"         D        1.10      0.20       0.80     75   10.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
 SUBAREA RUNOFF(CFS) =      3.35
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      3.35

****************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.50  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =   130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.66
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    9.01
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.51
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.28
 STREET FLOW TRAVEL TIME(MIN.) =   0.48   Tc(MIN.) =  11.12
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.459
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                D        0.20      0.20       0.10     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA AREA(ACRES) =     0.20      SUBAREA RUNOFF(CFS) =     0.62
 EFFECTIVE AREA(ACRES) =    1.30     AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     1.30        PEAK FLOW RATE(CFS) =      3.89

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.21
 FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   1.32
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.12
 RAINFALL INTENSITY(INCH/HR) =   3.46
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.89

****************************************************************************
 FLOW PROCESS FROM NODE    115.00 TO NODE    116.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.928
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.189
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.60      0.20       0.50    75    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      2.21
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.21

****************************************************************************
 FLOW PROCESS FROM NODE    116.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.00  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =   130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.74
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.12
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.10
 STREET FLOW TRAVEL TIME(MIN.) =   0.53   Tc(MIN.) =   8.45
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.039
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.30      0.20       0.50    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.30     SUBAREA RUNOFF(CFS) =     1.06
 EFFECTIVE AREA(ACRES) =     0.90     AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     0.90        PEAK FLOW RATE(CFS) =       3.19

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.28   HALFSTREET FLOOD WIDTH(FEET) =   8.61
 FLOW VELOCITY(FEET/SEC.) =  4.25   DEPTH*VELOCITY(FT*FT/SEC.) =   1.18
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    117.00 =   390.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.45
 RAINFALL INTENSITY(INCH/HR) =   4.04
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    0.90
 TOTAL STREAM AREA(ACRES) =    0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.19

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)    NODE
    1       3.89  11.12     3.459  0.20( 0.14) 0.69      1.3      113.00
    2       3.19   8.45     4.039  0.20( 0.10) 0.50      0.9      115.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)    NODE
    1       6.66   8.45     4.039  0.20( 0.12) 0.60      1.9      115.00
    2       6.61  11.12     3.459  0.20( 0.12) 0.61      2.2      113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      6.66    Tc(MIN.) =     8.45
 EFFECTIVE AREA(ACRES) =     1.89   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =      2.20
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)         (ACRES)    NODE
    1       6.66   8.45     4.039  0.20( 0.12) 0.60      1.9      115.00
    2       6.61  11.12     3.459  0.20( 0.12) 0.61      2.2      113.00
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.
```

```
** MEMORY BANK # 2 CONFLUENCE DATA **
 STREAM      Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      31.81  7.05    4.478  0.28( 0.21) 0.75     8.1      112.00
    2      33.44  8.31    4.078  0.28( 0.21) 0.75     9.4      106.00
    3      33.88  8.99    3.902  0.28( 0.21) 0.75    10.0      104.00
    4      33.99  9.79    3.718  0.28( 0.21) 0.76    10.6      101.00
    5      33.02 10.56    3.561  0.28( 0.21) 0.76    10.8      108.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      37.98  7.05    4.478  0.27( 0.19) 0.72     9.7      112.00
    2      40.05  8.31    4.078  0.27( 0.19) 0.72    11.3      106.00
    3      40.19  8.45    4.039  0.27( 0.19) 0.72    11.5      115.00
    4      40.53  8.99    3.902  0.27( 0.19) 0.73    12.0      104.00
    5      40.63  9.79    3.718  0.27( 0.20) 0.73    12.7      101.00
    6      39.64 10.56    3.561  0.27( 0.20) 0.73    12.9      108.00
    7      38.63 11.12    3.459  0.27( 0.20) 0.73    13.0      113.00
  TOTAL AREA(ACRES) =     13.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      40.63  Tc(MIN.) =    9.788
EFFECTIVE AREA(ACRES) =    12.66  AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.73
TOTAL AREA(ACRES) =     13.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    120.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1428.50  DOWNSTREAM(FEET) =  1420.00
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.80
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     40.63
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   9.88
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    120.00 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.88
 RAINFALL INTENSITY(INCH/HR) =   3.70
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.73
 EFFECTIVE STREAM AREA(ACRES) =   12.66
 TOTAL STREAM AREA(ACRES) =   13.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.63

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    119.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1465.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.934
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.519
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.80      0.30       0.50    56    6.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      3.15
 TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      3.15

****************************************************************************
 FLOW PROCESS FROM NODE    119.00 TO NODE    120.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.99
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    9.01
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.14
```

```
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.74
STREET FLOW TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =   7.75
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.244
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        1.00      0.30       0.50    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =    1.00     SUBAREA RUNOFF(CFS) =     3.68
EFFECTIVE AREA(ACRES) =    1.80   AREA-AVERAGED Fm(INCH/HR) =  0.15
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =    1.80       PEAK FLOW RATE(CFS) =       6.63

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =  10.23
FLOW VELOCITY(FEET/SEC.) =  6.56   DEPTH*VELOCITY(FT*FT/SEC.) =   2.00
LONGEST FLOWPATH FROM NODE    118.00 TO NODE    120.00 =   600.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   7.75
RAINFALL INTENSITY(INCH/HR) =   4.24
AREA-AVERAGED Fm(INCH/HR) =  0.15
AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  0.50
EFFECTIVE STREAM AREA(ACRES) =    1.80
TOTAL STREAM AREA(ACRES) =    1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.63

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     37.98   7.14    4.445  0.27( 0.19) 0.72     9.7     112.00
    1     40.05   8.40    4.053  0.27( 0.19) 0.72    11.3     106.00
    1     40.19   8.55    4.014  0.27( 0.19) 0.72    11.5     115.00
    1     40.53   9.08    3.879  0.27( 0.19) 0.73    12.0     104.00
    1     40.63   9.88    3.698  0.27( 0.20) 0.73    12.7     101.00
    1     39.64  10.65    3.543  0.27( 0.20) 0.73    12.9     108.00
    1     38.63  11.21    3.443  0.27( 0.20) 0.73    13.0     113.00
    2      6.63   7.75    4.244  0.30( 0.15) 0.50     1.8     118.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     44.40   7.14    4.445  0.27( 0.19) 0.69    11.4     112.00
    2     45.61   7.75    4.244  0.27( 0.19) 0.69    12.3     118.00
    3     46.37   8.40    4.053  0.27( 0.19) 0.69    13.1     106.00
    4     46.45   8.55    4.014  0.27( 0.19) 0.69    13.3     115.00
    5     46.58   9.08    3.879  0.27( 0.19) 0.70    13.8     104.00
    6     46.37   9.88    3.698  0.27( 0.19) 0.71    14.5     101.00
    7     45.14  10.65    3.543  0.27( 0.19) 0.71    14.7     108.00
    8     43.96  11.21    3.443  0.27( 0.19) 0.71    14.8     113.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     46.58   Tc(MIN.) =     9.08
EFFECTIVE AREA(ACRES) =    13.79   AREA-AVERAGED Fm(INCH/HR) =  0.19
AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.70
TOTAL AREA(ACRES) =     14.80
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    120.00 =  1100.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    120.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1420.00  DOWNSTREAM(FEET) =  1418.00
FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.30
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     46.58
PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   9.35
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   9.35
RAINFALL INTENSITY(INCH/HR) =   3.81
AREA-AVERAGED Fm(INCH/HR) =  0.19
AREA-AVERAGED Fp(INCH/HR) =  0.27
AREA-AVERAGED Ap =  0.70
EFFECTIVE STREAM AREA(ACRES) =   13.79
TOTAL STREAM AREA(ACRES) =   14.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     46.58

****************************************************************************
FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1443.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```

```
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.405
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.354
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50    56    7.41
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      2.27
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.27

****************************************************************************
 FLOW PROCESS FROM NODE    122.00 TO NODE    125.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.96
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    7.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.64
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.22
 STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =   8.81
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.947
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"       B        0.40      0.30       0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA AREA(ACRES) =     0.40      SUBAREA RUNOFF(CFS) =     1.38
 EFFECTIVE AREA(ACRES) =     1.00    AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =     1.00        PEAK FLOW RATE(CFS) =       3.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.27   HALFSTREET FLOOD WIDTH(FEET) =   8.40
 FLOW VELOCITY(FEET/SEC.) =  4.75   DEPTH*VELOCITY(FT*FT/SEC.) =   1.30
 LONGEST FLOWPATH FROM NODE    121.00 TO NODE    125.00 =   690.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.81
 RAINFALL INTENSITY(INCH/HR) =   3.95
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.46
 EFFECTIVE STREAM AREA(ACRES) =    1.00
 TOTAL STREAM AREA(ACRES) =    1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.43

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     44.40   7.42     4.350   0.27( 0.19) 0.69     11.4     112.00
     1     45.61   8.02     4.160   0.27( 0.19) 0.69     12.3     118.00
     1     46.37   8.68     3.980   0.27( 0.19) 0.69     13.1     106.00
     1     46.45   8.82     3.943   0.27( 0.19) 0.69     13.3     I15.00
     1     46.58   9.35     3.814   0.27( 0.19) 0.70     13.8     104.00
     1     46.37  10.16     3.641   0.27( 0.19) 0.71     14.5     101.00
     1     45.14  10.93     3.492   0.27( 0.19) 0.71     14.7     108.00
     1     43.96  11.49     3.396   0.27( 0.19) 0.71     14.8     113.00
     2      3.43   8.81     3.947   0.30( 0.14) 0.46      1.0     121.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     47.59   7.42     4.350   0.27( 0.18) 0.67     12.2     112.00
     2     48.91   8.02     4.160   0.27( 0.18) 0.67     13.2     118.00
     3     49.78   8.68     3.980   0.27( 0.18) 0.68     14.1     106.00
     4     49.87   8.81     3.947   0.27( 0.18) 0.68     14.2     121.00
     5     49.88   8.82     3.943   0.27( 0.18) 0.68     14.3     115.00
     6     49.89   9.35     3.814   0.27( 0.19) 0.68     14.8     104.00
     7     49.53  10.16     3.641   0.27( 0.19) 0.69     15.5     101.00
     8     48.16  10.93     3.492   0.27( 0.19) 0.69     15.7     108.00
     9     46.89  11.49     3.396   0.27( 0.19) 0.69     15.8     113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     49.89    Tc(MIN.) =     9.35
 EFFECTIVE AREA(ACRES) =    14.79   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     15.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =  1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 9.35
 RAINFALL INTENSITY(INCH/HR) = 3.81
 AREA-AVERAGED Fm(INCH/HR) = 0.19
 AREA-AVERAGED Fp(INCH/HR) = 0.27
 AREA-AVERAGED Ap = 0.68
 EFFECTIVE STREAM AREA(ACRES) = 14.79
 TOTAL STREAM AREA(ACRES) = 15.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 49.89

****************************************************************************
 FLOW PROCESS FROM NODE 123.00 TO NODE 124.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 290.00
 ELEVATION DATA: UPSTREAM(FEET) = 1453.80 DOWNSTREAM(FEET) = 1443.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.671
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 5.064
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 B        0.20      0.30       0.10    56    5.67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
 SUBAREA RUNOFF(CFS) = 0.91
 TOTAL AREA(ACRES) = 0.20  PEAK FLOW RATE(CFS) = 0.91

****************************************************************************
 FLOW PROCESS FROM NODE 124.00 TO NODE 125.00 IS CODE = 62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 3 USED)<<<<<
 UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) = 360.00  CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 13.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.30
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) = 0.21
  HALFSTREET FLOOD WIDTH(FEET) = 4.84
  AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.07
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.87
 STREET FLOW TRAVEL TIME(MIN.) = 1.47  Tc(MIN.) = 7.14
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 4.443
 SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        0.20      0.30       0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
 SUBAREA AREA(ACRES) = 0.20  SUBAREA RUNOFF(CFS) = 0.79
 EFFECTIVE AREA(ACRES) = 0.40  AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.10
 TOTAL AREA(ACRES) = 0.40  PEAK FLOW RATE(CFS) = 1.59

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.22  HALFSTREET FLOOD WIDTH(FEET) = 5.46
 FLOW VELOCITY(FEET/SEC.) = 4.24  DEPTH*VELOCITY(FT*FT/SEC.) = 0.95
 LONGEST FLOWPATH FROM NODE 123.00 TO NODE 125.00 = 650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 125.00 TO NODE 125.00 IS CODE = 1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.14
 RAINFALL INTENSITY(INCH/HR) = 4.44
 AREA-AVERAGED Fm(INCH/HR) = 0.03
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.10
 EFFECTIVE STREAM AREA(ACRES) = 0.40
 TOTAL STREAM AREA(ACRES) = 0.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.59

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     47.59   7.42     4.350   0.27( 0.18) 0.67     12.2      112.00
     1     48.91   8.02     4.160   0.27( 0.18) 0.67     13.2      118.00
     1     49.78   8.68     3.980   0.27( 0.18) 0.68     14.1      106.00
     1     49.87   8.81     3.947   0.27( 0.18) 0.68     14.2      121.00
     1     49.88   8.82     3.943   0.27( 0.18) 0.68     14.3      115.00
     1     49.89   9.35     3.814   0.27( 0.19) 0.68     14.8      104.00
     1     49.53  10.16     3.641   0.27( 0.19) 0.69     15.5      101.00
     1     48.16  10.93     3.492   0.27( 0.19) 0.69     15.7      108.00
     1     46.89  11.49     3.396   0.27( 0.19) 0.69     15.8      113.00
     2      1.59   7.14     4.443   0.30( 0.03) 0.10      0.4      123.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

 ** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	48.45	7.14	4.443	0.27(0.18)	0.65	12.2	123.00
2	49.14	7.42	4.350	0.27(0.18)	0.66	12.6	112.00
3	50.40	8.02	4.160	0.27(0.18)	0.66	13.6	118.00
4	51.20	8.68	3.980	0.27(0.18)	0.66	14.5	106.00
5	51.28	8.81	3.947	0.27(0.18)	0.66	14.6	121.00
6	51.29	8.82	3.943	0.27(0.18)	0.66	14.7	115.00
7	51.25	9.35	3.814	0.27(0.18)	0.67	15.2	104.00
8	50.83	10.16	3.641	0.27(0.18)	0.67	15.9	101.00
9	49.41	10.93	3.492	0.27(0.18)	0.68	16.1	108.00
10	48.10	11.49	3.396	0.27(0.18)	0.68	16.2	113.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51.29 Tc(MIN.) = 8.82
EFFECTIVE AREA(ACRES) = 14.65 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.27 AREA-AVERAGED Ap = 0.66
TOTAL AREA(ACRES) = 16.20
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 125.00 = 1270.00 FEET.

****
FLOW PROCESS FROM NODE 125.00 TO NODE 5.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1418.00 DOWNSTREAM(FEET) = 1330.00
FLOW LENGTH(FEET) = 160.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 11.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 45.17
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 51.29
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 8.88
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	48.45	7.20	4.422	0.27(0.18)	0.65	12.2	123.00
2	49.14	7.48	4.330	0.27(0.18)	0.66	12.6	112.00
3	50.40	8.08	4.143	0.27(0.18)	0.66	13.6	118.00
4	51.20	8.74	3.964	0.27(0.18)	0.66	14.5	106.00
5	51.28	8.87	3.932	0.27(0.18)	0.66	14.6	121.00
6	51.29	8.88	3.928	0.27(0.18)	0.66	14.7	115.00
7	51.25	9.41	3.801	0.27(0.18)	0.67	15.2	104.00
8	50.83	10.21	3.629	0.27(0.18)	0.67	15.9	101.00
9	49.41	10.99	3.482	0.27(0.18)	0.68	16.1	108.00
10	48.10	11.55	3.386	0.27(0.18)	0.68	16.2	113.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22.47	14.43	2.985	0.30(0.30)	1.00	9.3	1.00

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1375.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	65.68	7.20	4.422	0.28(0.21)	0.75	16.8	123.00
2	66.62	7.48	4.330	0.28(0.21)	0.75	17.4	112.00
3	68.42	8.08	4.143	0.28(0.21)	0.75	18.8	118.00
4	69.78	8.74	3.964	0.28(0.21)	0.76	20.1	106.00
5	69.96	8.87	3.932	0.28(0.21)	0.76	20.4	121.00
6	69.98	8.88	3.928	0.28(0.21)	0.76	20.4	115.00
7	70.37	9.41	3.801	0.28(0.22)	0.76	21.3	104.00
8	70.56	10.21	3.629	0.28(0.22)	0.77	22.4	101.00
9	69.69	10.99	3.482	0.28(0.22)	0.77	23.2	108.00
10	68.78	11.55	3.386	0.28(0.22)	0.78	23.6	113.00
11	64.56	14.43	2.985	0.29(0.23)	0.79	25.5	1.00

TOTAL AREA(ACRES) = 25.50

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 70.56 Tc(MIN.) = 10.215
EFFECTIVE AREA(ACRES) = 22.44 AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.28 AREA-AVERAGED Ap = 0.77
TOTAL AREA(ACRES) = 25.50
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 5.00 TO NODE 6.00 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1320.00 DOWNSTREAM(FEET) = 1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 950.00 CHANNEL SLOPE = 0.1389
CHANNEL FLOW THRU SUBAREA(CFS) = 70.56
FLOW VELOCITY(FEET/SEC) = 8.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.84 Tc(MIN.) = 12.05
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

****
FLOW PROCESS FROM NODE 6.00 TO NODE 6.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 12.05
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.304
SUBAREA LOSS RATE DATA(AMC II):

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D       16.50      0.20       1.00    83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) =  16.50     SUBAREA RUNOFF(CFS) =  46.10
EFFECTIVE AREA(ACRES) =  38.94   AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.24 AREA-AVERAGED Ap = 0.87
TOTAL AREA(ACRES) =  42.00       PEAK FLOW RATE(CFS) =  108.45

** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     110.07   9.09    3.877  0.24( 0.21) 0.87    33.3     123.00
    2     110.23   9.35    3.815  0.24( 0.21) 0.87    33.9     112.00
    3     110.51   9.94    3.685  0.24( 0.21) 0.87    35.3     118.00
    4     110.38  10.58    3.557  0.24( 0.21) 0.87    36.6     106.00
    5     110.30  10.71    3.533  0.24( 0.21) 0.87    36.9     121.00
    6     110.29  10.72    3.530  0.24( 0.21) 0.87    36.9     115.00
    7     109.65  11.25    3.436  0.24( 0.21) 0.87    37.8     104.00
    8     108.45  12.05    3.304  0.24( 0.21) 0.87    38.9     101.00
    9     106.44  12.84    3.189  0.24( 0.21) 0.87    39.7     108.00
   10     104.77  13.40    3.112  0.24( 0.21) 0.87    40.1     113.00
   11      97.06  16.32    2.784  0.25( 0.22) 0.87    42.0       1.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =  110.51  Tc(MIN.) =  9.94
AREA-AVERAGED Fm(INCH/HR) = 0.21  AREA-AVERAGED Fp(INCH/HR) = 0.24
AREA-AVERAGED Ap = 0.87  EFFECTIVE AREA(ACRES) =  35.30

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE = 10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  270.00
 ELEVATION DATA: UPSTREAM(FEET) =  1424.00  DOWNSTREAM(FEET) =  1421.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  9.512
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.778
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.60      0.20       0.60    75    9.51
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60
 SUBAREA RUNOFF(CFS) =  5.27
 TOTAL AREA(ACRES) =  1.60   PEAK FLOW RATE(CFS) =  5.27

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    306.00 IS CODE = 62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1421.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =  480.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  8.40
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.36
  HALFSTREET FLOOD WIDTH(FEET) =  13.58
  AVERAGE FLOW VELOCITY(FEET/SEC.) =  4.97
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  1.80
 STREET FLOW TRAVEL TIME(MIN.) =  1.61  Tc(MIN.) =  11.12
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.459
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        0.80      0.30       0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.30      0.20       0.60    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.60
 SUBAREA AREA(ACRES) =  2.10      SUBAREA RUNOFF(CFS) =  6.27
 EFFECTIVE AREA(ACRES) =  3.70    AREA-AVERAGED Fm(INCH/HR) = 0.13
 AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.60
 TOTAL AREA(ACRES) =  3.70        PEAK FLOW RATE(CFS) =  11.07

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39  HALFSTREET FLOOD WIDTH(FEET) = 15.11
 FLOW VELOCITY(FEET/SEC.) = 5.37  DEPTH*VELOCITY(FT*FT/SEC.) =  2.08
 LONGEST FLOWPATH FROM NODE  301.00 TO NODE  306.00 =  750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.12
```

```
 RAINFALL INTENSITY(INCH/HR) =  3.46
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =  3.70
 TOTAL STREAM AREA(ACRES) =  3.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  11.07

****************************************************************************
 FLOW PROCESS FROM NODE  303.00 TO NODE  304.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1424.00  DOWNSTREAM(FEET) =  1419.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  8.638
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.990
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    75    8.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =  2.80
 TOTAL AREA(ACRES) =  0.80   PEAK FLOW RATE(CFS) =  2.80

****************************************************************************
 FLOW PROCESS FROM NODE  304.00 TO NODE  306.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1419.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =  470.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  5.14
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =  11.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =  4.30
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  1.38
 STREET FLOW TRAVEL TIME(MIN.) =  1.82  Tc(MIN.) =  10.46
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.581
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.50      0.30       0.50    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.00      0.20       0.50    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =  1.50   SUBAREA RUNOFF(CFS) =  4.68
 EFFECTIVE AREA(ACRES) =  2.30   AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =  2.30   PEAK FLOW RATE(CFS) =  7.18

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.35  HALFSTREET FLOOD WIDTH(FEET) =  12.87
 FLOW VELOCITY(FEET/SEC.) =  4.70  DEPTH*VELOCITY(FT*FT/SEC.) =  1.64
 LONGEST FLOWPATH FROM NODE  303.00 TO NODE  306.00 =  770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  306.00 TO NODE  306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.46
 RAINFALL INTENSITY(INCH/HR) =  3.58
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =  2.30
 TOTAL STREAM AREA(ACRES) =  2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  7.18

****************************************************************************
 FLOW PROCESS FROM NODE  305.00 TO NODE  306.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  135.00
 ELEVATION DATA: UPSTREAM(FEET) =  1418.00  DOWNSTREAM(FEET) =  1404.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  5.000
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  5.437
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  B        0.10      0.30       0.10    56    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =  0.49
 TOTAL AREA(ACRES) =  0.10   PEAK FLOW RATE(CFS) =  0.49
```

```
**************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =  1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   5.44
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =    0.10
 TOTAL STREAM AREA(ACRES) =    0.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.49

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     11.07  11.12    3.459  0.22( 0.13) 0.60     3.7      301.00
    2      7.18  10.46    3.581  0.22( 0.11) 0.50     2.3      303.00
    3      0.49   5.00    5.437  0.30( 0.03) 0.10     0.1      305.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     13.70   5.00    5.437  0.22( 0.12) 0.54     2.9      305.00
    2     18.30  10.46    3.581  0.22( 0.12) 0.55     5.9      303.00
    3     18.31  11.12    3.459  0.22( 0.12) 0.55     6.1      301.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    18.31   Tc(MIN.) =   11.12
 EFFECTIVE AREA(ACRES) =    6.10   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =     6.10
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    306.00 =   770.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    308.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1370.00
 FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS    9.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.50
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    18.31
 PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  11.39
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    308.00 =  1070.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    308.00 IS CODE =  1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.39
 RAINFALL INTENSITY(INCH/HR) =   3.41
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.55
 EFFECTIVE STREAM AREA(ACRES) =    6.10
 TOTAL STREAM AREA(ACRES) =    6.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.31

**************************************************************************
 FLOW PROCESS FROM NODE    307.00 TO NODE    308.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1404.50  DOWNSTREAM(FEET) =   1371.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.677
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  5.060
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE              GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"       B        0.40      0.30       0.40    56    5.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =     1.78
 TOTAL AREA(ACRES) =     0.40   PEAK FLOW RATE(CFS) =     1.78

**************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    308.00 IS CODE =  1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.68
 RAINFALL INTENSITY(INCH/HR) =   5.06
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.40
 EFFECTIVE STREAM AREA(ACRES) =    0.40
 TOTAL STREAM AREA(ACRES) =    0.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     1.78
```

```
** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      13.70   5.29     5.266   0.22( 0.12) 0.54      2.9      305.00
    1      18.30  10.73     3.529   0.22( 0.12) 0.55      5.9      303.00
    1      18.31  11.39     3.412   0.22( 0.12) 0.55      6.1      301.00
    2       1.78   5.68     5.060   0.30( 0.12) 0.40      0.4      307.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      15.43   5.29     5.266   0.23( 0.12) 0.53      3.2      305.00
    2      15.80   5.68     5.060   0.23( 0.12) 0.53      3.5      307.00
    3      19.53  10.73     3.529   0.23( 0.12) 0.54      6.3      303.00
    4      19.50  11.39     3.412   0.23( 0.12) 0.54      6.5      301.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     19.53    Tc(MIN.) =    10.73
EFFECTIVE AREA(ACRES) =     6.28   AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.54
TOTAL AREA(ACRES) =      6.50
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    308.00 =  1070.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1370.00  DOWNSTREAM(FEET) =  1363.50
 FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.32
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     19.53
 PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  10.81
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    309.00 TO NODE    310.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1390.00  DOWNSTREAM(FEET) =   1383.00
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.093
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.876
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          D        1.20      0.20       0.70     75    9.09
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      4.03
 TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      4.03

****************************************************************************
 FLOW PROCESS FROM NODE    310.00 TO NODE    313.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1383.00  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.53
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =   12.36
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.60
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.57
 STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =  10.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.578
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50     56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.00      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     1.60     SUBAREA RUNOFF(CFS) =     4.98
 EFFECTIVE AREA(ACRES) =    2.80    AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =     2.80       PEAK FLOW RATE(CFS) =       8.70

 END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  13.89
 FLOW VELOCITY(FEET/SEC.) =  4.94   DEPTH*VELOCITY(FT*FT/SEC.) =  1.81
 LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.47
 RAINFALL INTENSITY(INCH/HR) =  3.58
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.59
 EFFECTIVE STREAM AREA(ACRES) =    2.80
 TOTAL STREAM AREA(ACRES) =    2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.70

****************************************************************************
 FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1389.00  DOWNSTREAM(FEET) =   1379.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.259
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.403
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      D        0.60      0.20       0.40     75    7.26
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      2.33
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      2.33

****************************************************************************
 FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1379.20  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.80
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =   11.04
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.14
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.32
 STREET FLOW TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =   8.55
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.014
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.20      0.30       0.50     56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.20      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.21
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    4.92
 EFFECTIVE AREA(ACRES) =    2.00    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.21  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =    2.00        PEAK FLOW RATE(CFS) =       7.05

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  13.07
 FLOW VELOCITY(FEET/SEC.) =  4.48   DEPTH*VELOCITY(FT*FT/SEC.) =   1.58
 LONGEST FLOWPATH FROM NODE    311.00 TO NODE    313.00 =   620.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.55
 RAINFALL INTENSITY(INCH/HR) =   4.01
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.21
 AREA-AVERAGED Ap =  0.47
 EFFECTIVE STREAM AREA(ACRES) =    2.00
 TOTAL STREAM AREA(ACRES) =    2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.05

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      8.70  10.47     3.578   0.22( 0.13) 0.59      2.8      309.00
     2      7.05   8.55     4.014   0.21( 0.10) 0.47      2.0      311.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

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CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     15.04   8.55    4.014  0.22( 0.11) 0.53     4.3     311.00
   2     14.96  10.47    3.578  0.22( 0.12) 0.54     4.8     309.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    15.04    Tc(MIN.) =    8.55
EFFECTIVE AREA(ACRES) =    4.29   AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =     4.80
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     15.04   8.55    4.014  0.22( 0.11) 0.53     4.3     311.00
   2     14.96  10.47    3.578  0.22( 0.12) 0.54     4.8     309.00
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     15.43   5.37    5.221  0.23( 0.12) 0.53     3.2     305.00
   2     15.80   5.76    5.020  0.23( 0.12) 0.53     3.5     307.00
   3     19.53  10.81    3.515  0.23( 0.12) 0.54     6.3     303.00
   4     19.50  11.47    3.399  0.23( 0.12) 0.54     6.5     301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     27.80   5.37    5.221  0.22( 0.12) 0.53     5.9     305.00
   2     28.55   5.76    5.020  0.22( 0.12) 0.53     6.4     307.00
   3     32.90   8.55    4.014  0.22( 0.12) 0.53     9.3     311.00
   4     34.24  10.47    3.578  0.22( 0.12) 0.54    10.9     309.00
   5     34.21  10.81    3.515  0.22( 0.12) 0.54    11.1     303.00
   6     33.68  11.47    3.399  0.22( 0.12) 0.54    11.3     301.00
  TOTAL AREA(ACRES) =     11.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    34.24  Tc(MIN.) =   10.472
EFFECTIVE AREA(ACRES) =    10.89  AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =     11.30
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.10 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1363.50  DOWNSTREAM(FEET) =  1290.00
 FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  32.36
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    34.24
 PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  10.60
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.10 =  1400.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.10 TO NODE      6.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1290.00  DOWNSTREAM(FEET) =  1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   550.00   CHANNEL SLOPE =  0.1855
 CHANNEL FLOW THRU SUBAREA(CFS) =    34.24
 FLOW VELOCITY(FEET/SEC) =  7.82 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =  11.77
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     27.80   6.76    4.583  0.22( 0.12) 0.53     5.9     305.00
   2     28.55   7.14    4.445  0.22( 0.12) 0.53     6.4     307.00
   3     32.90   9:86    3.701  0.22( 0.12) 0.53     9.3     311.00
   4     34.24  11.77    3.349  0.22( 0.12) 0.54    10.9     309.00
   5     34.21  12.11    3.296  0.22( 0.12) 0.54    11.1     303.00
   6     33.68  12.78    3.197  0.22( 0.12) 0.54    11.3     301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1    110.07   9.09    3.877  0.24( 0.21) 0.87    33.3     123.00
   2    110.23   9.35    3.815  0.24( 0.21) 0.87    33.9     112.00
   3    110.51   9.94    3.685  0.24( 0.21) 0.87    35.3     118.00
```

```
   4    110.38  10.58    3.557  0.24( 0.21) 0.87    36.6     106.00
   5    110.30  10.71    3.533  0.24( 0.21) 0.87    36.9     121.00
   6    110.29  10.72    3.530  0.24( 0.21) 0.87    36.9     115.00
   7    109.65  11.25    3.436  0.24( 0.21) 0.87    37.8     104.00
   8    108.45  12.05    3.304  0.24( 0.21) 0.87    38.9     101.00
   9    106.44  12.84    3.189  0.24( 0.21) 0.87    39.7     108.00
  10    104.77  13.40    3.112  0.24( 0.21) 0.87    40.1     113.00
  11     97.06  16.32    2.784  0.25( 0.22) 0.87    42.0       1.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE      6.00 =  2380.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    125.47  6.76    4.583  0.23( 0.19) 0.81    30.7     305.00
    2    128.38  7.14    4.445  0.23( 0.19) 0.81    32.5     307.00
    3    141.73  9.09    3.877  0.23( 0.19) 0.80    41.8     123.00
    4    142.31  9.35    3.815  0.23( 0.19) 0.80    42.7     112.00
    5    143.38  9.86    3.701  0.24( 0.19) 0.80    44.4     311.00
    6    143.46  9.94    3.685  0.24( 0.19) 0.80    44.7     118.00
    7    143.78 10.58    3.557  0.24( 0.19) 0.80    46.5     106.00
    8    143.80 10.71    3.533  0.24( 0.19) 0.80    46.9     121.00
    9    143.79 10.72    3.530  0.24( 0.19) 0.80    46.9     115.00
   10    143.53 11.25    3.436  0.24( 0.19) 0.79    48.2     104.00
   11    143.11 11.77    3.349  0.24( 0.19) 0.79    49.4     309.00
   12    142.66 12.05    3.304  0.24( 0.19) 0.80    50.0     101.00
   13    142.52 12.11    3.296  0.24( 0.19) 0.80    50.1     303.00
   14    140.27 12.78    3.197  0.24( 0.19) 0.80    51.0     301.00
   15    140.02 12.84    3.189  0.24( 0.19) 0.80    51.0     108.00
   16    137.52 13.40    3.112  0.24( 0.19) 0.80    51.4     113.00
   17    126.21 16.32    2.784  0.24( 0.20) 0.80    53.3       1.00
  TOTAL AREA(ACRES) =     53.30

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     143.80  Tc(MIN.) =   10.709
 EFFECTIVE AREA(ACRES) =    46.86  AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =     53.30
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE      6.00 =  2380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      7.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1188.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0923
 CHANNEL FLOW THRU SUBAREA(CFS) =    143.80
 FLOW VELOCITY(FEET/SEC) =  16.10 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.54   Tc(MIN.) =  11.25
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE      7.00 =  2900.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.25
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.437
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       10.00      0.20        1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   10.00     SUBAREA RUNOFF(CFS) =   29.13
 EFFECTIVE AREA(ACRES) =   56.86   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =   63.30       PEAK FLOW RATE(CFS) =     166.12

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    153.53  7.32    4.381  0.22( 0.19) 0.85    40.7     305.00
     2    155.74  7.69    4.260  0.22( 0.19) 0.85    42.5     307.00
     3    166.01  9.63    3.753  0.23( 0.19) 0.84    51.8     123.00
     4    166.24  9.89    3.696  0.23( 0.19) 0.84    52.7     112.00
     5    166.63 10.40    3.592  0.23( 0.19) 0.84    54.4     311.00
     6    166.63 10.48    3.577  0.23( 0.19) 0.84    54.7     118.00
     7    166.23 11.12    3.458  0.23( 0.19) 0.83    56.5     106.00
     8    166.12 11.25    3.437  0.23( 0.19) 0.83    56.9     121.00
     9    166.10 11.26    3.434  0.23( 0.19) 0.83    56.9     115.00
    10    165.30 11.79    3.346  0.23( 0.19) 0.83    58.2     104.00
    11    164.37 12.31    3.265  0.23( 0.19) 0.83    59.4     309.00
    12    163.69 12.59    3.224  0.23( 0.19) 0.83    60.0     101.00
    13    163.49 12.65    3.216  0.23( 0.19) 0.83    60.1     303.00
    14    160.78 13.32    3.123  0.23( 0.19) 0.83    61.0     301.00
    15    160.49 13.38    3.115  0.23( 0.19) 0.83    61.0     108.00
    16    157.57 13.95    3.042  0.23( 0.19) 0.83    61.4     113.00
    17    144.40 16.88    2.731  0.24( 0.20) 0.84    63.3       1.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =   166.63  Tc(MIN.) =  10.48
 AREA-AVERAGED Fm(INCH/HR) =  0.19  AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  0.84  EFFECTIVE AREA(ACRES) =    54.67

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
 ELEVATION DATA: UPSTREAM(FEET) =   1590.00  DOWNSTREAM(FEET) =   1574.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.314
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.609
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B       1.40      0.30       1.00     66   10.31
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      4.17
 TOTAL AREA(ACRES) =      1.40   PEAK FLOW RATE(CFS) =      4.17

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
 ELEVATION DATA: UPSTREAM(FEET) =   1574.00  DOWNSTREAM(FEET) =   1518.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   660.00   CHANNEL SLOPE =  0.0848
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      4.17
 FLOW VELOCITY(FEET/SEC) =  10.44   FLOW DEPTH(FEET) =   0.52
 TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  11.37
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    203.00 =   880.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 MAINLINE Tc(MIN) =  11.37
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.416
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 B       1.90      0.30       0.85     56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
 SUBAREA AREA(ACRES) =     1.90   SUBAREA RUNOFF(CFS) =     5.41
 EFFECTIVE AREA(ACRES) =     3.30   AREA-AVERAGED Fm(INCH/HR) =  0.27
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =      3.30   PEAK FLOW RATE(CFS) =      9.33

****************************************************************************
 FLOW PROCESS FROM NODE    203.00 TO NODE    206.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
 UPSTREAM ELEVATION(FEET) =  1518.00  DOWNSTREAM ELEVATION(FEET) =  1463.00
 STREET LENGTH(FEET) =   910.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) =  18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.97
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.38
  HALFSTREET FLOOD WIDTH(FEET) =   14.60
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.19
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.35
 STREET FLOW TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =  13.82
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.059
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B       1.30      0.30       0.50     56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D       0.70      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     2.00   SUBAREA RUNOFF(CFS) =     5.27
 EFFECTIVE AREA(ACRES) =     5.30   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29   AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =      5.30   PEAK FLOW RATE(CFS) =      13.54

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.39   HALFSTREET FLOOD WIDTH(FEET) =  15.31
 FLOW VELOCITY(FEET/SEC.) =  6.41   DEPTH*VELOCITY(FT*FT/SEC.) =   2.50
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    206.00 =  1790.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    206.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.82
 RAINFALL INTENSITY(INCH/HR) =   3.06
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.76
 EFFECTIVE STREAM AREA(ACRES) =    5.30
 TOTAL STREAM AREA(ACRES) =    5.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.54
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**************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE = 21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1518.00  DOWNSTREAM(FEET) =  1516.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.989
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.482
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        0.90      0.30       0.60    56   10.99
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      2.67
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      2.67

**************************************************************************
 FLOW PROCESS FROM NODE    205.00 TO NODE    206.00 IS CODE = 62
--------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
==========================================================================
 UPSTREAM ELEVATION(FEET) = 1516.00  DOWNSTREAM ELEVATION(FEET) = 1462.50
 STREET LENGTH(FEET) =  720.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.08
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.30
   HALFSTREET FLOOD WIDTH(FEET) =    9.72
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.49
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.63
 STREET FLOW TRAVEL TIME(MIN.) =  2.19   Tc(MIN.) =  13.18
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.142
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        1.80      0.30       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =     4.80
 EFFECTIVE AREA(ACRES) =     2.70    AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     2.70        PEAK FLOW RATE(CFS) =       7.20

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.32   HALFSTREET FLOOD WIDTH(FEET) =  11.35
 FLOW VELOCITY(FEET/SEC.) =  5.92   DEPTH*VELOCITY(FT*FT/SEC.) =    1.92
 LONGEST FLOWPATH FROM NODE    204.00 TO NODE    206.00 =  1020.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    206.00 IS CODE =  1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.18
 RAINFALL INTENSITY(INCH/HR) =  3.14
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =     2.70
 TOTAL STREAM AREA(ACRES) =     2.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       7.20

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1      13.54   13.82     3.059   0.29( 0.22) 0.76      5.3      201.00
     2       7.20   13.18     3.142   0.30( 0.18) 0.60      2.7      204.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1      20.49   13.18     3.142   0.29( 0.21) 0.70      7.8      204.00
     2      20.53   13.82     3.059   0.29( 0.21) 0.70      8.0      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      20.53    Tc(MIN.) =     13.82
 EFFECTIVE AREA(ACRES) =      8.00   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29   AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =       8.00
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    206.00 =  1790.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    210.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
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 ELEVATION DATA: UPSTREAM(FEET) =  1461.00  DOWNSTREAM(FEET) =  1450.00
 FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.03
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     20.53
 PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  14.09
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.09
 RAINFALL INTENSITY(INCH/HR) =   3.02
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    8.00
 TOTAL STREAM AREA(ACRES) =    8.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.53

****************************************************************************
 FLOW PROCESS FROM NODE    207.00 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1462.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.164
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.120
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        1.90      0.30       0.70    56    8.16
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      6.69
 TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      6.69

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.16
 RAINFALL INTENSITY(INCH/HR) =   4.12
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    1.90
 TOTAL STREAM AREA(ACRES) =    1.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     6.69

****************************************************************************
 FLOW PROCESS FROM NODE    208.00 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.375
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.739
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  B        0.20      0.30       0.10    56    6.38
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =      0.85
 TOTAL AREA(ACRES) =      0.20   PEAK FLOW RATE(CFS) =      0.85

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.38
 RAINFALL INTENSITY(INCH/HR) =   4.74
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =    0.20
 TOTAL STREAM AREA(ACRES) =    0.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     0.85

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     20.49  13.45     3.106   0.29( 0.21)  0.70     7.8     204.00
     1     20.53  14.09     3.025   0.29( 0.21)  0.70     8.0     201.00
     2      6.69   8.16     4.120   0.30( 0.21)  0.70     1.9     207.00
     3      0.85   6.38     4.739   0.30( 0.03)  0.10     0.2     208.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.
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** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     22.08   6.38    4.739  0.30( 0.20) 0.68     5.4     208.00
    2     24.21   8.16    4.120  0.30( 0.20) 0.68     6.8     207.00
    3     25.99  13.45    3.106  0.30( 0.20) 0.69     9.9     204.00
    4     25.88  14.09    3.025  0.29( 0.20) 0.69    10.1     201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    25.99    Tc(MIN.) =    13.45
EFFECTIVE AREA(ACRES) =    9.85   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.69
TOTAL AREA(ACRES) =     10.10
LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.45
 RAINFALL INTENSITY(INCH/HR) =   3.11
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    9.85
 TOTAL STREAM AREA(ACRES) =   10.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.99

****************************************************************************
 FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  240.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1451.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.554
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.769
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          D        0.70      0.20       0.70    75    9.55
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      2.29
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.29

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.55
 RAINFALL INTENSITY(INCH/HR) =   3.77
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    0.70
 TOTAL STREAM AREA(ACRES) =    0.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.29

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     22.08   6.38    4.739  0.30( 0.20) 0.68     5.4     208.00
     1     24.21   8.16    4.120  0.30( 0.20) 0.68     6.8     207.00
     1     25.99  13.45    3.106  0.30( 0.20) 0.69     9.9     204.00
     1     25.88  14.09    3.025  0.29( 0.20) 0.69    10.1     201.00
     2      2.29   9.55    3.769  0.20( 0.14) 0.70     0.7     209.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     24.01   6.38    4.739  0.29( 0.20) 0.68     5.8     208.00
     2     26.35   8.16    4.120  0.29( 0.20) 0.69     7.4     207.00
     3     26.96   9.55    3.769  0.29( 0.20) 0.69     8.3     209.00
     4     27.86  13.45    3.106  0.29( 0.20) 0.69    10.6     204.00
     5     27.70  14.09    3.025  0.29( 0.20) 0.69    10.8     201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    27.86    Tc(MIN.) =    13.45
 EFFECTIVE AREA(ACRES) =   10.55   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     10.80
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    215.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1450.00  DOWNSTREAM(FEET) =  1417.50
 FLOW LENGTH(FEET) =   560.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.61
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    27.86
 PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  14.01
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.
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**********************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =  1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.01
 RAINFALL INTENSITY(INCH/HR) =   3.03
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =   10.55
 TOTAL STREAM AREA(ACRES) =   10.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.86

**********************************************************************
 FLOW PROCESS FROM NODE    213.00 TO NODE    214.00 IS CODE =  21
----------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
======================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.40  DOWNSTREAM(FEET) =   1432.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.469
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.700
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.90      0.20       0.50    75    6.47
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      3.73
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      3.73

**********************************************************************
 FLOW PROCESS FROM NODE    214.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
======================================================================
 UPSTREAM ELEVATION(FEET) = 1432.20  DOWNSTREAM ELEVATION(FEET) = 1416.20
 STREET LENGTH(FEET) =   290.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.39
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.33
  HALFSTREET FLOOD WIDTH(FEET) =   11.45
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.17
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.68
 STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =   7.40
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.354
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.40      0.20       0.60    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    5.34
 EFFECTIVE AREA(ACRES) =    2.30    AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =    2.30        PEAK FLOW RATE(CFS) =       8.78

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  13.07
 FLOW VELOCITY(FEET/SEC.) =  5.58   DEPTH*VELOCITY(FT*FT/SEC.) =   1.97
 LONGEST FLOWPATH FROM NODE    213.00 TO NODE    215.00 =   575.00 FEET.

**********************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =  1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.40
 RAINFALL INTENSITY(INCH/HR) =   4.35
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.56
 EFFECTIVE STREAM AREA(ACRES) =    2.30
 TOTAL STREAM AREA(ACRES) =    2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.78

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)    NODE
     1     24.01    6.95     4.511  0.29( 0.20) 0.68      5.8      208.00
     1     26.35    8.73     3.966  0.29( 0.20) 0.69      7.4      207.00
     1     26.96   10.12     3.648  0.29( 0.20) 0.69      8.3      209.00
     1     27.86   14.01     3.035  0.29( 0.20) 0.69     10.6      204.00
     1     27.70   14.65     2.959  0.29( 0.20) 0.69     10.8      201.00
     2      8.78    7.40     4.354  0.20( 0.11) 0.56      2.3      213.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
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** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap.  Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     32.56   6.95    4.511  0.27( 0.17) 0.65     8.0     208.00
    2     33.38   7.40    4.354  0.27( 0.17) 0.65     8.5     213.00
    3     34.33   8.73    3.966  0.27( 0.18) 0.66     9.7     207.00
    4     34.28  10.12    3.648  0.27( 0.18) 0.66    10.6     209.00
    5     33.91  14.01    3.035  0.28( 0.18) 0.67    12.9     204.00
    6     33.59  14.65    2.959  0.28( 0.18) 0.67    13.1     201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     34.33    Tc(MIN.) =     8.73
EFFECTIVE AREA(ACRES) =     9.71   AREA-AVERAGED Fm(INCH/HR) =  0.18
AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.66
TOTAL AREA(ACRES) =     13.10
LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.73
 RAINFALL INTENSITY(INCH/HR) =   3.97
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.66
 EFFECTIVE STREAM AREA(ACRES) =    9.71
 TOTAL STREAM AREA(ACRES) =   13.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.33

****************************************************************************
 FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1445.80

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.560
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.303
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      D        0.30      0.20       0.40     75    7.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      1.14
 TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      1.14

****************************************************************************
 FLOW PROCESS FROM NODE    212.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1445.80  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   460.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.51
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    8.61
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.67
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
 STREET FLOW TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =   9.20
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.850
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.40      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    4.73
 EFFECTIVE AREA(ACRES) =    1.70    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =    1.70        PEAK FLOW RATE(CFS) =       5.74

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =  10.74
 FLOW VELOCITY(FEET/SEC.) =  5.21   DEPTH*VELOCITY(FT*FT/SEC.) =   1.63
 LONGEST FLOWPATH FROM NODE    211.00 TO NODE    215.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.20
 RAINFALL INTENSITY(INCH/HR) =   3.85
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
```

```
AREA-AVERAGED Ap = 0.48
EFFECTIVE STREAM AREA(ACRES) = 1.70
TOTAL STREAM AREA(ACRES) = 1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.74

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     32.56  6.95    4.511  0.27( 0.17) 0.65     8.0     208.00
    1     33.38  7.40    4.354  0.27( 0.17) 0.65     8.5     213.00
    1     34.33  8.73    3.966  0.27( 0.18) 0.66     9.7     207.00
    1     34.28 10.12    3.648  0.27( 0.18) 0.66    10.6     209.00
    1     33.91 14.01    3.035  0.28( 0.18) 0.67    12.9     204.00
    1     33.59 14.65    2.959  0.28( 0.18) 0.67    13.1     201.00
    2      5.74  9.20    3.850  0.20( 0.10) 0.48     1.7     211.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     37.67  6.95    4.511  0.26( 0.16) 0.63     9.3     208.00
    2     38.62  7.40    4.354  0.26( 0.16) 0.63     9.9     213.00
    3     39.94  8.73    3.966  0.26( 0.17) 0.63    11.3     207.00
    4     40.05  9.20    3.850  0.26( 0.17) 0.63    11.7     211.00
    5     39.72 10.12    3.648  0.26( 0.17) 0.64    12.3     209.00
    6     38.40 14.01    3.035  0.27( 0.17) 0.65    14.6     204.00
    7     37.97 14.65    2.959  0.27( 0.17) 0.65    14.8     201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 40.05  Tc(MIN.) = 9.20
EFFECTIVE AREA(ACRES) = 11.71  AREA-AVERAGED Fm(INCH/HR) = 0.17
AREA-AVERAGED Fp(INCH/HR) = 0.26  AREA-AVERAGED Ap = 0.63
TOTAL AREA(ACRES) = 14.80
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 215.00 = 2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 215.00 TO NODE 220.00 IS CODE = 31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1416.20  DOWNSTREAM(FEET) = 1350.00
 FLOW LENGTH(FEET) = 270.00  MANNING'S N = 0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 31.11
 ESTIMATED PIPE DIAMETER(INCH) = 18.00  NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 40.05
 PIPE TRAVEL TIME(MIN.) = 0.14  Tc(MIN.) = 9.35
 LONGEST FLOWPATH FROM NODE 201.00 TO NODE 220.00 = 2850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 220.00 TO NODE 6.10 IS CODE = 53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
============================================================================
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1350.00  DOWNSTREAM(FEET) = 1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 960.00  CHANNEL SLOPE = 0.1875
 CHANNEL FLOW THRU SUBAREA(CFS) = 40.05
 FLOW VELOCITY(FEET/SEC) = 8.29 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) = 1.93  Tc(MIN.) = 11.28
 LONGEST FLOWPATH FROM NODE 201.00 TO NODE 6.10 = 3810.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 6.10 TO NODE 6.10 IS CODE = 10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE 216.00 TO NODE 217.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 300.00
 ELEVATION DATA: UPSTREAM(FEET) = 1616.00  DOWNSTREAM(FEET) = 1513.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 8.561
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 4.011
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA     Fp        Ap      SCS   Tc
      LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"              B        0.60      0.30       1.00    66    8.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA RUNOFF(CFS) = 2.00
 TOTAL AREA(ACRES) = 0.60  PEAK FLOW RATE(CFS) = 2.00

****************************************************************************
 FLOW PROCESS FROM NODE 217.00 TO NODE 218.00 IS CODE = 51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1513.00  DOWNSTREAM(FEET) = 1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 350.00  CHANNEL SLOPE = 0.1800
 CHANNEL BASE(FEET) = 0.00  "Z" FACTOR = 1.500
 MANNING'S FACTOR = 0.015  MAXIMUM DEPTH(FEET) = 1.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 2.00
 FLOW VELOCITY(FEET/SEC) = 11.52  FLOW DEPTH(FEET) = 0.34
 TRAVEL TIME(MIN.) = 0.51  Tc(MIN.) = 9.07
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 218.00 = 650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 218.00 TO NODE 218.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
 MAINLINE Tc(MIN) =   9.07
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.882
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        2.00      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     2.00     SUBAREA RUNOFF(CFS) =     6.45
 EFFECTIVE AREA(ACRES) =     2.60   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      2.60      PEAK FLOW RATE(CFS) =       8.38

****************************************************************************
 FLOW PROCESS FROM NODE     218.00 TO NODE     219.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1437.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   280.00   CHANNEL SLOPE =  0.0464
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      8.38
 FLOW VELOCITY(FEET/SEC) =   9.87   FLOW DEPTH(FEET) =   0.75
 TRAVEL TIME(MIN.) =   0.47   Tc(MIN.) =   9.54
 LONGEST FLOWPATH FROM NODE     216.00 TO NODE     219.00 =   930.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     219.00 TO NODE     219.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 MAINLINE Tc(MIN) =   9.54
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.772
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        3.10      0.30       1.00    66
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.00      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.28
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10     SUBAREA RUNOFF(CFS) =    12.90
 EFFECTIVE AREA(ACRES) =     6.70   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =      6.70      PEAK FLOW RATE(CFS) =       21.03

****************************************************************************
 FLOW PROCESS FROM NODE     219.00 TO NODE     225.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 ELEVATION DATA: UPSTREAM(FEET) =   1437.00  DOWNSTREAM(FEET) =   1400.00
 FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  20.98
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     21.03
 PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   9.77
 LONGEST FLOWPATH FROM NODE     216.00 TO NODE     225.00 =  1220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     225.00 TO NODE     225.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.77
 RAINFALL INTENSITY(INCH/HR) =   3.72
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    6.70
 TOTAL STREAM AREA(ACRES) =    6.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.03

****************************************************************************
 FLOW PROCESS FROM NODE     221.00 TO NODE     222.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1417.00  DOWNSTREAM(FEET) =   1408.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.932
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.188
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        0.50      0.20       0.60    75    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      1.83
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =       1.83

****************************************************************************
 FLOW PROCESS FROM NODE     222.00 TO NODE     225.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
 UPSTREAM ELEVATION(FEET) = 1408.70  DOWNSTREAM ELEVATION(FEET) = 1400.00
```

```
STREET LENGTH(FEET) =   180.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.017
OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.70
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.27
  HALFSTREET FLOOD WIDTH(FEET) =    8.00
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.07
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =   8.67
*  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.982
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       D        0.50      0.20       0.50    75
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =     0.50      SUBAREA RUNOFF(CFS) =     1.75
EFFECTIVE AREA(ACRES) =    1.00     AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.55
TOTAL AREA(ACRES) =     1.00       PEAK FLOW RATE(CFS) =       3.48

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   9.01
FLOW VELOCITY(FEET/SEC.) =  4.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.22
LONGEST FLOWPATH FROM NODE    221.00 TO NODE    225.00 =   460.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    225.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.67
 RAINFALL INTENSITY(INCH/HR) =   3.98
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.55
 EFFECTIVE STREAM AREA(ACRES) =    1.00
 TOTAL STREAM AREA(ACRES) =    1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.48

****************************************************************************
 FLOW PROCESS FROM NODE    223.00 TO NODE    224.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1419.00  DOWNSTREAM(FEET) =   1408.30

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.858
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.210
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D        1.60      0.20       0.60    75    7.86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      5.89
 TOTAL AREA(ACRES) =     1.60   PEAK FLOW RATE(CFS) =      5.89

****************************************************************************
 FLOW PROCESS FROM NODE    224.00 TO NODE    225.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1408.30  DOWNSTREAM ELEVATION(FEET) = 1400.00
 STREET LENGTH(FEET) =   170.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.30
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =   12.46
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.06
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.74
 STREET FLOW TRAVEL TIME(MIN.) =   0.56   Tc(MIN.) =   8.42
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.049
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D        0.80      0.20       0.60    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     0.80      SUBAREA RUNOFF(CFS) =     2.83
 EFFECTIVE AREA(ACRES) =    2.40     AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.60
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 TOTAL AREA(ACRES) =    2.40        PEAK FLOW RATE(CFS) =       8.49

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  13.28
 FLOW VELOCITY(FEET/SEC.) =  5.24   DEPTH*VELOCITY(FT*FT/SEC.) =   1.87
 LONGEST FLOWPATH FROM NODE    223.00 TO NODE    225.00 =   470.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    225.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.42
 RAINFALL INTENSITY(INCH/HR) =   4.05
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    2.40
 TOTAL STREAM AREA(ACRES) =    2.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.49

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     21.03   9.77    3.722  0.29( 0.29) 1.00     6.7      216.00
    2      3.48   8.67    3.982  0.20( 0.11) 0.55     1.0      221.00
    3      8.49   8.42    4.049  0.20( 0.12) 0.60     2.4      223.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     31.77   8.42    4.049  0.26( 0.22) 0.85     9.1      223.00
    2     31.90   8.67    3.982  0.26( 0.22) 0.85     9.3      221.00
    3     32.06   9.77    3.722  0.27( 0.23) 0.86    10.1      216.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     32.06    Tc(MIN.) =     9.77
 EFFECTIVE AREA(ACRES) =    10.10   AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.86
 TOTAL AREA(ACRES) =     10.10
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    225.00 =  1220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    227.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1399.00
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.70
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     32.06
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   9.86
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    227.00 =  1280.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    227.00 TO NODE    227.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.86
 RAINFALL INTENSITY(INCH/HR) =   3.70
 AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.86
 EFFECTIVE STREAM AREA(ACRES) =   10.10
 TOTAL STREAM AREA(ACRES) =   10.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.06

****************************************************************************
 FLOW PROCESS FROM NODE    226.00 TO NODE    227.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1397.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.509
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.571
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap        SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.60      0.20       0.60     75   10.51
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      4.97
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      4.97

****************************************************************************
 FLOW PROCESS FROM NODE    227.00 TO NODE    227.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.51
 RAINFALL INTENSITY(INCH/HR) =   3.57
 AREA-AVERAGED Fm(INCH/HR) =  0.12
```

AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.60
EFFECTIVE STREAM AREA(ACRES) = 1.60
TOTAL STREAM AREA(ACRES) = 1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.97

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31.77	8.51	4.024	0.26(0.22)	0.85	9.1	223.00
1	31.90	8.76	3.958	0.26(0.22)	0.85	9.3	221.00
1	32.06	9.86	3.702	0.27(0.23)	0.86	10.1	216.00
2	4.97	10.51	3.571	0.20(0.12)	0.60	1.6	226.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	36.32	8.51	4.024	0.26(0.21)	0.82	10.4	223.00
2	36.51	8.76	3.958	0.26(0.21)	0.82	10.7	221.00
3	36.90	9.86	3.702	0.26(0.21)	0.83	11.6	216.00
4	35.82	10.51	3.571	0.26(0.21)	0.82	11.7	226.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36.90 Tc(MIN.) = 9.86
EFFECTIVE AREA(ACRES) = 11.60 AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.26 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 11.70
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 227.00 = 1280.00 FEET.

****
FLOW PROCESS FROM NODE 227.00 TO NODE 228.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 1397.50 DOWNSTREAM(FEET) = 1286.00
FLOW LENGTH(FEET) = 370.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 33.22
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 36.90
PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 10.05
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 228.00 = 1650.00 FEET.

****
FLOW PROCESS FROM NODE 228.00 TO NODE 6.10 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 1286.00 DOWNSTREAM(FEET) = 1170.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 620.00 CHANNEL SLOPE = 0.1871
CHANNEL FLOW THRU SUBAREA(CFS) = 36.90
FLOW VELOCITY(FEET/SEC) = 8.05 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.28 Tc(MIN.) = 11.33
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 6.10 = 2270.00 FEET.

****
FLOW PROCESS FROM NODE 6.10 TO NODE 6.10 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN) = 11.33
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.422
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	8.80	0.20	1.00	83

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 8.80 SUBAREA RUNOFF(CFS) = 25.52
EFFECTIVE AREA(ACRES) = 20.40 AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 20.50 PEAK FLOW RATE(CFS) = 59.01

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	60.08	9.99	3.676	0.23(0.21)	0.90	19.2	223.00
2	59.93	10.24	3.625	0.23(0.21)	0.90	19.5	221.00
3	59.01	11.33	3.422	0.23(0.21)	0.90	20.4	216.00
4	57.31	11.99	3.314	0.23(0.21)	0.90	20.5	226.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 60.08 Tc(MIN.) = 9.99
AREA-AVERAGED Fm(INCH/HR) = 0.21 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.90 EFFECTIVE AREA(ACRES) = 19.24

****
FLOW PROCESS FROM NODE 6.10 TO NODE 6.10 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	60.08	9.99	3.676	0.23(0.21)	0.90	19.2	223.00
2	59.93	10.24	3.625	0.23(0.21)	0.90	19.5	221.00
3	59.01	11.33	3.422	0.23(0.21)	0.90	20.4	216.00
4	57.31	11.99	3.314	0.23(0.21)	0.90	20.5	226.00

LONGEST FLOWPATH FROM NODE 216.00 TO NODE 6.10 = 2270.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	37.67	9.07	3.881	0.26(0.16)	0.63	9.3	208.00
2	38.62	9.50	3.780	0.26(0.16)	0.63	9.9	213.00
3	39.94	10.81	3.515	0.26(0.17)	0.63	11.3	207.00

4	40.05	11.28	3.431	0.26(0.17)	0.63	11.7	211.00
5	39.72	12.20	3.282	0.26(0.17)	0.64	12.3	209.00
6	38.40	16.11	2.804	0.27(0.17)	0.65	14.6	204.00
7	37.97	16.76	2.742	0.27(0.17)	0.65	14.8	201.00

LONGEST FLOWPATH FROM NODE 201.00 TO NODE 6.10 = 3810.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	95.48	9.07	3.881	0.24(0.19)	0.81	26.7	208.00
2	97.52	9.50	3.780	0.24(0.19)	0.80	28.2	213.00
3	99.19	9.99	3.676	0.24(0.19)	0.80	29.7	223.00
4	99.30	10.24	3.625	0.24(0.19)	0.80	30.2	221.00
5	99.39	10.81	3.515	0.24(0.19)	0.80	31.3	207.00
6	99.11	11.28	3.431	0.24(0.19)	0.80	32.1	211.00
7	99.04	11.33	3.422	0.24(0.19)	0.80	32.1	216.00
8	97.10	11.99	3.314	0.24(0.19)	0.80	32.7	226.00
9	96.43	12.20	3.282	0.24(0.19)	0.80	32.8	209.00
10	86.30	16.11	2.804	0.24(0.19)	0.79	35.1	204.00
11	84.72	16.76	2.742	0.24(0.19)	0.79	35.3	201.00

TOTAL AREA(ACRES) = 35.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 99.39 Tc(MIN.) = 10.810
EFFECTIVE AREA(ACRES) = 31.28 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.24 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 35.30
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 6.10 = 3810.00 FEET.

****
FLOW PROCESS FROM NODE 6.10 TO NODE 6.10 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<

****
FLOW PROCESS FROM NODE 6.10 TO NODE 7.00 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1170.00 DOWNSTREAM(FEET) = 1140.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 170.00 CHANNEL SLOPE = 0.1765
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) = 99.39
FLOW VELOCITY(FEET/SEC) = 9.97 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.28 Tc(MIN.) = 11.09
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.00 = 3980.00 FEET.

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	95.48	9.36	3.813	0.24(0.19)	0.81	26.7	208.00
2	97.52	9.79	3.717	0.24(0.19)	0.80	28.2	213.00
3	99.19	10.27	3.618	0.24(0.19)	0.80	29.7	223.00
4	99.30	10.52	3.569	0.24(0.19)	0.80	30.2	221.00
5	99.39	11.09	3.463	0.24(0.19)	0.80	31.3	207.00
6	99.11	11.56	3.383	0.24(0.19)	0.80	32.1	211.00
7	99.04	11.62	3.374	0.24(0.19)	0.80	32.1	216.00
8	97.10	12.28	3.270	0.24(0.19)	0.80	32.7	226.00
9	96.43	12.49	3.239	0.24(0.19)	0.80	32.8	209.00
10	86.30	16.41	2.775	0.24(0.19)	0.79	35.1	204.00
11	84.72	17.06	2.714	0.24(0.19)	0.79	35.3	201.00

LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.00 = 3980.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	153.53	7.32	4.381	0.22(0.19)	0.85	40.7	305.00
2	155.74	7.69	4.260	0.22(0.19)	0.85	42.5	307.00
3	166.01	9.63	3.753	0.23(0.19)	0.84	51.8	123.00
4	166.24	9.89	3.696	0.23(0.19)	0.84	52.7	112.00
5	166.63	10.40	3.592	0.23(0.19)	0.84	54.4	311.00
6	166.63	10.48	3.577	0.23(0.19)	0.84	54.7	118.00
7	166.23	11.12	3.458	0.23(0.19)	0.83	56.5	106.00
8	166.12	11.25	3.437	0.23(0.19)	0.83	56.9	121.00
9	166.10	11.26	3.434	0.23(0.19)	0.83	56.9	115.00
10	165.30	11.79	3.346	0.23(0.19)	0.83	58.2	104.00
11	164.37	12.31	3.265	0.23(0.19)	0.83	59.4	309.00
12	163.69	12.59	3.224	0.23(0.19)	0.83	60.0	101.00
13	163.49	12.65	3.216	0.23(0.19)	0.83	60.1	303.00
14	160.78	13.32	3.123	0.23(0.19)	0.83	61.0	301.00
15	160.49	13.38	3.115	0.23(0.19)	0.83	61.0	108.00
16	157.57	13.95	3.042	0.23(0.19)	0.83	61.4	113.00
17	144.40	16.88	2.731	0.24(0.20)	0.84	63.3	1.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 7.00 = 2900.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	239.95	7.32	4.381	0.23(0.19)	0.84	61.7	305.00
2	243.92	7.69	4.260	0.23(0.19)	0.84	64.5	307.00
3	260.07	9.36	3.813	0.23(0.19)	0.83	77.2	208.00
4	262.76	9.63	3.753	0.23(0.19)	0.83	79.4	123.00
5	263.67	9.79	3.717	0.23(0.19)	0.83	80.5	213.00
6	264.11	9.89	3.696	0.23(0.19)	0.83	81.2	112.00
7	265.72	10.27	3.618	0.23(0.19)	0.83	83.6	223.00
8	265.88	10.40	3.592	0.23(0.19)	0.82	84.4	311.00
9	265.91	10.48	3.577	0.23(0.19)	0.82	84.8	118.00
10	265.90	10.52	3.569	0.23(0.19)	0.82	85.0	221.00
11	265.64	11.09	3.463	0.23(0.19)	0.82	87.7	207.00
12	265.61	11.12	3.458	0.23(0.19)	0.82	87.8	106.00
13	265.42	11.25	3.437	0.23(0.19)	0.82	88.4	121.00
14	265.39	11.26	3.434	0.23(0.19)	0.82	88.5	115.00
15	264.76	11.56	3.383	0.23(0.19)	0.82	89.7	211.00

```
   16    264.61  11.62    3.374  0.23( 0.19) 0.82     89.9      216.00
   17    263.83  11.79    3.346  0.23( 0.19) 0.82     90.5      104.00
   18    261.53  12.28    3.270  0.23( 0.19) 0.82     92.0      226.00
   19    261.36  12.31    3.265  0.23( 0.19) 0.82     92.1      309.00
   20    260.38  12.49    3.239  0.23( 0.19) 0.82     92.6      209.00
   21    259.85  12.59    3.224  0.23( 0.19) 0.82     92.9      101.00
   22    259.50  12.65    3.216  0.23( 0.19) 0.82     93.0      303.00
   23    255.07  13.32    3.123  0.24( 0.19) 0.82     94.2      301.00
   24    254.62  13.38    3.115  0.24( 0.19) 0.82     94.3      108.00
   25    250.23  13.95    3.042  0.24( 0.19) 0.82     95.1      113.00
   26    232.80  16.41    2.775  0.24( 0.20) 0.82     98.1      204.00
   27    229.57  16.88    2.731  0.24( 0.20) 0.82     98.5        1.00
   28    228.16  17.06    2.714  0.24( 0.20) 0.82     98.6      201.00
  TOTAL AREA(ACRES) =     98.60

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     265.91  Tc(MIN.) =   10.479
 EFFECTIVE AREA(ACRES) =    84.76  AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =     98.60
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE      7.00 =  3980.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.90 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1080.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0520
 CHANNEL FLOW THRU SUBAREA(CFS) =    265.91
 FLOW VELOCITY(FEET/SEC) =  14.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  11.62
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE      7.90 =  4980.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.90 TO NODE      7.90 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.62
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.374
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       12.40      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   12.40      SUBAREA RUNOFF(CFS) =   35.42
 EFFECTIVE AREA(ACRES) =    97.16   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =   111.00       PEAK FLOW RATE(CFS) =    278.23

****************************************************************************
 FLOW PROCESS FROM NODE      7.90 TO NODE      7.90 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.62
 RAINFALL INTENSITY(INCH/HR) =   3.37
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  0.85
 EFFECTIVE STREAM AREA(ACRES) =   97.16
 TOTAL STREAM AREA(ACRES) =  111.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    278.23

****************************************************************************
 FLOW PROCESS FROM NODE      7.10 TO NODE      7.20 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1315.00  DOWNSTREAM(FEET) =   1220.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.799
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.228
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.70      0.30       1.00    66    7.80
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      2.47
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      2.47

****************************************************************************
 FLOW PROCESS FROM NODE      7.20 TO NODE      7.30 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1180.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00   CHANNEL SLOPE =  0.1739
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1470 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.47
 FLOW VELOCITY(FEET/SEC) =   2.90 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =   9.12
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE      7.30 =   480.00 FEET.
```

```
**************************************************************************
 FLOW PROCESS FROM NODE       7.30 TO NODE       7.30 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =   9.12
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.870
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        1.30      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     4.18
 EFFECTIVE AREA(ACRES) =     2.00    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     2.00        PEAK FLOW RATE(CFS) =       6.43

**************************************************************************
 FLOW PROCESS FROM NODE       7.30 TO NODE       7.40 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1180.00  DOWNSTREAM(FEET) =   1114.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.1065
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1048 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      6.43
 FLOW VELOCITY(FEET/SEC) =   3.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =  12.19
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE       7.40 =  1100.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE       7.40 TO NODE       7.40 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  12.19
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.284
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        5.10      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     5.10      SUBAREA RUNOFF(CFS) =    13.70
 EFFECTIVE AREA(ACRES) =     7.10    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     7.10        PEAK FLOW RATE(CFS) =      19.07

**************************************************************************
 FLOW PROCESS FROM NODE       7.40 TO NODE       7.90 IS CODE =  52
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1114.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.0591
 CHANNEL FLOW THRU SUBAREA(CFS) =     19.07
 FLOW VELOCITY(FEET/SEC) =   7.19 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  13.21
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE       7.90 =  1540.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE       7.90 TO NODE       7.90 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.21
 RAINFALL INTENSITY(INCH/HR) =   3.14
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =     7.10
 TOTAL STREAM AREA(ACRES) =     7.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      19.07

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     255.49   8.50     4.026   0.22( 0.19)  0.87    74.1     305.00
     1     258.85   8.87     3.932   0.22( 0.19)  0.86    76.9     307.00
     1     272.66  10.51     3.571   0.22( 0.19)  0.85    89.6     208.00
     1     275.20  10.77     3.521   0.22( 0.19)  0.85    91.8     123.00
     1     276.07  10.93     3.492   0.23( 0.19)  0.85    92.9     213.00
     1     276.49  11.03     3.474   0.23( 0.19)  0.85    93.6     112.00
     1     278.04  11.41     3.408   0.23( 0.19)  0.85    96.0     223.00
     1     278.20  11.54     3.386   0.23( 0.19)  0.85    96.8     311.00
     1     278.23  11.62     3.374   0.23( 0.19)  0.85    97.2     118.00
     1     278.22  11.66     3.367   0.23( 0.19)  0.85    97.4     221.00
     1     277.94  12.23     3.277   0.23( 0.19)  0.84   100.1     207.00
     1     277.91  12.26     3.272   0.23( 0.19)  0.84   100.2     106.00
     1     277.73  12.39     3.254   0.23( 0.19)  0.84   100.8     121.00
     1     277.70  12.40     3.251   0.23( 0.19)  0.84   100.9     115.00
     1     277.10  12.70     3.208   0.23( 0.19)  0.84   102.1     211.00
     1     276.96  12.76     3.200   0.23( 0.19)  0.84   102.3     216.00
     1     276.22  12.93     3.175   0.23( 0.19)  0.84   102.9     104.00
     1     274.04  13.42     3.109   0.23( 0.19)  0.84   104.4     226.00
     1     273.88  13.46     3.105   0.23( 0.19)  0.84   104.5     309.00
     1     272.94  13.64     3.082   0.23( 0.19)  0.84   105.0     209.00
     1     272.37  13.74     3.068   0.23( 0.19)  0.84   105.3     101.00
     1     272.00  13.80     3.061   0.23( 0.19)  0.84   105.4     303.00
     1     267.38  14.47     2.979   0.23( 0.19)  0.84   106.6     301.00
     1     266.93  14.53     2.972   0.23( 0.19)  0.84   106.7     108.00
     1     262.53  15.11     2.908   0.23( 0.19)  0.84   107.5     113.00
```

1	245.69	17.60	2.667	0.23(0.20)	0.84	110.5	204.00
1	242.75	18.07	2.627	0.23(0.20)	0.84	110.9	1.00
1	241.38	18.26	2.612	0.23(0.20)	0.84	111.0	201.00
2	19.07	13.21	3.138	0.30(0.30)	1.00	7.1	7.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	271.61	8.50	4.026	0.23(0.20)	0.87	78.6	305.00
2	275.23	8.87	3.932	0.23(0.20)	0.87	81.7	307.00
3	290.15	10.51	3.571	0.23(0.20)	0.86	95.3	208.00
4	292.86	10.77	3.521	0.23(0.20)	0.86	97.6	123.00
5	293.82	10.93	3.492	0.23(0.20)	0.86	98.8	213.00
6	294.31	11.03	3.474	0.23(0.20)	0.86	99.5	112.00
7	296.09	11.41	3.408	0.23(0.20)	0.86	102.2	223.00
8	296.32	11.54	3.386	0.23(0.20)	0.86	103.0	311.00
9	296.40	11.62	3.374	0.23(0.20)	0.86	103.4	118.00
10	296.42	11.66	3.367	0.23(0.20)	0.86	103.6	221.00
11	296.47	12.23	3.277	0.23(0.20)	0.85	106.7	207.00
12	296.45	12.26	3.272	0.23(0.20)	0.85	106.8	106.00
13	296.34	12.39	3.254	0.23(0.20)	0.85	107.5	121.00
14	296.32	12.40	3.251	0.23(0.20)	0.85	107.5	115.00
15	295.89	12.70	3.208	0.23(0.20)	0.85	108.9	211.00
16	295.78	12.76	3.200	0.23(0.20)	0.85	109.2	216.00
17	295.14	12.93	3.175	0.23(0.20)	0.85	109.9	104.00
18	294.08	13.21	3.138	0.23(0.20)	0.85	110.8	7.10
19	292.91	13.42	3.109	0.23(0.20)	0.85	111.5	226.00
20	292.73	13.46	3.105	0.23(0.20)	0.85	111.6	309.00
21	291.63	13.64	3.082	0.23(0.20)	0.85	112.1	209.00
22	290.97	13.74	3.068	0.24(0.20)	0.85	112.4	101.00
23	290.55	13.80	3.061	0.24(0.20)	0.85	112.5	303.00
24	285.39	14.47	2.979	0.24(0.20)	0.85	113.7	301.00
25	284.89	14.53	2.972	0.24(0.20)	0.85	113.8	108.00
26	280.05	15.11	2.908	0.24(0.20)	0.85	114.6	113.00
27	261.60	17.60	2.667	0.24(0.20)	0.85	117.6	204.00
28	258.38	18.07	2.627	0.24(0.20)	0.85	118.0	1.00
29	256.91	18.26	2.612	0.24(0.20)	0.85	118.1	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 296.47 Tc(MIN.) = 12.23
EFFECTIVE AREA(ACRES) = 106.70 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 118.10
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.90 = 4980.00 FEET.

****
FLOW PROCESS FROM NODE 7.90 TO NODE 8.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
===
ELEVATION DATA: UPSTREAM(FEET) = 1088.00 DOWNSTREAM(FEET) = 1038.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0410
CHANNEL FLOW THRU SUBAREA(CFS) = 296.47
FLOW VELOCITY(FEET/SEC) = 13.43 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.51 Tc(MIN.) = 13.75
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 8.00 = 6200.00 FEET.

****
FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
===
MAINLINE Tc(MIN) = 13.75
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.067
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	25.80	0.20	1.00	83

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 25.80 SUBAREA RUNOFF(CFS) = 66.58
EFFECTIVE AREA(ACRES) = 132.50 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.88
TOTAL AREA(ACRES) = 143.90 PEAK FLOW RATE(CFS) = 342.03

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	325.32	10.06	3.661	0.22(0.20)	0.90	104.4	305.00
2	327.93	10.42	3.589	0.22(0.20)	0.90	107.5	307.00
3	338.84	12.03	3.308	0.22(0.20)	0.89	121.1	208.00
4	340.95	12.29	3.268	0.22(0.20)	0.89	123.4	123.00
5	341.60	12.45	3.244	0.22(0.20)	0.89	124.6	213.00
6	341.89	12.55	3.230	0.22(0.20)	0.89	125.3	112.00
7	342.96	12.93	3.176	0.22(0.20)	0.89	128.0	223.00
8	342.97	13.06	3.158	0.22(0.20)	0.89	128.8	311.00
9	342.93	13.13	3.148	0.22(0.20)	0.88	129.2	118.00
10	342.87	13.18	3.142	0.22(0.20)	0.88	129.4	221.00
11	342.03	13.75	3.067	0.23(0.20)	0.88	132.5	207.00
12	341.97	13.78	3.064	0.23(0.20)	0.88	132.6	106.00
13	341.67	13.90	3.048	0.23(0.20)	0.88	133.3	121.00
14	341.63	13.92	3.046	0.23(0.20)	0.88	133.3	115.00
15	340.77	14.22	3.010	0.23(0.20)	0.88	134.7	211.00
16	340.59	14.27	3.003	0.23(0.20)	0.88	135.0	216.00
17	339.72	14.45	2.982	0.23(0.20)	0.88	135.7	104.00
18	338.29	14.72	2.950	0.23(0.20)	0.88	136.6	7.10
19	336.90	14.94	2.926	0.23(0.20)	0.88	137.3	226.00
20	336.68	14.98	2.922	0.23(0.20)	0.88	137.4	309.00
21	335.39	15.16	2.903	0.23(0.20)	0.88	137.9	209.00
22	334.62	15.26	2.891	0.23(0.20)	0.88	138.2	101.00
23	334.15	15.32	2.885	0.23(0.20)	0.88	138.3	303.00
24	328.32	16.01	2.814	0.23(0.20)	0.88	139.5	301.00
25	327.76	16.07	2.808	0.23(0.20)	0.88	139.6	108.00
26	322.41	16.65	2.752	0.23(0.20)	0.88	140.4	113.00
27	301.81	19.18	2.541	0.23(0.20)	0.88	143.4	204.00
28	298.21	19.66	2.506	0.23(0.20)	0.88	143.8	1.00
29	296.60	19.84	2.492	0.23(0.20)	0.88	143.9	201.00

```
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    342.97  Tc(MIN.) =  13.06
 AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.89  EFFECTIVE AREA(ACRES) =    128.77

****************************************************************************
 FLOW PROCESS FROM NODE      8.00 TO NODE    459.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1038.00  DOWNSTREAM(FEET) =   1018.30
 CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.0313
 CHANNEL FLOW THRU SUBAREA(CFS) =    342.97
 FLOW VELOCITY(FEET/SEC) =  12.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  13.91
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    459.00 =  6830.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.91
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.047
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       8.60      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    8.60      SUBAREA RUNOFF(CFS) =   22.03
 EFFECTIVE AREA(ACRES) =   137.37   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.89
 TOTAL AREA(ACRES) =   152.50       PEAK FLOW RATE(CFS) =    352.10

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.91
 RAINFALL INTENSITY(INCH/HR) =   3.05
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.89
 EFFECTIVE STREAM AREA(ACRES) =  137.37
 TOTAL STREAM AREA(ACRES) =  152.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    352.10

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN.) =  10.46   RAINFALL INTENSITY(INCH/HR) =  3.58
 EFFECTIVE AREA(ACRES) =    39.30
 TOTAL AREA(ACRES) =    43.50        PEAK FLOW RATE(CFS) =    147.80
 AREA-AVERAGED Fm(INCH/HR) =   0.14  AREA-AVERAGED Fp(INCH/HR) =   0.25
 AREA-AVERAGED Ap =  0.54
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
       CONFLUENCE ANALYSES.

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.46
 RAINFALL INTENSITY(INCH/HR) =   3.58
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.25
 AREA-AVERAGED Ap =  0.54
 EFFECTIVE STREAM AREA(ACRES) =   39.30
 TOTAL STREAM AREA(ACRES) =   43.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    147.80

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1    335.03  10.93     3.493   0.22( 0.20)  0.91    113.0     305.00
     1    337.57  11.28     3.430   0.22( 0.20)  0.91    116.1     307.00
     1    348.13  12.89     3.181   0.22( 0.20)  0.90    129.7     208.00
     1    350.17  13.15     3.146   0.22( 0.20)  0.90    132.0     123.00
     1    350.79  13.31     3.124   0.22( 0.20)  0.90    133.2     213.00
     1    351.08  13.41     3.111   0.22( 0.20)  0.90    133.9     112.00
     1    352.09  13.78     3.063   0.22( 0.20)  0.89    136.6     223.00
     1    352.10  13.91     3.047   0.22( 0.20)  0.89    137.4     311.00
     1    352.05  13.99     3.037   0.22( 0.20)  0.89    137.8     118.00
     1    352.00  14.03     3.032   0.22( 0.20)  0.89    138.0     221.00
     1    351.13  14.60     2.964   0.22( 0.20)  0.89    141.1     207.00
     1    351.08  14.63     2.961   0.22( 0.20)  0.89    141.2     106.00
     1    350.78  14.76     2.947   0.22( 0.20)  0.89    141.9     121.00
     1    350.74  14.77     2.945   0.22( 0.20)  0.89    141.9     115.00
     1    349.87  15.08     2.911   0.22( 0.20)  0.89    143.3     211.00
     1    349.69  15.13     2.905   0.22( 0.20)  0.89    143.6     216.00
     1    348.82  15.31     2.886   0.22( 0.20)  0.89    144.3     104.00
     1    347.40  15.58     2.857   0.23( 0.20)  0.89    145.2       7.10
     1    346.02  15.80     2.835   0.23( 0.20)  0.89    145.9     226.00
     1    345.80  15.84     2.831   0.23( 0.20)  0.89    146.0     309.00
     1    344.53  16.02     2.813   0.23( 0.20)  0.89    146.5     209.00
     1    343.76  16.13     2.802   0.23( 0.20)  0.89    146.8     101.00
     1    343.29  16.18     2.797   0.23( 0.20)  0.89    146.9     303.00
     1    337.52  16.87     2.732   0.23( 0.20)  0.88    148.1     301.00
     1    336.97  16.94     2.726   0.23( 0.20)  0.88    148.2     108.00
```

1	331.65	17.52	2.674	0.23(0.20)	0.88	149.0	113.00
1	311.12	20.07	2.476	0.23(0.20)	0.88	152.0	204.00
1	307.52	20.55	2.443	0.23(0.20)	0.88	152.4	1.00
1	305.90	20.74	2.430	0.23(0.20)	0.88	152.5	201.00
2	147.80	10.46	3.581	0.25(0.14)	0.54	39.3	459.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	477.02	10.46	3.581	0.22(0.18)	0.81	147.5	459.00
2	479.08	10.93	3.493	0.22(0.18)	0.82	152.3	305.00
3	478.92	11.28	3.430	0.22(0.18)	0.82	155.4	307.00
4	478.79	12.89	3.181	0.23(0.18)	0.82	169.0	208.00
5	479.32	13.15	3.146	0.23(0.18)	0.82	171.3	123.00
6	479.02	13.31	3.124	0.23(0.18)	0.81	172.5	213.00
7	478.75	13.41	3.111	0.23(0.18)	0.81	173.2	112.00
8	477.70	13.78	3.063	0.23(0.18)	0.81	175.9	223.00
9	477.00	13.91	3.047	0.23(0.18)	0.81	176.7	311.00
10	476.55	13.99	3.037	0.23(0.18)	0.81	177.1	118.00
11	476.27	14.03	3.032	0.23(0.18)	0.81	177.3	221.00
12	472.49	14.60	2.964	0.23(0.19)	0.81	180.4	207.00
13	472.30	14.63	2.961	0.23(0.19)	0.81	180.5	106.00
14	471.38	14.76	2.947	0.23(0.19)	0.81	181.2	121.00
15	471.27	14.77	2.945	0.23(0.19)	0.81	181.2	115.00
16	468.97	15.08	2.911	0.23(0.19)	0.81	182.6	211.00
17	468.52	15.13	2.905	0.23(0.19)	0.81	182.9	216.00
18	466.84	15.31	2.886	0.23(0.19)	0.81	183.6	104.00
19	464.18	15.58	2.857	0.23(0.19)	0.81	184.5	7.10
20	461.83	15.80	2.835	0.23(0.19)	0.81	185.2	226.00
21	461.46	15.84	2.831	0.23(0.19)	0.81	185.3	309.00
22	459.41	16.02	2.813	0.23(0.19)	0.81	185.8	209.00
23	458.18	16.13	2.802	0.23(0.19)	0.81	186.1	101.00
24	457.47	16.18	2.797	0.23(0.19)	0.81	186.2	303.00
25	448.90	16.87	2.732	0.23(0.19)	0.81	187.4	301.00
26	448.10	16.94	2.726	0.23(0.19)	0.81	187.5	108.00
27	440.56	17.52	2.674	0.23(0.19)	0.81	188.3	113.00
28	411.55	20.07	2.476	0.23(0.19)	0.81	191.3	204.00
29	406.53	20.55	2.443	0.23(0.19)	0.81	191.7	1.00
30	404.37	20.74	2.430	0.23(0.19)	0.81	191.8	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 479.32 Tc(MIN.) = 13.15
EFFECTIVE AREA(ACRES) = 171.32 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 196.00
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 459.00 = 6830.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 196.00 TC(MIN.) = 13.15
EFFECTIVE AREA(ACRES) = 171.32 AREA-AVERAGED Fm(INCH/HR)= 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.82
PEAK FLOW RATE(CFS) = 479.32

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	477.02	10.46	3.581	0.22(0.18)	0.81	147.5	459.00
2	479.08	10.93	3.493	0.22(0.18)	0.82	152.3	305.00
3	478.92	11.28	3.430	0.22(0.18)	0.82	155.4	307.00
4	478.79	12.89	3.181	0.23(0.18)	0.82	169.0	208.00
5	479.32	13.15	3.146	0.23(0.18)	0.82	171.3	123.00
6	479.02	13.31	3.124	0.23(0.18)	0.81	172.5	213.00
7	478.75	13.41	3.111	0.23(0.18)	0.81	173.2	112.00
8	477.70	13.78	3.063	0.23(0.18)	0.81	175.9	223.00
9	477.00	13.91	3.047	0.23(0.18)	0.81	176.7	311.00
10	476.55	13.99	3.037	0.23(0.18)	0.81	177.1	118.00
11	476.27	14.03	3.032	0.23(0.18)	0.81	177.3	221.00
12	472.49	14.60	2.964	0.23(0.19)	0.81	180.4	207.00
13	472.30	14.63	2.961	0.23(0.19)	0.81	180.5	106.00
14	471.38	14.76	2.947	0.23(0.19)	0.81	181.2	121.00
15	471.27	14.77	2.945	0.23(0.19)	0.81	181.2	115.00
16	468.97	15.08	2.911	0.23(0.19)	0.81	182.6	211.00
17	468.52	15.13	2.905	0.23(0.19)	0.81	182.9	216.00
18	466.84	15.31	2.886	0.23(0.19)	0.81	183.6	104.00
19	464.18	15.58	2.857	0.23(0.19)	0.81	184.5	7.10
20	461.83	15.80	2.835	0.23(0.19)	0.81	185.2	226.00
21	461.46	15.84	2.831	0.23(0.19)	0.81	185.3	309.00
22	459.41	16.02	2.813	0.23(0.19)	0.81	185.8	209.00
23	458.18	16.13	2.802	0.23(0.19)	0.81	186.1	101.00
24	457.47	16.18	2.797	0.23(0.19)	0.81	186.2	303.00
25	448.90	16.87	2.732	0.23(0.19)	0.81	187.4	301.00
26	448.10	16.94	2.726	0.23(0.19)	0.81	187.5	108.00
27	440.56	17.52	2.674	0.23(0.19)	0.81	188.3	113.00
28	411.55	20.07	2.476	0.23(0.19)	0.81	191.3	204.00
29	406.53	20.55	2.443	0.23(0.19)	0.81	191.7	1.00
30	404.37	20.74	2.430	0.23(0.19)	0.81	191.8	201.00

END OF RATIONAL METHOD ANALYSIS

1

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                        Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* w.o. #1665-1, t.t. 15230, saddleback meadows                           *
* 50-yr storm                                                            *
* area "D"                                                               *
 **************************************************************************

  FILE NAME: D-DEV.DAT
  TIME/DATE OF STUDY: 10:09 07/16/2001

  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE   FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
 1   24.0     19.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150
 2   20.0     15.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150
 3   18.0     13.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE     314.00 TO NODE     315.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  ELEVATION DATA: UPSTREAM(FEET) =   1418.00  DOWNSTREAM(FEET) =   1392.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  5.437
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        0.30      0.30       0.10     56    5.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      1.46
  TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      1.46

**************************************************************************
  FLOW PROCESS FROM NODE     315.00 TO NODE     316.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<

  UPSTREAM ELEVATION(FEET) = 1392.00  DOWNSTREAM ELEVATION(FEET) = 1337.50
  STREET LENGTH(FEET) =   530.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.017
  OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.71
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    6.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.34
  STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =   6.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.647
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.60      0.30       0.10     56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    0.60     SUBAREA RUNOFF(CFS) =    2.49
  EFFECTIVE AREA(ACRES) =    0.90     AREA-AVERAGED Fm(INCH/HR) =  0.03
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =    0.90        PEAK FLOW RATE(CFS) =      3.74

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   HALFSTREET FLOOD WIDTH(FEET) =   7.75
  FLOW VELOCITY(FEET/SEC.) =  5.91   DEPTH*VELOCITY(FT*FT/SEC.) =   1.55
  LONGEST FLOWPATH FROM NODE     314.00 TO NODE     316.00 =   795.00 FEET.
```

```
**************************************************************************
 FLOW PROCESS FROM NODE     316.00 TO NODE     317.00 IS CODE = 31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1337.50  DOWNSTREAM(FEET) = 1320.00
 FLOW LENGTH(FEET) =  150.00  MANNING'S N = 0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 12.66
 ESTIMATED PIPE DIAMETER(INCH) = 18.00    NUMBER OF PIPES =  1
 PIPE-FLOW(CFS) =     3.74
 PIPE TRAVEL TIME(MIN.) =  0.20    Tc(MIN.) =  6.80
 LONGEST FLOWPATH FROM NODE    314.00 TO NODE    317.00 =  945.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     317.00 TO NODE     323.00 IS CODE = 53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1320.00  DOWNSTREAM(FEET) =  1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  730.00   CHANNEL SLOPE = 0.2466
 CHANNEL FLOW THRU SUBAREA(CFS) =     3.74
 FLOW VELOCITY(FEET/SEC) =  4.31 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =  2.82   Tc(MIN.) =  9.62
 LONGEST FLOWPATH FROM NODE    314.00 TO NODE    323.00 =  1675.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE = 81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  9.62
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.755
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       8.00      0.20       1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     8.00      SUBAREA RUNOFF(CFS) =   25.60
 EFFECTIVE AREA(ACRES) =     8.90    AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =     8.90        PEAK FLOW RATE(CFS) =      28.61

**************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =  1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  9.62
 RAINFALL INTENSITY(INCH/HR) =  3.76
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.91
 EFFECTIVE STREAM AREA(ACRES) =     8.90
 TOTAL STREAM AREA(ACRES) =     8.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.61

**************************************************************************
 FLOW PROCESS FROM NODE     318.00 TO NODE     319.00 IS CODE = 21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1649.00  DOWNSTREAM(FEET) =  1490.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  7.849
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.213
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       0.70      0.20       1.00     83    7.85
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =     2.53
 TOTAL AREA(ACRES) =     0.70   PEAK FLOW RATE(CFS) =     2.53

**************************************************************************
 FLOW PROCESS FROM NODE     319.00 TO NODE     320.00 IS CODE = 53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1490.00  DOWNSTREAM(FEET) =  1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  240.00   CHANNEL SLOPE = 0.1667
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     2.53
 FLOW VELOCITY(FEET/SEC) =  2.89 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =  1.39   Tc(MIN.) =  9.23
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    320.00 =  540.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     320.00 TO NODE     320.00 IS CODE = 81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  9.23
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.842
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        4.60      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) =     4.60      SUBAREA RUNOFF(CFS) =   15.08
 EFFECTIVE AREA(ACRES) =     5.30    AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =     5.30        PEAK FLOW RATE(CFS) =      17.37

****************************************************************************
 FLOW PROCESS FROM NODE     320.00 TO NODE     321.00 IS CODE = 53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE = 0.1806
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     17.37
 FLOW VELOCITY(FEET/SEC) =   5.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.14   Tc(MIN.) =  11.37
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    321.00 =  1260.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     321.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.37
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.415
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.10      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) =     5.10      SUBAREA RUNOFF(CFS) =   14.76
 EFFECTIVE AREA(ACRES) =    10.40    AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =     10.40       PEAK FLOW RATE(CFS) =      30.10

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     322.00 IS CODE = 53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE = 0.1455
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     30.10
 FLOW VELOCITY(FEET/SEC) =   6.32 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.90   Tc(MIN.) =  14.27
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    322.00 =  2360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     322.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.27
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.003
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       16.40      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) =    16.40      SUBAREA RUNOFF(CFS) =   41.38
 EFFECTIVE AREA(ACRES) =    26.80    AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =     26.80       PEAK FLOW RATE(CFS) =      67.61

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     323.00 IS CODE = 52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1160.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE = 0.0952
 CHANNEL FLOW THRU SUBAREA(CFS) =     67.61
 FLOW VELOCITY(FEET/SEC) =  13.04 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =  14.54
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    323.00 =  2570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.54
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.972
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.00      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) =     1.00      SUBAREA RUNOFF(CFS) =    2.49
 EFFECTIVE AREA(ACRES) =    27.80    AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =     27.80       PEAK FLOW RATE(CFS) =      69.35

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =  1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 14.54
RAINFALL INTENSITY(INCH/HR) = 2.97
AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 27.80
TOTAL STREAM AREA(ACRES) = 27.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 69.35

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28.61	9.62	3.755	0.20(0.18)	0.91	8.9	314.00
2	69.35	14.54	2.972	0.20(0.20)	1.00	27.8	318.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	87.45	9.62	3.755	0.20(0.19)	0.97	27.3	314.00
2	91.69	14.54	2.972	0.20(0.20)	0.98	36.7	318.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 91.69 Tc(MIN.) = 14.54
EFFECTIVE AREA(ACRES) = 36.70 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 36.70
LONGEST FLOWPATH FROM NODE 318.00 TO NODE 323.00 = 2570.00 FEET.

```
****************************************************************************
 FLOW PROCESS FROM NODE    323.00 TO NODE    324.00 IS CODE = 52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```

ELEVATION DATA: UPSTREAM(FEET) = 1140.00 DOWNSTREAM(FEET) = 1090.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 630.00 CHANNEL SLOPE = 0.0794
CHANNEL FLOW THRU SUBAREA(CFS) = 91.69
FLOW VELOCITY(FEET/SEC) = 13.03 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.81 Tc(MIN.) = 15.35
LONGEST FLOWPATH FROM NODE 318.00 TO NODE 324.00 = 3200.00 FEET.

```
****************************************************************************
 FLOW PROCESS FROM NODE    324.00 TO NODE    324.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

MAINLINE Tc(MIN) = 15.35
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.882

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	9.30	0.20	1.00	83

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 9.30 SUBAREA RUNOFF(CFS) = 22.45
EFFECTIVE AREA(ACRES) = 46.00 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 46.00 PEAK FLOW RATE(CFS) = 111.19

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	111.62	10.43	3.586	0.20(0.20)	0.98	36.6	314.00
2	111.19	15.35	2.882	0.20(0.20)	0.98	46.0	318.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 111.62 Tc(MIN.) = 10.43
AREA-AVERAGED Fm(INCH/HR) = 0.20 AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 36.59

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 46.00 TC(MIN.) = 10.43
EFFECTIVE AREA(ACRES) = 36.59 AREA-AVERAGED Fm(INCH/HR)= 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
PEAK FLOW RATE(CFS) = 111.62

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	111.62	10.43	3.586	0.20(0.20)	0.98	36.6	314.00
2	111.19	15.35	2.882	0.20(0.20)	0.98	46.0	318.00

END OF RATIONAL METHOD ANALYSIS

1

10-YEAR STORM

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* w.o.#1665-1, saddleback meadows, t.t. 15230                             *
* 10-year storm                                                           *
* areas "A", "B", and "C"                                                 *
 **************************************************************************

  FILE NAME: ABC-DEV.DAT
  TIME/DATE OF STUDY: 09:27 07/16/2001

  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

                  --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO  STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL IN-  / OUT-/PARK-  HEIGHT WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)   (FT)   (FT)  (FT)    (n)
 1   24.0     19.0   0.017/0.017/0.020    0.50   1.50 0.0313 0.125 0.0150
 2   20.0     15.0   0.017/0.017/0.020    0.50   1.50 0.0313 0.125 0.0150
 3   18.0     13.0   0.017/0.017/0.020    0.50   1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1560.00  DOWNSTREAM(FEET) =   1530.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.956
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.590
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30       1.00     66   10.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      2.06
  TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      2.06

**************************************************************************
  FLOW PROCESS FROM NODE       2.00 TO NODE       3.00 IS CODE =  53
--------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<

  ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1452.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   410.00   CHANNEL SLOPE =  0.1902
  CHANNEL FLOW THRU SUBAREA(CFS) =      2.06
  FLOW VELOCITY(FEET/SEC) =   3.11 (PER LACEFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.20   Tc(MIN.) =  13.15
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE       3.00 =   710.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE       3.00 TO NODE       3.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

  MAINLINE Tc(MIN) =  13.15
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.337
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.20      0.30       1.00     66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     4.20   SUBAREA RUNOFF(CFS) =     7.70
  EFFECTIVE AREA(ACRES) =     5.20   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     5.20   PEAK FLOW RATE(CFS) =      9.53

**************************************************************************
  FLOW PROCESS FROM NODE       3.00 TO NODE       4.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

  ELEVATION DATA: UPSTREAM(FEET) =  1452.00  DOWNSTREAM(FEET) =  1416.00
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  20.07
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      9.53
 PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  13.30
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =   890.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1416.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   485.00   CHANNEL SLOPE =  0.1979
 CHANNEL FLOW THRU SUBAREA(CFS) =      9.53
 FLOW VELOCITY(FEET/SEC) =   5.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =  14.84
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  1375.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.84
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.176
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.10      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10    SUBAREA RUNOFF(CFS) =     6.92
 EFFECTIVE AREA(ACRES) =     9.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     9.30      PEAK FLOW RATE(CFS) =      15.70

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1520.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.225

 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.882
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.00      0.30       0.90    56    9.23
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
 SUBAREA RUNOFF(CFS) =      2.35
 TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      2.35

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =   1500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   150.00   CHANNEL SLOPE =  0.1333
 CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.35
 FLOW VELOCITY(FEET/SEC) =  10.61   FLOW DEPTH(FEET) =   0.38
 TRAVEL TIME(MIN.) =   0.24   Tc(MIN.) =   9.46
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =   440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.46
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.836
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        3.60      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     3.60    SUBAREA RUNOFF(CFS) =     8.22
 EFFECTIVE AREA(ACRES) =     4.60   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     4.60      PEAK FLOW RATE(CFS) =      10.52

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    111.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1500.00  DOWNSTREAM(FEET) =  1454.00
 FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  20.96
```

```
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     10.52
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   9.64
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    111.00 =   660.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.64
 RAINFALL INTENSITY(INCH/HR) =   2.80
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98
 EFFECTIVE STREAM AREA(ACRES) =    4.60
 TOTAL STREAM AREA(ACRES) =    4.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.52

****************************************************************************
 FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1488.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.526
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.215
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D       0.70      0.20       0.50     75    7.53
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      1.96
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      1.96

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1488.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =   410.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.86
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    7.18
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.11
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
 STREET FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =   8.86
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.953
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D       0.70      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    1.80
 EFFECTIVE AREA(ACRES) =    1.40    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    1.40        PEAK FLOW RATE(CFS) =       3.59

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   8.10
 FLOW VELOCITY(FEET/SEC.) =  5.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.42
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.86
 RAINFALL INTENSITY(INCH/HR) =   2.95
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.59

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1483.00
```

```
Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.031
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.378
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50    56    7.03
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      1.74
TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      1.74

****************************************************************************
 FLOW PROCESS FROM NODE    107.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1483.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =  350.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.82
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    7.18
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.03
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.27
 STREET FLOW TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =   8.19
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.085
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    2.15
 EFFECTIVE AREA(ACRES) =    1.40    AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    1.40        PEAK FLOW RATE(CFS) =      3.73

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.27   HALFSTREET FLOOD WIDTH(FEET) =   8.20
 FLOW VELOCITY(FEET/SEC.) =  5.39   DEPTH*VELOCITY(FT*FT/SEC.) =   1.46
 LONGEST FLOWPATH FROM NODE    106.00 TO NODE    111.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.19
 RAINFALL INTENSITY(INCH/HR) =   3.08
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.24
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.73

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     10.52    9.64     2.801  0.30( 0.29) 0.98      4.6      101.00
     2      3.59    8.86     2.953  0.20( 0.10) 0.50      1.4      104.00
     3      3.73    8.19     3.085  0.24( 0.12) 0.50      1.4      106.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     17.17    8.19     3.085  0.28( 0.22) 0.78      6.6      106.00
     2     17.43    8.86     2.953  0.28( 0.22) 0.79      7.0      104.00
     3     17.31    9.64     2.801  0.28( 0.22) 0.80      7.4      101.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     17.43    Tc(MIN.) =     8.86
 EFFECTIVE AREA(ACRES) =     7.03   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =      7.40
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.86
 RAINFALL INTENSITY(INCH/HR) =   2.95
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28
 AREA-AVERAGED Ap =  0.79
 EFFECTIVE STREAM AREA(ACRES) =    7.03
 TOTAL STREAM AREA(ACRES) =    7.40
```

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 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.43

****************************************************************************
 FLOW PROCESS FROM NODE     108.00 TO NODE     109.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1594.00  DOWNSTREAM(FEET) =   1530.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.034
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.919
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.70      0.30       1.00     66    9.03
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.65
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      1.65

****************************************************************************
 FLOW PROCESS FROM NODE     109.00 TO NODE     110.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1465.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.2708
 CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.65
 FLOW VELOCITY(FEET/SEC) =  11.12   FLOW DEPTH(FEET) =   0.12
 TRAVEL TIME(MIN.) =   0.36   Tc(MIN.) =   9.39
 LONGEST FLOWPATH FROM NODE     108.00 TO NODE     110.00 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     110.00 TO NODE     110.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.39
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.849
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.30      0.30       0.50     56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.30     SUBAREA RUNOFF(CFS) =     0.73
 EFFECTIVE AREA(ACRES) =     1.00   AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =     1.00      PEAK FLOW RATE(CFS) =      2.33

****************************************************************************
 FLOW PROCESS FROM NODE     110.00 TO NODE     111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1458.00
 STREET LENGTH(FEET) =   240.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.01
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.31
   HALFSTREET FLOOD WIDTH(FEET) =   10.74
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.64
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
 STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  10.49
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.665
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        1.50      0.30       0.60     56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     1.50     SUBAREA RUNOFF(CFS) =     3.35
 EFFECTIVE AREA(ACRES) =     2.50   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     2.50      PEAK FLOW RATE(CFS) =      5.52

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.34   HALFSTREET FLOOD WIDTH(FEET) =  12.36
 FLOW VELOCITY(FEET/SEC.) =  3.89   DEPTH*VELOCITY(FT*FT/SEC.) =   1.33
 LONGEST FLOWPATH FROM NODE     108.00 TO NODE     111.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     111.00 TO NODE     111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.49
 RAINFALL INTENSITY(INCH/HR) =   2.67
```

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AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  0.70
EFFECTIVE STREAM AREA(ACRES) =    2.50
TOTAL STREAM AREA(ACRES) =    2.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.52

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     17.17   8.19    3.085  0.28( 0.22) 0.78     6.6     106.00
    1     17.43   8.86    2.953  0.28( 0.22) 0.79     7.0     104.00
    1     17.31   9.64    2.801  0.28( 0.22) 0.80     7.4     101.00
    2      5.52  10.49    2.665  0.30( 0.21) 0.70     2.5     108.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
    1     22.21   8.19    3.085  0.28( 0.22) 0.76     8.6     106.00
    2     22.64   8.86    2.953  0.28( 0.22) 0.77     9.1     104.00
    3     22.66   9.64    2.801  0.29( 0.22) 0.77     9.7     101.00
    4     21.91  10.49    2.665  0.29( 0.22) 0.77     9.9     108.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     22.66   Tc(MIN.) =     9.64
EFFECTIVE AREA(ACRES) =     9.70   AREA-AVERAGED Fm(INCH/HR) =  0.22
AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.77
TOTAL AREA(ACRES) =      9.90
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    111.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    117.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1454.00  DOWNSTREAM(FEET) =  1432.00
 FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.06
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     22.66
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   9.84
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.84
 RAINFALL INTENSITY(INCH/HR) =   2.76
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.77
 EFFECTIVE STREAM AREA(ACRES) =    9.70
 TOTAL STREAM AREA(ACRES) =    9.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.66

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    117.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.047
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.372
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        0.90      0.20       0.60    75    7.05
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      2.63
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      2.63

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.05
 RAINFALL INTENSITY(INCH/HR) =   3.37
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    0.90
 TOTAL STREAM AREA(ACRES) =    0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.63

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     22.21   8.39    3.045  0.28( 0.22) 0.76     8.6     106.00
     1     22.64   9.06    2.913  0.28( 0.22) 0.77     9.1     104.00
     1     22.66   9.84    2.762  0.29( 0.22) 0.77     9.7     101.00
     1     21.91  10.69    2.638  0.29( 0.22) 0.77     9.9     108.00
     2      2.63   7.05    3.372  0.20( 0.12) 0.60     0.9     112.00
```

```
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     23.45   7.05    3.372  0.28( 0.21) 0.75     8.1      112.00
     2     24.58   8.39    3.045  0.28( 0.21) 0.75     9.5      106.00
     3     24.90   9.06    2.913  0.28( 0.21) 0.75    10.0      104.00
     4     24.80   9.84    2.762  0.28( 0.21) 0.76    10.6      101.00
     5     23.95  10.69    2.638  0.28( 0.21) 0.76    10.8      108.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     24.90    Tc(MIN.) =     9.06
 EFFECTIVE AREA(ACRES) =    10.04   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.75
 TOTAL AREA(ACRES) =     10.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.637
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.646
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "1 DWELLING/ACRE"         D        1.10      0.20       0.80    75   10.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
 SUBAREA RUNOFF(CFS) =      2.46
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      2.46

****************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.50  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =   130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.69
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    7.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.22
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.11
 STREET FLOW TRAVEL TIME(MIN.) =   0.51   Tc(MIN.) =  11.15
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.578
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                D        0.20      0.20       0.10    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA AREA(ACRES) =     0.20      SUBAREA RUNOFF(CFS) =     0.46
 EFFECTIVE AREA(ACRES) =    1.30     AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     1.30        PEAK FLOW RATE(CFS) =      2.85

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   8.00
 FLOW VELOCITY(FEET/SEC.) =  4.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.15
 RAINFALL INTENSITY(INCH/HR) =   2.58
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.85

****************************************************************************
 FLOW PROCESS FROM NODE    115.00 TO NODE    116.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.928
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.136
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.60      0.20       0.50    75    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      1.64
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      1.64

****************************************************************************
 FLOW PROCESS FROM NODE    116.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.00  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =   130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.03
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    6.88
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.89
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.96
 STREET FLOW TRAVEL TIME(MIN.) =   0.56   Tc(MIN.) =   8.49
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.027
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.30      0.20       0.50    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.30   SUBAREA RUNOFF(CFS) =     0.79
 EFFECTIVE AREA(ACRES) =     0.90   AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     0.90        PEAK FLOW RATE(CFS) =      2.37

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.26   HALFSTREET FLOOD WIDTH(FEET) =   7.49
 FLOW VELOCITY(FEET/SEC.) =  3.96   DEPTH*VELOCITY(FT*FT/SEC.) =   1.02
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    117.00 =   390.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.49
 RAINFALL INTENSITY(INCH/HR) =   3.03
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    0.90
 TOTAL STREAM AREA(ACRES) =    0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.37

 ** CONFLUENCE DATA **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)         (ACRES)    NODE
     1      2.85  11.15    2.578  0.20( 0.14) 0.69     1.3      113.00
     2      2.37   8.49    3.027  0.20( 0.10) 0.50     0.9      115.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)         (ACRES)    NODE
     1      4.94   8.49    3.027  0.20( 0.12) 0.60     1.9      115.00
     2      4.86  11.15    2.578  0.20( 0.12) 0.61     2.2      113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      4.94   Tc(MIN.) =     8.49
 EFFECTIVE AREA(ACRES) =     1.89   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =      2.20
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)         (ACRES)    NODE
     1      4.94   8.49    3.027  0.20( 0.12) 0.60     1.9      115.00
     2      4.86  11.15    2.578  0.20( 0.12) 0.61     2.2      113.00
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.
```

```
** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)       Ap    Ae       HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)            (ACRES)    NODE
    1      23.45   7.05     3.372   0.28( 0.21)  0.75      8.1      112.00
    2      24.58   8.39     3.045   0.28( 0.21)  0.75      9.5      106.00
    3      24.90   9.06     2.913   0.28( 0.21)  0.75     10.0      104.00
    4      24.80   9.84     2.762   0.28( 0.21)  0.76     10.6      101.00
    5      23.95  10.69     2.638   0.28( 0.21)  0.76     10.8      108.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE     117.00 =   990.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)       Ap    Ae       HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)            (ACRES)    NODE
    1      28.04   7.05     3.372   0.27( 0.19)  0.72      9.7      112.00
    2      29.50   8.39     3.045   0.27( 0.19)  0.72     11.3      106.00
    3      29.57   8.49     3.027   0.27( 0.19)  0.72     11.4      115.00
    4      29.83   9.06     2.913   0.27( 0.19)  0.73     12.0      104.00
    5      29.70   9.84     2.762   0.27( 0.20)  0.73     12.6      101.00
    6      28.83  10.69     2.638   0.27( 0.20)  0.73     12.9      108.00
    7      28.22  11.15     2.578   0.27( 0.20)  0.73     13.0      113.00
  TOTAL AREA(ACRES) =     13.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     29.83  Tc(MIN.) =    9.064
EFFECTIVE AREA(ACRES) =    12.00  AREA-AVERAGED Fm(INCH/HR) =  0.19
AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.73
TOTAL AREA(ACRES) =     13.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE     117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    120.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1428.50  DOWNSTREAM(FEET) =  1420.00
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.88
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    29.83
 PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   9.16
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE     120.00 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2

 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.16
 RAINFALL INTENSITY(INCH/HR) =   2.89
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.73
 EFFECTIVE STREAM AREA(ACRES) =  12.00
 TOTAL STREAM AREA(ACRES) =   13.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.83

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    119.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1465.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.934
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.410
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap       SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)   CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.80      0.30       0.50     56    6.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      2.35
 TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      2.35

****************************************************************************
 FLOW PROCESS FROM NODE    119.00 TO NODE    120.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.70
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    7.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.81
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```
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.53
STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =   7.80
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.162
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        1.00      0.30       0.50    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    2.71
EFFECTIVE AREA(ACRES) =    1.80    AREA-AVERAGED Fm(INCH/HR) =  0.15
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =    1.80        PEAK FLOW RATE(CFS) =       4.88

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   8.91
FLOW VELOCITY(FEET/SEC.) =  6.13   DEPTH*VELOCITY(FT*FT/SEC.) =   1.73
LONGEST FLOWPATH FROM NODE    118.00 TO NODE    120.00 =   600.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   7.80
RAINFALL INTENSITY(INCH/HR) =   3.16
AREA-AVERAGED Fm(INCH/HR) =  0.15
AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  0.50
EFFECTIVE STREAM AREA(ACRES) =    1.80
TOTAL STREAM AREA(ACRES) =    1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.88

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
    1     28.04   7.14    3.339  0.27( 0.19) 0.72     9.7     112.00
    1     29.50   8.49    3.026  0.27( 0.19) 0.72    11.3     106.00
    1     29.57   8.58    3.008  0.27( 0.19) 0.72    11.4     115.00
    1     29.83   9.16    2.894  0.27( 0.19) 0.73    12.0     104.00
    1     29.70   9.93    2.743  0.27( 0.20) 0.73    12.6     101.00
    1     28.83  10.79    2.625  0.27( 0.20) 0.73    12.9     108.00
    1     28.22  11.25    2.565  0.27( 0.20) 0.73    13.0     113.00
    2      4.88   7.80    3.162  0.30( 0.15) 0.50     1.8     118.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
    1     32.77   7.14    3.339  0.27( 0.19) 0.69    11.3     112.00
    2     33.63   7.80    3.162  0.27( 0.19) 0.69    12.3     118.00
    3     34.16   8.49    3.026  0.27( 0.19) 0.69    13.1     106.00
    4     34.20   8.58    3.008  0.27( 0.19) 0.69    13.2     115.00
    5     34.27   9.16    2.894  0.27( 0.19) 0.70    13.8     104.00
    6     33.90   9.93    2.743  0.27( 0.19) 0.71    14.4     101.00
    7     32.84  10.79    2.625  0.27( 0.19) 0.71    14.7     108.00
    8     32.13  11.25    2.565  0.27( 0.19) 0.71    14.8     113.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     34.27    Tc(MIN.) =     9.16
EFFECTIVE AREA(ACRES) =    13.80   AREA-AVERAGED Fm(INCH/HR) =  0.19
AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.70
TOTAL AREA(ACRES) =     14.80
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    120.00 =  1100.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    120.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1420.00  DOWNSTREAM(FEET) =  1418.00
FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.58
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     34.27
PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   9.46
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   9.46
RAINFALL INTENSITY(INCH/HR) =   2.84
AREA-AVERAGED Fm(INCH/HR) =  0.19
AREA-AVERAGED Fp(INCH/HR) =  0.27
AREA-AVERAGED Ap =  0.70
EFFECTIVE STREAM AREA(ACRES) =   13.80
TOTAL STREAM AREA(ACRES) =   14.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.27

****************************************************************************
FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1443.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```

```
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.405
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.252
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50     56    7.41
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      1.67
TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      1.67

****************************************************************************
 FLOW PROCESS FROM NODE    122.00 TO NODE    125.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.18
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.24
   HALFSTREET FLOOD WIDTH(FEET) =    6.68
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.36
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.07
 STREET FLOW TRAVEL TIME(MIN.) =   1.49   Tc(MIN.) =   8.89
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.947
 SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"       B        0.40      0.30       0.40     56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
SUBAREA AREA(ACRES) =     0.40      SUBAREA RUNOFF(CFS) =     1.02
EFFECTIVE AREA(ACRES) =     1.00    AREA-AVERAGED Fm(INCH/HR) =  0.14
AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  0.46
TOTAL AREA(ACRES) =     1.00        PEAK FLOW RATE(CFS) =       2.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  0.25   HALFSTREET FLOOD WIDTH(FEET) =   7.18
FLOW VELOCITY(FEET/SEC.) =  4.51   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
LONGEST FLOWPATH FROM NODE    121.00 TO NODE    125.00 =   690.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.89
 RAINFALL INTENSITY(INCH/HR) =   2.95
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.46
 EFFECTIVE STREAM AREA(ACRES) =    1.00
 TOTAL STREAM AREA(ACRES) =    1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.53

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)       Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     32.77   7.44     3.239   0.27( 0.19)  0.69    11.3     112.00
     1     33.63   8.09     3.104   0.27( 0.19)  0.69    12.3     118.00
     1     34.16   8.79     2.968   0.27( 0.19)  0.69    13.1     106.00
     1     34.20   8.88     2.950   0.27( 0.19)  0.69    13.2     115.00
     1     34.27   9.46     2.836   0.27( 0.19)  0.70    13.8     104.00
     1     33.90  10.23     2.700   0.27( 0.19)  0.71    14.4     101.00
     1     32.84  11.09     2.586   0.27( 0.19)  0.71    14.7     108.00
     1     32.13  11.55     2.526   0.27( 0.19)  0.71    14.8     113.00
     2      2.53   8.89     2.947   0.30( 0.14)  0.46     1.0     121.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)       Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     35.11   7.44     3.239   0.27( 0.18)  0.67    12.1     112.00
     2     36.06   8.09     3.104   0.27( 0.18)  0.67    13.2     118.00
     3     36.68   8.79     2.968   0.27( 0.18)  0.68    14.1     106.00
     4     36.73   8.88     2.950   0.27( 0.18)  0.68    14.2     115.00
     5     36.73   8.89     2.947   0.27( 0.18)  0.68    14.2     121.00
     6     36.70   9.46     2.836   0.27( 0.19)  0.68    14.8     104.00
     7     36.21  10.23     2.700   0.27( 0.19)  0.69    15.4     101.00
     8     35.04  11.09     2.586   0.27( 0.19)  0.69    15.7     108.00
     9     34.28  11.55     2.526   0.27( 0.19)  0.69    15.8     113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     36.73    Tc(MIN.) =     8.89
 EFFECTIVE AREA(ACRES) =    14.24   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     15.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =  1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 8.89
RAINFALL INTENSITY(INCH/HR) = 2.95
AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.27
AREA-AVERAGED Ap = 0.68
EFFECTIVE STREAM AREA(ACRES) = 14.24
TOTAL STREAM AREA(ACRES) = 15.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 36.73

****************************************************************************
FLOW PROCESS FROM NODE 123.00 TO NODE 124.00 IS CODE = 21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
INITIAL SUBAREA FLOW-LENGTH(FEET) = 290.00
ELEVATION DATA: UPSTREAM(FEET) = 1453.80 DOWNSTREAM(FEET) = 1443.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 5.671
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 3.835
SUBAREA Tc AND LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
COMMERCIAL                B        0.20      0.30       0.10     56    5.67
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA RUNOFF(CFS) = 0.68
TOTAL AREA(ACRES) = 0.20  PEAK FLOW RATE(CFS) = 0.68

****************************************************************************
FLOW PROCESS FROM NODE 124.00 TO NODE 125.00 IS CODE = 62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 3 USED)<<<<<
UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1418.00
STREET LENGTH(FEET) = 360.00  CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 13.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.017
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.98
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) = 0.19
  HALFSTREET FLOOD WIDTH(FEET) = 3.74
  AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.08
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.79
STREET FLOW TRAVEL TIME(MIN.) = 1.47  Tc(MIN.) = 7.14
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 3.341
SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                B        0.20      0.30       0.10     56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.10
SUBAREA AREA(ACRES) = 0.20  SUBAREA RUNOFF(CFS) = 0.60
EFFECTIVE AREA(ACRES) = 0.40  AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 0.40  PEAK FLOW RATE(CFS) = 1.19

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.21  HALFSTREET FLOOD WIDTH(FEET) = 4.51
FLOW VELOCITY(FEET/SEC.) = 4.05  DEPTH*VELOCITY(FT*FT/SEC.) = 0.84
LONGEST FLOWPATH FROM NODE 123.00 TO NODE 125.00 = 650.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE 125.00 TO NODE 125.00 IS CODE = 1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 7.14
RAINFALL INTENSITY(INCH/HR) = 3.34
AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 0.40
TOTAL STREAM AREA(ACRES) = 0.40
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.19

** CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     35.11   7.44     3.239   0.27( 0.18) 0.67    12.1     112.00
    1     36.06   8.09     3.104   0.27( 0.18) 0.67    13.2     118.00
    1     36.68   8.79     2.968   0.27( 0.18) 0.68    14.1     106.00
    1     36.73   8.88     2.950   0.27( 0.18) 0.68    14.2     115.00
    1     36.73   8.89     2.947   0.27( 0.18) 0.68    14.2     121.00
    1     36.70   9.46     2.836   0.27( 0.19) 0.68    14.8     104.00
    1     36.21  10.23     2.700   0.27( 0.19) 0.69    15.4     101.00
    1     35.04  11.09     2.586   0.27( 0.19) 0.69    15.7     108.00
    1     34.28  11.55     2.526   0.27( 0.19) 0.69    15.8     113.00
    2      1.19   7.14     3.341   0.30( 0.03) 0.10     0.4     123.00
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	35.99	7.14	3.341	0.27(0.18)	0.65	12.0	123.00
2	36.26	7.44	3.239	0.27(0.18)	0.66	12.5	112.00
3	37.16	8.09	3.104	0.27(0.18)	0.66	13.6	118.00
4	37.74	8.79	2.968	0.27(0.18)	0.66	14.5	106.00
5	37.78	8.88	2.950	0.27(0.18)	0.66	14.6	115.00
6	37.78	8.89	2.947	0.27(0.18)	0.66	14.6	121.00
7	37.71	9.46	2.836	0.27(0.18)	0.67	15.2	104.00
8	37.17	10.23	2.700	0.27(0.18)	0.67	15.8	101.00
9	35.96	11.09	2.586	0.27(0.18)	0.68	16.1	108.00
10	35.18	11.55	2.526	0.27(0.18)	0.68	16.2	113.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 37.78 Tc(MIN.) = 8.89
EFFECTIVE AREA(ACRES) = 14.64 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.27 AREA-AVERAGED Ap = 0.66
TOTAL AREA(ACRES) = 16.20
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 125.00 = 1270.00 FEET.

****
FLOW PROCESS FROM NODE 125.00 TO NODE 5.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
===
ELEVATION DATA: UPSTREAM(FEET) = 1418.00 DOWNSTREAM(FEET) = 1330.00
FLOW LENGTH(FEET) = 160.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 9.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 42.05
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 37.78
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 8.96
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
===

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	35.99	7.20	3.319	0.27(0.18)	0.65	12.0	123.00
2	36.26	7.51	3.219	0.27(0.18)	0.66	12.5	112.00
3	37.16	8.16	3.091	0.27(0.18)	0.66	13.6	118.00
4	37.74	8.85	2.956	0.27(0.18)	0.66	14.5	106.00
5	37.78	8.94	2.937	0.27(0.18)	0.66	14.6	115.00
6	37.78	8.96	2.934	0.27(0.18)	0.66	14.6	121.00
7	37.71	9.52	2.824	0.27(0.18)	0.67	15.2	104.00
8	37.17	10.29	2.691	0.27(0.18)	0.67	15.8	101.00
9	35.96	11.15	2.578	0.27(0.18)	0.68	16.1	108.00
10	35.18	11.61	2.517	0.27(0.18)	0.68	16.2	113.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15.70	14.84	2.176	0.30(0.30)	1.00	9.3	1.00

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1375.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	48.27	7.20	3.319	0.28(0.21)	0.75	16.6	123.00
2	48.63	7.51	3.219	0.28(0.21)	0.75	17.2	112.00
3	50.01	8.16	3.091	0.28(0.21)	0.75	18.7	118.00
4	50.99	8.85	2.956	0.28(0.21)	0.75	20.1	106.00
5	51.08	8.94	2.937	0.28(0.21)	0.76	20.2	115.00
6	51.09	8.96	2.934	0.28(0.21)	0.76	20.3	121.00
7	51.27	9.52	2.824	0.28(0.21)	0.76	21.2	104.00
8	51.06	10.29	2.691	0.28(0.22)	0.77	22.3	101.00
9	50.30	11.15	2.578	0.28(0.22)	0.77	23.1	108.00
10	49.71	11.61	2.517	0.28(0.22)	0.78	23.5	113.00
11	45.73	14.84	2.176	0.29(0.23)	0.79	25.5	1.00

TOTAL AREA(ACRES) = 25.50

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51.27 Tc(MIN.) = 9.521
EFFECTIVE AREA(ACRES) = 21.17 AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.28 AREA-AVERAGED Ap = 0.76
TOTAL AREA(ACRES) = 25.50
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<
===

****
FLOW PROCESS FROM NODE 5.00 TO NODE 6.00 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
===
ELEVATION DATA: UPSTREAM(FEET) = 1320.00 DOWNSTREAM(FEET) = 1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 950.00 CHANNEL SLOPE = 0.1389
CHANNEL FLOW THRU SUBAREA(CFS) = 51.27
FLOW VELOCITY(FEET/SEC) = 7.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 2.04 Tc(MIN.) = 11.57
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

****
FLOW PROCESS FROM NODE 6.00 TO NODE 6.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
===
MAINLINE Tc(MIN) = 11.57
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.523

```
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                 D       16.50      0.20       1.00    83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   16.50     SUBAREA RUNOFF(CFS) =   34.50
EFFECTIVE AREA(ACRES) =    37.67   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.87
TOTAL AREA(ACRES) =    42.00      PEAK FLOW RATE(CFS) =      78.48

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     79.25   9.29    2.869  0.24( 0.21) 0.87    33.1      123.00
    2     79.12   9.59    2.811  0.24( 0.21) 0.87    33.7      112.00
    3     79.01  10.22    2.701  0.24( 0.21) 0.87    35.2      118.00
    4     79.11  10.90    2.612  0.24( 0.21) 0.87    36.6      106.00
    5     79.08  10.99    2.599  0.24( 0.21) 0.87    36.7      115.00
    6     79.07  11.00    2.597  0.24( 0.21) 0.87    36.8      121.00
    7     78.48  11.57    2.523  0.24( 0.21) 0.87    37.7      104.00
    8     77.19  12.34    2.421  0.24( 0.21) 0.87    38.8      101.00
    9     75.65  13.21    2.332  0.24( 0.21) 0.87    39.6      108.00
   10     74.67  13.68    2.287  0.24( 0.21) 0.87    40.0      113.00
   11     68.15  16.96    2.019  0.25( 0.22) 0.87    42.0        1.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    79.25  Tc(MIN.) =   9.29
AREA-AVERAGED Fm(INCH/HR) =  0.21  AREA-AVERAGED Fp(INCH/HR) =  0.24
AREA-AVERAGED Ap =  0.87  EFFECTIVE AREA(ACRES) =    33.06

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1424.00  DOWNSTREAM(FEET) =   1421.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.512
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.826
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         D        1.60      0.20       0.60    75    9.51
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      3.90
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      3.90

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    306.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1421.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =  480.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      6.19
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.33
  HALFSTREET FLOOD WIDTH(FEET) =   11.96
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.63
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.55
 STREET FLOW TRAVEL TIME(MIN.) =   1.73   Tc(MIN.) =  11.24
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.566
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         B        0.80      0.30       0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         D        1.30      0.20       0.60    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    2.10     SUBAREA RUNOFF(CFS) =    4.58
 EFFECTIVE AREA(ACRES) =    3.70   AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =    3.70       PEAK FLOW RATE(CFS) =      8.10

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.36   HALFSTREET FLOOD WIDTH(FEET) =  13.38
 FLOW VELOCITY(FEET/SEC.) =  4.93   DEPTH*VELOCITY(FT*FT/SEC.) =   1.77
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    306.00 =   750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
 TIME OF CONCENTRATION(MIN.) =  11.24
 RAINFALL INTENSITY(INCH/HR) =   2.57
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    3.70
 TOTAL STREAM AREA(ACRES) =    3.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.10

****************************************************************************
 FLOW PROCESS FROM NODE    303.00 TO NODE    304.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1424.00  DOWNSTREAM(FEET) =   1419.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.638
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.997
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    75    8.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      2.09
 TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      2.09

****************************************************************************
 FLOW PROCESS FROM NODE    304.00 TO NODE    306.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1419.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =   470.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.80
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.30
   HALFSTREET FLOOD WIDTH(FEET) =    9.82
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.03
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
 STREET FLOW TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =  10.58
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.653
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.50      0.30       0.50    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.00      0.20       0.50    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.50      SUBAREA RUNOFF(CFS) =    3.42
 EFFECTIVE AREA(ACRES) =    2.30    AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    2.30        PEAK FLOW RATE(CFS) =      5.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =  11.35
 FLOW VELOCITY(FEET/SEC.) =  4.33   DEPTH*VELOCITY(FT*FT/SEC.) =   1.40
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    306.00 =   770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.58
 RAINFALL INTENSITY(INCH/HR) =   2.65
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    2.30
 TOTAL STREAM AREA(ACRES) =    2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.26

****************************************************************************
 FLOW PROCESS FROM NODE    305.00 TO NODE    306.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   135.00
 ELEVATION DATA: UPSTREAM(FEET) =   1418.00  DOWNSTREAM(FEET) =   1404.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  4.060
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  B        0.10      0.30       0.10    56    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =      0.36
```

```
 TOTAL AREA(ACRES) =      0.10   PEAK FLOW RATE(CFS) =      0.36

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   4.06
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =    0.10
 TOTAL STREAM AREA(ACRES) =    0.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.36

 ** CONFLUENCE DATA **
  STREAM      Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1       8.10  11.24    2.566  0.22( 0.13) 0.60     3.7     301.00
    2       5.26  10.58    2.653  0.22( 0.11) 0.50     2.3     303.00
    3       0.36   5.00    4.060  0.30( 0.03) 0.10     0.1     305.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1      10.04   5.00    4.060  0.22( 0.12) 0.54     2.8     305.00
    2      13.40  10.58    2.653  0.22( 0.12) 0.55     5.9     303.00
    3      13.41  11.24    2.566  0.22( 0.12) 0.55     6.1     301.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     13.41   Tc(MIN.) =    11.24
 EFFECTIVE AREA(ACRES) =     6.10   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =      6.10
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    306.00 =   770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    308.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1370.00
 FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.11
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     13.41
 PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  11.53
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    308.00 =  1070.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    308.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.53
 RAINFALL INTENSITY(INCH/HR) =   2.53
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.55
 EFFECTIVE STREAM AREA(ACRES) =    6.10
 TOTAL STREAM AREA(ACRES) =    6.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.41

****************************************************************************
 FLOW PROCESS FROM NODE    307.00 TO NODE    308.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1404.50  DOWNSTREAM(FEET) =   1371.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.677
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.832
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.40      0.30       0.40     56    5.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      1.34
 TOTAL AREA(ACRES) =      0.40   PEAK FLOW RATE(CFS) =      1.34

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    308.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.68
 RAINFALL INTENSITY(INCH/HR) =   3.83
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.40
 EFFECTIVE STREAM AREA(ACRES) =    0.40
 TOTAL STREAM AREA(ACRES) =    0.40
```

```
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.34

** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      10.04   5.32     3.954   0.22( 0.12) 0.54      2.8      305.00
    1      13.40  10.87     2.615   0.22( 0.12) 0.55      5.9      303.00
    1      13.41  11.53     2.528   0.22( 0.12) 0.55      6.1      301.00
    2       1.34   5.68     3.832   0.30( 0.12) 0.40      0.4      307.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      11.34   5.32     3.954   0.23( 0.12) 0.53      3.2      305.00
    2      11.60   5.68     3.832   0.23( 0.12) 0.53      3.4      307.00
    3      14.30  10.87     2.615   0.23( 0.12) 0.54      6.3      303.00
    4      14.28  11.53     2.528   0.23( 0.12) 0.54      6.5      301.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     14.30    Tc(MIN.) =    10.87
EFFECTIVE AREA(ACRES) =     6.28   AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.54
TOTAL AREA(ACRES) =      6.50
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    308.00 =  1070.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1370.00  DOWNSTREAM(FEET) =  1363.50
 FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.10
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     14.30
 PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  10.96
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    309.00 TO NODE    310.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1390.00  DOWNSTREAM(FEET) =  1383.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.093
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.908
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          D        1.20      0.20       0.70     75    9.09
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      2.99
 TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      2.99

****************************************************************************
 FLOW PROCESS FROM NODE    310.00 TO NODE    313.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1383.00  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.82
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =   10.84
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.30
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.35
 STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  10.57
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.655
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50     56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.00      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.60     SUBAREA RUNOFF(CFS) =    3.65
 EFFECTIVE AREA(ACRES) =    2.80   AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =    2.80       PEAK FLOW RATE(CFS) =       6.37
```

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 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34  HALFSTREET FLOOD WIDTH(FEET) = 12.16
 FLOW VELOCITY(FEET/SEC.) = 4.62  DEPTH*VELOCITY(FT*FT/SEC.) = 1.56
 LONGEST FLOWPATH FROM NODE  309.00 TO NODE  313.00 = 680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  313.00 TO NODE  313.00 IS CODE = 1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 10.57
 RAINFALL INTENSITY(INCH/HR) = 2.66
 AREA-AVERAGED Fm(INCH/HR) = 0.13
 AREA-AVERAGED Fp(INCH/HR) = 0.22
 AREA-AVERAGED Ap = 0.59
 EFFECTIVE STREAM AREA(ACRES) = 2.80
 TOTAL STREAM AREA(ACRES) = 2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.37

****************************************************************************
 FLOW PROCESS FROM NODE  311.00 TO NODE  312.00 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 300.00
 ELEVATION DATA: UPSTREAM(FEET) = 1389.00  DOWNSTREAM(FEET) = 1379.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.259
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 3.301
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA     Fp        Ap      SCS  Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"     D       0.60     0.20      0.40    75   7.26
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.40
 SUBAREA RUNOFF(CFS) = 1.74
 TOTAL AREA(ACRES) = 0.60  PEAK FLOW RATE(CFS) = 1.74

****************************************************************************
 FLOW PROCESS FROM NODE  312.00 TO NODE  313.00 IS CODE = 62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1379.20  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) = 320.00  CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 13.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.56
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) = 0.30
  HALFSTREET FLOOD WIDTH(FEET) = 9.72
  AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.85
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.14
 STREET FLOW TRAVEL TIME(MIN.) = 1.39  Tc(MIN.) = 8.65
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.996
 SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA     Fp        Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"      B       0.20     0.30      0.50    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"      D       1.20     0.20      0.50    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.21
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.50
 SUBAREA AREA(ACRES) = 1.40  SUBAREA RUNOFF(CFS) = 3.64
 EFFECTIVE AREA(ACRES) = 2.00  AREA-AVERAGED Fm(INCH/HR) = 0.10
 AREA-AVERAGED Fp(INCH/HR) = 0.21  AREA-AVERAGED Ap = 0.47
 TOTAL AREA(ACRES) = 2.00  PEAK FLOW RATE(CFS) = 5.21

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.33  HALFSTREET FLOOD WIDTH(FEET) = 11.45
 FLOW VELOCITY(FEET/SEC.) = 4.22  DEPTH*VELOCITY(FT*FT/SEC.) = 1.37
 LONGEST FLOWPATH FROM NODE  311.00 TO NODE  313.00 = 620.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  313.00 TO NODE  313.00 IS CODE = 1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 8.65
 RAINFALL INTENSITY(INCH/HR) = 3.00
 AREA-AVERAGED Fm(INCH/HR) = 0.10
 AREA-AVERAGED Fp(INCH/HR) = 0.21
 AREA-AVERAGED Ap = 0.47
 EFFECTIVE STREAM AREA(ACRES) = 2.00
 TOTAL STREAM AREA(ACRES) = 2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.21

 ** CONFLUENCE DATA **
  STREAM    Q     Tc    Intensity  Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER  (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)   NODE
    1      6.37  10.57   2.655  0.22( 0.13) 0.59    2.8     309.00
    2      5.21   8.65   2.996  0.21( 0.10) 0.47    2.0     311.00
```

```
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     11.13   8.65    2.996  0.22( 0.11) 0.53     4.3     311.00
    2     10.97  10.57    2.655  0.22( 0.12) 0.54     4.8     309.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     11.13    Tc(MIN.) =     8.65
EFFECTIVE AREA(ACRES) =     4.29   AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =      4.80
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     11.13   8.65    2.996  0.22( 0.11) 0.53     4.3     311.00
    2     10.97  10.57    2.655  0.22( 0.12) 0.54     4.8     309.00
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     11.34   5.40    3.924  0.23( 0.12) 0.53     3.2     305.00
    2     11.60   5.76    3.803  0.23( 0.12) 0.53     3.4     307.00
    3     14.30  10.96    2.604  0.23( 0.12) 0.54     6.3     303.00
    4     14.28  11.62    2.517  0.23( 0.12) 0.54     6.5     301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     20.53   5.40    3.924  0.22( 0.12) 0.53     5.9     305.00
    2     21.10   5.76    3.803  0.22( 0.12) 0.53     6.3     307.00
    3     24.22   8.65    2.996  0.22( 0.12) 0.53     9.3     311.00
    4     25.07  10.57    2.655  0.22( 0.12) 0.54    10.9     309.00
    5     25.05  10.96    2.604  0.22( 0.12) 0.54    11.1     303.00
    6     24.65  11.62    2.517  0.22( 0.12) 0.54    11.3     301.00
  TOTAL AREA(ACRES) =     11.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      25.07  Tc(MIN.) =   10.567
EFFECTIVE AREA(ACRES) =    10.87  AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =     11.30
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.10 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1363.50  DOWNSTREAM(FEET) =  1290.00
 FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  30.00
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     25.07
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  10.71
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.10 =  1400.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.10 TO NODE      6.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1290.00  DOWNSTREAM(FEET) =   1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   550.00   CHANNEL SLOPE =  0.1855
 CHANNEL FLOW THRU SUBAREA(CFS) =     25.07
 FLOW VELOCITY(FEET/SEC) =   7.05 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  12.01
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     20.53   6.94    3.408  0.22( 0.12) 0.53     5.9     305.00
    2     21.10   7.29    3.292  0.22( 0.12) 0.53     6.3     307.00
    3     24.22  10.10    2.717  0.22( 0.12) 0.53     9.3     311.00
    4     25.07  12.01    2.465  0.22( 0.12) 0.54    10.9     309.00
    5     25.05  12.39    2.414  0.22( 0.12) 0.54    11.1     303.00
    6     24.65  13.06    2.346  0.22( 0.12) 0.54    11.3     301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	79.25	9.29	2.869	0.24(0.21)	0.87	33.1	123.00
2	79.12	9.59	2.811	0.24(0.21)	0.87	33.7	112.00
3	79.01	10.22	2.701	0.24(0.21)	0.87	35.2	118.00
4	79.11	10.90	2.612	0.24(0.21)	0.87	36.6	106.00
5	79.08	10.99	2.599	0.24(0.21)	0.87	36.7	115.00
6	79.07	11.00	2.597	0.24(0.21)	0.87	36.8	121.00
7	78.48	11.57	2.523	0.24(0.21)	0.87	37.7	104.00
8	77.19	12.34	2.421	0.24(0.21)	0.87	38.8	101.00
9	75.65	13.21	2.332	0.24(0.21)	0.87	39.6	108.00
10	74.67	13.68	2.287	0.24(0.21)	0.87	40.0	113.00
11	68.15	16.96	2.019	0.25(0.22)	0.87	42.0	1.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	91.72	6.94	3.408	0.23(0.19)	0.81	30.6	305.00
2	93.12	7.29	3.292	0.23(0.19)	0.81	32.2	307.00
3	102.58	9.29	2.869	0.23(0.19)	0.80	41.5	123.00
4	102.77	9.59	2.811	0.23(0.19)	0.80	42.5	112.00
5	103.25	10.10	2.717	0.24(0.19)	0.80	44.2	311.00
6	103.28	10.22	2.701	0.24(0.19)	0.80	44.6	118.00
7	103.69	10.90	2.612	0.24(0.19)	0.80	46.5	106.00
8	103.69	10.99	2.599	0.24(0.19)	0.79	46.8	115.00
9	103.69	11.00	2.597	0.24(0.19)	0.79	46.8	121.00
10	103.35	11.57	2.523	0.24(0.19)	0.79	48.2	104.00
11	102.81	12.01	2.465	0.24(0.19)	0.79	49.2	309.00
12	102.24	12.34	2.421	0.24(0.19)	0.79	49.8	101.00
13	102.14	12.39	2.414	0.24(0.19)	0.79	49.9	303.00
14	100.56	13.06	2.346	0.24(0.19)	0.80	50.8	301.00
15	100.14	13.21	2.332	0.24(0.19)	0.80	50.9	108.00
16	98.66	13.68	2.287	0.24(0.19)	0.80	51.3	113.00
17	89.18	16.96	2.019	0.24(0.20)	0.80	53.3	1.00

TOTAL AREA(ACRES) = 53.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 103.69 Tc(MIN.) = 10.989
EFFECTIVE AREA(ACRES) = 46.76 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.24 AREA-AVERAGED Ap = 0.79
TOTAL AREA(ACRES) = 53.30
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

****
FLOW PROCESS FROM NODE 6.00 TO NODE 6.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 6.00 TO NODE 7.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1188.00 DOWNSTREAM(FEET) = 1140.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 520.00 CHANNEL SLOPE = 0.0923
CHANNEL FLOW THRU SUBAREA(CFS) = 103.69
FLOW VELOCITY(FEET/SEC) = 14.58 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.59 Tc(MIN.) = 11.58
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 7.00 = 2900.00 FEET.

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 11.58
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.521
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	10.00	0.20	1.00	83

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 10.00 SUBAREA RUNOFF(CFS) = 20.89
EFFECTIVE AREA(ACRES) = 56.76 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 63.30 PEAK FLOW RATE(CFS) = 119.07

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	110.22	7.56	3.209	0.22(0.19)	0.86	40.6	305.00
2	112.12	7.90	3.141	0.22(0.19)	0.85	42.2	307.00
3	118.75	9.89	2.752	0.23(0.19)	0.84	51.5	123.00
4	118.87	10.18	2.706	0.23(0.19)	0.84	52.5	112.00
5	119.47	10.70	2.638	0.23(0.19)	0.84	54.2	311.00
6	119.51	10.81	2.623	0.23(0.19)	0.83	54.6	118.00
7	119.17	11.49	2.533	0.23(0.19)	0.83	56.5	106.00
8	119.07	11.58	2.521	0.23(0.19)	0.83	56.8	115.00
9	119.05	11.60	2.519	0.23(0.19)	0.83	56.8	121.00
10	118.02	12.16	2.445	0.23(0.19)	0.83	58.2	104.00
11	117.11	12.60	2.390	0.23(0.19)	0.83	59.2	309.00
12	116.68	12.94	2.358	0.23(0.19)	0.83	59.8	101.00
13	116.56	12.99	2.353	0.23(0.19)	0.83	59.9	303.00
14	114.69	13.66	2.288	0.23(0.19)	0.83	60.8	301.00
15	114.16	13.81	2.274	0.23(0.19)	0.83	60.9	108.00
16	112.29	14.28	2.229	0.23(0.19)	0.83	61.3	113.00
17	101.34	17.58	1.975	0.24(0.20)	0.84	63.3	1.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 119.51 Tc(MIN.) = 10.81
AREA-AVERAGED Fm(INCH/HR) = 0.19 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA(ACRES) = 54.58

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

****

```
 FLOW PROCESS FROM NODE     201.00 TO NODE     202.00 IS CODE =  21
----------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
======================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
 ELEVATION DATA: UPSTREAM(FEET) =   1590.00  DOWNSTREAM(FEET) =   1574.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.314
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.689
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.40      0.30       1.00    66   10.31
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      3.01
 TOTAL AREA(ACRES) =      1.40   PEAK FLOW RATE(CFS) =      3.01

****************************************************************************
 FLOW PROCESS FROM NODE     202.00 TO NODE     203.00 IS CODE =  51
----------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
======================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1574.00  DOWNSTREAM(FEET) =   1518.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   660.00   CHANNEL SLOPE =  0.0848
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      3.01
 FLOW VELOCITY(FEET/SEC) =   9.46   FLOW DEPTH(FEET) =   0.46
 TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  11.48
 LONGEST FLOWPATH FROM NODE     201.00 TO NODE     203.00 =   880.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     203.00 TO NODE     203.00 IS CODE =  81
----------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
======================================================================
 MAINLINE Tc(MIN) =  11.48
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.535
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 B        1.90      0.30       0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
 SUBAREA AREA(ACRES) =     1.90     SUBAREA RUNOFF(CFS) =     3.90
 EFFECTIVE AREA(ACRES) =     3.30   AREA-AVERAGED Fm(INCH/HR) =  0.27
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =     3.30       PEAK FLOW RATE(CFS) =      6.71

****************************************************************************
 FLOW PROCESS FROM NODE     203.00 TO NODE     206.00 IS CODE =  62
----------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
======================================================================
 UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1463.00
 STREET LENGTH(FEET) =   910.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.61
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.35
   HALFSTREET FLOOD WIDTH(FEET) =   12.77
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.71
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.99
 STREET FLOW TRAVEL TIME(MIN.) =   2.65   Tc(MIN.) =  14.13
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.243
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        1.30      0.30       0.50    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.70      0.20       0.50    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     2.00     SUBAREA RUNOFF(CFS) =     3.80
 EFFECTIVE AREA(ACRES) =     5.30   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =     5.30       PEAK FLOW RATE(CFS) =      9.65

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  13.38
 FLOW VELOCITY(FEET/SEC.) =  5.87   DEPTH*VELOCITY(FT*FT/SEC.) =   2.10
 LONGEST FLOWPATH FROM NODE     201.00 TO NODE     206.00 =  1790.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     206.00 TO NODE     206.00 IS CODE =  1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.13
 RAINFALL INTENSITY(INCH/HR) =   2.24
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.76
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 EFFECTIVE STREAM AREA(ACRES) =    5.30
 TOTAL STREAM AREA(ACRES) =    5.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.65

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1518.00  DOWNSTREAM(FEET) =  1516.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.989
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.599
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        0.90      0.30       0.60    56   10.99
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      1.96
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      1.96

****************************************************************************
 FLOW PROCESS FROM NODE    205.00 TO NODE    206.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1516.00  DOWNSTREAM ELEVATION(FEET) = 1462.50
 STREET LENGTH(FEET) =  720.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.70
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.40
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.12
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.40
 STREET FLOW TRAVEL TIME(MIN.) =  2.34  Tc(MIN.) =  13.33
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.320
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        1.80      0.30       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =     1.80     SUBAREA RUNOFF(CFS) =     3.47
 EFFECTIVE AREA(ACRES) =     2.70     AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     2.70     PEAK FLOW RATE(CFS) =      5.20

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.30  HALFSTREET FLOOD WIDTH(FEET) =  9.82
 FLOW VELOCITY(FEET/SEC.) =  5.52  DEPTH*VELOCITY(FT*FT/SEC.) =  1.64
 LONGEST FLOWPATH FROM NODE    204.00 TO NODE    206.00 =  1020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    206.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.33
 RAINFALL INTENSITY(INCH/HR) =  2.32
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    2.70
 TOTAL STREAM AREA(ACRES) =    2.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.20

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1      9.65  14.13    2.243  0.29( 0.22) 0.76     5.3      201.00
     2      5.20  13.33    2.320  0.30( 0.18) 0.60     2.7      204.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1     14.65  13.33    2.320  0.29( 0.21) 0.70     7.7      204.00
     2     14.66  14.13    2.243  0.29( 0.21) 0.70     8.0      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     14.66    Tc(MIN.) =    14.13
 EFFECTIVE AREA(ACRES) =     8.00    AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =      8.00
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    206.00 =  1790.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    210.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 ELEVATION DATA: UPSTREAM(FEET) =  1461.00  DOWNSTREAM(FEET) =  1450.00
 FLOW LENGTH(FEET) =  230.00  MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.23
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =  1
 PIPE-FLOW(CFS) =  14.66
 PIPE TRAVEL TIME(MIN.) =  0.29    Tc(MIN.) =  14.42
 LONGEST FLOWPATH FROM NODE  201.00 TO NODE  210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  210.00 TO NODE  210.00 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.42
 RAINFALL INTENSITY(INCH/HR) =  2.22
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =  8.00
 TOTAL STREAM AREA(ACRES) =  8.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  14.66

****************************************************************************
 FLOW PROCESS FROM NODE  207.00 TO NODE  210.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1462.00  DOWNSTREAM(FEET) =  1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  8.164
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.090
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        1.90      0.30       0.70     56    8.16
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =  4.92
 TOTAL AREA(ACRES) =  1.90   PEAK FLOW RATE(CFS) =  4.92

****************************************************************************
 FLOW PROCESS FROM NODE  210.00 TO NODE  210.00 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  8.16
 RAINFALL INTENSITY(INCH/HR) =  3.09
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =  1.90
 TOTAL STREAM AREA(ACRES) =  1.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  4.92

****************************************************************************
 FLOW PROCESS FROM NODE  208.00 TO NODE  210.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  230.00
 ELEVATION DATA: UPSTREAM(FEET) =  1453.00  DOWNSTREAM(FEET) =  1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  6.375
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.598
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 B        0.20      0.30       0.10     56    6.38
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =  0.64
 TOTAL AREA(ACRES) =  0.20   PEAK FLOW RATE(CFS) =  0.64

****************************************************************************
 FLOW PROCESS FROM NODE  210.00 TO NODE  210.00 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =  6.38
 RAINFALL INTENSITY(INCH/HR) =  3.60
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =  0.20
 TOTAL STREAM AREA(ACRES) =  0.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  0.64

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     14.65  13.62    2.292   0.29( 0.21) 0.70     7.7     204.00
     1     14.66  14.42    2.216   0.29( 0.21) 0.70     8.0     201.00
     2      4.92   8.16    3.090   0.30( 0.21) 0.70     1.9     207.00
     3      0.64   6.38    3.598   0.30( 0.03) 0.10     0.2     208.00
```

```
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     16.31   6.38     3.598   0.30( 0.20) 0.68      5.3     208.00
     2     17.61   8.16     3.090   0.30( 0.20) 0.68      6.7     207.00
     3     18.62  13.62     2.292   0.30( 0.20) 0.69      9.8     204.00
     4     18.49  14.42     2.216   0.29( 0.20) 0.69     10.1     201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     18.62    Tc(MIN.) =    13.62
 EFFECTIVE AREA(ACRES) =     9.80   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     10.10
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.62
 RAINFALL INTENSITY(INCH/HR) =   2.29
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    9.80
 TOTAL STREAM AREA(ACRES) =   10.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.62

****************************************************************************
 FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   240.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1451.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.554
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.817
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         D        0.70      0.20       0.70     75    9.55
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      1.69
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      1.69

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.55
 RAINFALL INTENSITY(INCH/HR) =   2.82
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    0.70
 TOTAL STREAM AREA(ACRES) =    0.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.69

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     16.31   6.38     3.598   0.30( 0.20) 0.68      5.3     208.00
     1     17.61   8.16     3.090   0.30( 0.20) 0.68      6.7     207.00
     1     18.62  13.62     2.292   0.30( 0.20) 0.69      9.8     204.00
     1     18.49  14.42     2.216   0.29( 0.20) 0.69     10.1     201.00
     2      1.69   9.55     2.817   0.20( 0.14) 0.70      0.7     209.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     17.77   6.38     3.598   0.29( 0.20) 0.68      5.8     208.00
     2     19.20   8.16     3.090   0.29( 0.20) 0.69      7.3     207.00
     3     19.55   9.55     2.817   0.29( 0.20) 0.69      8.2     209.00
     4     19.97  13.62     2.292   0.29( 0.20) 0.69     10.5     204.00
     5     19.79  14.42     2.216   0.29( 0.20) 0.69     10.8     201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     19.97    Tc(MIN.) =    13.62
 EFFECTIVE AREA(ACRES) =    10.50   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     10.80
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    215.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1450.00  DOWNSTREAM(FEET) =  1417.50
 FLOW LENGTH(FEET) =   560.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.20
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
 PIPE-FLOW(CFS) =    19.97
 PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  14.24
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.24
 RAINFALL INTENSITY(INCH/HR) =   2.23
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =   10.50
 TOTAL STREAM AREA(ACRES) =   10.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.97

****************************************************************************
 FLOW PROCESS FROM NODE    213.00 TO NODE    214.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   285.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.40  DOWNSTREAM(FEET) =   1432.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.469
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.566
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        0.90      0.20       0.50    75    6.47
 SUBAREA AVERAGE PERVIOUS LOSS RATE,, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      2.81
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      2.81

****************************************************************************
 FLOW PROCESS FROM NODE    214.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1432.20  DOWNSTREAM ELEVATION(FEET) = 1416.20
 STREET LENGTH(FEET) =   290.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.77
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.30
  HALFSTREET FLOOD WIDTH(FEET) =   10.13
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.80
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.45
 STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =   7.48
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.228
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D        1.40      0.20       0.60    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    3.92
 EFFECTIVE AREA(ACRES) =    2.30    AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =    2.30        PEAK FLOW RATE(CFS) =       6.45

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  11.45
 FLOW VELOCITY(FEET/SEC.) =  5.22   DEPTH*VELOCITY(FT*FT/SEC.) =   1.70
 LONGEST FLOWPATH FROM NODE    213.00 TO NODE    215.00 =   575.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.48
 RAINFALL INTENSITY(INCH/HR) =   3.23
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.56
 EFFECTIVE STREAM AREA(ACRES) =    2.30
 TOTAL STREAM AREA(ACRES) =    2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.45

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1     17.77   7.00    3.387  0.29( 0.20) 0.68     5.8     208.00
     1     19.20   8.78    2.969  0.29( 0.20) 0.69     7.3     207.00
     1     19.55  10.17    2.708  0.29( 0.20) 0.69     8.2     209.00
     1     19.97  14.24    2.233  0.29( 0.20) 0.69    10.5     204.00
     1     19.79  15.04    2.157  0.29( 0.20) 0.69    10.8     201.00
     2      6.45   7.48    3.228  0.20( 0.11) 0.56     2.3     213.00
```

```
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     24.12   7.00     3.387   0.27( 0.17) 0.65     7.9     208.00
    2     24.60   7.48     3.228   0.27( 0.17) 0.65     8.5     213.00
    3     25.11   8.78     2.969   0.27( 0.18) 0.66     9.6     207.00
    4     24.93  10.17     2.708   0.27( 0.18) 0.66    10.5     209.00
    5     24.36  14.24     2.233   0.28( 0.18) 0.67    12.8     204.00
    6     24.03  15.04     2.157   0.28( 0.18) 0.67    13.1     201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    25.11    Tc(MIN.) =    8.78
 EFFECTIVE AREA(ACRES) =    9.61   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.66
 TOTAL AREA(ACRES) =    13.10
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.78
 RAINFALL INTENSITY(INCH/HR) =   2.97
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.66
 EFFECTIVE STREAM AREA(ACRES) =    9.61
 TOTAL STREAM AREA(ACRES) =   13.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    25.11

****************************************************************************
 FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1445.80

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.560
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.208
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      D        0.30      0.20       0.40     75    7.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      0.84
 TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      0.84

****************************************************************************
 FLOW PROCESS FROM NODE    212.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1445.80  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =  460.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.59
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.26
  HALFSTREET FLOOD WIDTH(FEET) =    7.39
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.43
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
 STREET FLOW TRAVEL TIME(MIN.) =   1.73   Tc(MIN.) =   9.29
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.869
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.40      0.20       0.50     75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    3.49
 EFFECTIVE AREA(ACRES) =    1.70    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =    1.70        PEAK FLOW RATE(CFS) =       4.24

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.42
 FLOW VELOCITY(FEET/SEC.) =  4.85   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
 LONGEST FLOWPATH FROM NODE    211.00 TO NODE    215.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.29
```

```
RAINFALL INTENSITY(INCH/HR) =  2.87
AREA-AVERAGED Fm(INCH/HR) =  0.10
AREA-AVERAGED Fp(INCH/HR) =  0.20
AREA-AVERAGED Ap =  0.48
EFFECTIVE STREAM AREA(ACRES) =  1.70
TOTAL STREAM AREA(ACRES) =  1.70
PEAK FLOW RATE(CFS) AT CONFLUENCE =  4.24

** CONFLUENCE DATA **
 STREAM     Q     Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)   NODE
    1     24.12   7.00    3.387  0.27( 0.17) 0.65     7.9     208.00
    1     24.60   7.48    3.228  0.27( 0.17) 0.65     8.5     213.00
    1     25.11   8.78    2.969  0.27( 0.18) 0.66     9.6     207.00
    1     24.93  10.17    2.708  0.27( 0.18) 0.66    10.5     209.00
    1     24.36  14.24    2.233  0.28( 0.18) 0.67    12.8     204.00
    1     24.03  15.04    2.157  0.28( 0.18) 0.67    13.1     201.00
    2      4.24   9.29    2.869  0.20( 0.10) 0.48     1.7     211.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)   NODE
    1     27.91   7.00    3.387  0.26( 0.16) 0.62     9.2     208.00
    2     28.45   7.48    3.228  0.26( 0.16) 0.63     9.8     213.00
    3     29.27   8.78    2.969  0.26( 0.17) 0.63    11.2     207.00
    4     29.29   9.29    2.869  0.26( 0.17) 0.63    11.6     211.00
    5     28.92  10.17    2.708  0.26( 0.17) 0.63    12.2     209.00
    6     27.63  14.24    2.233  0.27( 0.17) 0.65    14.5     204.00
    7     27.18  15.04    2.157  0.27( 0.17) 0.65    14.8     201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =  29.29  Tc(MIN.) =  9.29
EFFECTIVE AREA(ACRES) =  11.64  AREA-AVERAGED Fm(INCH/HR) =  0.17
AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.63
TOTAL AREA(ACRES) =  14.80
LONGEST FLOWPATH FROM NODE  201.00 TO NODE  215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  215.00 TO NODE  220.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1416.20  DOWNSTREAM(FEET) =  1350.00
 FLOW LENGTH(FEET) =  270.00  MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  29.11
 ESTIMATED PIPE DIAMETER(INCH) =  18.00  NUMBER OF PIPES =  1
 PIPE-FLOW(CFS) =  29.29
 PIPE TRAVEL TIME(MIN.) =  0.15  Tc(MIN.) =  9.45
 LONGEST FLOWPATH FROM NODE  201.00 TO NODE  220.00 =  2850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  220.00 TO NODE  6.10 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  960.00  CHANNEL SLOPE =  0.1875
 CHANNEL FLOW THRU SUBAREA(CFS) =  29.29
 FLOW VELOCITY(FEET/SEC) =  7.47 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =  2.14  Tc(MIN.) =  11.59
 LONGEST FLOWPATH FROM NODE  201.00 TO NODE  6.10 =  3810.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  6.10 TO NODE  6.10 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  216.00 TO NODE  217.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1616.00  DOWNSTREAM(FEET) =  1513.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  8.561
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.012
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30       1.00    66    8.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =  1.46
 TOTAL AREA(ACRES) =  0.60  PEAK FLOW RATE(CFS) =  1.46

****************************************************************************
 FLOW PROCESS FROM NODE  217.00 TO NODE  218.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1513.00  DOWNSTREAM(FEET) =  1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  350.00  CHANNEL SLOPE =  0.1800
 CHANNEL BASE(FEET) =  0.00  "Z" FACTOR =  1.500
 MANNING'S FACTOR = 0.015  MAXIMUM DEPTH(FEET) =  1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =  1.46
 FLOW VELOCITY(FEET/SEC) =  10.68  FLOW DEPTH(FEET) =  0.30
 TRAVEL TIME(MIN.) =  0.55  Tc(MIN.) =  9.11
 LONGEST FLOWPATH FROM NODE  216.00 TO NODE  218.00 =  650.00 FEET.
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     218.00 TO NODE     218.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.11
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.905
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        2.00      0.30       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     2.00      SUBAREA RUNOFF(CFS) =     4.69
 EFFECTIVE AREA(ACRES) =     2.60    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     2.60        PEAK FLOW RATE(CFS) =       6.10

****************************************************************************
 FLOW PROCESS FROM NODE     218.00 TO NODE     219.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1437.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   280.00   CHANNEL SLOPE =  0.0464
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      6.10
 FLOW VELOCITY(FEET/SEC) =   9.09   FLOW DEPTH(FEET) =   0.67
 TRAVEL TIME(MIN.) =   0.51   Tc(MIN.) =   9.62
 LONGEST FLOWPATH FROM NODE     216.00 TO NODE     219.00 =   930.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     219.00 TO NODE     219.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.62
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.804
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        3.10      0.30       1.00    66
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        1.00      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.28
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10      SUBAREA RUNOFF(CFS) =     9.33
 EFFECTIVE AREA(ACRES) =     6.70    AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     6.70        PEAK FLOW RATE(CFS) =      15.19

****************************************************************************
 FLOW PROCESS FROM NODE     219.00 TO NODE     225.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1437.00  DOWNSTREAM(FEET) =  1400.00
 FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS    8.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.35
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.19
 PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   9.87
 LONGEST FLOWPATH FROM NODE     216.00 TO NODE     225.00 =  1220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     225.00 TO NODE     225.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.87
 RAINFALL INTENSITY(INCH/HR) =   2.76
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    6.70
 TOTAL STREAM AREA(ACRES) =    6.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.19

****************************************************************************
 FLOW PROCESS FROM NODE     221.00 TO NODE     222.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1417.00  DOWNSTREAM(FEET) =   1408.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.932
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.135
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         D        0.50      0.20       0.60    75    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      1.36
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      1.36

****************************************************************************
 FLOW PROCESS FROM NODE     222.00 TO NODE     225.00 IS CODE =  62
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  3 USED)<<<<<
UPSTREAM ELEVATION(FEET) = 1408.70  DOWNSTREAM ELEVATION(FEET) = 1400.00
STREET LENGTH(FEET) =  180.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.017
OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.01
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.25
  HALFSTREET FLOOD WIDTH(FEET) =    6.88
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.83
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.95
STREET FLOW TRAVEL TIME(MIN.) =  0.78   Tc(MIN.) =  8.72
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.982
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        D        0.50      0.20       0.50    75
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    1.30
EFFECTIVE AREA(ACRES) =    1.00    AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.55
TOTAL AREA(ACRES) =    1.00        PEAK FLOW RATE(CFS) =       2.58

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  7.79
FLOW VELOCITY(FEET/SEC.) =  4.05   DEPTH*VELOCITY(FT*FT/SEC.) =  1.07
LONGEST FLOWPATH FROM NODE    221.00 TO NODE    225.00 =   460.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    225.00 IS CODE =  1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  8.72
RAINFALL INTENSITY(INCH/HR) =  2.98
AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.20
AREA-AVERAGED Ap =  0.55
EFFECTIVE STREAM AREA(ACRES) =    1.00
TOTAL STREAM AREA(ACRES) =    1.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.58

****************************************************************************
 FLOW PROCESS FROM NODE    223.00 TO NODE    224.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
ELEVATION DATA: UPSTREAM(FEET) =  1419.00  DOWNSTREAM(FEET) =  1408.30

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.858
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.150
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        D        1.60      0.20       0.60    75    7.86
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA RUNOFF(CFS) =      4.36
TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      4.36

****************************************************************************
 FLOW PROCESS FROM NODE    224.00 TO NODE    225.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  3 USED)<<<<<
UPSTREAM ELEVATION(FEET) = 1408.30  DOWNSTREAM ELEVATION(FEET) = 1400.00
STREET LENGTH(FEET) =  170.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.017
OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.41
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.32
  HALFSTREET FLOOD WIDTH(FEET) =   10.94
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.75
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.50
STREET FLOW TRAVEL TIME(MIN.) =  0.60   Tc(MIN.) =  8.45
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.033
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        D        0.80      0.20       0.60    75
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
```

```
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =     0.80      SUBAREA RUNOFF(CFS) =     2.10
EFFECTIVE AREA(ACRES) =     2.40    AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =     2.40        PEAK FLOW RATE(CFS) =       6.29

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  11.65
FLOW VELOCITY(FEET/SEC.) =  4.93   DEPTH*VELOCITY(FT*FT/SEC.) =   1.62
LONGEST FLOWPATH FROM NODE    223.00 TO NODE    225.00 =   470.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    225.00 TO NODE    225.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =   8.45
RAINFALL INTENSITY(INCH/HR) =   3.03
AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.20
AREA-AVERAGED Ap =  0.60
EFFECTIVE STREAM AREA(ACRES) =    2.40
TOTAL STREAM AREA(ACRES) =    2.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.29

** CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     15.19   9.87    2.756  0.29( 0.29) 1.00     6.7      216.00
    2      2.58   8.72    2.982  0.20( 0.11) 0.55     1.0      221.00
    3      6.29   8.45    3.033  0.20( 0.12) 0.60     2.4      223.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
    1     23.32   8.45    3.033  0.26( 0.22) 0.85     9.1      223.00
    2     23.41   8.72    2.982  0.26( 0.22) 0.85     9.3      221.00
    3     23.27   9.87    2.756  0.27( 0.23) 0.86    10.1      216.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     23.41    Tc(MIN.) =     8.72
EFFECTIVE AREA(ACRES) =     9.32   AREA-AVERAGED Fm(INCH/HR) =  0.22
AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.85
TOTAL AREA(ACRES) =     10.10
LONGEST FLOWPATH FROM NODE    216.00 TO NODE    225.00 =  1220.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    225.00 TO NODE    227.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1399.00
FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.89
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =    23.41
PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   8.82
LONGEST FLOWPATH FROM NODE    216.00 TO NODE    227.00 =  1280.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    227.00 TO NODE    227.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   8.82
RAINFALL INTENSITY(INCH/HR) =   2.96
AREA-AVERAGED Fm(INCH/HR) =  0.22
AREA-AVERAGED Fp(INCH/HR) =  0.26
AREA-AVERAGED Ap =  0.85
EFFECTIVE STREAM AREA(ACRES) =    9.32
TOTAL STREAM AREA(ACRES) =   10.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.41

****************************************************************************
FLOW PROCESS FROM NODE    226.00 TO NODE    227.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1397.50

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.509
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.663
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap       SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        D        1.60      0.20       0.60     75   10.51
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA RUNOFF(CFS) =      3.66
TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      3.66

****************************************************************************
FLOW PROCESS FROM NODE    227.00 TO NODE    227.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
```

```
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  10.51
RAINFALL INTENSITY(INCH/HR) =   2.66
AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.20
AREA-AVERAGED Ap =  0.60
EFFECTIVE STREAM AREA(ACRES) =    1.60
TOTAL STREAM AREA(ACRES) =    1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.66

** CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      23.32   8.56     3.013   0.26( 0.22) 0.85      9.1      223.00
    1      23.41   8.82     2.962   0.26( 0.22) 0.85      9.3      221.00
    1      23.27   9.97     2.736   0.27( 0.23) 0.86     10.1      216.00
    2       3.66  10.51     2.663   0.20( 0.12) 0.60      1.6      226.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      26.71   8.56     3.013   0.26( 0.21) 0.82     10.4      223.00
    2      26.84   8.82     2.962   0.26( 0.21) 0.82     10.7      221.00
    3      26.84   9.97     2.736   0.26( 0.21) 0.83     11.6      216.00
    4      26.25  10.51     2.663   0.26( 0.21) 0.82     11.7      226.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     26.84    Tc(MIN.) =     8.82
EFFECTIVE AREA(ACRES) =    10.66   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.82
TOTAL AREA(ACRES) =     11.70
LONGEST FLOWPATH FROM NODE    216.00 TO NODE    227.00 =  1280.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    227.00 TO NODE    228.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1397.50  DOWNSTREAM(FEET) =  1286.00
 FLOW LENGTH(FEET) =   370.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  30.81
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     26.84
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   9.02
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    228.00 =  1650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    228.00 TO NODE      6.10 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
```

```
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1286.00  DOWNSTREAM(FEET) =   1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.1871
 CHANNEL FLOW THRU SUBAREA(CFS) =     26.84
 FLOW VELOCITY(FEET/SEC) =   7.24 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =  10.44
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE      6.10 =  2270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.44
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       8.80      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    8.80      SUBAREA RUNOFF(CFS) =   19.57
 EFFECTIVE AREA(ACRES) =   19.46   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.90
 TOTAL AREA(ACRES) =    20.50      PEAK FLOW RATE(CFS) =      43.18

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      43.23  10.18     2.706   0.23( 0.21) 0.90     19.2      223.00
     2      43.18  10.44     2.672   0.23( 0.21) 0.90     19.5      221.00
     3      42.47  11.60     2.519   0.23( 0.21) 0.90     20.4      216.00
     4      41.30  12.15     2.446   0.23( 0.21) 0.90     20.5      226.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     43.23  Tc(MIN.) =  10.18
 AREA-AVERAGED Fm(INCH/HR) =  0.21  AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  0.90  EFFECTIVE AREA(ACRES) =     19.21

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      43.23  10.18     2.706   0.23( 0.21) 0.90     19.2      223.00
     2      43.18  10.44     2.672   0.23( 0.21) 0.90     19.5      221.00
     3      42.47  11.60     2.519   0.23( 0.21) 0.90     20.4      216.00
     4      41.30  12.15     2.446   0.23( 0.21) 0.90     20.5      226.00
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE      6.10 =  2270.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27.91	9.34	2.860	0.26(0.16)	0.62	9.2	208.00
2	28.45	9.80	2.770	0.26(0.16)	0.63	9.8	213.00
3	29.27	11.08	2.587	0.26(0.17)	0.63	11.2	207.00
4	29.29	11.59	2.520	0.26(0.17)	0.63	11.6	211.00
5	28.92	12.48	2.403	0.26(0.17)	0.63	12.2	209.00
6	27.63	16.58	2.046	0.27(0.17)	0.65	14.5	204.00
7	27.18	17.39	1.988	0.27(0.17)	0.65	14.8	201.00

LONGEST FLOWPATH FROM NODE 201.00 TO NODE 6.10 = 3810.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	69.99	9.34	2.860	0.24(0.19)	0.81	26.8	208.00
2	71.10	9.80	2.770	0.24(0.19)	0.80	28.3	213.00
3	71.93	10.18	2.706	0.24(0.19)	0.81	29.5	223.00
4	72.04	10.44	2.672	0.24(0.19)	0.80	30.0	221.00
5	72.05	11.08	2.587	0.24(0.19)	0.80	31.2	207.00
6	71.76	11.59	2.520	0.24(0.19)	0.80	32.0	211.00
7	71.75	11.60	2.519	0.24(0.19)	0.80	32.1	216.00
8	70.36	12.15	2.446	0.24(0.19)	0.80	32.5	226.00
9	69.42	12.48	2.403	0.24(0.19)	0.80	32.7	209.00
10	61.56	16.58	2.046	0.24(0.19)	0.79	35.0	204.00
11	60.02	17.39	1.988	0.24(0.19)	0.79	35.3	201.00

TOTAL AREA(ACRES) = 35.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 72.05 Tc(MIN.) = 11.081
EFFECTIVE AREA(ACRES) = 31.21 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.24 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 35.30
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 6.10 = 3810.00 FEET.

****

FLOW PROCESS FROM NODE 6.10 TO NODE 6.10 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<

****

FLOW PROCESS FROM NODE 6.10 TO NODE 7.00 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1170.00 DOWNSTREAM(FEET) = 1140.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 170.00 CHANNEL SLOPE = 0.1765
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) = 72.05
FLOW VELOCITY(FEET/SEC) = 8.96 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.32 Tc(MIN.) = 11.40
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.00 = 3980.00 FEET.

****

FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	69.99	9.66	2.797	0.24(0.19)	0.81	26.8	208.00
2	71.10	10.11	2.715	0.24(0.19)	0.80	28.3	213.00
3	71.93	10.50	2.664	0.24(0.19)	0.81	29.5	223.00
4	72.04	10.76	2.630	0.24(0.19)	0.80	30.0	221.00
5	72.05	11.40	2.546	0.24(0.19)	0.80	31.2	207.00
6	71.76	11.90	2.479	0.24(0.19)	0.80	32.0	211.00
7	71.75	11.91	2.477	0.24(0.19)	0.80	32.1	216.00
8	70.36	12.47	2.404	0.24(0.19)	0.80	32.5	226.00
9	69.42	12.80	2.371	0.24(0.19)	0.80	32.7	209.00
10	61.56	16.91	2.022	0.24(0.19)	0.79	35.0	204.00
11	60.02	17.73	1.966	0.24(0.19)	0.79	35.3	201.00

LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.00 = 3980.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	110.22	7.56	3.209	0.22(0.19)	0.86	40.6	305.00
2	112.12	7.90	3.141	0.22(0.19)	0.85	42.2	307.00
3	118.75	9.89	2.752	0.23(0.19)	0.84	51.5	123.00
4	118.87	10.18	2.706	0.23(0.19)	0.84	52.5	112.00
5	119.47	10.70	2.638	0.23(0.19)	0.84	54.2	311.00
6	119.51	10.81	2.623	0.23(0.19)	0.83	54.6	118.00
7	119.17	11.49	2.533	0.23(0.19)	0.83	56.5	106.00
8	119.07	11.58	2.521	0.23(0.19)	0.83	56.8	115.00
9	119.05	11.60	2.519	0.23(0.19)	0.83	56.8	121.00
10	118.02	12.16	2.445	0.23(0.19)	0.83	58.2	104.00
11	117.11	12.60	2.390	0.23(0.19)	0.83	59.2	309.00
12	116.68	12.94	2.358	0.23(0.19)	0.83	59.8	101.00
13	116.56	12.99	2.353	0.23(0.19)	0.83	59.9	303.00
14	114.69	13.66	2.288	0.23(0.19)	0.83	60.8	301.00
15	114.16	13.81	2.274	0.23(0.19)	0.83	60.9	108.00
16	112.29	14.28	2.229	0.23(0.19)	0.83	61.3	113.00
17	101.34	17.58	1.975	0.24(0.20)	0.84	63.3	1.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 7.00 = 2900.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	173.63	7.56	3.209	0.23(0.19)	0.84	61.6	305.00
2	176.94	7.90	3.141	0.23(0.19)	0.84	64.2	307.00
3	187.97	9.66	2.797	0.23(0.19)	0.83	77.2	208.00
4	189.30	9.89	2.752	0.23(0.19)	0.83	79.1	123.00
5	189.94	10.11	2.715	0.23(0.19)	0.83	80.6	213.00
6	190.12	10.18	2.706	0.23(0.19)	0.83	81.0	112.00
7	191.17	10.50	2.664	0.23(0.19)	0.83	83.0	223.00
8	191.48	10.70	2.638	0.23(0.19)	0.82	84.1	311.00
9	191.53	10.76	2.630	0.23(0.19)	0.82	84.4	221.00
10	191.55	10.81	2.623	0.23(0.19)	0.82	84.7	118.00

11	191.27	11.40	2.546	0.23(0.19)	0.82	87.5	207.00
12	191.17	11.49	2.533	0.23(0.19)	0.82	87.9	106.00
13	191.01	11.58	2.521	0.23(0.19)	0.82	88.3	115.00
14	190.98	11.60	2.519	0.23(0.19)	0.82	88.3	121.00
15	190.24	11.90	2.479	0.23(0.19)	0.82	89.6	211.00
16	190.22	11.91	2.477	0.23(0.19)	0.82	89.6	216.00
17	189.15	12.16	2.445	0.23(0.19)	0.82	90.4	104.00
18	187.75	12.47	2.404	0.23(0.19)	0.82	91.4	226.00
19	187.09	12.60	2.390	0.23(0.19)	0.82	91.8	309.00
20	186.29	12.80	2.371	0.23(0.19)	0.82	92.3	209.00
21	185.83	12.94	2.358	0.23(0.19)	0.82	92.6	101.00
22	185.61	12.99	2.353	0.23(0.19)	0.82	92.7	303.00
23	182.46	13.66	2.288	0.24(0.19)	0.82	94.0	301.00
24	181.65	13.81	2.274	0.24(0.19)	0.82	94.2	108.00
25	178.88	14.28	2.229	0.24(0.19)	0.82	94.8	113.00
26	165.12	16.91	2.022	0.24(0.19)	0.82	97.9	204.00
27	161.63	17.58	1.975	0.24(0.20)	0.82	98.5	1.00
28	160.86	17.73	1.966	0.24(0.20)	0.82	98.6	201.00

TOTAL AREA(ACRES) = 98.60

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 191.55 Tc(MIN.) = 10.812
EFFECTIVE AREA(ACRES) = 84.68 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 98.60
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.00 = 3980.00 FEET.

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.90 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1140.00 DOWNSTREAM(FEET) = 1088.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1000.00 CHANNEL SLOPE = 0.0520
CHANNEL FLOW THRU SUBAREA(CFS) = 191.55
FLOW VELOCITY(FEET/SEC) = 13.20 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.26 Tc(MIN.) = 12.08
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.90 = 4980.00 FEET.

****
FLOW PROCESS FROM NODE 7.90 TO NODE 7.90 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 12.08
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.456
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	12.40	0.20	1.00	83

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 25.18
EFFECTIVE AREA(ACRES) = 97.08 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 111.00 PEAK FLOW RATE(CFS) = 197.84

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	183.79	8.86	2.954	0.22(0.19)	0.87	74.0	305.00
2	185.70	9.20	2.888	0.22(0.19)	0.86	76.6	307.00
3	194.88	10.93	2.608	0.22(0.19)	0.85	89.6	208.00
4	196.41	11.15	2.578	0.22(0.19)	0.85	91.5	123.00
5	197.18	11.38	2.548	0.23(0.19)	0.85	93.0	213.00
6	197.35	11.45	2.539	0.23(0.19)	0.85	93.4	112.00
7	198.02	11.76	2.497	0.23(0.19)	0.85	95.4	223.00
8	197.97	11.96	2.471	0.23(0.19)	0.85	96.5	311.00
9	197.91	12.02	2.463	0.23(0.19)	0.85	96.8	221.00
10	197.84	12.08	2.456	0.23(0.19)	0.85	97.1	118.00
11	197.05	12.66	2.385	0.23(0.19)	0.84	99.9	207.00
12	197.06	12.76	2.376	0.23(0.19)	0.84	100.3	106.00
13	197.04	12.85	2.367	0.23(0.19)	0.84	100.7	115.00
14	197.03	12.86	2.365	0.23(0.19)	0.84	100.7	121.00
15	196.75	13.17	2.336	0.23(0.19)	0.84	102.0	211.00
16	196.73	13.18	2.335	0.23(0.19)	0.84	102.0	216.00
17	196.05	13.43	2.311	0.23(0.19)	0.84	102.8	104.00
18	195.04	13.74	2.281	0.23(0.19)	0.84	103.8	226.00
19	194.54	13.87	2.268	0.23(0.19)	0.84	104.2	309.00
20	193.70	14.07	2.249	0.23(0.19)	0.84	104.7	209.00
21	193.07	14.21	2.236	0.23(0.19)	0.84	105.0	101.00
22	192.78	14.27	2.230	0.23(0.19)	0.84	105.1	303.00
23	188.80	14.94	2.165	0.23(0.19)	0.84	106.4	301.00
24	188.02	15.10	2.153	0.23(0.19)	0.84	106.6	108.00
25	185.75	15.57	2.119	0.23(0.19)	0.84	107.2	113.00
26	172.77	18.23	1.936	0.23(0.20)	0.84	110.3	204.00
27	169.68	18.91	1.895	0.23(0.20)	0.84	110.9	1.00
28	168.88	19.06	1.886	0.23(0.20)	0.84	111.0	201.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 198.02 Tc(MIN.) = 11.76
AREA-AVERAGED Fm(INCH/HR) = 0.19 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.85 EFFECTIVE AREA(ACRES) = 95.43

****
FLOW PROCESS FROM NODE 7.90 TO NODE 7.90 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 11.76
RAINFALL INTENSITY(INCH/HR) = 2.50
AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23

```
 AREA-AVERAGED Ap = 0.85
 EFFECTIVE STREAM AREA(ACRES) = 95.43
 TOTAL STREAM AREA(ACRES) = 111.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 198.02

****************************************************************************
 FLOW PROCESS FROM NODE 7.10 TO NODE 7.20 IS CODE = 21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 250.00
 ELEVATION DATA: UPSTREAM(FEET) = 1315.00 DOWNSTREAM(FEET) = 1220.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.799
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 3.161
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
     LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH" B 0.70 0.30 1.00 66 7.80
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA RUNOFF(CFS) = 1.80
 TOTAL AREA(ACRES) = 0.70 PEAK FLOW RATE(CFS) = 1.80

****************************************************************************
 FLOW PROCESS FROM NODE 7.20 TO NODE 7.30 IS CODE = 53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1220.00 DOWNSTREAM(FEET) = 1180.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 230.00 CHANNEL SLOPE = 0.1739
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1470 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) = 1.80
 FLOW VELOCITY(FEET/SEC) = 2.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) = 1.47 Tc(MIN.) = 9.27
 LONGEST FLOWPATH FROM NODE 7.10 TO NODE 7.30 = 480.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 7.30 TO NODE 7.30 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) = 9.27
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.874
 SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
     LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "OPEN BRUSH" B 1.30 0.30 1.00 66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) = 1.30 SUBAREA RUNOFF(CFS) = 3.01
 EFFECTIVE AREA(ACRES) = 2.00 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) = 2.00 PEAK FLOW RATE(CFS) = 4.63

****************************************************************************
 FLOW PROCESS FROM NODE 7.30 TO NODE 7.40 IS CODE = 53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1180.00 DOWNSTREAM(FEET) = 1114.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 620.00 CHANNEL SLOPE = 0.1065
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1048 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) = 4.63
 FLOW VELOCITY(FEET/SEC) = 3.02 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) = 3.42 Tc(MIN.) = 12.69
 LONGEST FLOWPATH FROM NODE 7.10 TO NODE 7.40 = 1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 7.40 TO NODE 7.40 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) = 12.69
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.382
 SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
     LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "OPEN BRUSH" B 5.10 0.30 1.00 66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) = 5.10 SUBAREA RUNOFF(CFS) = 9.56
 EFFECTIVE AREA(ACRES) = 7.10 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) = 7.10 PEAK FLOW RATE(CFS) = 13.30

****************************************************************************
 FLOW PROCESS FROM NODE 7.40 TO NODE 7.90 IS CODE = 52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) = 1114.00 DOWNSTREAM(FEET) = 1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 440.00 CHANNEL SLOPE = 0.0591
 CHANNEL FLOW THRU SUBAREA(CFS) = 13.30
 FLOW VELOCITY(FEET/SEC) = 6.54 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) = 1.12 Tc(MIN.) = 13.81
 LONGEST FLOWPATH FROM NODE 7.10 TO NODE 7.90 = 1540.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE 7.90 TO NODE 7.90 IS CODE = 1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 13.81
RAINFALL INTENSITY(INCH/HR) = 2.27
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 7.10
TOTAL STREAM AREA(ACRES) = 7.10
PEAK FLOW RATE(CFS) AT CONFLUENCE = 13.30

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	183.79	8.86	2.954	0.22(0.19)	0.87	74.0	305.00
1	185.70	9.20	2.888	0.22(0.19)	0.86	76.6	307.00
1	194.88	10.93	2.608	0.22(0.19)	0.85	89.6	208.00
1	196.41	11.15	2.578	0.22(0.19)	0.85	91.5	123.00
1	197.18	11.38	2.548	0.23(0.19)	0.85	93.0	213.00
1	197.35	11.45	2.539	0.23(0.19)	0.85	93.4	112.00
1	198.02	11.76	2.497	0.23(0.19)	0.85	95.4	223.00
1	197.97	11.96	2.471	0.23(0.19)	0.85	96.5	311.00
1	197.91	12.02	2.463	0.23(0.19)	0.85	96.8	221.00
1	197.84	12.08	2.456	0.23(0.19)	0.85	97.1	118.00
1	197.05	12.66	2.385	0.23(0.19)	0.84	99.9	207.00
1	197.06	12.76	2.376	0.23(0.19)	0.84	100.3	106.00
1	197.04	12.85	2.367	0.23(0.19)	0.84	100.7	115.00
1	197.03	12.86	2.365	0.23(0.19)	0.84	100.7	121.00
1	196.75	13.17	2.336	0.23(0.19)	0.84	102.0	211.00
1	196.73	13.18	2.335	0.23(0.19)	0.84	102.0	216.00
1	196.05	13.43	2.311	0.23(0.19)	0.84	102.8	104.00
1	195.04	13.74	2.281	0.23(0.19)	0.84	103.8	226.00
1	194.54	13.87	2.268	0.23(0.19)	0.84	104.2	309.00
1	193.70	14.07	2.249	0.23(0.19)	0.84	104.7	209.00
1	193.07	14.21	2.236	0.23(0.19)	0.84	105.0	101.00
1	192.78	14.27	2.230	0.23(0.19)	0.84	105.1	303.00
1	188.80	14.94	2.165	0.23(0.19)	0.84	106.4	301.00
1	188.02	15.10	2.153	0.23(0.19)	0.84	106.6	108.00
1	185.75	15.57	2.119	0.23(0.19)	0.84	107.2	113.00
1	172.77	18.23	1.936	0.23(0.20)	0.84	110.3	204.00
1	169.68	18.91	1.895	0.23(0.20)	0.84	110.9	1.00
1	168.88	19.06	1.886	0.23(0.20)	0.84	111.0	201.00
2	13.30	13.81	2.274	0.30(0.30)	1.00	7.1	7.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	195.26	8.86	2.954	0.23(0.20)	0.87	78.5	305.00
2	197.32	9.20	2.888	0.23(0.20)	0.87	81.3	307.00
3	207.18	10.93	2.608	0.23(0.20)	0.86	95.2	208.00
4	208.81	11.15	2.578	0.23(0.20)	0.86	97.2	123.00
5	209.66	11.38	2.548	0.23(0.20)	0.86	98.8	213.00
6	209.86	11.45	2.539	0.23(0.20)	0.86	99.3	112.00
7	210.63	11.76	2.497	0.23(0.20)	0.86	101.5	223.00
8	210.64	11.96	2.471	0.23(0.20)	0.86	102.6	311.00
9	210.60	12.02	2.463	0.23(0.20)	0.86	103.0	221.00
10	210.54	12.08	2.456	0.23(0.20)	0.86	103.3	118.00
11	209.93	12.66	2.385	0.23(0.20)	0.85	106.4	207.00
12	209.98	12.76	2.376	0.23(0.20)	0.85	106.8	106.00
13	209.99	12.85	2.367	0.23(0.20)	0.85	107.3	115.00
14	209.99	12.86	2.365	0.23(0.20)	0.85	107.4	121.00
15	209.83	13.17	2.336	0.23(0.20)	0.85	108.8	211.00
16	209.82	13.18	2.335	0.23(0.20)	0.85	108.8	216.00
17	209.23	13.43	2.311	0.23(0.20)	0.85	109.7	104.00
18	208.32	13.74	2.281	0.23(0.20)	0.85	110.8	226.00
19	208.09	13.81	2.274	0.23(0.20)	0.85	111.1	7.10
20	207.80	13.87	2.268	0.23(0.20)	0.85	111.3	309.00
21	206.84	14.07	2.249	0.23(0.20)	0.85	111.8	209.00
22	206.11	14.21	2.236	0.23(0.20)	0.85	112.1	101.00
23	205.79	14.27	2.230	0.23(0.20)	0.85	112.2	303.00
24	201.37	14.94	2.165	0.24(0.20)	0.85	113.5	301.00
25	200.50	15.10	2.153	0.24(0.20)	0.85	113.7	108.00
26	198.01	15.57	2.119	0.24(0.20)	0.85	114.3	113.00
27	183.80	18.23	1.936	0.24(0.20)	0.85	117.4	204.00
28	180.43	18.91	1.895	0.24(0.20)	0.85	118.0	1.00
29	179.57	19.06	1.886	0.24(0.20)	0.85	118.1	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 210.64 Tc(MIN.) = 11.96
EFFECTIVE AREA(ACRES) = 102.63 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 118.10
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.90 = 4980.00 FEET.

****
FLOW PROCESS FROM NODE 7.90 TO NODE 8.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1088.00 DOWNSTREAM(FEET) = 1038.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0410
CHANNEL FLOW THRU SUBAREA(CFS) = 210.64
FLOW VELOCITY(FEET/SEC) = 12.07 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.69 Tc(MIN.) = 13.64
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 8.00 = 6200.00 FEET.

****
FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 13.64
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.290
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN

```
NATURAL FAIR COVER
"OPEN BRUSH"                D       25.80      0.20      1.00     83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   25.80     SUBAREA RUNOFF(CFS) =   48.53
EFFECTIVE AREA(ACRES) =   128.43   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.89
TOTAL AREA(ACRES) =   143.90      PEAK FLOW RATE(CFS) =    241.78

****************************************************************************
FLOW PROCESS FROM NODE      8.00 TO NODE    459.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1038.00  DOWNSTREAM(FEET) =   1018.30
CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.0313
CHANNEL FLOW THRU SUBAREA(CFS) =   241.78
FLOW VELOCITY(FEET/SEC) =  11.00 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  14.60
LONGEST FLOWPATH FROM NODE    201.00 TO NODE    459.00 =  6830.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  14.60
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.199
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        8.60      0.20      1.00     83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =    8.60     SUBAREA RUNOFF(CFS) =   15.47
EFFECTIVE AREA(ACRES) =   137.03   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.89
TOTAL AREA(ACRES) =   152.50      PEAK FLOW RATE(CFS) =    246.66

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    236.36  11.55    2.525  0.22( 0.20) 0.91   112.9      305.00
    2    237.65  11.88    2.482  0.22( 0.20) 0.91   115.7      307.00
    3    244.77  13.58    2.296  0.22( 0.20) 0.90   129.6      208.00
    4    245.95  13.80    2.275  0.22( 0.20) 0.90   131.6      123.00
    5    246.44  14.02    2.254  0.22( 0.20) 0.90   133.2      213.00
    6    246.54  14.09    2.247  0.22( 0.20) 0.90   133.7      112.00
    7    246.87  14.40    2.217  0.22( 0.20) 0.89   135.9      223.00
    8    246.66  14.60    2.199  0.22( 0.20) 0.89   137.0      311.00
    9    246.54  14.66    2.192  0.22( 0.20) 0.89   137.4      221.00
   10    246.43  14.72    2.187  0.22( 0.20) 0.89   137.7      118.00
   11    245.68  15.30    2.138  0.22( 0.20) 0.89   140.8      207.00
   12    245.63  15.40    2.131  0.22( 0.20) 0.89   141.2      106.00
   13    245.55  15.49    2.125  0.22( 0.20) 0.89   141.7      115.00
   14    245.53  15.51    2.124  0.22( 0.20) 0.89   141.8      121.00
   15    245.08  15.82    2.101  0.22( 0.20) 0.89   143.2      211.00
   16    245.06  15.83    2.101  0.22( 0.20) 0.89   143.2      216.00
   17    244.28  16.08    2.083  0.22( 0.20) 0.89   144.1      104.00
   18    243.16  16.39    2.060  0.23( 0.20) 0.89   145.2      226.00
   19    242.88  16.46    2.055  0.23( 0.20) 0.89   145.5        7.10
   20    242.56  16.53    2.050  0.23( 0.20) 0.89   145.7      309.00
   21    241.51  16.73    2.036  0.23( 0.20) 0.89   146.2      209.00
   22    240.72  16.87    2.025  0.23( 0.20) 0.89   146.5      101.00
   23    240.38  16.93    2.021  0.23( 0.20) 0.89   146.6      303.00
   24    235.93  17.62    1.973  0.23( 0.20) 0.88   147.9      301.00
   25    235.04  17.78    1.963  0.23( 0.20) 0.88   148.1      108.00
   26    232.07  18.26    1.934  0.23( 0.20) 0.88   148.7      113.00
   27    216.01  20.99    1.783  0.23( 0.20) 0.88   151.8      204.00
   28    212.33  21.68    1.749  0.23( 0.20) 0.88   152.4        1.00
   29    211.40  21.83    1.742  0.23( 0.20) 0.88   152.5      201.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    246.87  Tc(MIN.) =  14.40
AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.22
AREA-AVERAGED Ap =  0.89  EFFECTIVE AREA(ACRES) =    135.88

****************************************************************************
FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  14.40
RAINFALL INTENSITY(INCH/HR) =   2.22
AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.22
AREA-AVERAGED Ap =  0.89
EFFECTIVE STREAM AREA(ACRES) =  135.88
TOTAL STREAM AREA(ACRES) =  152.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =    246.87

****************************************************************************
FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =   7
----------------------------------------------------------------------------
>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) =  10.46   RAINFALL INTENSITY(INCH/HR) =  2.67
EFFECTIVE AREA(ACRES) =    39.30
TOTAL AREA(ACRES) =    43.50        PEAK FLOW RATE(CFS) =    147.80
AREA-AVERAGED Fm(INCH/HR) =   0.14  AREA-AVERAGED Fp(INCH/HR) =   0.25
AREA-AVERAGED Ap =  0.54
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
      CONFLUENCE ANALYSES.

****************************************************************************
FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.46
RAINFALL INTENSITY(INCH/HR) = 2.67
AREA-AVERAGED Fm(INCH/HR) = 0.14
AREA-AVERAGED Fp(INCH/HR) = 0.25
AREA-AVERAGED Ap = 0.54
EFFECTIVE STREAM AREA(ACRES) = 39.30
TOTAL STREAM AREA(ACRES) = 43.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 147.80

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	236.36	11.55	2.525	0.22(0.20)	0.91	112.9	305.00
1	237.65	11.88	2.482	0.22(0.20)	0.91	115.7	307.00
1	244.77	13.58	2.296	0.22(0.20)	0.90	129.6	208.00
1	245.95	13.80	2.275	0.22(0.20)	0.90	131.6	123.00
1	246.44	14.02	2.254	0.22(0.20)	0.90	133.2	213.00
1	246.54	14.09	2.247	0.22(0.20)	0.90	133.7	112.00
1	246.87	14.40	2.217	0.22(0.20)	0.89	135.9	223.00
1	246.66	14.60	2.199	0.22(0.20)	0.89	137.0	311.00
1	246.54	14.66	2.192	0.22(0.20)	0.89	137.4	221.00
1	246.43	14.72	2.187	0.22(0.20)	0.89	137.7	118.00
1	245.68	15.30	2.138	0.22(0.20)	0.89	140.8	207.00
1	245.63	15.40	2.131	0.22(0.20)	0.89	141.2	106.00
1	245.55	15.49	2.125	0.22(0.20)	0.89	141.7	115.00
1	245.53	15.51	2.124	0.22(0.20)	0.89	141.8	121.00
1	245.08	15.82	2.101	0.22(0.20)	0.89	143.2	211.00
1	245.06	15.83	2.101	0.22(0.20)	0.89	143.2	216.00
1	244.28	16.08	2.083	0.22(0.20)	0.89	144.1	104.00
1	243.16	16.39	2.060	0.23(0.20)	0.89	145.2	226.00
1	242.88	16.46	2.055	0.23(0.20)	0.89	145.5	7.10
1	242.56	16.53	2.050	0.23(0.20)	0.89	145.7	309.00
1	241.51	16.73	2.036	0.23(0.20)	0.89	146.2	209.00
1	240.72	16.87	2.025	0.23(0.20)	0.89	146.5	101.00
1	240.38	16.93	2.021	0.23(0.20)	0.89	146.6	303.00
1	235.93	17.62	1.973	0.23(0.20)	0.88	147.9	301.00
1	235.04	17.78	1.963	0.23(0.20)	0.88	148.1	108.00
1	232.07	18.26	1.934	0.23(0.20)	0.88	148.7	113.00
1	216.01	20.99	1.783	0.23(0.20)	0.88	151.8	204.00
1	212.33	21.68	1.749	0.23(0.20)	0.88	152.4	1.00
1	211.40	21.83	1.742	0.23(0.20)	0.88	152.5	201.00
2	147.80	10.46	2.669	0.25(0.14)	0.54	39.3	459.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	375.08	10.46	2.669	0.22(0.18)	0.81	141.5	459.00
2	375.75	11.55	2.525	0.22(0.18)	0.82	152.2	305.00
3	374.51	11.88	2.482	0.22(0.18)	0.82	155.0	307.00
4	370.82	13.58	2.296	0.23(0.18)	0.82	168.9	208.00
5	370.76	13.80	2.275	0.23(0.18)	0.82	170.9	123.00
6	370.01	14.02	2.254	0.23(0.18)	0.81	172.5	213.00
7	369.72	14.09	2.247	0.23(0.18)	0.81	173.0	112.00
8	368.30	14.40	2.217	0.23(0.18)	0.81	175.2	223.00
9	367.00	14.60	2.199	0.23(0.18)	0.81	176.3	311.00
10	366.54	14.66	2.192	0.23(0.18)	0.81	176.7	221.00
11	366.13	14.72	2.187	0.23(0.18)	0.81	177.0	118.00
12	362.50	15.30	2.138	0.23(0.19)	0.81	180.1	207.00
13	362.06	15.40	2.131	0.23(0.19)	0.81	180.5	106.00
14	361.59	15.49	2.125	0.23(0.19)	0.81	181.0	115.00
15	361.50	15.51	2.124	0.23(0.19)	0.81	181.1	121.00
16	359.75	15.82	2.101	0.23(0.19)	0.81	182.5	211.00
17	359.69	15.83	2.101	0.23(0.19)	0.81	182.5	216.00
18	357.86	16.08	2.083	0.23(0.19)	0.81	183.4	104.00
19	355.43	16.39	2.060	0.23(0.19)	0.81	184.5	226.00
20	354.85	16.46	2.055	0.23(0.19)	0.81	184.8	7.10
21	354.25	16.53	2.050	0.23(0.19)	0.81	185.0	309.00
22	352.35	16.73	2.036	0.23(0.19)	0.81	185.5	209.00
23	350.96	16.87	2.025	0.23(0.19)	0.81	185.8	101.00
24	350.38	16.93	2.021	0.23(0.19)	0.81	185.9	303.00
25	343.10	17.62	1.973	0.23(0.19)	0.81	187.2	301.00
26	341.67	17.78	1.963	0.23(0.19)	0.81	187.4	108.00
27	337.00	18.26	1.934	0.23(0.19)	0.81	188.0	113.00
28	312.10	20.99	1.783	0.23(0.19)	0.81	191.1	204.00
29	306.47	21.68	1.749	0.23(0.19)	0.81	191.7	1.00
30	305.12	21.83	1.742	0.23(0.19)	0.81	191.8	201.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 375.75 Tc(MIN.) = 11.55
EFFECTIVE AREA(ACRES) = 152.21 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 196.00
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 459.00 = 6830.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 196.00 TC(MIN.) = 11.55
EFFECTIVE AREA(ACRES) = 152.21 AREA-AVERAGED Fm(INCH/HR)= 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.82
PEAK FLOW RATE(CFS) = 375.75

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	375.08	10.46	2.669	0.22(0.18)	0.81	141.5	459.00
2	375.75	11.55	2.525	0.22(0.18)	0.82	152.2	305.00
3	374.51	11.88	2.482	0.22(0.18)	0.82	155.0	307.00
4	370.82	13.58	2.296	0.23(0.18)	0.82	168.9	208.00
5	370.76	13.80	2.275	0.23(0.18)	0.82	170.9	123.00
6	370.01	14.02	2.254	0.23(0.18)	0.81	172.5	213.00
7	369.72	14.09	2.247	0.23(0.18)	0.81	173.0	112.00
8	368.30	14.40	2.217	0.23(0.18)	0.81	175.2	223.00
9	367.00	14.60	2.199	0.23(0.18)	0.81	176.3	311.00
10	366.54	14.66	2.192	0.23(0.18)	0.81	176.7	221.00
11	366.13	14.72	2.187	0.23(0.18)	0.81	177.0	118.00
12	362.50	15.30	2.138	0.23(0.19)	0.81	180.1	207.00

13	362.06	15.40	2.131	0.23(0.19)	0.81	180.5	106.00
14	361.59	15.49	2.125	0.23(0.19)	0.81	181.0	115.00
15	361.50	15.51	2.124	0.23(0.19)	0.81	181.1	121.00
16	359.75	15.82	2.101	0.23(0.19)	0.81	182.5	211.00
17	359.69	15.83	2.101	0.23(0.19)	0.81	182.5	216.00
18	357.86	16.08	2.083	0.23(0.19)	0.81	183.4	104.00
19	355.43	16.39	2.060	0.23(0.19)	0.81	184.5	226.00
20	354.85	16.46	2.055	0.23(0.19)	0.81	184.8	7.10
21	354.25	16.53	2.050	0.23(0.19)	0.81	185.0	309.00
22	352.35	16.73	2.036	0.23(0.19)	0.81	185.5	209.00
23	350.96	16.87	2.025	0.23(0.19)	0.81	185.8	101.00
24	350.38	16.93	2.021	0.23(0.19)	0.81	185.9	303.00
25	343.10	17.62	1:973	0.23(0.19)	0.81	187.2	301.00
26	341.67	17.78	1.963	0.23(0.19)	0.81	187.4	108.00
27	337.00	18.26	1.934	0.23(0.19)	0.81	188.0	113.00
28	312.10	20.99	1.783	0.23(0.19)	0.81	191.1	204.00
29	306.47	21.68	1.749	0.23(0.19)	0.81	191.7	1.00
30	305.12	21.83	1.742	0.23(0.19)	0.81	191.8	201.00

END OF RATIONAL METHOD ANALYSIS

1

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
* w.o. #1665-1, t.t. 15230, saddleback meadows                           *
* 10-yr storm                                                            *
* area "D"                                                               *
 **************************************************************************

  FILE NAME: D-DEV.DAT
  TIME/DATE OF STUDY: 10:08 07/16/2001
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-   HEIGHT WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)   (FT)   (FT)  (FT)    (n)
 1   24.0     19.0   0.017/0.017/0.020    0.50   1.50 0.0313 0.125 0.0150
 2   20.0     15.0   0.017/0.017/0.020    0.50   1.50 0.0313 0.125 0.0150
 3   18.0     13.0   0.017/0.017/0.020    0.50   1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE     314.00 TO NODE     315.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   265.00
  ELEVATION DATA: UPSTREAM(FEET) =   1418.00  DOWNSTREAM(FEET) =   1392.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  4.060
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        0.30      0.30       0.10     56    5.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      1.09
  TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      1.09

**************************************************************************
  FLOW PROCESS FROM NODE     315.00 TO NODE     316.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1392.00  DOWNSTREAM ELEVATION(FEET) = 1337.50
  STREET LENGTH(FEET) =   530.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.017
  OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.02
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.23
    HALFSTREET FLOOD WIDTH(FEET) =    5.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.71   Tc(MIN.) =   6.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.484
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.60      0.30       0.10     56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =     0.60     SUBAREA RUNOFF(CFS) =     1.87
  EFFECTIVE AREA(ACRES) =    0.90    AREA-AVERAGED Fm(INCH/HR) =  0.03
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =     0.90      PEAK FLOW RATE(CFS) =      2.80

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  0.24   HALFSTREET FLOOD WIDTH(FEET) =   6.70
  FLOW VELOCITY(FEET/SEC.) =  5.56   DEPTH*VELOCITY(FT*FT/SEC.) =   1.36
  LONGEST FLOWPATH FROM NODE     314.00 TO NODE     316.00 =   795.00 FEET.
```

```
**************************************************************************
 FLOW PROCESS FROM NODE     316.00 TO NODE     317.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1337.50  DOWNSTREAM(FEET) =  1320.00
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.62
 ESTIMATED PIPE DIAMETER(INCH) =  18.00     NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      2.80
 PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   6.93
 LONGEST FLOWPATH FROM NODE     314.00 TO NODE     317.00 =   945.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     317.00 TO NODE     323.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   730.00   CHANNEL SLOPE =  0.2466
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.80
 FLOW VELOCITY(FEET/SEC) =   3.92 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.11   Tc(MIN.) =  10.03
 LONGEST FLOWPATH FROM NODE     314.00 TO NODE     323.00 =  1675.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  10.03
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.725
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        8.00      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     8.00     SUBAREA RUNOFF(CFS) =   18.18
 EFFECTIVE AREA(ACRES) =     8.90   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =      8.90      PEAK FLOW RATE(CFS) =      20.37

**************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.03
 RAINFALL INTENSITY(INCH/HR) =   2.73
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.91
 EFFECTIVE STREAM AREA(ACRES) =    8.90
 TOTAL STREAM AREA(ACRES) =    8.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.37

**************************************************************************
 FLOW PROCESS FROM NODE     318.00 TO NODE     319.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1649.00  DOWNSTREAM(FEET) =   1490.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.849
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.152
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        0.70      0.20       1.00    83    7.85
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.86
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      1.86

**************************************************************************
 FLOW PROCESS FROM NODE     319.00 TO NODE     320.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.1667
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL).
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.86
 FLOW VELOCITY(FEET/SEC) =   2.61 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =   9.38
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     320.00 =   540.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     320.00 TO NODE     320.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =   9.38
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.851
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
NATURAL FAIR COVER
"OPEN BRUSH"                D        4.60      0.20      1.00     83
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) =     4.60      SUBAREA RUNOFF(CFS) =   10.97
EFFECTIVE AREA(ACRES) =     5.30    AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) =     5.30        PEAK FLOW RATE(CFS) =      12.64

****************************************************************************
 FLOW PROCESS FROM NODE     320.00 TO NODE     321.00 IS CODE = 53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE = 0.1806
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     12.64
 FLOW VELOCITY(FEET/SEC) =   5.05 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.37   Tc(MIN.) =  11.76
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     321.00 =  1260.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     321.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.76
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.498
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.10      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) =     5.10      SUBAREA RUNOFF(CFS) =   10.55
 EFFECTIVE AREA(ACRES) =    10.40    AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =     10.40       PEAK FLOW RATE(CFS) =      21.51

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     322.00 IS CODE = 53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE = 0.1455
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     21.51
 FLOW VELOCITY(FEET/SEC) =   7.65 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.24   Tc(MIN.) =  15.00
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     322.00 =  2360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     322.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.160
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       16.40      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) =    16.40      SUBAREA RUNOFF(CFS) =   28.93
 EFFECTIVE AREA(ACRES) =    26.80    AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =     26.80       PEAK FLOW RATE(CFS) =      47.27

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     323.00 IS CODE = 52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1160.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE = 0.0952
 CHANNEL FLOW THRU SUBAREA(CFS) =     47.27
 FLOW VELOCITY(FEET/SEC) =  11.75 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.30   Tc(MIN.) =  15.30
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     323.00 =  2570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE = 81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.30
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.138
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.00      0.20      1.00     83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
 SUBAREA AREA(ACRES) =     1.00      SUBAREA RUNOFF(CFS) =    1.74
 EFFECTIVE AREA(ACRES) =    27.80    AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.20    AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) =     27.80       PEAK FLOW RATE(CFS) =      48.50

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =  1
----------------------------------------------------------------------------
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
------------------------------------------------------------------------
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.30
 RAINFALL INTENSITY(INCH/HR) =   2.14
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =   27.80
 TOTAL STREAM AREA(ACRES) =   27.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.50

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1      20.37  10.03     2.725   0.20( 0.18) 0.91      8.9      314.00
     2      48.50  15.30     2.138   0.20( 0.20) 1.00     27.8      318.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1      61.81  10.03     2.725   0.20( 0.19) 0.97     27.1      314.00
     2      64.16  15.30     2.138   0.20( 0.20) 0.98     36.7      318.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     64.16    Tc(MIN.) =    15.30
 EFFECTIVE AREA(ACRES) =    36.70   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     36.70
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    323.00 =  2570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    323.00 TO NODE    324.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
------------------------------------------------------------------------
 ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1090.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.0794
 CHANNEL FLOW THRU SUBAREA(CFS) =     64.16
 FLOW VELOCITY(FEET/SEC) =  11.72 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =  16.20
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    324.00 =  3200.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    324.00 TO NODE    324.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
------------------------------------------------------------------------
 MAINLINE Tc(MIN) =  16.20
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.074
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        9.30      0.20       1.00    83
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     9.30      SUBAREA RUNOFF(CFS) =    15.68
 EFFECTIVE AREA(ACRES) =    46.00    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20   AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =    46.00        PEAK FLOW RATE(CFS) =      77.72

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1      79.03  10.94     2.606   0.20( 0.20) 0.98     36.4      314.00
     2      77.72  16.20     2.074   0.20( 0.20) 0.98     46.0      318.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     79.03  Tc(MIN.) =  10.94
 AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =     36.43
------------------------------------------------------------------------
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     46.00  TC(MIN.) =     10.94
 EFFECTIVE AREA(ACRES) =     36.43  AREA-AVERAGED Fm(INCH/HR)=  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.98
 PEAK FLOW RATE(CFS)    =     79.03

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1      79.03  10.94     2.606   0.20( 0.20) 0.98     36.4      314.00
     2      77.72  16.20     2.074   0.20( 0.20) 0.98     46.0      318.00
------------------------------------------------------------------------
 END OF RATIONAL METHOD ANALYSIS

1
```

2-YEAR STORM

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY ************************
* w.o.#1665-1, saddleback meadows, t.t. 15230                           *
* 2-year storm                                                          *
* areas "A", "B", and "C"                                               *
 ************************************************************************

  FILE NAME: ABC-DEV.DAT
  TIME/DATE OF STUDY: 09:33 07/16/2001
 ------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ------------------------------------------------------------------------
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)      (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 1   24.0      19.0   0.017/0.017/0.020   0.50    1.50 0.0313 0.125 0.0150
 2   20.0      15.0   0.017/0.017/0.020   0.50    1.50 0.0313 0.125 0.0150
 3   18.0      13.0   0.017/0.017/0.020   0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

 **************************************************************************
  FLOW PROCESS FROM NODE       1.00 TO NODE       2.00 IS CODE =  21
 --------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ------------------------------------------------------------------------
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =   1560.00  DOWNSTREAM(FEET) =   1530.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.956
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.443
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30       1.00     46   10.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      1.03
  TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      1.03

 **************************************************************************
  FLOW PROCESS FROM NODE       2.00 TO NODE       3.00 IS CODE =  53
 --------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ------------------------------------------------------------------------
  ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1452.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   410.00   CHANNEL SLOPE =  0.1902
  CHANNEL FLOW THRU SUBAREA(CFS) =      1.03
  FLOW VELOCITY(FEET/SEC) =   2.47 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.77   Tc(MIN.) =  13.73
  LONGEST FLOWPATH FROM NODE       1.00 TO NODE       3.00 =   710.00 FEET.

 **************************************************************************
  FLOW PROCESS FROM NODE       3.00 TO NODE       3.00 IS CODE =  81
 --------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 ------------------------------------------------------------------------
  MAINLINE Tc(MIN) =  13.73
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.268
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.20      0.30       1.00     46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =     4.20      SUBAREA RUNOFF(CFS) =     3.66
  EFFECTIVE AREA(ACRES) =     5.20    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     5.20        PEAK FLOW RATE(CFS) =      4.53

 **************************************************************************
  FLOW PROCESS FROM NODE       3.00 TO NODE       4.00 IS CODE =  31
 --------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 ------------------------------------------------------------------------
  ELEVATION DATA: UPSTREAM(FEET) =  1452.00  DOWNSTREAM(FEET) =  1416.00
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.19
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      4.53
 PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  13.91
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      4.00 =   890.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      4.00 TO NODE      5.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1416.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   485.00   CHANNEL SLOPE =  0.1979
 CHANNEL FLOW THRU SUBAREA(CFS) =      4.53
 FLOW VELOCITY(FEET/SEC) =   4.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.96   Tc(MIN.) =  15.87
 LONGEST FLOWPATH FROM NODE      1.00 TO NODE      5.00 =  1375.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.87
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.166
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        4.10      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10    SUBAREA RUNOFF(CFS) =     3.20
 EFFECTIVE AREA(ACRES) =     9.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     9.30       PEAK FLOW RATE(CFS) =       7.25

****************************************************************************
 FLOW PROCESS FROM NODE      5.00 TO NODE      5.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1520.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.225
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.593
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 ".4 DWELLING/ACRE"          B        1.00      0.30       0.90    36    9.23
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
 SUBAREA RUNOFF(CFS) =      1.19
 TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =       1.19

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1520.00  DOWNSTREAM(FEET) =   1500.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   150.00   CHANNEL SLOPE =  0.1333
 CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.19
 FLOW VELOCITY(FEET/SEC) =   9.14   FLOW DEPTH(FEET) =   0.29
 TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =   9.50
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =   440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.566
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        3.60      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     3.60    SUBAREA RUNOFF(CFS) =     4.10
 EFFECTIVE AREA(ACRES) =     4.60   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     4.60       PEAK FLOW RATE(CFS) =       5.27

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    111.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1500.00  DOWNSTREAM(FEET) =  1454.00
 FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.20
```

```
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      5.27
 PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   9.71
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    111.00 =   660.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.71
 RAINFALL INTENSITY(INCH/HR) =   1.55
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98
 EFFECTIVE STREAM AREA(ACRES) =    4.60
 TOTAL STREAM AREA(ACRES) =    4.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.27

****************************************************************************
 FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1488.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.526
 *  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.790
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D       0.70      0.20       0.50     57    7.53
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      1.06
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      1.06

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1488.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =  410.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.54
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.22
  HALFSTREET FLOOD WIDTH(FEET) =    5.05
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.56
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
 STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =   9.03
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.613
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D       0.70      0.20       0.50     57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    0.95
 EFFECTIVE AREA(ACRES) =    1.40    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    1.40        PEAK FLOW RATE(CFS) =      1.91

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =   5.76
 FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.08
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.03
 RAINFALL INTENSITY(INCH/HR) =   1.61
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.91

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1497.00  DOWNSTREAM(FEET) =   1483.00
```

```
Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.031
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.861
SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50    36    7.03
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      0.92
TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      0.92

****************************************************************************
 FLOW PROCESS FROM NODE    107.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1483.00  DOWNSTREAM ELEVATION(FEET) = 1454.00
 STREET LENGTH(FEET) =   350.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.50
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.21
   HALFSTREET FLOOD WIDTH(FEET) =    4.95
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.54
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
 STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =   8.31
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.691
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    1.15
 EFFECTIVE AREA(ACRES) =    1.40    AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    1.40        PEAK FLOW RATE(CFS) =      1.98

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.23   HALFSTREET FLOOD WIDTH(FEET) =   5.86
 FLOW VELOCITY(FEET/SEC.) =  4.78   DEPTH*VELOCITY(FT*FT/SEC.) =   1.10
 LONGEST FLOWPATH FROM NODE    106.00 TO NODE    111.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.31
 RAINFALL INTENSITY(INCH/HR) =   1.69
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.24
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.40
 TOTAL STREAM AREA(ACRES) =    1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.98

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      5.27   9.71    1.546  0.30( 0.29) 0.98     4.6      101.00
     2      1.91   9.03    1.613  0.20( 0.10) 0.50     1.4      104.00
     3      1.98   8.31    1.691  0.24( 0.12) 0.50     1.4      106.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      8.85   8.31    1.691  0.28( 0.22) 0.78     6.6      106.00
     2      8.94   9.03    1.613  0.28( 0.22) 0.79     7.1      104.00
     3      8.89   9.71    1.546  0.28( 0.22) 0.80     7.4      101.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      8.94    Tc(MIN.) =     9.03
 EFFECTIVE AREA(ACRES) =     7.07   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =      7.40
 LONGEST FLOWPATH FROM NODE    104.00 TO NODE    111.00 =   700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.03
 RAINFALL INTENSITY(INCH/HR) =   1.61
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.28
 AREA-AVERAGED Ap =  0.79
 EFFECTIVE STREAM AREA(ACRES) =    7.07
 TOTAL STREAM AREA(ACRES) =    7.40
```

```
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.94

****************************************************************************
 FLOW PROCESS FROM NODE    108.00 TO NODE    109.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1594.00  DOWNSTREAM(FEET) =   1530.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.034
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.612
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.70      0.30       1.00    46    9.03
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      0.83
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      0.83

****************************************************************************
 FLOW PROCESS FROM NODE    109.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1465.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.2708
 CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      0.83
 FLOW VELOCITY(FEET/SEC) =   9.09   FLOW DEPTH(FEET) =   0.08
 TRAVEL TIME(MIN.) =   0.44   Tc(MIN.) =   9.47
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    110.00 =   520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.47
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.569
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.30      0.30       0.50    36
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.30   SUBAREA RUNOFF(CFS) =     0.38
 EFFECTIVE AREA(ACRES) =     1.00   AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =      1.00   PEAK FLOW RATE(CFS) =      1.18

****************************************************************************
 FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1458.00
 STREET LENGTH(FEET) =   240.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.04
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    7.89
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.14
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.83
 STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  10.75
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.459
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        1.50      0.30       0.60    36
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    1.50   SUBAREA RUNOFF(CFS) =    1.73
 EFFECTIVE AREA(ACRES) =    2.50   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =    2.50   PEAK FLOW RATE(CFS) =      2.81

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.21
 FLOW VELOCITY(FEET/SEC.) =  3.33   DEPTH*VELOCITY(FT*FT/SEC.) =   0.96
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    111.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.75
 RAINFALL INTENSITY(INCH/HR) =   1.46
```

```
AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  0.70
EFFECTIVE STREAM AREA(ACRES) =    2.50
TOTAL STREAM AREA(ACRES) =    2.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.81

** CONFLUENCE DATA **
 STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      8.85   8.31     1.691   0.28( 0.22) 0.78      6.6      106.00
    1      8.94   9.03     1.613   0.28( 0.22) 0.79      7.1      104.00
    1      8.89   9.71     1.546   0.28( 0.22) 0.80      7.4      101.00
    2      2.81  10.75     1.459   0.30( 0.21) 0.70      2.5      108.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1     11.43   8.31     1.691   0.28( 0.22) 0.77      8.6      106.00
    2     11.59   9.03     1.613   0.28( 0.22) 0.77      9.2      104.00
    3     11.60   9.71     1.546   0.29( 0.22) 0.77      9.7      101.00
    4     11.11  10.75     1.459   0.29( 0.22) 0.77      9.9      108.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     11.60    Tc(MIN.) =     9.71
EFFECTIVE AREA(ACRES) =     9.66   AREA-AVERAGED Fm(INCH/HR) =  0.22
AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.77
TOTAL AREA(ACRES) =      9.90
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    111.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    117.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1454.00  DOWNSTREAM(FEET) =  1432.00
 FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.21
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     11.60
 PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   9.95
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.95
 RAINFALL INTENSITY(INCH/HR) =   1.53
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.77
 EFFECTIVE STREAM AREA(ACRES) =    9.66
 TOTAL STREAM AREA(ACRES) =    9.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.60

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    117.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.047
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.859
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        0.90      0.20       0.60    57    7.05
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      1.41
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      1.41

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.05
 RAINFALL INTENSITY(INCH/HR) =   1.86
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    0.90
 TOTAL STREAM AREA(ACRES) =    0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.41

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     11.43   8.55     1.664   0.28( 0.22) 0.77      8.6      106.00
     1     11.59   9.26     1.589   0.28( 0.22) 0.77      9.2      104.00
     1     11.60   9.95     1.525   0.29( 0.22) 0.77      9.7      101.00
     1     11.11  10.99     1.441   0.29( 0.22) 0.77      9.9      108.00
     2      1.41   7.05     1.859   0.20( 0.12) 0.60      0.9      112.00
```

```
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     12.10   7.05    1.859  0.28( 0.21) 0.75     8.0     112.00
    2     12.68   8.55    1.664  0.28( 0.21) 0.75     9.5     106.00
    3     12.78   9.26    1.589  0.28( 0.21) 0.75    10.1     104.00
    4     12.74   9.95    1.525  0.28( 0.21) 0.76    10.6     101.00
    5     12.18  10.99    1.441  0.28( 0.21) 0.76    10.8     108.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    12.78    Tc(MIN.) =    9.26
EFFECTIVE AREA(ACRES) =   10.07   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.75
TOTAL AREA(ACRES) =    10.80
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.637
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.468
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "1 DWELLING/ACRE"          D        1.10      0.20       0.80     57   10.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
 SUBAREA RUNOFF(CFS) =      1.29
 TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      1.29

****************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.50  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =   130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.42
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.23
   HALFSTREET FLOOD WIDTH(FEET) =   5.56
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.70
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   0.83
 STREET FLOW TRAVEL TIME(MIN.) =  0.59   Tc(MIN.) =  11.22
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.423
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 D        0.20      0.20       0.10     57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA AREA(ACRES) =    0.20      SUBAREA RUNOFF(CFS) =    0.25
 EFFECTIVE AREA(ACRES) =    1.30    AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =    1.30        PEAK FLOW RATE(CFS) =      1.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =   5.66
 FLOW VELOCITY(FEET/SEC.) =  3.82   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.22
 RAINFALL INTENSITY(INCH/HR) =   1.42
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    1.30
 TOTAL STREAM AREA(ACRES) =    1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.50

****************************************************************************
 FLOW PROCESS FROM NODE    115.00 TO NODE    116.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   260.00
 ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1435.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.928
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.737
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.60      0.20       0.50    57    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      0.88
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      0.88

****************************************************************************
 FLOW PROCESS FROM NODE    116.00 TO NODE    117.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1435.00  DOWNSTREAM ELEVATION(FEET) = 1428.50
 STREET LENGTH(FEET) =  130.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.10
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.21
   HALFSTREET FLOOD WIDTH(FEET) =    4.73
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.52
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.74
 STREET FLOW TRAVEL TIME(MIN.) =   0.62   Tc(MIN.) =   8.54
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.664
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.30      0.20       0.50    57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     0.30     SUBAREA RUNOFF(CFS) =     0.42
 EFFECTIVE AREA(ACRES) =     0.90     AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     0.90     PEAK FLOW RATE(CFS) =      1.27

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.22   HALFSTREET FLOOD WIDTH(FEET) =   5.25
 FLOW VELOCITY(FEET/SEC.) =  3.56   DEPTH*VELOCITY(FT*FT/SEC.) =   0.78
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    117.00 =   390.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.54
 RAINFALL INTENSITY(INCH/HR) =   1.66
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    0.90
 TOTAL STREAM AREA(ACRES) =    0.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.27

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      1.50   11.22     1.423   0.20( 0.14) 0.69     1.3      113.00
     2      1.27    8.54     1.664   0.20( 0.10) 0.50     0.9      115.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      2.63    8.54     1.664   0.20( 0.12) 0.60     1.9      115.00
     2      2.58   11.22     1.423   0.20( 0.12) 0.61     2.2      113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      2.63    Tc(MIN.) =     8.54
 EFFECTIVE AREA(ACRES) =     1.89   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =      2.20
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      2.63    8.54     1.664   0.20( 0.12) 0.60     1.9      115.00
     2      2.58   11.22     1.423   0.20( 0.12) 0.61     2.2      113.00
 LONGEST FLOWPATH FROM NODE    113.00 TO NODE    117.00 =   430.00 FEET.
```

```
** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap.  Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      12.10   7.05     1.859   0.28( 0.21)  0.75     8.0      112.00
    2      12.68   8.55     1.664   0.28( 0.21)  0.75     9.5      106.00
    3      12.78   9.26     1.589   0.28( 0.21)  0.75    10.1      104.00
    4      12.74   9.95     1.525   0.28( 0.21)  0.76    10.6      101.00
    5      12.18  10.99     1.441   0.28( 0.21)  0.76    10.8      108.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
    1      14.54   7.05     1.859   0.27( 0.19)  0.72     9.5      112.00
    2      15.30   8.54     1.664   0.27( 0.19)  0.72    11.3      115.00
    3      15.31   8.55     1.664   0.27( 0.19)  0.72    11.4      106.00
    4      15.39   9.26     1.589   0.27( 0.20)  0.73    12.0      104.00
    5      15.34   9.95     1.525   0.27( 0.20)  0.73    12.6      101.00
    6      14.76  10.99     1.441   0.27( 0.20)  0.73    13.0      108.00
    7      14.58  11.22     1.423   0.27( 0.20)  0.73    13.0      113.00
  TOTAL AREA(ACRES) =     13.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      15.39  Tc(MIN.) =    9.262
EFFECTIVE AREA(ACRES) =    12.05  AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.73
TOTAL AREA(ACRES) =     13.00
LONGEST FLOWPATH FROM NODE    108.00 TO NODE    117.00 =   990.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    117.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    120.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1428.50  DOWNSTREAM(FEET) =  1420.00
 FLOW LENGTH(FEET) =   110.00  MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.09
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.39
 PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   9.38
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    120.00 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.38
 RAINFALL INTENSITY(INCH/HR) =   1.58
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.73
 EFFECTIVE STREAM AREA(ACRES) =   12.05
 TOTAL STREAM AREA(ACRES) =   13.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.39

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    119.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1465.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.934
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.876
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.80      0.30       0.50    36    6.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      1.24
 TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      1.24

****************************************************************************
 FLOW PROCESS FROM NODE    119.00 TO NODE    120.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
 STREET LENGTH(FEET) =   300.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.96
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.23
```

```
  HALFSTREET FLOOD WIDTH(FEET) =    5.56
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
STREET FLOW TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =   7.92
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.739
SUBAREA LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
    LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        1.00      0.30       0.50    36
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.43
EFFECTIVE AREA(ACRES) =    1.80    AREA-AVERAGED Fm(INCH/HR) =  0.15
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =    1.80        PEAK FLOW RATE(CFS) =       2.57

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =   6.47
FLOW VELOCITY(FEET/SEC.) =  5.39   DEPTH*VELOCITY(FT*FT/SEC.) =   1.30
LONGEST FLOWPATH FROM NODE    118.00 TO NODE    120.00 =   600.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    120.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.92
 RAINFALL INTENSITY(INCH/HR) =   1.74
 AREA-AVERAGED Fm(INCH/HR) =  0.15
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    1.80
 TOTAL STREAM AREA(ACRES) =    1.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.57

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     14.54   7.16    1.842  0.27( 0.19) 0.72     9.5     112.00
     1     15.30   8.66    1.652  0.27( 0.19) 0.72    11.3     115.00
     1     15.31   8.67    1.651  0.27( 0.19) 0.72    11.4     106.00
     1     15.39   9.38    1.578  0.27( 0.20) 0.73    12.0     104.00
     1     15.34  10.06    1.515  0.27( 0.20) 0.73    12.6     101.00
     1     14.76  11.10    1.432  0.27( 0.20) 0.73    13.0     108.00
     1     14.58  11.34    1.415  0.27( 0.20) 0.73    13.0     113.00
     2      2.57   7.92    1.739  0.30( 0.15) 0.50     1.8     118.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     17.02   7.16    1.842  0.27( 0.19) 0.69    11.1     112.00
     2     17.50   7.92    1.739  0.27( 0.19) 0.69    12.2     118.00
     3     17.74   8.66    1.652  0.27( 0.19) 0.69    13.1     115.00
     4     17.74   8.67    1.651  0.27( 0.19) 0.69    13.2     106.00
     5     17.71   9.38    1.578  0.27( 0.19) 0.70    13.8     104.00
     6     17.55  10.06    1.515  0.27( 0.19) 0.71    14.4     101.00
     7     16.84  11.10    1.432  0.27( 0.19) 0.71    14.8     108.00
     8     16.63  11.34    1.415  0.27( 0.19) 0.71    14.8     113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     17.74    Tc(MIN.) =     8.67
 EFFECTIVE AREA(ACRES) =    13.15   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     14.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    120.00 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    120.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1420.00  DOWNSTREAM(FEET) =  1418.00
 FLOW LENGTH(FEET) =   170.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.16
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     17.74
 PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   9.01
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.01
 RAINFALL INTENSITY(INCH/HR) =   1.61
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =   13.15
 TOTAL STREAM AREA(ACRES) =   14.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.74

****************************************************************************
 FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1443.00
```

```
Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.405
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.807
SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50     36    7.41
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
SUBAREA RUNOFF(CFS) =      0.89
TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      0.89

****************************************************************************
 FLOW PROCESS FROM NODE    122.00 TO NODE    125.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.16
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.21
   HALFSTREET FLOOD WIDTH(FEET) =    4.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.95
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
 STREET FLOW TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =   9.05
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.610
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"       B        0.40      0.30       0.40     36
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA AREA(ACRES) =     0.40     SUBAREA RUNOFF(CFS) =     0.54
 EFFECTIVE AREA(ACRES) =     1.00     AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =     1.00        PEAK FLOW RATE(CFS) =       1.33

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.21   HALFSTREET FLOOD WIDTH(FEET) =   4.95
 FLOW VELOCITY(FEET/SEC.) =  4.02   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86

 LONGEST FLOWPATH FROM NODE    121.00 TO NODE    125.00 =   690.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.05
 RAINFALL INTENSITY(INCH/HR) =   1.61
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.46
 EFFECTIVE STREAM AREA(ACRES) =    1.00
 TOTAL STREAM AREA(ACRES) =    1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.33

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     17.02    7.51     1.792  0.27( 0.19)  0.69    11.1     112.00
     1     17.50    8.26     1.697  0.27( 0.19)  0.69    12.2     118.00
     1     17.74    9.00     1.615  0.27( 0.19)  0.69    13.1     115.00
     1     17.74    9.01     1.614  0.27( 0.19)  0.69    13.2     106.00
     1     17.71    9.72     1.545  0.27( 0.19)  0.70    13.8     104.00
     1     17.55   10.41     1.486  0.27( 0.19)  0.71    14.4     101.00
     1     16.84   11.45     1.407  0.27( 0.19)  0.71    14.8     108.00
     1     16.63   11.69     1.390  0.27( 0.19)  0.71    14.8     113.00
     2      1.33    9.05     1.610  0.30( 0.14)  0.46     1.0     121.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity    Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     18.26    7.51     1.792  0.27( 0.18)  0.67    12.0     112.00
     2     18.78    8.26     1.697  0.27( 0.18)  0.67    13.1     118.00
     3     19.06    9.00     1.615  0.27( 0.18)  0.68    14.1     115.00
     4     19.06    9.01     1.614  0.27( 0.18)  0.68    14.1     106.00
     5     19.06    9.05     1.610  0.27( 0.18)  0.68    14.2     121.00
     6     18.97    9.72     1.545  0.27( 0.19)  0.68    14.8     104.00
     7     18.77   10.41     1.486  0.27( 0.19)  0.69    15.4     101.00
     8     17.98   11.45     1.407  0.27( 0.19)  0.69    15.8     108.00
     9     17.76   11.69     1.390  0.27( 0.19)  0.69    15.8     113.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     19.06    Tc(MIN.) =     9.05
 EFFECTIVE AREA(ACRES) =    14.19   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27   AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     15.80
 LONGEST FLOWPATH FROM NODE    108.00 TO NODE    125.00 =  1270.00 FEET.

****************************************************************************
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 FLOW PROCESS FROM NODE     125.00 TO NODE     125.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.05
 RAINFALL INTENSITY(INCH/HR) =   1.61
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.68
 EFFECTIVE STREAM AREA(ACRES) =   14.19
 TOTAL STREAM AREA(ACRES) =   15.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.06

****************************************************************************
 FLOW PROCESS FROM NODE     123.00 TO NODE     124.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   290.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1443.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.671
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  2.106
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 B        0.20      0.30       0.10    36    5.67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =      0.37
 TOTAL AREA(ACRES) =      0.20   PEAK FLOW RATE(CFS) =      0.37

****************************************************************************
 FLOW PROCESS FROM NODE     124.00 TO NODE     125.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1443.00  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   360.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      0.54

  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.16
  HALFSTREET FLOOD WIDTH(FEET) =    1.50
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.97
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.78
 STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =   6.88
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.885
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        0.20      0.30       0.10    36
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA AREA(ACRES) =    0.20      SUBAREA RUNOFF(CFS) =    0.33
 EFFECTIVE AREA(ACRES) =    0.40    AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =    0.40        PEAK FLOW RATE(CFS) =       0.67

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.16   HALFSTREET FLOOD WIDTH(FEET) =   1.50
 FLOW VELOCITY(FEET/SEC.) =  4.97   DEPTH*VELOCITY(FT*FT/SEC.) =   0.78
 LONGEST FLOWPATH FROM NODE    123.00 TO NODE    125.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     125.00 TO NODE     125.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.88
 RAINFALL INTENSITY(INCH/HR) =   1.89
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =    0.40
 TOTAL STREAM AREA(ACRES) =    0.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.67

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     18.26   7.51     1.792   0.27( 0.18) 0.67    12.0     112.00
     1     18.78   8.26     1.697   0.27( 0.18) 0.67    13.1     118.00
     1     19.06   9.00     1.615   0.27( 0.18) 0.68    14.1     115.00
     1     19.06   9.01     1.614   0.27( 0.18) 0.68    14.1     106.00
     1     19.06   9.05     1.610   0.27( 0.18) 0.68    14.2     121.00
     1     18.97   9.72     1.545   0.27( 0.19) 0.68    14.8     104.00
     1     18.77  10.41     1.486   0.27( 0.19) 0.69    15.4     101.00
     1     17.98  11.45     1.407   0.27( 0.19) 0.69    15.8     108.00
     1     17.76  11.69     1.390   0.27( 0.19) 0.69    15.8     113.00
     2      0.67   6.88     1.885   0.30( 0.03) 0.10     0.4     123.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.35	6.88	1.885	0.27(0.18)	0.65	11.4	123.00
2	18.89	7.51	1.792	0.27(0.18)	0.66	12.4	112.00
3	19.38	8.26	1.697	0.27(0.18)	0.66	13.5	118.00
4	19.63	9.00	1.615	0.27(0.18)	0.66	14.5	115.00
5	19.63	9.01	1.614	0.27(0.18)	0.66	14.5	106.00
6	19.63	9.05	1.610	0.27(0.18)	0.66	14.6	121.00
7	19.52	9.72	1.545	0.27(0.18)	0.67	15.2	104.00
8	19.29	10.41	1.486	0.27(0.18)	0.67	15.8	101.00
9	18.47	11.45	1.407	0.27(0.18)	0.68	16.2	108.00
10	18.25	11.69	1.390	0.27(0.18)	0.68	16.2	113.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 19.63 Tc(MIN.) = 9.01
EFFECTIVE AREA(ACRES) = 14.55 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.27 AREA-AVERAGED Ap = 0.66
TOTAL AREA(ACRES) = 16.20
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 125.00 = 1270.00 FEET.

****
FLOW PROCESS FROM NODE 125.00 TO NODE 5.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
===
ELEVATION DATA: UPSTREAM(FEET) = 1418.00 DOWNSTREAM(FEET) = 1330.00
FLOW LENGTH(FEET) = 160.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 35.35
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.63
PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 9.09
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
===

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18.35	6.95	1.873	0.27(0.18)	0.65	11.4	123.00
2	18.89	7.59	1.782	0.27(0.18)	0.66	12.4	112.00
3	19.38	8.34	1.688	0.27(0.18)	0.66	13.5	118.00
4	19.63	9.08	1.607	0.27(0.18)	0.66	14.5	115.00
5	19.63	9.09	1.606	0.27(0.18)	0.66	14.5	106.00
6	19.63	9.13	1.603	0.27(0.18)	0.66	14.6	121.00
7	19.52	9.80	1.539	0.27(0.18)	0.67	15.2	104.00
8	19.29	10.49	1.480	0.27(0.18)	0.67	15.8	101.00
9	18.47	11.53	1.401	0.27(0.18)	0.68	16.2	108.00
10	18.25	11.77	1.385	0.27(0.18)	0.68	16.2	113.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.25	15.87	1.166	0.30(0.30)	1.00	9.3	1.00

LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1375.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24.12	6.95	1.873	0.28(0.21)	0.75	15.4	123.00
2	24.82	7.59	1.782	0.28(0.21)	0.75	16.8	112.00
3	25.48	8.34	1.688	0.28(0.21)	0.75	18.4	118.00
4	25.89	9.08	1.607	0.28(0.21)	0.75	19.9	115.00
5	25.89	9.09	1.606	0.28(0.21)	0.75	19.9	106.00
6	25.90	9.13	1.603	0.28(0.21)	0.75	19.9	121.00
7	25.92	9.80	1.539	0.28(0.21)	0.76	21.0	104.00
8	25.81	10.49	1.480	0.28(0.22)	0.77	22.0	101.00
9	25.17	11.53	1.401	0.28(0.22)	0.77	22.9	108.00
10	24.98	11.77	1.385	0.28(0.22)	0.77	23.1	113.00
11	22.18	15.87	1.166	0.29(0.23)	0.79	25.5	1.00
TOTAL AREA(ACRES) = 25.50							

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 25.92 Tc(MIN.) = 9.799
EFFECTIVE AREA(ACRES) = 20.99 AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.28 AREA-AVERAGED Ap = 0.76
TOTAL AREA(ACRES) = 25.50
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 5.00 = 1430.00 FEET.

****
FLOW PROCESS FROM NODE 5.00 TO NODE 5.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<
===

****
FLOW PROCESS FROM NODE 5.00 TO NODE 6.00 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
===
ELEVATION DATA: UPSTREAM(FEET) = 1320.00 DOWNSTREAM(FEET) = 1188.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 950.00 CHANNEL SLOPE = 0.1389
CHANNEL FLOW THRU SUBAREA(CFS) = 25.92
FLOW VELOCITY(FEET/SEC) = 6.17 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 2.57 Tc(MIN.) = 12.36
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

****
FLOW PROCESS FROM NODE 6.00 TO NODE 6.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
===

```
MAINLINE Tc(MIN) =  12.36
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.346
SUBAREA LOSS RATE DATA(AMC  I ):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"                 D       16.50      0.20       1.00    67
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =   16.50     SUBAREA RUNOFF(CFS) =   17.02
EFFECTIVE AREA(ACRES) =    37.49   AREA-AVERAGED Fm(INCH/HR) =  0.21
AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.86
TOTAL AREA(ACRES) =    42.00      PEAK FLOW RATE(CFS) =      38.41

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     38.91   9.58    1.558  0.23( 0.20) 0.88    31.9      123.00
    2     38.95  10.19    1.504  0.24( 0.21) 0.87    33.3      112.00
    3     38.99  10.92    1.446  0.24( 0.21) 0.87    34.9      118.00
    4     38.83  11.65    1.393  0.24( 0.21) 0.86    36.4      115.00
    5     38.83  11.66    1.393  0.24( 0.21) 0.86    36.4      106.00
    6     38.81  11.69    1.390  0.24( 0.21) 0.86    36.4      121.00
    7     38.41  12.36    1.346  0.24( 0.21) 0.86    37.5      104.00
    8     37.91  13.06    1.305  0.24( 0.21) 0.87    38.5      101.00
    9     36.79  14.12    1.247  0.24( 0.21) 0.87    39.4      108.00
   10     36.50  14.36    1.235  0.24( 0.21) 0.87    39.6      113.00
   11     32.12  18.58    1.066  0.25( 0.22) 0.87    42.0        1.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =     38.99  Tc(MIN.) =  10.92
AREA-AVERAGED Fm(INCH/HR) =  0.21  AREA-AVERAGED Fp(INCH/HR) =  0.24
AREA-AVERAGED Ap =  0.87  EFFECTIVE AREA(ACRES) =     34.93

****************************************************************************
 FLOW PROCESS FROM NODE       6.00 TO NODE       6.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE     301.00 TO NODE     302.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   270.00
 ELEVATION DATA: UPSTREAM(FEET) =   1424.00  DOWNSTREAM(FEET) =   1421.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.512
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.565
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         D        1.60      0.20       0.60    57    9.51
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      2.08
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      2.08

****************************************************************************
 FLOW PROCESS FROM NODE     302.00 TO NODE     306.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1421.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =   480.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.27
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.28
   HALFSTREET FLOOD WIDTH(FEET) =    9.01
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.03
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
 STREET FLOW TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =  11.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.404
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         B        0.80      0.30       0.60    36
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         D        1.30      0.20       0.60    57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    2.10     SUBAREA RUNOFF(CFS) =    2.38
 EFFECTIVE AREA(ACRES) =    3.70   AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =    3.70       PEAK FLOW RATE(CFS) =       4.23

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.30   HALFSTREET FLOOD WIDTH(FEET) =  10.13
 FLOW VELOCITY(FEET/SEC.) =  4.26   DEPTH*VELOCITY(FT*FT/SEC.) =   1.29
 LONGEST FLOWPATH FROM NODE    301.00 TO NODE    306.00 =   750.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     306.00 TO NODE     306.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
 TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.50
 RAINFALL INTENSITY(INCH/HR) =   1.40
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    3.70
 TOTAL STREAM AREA(ACRES) =    3.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.23

****************************************************************************
 FLOW PROCESS FROM NODE    303.00 TO NODE    304.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1424.00  DOWNSTREAM(FEET) =   1419.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.638
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.654
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.80      0.20       0.50    57    8.64
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      1.12
 TOTAL AREA(ACRES) =      0.80   PEAK FLOW RATE(CFS) =      1.12

****************************************************************************
 FLOW PROCESS FROM NODE    304.00 TO NODE    306.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1419.00  DOWNSTREAM ELEVATION(FEET) = 1400.40
 STREET LENGTH(FEET) =   470.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.02
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    7.29
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.53
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.90
 STREET FLOW TRAVEL TIME(MIN.) =   2.22   Tc(MIN.) =  10.86
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.450
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.50      0.30       0.50    36
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.00      0.20       0.50    57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.50   SUBAREA RUNOFF(CFS) =    1.80
 EFFECTIVE AREA(ACRES) =    2.30   AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    2.30   PEAK FLOW RATE(CFS) =      2.77

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   8.50
 FLOW VELOCITY(FEET/SEC.) =  3.77   DEPTH*VELOCITY(FT*FT/SEC.) =   1.04
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    306.00 =   770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.86
 RAINFALL INTENSITY(INCH/HR) =   1.45
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =    2.30
 TOTAL STREAM AREA(ACRES) =    2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.77

****************************************************************************
 FLOW PROCESS FROM NODE    305.00 TO NODE    306.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   135.00
 ELEVATION DATA: UPSTREAM(FEET) =   1418.00  DOWNSTREAM(FEET) =   1404.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  2.264
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  B        0.10      0.30       0.10    36    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
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```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =      0.20
 TOTAL AREA(ACRES) =      0.10   PEAK FLOW RATE(CFS) =      0.20

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    306.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.00
 RAINFALL INTENSITY(INCH/HR) =   2.26
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =    0.10
 TOTAL STREAM AREA(ACRES) =    0.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.20

 ** CONFLUENCE DATA **
  STREAM      Q     Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
     1       4.23  11.50    1.404  0.22( 0.13) 0.60      3.7     301.00
     2       2.77  10.86    1.450  0.22( 0.11) 0.50      2.3     303.00
     3       0.20   5.00    2.264  0.30( 0.03) 0.10      0.1     305.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q     Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)     NODE
     1       5.34   5.00    2.264  0.22( 0.12) 0.54      2.8     305.00
     2       7.04  10.86    1.450  0.22( 0.12) 0.55      5.9     303.00
     3       7.03  11.50    1.404  0.22( 0.12) 0.55      6.1     301.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      7.04    Tc(MIN.) =    10.86
 EFFECTIVE AREA(ACRES) =     5.90   AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =      6.10
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    306.00 =   770.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    306.00 TO NODE    308.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1370.00
 FLOW LENGTH(FEET) =   300.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.37
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      7.04
 PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =  11.21
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    308.00 =  1070.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    308.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  11.21
 RAINFALL INTENSITY(INCH/HR) =   1.42
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.55
 EFFECTIVE STREAM AREA(ACRES) =    5.90
 TOTAL STREAM AREA(ACRES) =    6.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.04

****************************************************************************
 FLOW PROCESS FROM NODE    307.00 TO NODE    308.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1404.50  DOWNSTREAM(FEET) =   1371.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.677
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  2.105
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.40      0.30       0.40     36    5.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      0.71
 TOTAL AREA(ACRES) =      0.40   PEAK FLOW RATE(CFS) =      0.71

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    308.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   5.68
 RAINFALL INTENSITY(INCH/HR) =   2.10
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.40
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EFFECTIVE STREAM AREA(ACRES) =    0.40
TOTAL STREAM AREA(ACRES) =    0.40
PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.71

** CONFLUENCE DATA **
 STREAM      Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      5.34   5.38    2.171  0.22( 0.12) 0.54      2.8     305.00
    1      7.04  11.21    1.424  0.22( 0.12) 0.55      5.9     303.00
    1      7.03  11.84    1.380  0.22( 0.12) 0.55      6.1     301.00
    2      0.71   5.68    2.105  0.30( 0.12) 0.40      0.4     307.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM      Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      6.04   5.38    2.171  0.23( 0.12) 0.53      3.1     305.00
    2      6.14   5.68    2.105  0.23( 0.12) 0.53      3.3     307.00
    3      7.51  11.21    1.424  0.23( 0.12) 0.54      6.3     303.00
    4      7.48  11.84    1.380  0.23( 0.12) 0.54      6.5     301.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      7.51    Tc(MIN.) =    11.21
EFFECTIVE AREA(ACRES) =     6.30   AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.54
TOTAL AREA(ACRES) =      6.50
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    308.00 =  1070.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    308.00 TO NODE    313.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1370.00  DOWNSTREAM(FEET) =  1363.50
 FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS    6.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.57
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      7.51
 PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  11.31
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    309.00 TO NODE    310.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1390.00  DOWNSTREAM(FEET) =  1383.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.093
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.606
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          D        1.20      0.20       0.70     57    9.09
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      1.58
 TOTAL AREA(ACRES) =      1.20   PEAK FLOW RATE(CFS) =      1.58

****************************************************************************
 FLOW PROCESS FROM NODE    310.00 TO NODE    313.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1383.00  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) =  380.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.55
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.27
   HALFSTREET FLOOD WIDTH(FEET) =    8.10
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.75
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.01
 STREET FLOW TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  10.78
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.456
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.60      0.30       0.50     36
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.00      0.20       0.50     57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.60    SUBAREA RUNOFF(CFS) =    1.93
 EFFECTIVE AREA(ACRES) =    2.80   AREA-AVERAGED Fm(INCH/HR) =  0.13
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 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =   2.80         PEAK FLOW RATE(CFS) =       3.35

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29   HALFSTREET FLOOD WIDTH(FEET) =   9.21
 FLOW VELOCITY(FEET/SEC.) =  3.97   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
 LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.78
 RAINFALL INTENSITY(INCH/HR) =   1.46
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.59
 EFFECTIVE STREAM AREA(ACRES) =   2.80
 TOTAL STREAM AREA(ACRES) =   2.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.35

****************************************************************************
 FLOW PROCESS FROM NODE    311.00 TO NODE    312.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1389.00  DOWNSTREAM(FEET) =   1379.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   7.259
*  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.828
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"       D        0.60      0.20       0.40    57    7.26
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      0.94
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      0.94

****************************************************************************
 FLOW PROCESS FROM NODE    312.00 TO NODE    313.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1379.20  DOWNSTREAM ELEVATION(FEET) = 1367.60
 STREET LENGTH(FEET) =   320.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.91
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.25
  HALFSTREET FLOOD WIDTH(FEET) =   7.29
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.33
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   0.85
 STREET FLOW TRAVEL TIME(MIN.) =  1.60   Tc(MIN.) =   8.86
*  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.630
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.20      0.30       0.50    36
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        1.20      0.20       0.50    57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.21
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =   1.40      SUBAREA RUNOFF(CFS) =    1.92
 EFFECTIVE AREA(ACRES) =   2.00    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.21  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =   2.00        PEAK FLOW RATE(CFS) =       2.76

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   8.71
 FLOW VELOCITY(FEET/SEC.) =  3.60   DEPTH*VELOCITY(FT*FT/SEC.) =   1.00
 LONGEST FLOWPATH FROM NODE    311.00 TO NODE    313.00 =   620.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.86
 RAINFALL INTENSITY(INCH/HR) =   1.63
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.21
 AREA-AVERAGED Ap =  0.47
 EFFECTIVE STREAM AREA(ACRES) =   2.00
 TOTAL STREAM AREA(ACRES) =   2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.76

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
```

```
   1      3.35  10.78    1.456  0.22( 0.13) 0.59      2.8      309.00
   2      2.76   8.86    1.630  0.21( 0.10) 0.47      2.0      311.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1      5.87   8.86    1.630  0.22( 0.11) 0.53      4.3      311.00
   2      5.79  10.78    1.456  0.22( 0.12) 0.54      4.8      309.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      5.87    Tc(MIN.) =     8.86
EFFECTIVE AREA(ACRES) =     4.30   AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =      4.80
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1      5.87   8.86    1.630  0.22( 0.11) 0.53      4.3      311.00
   2      5.79  10.78    1.456  0.22( 0.12) 0.54      4.8      309.00
LONGEST FLOWPATH FROM NODE    309.00 TO NODE    313.00 =   680.00 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1      6.04   5.48    2.147  0.23( 0.12) 0.53      3.1      305.00
   2      6.14   5.78    2.083  0.23( 0.12) 0.53      3.3      307.00
   3      7.51  11.31    1.417  0.23( 0.12) 0.54      6.3      303.00
   4      7.48  11.94    1.373  0.23( 0.12) 0.54      6.5      301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

 ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     10.91   5.48    2.147  0.22( 0.12) 0.53      5.8      305.00
   2     11.11   5.78    2.083  0.22( 0.12) 0.53      6.1      307.00
   3     12.77   8.86    1.630  0.22( 0.12) 0.53      9.3      311.00
   4     13.17  10.78    1.456  0.22( 0.12) 0.54     10.8      309.00
   5     13.14  11.31    1.417  0.22( 0.12) 0.54     11.1      303.00
   6     12.92  11.94    1.373  0.22( 0.12) 0.54     11.3      301.00
  TOTAL AREA(ACRES) =     11.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     13.17  Tc(MIN.) =   10.782
EFFECTIVE AREA(ACRES) =   10.81  AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =     11.30
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.00 =  1150.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    313.00 TO NODE    313.10 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1363.50  DOWNSTREAM(FEET) =  1290.00
 FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS    6.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  25.24
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     13.17
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =  10.95
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE    313.10 =  1400.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    313.10 TO NODE      6.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1290.00  DOWNSTREAM(FEET) =  1188.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   550.00   CHANNEL SLOPE =  0.1855
 CHANNEL FLOW THRU SUBAREA(CFS) =     13.17
 FLOW VELOCITY(FEET/SEC) =   5.69 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.61   Tc(MIN.) =  12.56
 LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.00 TO NODE      6.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
   1     10.91   7.37    1.812  0.22( 0.12) 0.53      5.8      305.00
   2     11.11   7.66    1.772  0.22( 0.12) 0.53      6.1      307.00
   3     12.77  10.66    1.466  0.22( 0.12) 0.53      9.3      311.00
   4     13.17  12.56    1.334  0.22( 0.12) 0.54     10.8      309.00
   5     13.14  13.08    1.303  0.22( 0.12) 0.54     11.1      303.00
   6     12.92  13.73    1.268  0.22( 0.12) 0.54     11.3      301.00
LONGEST FLOWPATH FROM NODE    303.00 TO NODE      6.00 =  1950.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	38.91	9.58	1.558	0.23(0.20)	0.88	31.9	123.00
2	38.95	10.19	1.504	0.24(0.21)	0.87	33.3	112.00
3	38.99	10.92	1.446	0.24(0.21)	0.87	34.9	118.00
4	38.83	11.65	1.393	0.24(0.21)	0.86	36.4	115.00
5	38.83	11.66	1.393	0.24(0.21)	0.86	36.4	106.00
6	38.81	11.69	1.390	0.24(0.21)	0.86	36.4	121.00
7	38.41	12.36	1.346	0.24(0.21)	0.86	37.5	104.00
8	37.91	13.06	1.305	0.24(0.21)	0.87	38.5	101.00
9	36.79	14.12	1.247	0.24(0.21)	0.87	39.4	108.00
10	36.50	14.36	1.235	0.24(0.21)	0.87	39.6	113.00
11	32.12	18.58	1.066	0.25(0.22)	0.87	42.0	1.00

LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	46.43	7.37	1.812	0.23(0.19)	0.81	30.4	305.00
2	47.12	7.66	1.772	0.23(0.19)	0.81	31.7	307.00
3	51.08	9.58	1.558	0.23(0.19)	0.81	40.1	123.00
4	51.47	10.19	1.504	0.23(0.19)	0.80	42.1	112.00
5	51.75	10.66	1.466	0.23(0.19)	0.80	43.6	311.00
6	51.82	10.92	1.446	0.23(0.19)	0.80	44.4	118.00
7	51.81	11.65	1.393	0.24(0.19)	0.79	46.4	115.00
8	51.81	11.66	1.393	0.24(0.19)	0.79	46.5	106.00
9	51.80	11.69	1.390	0.24(0.19)	0.79	46.6	121.00
10	51.54	12.36	1.346	0.24(0.19)	0.79	48.1	104.00
11	51.44	12.56	1.334	0.24(0.19)	0.79	48.6	309.00
12	51.05	13.06	1.305	0.24(0.19)	0.79	49.5	101.00
13	51.02	13.08	1.303	0.24(0.19)	0.79	49.6	303.00
14	50.12	13.73	1.268	0.24(0.19)	0.79	50.4	301.00
15	49.48	14.12	1.247	0.24(0.19)	0.79	50.7	108.00
16	49.05	14.36	1.235	0.24(0.19)	0.79	50.9	113.00
17	42.76	18.58	1.066	0.24(0.20)	0.80	53.3	1.00

TOTAL AREA(ACRES) = 53.30

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51.82 Tc(MIN.) = 10.919
EFFECTIVE AREA(ACRES) = 44.43 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.24 AREA-AVERAGED Ap = 0.79
TOTAL AREA(ACRES) = 53.30
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 6.00 = 2380.00 FEET.

****
FLOW PROCESS FROM NODE 6.00 TO NODE 6.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 1 <<<<<
==========

****
FLOW PROCESS FROM NODE 6.00 TO NODE 7.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========

ELEVATION DATA: UPSTREAM(FEET) = 1188.00 DOWNSTREAM(FEET) = 1140.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 520.00 CHANNEL SLOPE = 0.0923
CHANNEL FLOW THRU SUBAREA(CFS) = 51.82
FLOW VELOCITY(FEET/SEC) = 11.88 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.73 Tc(MIN.) = 11.65
LONGEST FLOWPATH FROM NODE 108.00 TO NODE 7.00 = 2900.00 FEET.

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========

MAINLINE Tc(MIN) = 11.65
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.393
SUBAREA LOSS RATE DATA(AMC I):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	10.00	0.20	1.00	67

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 10.00 SUBAREA RUNOFF(CFS) = 10.74
EFFECTIVE AREA(ACRES) = 54.43 AREA-AVERAGED Fm(INCH/HR) = 0.19
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 63.30 PEAK FLOW RATE(CFS) = 58.96

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	55.31	8.12	1.713	0.22(0.19)	0.86	40.4	305.00
2	55.83	8.41	1.680	0.22(0.19)	0.86	41.7	307.00
3	58.79	10.32	1.494	0.22(0.19)	0.85	50.1	123.00
4	58.91	10.92	1.446	0.23(0.19)	0.84	52.1	112.00
5	58.99	11.39	1.411	0.23(0.19)	0.84	53.6	311.00
6	58.96	11.65	1.393	0.23(0.19)	0.83	54.4	118.00
7	58.71	12.38	1.345	0.23(0.19)	0.83	56.4	115.00
8	58.70	12.38	1.345	0.23(0.19)	0.83	56.5	106.00
9	58.68	12.42	1.343	0.23(0.19)	0.83	56.6	121.00
10	58.21	13.09	1.303	0.23(0.19)	0.83	58.1	104.00
11	58.05	13.29	1.292	0.23(0.19)	0.83	58.6	309.00
12	57.52	13.79	1.265	0.23(0.19)	0.83	59.5	101.00
13	57.48	13.82	1.263	0.23(0.19)	0.83	59.6	303.00
14	56.43	14.47	1.230	0.23(0.19)	0.83	60.4	301.00
15	55.72	14.86	1.211	0.23(0.19)	0.83	60.7	108.00
16	55.23	15.11	1.200	0.23(0.19)	0.83	60.9	113.00
17	48.13	19.35	1.041	0.24(0.20)	0.84	63.3	1.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 58.99 Tc(MIN.) = 11.39
AREA-AVERAGED Fm(INCH/HR) = 0.19 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.84 EFFECTIVE AREA(ACRES) = 53.63

****
FLOW PROCESS FROM NODE 7.00 TO NODE 7.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==========

```
****************************************************************************
 FLOW PROCESS FROM NODE     201.00 TO NODE     202.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
 ELEVATION DATA: UPSTREAM(FEET) =   1590.00  DOWNSTREAM(FEET) =   1574.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.314
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.494
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.40      0.30       1.00     46   10.31
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      1.50
 TOTAL AREA(ACRES) =      1.40   PEAK FLOW RATE(CFS) =      1.50

****************************************************************************
 FLOW PROCESS FROM NODE     202.00 TO NODE     203.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1574.00  DOWNSTREAM(FEET) =   1518.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   660.00   CHANNEL SLOPE =  0.0848
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.50
 FLOW VELOCITY(FEET/SEC) =   8.01   FLOW DEPTH(FEET) =   0.35
 TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =  11.69
 LONGEST FLOWPATH FROM NODE     201.00 TO NODE     203.00 =   880.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     203.00 TO NODE     203.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.69
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.390
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                B        1.90      0.30       0.85     36
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
 SUBAREA AREA(ACRES) =     1.90      SUBAREA RUNOFF(CFS) =     1.94
 EFFECTIVE AREA(ACRES) =     3.30   AREA-AVERAGED Fm(INCH/HR) =  0.27
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =     3.30      PEAK FLOW RATE(CFS) =      3.32

****************************************************************************
 FLOW PROCESS FROM NODE     203.00 TO NODE     206.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1463.00
 STREET LENGTH(FEET) =   910.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.29
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.29
   HALFSTREET FLOOD WIDTH(FEET) =    9.42
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.90
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.43
 STREET FLOW TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =  14.78
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.215
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        1.30      0.30       0.50     36
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        0.70      0.20       0.50     57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.27
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =     2.00      SUBAREA RUNOFF(CFS) =     1.95
 EFFECTIVE AREA(ACRES) =     5.30    AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =     5.30      PEAK FLOW RATE(CFS) =       4.74

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   9.82
 FLOW VELOCITY(FEET/SEC.) =  5.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.50
 LONGEST FLOWPATH FROM NODE     201.00 TO NODE     206.00 =  1790.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     206.00 TO NODE     206.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.78
 RAINFALL INTENSITY(INCH/HR) =   1.22
 AREA-AVERAGED Fm(INCH/HR) =  0.22
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 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.76
 EFFECTIVE STREAM AREA(ACRES) =    5.30
 TOTAL STREAM AREA(ACRES) =    5.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.74

****************************************************************************
 FLOW PROCESS FROM NODE    204.00 TO NODE    205.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1518.00  DOWNSTREAM(FEET) =   1516.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  10.989
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.441
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        0.90      0.30       0.60    36   10.99
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      1.02
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      1.02

****************************************************************************
 FLOW PROCESS FROM NODE    205.00 TO NODE    206.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1516.00  DOWNSTREAM ELEVATION(FEET) = 1462.50
 STREET LENGTH(FEET) =   720.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.91
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.23
   HALFSTREET FLOOD WIDTH(FEET) =    5.96
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.04
 STREET FLOW TRAVEL TIME(MIN.) =   2.67   Tc(MIN.) =  13.66
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.272
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        1.80      0.30       0.60    36
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =  1.80     SUBAREA RUNOFF(CFS) =    1.77
 EFFECTIVE AREA(ACRES) =    2.70    AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =    2.70        PEAK FLOW RATE(CFS) =      2.65

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   7.18
 FLOW VELOCITY(FEET/SEC.) =  4.74   DEPTH*VELOCITY(FT*FT/SEC.) =   1.20
 LONGEST FLOWPATH FROM NODE    204.00 TO NODE    206.00 =  1020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    206.00 TO NODE    206.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  13.66
 RAINFALL INTENSITY(INCH/HR) =   1.27
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    2.70
 TOTAL STREAM AREA(ACRES) =    2.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.65

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1      4.74  14.78    1.215  0.29( 0.22) 0.76     5.3      201.00
     2      2.65  13.66    1.272  0.30( 0.18) 0.60     2.7      204.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)     NODE
     1      7.28  13.66    1.272  0.29( 0.21) 0.70     7.6      204.00
     2      7.26  14.78    1.215  0.29( 0.21) 0.70     8.0      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      7.28    Tc(MIN.) =    13.66
 EFFECTIVE AREA(ACRES) =     7.60   AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =      8.00
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    206.00 =  1790.00 FEET.

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 FLOW PROCESS FROM NODE     206.00 TO NODE     210.00 IS CODE =  31
----------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
======================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1461.00  DOWNSTREAM(FEET) =  1450.00
 FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.11
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      7.28
 PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =  14.00
 LONGEST FLOWPATH FROM NODE     201.00 TO NODE     210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     210.00 TO NODE     210.00 IS CODE =   1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.00
 RAINFALL INTENSITY(INCH/HR) =   1.25
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    7.60
 TOTAL STREAM AREA(ACRES) =    8.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.28

****************************************************************************
 FLOW PROCESS FROM NODE     207.00 TO NODE     210.00 IS CODE =  21
----------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
======================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1462.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.164
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.708
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        1.90      0.30       0.70     36    8.16
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      2.56
 TOTAL AREA(ACRES) =      1.90   PEAK FLOW RATE(CFS) =      2.56

****************************************************************************
 FLOW PROCESS FROM NODE     210.00 TO NODE     210.00 IS CODE =   1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.16
 RAINFALL INTENSITY(INCH/HR) =   1.71
 AREA-AVERAGED Fm(INCH/HR) =  0.21
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    1.90
 TOTAL STREAM AREA(ACRES) =    1.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.56

****************************************************************************
 FLOW PROCESS FROM NODE     208.00 TO NODE     210.00 IS CODE =  21
----------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
======================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   230.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.00  DOWNSTREAM(FEET) =   1450.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.375
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.969
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  B        0.20      0.30       0.10     36    6.38
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =      0.35
 TOTAL AREA(ACRES) =      0.20   PEAK FLOW RATE(CFS) =      0.35

****************************************************************************
 FLOW PROCESS FROM NODE     210.00 TO NODE     210.00 IS CODE =   1
----------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
======================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   6.38
 RAINFALL INTENSITY(INCH/HR) =   1.97
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =    0.20
 TOTAL STREAM AREA(ACRES) =    0.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.35

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      7.28   14.00     1.254   0.29( 0.21) 0.70     7.6      204.00
     1      7.26   15.13     1.199   0.29( 0.21) 0.70     8.0      201.00
```

```
    2      2.56   8.16    1.708  0.30( 0.21) 0.70      1.9      207.00
    3      0.35   6.38    1.969  0.30( 0.03) 0.10      0.2      208.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      8.28   6.38     1.969   0.30( 0.20) 0.68      5.1      208.00
     2      8.96   8.16     1.708   0.30( 0.20) 0.68      6.5      207.00
     3      9.29  14.00     1.254   0.30( 0.20) 0.69      9.7      204.00
     4      9.16  15.13     1.199   0.29( 0.20) 0.69     10.1      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      9.29    Tc(MIN.) =    14.00
 EFFECTIVE AREA(ACRES) =     9.70   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     10.10
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.00
 RAINFALL INTENSITY(INCH/HR) =   1.25
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    9.70
 TOTAL STREAM AREA(ACRES) =   10.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.29

****************************************************************************
 FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   240.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1451.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.554
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          D        0.70      0.20       0.70    57    9.55
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      0.90
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      0.90

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    210.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.55
 RAINFALL INTENSITY(INCH/HR) =   1.56
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.70
 EFFECTIVE STREAM AREA(ACRES) =    0.70
 TOTAL STREAM AREA(ACRES) =    0.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.90

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      8.28   6.38     1.969   0.30( 0.20) 0.68      5.1      208.00
     1      8.96   8.16     1.708   0.30( 0.20) 0.68      6.5      207.00
     1      9.29  14.00     1.254   0.30( 0.20) 0.69      9.7      204.00
     1      9.16  15.13     1.199   0.29( 0.20) 0.69     10.1      201.00
     2      0.90   9.55     1.561   0.20( 0.14) 0.70      0.7      209.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      9.05   6.38     1.969   0.29( 0.20) 0.68      5.6      208.00
     2      9.80   8.16     1.708   0.29( 0.20) 0.68      7.1      207.00
     3      9.93   9.55     1.561   0.29( 0.20) 0.69      8.0      209.00
     4      9.99  14.00     1.254   0.29( 0.20) 0.69     10.4      204.00
     5      9.83  15.13     1.199   0.29( 0.20) 0.69     10.8      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      9.99    Tc(MIN.) =    14.00
 EFFECTIVE AREA(ACRES) =    10.40   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     10.80
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    210.00 =  2020.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    215.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1450.00  DOWNSTREAM(FEET) =  1417.50
 FLOW LENGTH(FEET) =   560.00   MANNING'S N =  0.013
```

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 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.97
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      9.99
 PIPE TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  14.72
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  14.72
 RAINFALL INTENSITY(INCH/HR) =   1.22
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =   10.40
 TOTAL STREAM AREA(ACRES) =   10.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.99

****************************************************************************
 FLOW PROCESS FROM NODE    213.00 TO NODE    214.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  285.00
 ELEVATION DATA: UPSTREAM(FEET) =   1450.40  DOWNSTREAM(FEET) =   1432.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.469
 *  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.953
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        0.90      0.20       0.50     57    6.47
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA RUNOFF(CFS) =      1.50
 TOTAL AREA(ACRES) =      0.90   PEAK FLOW RATE(CFS) =      1.50

****************************************************************************
 FLOW PROCESS FROM NODE    214.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1432.20  DOWNSTREAM ELEVATION(FEET) = 1416.20
 STREET LENGTH(FEET) =   290.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.55
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.26
   HALFSTREET FLOOD WIDTH(FEET) =    7.49
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.26
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.10
 STREET FLOW TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =   7.60
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.779
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       D        1.40      0.20       0.60     57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    1.40     SUBAREA RUNOFF(CFS) =    2.09
 EFFECTIVE AREA(ACRES) =    2.30    AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =    2.30        PEAK FLOW RATE(CFS) =       3.45

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   8.71
 FLOW VELOCITY(FEET/SEC.) =  4.51   DEPTH*VELOCITY(FT*FT/SEC.) =   1.26
 LONGEST FLOWPATH FROM NODE    213.00 TO NODE    215.00 =   575.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   7.60
 RAINFALL INTENSITY(INCH/HR) =   1.78
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.56
 EFFECTIVE STREAM AREA(ACRES) =    2.30
 TOTAL STREAM AREA(ACRES) =    2.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.45

 ** CONFLUENCE DATA **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      9.05   7.11    1.849  0.29( 0.20) 0.68     5.6      208.00
     1      9.80   8.89    1.627  0.29( 0.20) 0.68     7.1      207.00
```

```
    1      9.93  10.27    1.497  0.29( 0.20) 0.69      8.0      209.00
    1      9.99  14.72    1.218  0.29( 0.20) 0.69     10.4      204.00
    1      9.83  15.85    1.167  0.29( 0.20) 0.69     10.8      201.00
    2      3.45   7.60    1.779  0.20( 0.11) 0.56      2.3      213.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     12.41   7.11     1.849   0.27( 0.17) 0.65      7.8      208.00
     2     12.71   7.60     1.779   0.27( 0.17) 0.65      8.3      213.00
     3     12.94   8.89     1.627   0.27( 0.18) 0.65      9.4      207.00
     4     12.80  10.27     1.497   0.27( 0.18) 0.66     10.3      209.00
     5     12.28  14.72     1.218   0.28( 0.18) 0.67     12.7      204.00
     6     12.01  15.85     1.167   0.28( 0.18) 0.67     13.1      201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    12.94   Tc(MIN.) =     8.89
 EFFECTIVE AREA(ACRES) =     9.43   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.65
 TOTAL AREA(ACRES) =     13.10
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.89
 RAINFALL INTENSITY(INCH/HR) =   1.63
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.27
 AREA-AVERAGED Ap =  0.65
 EFFECTIVE STREAM AREA(ACRES) =    9.43
 TOTAL STREAM AREA(ACRES) =   13.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.94

****************************************************************************
 FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1453.80  DOWNSTREAM(FEET) =   1445.80

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.560
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.785
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      D        0.30      0.20       0.40     57    7.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE    212.00 TO NODE    215.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1445.80  DOWNSTREAM ELEVATION(FEET) = 1418.00
 STREET LENGTH(FEET) =   460.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.39
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.22
  HALFSTREET FLOOD WIDTH(FEET) =    5.25
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.89
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.86
 STREET FLOW TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =   9.53
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.563
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       D        1.40      0.20       0.50     57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    1.84
 EFFECTIVE AREA(ACRES) =    1.70    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =    1.70        PEAK FLOW RATE(CFS) =       2.24

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) =  0.25   HALFSTREET FLOOD WIDTH(FEET) =   6.88
 FLOW VELOCITY(FEET/SEC.) =  4.28   DEPTH*VELOCITY(FT*FT/SEC.) =   1.06
 LONGEST FLOWPATH FROM NODE    211.00 TO NODE    215.00 =   760.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    215.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   9.53
 RAINFALL INTENSITY(INCH/HR) =   1.56
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.48
 EFFECTIVE STREAM AREA(ACRES) =    1.70
 TOTAL STREAM AREA(ACRES) =    1.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.24

 ** CONFLUENCE DATA **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     12.41   7.11     1.849   0.27( 0.17) 0.65      7.8     208.00
     1     12.71   7.60     1.779   0.27( 0.17) 0.65      8.3     213.00
     1     12.94   8.89     1.627   0.27( 0.18) 0.65      9.4     207.00
     1     12.80  10.27     1.497   0.27( 0.18) 0.66     10.3     209.00
     1     12.28  14.72     1.218   0.28( 0.18) 0.67     12.7     204.00
     1     12.01  15.85     1.167   0.28( 0.18) 0.67     13.1     201.00
     2      2.24   9.53     1.563   0.20( 0.10) 0.48      1.7     211.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc    Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1     14.41   7.11     1.849   0.26( 0.16) 0.62      9.0     208.00
     2     14.76   7.60     1.779   0.26( 0.16) 0.62      9.7     213.00
     3     15.12   8.89     1.627   0.26( 0.16) 0.63     11.0     207.00
     4     15.12   9.53     1.563   0.26( 0.17) 0.63     11.5     211.00
     5     14.94  10.27     1.497   0.26( 0.17) 0.63     12.0     209.00
     6     13.99  14.72     1.218   0.27( 0.17) 0.64     14.4     204.00
     7     13.65  15.85     1.167   0.27( 0.17) 0.65     14.8     201.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     15.12    Tc(MIN.) =     8.89
 EFFECTIVE AREA(ACRES) =    11.01   AREA-AVERAGED Fm(INCH/HR) =  0.16
 AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.63
 TOTAL AREA(ACRES) =     14.80
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    215.00 =  2580.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    215.00 TO NODE    220.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1416.20  DOWNSTREAM(FEET) =  1350.00
 FLOW LENGTH(FEET) =   270.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  24.55
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     15.12
 PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   9.07
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    220.00 =  2850.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    220.00 TO NODE      6.10 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   960.00   CHANNEL SLOPE =  0.1875
 CHANNEL FLOW THRU SUBAREA(CFS) =     15.12
 FLOW VELOCITY(FEET/SEC) =   5.99 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.67   Tc(MIN.) =  11.74
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE      6.10 =  3810.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      6.10 TO NODE      6.10 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    216.00 TO NODE    217.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1616.00  DOWNSTREAM(FEET) =   1513.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.561
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.663
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        0.60      0.30       1.00     46    8.56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      0.74
 TOTAL AREA(ACRES) =      0.60   PEAK FLOW RATE(CFS) =      0.74

****************************************************************************
 FLOW PROCESS FROM NODE    217.00 TO NODE    218.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1513.00  DOWNSTREAM(FEET) =   1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   350.00   CHANNEL SLOPE =  0.1800
 CHANNEL BASE(FEET) =    0.00    "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      0.74
```

```
 FLOW VELOCITY(FEET/SEC) =   8.98   FLOW DEPTH(FEET) =   0.23
 TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =   9.21
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    218.00 =   650.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    218.00 TO NODE    218.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.21
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.594
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        2.00      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     2.00      SUBAREA RUNOFF(CFS) =     2.33
 EFFECTIVE AREA(ACRES) =     2.60    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     2.60        PEAK FLOW RATE(CFS) =       3.03

****************************************************************************
 FLOW PROCESS FROM NODE    218.00 TO NODE    219.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (NEW ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1437.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   280.00   CHANNEL SLOPE =  0.0464
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   1.500
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      3.03
 FLOW VELOCITY(FEET/SEC) =   7.64   FLOW DEPTH(FEET) =   0.51
 TRAVEL TIME(MIN.) =   0.61   Tc(MIN.) =   9.82
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    219.00 =   930.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    219.00 TO NODE    219.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.82
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.537
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        3.10      0.30       1.00    46
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D        1.00      0.20       1.00    67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.28
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     4.10      SUBAREA RUNOFF(CFS) =     4.65
 EFFECTIVE AREA(ACRES) =     6.70    AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     6.70        PEAK FLOW RATE(CFS) =       7.55

****************************************************************************
 FLOW PROCESS FROM NODE    219.00 TO NODE    225.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1437.00  DOWNSTREAM(FEET) =  1400.00
 FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS    5.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.00
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     7.55
 PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  10.12
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    225.00 =  1220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    225.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.12
 RAINFALL INTENSITY(INCH/HR) =   1.51
 AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.29
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    6.70
 TOTAL STREAM AREA(ACRES) =    6.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.55

****************************************************************************
 FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   280.00
 ELEVATION DATA: UPSTREAM(FEET) =   1417.00  DOWNSTREAM(FEET) =   1408.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.932
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.737
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         D        0.50      0.20       0.60    57    7.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      0.73
 TOTAL AREA(ACRES) =      0.50   PEAK FLOW RATE(CFS) =      0.73
```

```
****************************************************************************
 FLOW PROCESS FROM NODE     222.00 TO NODE     225.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1408.70  DOWNSTREAM ELEVATION(FEET) = 1400.00
 STREET LENGTH(FEET) =  180.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.07
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.21
  HALFSTREET FLOOD WIDTH(FEET) =  4.73
  AVERAGE FLOW VELOCITY(FEET/SEC.) =  3.45
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  0.73
 STREET FLOW TRAVEL TIME(MIN.) =  0.87  Tc(MIN.) =  8.80
 *  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.636
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        D        0.50      0.20       0.50    57
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =  0.50   SUBAREA RUNOFF(CFS) =  0.69
 EFFECTIVE AREA(ACRES) =  1.00   AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =  1.00   PEAK FLOW RATE(CFS) =  1.37

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.23  HALFSTREET FLOOD WIDTH(FEET) =  5.56
 FLOW VELOCITY(FEET/SEC.) =  3.58  DEPTH*VELOCITY(FT*FT/SEC.) =  0.81
 LONGEST FLOWPATH FROM NODE  221.00 TO NODE  225.00 =  460.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     225.00 TO NODE     225.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  8.80
 RAINFALL INTENSITY(INCH/HR) =  1.64
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.55
 EFFECTIVE STREAM AREA(ACRES) =  1.00
 TOTAL STREAM AREA(ACRES) =  1.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =  1.37

****************************************************************************
 FLOW PROCESS FROM NODE     223.00 TO NODE     224.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  300.00
 ELEVATION DATA: UPSTREAM(FEET) =  1419.00  DOWNSTREAM(FEET) =  1408.30

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =  7.858
 *  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.746
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.60      0.20       0.60    57    7.86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =  2.34
 TOTAL AREA(ACRES) =  1.60   PEAK FLOW RATE(CFS) =  2.34

****************************************************************************
 FLOW PROCESS FROM NODE     224.00 TO NODE     225.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1408.30  DOWNSTREAM ELEVATION(FEET) = 1400.00
 STREET LENGTH(FEET) =  170.00  CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.017
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =  0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =  0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.90
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.27
  HALFSTREET FLOOD WIDTH(FEET) =  8.30
  AVERAGE FLOW VELOCITY(FEET/SEC.) =  4.10
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =  1.11
 STREET FLOW TRAVEL TIME(MIN.) =  0.69  Tc(MIN.) =  8.55
 *  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.664
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
```

```
    LAND USE              GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        D        0.80       0.20        0.60     57
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =     0.80     SUBAREA RUNOFF(CFS) =     1.11
EFFECTIVE AREA(ACRES) =    2.40    AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =    2.40        PEAK FLOW RATE(CFS) =       3.33

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   8.81
FLOW VELOCITY(FEET/SEC.) =  4.27   DEPTH*VELOCITY(FT*FT/SEC.) =   1.20
LONGEST FLOWPATH FROM NODE    223.00 TO NODE    225.00 =   470.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    225.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.55
 RAINFALL INTENSITY(INCH/HR) =   1.66
 AREA-AVERAGED Fm(INCH/HR) =  0.12
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    2.40
 TOTAL STREAM AREA(ACRES) =    2.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.33

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1      7.55  10.12    1.510  0.29( 0.29) 1.00     6.7     216.00
     2      1.37   8.80    1.636  0.20( 0.11) 0.55     1.0     221.00
     3      3.33   8.55    1.664  0.20( 0.12) 0.60     2.4     223.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  3 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1     11.87   8.55    1.664  0.26( 0.22) 0.85     9.0     223.00
     2     11.89   8.80    1.636  0.26( 0.22) 0.85     9.2     221.00
     3     11.81  10.12    1.510  0.27( 0.23) 0.86    10.1     216.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     11.89    Tc(MIN.) =     8.80
 EFFECTIVE AREA(ACRES) =     9.23   AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =     10.10
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    225.00 =  1220.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    225.00 TO NODE    227.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1399.00
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.27
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     11.89
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   8.92
 LONGEST FLOWPATH FROM NODE    216.00 TO NODE    227.00 =  1280.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    227.00 TO NODE    227.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.92
 RAINFALL INTENSITY(INCH/HR) =   1.62
 AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.26
 AREA-AVERAGED Ap =  0.85
 EFFECTIVE STREAM AREA(ACRES) =    9.23
 TOTAL STREAM AREA(ACRES) =   10.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.89

****************************************************************************
 FLOW PROCESS FROM NODE    226.00 TO NODE    227.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1397.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.509
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.478
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        D        1.60       0.20        0.60     57   10.51
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =      1.96
 TOTAL AREA(ACRES) =      1.60   PEAK FLOW RATE(CFS) =      1.96

****************************************************************************
 FLOW PROCESS FROM NODE    227.00 TO NODE    227.00 IS CODE =   1
----------------------------------------------------------------------------
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```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.51
RAINFALL INTENSITY(INCH/HR) = 1.48
AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.60
EFFECTIVE STREAM AREA(ACRES) = 1.60
TOTAL STREAM AREA(ACRES) = 1.60
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.96

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11.87	8.67	1.650	0.26(0.22)	0.85	9.0	223.00
1	11.89	8.92	1.623	0.26(0.22)	0.85	9.2	221.00
1	11.81	10.24	1.500	0.27(0.23)	0.86	10.1	216.00
2	1.96	10.51	1.478	0.20(0.12)	0.60	1.6	226.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13.68	8.67	1.650	0.26(0.21)	0.81	10.3	223.00
2	13.72	8.92	1.623	0.26(0.21)	0.82	10.6	221.00
3	13.75	10.24	1.500	0.26(0.21)	0.83	11.7	216.00
4	13.56	10.51	1.478	0.26(0.21)	0.82	11.7	226.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 13.75 Tc(MIN.) = 10.24
EFFECTIVE AREA(ACRES) = 11.66 AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.26 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 11.70
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 227.00 = 1280.00 FEET.

****
FLOW PROCESS FROM NODE 227.00 TO NODE 228.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1397.50 DOWNSTREAM(FEET) = 1286.00
FLOW LENGTH(FEET) = 370.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 25.77
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 13.75
PIPE TRAVEL TIME(MIN.) = 0.24 Tc(MIN.) = 10.48
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 228.00 = 1650.00 FEET.

****
FLOW PROCESS FROM NODE 228.00 TO NODE 6.10 IS CODE = 53

>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1286.00 DOWNSTREAM(FEET) = 1170.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 620.00 CHANNEL SLOPE = 0.1871
CHANNEL FLOW THRU SUBAREA(CFS) = 13.75
FLOW VELOCITY(FEET/SEC) = 5.80 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.78 Tc(MIN.) = 12.27
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 6.10 = 2270.00 FEET.

****
FLOW PROCESS FROM NODE 6.10 TO NODE 6.10 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 12.27
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.352
SUBAREA LOSS RATE DATA(AMC I):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	8.80	0.20	1.00	67

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 8.80 SUBAREA RUNOFF(CFS) = 9.13
EFFECTIVE AREA(ACRES) = 20.46 AREA-AVERAGED Fm(INCH/HR) = 0.21
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 20.50 PEAK FLOW RATE(CFS) = 21.07

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21.68	10.69	1.463	0.23(0.21)	0.90	19.1	223.00
2	21.60	10.95	1.444	0.23(0.21)	0.90	19.4	221.00
3	21.07	12.27	1.352	0.23(0.21)	0.90	20.5	216.00
4	20.80	12.54	1.335	0.23(0.21)	0.90	20.5	226.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 21.68 Tc(MIN.) = 10.69
AREA-AVERAGED Fm(INCH/HR) = 0.21 AREA-AVERAGED Fp(INCH/HR) = 0.23
AREA-AVERAGED Ap = 0.90 EFFECTIVE AREA(ACRES) = 19.15

****
FLOW PROCESS FROM NODE 6.10 TO NODE 6.10 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21.68	10.69	1.463	0.23(0.21)	0.90	19.1	223.00
2	21.60	10.95	1.444	0.23(0.21)	0.90	19.4	221.00
3	21.07	12.27	1.352	0.23(0.21)	0.90	20.5	216.00

```
   4     20.80  12.54    1.335  0.23( 0.21) 0.90     20.5      226.00
LONGEST FLOWPATH FROM NODE     216.00 TO NODE       6.10 =  2270.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae       HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      14.41  10.01     1.519   0.26( 0.16) 0.62      9.0       208.00
    2      14.76  10.48     1.480   0.26( 0.16) 0.62      9.7       213.00
    3      15.12  11.74     1.387   0.26( 0.16) 0.63     11.0       207.00
    4      15.12  12.39     1.345   0.26( 0.17) 0.63     11.5       211.00
    5      14.94  13.14     1.300   0.26( 0.17) 0.63     12.0       209.00
    6      13.99  17.65     1.098   0.27( 0.17) 0.64     14.4       204.00
    7      13.65  18.80     1.058   0.27( 0.17) 0.65     14.8       201.00
LONGEST FLOWPATH FROM NODE     201.00 TO NODE       6.10 =  3810.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae       HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      35.62  10.01     1.519   0.24( 0.19) 0.81     27.0       208.00
    2      36.30  10.48     1.480   0.24( 0.19) 0.81     28.5       213.00
    3      36.51  10.69     1.463   0.24( 0.19) 0.81     29.1       223.00
    4      36.50  10.95     1.444   0.24( 0.19) 0.81     29.6       221.00
    5      36.40  11.74     1.387   0.24( 0.19) 0.80     31.0       207.00
    6      36.19  12.27     1.352   0.24( 0.19) 0.80     31.9       216.00
    7      36.07  12.39     1.345   0.24( 0.19) 0.80     32.0       211.00
    8      35.88  12.54     1.335   0.24( 0.19) 0.80     32.1       226.00
    9      35.09  13.14     1.300   0.24( 0.19) 0.80     32.5       209.00
   10      30.41  17.65     1.098   0.24( 0.19) 0.79     34.9       204.00
   11      29.34  18.80     1.058   0.24( 0.19) 0.79     35.3       201.00
  TOTAL AREA(ACRES) =      35.30

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      36.51  Tc(MIN.) =   10.695
 EFFECTIVE AREA(ACRES) =    29.06  AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =     35.30
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE       6.10 =  3810.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       6.10 TO NODE       6.10 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE       6.10 TO NODE       7.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.1765
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1482 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =     36.51
 FLOW VELOCITY(FEET/SEC) =   7.14 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.40   Tc(MIN.) =  11.09
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE       7.00 =  3980.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE       7.00 TO NODE       7.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae       HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      35.62  10.41     1.486   0.24( 0.19) 0.81     27.0       208.00
    2      36.30  10.88     1.449   0.24( 0.19) 0.81     28.5       213.00
    3      36.51  11.09     1.433   0.24( 0.19) 0.81     29.1       223.00
    4      36.50  11.34     1.415   0.24( 0.19) 0.81     29.6       221.00
    5      36.40  12.14     1.361   0.24( 0.19) 0.80     31.0       207.00
    6      36.19  12.66     1.328   0.24( 0.19) 0.80     31.9       216.00
    7      36.07  12.78     1.321   0.24( 0.19) 0.80     32.0       211.00
    8      35.88  12.94     1.312   0.24( 0.19) 0.80     32.1       226.00
    9      35.09  13.54     1.278   0.24( 0.19) 0.80     32.5       209.00
   10      30.41  18.07     1.083   0.24( 0.19) 0.79     34.9       204.00
   11      29.34  19.23     1.045   0.24( 0.19) 0.79     35.3       201.00
LONGEST FLOWPATH FROM NODE     201.00 TO NODE       7.00 =  3980.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae       HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      55.31   8.12     1.713   0.22( 0.19) 0.86     40.4       305.00
    2      55.83   8.41     1.680   0.22( 0.19) 0.86     41.7       307.00
    3      58.79  10.32     1.494   0.22( 0.19) 0.85     50.1       123.00
    4      58.91  10.92     1.446   0.23( 0.19) 0.84     52.1       112.00
    5      58.99  11.39     1.411   0.23( 0.19) 0.84     53.6       311.00
    6      58.96  11.65     1.393   0.23( 0.19) 0.83     54.4       118.00
    7      58.71  12.38     1.345   0.23( 0.19) 0.83     56.4       115.00
    8      58.70  12.38     1.345   0.23( 0.19) 0.83     56.5       106.00
    9      58.68  12.42     1.343   0.23( 0.19) 0.83     56.6       121.00
   10      58.21  13.09     1.303   0.23( 0.19) 0.83     58.1       104.00
   11      58.05  13.29     1.292   0.23( 0.19) 0.83     58.6       309.00
   12      57.52  13.79     1.265   0.23( 0.19) 0.83     59.5       101.00
   13      57.48  13.82     1.263   0.23( 0.19) 0.83     59.6       303.00
   14      56.43  14.47     1.230   0.23( 0.19) 0.83     60.4       301.00
   15      55.72  14.86     1.211   0.23( 0.19) 0.83     60.7       108.00
   16      55.23  15.11     1.200   0.23( 0.19) 0.83     60.9       113.00
   17      48.13  19.35     1.041   0.24( 0.20) 0.84     63.3         1.00
LONGEST FLOWPATH FROM NODE     108.00 TO NODE       7.00 =  2900.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM      Q      Tc    Intensity    Fp(Fm)      Ap    Ae       HEADWATER
 NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)           (ACRES)     NODE
    1      87.98   8.12     1.713   0.23( 0.19) 0.84     61.4       305.00
    2      88.90   8.41     1.680   0.23( 0.19) 0.84     63.4       307.00
    3      94.30  10.32     1.494   0.23( 0.19) 0.83     76.8       123.00
    4      94.44  10.41     1.486   0.23( 0.19) 0.83     77.4       208.00
    5      95.21  10.88     1.449   0.23( 0.19) 0.83     80.4       213.00
    6      95.26  10.92     1.446   0.23( 0.19) 0.83     80.7       112.00
```

```
   7     95.45  11.09    1.433  0.23( 0.19) 0.83     81.7      223.00
   8     95.48  11.34    1.415  0.23( 0.19) 0.82     83.1      221.00
   9     95.48  11.39    1.411  0.23( 0.19) 0.82     83.3      311.00
  10     95.43  11.65    1.393  0.23( 0.19) 0.82     84.6      118.00
  11     95.20  12.14    1.361  0.23( 0.19) 0.82     86.8      207.00
  12     95.01  12.38    1.345  0.23( 0.19) 0.82     87.9      115.00
  13     95.01  12.38    1.345  0.23( 0.19) 0.82     87.9      106.00
  14     94.97  12.42    1.343  0.23( 0.19) 0.82     88.1      121.00
  15     94.70  12.66    1.328  0.23( 0.19) 0.82     89.0      216.00
  16     94.50  12.78    1.321  0.23( 0.19) 0.82     89.4      211.00
  17     94.20  12.94    1.312  0.23( 0.19) 0.82     89.9      226.00
  18     93.89  13.09    1.303  0.23( 0.19) 0.82     90.4      104.00
  19     93.47  13.29    1.292  0.23( 0.19) 0.82     90.9      309.00
  20     92.87  13.54    1.278  0.23( 0.19) 0.82     91.5      209.00
  21     92.35  13.79    1.265  0.23( 0.19) 0.82     92.1      101.00
  22     92.29  13.82    1.263  0.23( 0.19) 0.82     92.2      303.00
  23     90.57  14.47    1.230  0.23( 0.19) 0.82     93.3      301.00
  24     89.44  14.86    1.211  0.24( 0.19) 0.82     93.9      108.00
  25     88.71  15.11    1.200  0.24( 0.19) 0.82     94.2      113.00
  26     80.68  18.07    1.083  0.24( 0.19) 0.82     97.5      204.00
  27     77.67  19.23    1.045  0.24( 0.20) 0.82     98.5      201.00
  28     77.34  19.35    1.041  0.24( 0.20) 0.82     98.6        1.00
 TOTAL AREA(ACRES) =     98.60

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     95.48  Tc(MIN.) =   11.386
 EFFECTIVE AREA(ACRES) =   83.27  AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.82
 TOTAL AREA(ACRES) =    98.60
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE      7.00 =  3980.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE      7.00 TO NODE      7.90 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1000.00   CHANNEL SLOPE =  0.0520
 CHANNEL FLOW THRU SUBAREA(CFS) =     95.48
 FLOW VELOCITY(FEET/SEC) =  10.68 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  12.95
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE      7.90 =  4980.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.90 TO NODE      7.90 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.95
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.311
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       12.40      0.20       1.00     67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   12.40      SUBAREA RUNOFF(CFS) =   12.40
 EFFECTIVE AREA(ACRES) =    95.67   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =   111.00       PEAK FLOW RATE(CFS) =      96.43

****************************************************************************
 FLOW PROCESS FROM NODE      7.90 TO NODE      7.90 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  12.95
 RAINFALL INTENSITY(INCH/HR) =   1.31
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  0.85
 EFFECTIVE STREAM AREA(ACRES) =   95.67
 TOTAL STREAM AREA(ACRES) =  111.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     96.43

****************************************************************************
 FLOW PROCESS FROM NODE      7.10 TO NODE      7.20 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   250.00
 ELEVATION DATA: UPSTREAM(FEET) =   1315.00  DOWNSTREAM(FEET) =   1220.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.799
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.754
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        0.70      0.30       1.00     46    7.80
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      0.92
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      0.92

****************************************************************************
 FLOW PROCESS FROM NODE      7.20 TO NODE      7.30 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1180.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   230.00   CHANNEL SLOPE =  0.1739
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1470 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =      0.92
 FLOW VELOCITY(FEET/SEC) =   2.15 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =   9.58
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE      7.30 =   480.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.30 TO NODE      7.30 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =   9.58
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.558
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        1.30      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     1.30      SUBAREA RUNOFF(CFS) =     1.47
 EFFECTIVE AREA(ACRES) =     2.00    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     2.00        PEAK FLOW RATE(CFS) =       2.26

****************************************************************************
 FLOW PROCESS FROM NODE      7.30 TO NODE      7.40 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1180.00  DOWNSTREAM(FEET) =   1114.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.1065
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1048 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      2.26
 FLOW VELOCITY(FEET/SEC) =   2.38 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.34   Tc(MIN.) =  13.93
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE      7.40 =  1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.40 TO NODE      7.40 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.93
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.257
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        5.10      0.30       1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     5.10      SUBAREA RUNOFF(CFS) =     4.39
 EFFECTIVE AREA(ACRES) =     7.10    AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30   AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     7.10        PEAK FLOW RATE(CFS) =       6.12

****************************************************************************
 FLOW PROCESS FROM NODE      7.40 TO NODE      7.90 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1114.00  DOWNSTREAM(FEET) =   1088.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.0591
 CHANNEL FLOW THRU SUBAREA(CFS) =      6.12
 FLOW VELOCITY(FEET/SEC) =   5.38 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =  15.29
 LONGEST FLOWPATH FROM NODE      7.10 TO NODE      7.90 =  1540.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      7.90 TO NODE      7.90 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.29
 RAINFALL INTENSITY(INCH/HR) =   1.19
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00
 EFFECTIVE STREAM AREA(ACRES) =    7.10
 TOTAL STREAM AREA(ACRES) =    7.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.12

 ** CONFLUENCE DATA **
  STREAM      Q      Tc    Intensity   Fp(Fm)      Ap    Ae      HEADWATER
  NUMBER    (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)          (ACRES)    NODE
     1      89.86   9.72     1.545   0.22( 0.19) 0.87     73.8     305.00
     1      90.64  10.00     1.520   0.22( 0.19) 0.87     75.8     307.00
     1      95.21  11.88     1.377   0.22( 0.19) 0.86     89.2     123.00
     1      95.31  11.98     1.371   0.22( 0.19) 0.85     89.8     208.00
     1      96.09  12.44     1.341   0.22( 0.19) 0.85     92.8     213.00
     1      96.15  12.48     1.339   0.22( 0.19) 0.85     93.1     112.00
     1      96.35  12.65     1.329   0.23( 0.19) 0.85     94.1     223.00
     1      96.42  12.90     1.314   0.23( 0.19) 0.85     95.5     221.00
     1      96.43  12.95     1.311   0.23( 0.19) 0.85     95.7     311.00
     1      96.40  13.21     1.296   0.23( 0.19) 0.85     97.0     118.00
     1      96.23  13.70     1.269   0.23( 0.19) 0.84     99.2     207.00
     1      96.10  13.94     1.257   0.23( 0.19) 0.84    100.3     115.00
     1      96.09  13.95     1.256   0.23( 0.19) 0.84    100.3     106.00
     1      96.06  13.99     1.254   0.23( 0.19) 0.84    100.5     121.00
     1      95.83  14.23     1.242   0.23( 0.19) 0.84    101.4     216.00
```

1	95.65	14.35	1.236	0.23(0.19)	0.84	101.8	211.00
1	95.40	14.51	1.228	0.23(0.19)	0.84	102.3	226.00
1	95.12	14.66	1.221	0.23(0.19)	0.84	102.8	104.00
1	94.75	14.86	1.211	0.23(0.19)	0.84	103.3	309.00
1	94.22	15.12	1.200	0.23(0.19)	0.84	103.9	209.00
1	93.69	15.36	1.188	0.23(0.19)	0.84	104.5	101.00
1	93.63	15.39	1.187	0.23(0.19)	0.84	104.6	303.00
1	91.93	16.05	1.159	0.23(0.19)	0.84	105.7	301.00
1	90.85	16.45	1.143	0.23(0.19)	0.84	106.3	108.00
1	90.15	16.70	1.133	0.23(0.19)	0.84	106.6	113.00
1	82.56	19.71	1.030	0.23(0.20)	0.84	109.9	204.00
1	79.92	20.89	0.996	0.23(0.20)	0.84	110.9	201.00
1	79.63	21.01	0.993	0.23(0.20)	0.84	111.0	1.00
2	6.12	15.29	1.192	0.30(0.30)	1.00	7.1	7.10

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	95.30	9.72	1.545	0.23(0.20)	0.87	78.3	305.00
2	96.12	10.00	1.520	0.23(0.20)	0.87	80.5	307.00
3	100.95	11.88	1.377	0.23(0.20)	0.86	94.7	123.00
4	101.07	11.98	1.371	0.23(0.20)	0.86	95.3	208.00
5	101.91	12.44	1.341	0.23(0.20)	0.86	98.6	213.00
6	101.97	12.48	1.339	0.23(0.20)	0.86	98.9	112.00
7	102.19	12.65	1.329	0.23(0.20)	0.86	100.0	223.00
8	102.29	12.90	1.314	0.23(0.20)	0.86	101.4	221.00
9	102.30	12.95	1.311	0.23(0.20)	0.86	101.7	311.00
10	102.31	13.21	1.296	0.23(0.20)	0.86	103.1	118.00
11	102.19	13.70	1.269	0.23(0.20)	0.85	105.6	207.00
12	102.08	13.94	1.257	0.23(0.20)	0.85	106.7	115.00
13	102.07	13.95	1.256	0.23(0.20)	0.85	106.8	106.00
14	102.05	13.99	1.254	0.23(0.20)	0.85	106.9	121.00
15	101.85	14.23	1.242	0.23(0.20)	0.85	108.0	216.00
16	101.68	14.35	1.236	0.23(0.20)	0.85	108.5	211.00
17	101.44	14.51	1.228	0.23(0.20)	0.85	109.0	226.00
18	101.18	14.66	1.221	0.23(0.20)	0.85	109.6	104.00
19	100.83	14.86	1.211	0.23(0.20)	0.85	110.2	309.00
20	100.32	15.12	1.200	0.23(0.20)	0.85	111.0	209.00
21	99.97	15.29	1.192	0.23(0.20)	0.85	111.5	7.10
22	99.79	15.36	1.188	0.23(0.20)	0.85	111.6	101.00
23	99.71	15.39	1.187	0.23(0.20)	0.85	111.7	303.00
24	97.82	16.05	1.159	0.24(0.20)	0.85	112.8	301.00
25	96.63	16.45	1.143	0.24(0.20)	0.85	113.4	108.00
26	95.86	16.70	1.133	0.24(0.20)	0.85	113.7	113.00
27	87.57	19.71	1.030	0.24(0.20)	0.85	117.0	204.00
28	84.69	20.89	0.996	0.24(0.20)	0.85	118.0	201.00
29	84.38	21.01	0.993	0.24(0.20)	0.85	118.1	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 102.31 Tc(MIN.) = 13.21
EFFECTIVE AREA(ACRES) = 103.10 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 118.10

LONGEST FLOWPATH FROM NODE 201.00 TO NODE 7.90 = 4980.00 FEET.

****
FLOW PROCESS FROM NODE 7.90 TO NODE 8.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1088.00 DOWNSTREAM(FEET) = 1038.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0410
CHANNEL FLOW THRU SUBAREA(CFS) = 102.31
FLOW VELOCITY(FEET/SEC) = 9.68 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 2.10 Tc(MIN.) = 15.31
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 8.00 = 6200.00 FEET.

****
FLOW PROCESS FROM NODE 8.00 TO NODE 8.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN) = 15.31
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.191
SUBAREA LOSS RATE DATA(AMC I):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	25.80	0.20	1.00	67

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 25.80 SUBAREA RUNOFF(CFS) = 23.01
EFFECTIVE AREA(ACRES) = 128.90 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.88
TOTAL AREA(ACRES) = 143.90 PEAK FLOW RATE(CFS) = 115.14

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	110.50	11.87	1.378	0.22(0.20)	0.91	104.1	305.00
2	111.08	12.15	1.360	0.22(0.20)	0.90	106.3	307.00
3	114.52	13.99	1.254	0.22(0.20)	0.89	120.5	123.00
4	114.57	14.09	1.249	0.22(0.20)	0.89	121.1	208.00
5	115.13	14.55	1.226	0.22(0.20)	0.89	124.4	213.00
6	115.17	14.59	1.224	0.22(0.20)	0.89	124.7	112.00
7	115.29	14.76	1.216	0.22(0.20)	0.89	125.8	223.00
8	115.27	15.01	1.205	0.22(0.20)	0.89	127.2	221.00
9	115.26	15.05	1.203	0.22(0.20)	0.89	127.5	311.00
10	115.14	15.31	1.191	0.22(0.20)	0.88	128.9	118.00
11	114.80	15.80	1.169	0.23(0.20)	0.88	131.4	207.00
12	114.59	16.04	1.159	0.23(0.20)	0.88	132.5	115.00
13	114.58	16.05	1.159	0.23(0.20)	0.88	132.6	106.00
14	114.54	16.09	1.157	0.23(0.20)	0.88	132.7	121.00
15	114.24	16.33	1.147	0.23(0.20)	0.88	133.8	216.00
16	114.03	16.46	1.143	0.23(0.20)	0.88	134.3	211.00
17	113.74	16.61	1.136	0.23(0.20)	0.88	134.8	226.00
18	113.43	16.77	1.130	0.23(0.20)	0.88	135.4	104.00
19	113.01	16.97	1.122	0.23(0.20)	0.88	136.0	309.00

```
   20    112.42  17.23    1.113  0.23( 0.20) 0.88   136.8     209.00
   21    112.02  17.40    1.106  0.23( 0.20) 0.88   137.3       7.10
   22    111.82  17.48    1.104  0.23( 0.20) 0.88   137.4     101.00
   23    111.74  17.51    1.102  0.23( 0.20) 0.88   137.5     303.00
   24    109.71  18.18    1.079  0.23( 0.20) 0.88   138.6     301.00
   25    108.43  18.59    1.065  0.23( 0.20) 0.88   139.2     108.00
   26    107.61  18.84    1.057  0.23( 0.20) 0.88   139.5     113.00
   27     98.69  21.91    0.969  0.23( 0.20) 0.88   142.8     204.00
   28     95.58  23.11    0.940  0.23( 0.20) 0.88   143.8     201.00
   29     95.25  23.24    0.937  0.23( 0.20) 0.88   143.9       1.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    115.29  Tc(MIN.) =  14.76
 AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.89  EFFECTIVE AREA(ACRES) =    125.80

****************************************************************************
 FLOW PROCESS FROM NODE      8.00 TO NODE    459.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1038.00  DOWNSTREAM(FEET) =   1018.30
 CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.0313
 CHANNEL FLOW THRU SUBAREA(CFS) =    115.29
 FLOW VELOCITY(FEET/SEC) =   8.76 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  15.95
 LONGEST FLOWPATH FROM NODE    201.00 TO NODE    459.00 =  6830.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.95
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.163
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       8.60      0.20       1.00     67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    8.60     SUBAREA RUNOFF(CFS) =    7.45
 EFFECTIVE AREA(ACRES) =   134.40   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.89
 TOTAL AREA(ACRES) =   152.50       PEAK FLOW RATE(CFS) =    116.71

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.95
 RAINFALL INTENSITY(INCH/HR) =   1.16
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.89
 EFFECTIVE STREAM AREA(ACRES) =  134.40
 TOTAL STREAM AREA(ACRES) =  152.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    116.71

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN.) =  10.46   RAINFALL INTENSITY(INCH/HR) =  1.48
 EFFECTIVE AREA(ACRES) =    39.30
 TOTAL AREA(ACRES) =    43.50        PEAK FLOW RATE(CFS) =    147.80
 AREA-AVERAGED Fm(INCH/HR) =   0.14  AREA-AVERAGED Fp(INCH/HR) =   0.25
 AREA-AVERAGED Ap =  0.54
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
       CONFLUENCE ANALYSES.

****************************************************************************
 FLOW PROCESS FROM NODE    459.00 TO NODE    459.00 IS CODE =  1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.46
 RAINFALL INTENSITY(INCH/HR) =   1.48
 AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.25
 AREA-AVERAGED Ap =  0.54
 EFFECTIVE STREAM AREA(ACRES) =   39.30
 TOTAL STREAM AREA(ACRES) =   43.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    147.80

 ** CONFLUENCE DATA **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap    Ae     HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR)  (INCH/HR)          (ACRES)     NODE
     1    112.01  13.08    1.303  0.22( 0.20) 0.91    112.7      305.00
     1    112.59  13.36    1.288  0.22( 0.20) 0.91    114.9      307.00
     1    115.95  15.19    1.196  0.22( 0.20) 0.90    129.1      123.00
     1    116.00  15.29    1.192  0.22( 0.20) 0.90    129.7      208.00
     1    116.55  15.74    1.172  0.22( 0.20) 0.90    133.0      213.00
     1    116.59  15.79    1.170  0.22( 0.20) 0.90    133.3      112.00
     1    116.71  15.95    1.163  0.22( 0.20) 0.89    134.4      223.00
     1    116.69  16.20    1.153  0.22( 0.20) 0.89    135.8      221.00
     1    116.68  16.25    1.151  0.22( 0.20) 0.89    136.1      311.00
     1    116.56  16.51    1.140  0.22( 0.20) 0.89    137.5      118.00
     1    116.24  17.00    1.121  0.22( 0.20) 0.89    140.0      207.00
     1    116.04  17.24    1.112  0.22( 0.20) 0.89    141.1      115.00
     1    116.03  17.25    1.112  0.22( 0.20) 0.89    141.2      106.00
     1    115.99  17.29    1.111  0.22( 0.20) 0.89    141.3      121.00
     1    115.70  17.53    1.102  0.22( 0.20) 0.89    142.4      216.00
```

1	115.50	17.66	1.097	0.22(0.20)	0.89	142.9	211.00
1	115.21	17.82	1.092	0.22(0.20)	0.89	143.4	226.00
1	114.91	17.98	1.086	0.22(0.20)	0.89	144.0	104.00
1	114.51	18.18	1.079	0.22(0.20)	0.89	144.6	309.00
1	113.93	18.44	1.070	0.23(0.20)	0.89	145.4	209.00
1	113.55	18.61	1.065	0.23(0.20)	0.89	145.9	7.10
1	113.35	18.69	1.062	0.23(0.20)	0.89	146.0	101.00
1	113.27	18.72	1.061	0.23(0.20)	0.89	146.1	303.00
1	111.29	19.40	1.040	0.23(0.20)	0.88	147.2	301.00
1	110.04	19.81	1.027	0.23(0.20)	0.88	147.8	108.00
1	109.24	20.07	1.020	0.23(0.20)	0.88	148.1	113.00
1	100.49	23.17	0.939	0.23(0.20)	0.88	151.4	204.00
1	97.42	24.38	0.912	0.23(0.20)	0.88	152.4	201.00
1	97.08	24.51	0.909	0.23(0.20)	0.88	152.5	1.00
2	147.80	10.46	1.482	0.25(0.14)	0.54	39.3	459.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	251.84	10.46	1.482	0.22(0.18)	0.80	129.4	459.00
2	240.21	13.08	1.303	0.22(0.18)	0.82	152.0	305.00
3	239.09	13.36	1.288	0.22(0.18)	0.82	154.2	307.00
4	232.38	15.19	1.196	0.22(0.18)	0.82	168.4	123.00
5	231.96	15.29	1.192	0.23(0.18)	0.82	169.0	208.00
6	230.33	15.74	1.172	0.23(0.18)	0.81	172.3	213.00
7	230.16	15.79	1.170	0.23(0.18)	0.81	172.6	112.00
8	229.52	15.95	1.163	0.23(0.18)	0.81	173.7	223.00
9	228.36	16.20	1.153	0.23(0.18)	0.81	175.1	221.00
10	228.16	16.25	1.151	0.23(0.18)	0.81	175.4	311.00
11	226.88	16.51	1.140	0.23(0.18)	0.81	176.8	118.00
12	224.46	17.00	1.121	0.23(0.18)	0.81	179.3	207.00
13	223.28	17.24	1.112	0.23(0.18)	0.81	180.4	115.00
14	223.23	17.25	1.112	0.23(0.18)	0.81	180.5	106.00
15	223.04	17.29	1.111	0.23(0.18)	0.81	180.6	121.00
16	221.77	17.53	1.102	0.23(0.19)	0.81	181.7	216.00
17	221.09	17.66	1.097	0.23(0.19)	0.81	182.2	211.00
18	220.18	17.82	1.092	0.23(0.19)	0.81	182.7	226.00
19	219.26	17.98	1.086	0.23(0.19)	0.81	183.3	104.00
20	218.11	18.18	1.079	0.23(0.19)	0.81	183.9	309.00
21	216.57	18.44	1.070	0.23(0.19)	0.81	184.7	209.00
22	215.55	18.61	1.065	0.23(0.19)	0.81	185.2	7.10
23	215.07	18.69	1.062	0.23(0.19)	0.81	185.3	101.00
24	214.88	18.72	1.061	0.23(0.19)	0.81	185.4	303.00
25	210.55	19.40	1.040	0.23(0.19)	0.81	186.5	301.00
26	207.93	19.81	1.027	0.23(0.19)	0.81	187.1	108.00
27	206.30	20.07	1.020	0.23(0.19)	0.81	187.4	113.00
28	188.69	23.17	0.939	0.23(0.19)	0.81	190.7	204.00
29	182.65	24.38	0.912	0.23(0.19)	0.81	191.7	201.00
30	182.02	24.51	0.909	0.23(0.19)	0.81	191.8	1.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 251.84 Tc(MIN.) = 10.46
EFFECTIVE AREA(ACRES) = 129.41 AREA-AVERAGED Fm(INCH/HR) = 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 196.00
LONGEST FLOWPATH FROM NODE 201.00 TO NODE 459.00 = 6830.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 196.00 TC(MIN.) = 10.46
EFFECTIVE AREA(ACRES) = 129.41 AREA-AVERAGED Fm(INCH/HR)= 0.18
AREA-AVERAGED Fp(INCH/HR) = 0.22 AREA-AVERAGED Ap = 0.80
PEAK FLOW RATE(CFS) = 251.84

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	251.84	10.46	1.482	0.22(0.18)	0.80	129.4	459.00
2	240.21	13.08	1.303	0.22(0.18)	0.82	152.0	305.00
3	239.09	13.36	1.288	0.22(0.18)	0.82	154.2	307.00
4	232.38	15.19	1.196	0.22(0.18)	0.82	168.4	123.00
5	231.96	15.29	1.192	0.23(0.18)	0.82	169.0	208.00
6	230.33	15.74	1.172	0.23(0.18)	0.81	172.3	213.00
7	230.16	15.79	1.170	0.23(0.18)	0.81	172.6	112.00
8	229.52	15.95	1.163	0.23(0.18)	0.81	173.7	223.00
9	228.36	16.20	1.153	0.23(0.18)	0.81	175.1	221.00
10	228.16	16.25	1.151	0.23(0.18)	0.81	175.4	311.00
11	226.88	16.51	1.140	0.23(0.18)	0.81	176.8	118.00
12	224.46	17.00	1.121	0.23(0.18)	0.81	179.3	207.00
13	223.28	17.24	1.112	0.23(0.18)	0.81	180.4	115.00
14	223.23	17.25	1.112	0.23(0.18)	0.81	180.5	106.00
15	223.04	17.29	1.111	0.23(0.18)	0.81	180.6	121.00
16	221.77	17.53	1.102	0.23(0.19)	0.81	181.7	216.00
17	221.09	17.66	1.097	0.23(0.19)	0.81	182.2	211.00
18	220.18	17.82	1.092	0.23(0.19)	0.81	182.7	226.00
19	219.26	17.98	1.086	0.23(0.19)	0.81	183.3	104.00
20	218.11	18.18	1.079	0.23(0.19)	0.81	183.9	309.00
21	216.57	18.44	1.070	0.23(0.19)	0.81	184.7	209.00
22	215.55	18.61	1.065	0.23(0.19)	0.81	185.2	7.10
23	215.07	18.69	1.062	0.23(0.19)	0.81	185.3	101.00
24	214.88	18.72	1.061	0.23(0.19)	0.81	185.4	303.00
25	210.55	19.40	1.040	0.23(0.19)	0.81	186.5	301.00
26	207.93	19.81	1.027	0.23(0.19)	0.81	187.1	108.00
27	206.30	20.07	1.020	0.23(0.19)	0.81	187.4	113.00
28	188.69	23.17	0.939	0.23(0.19)	0.81	190.7	204.00
29	182.65	24.38	0.912	0.23(0.19)	0.81	191.7	201.00
30	182.02	24.51	0.909	0.23(0.19)	0.81	191.8	1.00

END OF RATIONAL METHOD ANALYSIS

1

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
             (Reference: 1986 OCEMA HYDROLOGY CRITERION)
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                        Analysis prepared by:

                        HUNSAKER & ASSOCIATES
                              Irvine,Inc.
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                Three Hughes * Irvine, California 92618 * (949)583-1010

 ************************** DESCRIPTION OF STUDY *************************
* w.o. #1665-1, t.t. 15230, saddleback meadows                           *
* 2-yr storm                                                             *
* area "D"                                                               *
 **************************************************************************

  FILE NAME: D-DEV.DAT
  TIME/DATE OF STUDY: 10:06 07/16/2001

  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 1   24.0     19.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150
 2   20.0     15.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150
 3   18.0     13.0   0.017/0.017/0.020    0.50    1.50 0.0313 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE    314.00 TO NODE    315.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

  INITIAL SUBAREA FLOW-LENGTH(FEET) =  265.00
  ELEVATION DATA: UPSTREAM(FEET) =  1418.00  DOWNSTREAM(FEET) =  1392.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   5.000
  *  2 YEAR RAINFALL INTENSITY(INCH/HR) =  2.264
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        0.30      0.30       0.10     36    5.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =      0.60
  TOTAL AREA(ACRES) =      0.30   PEAK FLOW RATE(CFS) =      0.60

**************************************************************************
  FLOW PROCESS FROM NODE    315.00 TO NODE    316.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<

  UPSTREAM ELEVATION(FEET) = 1392.00  DOWNSTREAM ELEVATION(FEET) = 1337.50
  STREET LENGTH(FEET) =  530.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.017
  OUTSIDE STREET CROSSFALL(DECIMAL) =  0.017

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.19
    HALFSTREET FLOOD WIDTH(FEET) =    3.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.93
  STREET FLOW TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =   6.81
  *  2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.896
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.60      0.30       0.10     36
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =     0.60     SUBAREA RUNOFF(CFS) =     1.01
  EFFECTIVE AREA(ACRES) =     0.90     AREA-AVERAGED Fm(INCH/HR) =  0.03
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =     0.90        PEAK FLOW RATE(CFS) =        1.51

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   HALFSTREET FLOOD WIDTH(FEET) =   4.62
  FLOW VELOCITY(FEET/SEC.) =  4.99   DEPTH*VELOCITY(FT*FT/SEC.) =   1.04
  LONGEST FLOWPATH FROM NODE    314.00 TO NODE    316.00 =   795.00 FEET.
```

```
**************************************************************************
 FLOW PROCESS FROM NODE     316.00 TO NODE     317.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1337.50  DOWNSTREAM(FEET) =  1320.00
 FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN  18.0 INCH PIPE IS   2.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.69
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      1.51
 PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   7.07
 LONGEST FLOWPATH FROM NODE    314.00 TO NODE    317.00 =   945.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     317.00 TO NODE     323.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   730.00   CHANNEL SLOPE =  0.2466
 CHANNEL FLOW THRU SUBAREA(CFS) =      1.51
 FLOW VELOCITY(FEET/SEC) =   3.19 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.81   Tc(MIN.) =  10.88
 LONGEST FLOWPATH FROM NODE    314.00 TO NODE    323.00 =  1675.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  10.88
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.449
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       8.00      0.20       1.00     67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     8.00     SUBAREA RUNOFF(CFS) =     8.99
 EFFECTIVE AREA(ACRES) =     8.90   AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  0.91
 TOTAL AREA(ACRES) =      8.90      PEAK FLOW RATE(CFS) =      10.14

**************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  10.88
 RAINFALL INTENSITY(INCH/HR) =   1.45
 AREA-AVERAGED Fm(INCH/HR) =  0.18
 AREA-AVERAGED Fp(INCH/HR) =  0.20
 AREA-AVERAGED Ap =  0.91
 EFFECTIVE STREAM AREA(ACRES) =    8.90
 TOTAL STREAM AREA(ACRES) =    8.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.14

**************************************************************************
 FLOW PROCESS FROM NODE     318.00 TO NODE     319.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =   1649.00  DOWNSTREAM(FEET) =   1490.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.849
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.747
 SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"                 D       0.70      0.20       1.00     67    7.85
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA RUNOFF(CFS) =      0.97
 TOTAL AREA(ACRES) =      0.70   PEAK FLOW RATE(CFS) =      0.97

**************************************************************************
 FLOW PROCESS FROM NODE     319.00 TO NODE     320.00 IS CODE =  53
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1450.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.1667
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE =  .1433 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =      0.97
 FLOW VELOCITY(FEET/SEC) =   2.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =   9.74
 LONGEST FLOWPATH FROM NODE    318.00 TO NODE    320.00 =   540.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE     320.00 TO NODE     320.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =   9.74
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
```

```
     LAND USE              GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
NATURAL FAIR COVER
"OPEN BRUSH"                D        4.60       0.20        1.00     67
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
SUBAREA AREA(ACRES) =     4.60     SUBAREA RUNOFF(CFS) =     5.57
EFFECTIVE AREA(ACRES) =     5.30   AREA-AVERAGED Fm(INCH/HR) =  0.20
AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
TOTAL AREA(ACRES) =     5.30       PEAK FLOW RATE(CFS) =       6.41

****************************************************************************
 FLOW PROCESS FROM NODE     320.00 TO NODE     321.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1320.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   720.00   CHANNEL SLOPE =  0.1806
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1503 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =       6.41
 FLOW VELOCITY(FEET/SEC) =   4.03 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =  12.71
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     321.00 =  1260.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     321.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.71
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.325
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        5.10       0.20        1.00     67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     5.10     SUBAREA RUNOFF(CFS) =     5.16
 EFFECTIVE AREA(ACRES) =    10.40   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    10.40       PEAK FLOW RATE(CFS) =      10.53

****************************************************************************
 FLOW PROCESS FROM NODE     321.00 TO NODE     322.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1320.00  DOWNSTREAM(FEET) =   1160.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1455
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1320 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =      10.53
 FLOW VELOCITY(FEET/SEC) =   4.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.11   Tc(MIN.) =  16.83
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     322.00 =  2360.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     322.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.83
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.128
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D       16.40       0.20        1.00     67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =    16.40     SUBAREA RUNOFF(CFS) =    13.70
 EFFECTIVE AREA(ACRES) =    26.80   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    26.80       PEAK FLOW RATE(CFS) =      22.38

****************************************************************************
 FLOW PROCESS FROM NODE     322.00 TO NODE     323.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1160.00  DOWNSTREAM(FEET) =   1140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.0952
 CHANNEL FLOW THRU SUBAREA(CFS) =      22.38
 FLOW VELOCITY(FEET/SEC) =   9.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.37   Tc(MIN.) =  17.19
 LONGEST FLOWPATH FROM NODE     318.00 TO NODE     323.00 =  2570.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  17.19
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.114
 SUBAREA LOSS RATE DATA(AMC  I ):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                D        1.00       0.20        1.00     67
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.20
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =     1.00     SUBAREA RUNOFF(CFS) =     0.82
 EFFECTIVE AREA(ACRES) =    27.80   AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.20  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =    27.80       PEAK FLOW RATE(CFS) =      22.87

****************************************************************************
 FLOW PROCESS FROM NODE     323.00 TO NODE     323.00 IS CODE =   1
```

```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 17.19
RAINFALL INTENSITY(INCH/HR) = 1.11
AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 27.80
TOTAL STREAM AREA(ACRES) = 27.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 22.87

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10.14	10.88	1.449	0.20(0.18)	0.91	8.9	314.00
2	22.87	17.19	1.114	0.20(0.20)	1.00	27.8	318.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29.91	10.88	1.449	0.20(0.19)	0.97	26.5	314.00
2	30.33	17.19	1.114	0.20(0.20)	0.98	36.7	318.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 30.33 Tc(MIN.) = 17.19
EFFECTIVE AREA(ACRES) = 36.70 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 36.70
LONGEST FLOWPATH FROM NODE 318.00 TO NODE 323.00 = 2570.00 FEET.

```
****************************************************************************
FLOW PROCESS FROM NODE    323.00 TO NODE    324.00 IS CODE = 52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```

ELEVATION DATA: UPSTREAM(FEET) = 1140.00 DOWNSTREAM(FEET) = 1090.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 630.00 CHANNEL SLOPE = 0.0794
CHANNEL FLOW THRU SUBAREA(CFS) = 30.33
FLOW VELOCITY(FEET/SEC) = 9.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.11 Tc(MIN.) = 18.30
LONGEST FLOWPATH FROM NODE 318.00 TO NODE 324.00 = 3200.00 FEET.

```
****************************************************************************
FLOW PROCESS FROM NODE    324.00 TO NODE    324.00 IS CODE = 81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

MAINLINE Tc(MIN) = 18.30
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.075
SUBAREA LOSS RATE DATA(AMC I):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	D	9.30	0.20	1.00	67

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.20
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.00
SUBAREA AREA(ACRES) = 9.30 SUBAREA RUNOFF(CFS) = 7.32
EFFECTIVE AREA(ACRES) = 46.00 AREA-AVERAGED Fm(INCH/HR) = 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 46.00 PEAK FLOW RATE(CFS) = 36.35

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	37.82	12.00	1.370	0.20(0.20)	0.98	35.8	314.00
2	36.35	18.30	1.075	0.20(0.20)	0.98	46.0	318.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 37.82 Tc(MIN.) = 12.00
AREA-AVERAGED Fm(INCH/HR) = 0.20 AREA-AVERAGED Fp(INCH/HR) = 0.20
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 35.80

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 46.00 TC(MIN.) = 12.00
EFFECTIVE AREA(ACRES) = 35.80 AREA-AVERAGED Fm(INCH/HR)= 0.20
AREA-AVERAGED Fp(INCH/HR) = 0.20 AREA-AVERAGED Ap = 0.98
PEAK FLOW RATE(CFS) = 37.82

** PEAK FLOW RATE TABLE **

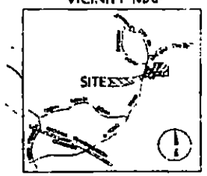
STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	37.82	12.00	1.370	0.20(0.20)	0.98	35.8	314.00
2	36.35	18.30	1.075	0.20(0.20)	0.98	46.0	318.00

END OF RATIONAL METHOD ANALYSIS

1

HYDROLOGY MAPS

VICINITY MAP



LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- NODE NUMBER
- AREA DESIGNATION / AREA ACREAGE
- PEAK FLOW RATE / TIME OF CONCENTRATION
- PEAK CONFLUENCE FLOW RATE / TIME OF CONCENTRATION
- PROPOSED STORM DRAIN
- SOIL GROUP (C, D)

GRAPHIC SCALE 1" = 100

MAP DATE IDENTIFIER

Last Revision Date	BY
09/24/01	TT
Date of Work Map	
09/24/01	

PREPARED FOR:

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PREPARED BY

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING • ENGINEERING • SURVEYING

HYDROLOGY MAP
FOR
TENTATIVE TRACT 15230
(EXISTING CONDITION)

• NOTE.

CALCULATED Q100 IS FOR THE PURPOSE OF COMPARING Q100 UNDER EXISTING AND PROPOSED CONDITION AND IS NOT THE TOTAL Q100 TRIBUTARY TO THE DEDICATED POINT

Alisos Creek

Creek

Oso Creek

EXIST FACILITY "JOY" PER L.D. PLANS # 701-701-15

EXIST 24" RCP

EXIST UNDER

PROPOSED LINE "A"

PROPOSED LINE "B"

PROPOSED LINE "C"

PROPOSED LINE "D"

PROPOSED LINE "E"

PROPOSED LINE "F"

PROPOSED LINE "G"

LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- NODE NUMBER
- AREA DESIGNATION / AREA ACREAGE
- PEAK FLOW RATE / TIME OF CONCENTRATION
- PEAK CONFLUENCE FLOW RATE / TIME OF CONCENTRATION
- PROPOSED STORM DRAIN
- SOIL GROUP BOUNDARY (D / C / D)

TYPICAL CROSS SECTIONS

ENTRY AT THE GATE

VICINITY MAP

SITE

GRAPHIC SCALE 1"=100'

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PLANNING • ENGINEERING • SURVEYING

MAP DATE IDENTIFIER
09/24/01 BY: TT
09/24/01

HYDROLOGY MAP FOR TENTATIVE TRACT 15230 (Developed Condition)

09/24/2001